Martin Marietta
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Post Office Box 4840 Syracuse, NY 13221-4840

LOCKHEED MARTIN

July 21, 1995

Ms. Catherine A. Klatt
Project Engineer
Bureau of Western Remedial Action
Division of Hazardous Waste Remediation
New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233-7010

RE: Addendum to Final RI Report
Further Evaluation of Soil and
Groundwater at Area of Concern #10
GE Farrell Road Plant, Geddes, Onondaga County, New York
NYSDEC Site No. 7-34-055

Dear Ms. Klatt:

Please find enclosed an addendum to the Final Remedial Investigation (RI) Report related to AOC #10 soils. This addendum was prepared by ERM-Northeast, Inc. in accordance with our conference call on June 20, 1995, and indicates that no further investigative activities are required in AOC #10.

We look forward to the Department's approval to incorporate this addendum into the Final RI Report.

Please contact me on (315) 456-3199 if you have any questions or need additional information.

Sincerely,

Patrick Salvador

Patrick D. Salvador, P.E.
Principal Engineer

c: Director, Bureau of Environmental Exposure Investigation
Sandra Lee Fenske, Esq. - Martin Marietta
Henriette Hamel - NYSDOH
Michael Lesser, Esq. - NYSDEC
Ralph Manna - NYSDEC
Virginia Robbins , Esq. - Bond, Schoeneck & King
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ERM-Northeast

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21 July 1995

Mr. Patrick Salvador
Lockheed Martin Corporation
PO Box 4840, EP5-H6 MD-62
Syracuse, New York 13221

RE: Further Evaluation of Soil and Ground Water Data
Area of Concern #10,
Farrell Road Plant
ERM-Northeast Project No. 557.044

Dear Pat:

This letter summarizes ERM-Northeast, Inc.'s (ERM) further evaluation of soils in Area of Concern #10 (Area 10) at the Farrell Road Plant (FRP). It also summarizes a conference call between the New York State Department of Environmental Conservation (NYSDEC), Lockheed Martin Corporation (LMC), and ERM held on 20 June 1995 to discuss the results of the further evaluation of soil and ground water samples collected in Area 10. This letter should be attached to the May 1995 Final Remedial Investigation (RI) Report as an addendum.

BACKGROUND INFORMATION

ERM completed six soil borings in Area 10 during the 1992 Environmental Investigation and the 1994 RI. The purpose of the soil borings was to determine whether or not past storage of industrial material including drums in Area 10 had impacted soil and ground water in the area.

Soil samples collected from the borings were analyzed for one or more of the following groups of compounds; volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, metals and cyanide. The analytical results for VOC and SVOC analyses from previous investigations are summarized in data tables in Attachment 1 of this letter. In addition to the soil borings, ERM installed four monitoring wells in Area 10. The wells were installed as part of the site wide ground water investigation, and ground water investigations at Area 10, the former debris pile (Area 1) and the garage (Area 16).

The results of previous investigations and the 1994 RI lead ERM to the conclusion that concentrations of soil analytes in Area 10 are below action levels and would require no further action. The conclusion was presented in the Final RI Report and was based on the fact that although soil concentrations in excess of action levels were present in soil samples collected from near the water table, the source of these analytes was not from the soil in Area 10, but from the ground water.

ERM

In a letter of comment dated 15 November 1994 NYSDEC to Martin Marietta Corporation (MMC), NYSDEC cited several soil samples collected from Area 10 that exceed cleanup objectives for the following compounds; 1,1-dichloroethane (DCA), phenol, 1,1,1-trichloroethane (TCA), and acetone. In addition, NYSDEC cited ground water samples collected from MW-26S and MW-26D that contained exceedances for chlorinated solvents, phenols and PCBs. NYSDEC indicated that the soil in Area 10 may be a source of the ground water contamination and requested that the area be further evaluated.

MMC responded to NYSDEC comments in a letter dated 22 December 1994. The letter reiterated the conclusion that Area 10 is not the source of the organic contamination seen in ground water. MMC suggested that the ground water contamination is due to other documented sources and that the affected soil in Area 10 is due to soil coming into contact with affected ground water during water table fluctuations. MMC agreed to conduct an in-depth evaluation of all soil and ground water samples collected from Area 10 and adjacent areas that may be influencing the results in Area 10.

RESULTS OF AREA 10 EVALUATION

On 20 June 1995, ERM presented the results of the further evaluation of the soil and ground water results from Area 10. The results of the evaluation were presented in a conference call with Ms. Catherine Klatt and Mr. Brad Brown (NYSDEC), Mr. Patrick Salvador (LMC), and Mr. Edward Hinchey (ERM).

Although all soil samples were analyzed for one or all of the target compound list (TCL) and target analyte list (TAL) analytes, exceedances were only encountered in the soil for VOCs. Boring B-75 did not contain any VOCs at three feet below grade, but contained 0.1 mg/Kg at a depth of 8 to 10 feet (Table 1). Soil from 8 to 10 feet in depth at B-76 contained 3.5 mg/Kg VOCs. VOC concentrations as measured with a photoionization detector (PID) during the soil boring completion indicated that low levels of VOCs were present in soil vapor throughout both borings; however, the maximum concentration was encountered at approximately eight feet below grade.

Boring B-103 contained 0.24 mg/Kg of VOCs at a depth of 3 to 5 feet and 0.91 mg/Kg at a depth of 8 to 10 feet below grade. Boring B-108 contained VOCs at a

concentration of 0.7 mg/Kg at a depth of 7 to 9 feet; however, it contained approximately 0.05 mg/Kg VOCs at a depth of 3 to 5 feet. Boring B-109 did not contain any VOCs at a depth of 3 to 5 feet or 9 to 11 feet below grade. Boring B-110 did not contain any VOCs at a depth of 3 to 5 feet; however, it contained a trace concentration at a depth of 7 to 9 feet. Boring B-112 contained very