Binghamton Plastics

(6)

3GW/2 soil samples

DOVER ELECTRONICS COMPANY

DEM - East

PHASE III INVESTIGATION

Final Report
December 1992

Stetson-Harza
A HARZA COMPANY

DOVER ELECTRONICS COMPANY

Multi Layer Ceramic Substrates Division

Broome Corporate Park • PO Box 5212 • Binghamton, NY 13902-5212 • Tel: 607/772/5900 • FAX: 607/772/1759

December 30, 1992

NYS Department of Environmental Conservation
Region 7 Binghamton Sub Office
Rt. 11, RD #1, Box 1803
Kirkwood, NY 13795-9772

ATTN: Scott Rodabaugh

Dear Scott:

Enclosed please find one copy of Dover Electronics Company (DECO) DEM-East and Kirkwood North Phase III investigation final reports dated December 1992. These final reports are for your review. A meeting will be scheduled for detailed discussions on final recommendations upon completion of your review. Please contact me for any questions and/or completion of your review.

Sincerely,

DOVER ELECTRONICS COMPANY

Jim O'Brien
Staff Engineer

Attachments

CC: Rich Kenehan

JO:dmr

TABLE OF CONTENTS

DEM - EAST

PHASE III INVESTIGATION

1.0 INTRODUCTION

The site, known as the DEM - East Manufacturing Facility is located on Conklin Avenue in Binghamton, New York (see Figure 1.1). Originally constructed in 1956 by Binghamton Plastics, the facility has undergone structural modifications. Building additions were constructed in 1963, 1974, and 1982 and the facility was sold to Universal Instruments in the early 1980's and later to Dover Electronics.

On-site contamination has been attributed to leakage from a 1,000 gallon underground storage tank which was left in place by Binghamton Plastics. Removed in 1986, the tank was used as a hydraulic oil reservoir and contained 650 gallons of oil contaminated with 1,1,1 trichloroethane and trichloroethylene.

There are additional areas in the vicinity of the DEM - East Facility that are suspected of being contaminated. These sites include the Contro-Neville Dump; a C & D Landfill located 1/8 mile south east of the site and the Stein Builders Dump, a C & D Landfill located 1/4 mile south of the site. Also contamination was detected in a well 1/2 mile east of the site in the early 1980's. The well has since been abandoned. The contamination in the well was attributed to a nearby manufacturing facility not associated with Dover.

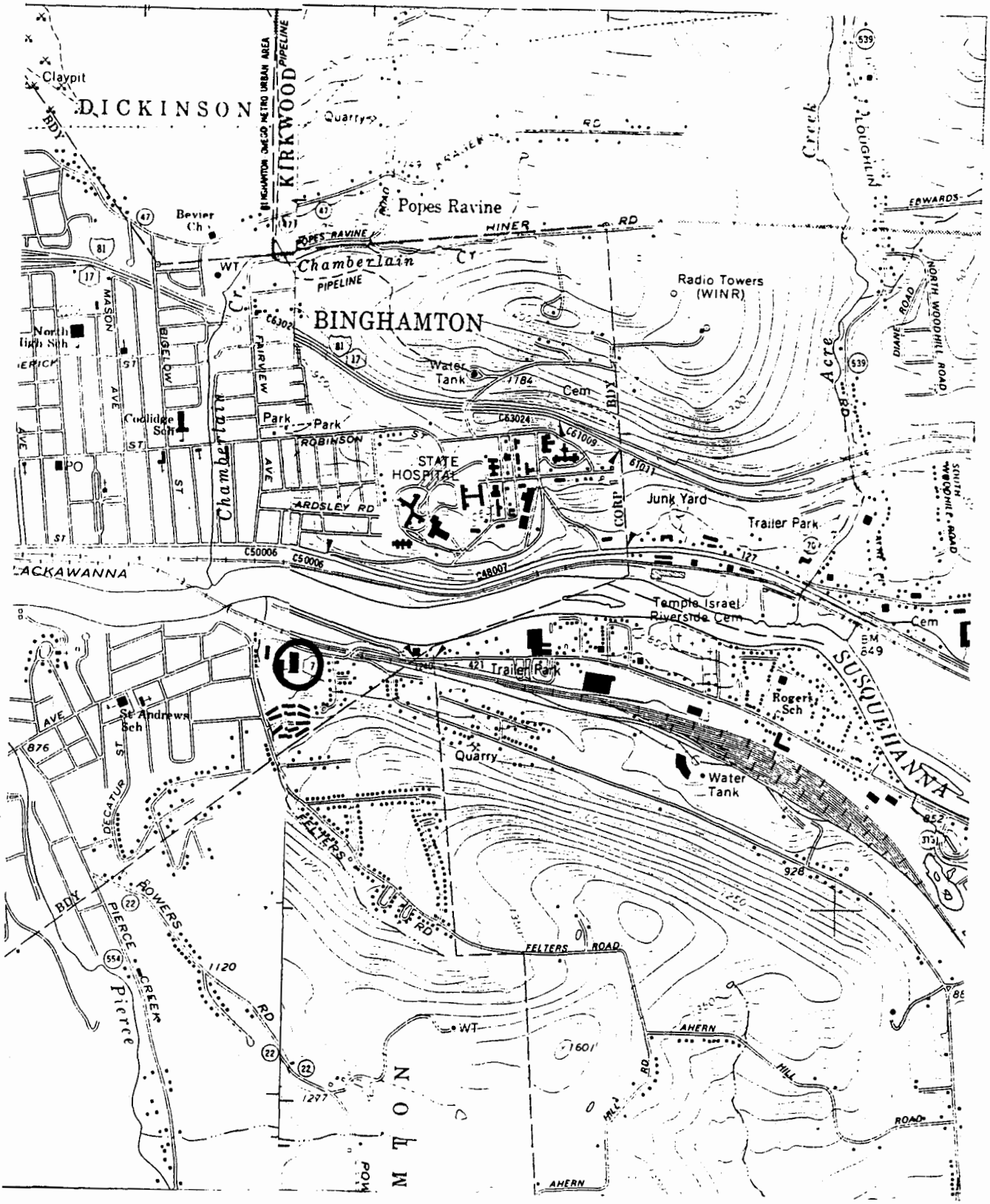
Since acquisition of the facility by the Dover Electronics Company in the mid-1980's two Environmental Investigations have been performed. The first investigation, dated October 8, 1990, consisted of subsurface soil sampling. this sampling event identified contamination due to lubricating oils, 1,1,1 trichloroethane, trichloroethylene, and carbon tetrachloride in the area of the former Binghamton Plastic's tank location. Based on these results, a Phase II Investigation was recommended.

The Phase II Investigation, dated August 29, 1991 consisted of soil gas analysis, monitoring well construction, and subsurface soil and groundwater sampling. Results of this sampling event showed the same contamination as the Phase I investigation, but the

pollutants 1,1 dichloroethane and tetrachloroethylene were also detected. Several recommendations were made based on these results including pump and treat remediation of the affected groundwater and the removal of a 2 foot layer of contaminated soil.

Maximum contaminant concentrations determined during both the Phase I and Phase II investigations can be found in Appendix A.

Based on the current understanding of site history combined with the results and recommendations of the two previous investigations ~~and~~, additional field activities were necessary to recommend remedial alternatives for soil and groundwater contamination. These activities included determination of the soil waste classification and the extent and nature of groundwater contamination and groundwater gradient.



Stetson-Harza A HARZA COMPANY 181 Genesee Street, Utica, NY 13501 (315) 797-5800 Rensselaer Technology Park 250 Jordan Rd., Troy, NY 12180 (518) 283-8080	DATE DRAWN NO. 6519	DOVER ELECTRONICS COMPANY **DEM - East** **Location Map**	**FIG. 1.1**

DRAWING 13617 FORM # 3/26

2.0 FIELD INVESTIGATIONS

This section outlines investigation tasks completed for the DEM - East Portion of the Dover Electronics Company project. Figure 2.1 details investigation locations.

2.1 Subsurface Soil Sampling. Two soil samples were collected from the approximate boundary of the area previously determined to be contaminated. Each sample was a composite of two split spoon soil samples taken from a depth of four to six feet. One sample was taken from Borings D-1 and D-2 and labeled D-1-2 and the other was taken from Borings D-3 and D-4 and labeled D-3-4. The composite sample D-3-4 was taken to be the representative of soil immediately in front of the garage door. D-1-2 was representative of the former tank area.

1 composite over a total of 4 feet of soil from two locations

2.2 Monitoring Well Development. All existing wells were developed before sampling. The well development met NYSDEC Requirements for stability including pH, conductivity, and temperature with the exception of turbidity. Very fine, gray silt was consistently down into well screens.

2.3 Groundwater Sampling. Stetson-Harza personnel collected one groundwater sample for each existing well. Wells were purged prior to sample collection by extracted three well volumes of water.

2.4 Laboratory Analysis. Three (3) groundwater and two (2) soil samples were collected and analyzed for Volatile Organic Compounds utilizing appropriate USEPA and NYSDEC Protocols. Sample D-1-2 was also analyzed using the Toxicity Characteristic Leaching Procedure (TCLP).

2.5 Site Survey. Stetson-Harza surveyed the site following field operations. The survey consisted of well location and elevation determinations. A temporary benchmark placed by NYSDOT in New York Telephone Pole 250 was used to determine well elevations.

APPROXIMATELY 600 FT TO SUSQUEHANNA RIVER FROM NORTH SIDE OF CONKLIN AVE

ERIE - LAKAWANNA RAILROAD

CONKLIN AVENUE

CHAMBERS STREET

DEM - EAST MANUFACTURING FACILITY

DMW3

DMW2

D-4

D-3

DMW1

D-2

D-1

DMW4

SCALE: 1"=40'

LEGEND

- BORING LOCATION
- STORM SEWER
- EXISTING MONITORING WELL

Stetson-Harza A HARZA COMPANY 181 Genesee Street, Utica, NY 13501 (315) 797-5600 Rensselaer Technology Park 250 Jordan Rd., Troy, NY 12180 (518) 283-8560	DATE DRAWN NO. 6519	DOVER ELECTRONICS COMPANY **Investigation location map**	**FIGURE** **2.1**

3.0 EVALUATION OF INVESTIGATIVE RESULTS

Analytical data is summarized based on the NYSDEC Target Compound List (TCL) parameters detected in the subsurface soil or groundwater sample. Table 3.1 details the results of the TCL parameters detected in the subsurface soil, Table 3.2 lists the Toxicity Characteristic Leaching Procedure parameters detected in the soil samples and Table 3.3 presents the TCL parameters detected in the groundwater. Laboratory data may be found in Appendix C.

3.1 Comparative Criteria

Analytical results are related to available criteria to describe the presence of contamination. For groundwater, comparative criteria used are New York State Ground Water Quality Standards (GWQS). These values are derived to protect human health if the groundwater were used as a source of potable water supply.

For soil, analytical results are compared to the USEPA Health Effects Assessment Summary Table (HEAST) values. The HEAST concentrations were derived using standard exposure assumptions and only consider direct human ingestion of soils containing a single chemical compound. These values may be considered sufficiently protective of human health where land use will remain restricted.

To predict the contaminated soil's effect on groundwater, the Toxicity Characteristic Leaching Procedure (TCLP) was used. TCLP covers 39 pollutants. The TCLP treats soils with a weak acid to produce an extract which is then analyzed. This procedure is based on the assumption that the soil will be disposed of in a sanitary landfill and that its leachate, which the extract represents, will enter groundwater at some time. Therefore, the TCLP identifies pollutant concentrations in the extract that would be hazardous to groundwater. If the pollutant concentrations are above regulatory levels, the waste is hazardous and must be disposed of at an EPA certified hazardous waste facility.

3.2 Subsurface Soils

Soil samples for analysis were collected at 4 to 6 foot depths from four points at the location of the former underground storage tanks. Sampling points D1 and D2 were composited for sample D-1-2; similarly, points D3 and D4 were composited to produce sample D-3-4. Subsurface soil samples D-1-2 and D-3-4 were analyzed TCL volatile organics. Sample D-1-2 was further tested for Toxicity Characteristic Leaching Procedure to determine if the soil is a characteristic hazardous waste.

a. TCL Volatile Organic Compounds

Trichloroethylene was found in both soil samples, with a greater concentration occurring in Sample D-1-2. Results were below the comparative HEAST value. Tetrachloroethylene was detected in soil sample D-1-2, again below the HEAST value. Refer to Table 3.1.

b. Toxicity Characteristic Leaching Procedure (TCLP)

Of the eight TCLP metals, only barium, lead and silver were detected in Sample D-1-2. Analytical results determined the concentrations were below the respective regulatory levels.

Of the 31 TCLP organic compounds (volatiles, semi-volatiles, and pesticides), tetrachloroethylene and trichloroethylene were detected in Sample D-1-2 and were below the regulatory levels. Refer to Table 3.2.

3.3 Groundwater

Groundwater samples were collected from three monitoring wells DMW1, DMW2, and DMW3 and analyzed for NYSDEC Target Compound List (TCL) volatile organics.

The New York State Groundwater Standard was exceeded for six volatile organic compounds 1,1-dichloroethane, 1,1-dichloroethylene, trans-1,2-dichloroethylene, 1,1,1-tricloroethane, trichloroethylene, cis 1,2-dichloroethylene and for total of organic compounds in monitoring well DMW1.

Three volatile organic compounds 1,1,1,-trichloroethane, trichloroethylene, cis 1,2-dichloroethene found in monitoring well DMW2 exceeded respective groundwater standards in addition to total organic compounds.

Volatile organic compounds were not detected in monitoring well DMW3. Table 3.3 summarizes the pollutant concentrations found in water samples from monitoring wells DMW1-DMW3.

Table 3.4 gives water table elevations as determined in the field by using a water level indicator and survey which provided top of casing (TOC) elevations. The elevations show decreasing water table elevations toward the north. However, the 11 foot drop in water table elevation from DMW1 to DMW2 does indicate perched water due to confining conditions. Till and lacustrine deposits in this area (fine sand, silt, and clay) may have led to some thin confined water bearing zones in this area at different elevations. Low yields (< 1 gal/min) seem to indicate that groundwater in these wells is not from the aquifer directly linked to the Susquehanna River which is expected to have short-term yields of over 100 gal/min in the vicinity of the site (see Appendix D).

Laboratory data does show that some contamination has migrated to DMW2 from the tank area. Again, the 21 foot drop in water elevation does seem to indicate that these are separate water bearing zones but groundwater is slowly seeping into the lower zone near DMW2. This would explain the significant attenuation of pollutant concentrations in the DMW2 sample of about two orders of magnitude. The saturated zone at DMW1 may have been created when the tank was removed and the open pit backfilled with more permeable materials than the natural silty soils. This would create a "bath tub" effect for infiltrating surface water.

TABLE 3.1

TCL VOLATILE ORGANICS DETECTED IN SUBSURFACE SOIL SAMPLES (ug/kg)

	D-1-2	D-3-4	HEASTeValue(1)
Tetrachloroethylene	47.1		1,400
Trichloroethylene	719	40.2	6,400

(1) USEPA Health Effects Assessments Summary Table

TABLE 3.2

TOXICITY CHARACTERISTIC LEACHING PROCEDURE
PARAMETERS DETECTED IN SUBSURFACE SOIL SAMPLES (mg/l)

	D-1-2 Extract	TCLP Regulatory Level
Barium	0.7	100.
Lead	0.12	5.
Silver	0.18	5.
Tetrachloroethylene	0.007	0.7
Trichloroethylene	0.09	0.5

TABLE 3.3

TCL VOLATILE ORGANIC COMPOUNDS DETECTED
IN GROUNDWATER SAMPLES (ug/l)

	DMW1	DMW2	DMW3	NYSeGW Std.	TCLP Reg. Level
1,1-dichloroethane	2,720			5	
1,1-dichloroethylene	1,650			5	700
T-1,2-dichloroethylene	1,650			5	
1,1,1-trichloroethane	32,700	231		5	
trichloroethylene	35,200	506		5	500
C-1,2-dichloroethylene	17,500	98.4		5	

TABLE 3.4

SURFACE AND GROUNDWATER ELEVATIONS
MONITORING WELLS DMW1-DMW4 (FEET ABOVE MSL)

	Top of Casing	Approximate Surface Elevation	Depth GW from TOC	Approximate Groundwater Elevation
DMW1	875.13	875.1	3.8	871.3
DMW2	872.95	873.8	13.0	860.0
DMW3	874.85	875.3	23.1	851.8
DMW4	878.56	879.4	4.3	874.3

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusion

Overall, data from the Phase III investigation compared closely with data obtained during Phases I and II. There is now sufficient data to develop and propose a remedial alternative.

Generally, laboratory data seems to indicate the human threat from exposure to contaminated soil on site is minimal as long as this site is used as a parking lot. The pollutant concentrations are below HEAST values and the soil meets all regulatory levels under TCLP testing. However, pollutant concentrations in groundwater need attention.

In the area of the tank excavation, monitoring well DMW1 reveals a perched water table with a poor yield of about 0.5 gal/min. Contaminated soil and past leakage directly into this low flow water bearing zone has resulted in concentrations exceeding 90 ppm of total volatile organic compounds, the most toxic compound being trichloroethylene.

Although there seems to be no direct link to the high yield aquifer associated with the Susquehanna River, the potential exists for some migration in a northerly direction as indicated from tests which revealed that Sample DMW2 also had detections of trichloroethylene.

4.2 Recommendations

Since data indicates that soil in the area of the former tank meets guidance values under the TC rule and for human health figures, it is recommended that at the present time that the soil be left in place and a pump and treat system be installed.

Given the low yield in this aquifer and the fact that this is a confined, possibly manmade saturated zone, it is likely that the largest volume of groundwater would be taken out within the initial weeks of operation. After this initial period, the volume of water that could be drawn from the system will likely reduce significantly and be directly related to rain infiltration. Therefore, because of the anticipated low-volume condition, a system which included a carbon filtration unit that discharges into the local sewer system, may be more economical than an air stripping system. An air stripper could be added later if carbon filtration units become saturated frequently enough to make the air stripper more economical.

It is anticipated that two carbon units would be saturated during the first two to four weeks after installation. After this period, it is assumed that the number of saturated units will reduce to about two a year. Actual number of replacements cannot be predicted due to variables of volume and contaminant concentrations in the groundwater influent. If carbon unit replacements exceed two annually after the first month of operation, an air stripper should be considered. The cost of an air stripper addition would range from $12,000 to $15,000. Even with the air stripper, the carbon filtration units may need to remain in place to remove the semi-volatile contaminants Bis (2-ethylhexyl) phthalate and Di-n-butyl phthalate detected in the EPA 8270 analysis done under the Phase II investigation.

TABLE 4.1

PROPOSED REMEDIAL ACTION CAPITAL COST ESTIMATE

	Unit Cost	Unit	Cost
Storage shed, jet pumps, level controls, flow meters	$9,000	LS	$ 9,000
85 gallon carbon units (2 initial units and 2 replacements)	$900/unit	4	3,600
Disposal of 2 Carbon Units	$1,000/unit	2	2,000
Control Panel	$3,000	LS	3,000
Engineering and setup	$6,000	LS	6,000
Electrical hook-up to shed	$800	LS	800
Sanitary Sewer	$25/LF	300 LF	7,500
		Subtotal	$31,900
		15% Contingency	4,785
		TOTAL	$36,685
		SAY	$37,000

TABLE 4.2

ANNUAL O&M COSTS

	Unit Cost	Unit	Cost
Carbon Units			
Replacements	$ 900	2	$ 1,800
Disposal	1,000	2	2,000
Laboratory Testing	$200/sample	6 samples	1,200
Sampling	$60/hour	64 hours	3,840
Power Usage	$.10/KWH	2500 KWH	250
		Subtotal	$ 9,090
		15% Contingency	1,363
		TOTAL	$10,453
		SAY	$11,000

TABLEeA.1

PHASE I AND II

MAXIMUM CONTAMINANT CONCENTRATIONS FOR

DOVER ELECTRONICS COMPANY

DEM - EAST SITE

SITE	CONTAMINANT	CONCENTRATION	
		SOIL (ug/kg)	GROUNDWATER (2) (ug/1)
DEMe East	1,1 Dichloroethane	35.4	2,450
	1,1 Dichloroethylene	9.9	3,100
	Tetrachloroethylene	98.2	149
	1,1,1 Trichloroethane	1,470	17,500
	Trichloroethylene	2,070	31,000
	Bis (2-ethylhexyl) phthalate		14
	Di-n-butyl phthalate		55
	Chloroethane		194
	Chloroform		7.3
	Chloromethane		22
	Trans-1,2-dichloroethylene		505
	1,1,2 Trichloroethane		12
	Vinyl chloride		400
	Ethylbenzene		7
	Toluene		64
	Xylenes		21
	Cis-1,2-dichloroethylene		30,300

NOTES:

Maximum concentrations were all found at Location DMW1 in the area of the removed tank.

REFERENCES:

"Environmental Site Assessment for Dover Electronics Company DEM - East and Kirkwood North Locations"; Hagopian Engineering Associates; October 8, 1990.

"Phase II Environmental Site Assessment for Dover Electronics Company"; Hagopian Engineering Associates; August 29, 1991.

APPENDIX B

PHASE III

BORING LOGS

TEST BORING LOG

parratt wolff inc
FISHER ROAD
EAST SYRACUSE, N.Y. 13057

PROJECT Phase III Study
LOCATION Dover Electronics - DEM-East
Binghamton, New York
DATE STARTED 7/30/92 DATE COMPLETED 7/30/92

HOLE NO. D-1
SURF. EL.
JOB NO. 92206
GROUND WATER DEPTH
WHILE DRILLING 2.0'
BEFORE CASING REMOVED 2.5'
AFTER CASING REMOVED Grouted To Surface

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING 30" — ASTM D-1586, STANDARD PENETRATION TEST

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING
"/OR — % CORE RECOVERY

CASING TYPE - HOLLOW STEM AUGER
DRILLER'S FIELD LOG

SHEET 1 OF 1

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
WL ▼							
5.0	4.0'-6.0'	1		7/9 16/16	25	Brown wet medium dense fine to coarse SAND and SILT, little fine to coarse gravel	
						Bottom of Boring	6.0'
10.0							

perratt wolff inc

TEST BORING LOG

FISHER ROAD
EAST SYRACUSE, N.Y. 13057

PROJECT Phase III Study
LOCATION Dover Electronics - DEM-East
Binghamton, New York
DATE STARTED 7/30/92 DATE COMPLETED 7/30/92

HOLE NO. D-2
SURF. EL.
JOB NO. 92206
GROUND WATER DEPTH
WHILE DRILLING 2.0'
BEFORE CASING REMOVED 4.0'
AFTER CASING REMOVED Grouted To Surface

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING 30" — ASTM D-1586, STANDARD PENETRATION TEST

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING
"/OR — % CORE RECOVERY

CASING TYPE - HOLLOW STEM AUGER
DRILLER'S FIELD LOG

SHEET 1 OF 1

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
WL ▼							
5.0	4.0'-	1		9/11		Brown wet medium dense fine to coarse	
	6.0'			8/14	19	SAND and SILT, little fine to coarse gravel	
						Bottom of Boring	6.0'
10.0							

TEST BORING LOG

parratt wolff inc
FISHER ROAD
EAST SYRACUSE, N.Y. 13057

PROJECT Phase III Study
LOCATION Dover Electronics - DEM-East
Binghamton, New York
DATE STARTED 7/30/92 DATE COMPLETED 7/30/92

HOLE NO. D-3
SURF. EL.
JOB NO. 92206
GROUND WATER DEPTH
WHILE DRILLING Dry
BEFORE CASING REMOVED Dry
AFTER CASING REMOVED Grouted To Surface

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING 30" — ASTM D-1586, STANDARD PENETRATION TEST

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING
"/OR — % CORE RECOVERY

CASING TYPE - HOLLOW STEM AUGER
DRILLER'S FIELD LOG

SHEET 1 OF 1

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
						ASPHALT	0.2'
						Brown moist medium dense fine to coarse SAND and SILT, some fine to coarse gravel	
5.0	4.0'-	1		23/15			
	6.0'			14/14	29		
						Bottom of Boring	6.0'
10.0							

parratt wolff inc

TEST BORING LOG

FISHER ROAD
EAST SYRACUSE, N.Y. 13057

PROJECT Phase III Study
LOCATION Dover Electronics - DEM-East
Binghamton, New York
DATE STARTED 7/30/92 DATE COMPLETED 7/30/92

HOLE NO. D-4
SURF. EL.
JOB NO. 92206
GROUND WATER DEPTH
WHILE DRILLING Dry
BEFORE CASING REMOVED Dry
AFTER CASING REMOVED Grouted To Surface

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING 30" — ASTM D-1586, STANDARD PENETRATION TEST

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING
"/OR — % CORE RECOVERY

CASING TYPE - HOLLOW STEM AUGER
DRILLER'S FIELD LOG

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
						ASPHALT	0.2'
						Brown moist medium dense fine to coarse SAND and SILT, some fine to coarse gravel	
5.0	4.0'-	1		13/14			
	6.0'			14/20	28		
						Bottom of Boring	6.0'
10.0							

APPENDIX C

PHASE III

LABORATORY DATA

BUCK ENVIRONMENTAL LABORATORIES INC.
ACCREDITED ENVIRONMENTAL ANALYSIS
3845 ROUTE 11 SOUTH, P.O. BOX 5150
CORTLAND, N.Y. 13045 607-753-3403

LABORATORY REPORT

Client:	**STETSON-HARZA**	Report Date:	8/21/92
		Sampling Date:	8/13/92
Site:	Dover Electronics	Sampled By:	P.Romano
Sample No:	DMW1	Analysis Date:	8/19/92
Sample:	Water	Lab Log No:	9208114

TARGET COMPOUND LIST
(EPA 8240 GC/MS Methodology)

CAS No.	Compound	DL	RESULT
75-27-4	bromodichloromethane	1,000	ND
75-25-2	bromoform	1,000	ND
74-83-9	bromomethane	2,000	ND
56-23-5	carbon tetrachloride	1,000	ND
108-90-7	chlorobenzene	1,000	ND
75-00-3	chloroethane	2,000	ND
100-75-8	2-chloroethylvinylether	2,000	ND
67-66-3	chloroform	1,000	ND
74-87-3	chloromethane	2,000	ND
124-48-1	dibromochloromethane	1,000	ND
95-50-1	1,2-dichlorobenzene	1,000	ND
541-73-1	1,3-dichlorobenzene	1,000	ND
106-46-7	1,4-dichlorobenzene	1,000	ND
75-71-8	dichlorodifluoromethane	1,000	ND
75-34-3	1,1-dichloroethane	1,000	2,720.
75-35-4	1,1-dichloroethene	1,000	1,650.
107-06-2	1,2-dichloroethane	1,000	ND
156-60-5	trans-1,2-dichloroethene	1,000	1,650.
78-87-5	1,2-dichloropropane	1,000	ND
10061-01-5	cis-1,3-dichloropropene	1,000	ND
10061-02-6	trans-1,3-dichloropropene	1,000	ND
75-09-2	methylene chloride	1,000	ND
79-34-5	1,1,2,2-tetrachloroethane	1,000	ND
127-18-4	tetrachloroethene	1,000	ND
71-55-6	1,1,1-trichloroethane	1,000	32,700.
79-00-5	1,1,2-trichloroethane	1,000	ND
79-01-6	trichloroethene	1,000	35,200.
75-69-4	trichlorofluoromethane	1,000	ND
75-01-4	vinyl chloride	2,000	ND

Continued on Page 2

BUCK ENVIRONMENTAL LABORATORIES INC.
ACCREDITED ENVIRONMENTAL ANALYSIS
3845 ROUTE 11 SOUTH, CORTLAND, N.Y. 13045
P.O. BOX 5150 607-753-3403

LABORATORY REPORT

Client:	**STETSON-HARZA**	Report Date:	8/21/92
		Sampling Date:	8/13/92
Site:	Dover Electronics	Sampled By:	P.Romano
Sample No:	DMW1	Analysis Date:	8/19/92
Sample:	Water	Lab Log No:	9208114

TARGET COMPOUND LIST
(EPA 8240 GC/MS Methodology)

CAS No.	Compound	DL	RESULT
71-43-2	benzene	1,000	ND
100-41-1	ethylbenzene	1,000	ND
108-88-3	toluene	1,000	ND
1330-20-7	xylenes (m, o, & p)	1,000	ND
67-64-1	acetone	20,000	ND
75-15-0	carbon disulfide	20,000	ND
78-93-3	2-butanone	20,000	ND
108-05-4	vinyl acetate	10,000	ND
108-10-1	4-methyl-2-pentanone	10,000	ND
591-78-6	2-hexanone	10,000	ND
100-42-5	styrene	1,000	ND
Additional Compounds:			
1634-04-4	MTBE	1,000	ND
156-59-4	cis-1,2-dichloroethene	1,000	17,500.

All concentrations are reported as ug/L. ND indicates that no amount greater than the detection limit (DL) was detected.

These analyses are certified as conforming to generally accepted laboratory practices, the analytical method cited, requirements of the New York State Health Department ELAP program, and the New York State Department of Environmental Conservation.

John H. Buck, P.E.
Laboratory Director

BUCK ENVIRONMENTAL LABORATORIES INC.
ACCREDITED ENVIRONMENTAL ANALYSIS
3845 ROUTE 11 SOUTH, CORTLAND, N.Y. 13045
P.O. BOX 5150 607-753-3403

LABORATORY REPORT

Client: **STETSON-HARZA**

Site: Dover Electronics
Sample No: DMW2
Sample: Water

Report Date: 8/21/92
Sampling Date: 8/13/92
Sampled By: P.Romano
Analysis Date: 8/19/92
Lab Log No: 9208114

TARGET COMPOUND LIST
(EPA 8240 GC/MS Methodology)

CAS No.	Compound	DL	RESULT
75-27-4	bromodichloromethane	50	ND
75-25-2	bromoform	50	ND
74-83-9	bromomethane	100	ND
56-23-5	carbon tetrachloride	50	ND
108-90-7	chlorobenzene	50	ND
75-00-3	chloroethane	100	ND
100-75-8	2-chloroethylvinylether	100	ND
67-66-3	chloroform	50	ND
74-87-3	chloromethane	100	ND
124-48-1	dibromochloromethane	50	ND
95-50-1	1,2-dichlorobenzene	50	ND
541-73-1	1,3-dichlorobenzene	50	ND
106-46-7	1,4-dichlorobenzene	50	ND
75-71-8	dichlorodifluoromethane	50	ND
75-34-3	1,1-dichloroethane	50	ND
75-35-4	1,1-dichloroethene	50	ND
107-06-2	1,2-dichloroethane	50	ND
156-60-5	trans-1,2-dichloroethene	50	ND
78-87-5	1,2-dichloropropane	50	ND
10061-01-5	cis-1,3-dichloropropene	50	ND
10061-02-6	trans-1,3-dichloropropene	50	ND
75-09-2	methylene chloride	50	ND
79-34-5	1,1,2,2-tetrachloroethane	50	ND
127-18-4	tetrachloroethene	50	ND
71-55-6	1,1,1-trichloroethane	50	231.
79-00-5	1,1,2-trichloroethane	50	ND
79-01-6	trichloroethene	50	506
75-69-4	trichlorofluoromethane	50	ND
75-01-4	vinyl chloride	100	ND

Continued on Page 2

BUCK ENVIRONMENTAL LABORATORIES INC.
ACCREDITED ENVIRONMENTAL ANALYSIS
3845 ROUTE 11 SOUTH, P.O. BOX 5150
CORTLAND, N.Y. 13045 607-753-3403

LABORATORY REPORT

Client:	**STETSON-HARZA**	Report Date:	8/21/92
		Sampling Date:	8/13/92
Site:	Dover Electronics	Sampled By:	P.Romano
Sample No:	DMW2	Analysis Date:	8/19/92
Sample:	Water	Lab Log No:	9208114

TARGET COMPOUND LIST
(EPA 8240 GC/MS Methodology)

CAS No.	Compound	DL	RESULT
71-43-2	benzene	50	ND
100-41-1	ethylbenzene	50	ND
108-88-3	toluene	50	ND
1330-20-7	xylenes (m, o, & p)	50	ND
67-64-1	acetone	1000	ND
75-15-0	carbon disulfide	1000	ND
78-93-3	2-butanone	1000	ND
108-05-4	vinyl acetate	500	ND
108-10-1	4-methyl-2-pentanone	500	ND
591-78-6	2-hexanone	500	ND
100-42-5	styrene	50	ND
Additional Compounds:			
1634-04-4	MTBE	50	ND
156-59-4	cis-1,2-dichloroethene	50	98.4

All concentrations are reported as ug/L. ND indicates that no amount greater than the detection limit (DL) was detected.

These analyses are certified as conforming to generally accepted laboratory practices, the analytical method cited, requirements of the New York State Health Department ELAP program, and the New York State Department of Environmental Conservation.

John H. Buck, P.E.
Laboratory Director

BUCK ENVIRONMENTAL LABORATORIES INC.
ACCREDITED ENVIRONMENTAL ANALYSIS
3845 ROUTE 11 SOUTH, CORTLAND, N.Y. 13045
P.O. BOX 5150 607-753-3403

LABORATORY REPORT

Client:	**STETSON-HARZA**	Report Date:	8/21/92
		Sampling Date:	8/13/92
Site:	Dover Electronics	Sampled By:	P.Romano
Sample No:	DMW-3	Analysis Date:	8/19/92
Sample:	Water	Lab Log No:	9208114

TARGET COMPOUND LIST
(EPA 8240 GC/MS Methodology)

CAS No.	Compound	DL	RESULT
75-27-4	bromodichloromethane	5	ND
75-25-2	bromoform	5	ND
74-83-9	bromomethane	10	ND
56-23-5	carbon tetrachloride	5	ND
108-90-7	chlorobenzene	5	ND
75-00-3	chloroethane	10	ND
100-75-8	2-chloroethylvinylether	10	ND
67-66-3	chloroform	5	ND
74-87-3	chloromethane	10	ND
124-48-1	dibromochloromethane	5	ND
95-50-1	1,2-dichlorobenzene	5	ND
541-73-1	1,3-dichlorobenzene	5	ND
106-46-7	1,4-dichlorobenzene	5	ND
75-71-8	dichlorodifluoromethane	5	ND
75-34-3	1,1-dichloroethane	5	ND
75-35-4	1,1-dichloroethene	5	ND
107-06-2	1,2-dichloroethane	5	ND
156-60-5	trans-1,2-dichloroethene	5	ND
78-87-5	1,2-dichloropropane	5	ND
10061-01-5	cis-1,3-dichloropropene	5	ND
10061-02-6	trans-1,3-dichloropropene	5	ND
75-09-2	methylene chloride	5	ND
79-34-5	1,1,2,2-tetrachloroethane	5	ND
127-18-4	tetrachloroethene	5	ND
71-55-6	1,1,1-trichloroethane	5	ND
79-00-5	1,1,2-trichloroethane	5	ND
79-01-6	trichloroethene	5	ND
75-69-4	trichlorofluoromethane	5	ND
75-01-4	vinyl chloride	10	ND

Continued on Page 2

BUCK ENVIRONMENTAL LABORATORIES INC.
ACCREDITED ENVIRONMENTAL ANALYSIS
3845 ROUTE 11 SOUTH, CORTLAND, N.Y. 13045
P.O. BOX 5150 607-753-3403

LABORATORY REPORT

Client:	**STETSON-HARZA**	Report Date:	8/21/92
		Sampling Date:	8/13/92
Site:	Dover Electronics	Sampled By:	P.Romano
Sample No:	DMW-3	Analysis Date:	8/19/92
Sample:	Water	Lab Log No:	9208114

TARGET COMPOUND LIST
(EPA 8240 GC/MS Methodology)

CAS No.	Compound	DL	RESULT
71-43-2	benzene	5	ND
100-41-1	ethylbenzene	5	ND
108-88-3	toluene	5	ND
1330-20-7	xylenes (m, o, & p)	5	ND
67-64-1	acetone	100	ND
75-15-0	carbon disulfide	100	ND
78-93-3	2-butanone	100	ND
108-05-4	vinyl acetate	50	ND
108-10-1	4-methyl-2-pentanone	50	ND
591-78-6	2-hexanone	50	ND
100-42-5	styrene	5	ND
Additional Compound:			
1634-04-4	MTBE	10	ND

All concentrations are reported as ug/L. ND indicates that no amount greater than the detection limit (DL) was detected.

These analyses are certified as conforming to generally accepted laboratory practices, the analytical method cited, requirements of the New York State Health Department ELAP program, and the New York State Department of Environmental Conservation.

John H. Buck, P.E.
Laboratory Director

BUCK ENVIRONMENTAL LABORATORIES INC.
ACCREDITED ENVIRONMENTAL ANALYSIS
3845 ROUTE 11 SOUTH, CORTLAND, N.Y. 13045
P.O. BOX 5150 607-753-3403

LABORATORY REPORT

Client: **STETSON-HARZA**
Site: Dover Electronics
Sample No: D-1-2
Sample: Soil

Report Date: 8/17/92
Sampling Date: 7/29/92
Sampled By: P. Romano
Percent Moisture: 14.0%
Analysis Date: 8/08/92
Lab Log No: 9207242

TARGET COMPOUND LIST
(EPA 8240 GC/MS Methodology)

CAS No.	Compound	DL	RESULT
75-27-4	bromodichloromethane	23	ND
75-25-2	bromoform	23	ND
74-83-9	bromomethane	46	ND
56-23-5	carbon tetrachloride	23	ND
108-90-7	chlorobenzene	23	ND
75-00-3	chloroethane	46	ND
100-75-8	2-chloroethylvinylether	46	ND
67-66-3	chloroform	23	ND
74-87-3	chloromethane	46	ND
124-48-1	dibromochloromethane	23	ND
95-50-1	1,2-dichlorobenzene	23	ND
541-73-1	1,3-dichlorobenzene	23	ND
106-46-7	1,4-dichlorobenzene	23	ND
75-71-8	dichlorodifluoromethane	23	ND
75-34-3	1,1-dichloroethane	23	ND
75-35-4	1,1-dichloroethene	23	ND
107-06-2	1,2-dichloroethane	23	ND
156-60-5	trans-1,2-dichloroethene	23	ND
78-87-5	1,2-dichloropropane	23	ND
10061-01-5	cis-1,3-dichloropropene	23	ND
10061-02-6	trans-1,3-dichloropropene	23	ND
75-09-2	methylene chloride	23	ND
79-34-5	1,1,2,2-tetrachloroethane	23	ND
127-18-4	tetrachloroethene	23	47.1
71-55-6	1,1,1-trichloroethane	23	ND
79-00-5	1,1,2-trichloroethane	23	ND
79-01-6	trichloroethene	23	719.
75-69-4	trichlorofluoromethane	23	ND
75-01-4	vinyl chloride	46	ND

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BUCK ENVIRONMENTAL LABORATORIES INC.
ACCREDITED ENVIRONMENTAL ANALYSIS
3845 ROUTE 11 SOUTH, CORTLAND, N.Y. 13045
P.O. BOX 5150
607-753-3403

LABORATORY REPORT

Client: **STETSON-HARZA**
Site: Dover Electronics
Sample No: D-1-2
Sample: Soil

Report Date: 8/17/92
Sampling Date: 7/29/92
Sampled By: P. Romano
Percent Moisture: 14.0%
Analysis Date: 8/08/92
Lab Log No: 9207242

TARGET COMPOUND LIST
(EPA 8240 GC/MS Methodology)

CAS No.	Compound	DL	RESULT
71-43-2	benzene	23	ND
100-41-1	ethylbenzene	23	ND
108-88-3	toluene	23	ND
1330-20-7	xylenes (m, o, & p)	23	ND
67-64-1	acetone	460	ND
75-15-0	carbon disulfide	460	ND
78-93-3	2-butanone	460	ND
108-05-4	vinyl acetate	230	ND
108-10-1	4-methyl-2-pentanone	230	ND
591-78-6	2-hexanone	230	ND
100-42-5	styrene	23	ND
Additional Compound:			
1634-04-4	MTBE	10	ND

Uncorrected for moisture content.

All concentrations are reported as ug/kg. ND indicates that no amount greater than the detection limit (DL) was detected.

These analyses are certified as conforming to generally accepted laboratory practices, the analytical method cited, requirements of the New York State Health Department ELAP program, and the New York State Department of Environmental Conservation.

John H. Buck, P.E.
Laboratory Director

BUCK ENVIRONMENTAL LABORATORIES INC.
ACCREDITED ENVIRONMENTAL ANALYSIS
3845 ROUTE 11 SOUTH, CORTLAND, N.Y. 13045
P.O. BOX 5150
607-753-3403

LABORATORY REPORT

Client: **STETSON-HARZA**
Site: Dover Electronics
Sample No: D-3-4
Sample: Soil

Report Date: 8/17/92
Sampling Date: 7/29/92
Sampled By: P. Romano
Percent Moisture: 11.0%
Analysis Date: 8/08/92
Lab Log No: 9207242

TARGET COMPOUND LIST
(EPA 8240 GC/MS Methodology)

CAS No.	Compound	DL	RESULT
75-27-4	bromodichloromethane	5	ND
75-25-2	bromoform	5	ND
74-83-9	bromomethane	10	ND
56-23-5	carbon tetrachloride	5	ND
108-90-7	chlorobenzene	5	ND
75-00-3	chloroethane	10	ND
100-75-8	2-chloroethylvinylether	10	ND
67-66-3	chloroform	5	ND
74-87-3	chloromethane	10	ND
124-48-1	dibromochloromethane	5	ND
95-50-1	1,2-dichlorobenzene	5	ND
541-73-1	1,3-dichlorobenzene	5	ND
106-46-7	1,4-dichlorobenzene	5	ND
75-71-8	dichlorodifluoromethane	5	ND
75-34-3	1,1-dichloroethane	5	ND
75-35-4	1,1-dichloroethene	5	ND
107-06-2	1,2-dichloroethane	5	ND
156-60-5	trans-1,2-dichloroethene	5	ND
78-87-5	1,2-dichloropropane	5	ND
10061-01-5	cis-1,3-dichloropropene	5	ND
10061-02-6	trans-1,3-dichloropropene	5	ND
75-09-2	methylene chloride	5	ND
79-34-5	1,1,2,2-tetrachloroethane	5	ND
127-18-4	tetrachloroethene	5	ND
71-55-6	1,1,1-trichloroethane	5	ND
79-00-5	1,1,2-trichloroethane	5	ND
79-01-6	trichloroethene	5	40.2
75-69-4	trichlorofluoromethane	5	ND
75-01-4	vinyl chloride	10	ND

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BUCK ENVIRONMENTAL LABORATORIES INC.
ACCREDITED ENVIRONMENTAL ANALYSIS
3845 ROUTE 11 SOUTH, CORTLAND, N.Y. 13045
P.O. BOX 5150
607-753-3403

LABORATORY REPORT

Client: **STETSON-HARZA**
Site: Dover Electronics
Sample No: D-3-4
Sample: Soil

Report Date: 8/17/92
Sampling Date: 7/29/92
Sampled By: P. Romano
Percent Moisture: 11.0%
Analysis Date: 8/08/92
Lab Log No: 9207242

TARGET COMPOUND LIST
(EPA 8240 GC/MS Methodology)

CAS No.	Compound	DL	RESULT
71-43-2	benzene	5	ND
100-41-1	ethylbenzene	5	ND
108-88-3	toluene	5	ND
1330-20-7	xylenes (m, o, & p)	5	ND
67-64-1	acetone	100	ND
75-15-0	carbon disulfide	100	ND
78-93-3	2-butanone	100	ND
108-05-4	vinyl acetate	50	ND
108-10-1	4-methyl-2-pentanone	50	ND
591-78-6	2-hexanone	50	ND
100-42-5	styrene	5	ND
Additional Compound:			
1634-04-4	MTBE	10	ND

Uncorrected for moisture content.

All concentrations are reported as ug/kg. ND indicates that no amount greater than the detection limit (DL) was detected.

These analyses are certified as conforming to generally accepted laboratory practices, the analytical method cited, requirements of the New York State Health Department ELAP program, and the New York State Department of Environmental Conservation.

John H. Buck, P.E.
Laboratory Director

BUCK ENVIRONMENTAL LABORATORIES INC.
ACCREDITED ENVIRONMENTAL ANALYSIS
3845 ROUTE 11 SOUTH, P.O. BOX 5150
CORTLAND, N.Y. 13045 607-753-3403

TOXICITY CHARACTERISTICS LEACHING PROCEDURE
METALS

Client: **STETSON HARZA**
Site: Dover Electronics
Sample No: D-1-2
Sample: Soil

Report Date: 8/10/92
Sampling Date: 7/29/92
Sampled By: P. Romano
Date Received: 7/30/92
Extraction: TCLP 1311
Percent Solids: 90.0%
Lab Log No: 9207242

Cas No.	Compound	EPA Method	Regulatory Level (mg/L)	Result (mg/L)
7440-39-2	Arsenic	200.7	5.0	ND (<.100)
7440-39-3	Barium	200.7	100.0	.700
7440-43-9	Cadmium	200.7	1.0	ND (<.050)
7440-47-3	Chromium	200.7	5.0	ND (<.050)
7439-92-1	Lead	200.7	5.0	.120
7439-97-6	Mercury	245.1	0.2	ND (<.0004)
7782-49-2	Selenium	200.7	1.0	ND (<.100)
7440-22-4	Silver	200.7	5.0	.180

ND - None detected greater than detection limits noted.

Fluid Extraction Method: Fluid #1

All units above are mg/L based on a digestion of 100 g sample and a final solution volume of 2,000 ml.

These analyses are certified as conforming to generally accepted laboratory practices and requirements of the New York State Health Department ELAP program.

John H. Buck, P.E.
Laboratory Director

NYS ELAP ID 10795

BUCK ENVIRONMENTAL LABORATORIES INC.
ACCREDITED ENVIRONMENTAL ANALYSIS
3845 ROUTE 11 SOUTH, P.O. BOX 5150
CORTLAND, N.Y. 13045 607-753-3403

TOXICITY CHARACTERISTICS LEACHING PROCEDURE
PESTICIDES and HERBICIDES

Client: **STETSON-HARZA**
Site: Dover Electronics
Sample No: D-1-2
Sample: Soil

Report Date: 8/20/92
Sampling Date: 7/29/92
Sampled By: P. Romano
Date Received: 7/30/92
Extraction: TCLP 1311
Percent Solids: 90.0%
Lab Log Number: 9207242

Cas No.	Compound	Regulatory Level (mg/L)	Result (mg/L)
57-74-9	Chlordane	0.03	ND (<.0008)
72-20-8	Endrin	0.02	ND (<.0008)
76-44-8	Heptachlor	0.008	ND (<.0008)
1024-57-3	Heptachlor Epoxide	0.008	ND (<.0008)
58-89-9	Lindane	0.4	ND (<.0008)
72-43-5	Methoxyclor	10.0	ND (<.0008)
8001-35-2	Toxaphene	0.5	ND (<.004)
94-75-7	2,4,D	10.0	ND (<.0008)
93-72-1	2,4,5-TP (Silvex)	1.0	ND (<.00008)

ND - None detected greater than detection limits noted.

Fluid Extraction Method: Fluid #1

All units above are mg/L based on a digestion of 100 g sample and a final solution volume of 2,000 ml.

These analyses are certified as conforming to generally accepted laboratory practices and requirements of the New York State Health Department ELAP program.

John H. Buck, P.E.
Laboratory Director

NYS ELAP ID 10795

BUCK ENVIRONMENTAL LABORATORIES INC.
ACCREDITED ENVIRONMENTAL ANALYSIS
3845 ROUTE 11 SOUTH, CORTLAND, N.Y. 13045
P.O. BOX 5150
607-753-3403

TOXICITY CHARACTERISTICS LEACHING PROCEDURE
VOLATILE and BNA COMPOUNDS

Client: **STETSON-HARZA**

Site: Dover Electronics

Sample No: D-1-2
Sample: Soil

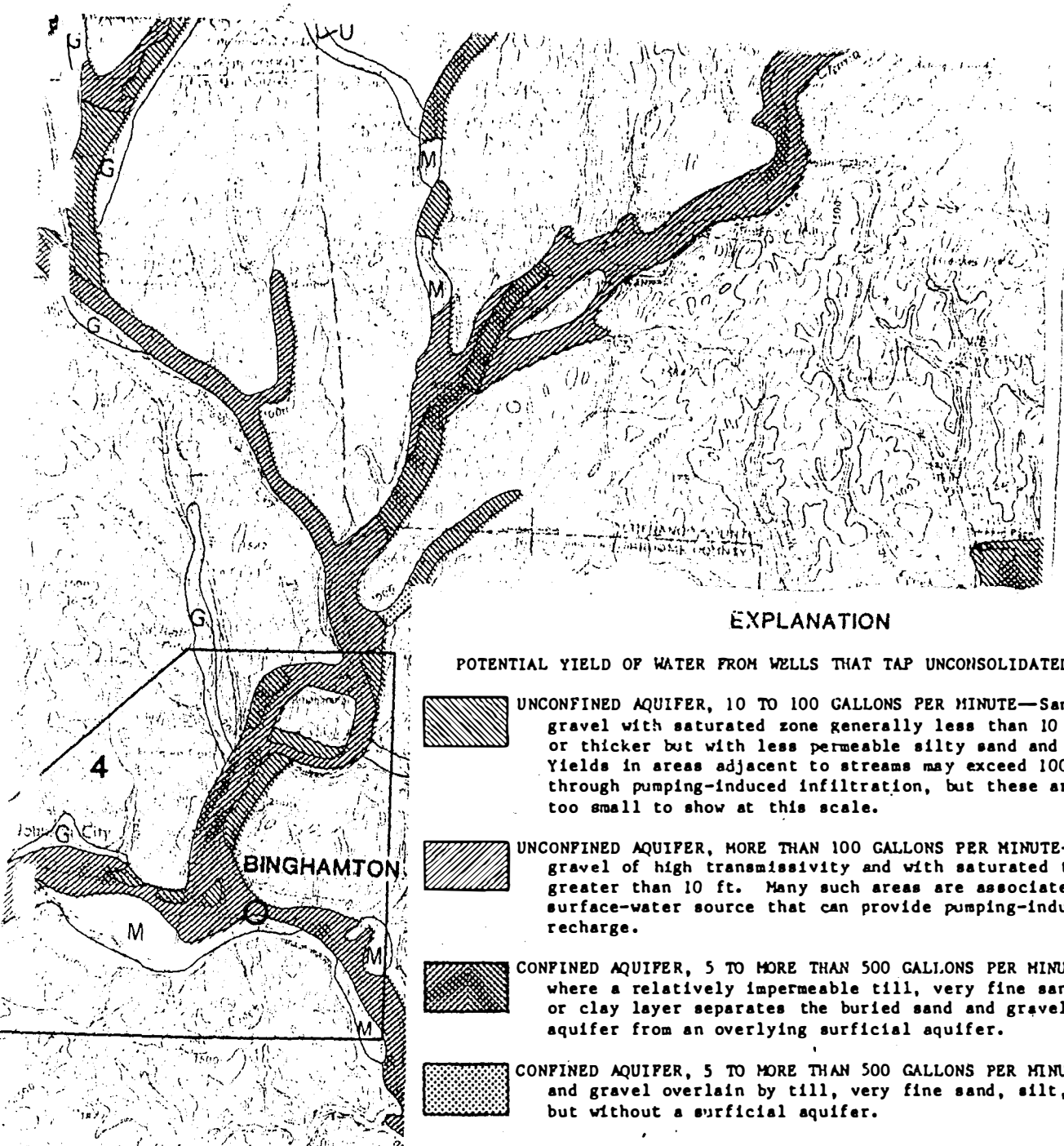
Report Date: 8/17/92
Date Sampled: 7/29/92
Sampled By: P. Romano
Date Received: 7/30/92
Extraction: TCLP 1311
Percent Solids: 90.0%
Lab Log Number: 9207242

Cas No.	Compound	Regulatory Level (mg/L)	Result (mg/L)
71-43-2	Benzene	0.5	ND (<.005)
56-23-5	Carbon Tetrachloride	0.5	ND (<.005)
108-90-7	Chlorobenzene	100.0	ND (<.005)
67-66-3	Chloroform	6.0	ND (<.005)
106-46-7	1,4-Dichlorobenzene	7.5	ND (<.005)
107-06-2	1,2-Dichloroethane	0.5	ND (<.005)
75-35-4	1,1-Dichloroethylene	0.7	ND (<.005)
78-93-3	Methyl Ethyl Ketone	200.0	ND (<.100)
127-18-4	Tetrachloroethylene	0.7	.007
79-01-6	Trichloroethylene	0.5	.090
75-01-4	Vinyl Chloride	0.2	ND (<.010)
121-14-2	2,4-Dinitrotoluene	0.13	ND (<.010)
118-74-1	Hexachlorobenzene	0.13	ND (<.005)
87-68-3	Hexachlorobutadiene	0.5	ND (<.005)
67-72-1	Hexachloroethane	3.0	ND (<.005)
98-95-3	Nitrobenzene	2.0	ND (<.005)
110-86-1	Pyridine	5.0	ND (<.010)
95-48-7	o-Cresol	200.0	ND (<.010)
108-39-4	m-Cresol	200.0	ND (<.010)
106-44-5	p-Cresol	200.0	ND (<.010)
- - -	Cresol	200.0	ND (<.010)
87-86-5	Pentachlorophenol	100.0	ND (<.005)
95-95-4	2,4,5-Trichlorophenol	400.0	ND (<.010)
88-06-2	2,4,6-Trichlorophenol	2.0	ND (<.005)

ND - None detected greater than detection limits noted.
Fluid Extraction Method: Fluid #1
All units above are mg/L based on a digestion of 100 g sample and a final solution volume of 2,000 ml.

These analyses are certified as conforming to generally accepted laboratory practices and requirements of the New York State Health Department ELAP program.

John H. Buck, P.E.
Laboratory Director
NYS ELAP ID 10795



EXPLANATION

POTENTIAL YIELD OF WATER FROM WELLS THAT TAP UNCONSOLIDATED AQUIFERS

UNCONFINED AQUIFER, 10 TO 100 GALLONS PER MINUTE—Sand and gravel with saturated zone generally less than 10 ft thick, or thicker but with less permeable silty sand and gravel. Yields in areas adjacent to streams may exceed 100 gal/min through pumping-induced infiltration, but these areas are too small to show at this scale.

UNCONFINED AQUIFER, MORE THAN 100 GALLONS PER MINUTE—Sand and gravel of high transmissivity and with saturated thickness greater than 10 ft. Many such areas are associated with a surface-water source that can provide pumping-induced recharge.

CONFINED AQUIFER, 5 TO MORE THAN 500 GALLONS PER MINUTE--Areas where a relatively impermeable till, very fine sand, silt, or clay layer separates the buried sand and gravel aquifer from an overlying surficial aquifer.

CONFINED AQUIFER, 5 TO MORE THAN 500 GALLONS PER MINUTE--Sand and gravel overlain by till, very fine sand, silt, or clay, but without a surficial aquifer.

AQUIFERS OF UNKNOWN POTENTIAL--Areas of sand or sand and gravel for which little or no well data are on file to determine yield potential. Letter symbols, explained below, indicate the type of deposit.

L — Lacustrine or eolian deposit—Fine to medium sand that probably yields less than 10 gal/min.

G — Kame, kame terrace, outwash, or alluvium.—Sand and gravel of unknown thickness or saturation. Yield potential is greater where streams are present.

M — Moraine.—Mostly till and lacustrine deposits (fine sand, silts and clay) capped in some places with unsaturated sand and gravel. Thin, scattered confined aquifers of sand and gravel in some places.

U — Confined aquifer.--Areas of lake deposits or till possibly underlain by sand and gravel aquifers. Depth and saturated thickness of aquifer not investigated.

Broome County
HEALTH DEPARTMENT
One Wall Street / Binghamton, New York 13901 / (607) 778-8885

Kathleen A. Gaffney, M.D., M.P.H., Commissioner

Timothy M. Grippen, County Executive

HAGA.
REC. 6/21/90

June 19, 1990

Mr. Donald Wright
Hagopian Engineering Associates
28 Alice Street
Binghamton, NY 13904

RE: Request for Area Record Search (ARS) - Binghamton (T)
Dover Electronics Facility, 498 Conklin Ave.

Dear Mr. Wright:

The above-mentioned parcel of land is located in the Susquehanna River watershed, specifically Subshed No. 99-011 as identified by the Broome County Health Department. A review of our files has revealed three contaminated sites within a 1/2 mile radius of the property in question. The first of these is the Binghamton Plastics dump, which is listed as having the same address as the above-mentioned Dover facility. Waste plastics and oils are thought to have been disposed here during the years of operation of the Binghamton Plastics Co. manufacturing operation. Mardin and Channery silt loams are the primary on-site soils. Depth to seasonal high water table in the vicinity of the property is about two feet.

The Contro-Neville dump is situated about 1/8 mile to the southeast of the Dover property. This site received assorted demolition debris of unknown composition. It is not known what, if any, measures were taken to line this site or provide a cap prior to its abandonment.

The Stein Builders site is located about 1/4 mile to the south of the Dover facility. This is another uncontrolled demolition debris dump similar to the Contro-Neville site.

Conklin well #1 is located about 1/2 mile to the east of the Dover property. It became necessary to abandon this well when volatile organics contamination in excess of New York State standards was observed there in the early 1980s. The source of at least some of this contamination is thought to be the nearby Savin facility.

Health Department files do not at present show problems other than those mentioned above with groundwater or surface water contamination on or near the property. This, however, does not

preclude the existence of nearby unrecorded contaminant sources such as unregulated dump sites or leaks from underground chemical storage tanks.

The files searched contain information collected for the Ground Water Management Program (GWMP) and records of the Broome County Health Department. These include data from SPDES permits, public wells, New York State and Federal Superfund sites, watershed and landfill plume data, engineering site plans, reports from local citizens, NYS ICS, US RCRA, well point and sewage permits. For spill site and underground chemical storage locations, please refer to the New York State Department of Environmental Conservation.

Thank you for your request. I hope this information will be of some assistance in your investigation. If there are any questions concerning the above information, I can be contacted at 778-2887.

Respectfully,

Ronald Brink

Ronald S. Brink
Groundwater Management Specialist

RSB/eh
D:/MAJOR/SEARCHHG.WPF

BGM Plastics RE REDACCESS
OF Southern Tier Plastics

Applied Remedial Technologies, Inc.

P.O. Box 667, Cortland, New York 13045
NY Only (800) 559-2305 (607) 758-3661
Fax (607) 758-3981

October 28,1992
Stetson-Harza Engineers
181 Genesee Street
Utica, NY 13501

Attention: Paul Romano

Reference: Remedial Cost Ranges
Industrial Site
Binghamton, N.Y.
SH # 6519

Gentlemen,

We are pleased to submit remedial options and cost ranges for soil and groundwater cleanup at your client's site in Binghamton, New York. Based on our conversations with you, three options were requested in which each additional option could be added to the first. It is our understanding that this information is to be used for budgeting purposes only and does not represent a formal cost estimate.

The first option would be for a carbon filtration system in which the contaminated groundwater would be pumped from wells DMW1 and DMW2 to carbon units located in a small shed placed nearby to those wells. The discharged water could be piped to the existing storm sewer or sanitary sewer which would require a NYSDEC SPEDES permit, however, permission would have to be obtained from the appropriate municipality or sewer district.

The next option would be for the placement of a low profile air stripper unit inside the shed to treat the water prior to entering the carbon filtration units. This option would be instituted if the carbon filtration units from the first option become saturated frequently enough to make this option more economical.

The third option would be the addition of a soil venting system for the cleanup of the soils in the former tank area. This option would entail the installation of several small diameter wells in the backfilled area which would be used for vacuum extraction. A vacuum extraction blower, vapor carbon units, and a submersible pump (placed in DMW1) to maintain a constant dewatered condition would be added.

Remedial Cost Ranges
Industrial Site
Binghamton, N.Y.
SH # 6519

Details of each option with cost ranges are as follows:

Option I - Carbon Filtration
Cost Range: $ 22,000 to $ 25,000

To Include:
- 1 - Storage Shed
- 2 - Jet pumps, water level controls, & flow meters
- 2 - 85 gallon carbon units (water)
- 1 - Control Panel
- All excavations, piping, & backfills from wells and to discharge point (300'+/-).
- All labor.

Not Included:
- Electrical hookup to shed (By Owner)
- Electricity costs (By Owner)
- Carbon Unit replacements: Estimate $900/Unit
- Carbon Unit disposal: Est. $600-$2000/Unit depending on quantity
- Laboratory testing, field sampling
- System operation and maintenance

Option II - Low Profile Air Stripper
Cost Range: $ 12,000 to $ 15,000

To Include:
- 1 - Low Profile Stripper
- 1 - 85 gallon carbon unit (vapor)
- 1 - Transfer pump (from stripper to carbons-water)
- Additional electrical controls @ panel
- Additional labor

Not Included:
- Carbon Unit replacements;
- Est.$900/Unit (water)
- Est.$1100/Unit (Vapor)
- Carbon Unit disposal
- Laboratory testing, field sampling
- System operation and maintenance

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Option III - Soil Venting System
Cost Range: $e16,000 toe$ 20,000

To Include:
- 3 - 4" PVC Vent Wells
- 1 - Regenerative blower (100 CFM)
- 1 - 85 gallon carbon unit (vapor)
- 1 - Submersible pump
- All excavations & piping from wells
- Additional electrical controlse@ panel
- Additional labor

Not Included:
- Carbon Unit replacements; Est. $1100/Unit (vapor)
- Carbon Unit disposal
- Laboratory testing, field sampling
- System operation and maintenance

Total Budget Ranges-All Options: $ 50,000 toe$ 60,000

Please call us if you have any questions on the above cost ranges. We have not made any provisions for conducting a Pilot Test which you should consider prior to installing any of the systems. If we can be of further assistance do not hesitate to contact our office. We will be glad to visit the site and submit an actual proposal when your client wishes to commence with the work.

Thank you for the opportunity to assist with this project and we look forward to working with you on future projects.

Sincerely,
Applied Remedial Technologies, Inc.

Marvin L'Amoreaux, President

ShallowTray™
low profile air strippers
(US Patent #5045215. Other US and Int'l Patents Pending.)

Today's Date: 11/6/92
Quote Needed By: ASAP
System Needed By: 6 months to 1 yr

Request For Quotation

SITE ID: _____

Name / Title Paul Romano, Environmental Engineer
Company Stetson-Harza
Address 181 Genesee Street
City Utica State NY Zip 13501 Country USA
Phone (315) 797-5800 FAX (315) 797-8143

Intended Use:

☑ Groundwater Remediation ☐ Industrial Waste ☐ Public Water ☐ Residential

Site Conditions:

Flow Rate: < 1 gpm
Water Temp: ≈ 17 °C
Air Temp: 50°F avg.
Iron: _____
Manganese: _____
Hardness: _____
pH: ≈ 7.0
Other: _____

CONTAMINANT	Untreated Influent (ug/L)	Effluent Requirement (ppb)	% Removal (ppb)	Air Limit (lb/hr)
1,1-dichloroethane	2,720	22		
1,1-dichloroethylene	1,650	16		
trans-1,2-dichloroethylene	1,650	21		
1,1,1-trichloroethane	32,700	21		
trichloroethylene	35,200	21		
cis-1,2-dichloroethylene	17,500	21		
Di-n-butyl phthalate	55	27		

Basic systems include the following: 304L Stainless Steel sump tank and trays; TEFC air blower sized to job; Inlet screen and damper; Stainless Steel demister pad; Air pressure gauge; Water level sight tube; Water inlet spray nozzle; Schedule 80 PVC gravity discharge and internal piping; Stainless Steel latches; Steel frame.

Options Required for This Site

☑ Feed pump, TEFC
☐ Discharge pump, TEFC
☐ EXP motors on pumps and blower
☐ Blower start / stop panel
☑ NEMA 3R system control panel with alarm interlocks, motor starter, relays, 100 dB alarm
☐ NEMA 3R as above with level controls for pumps
☐ EXP components for remote mount NEMA 3R panel
☐ NEMA 7 or custom control panel
☑ Main disconnect switch
☐ Low air pressure alarm switch
☐ High water level alarm switch
☐ Temperature guages
☐ Water pressure gauges
☑ Digital water flow meter and totalizer
☑ Tray cleanout ports
☐ Washer wand
☐ Iron settling tank
☑ Air flow meters
☐ Line sampling ports
☐ Air blower silencer
☐ Specify custom requirements
(Please use a second sheet for custom requirements)

Please add any other recommended options. Feed pump from 4 in. well 15 ft. deep.

ShallowTray™
low profile air strippers

STETSON-HARZA

November 9, 1992

Paul Romano
Stetson-Harza
181 Genesee Street
Utica, NY 13501

RE: Proposal #1192515
SITE ID: 6519

Dear Paul,

I have selected two options, our stainless steel **two-tray Model 1321** or our polyethylene **two-tray Model 1321-P** ShallowTray low profile air stripper for the groundwater remediation application you faxed.

I understand that the treatment flow rate is **1 gpm** and the water temperature is 62°F. ShallowTray systems are more tolerant of inorganics than other types of aeration equipment, however, high concentrations can cause operational difficulties if proper precautions are not taken. Be sure to check for the presence of inorganics in the water.

Expected performance for both ShallowTray air strippers operating at **1 gpm** (normal operation range is 1-12 gpm) and 62°F is as follows:

Contaminant	Untreated ppb	After 1st Tray ppb	After 2nd Tray ppb
1,1-Dichloroethane	2,720	42	1
1,1-Dichloroethylene	1,650	29	1
t-1,2-Dichloroethylene	1,650	29	1
1,1,1-Trichloroethane	32,700	196	2
Trichloroethylene	35,200	313	3
c-1,2-Dichloroethylene	17,500	185	2

The price for the ShallowTray Model 1321, with optional components, is listed below:

Basic System Model 1321
Sump tank & 1 tray, 304L stainless steel
1 Additional tray(s), 304L stainless steel
Blower, 2 tray, 2 hp, 150 cfm @ 10" wc, 1 phase, 230V, TEFC
Inlet screen and damper
Demister 304L stainless steel
Air pressure gauge
Spray nozzle
Sight tube
Gaskets
Latches - stainless steel
Piping - Schedule 80 PVC
Tray cleanout ports
Steel frame
Basic System Price **$7,735**

Options		
Feed pump	0	$0
Discharge pump	0	$0
Additional blower	0	$0
Blower start/stop panel	0	$0
NEMA 3R main disconnect switch	1	$98
Standard NEMA 3R control panel with alarm interlocks, motor starter, panel light	1	$2,072
NEMA 3R control panel with pump level controls, alarm interlocks, motor starter, panel light	0	$0
Control panel IS components	0	$0
Intermittent operation	1	$728
Strobe alarm light	0	$0
Alarm horn	0	$0
Low air pressure alarm switch	1	$171
High water level alarm switch	1	$70
Discharge pump level switch	0	$0
Water pressure gauges	0	$0
Digital water flow indicator & totalizer	1	$963
Air flow meter	1	$144
Temperature gauges	0	$0
Line sampling ports	0	$0
Air blower silencer	0	$0
Washer wand	0	$0
Iron settler	0	$0
Auto dialer	0	$0
Other	0	$0
Other	0	$0
Other	0	$0
Options Cost		$4,245
Price With Options		$11,980

The system is 6'3" high, 3'2" long and 3' wide and weighs approximately 760 lbs.

The price for the ShallowTray Model 1321-P, with optional components, is listed below:

Basic System Model 1321-P	
Sump tank & 1 tray, polyethylene	
1 Additional tray(s), polyethylene	
Blower, 2 tray, 2 hp, 150 cfm @ 10" wc, 1 phase, 230V, TEFC	
Inlet screen and damper	
Demister 304L stainless steel	
Spray nozzle	
Sight tube	
Gaskets	
Latches	
Piping - Schedule 80 PVC	
Basic System Price	**$5,555**

Options		
Aluminum Frame	1	$525
Air pressure gauge	1	$74
Feed pump	0	$0
Discharge pump	0	$0
Additional blower	0	$0
Blower start/stop panel	0	$0
NEMA 3R main disconnect switch	1	$98
Standard NEMA 3R control panel with alarm interlocks, motor starter, panel light	1	$2,072
NEMA 3R control panel with pump level controls, alarm interlocks, motor starter, panel light	0	$0
Control panel IS components	0	$0
Intermittent operation	1	$728
Strobe alarm light	0	$0
Alarm horn	0	$0
Low air pressure alarm switch	1	$171
High water level alarm switch	1	$70
Discharge pump level switch	0	$0
Water pressure gauges	0	$0
Digital water flow indicator & totalizer	1	$963
Air flow meter	1	$144
Temperature gauges	0	$0
Line sampling ports	0	$0
Air blower silencer	0	$0
Washer wand	0	$0
Iron settler	0	$0
Auto dialer	0	$0
Other	0	$0
Other	0	$0
Other	0	$0
Options Cost		$4,844
Price With Options		$10,399

The system is 5'9" high, 5'10" long and 2'4" wide and weighs approximately 420 lbs.

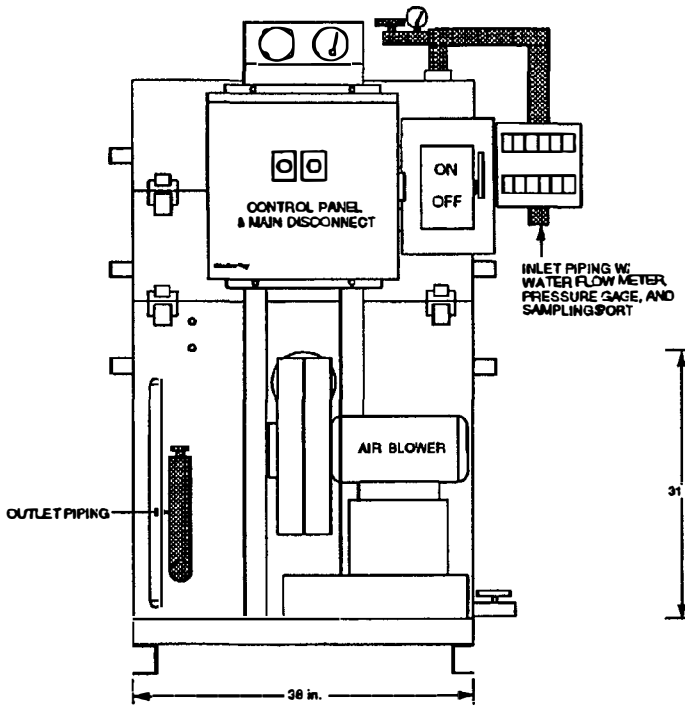
All systems are shipped pre-assembled and factory tested. Normal shipment is approximately 4 weeks from receipt of order. Purchase terms are 30% with the order, 70% net 30 days from delivery. Prices are valid for 90 days only. I look forward to working with you on this project. Once again, thank you for your interest in our products.

Sincerely,

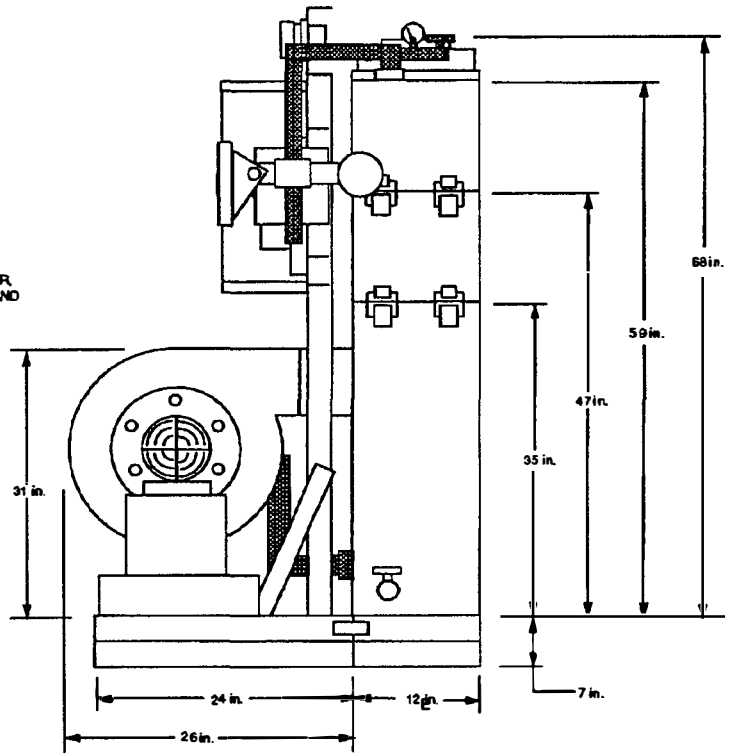
David Steele
Customer Service

File: Stetson-Harza

FRONT



RIGHT SIDE



NOTES:

1. DIMENSIONS AND LAYOUT REPRESENT A UNIT TYPICAL TO THE REQUIREMENTS YOU REQUESTED. MINOR CHANGES MAY RESULT IN THE MANUFACTURING PROCESS.

2. TYPICAL MINIMUM CLEARANCE REQUIREMENTS FOR CLEANING AND DISASSEMBLING UNIT:

VIEW	MINIMUM CLEARANCE
FRONT	2ft.
TOP	24in.
REAR	5 in.
LEFT SIDE	3.5ft.
RIGHT SIDE	1 ft.

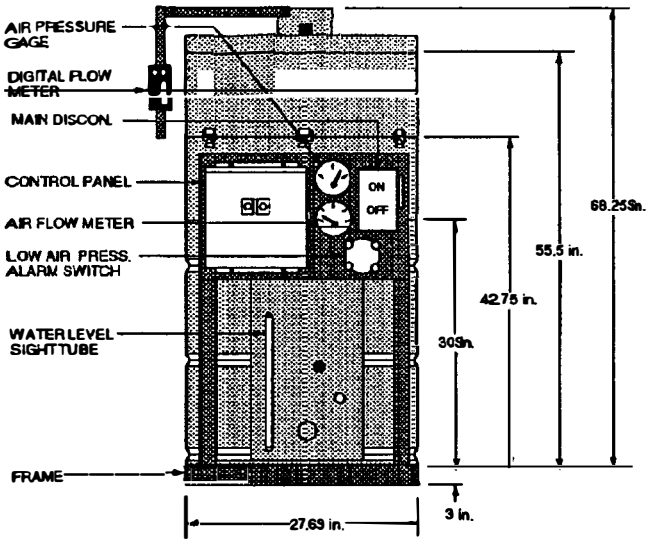
3. CONNECTION INFORMATION

ITEM	CONNECTION SIZE
GRAVITY DISCHARGE PIPING	2 In. Ø FEMALE SLIP JOINT, PVC80
OUTLET PUMP PIPING	1-1/4 in. Ø FEMALE SLIP JOINT, PVC80
WATER INLET PIPING	1-1/4 inØ FEMALE SLIP JOINT, PVC80
AIR EXHAUST NOZZLE	6.625 in. Ø, SUPPLIED W/ RUBBER COUPLING

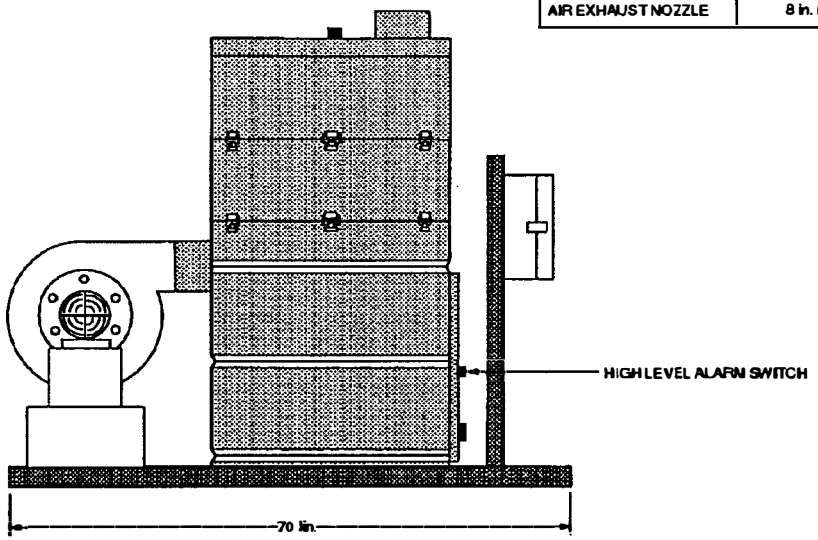
NORTH EAST ENVIRONMENTAL PRODUCTS, INC.
17 TECHNOLOGY DRIVE
WEST LEBANON, NH 03784
(603) 298-7061

TOLERANCES UNLESS OTHERWISE SPECIFIED ±1 in.	DRAWING NAME: 1321		
	DRAWING #: PROPOSAL #1192515		
DRAWN: DS	CUSTOMER: Stetson-Harza		
DATE: 11/9/92	SCALE:	SIZE: A	SHEET: OF:

FRONT



LEFT SIDE



CONNECTION INFORMATION

ITEM	SIZE
GRAVITY DISCHARGE	2 in. Ø FEMALE THD.
DISCHARGE PUMP	3/4 in. Ø FEMALE THD.
WATER INLET	1-1/4 in. Ø FEMALE THD.
AIR EXHAUST NOZZLE	8 in. Ø FLANGE

BASIC SYSTEM

- ✓ SUMP/TANK
- ✓ AERATION TRAYS
- ✓ BLOWER
- ✓ DEMISTER PAD
- ✓ PIPING
- ✓ SPRAY NOZZLE
- ✓ WATER LEVEL SIGHT TUEE
- ✓ GASKETS
- ✓ LATCHES

OPTIONAL ITEMS

- ✓ FRAME
- ___ DISCHARGE PUMP
- ___ FEED PUMP
- ___ ADDITIONAL BLOWER
- ___ EXP MOTORS
- ___ BLOWER START/STOPP PANEL
- ✓ CONTROL PANEL
- ✓ MAIN DISCONNECT SWITCH
- ___ IS COMPONENTS/REMOTE MOUNT
- ___ INTERMITTENT OPERATION
- ___ STROBE LIGHT
- ___ ALARM HORN
- ✓ LOW AIR PRESSURE ALARM SWITCH
- ✓ HIGH WATER LEVEL ALARM SWITCH
- ___ DISCHARGE PUMP LEVEL SWITCH
- ___ WATER PRESSURE GAGES
- ✓ DIGITAL WATER FLOW INDICATOR
- ✓ AIR FLOW METER
- ___ TEMPERATURE GAGES
- ___ LINE SAMPLING PORTS
- ___ AIR BLOWER SILENCER
- ___ WASHER WAND
- ___ AUTO DIALER

NOTES:

1. DIMENSIONS AND LAYOUT REPRESENT A UNIT TYPICAL TO THE REQUIREMENTS YOU REQUESTED. MINOR CHANGES MAY RESULT IN THE MANUFACTURING PROCESS.
2. TYPICAL MINIMUM CLEARANCE REQUIREMENTS FOR CLEANING AND DISASSEMBLING.

VIEW	MINIMUM CLEARANCE
FRONT	1.5 ft.
TOP	24 in.
REAR	2.5ft.
LEFT	4 in.
RIGHT	4 in.

3. OPTIONAL ITEMS ARE SHIPPED 'LOOSE' EXCEPT WHEN THE FRAME IS SUPPLIED BY N.E.E.P.

NORTH EAST ENVIRONMENTAL PRODUCTS, INC.
17 TECHNOLOGY DRIVE
WEST LEBANON, NH 03784
(603) 298-7061

TOLERANCES UNLESS OTHERWISE SPECIFIED ± 1 in.	DRAWING NAME: 1321-P		
	DRAWING #: PROPOSAL #1192515		
DRAWN: DS	CUSTOMER: Stetson-Harza		
DATE: 11/9/92	SCALE:	SIZE: A	SHEET: OF:

ShallowTray™
low profile air strippers

System Performance Estimate

Client & Proposal Information:

Statson-Harza
1192516

Model chosen: 1300
Water Flow Rate: 1.0 gpm
Air Flow Rate: 150 cfm
Water Temp: 62.0 F
Air temp: 50.0 F
A/W Ratio: 1192.0 cu. ft/ cu. ft
Safety Factor None

Contaminant	Untreated Influent ppb	Model 1311 Effluent ppb • air(lbs/hr) % removal	Model 1321 Effluent ppb • air(lbs/hr) % removal	Model 1331 Effluent ppb • air(lbs/hr) % removal	Model 1341 Effluent ppb • air(lbs/hr) % removal
1,1,1-Trichloroethane	32700	196 • 0.016 99.4019%	2 • 0.016 99.9964%	<1 • 0.016 100.0000%	<1 • 0.016 100.0000%
1,1-Dichloroethane	2720	42 • 0.001 98.4585%	1 • 0.001 99.9762%	<1 • 0.001 99.9996%	<1 • 0.001 100.0000%
1,19Dichloroethylene	1650	29 • <.001 98.2464%	1 • <.001 99.9693%	<1 • <.001 99.9995%	<1 • <.001 100.0000%
c-192-Dichloroethylene	17500	185 • 0.009 98.9442%	2 • 0.009 99.9889%	<1 • 0.009 99.9999%	<1 • 0.009 100.0000%
t-1,2-Dichloroethylene	1650	21 • <.001 98.7483%	1 • <.001 99.9843%	<1 • <.001 99.9998%	<1 • <.001 100.0000%
Trichloroethylene	35200	313 • 0.017 99.1135%	3 • 0.016 99.9921%	<1 • 0.016 99.9999%	<1 • 0.016 100.0000%

This report has been generated by ShallowTray Modeler software version 1.1.1. This software is designed to assist a skilled operator in predicting the performance of a ShallowTray air stripping system. The software will accurately predict the system performance when both the equipment and the software are operated according to the written documentation and standard operation. North East Environmental Products, Inc. cannot be responsible for incidental or consequential damages resulting from the improper operation of either the software or the air stripping equipment. Report generated: 11/6/92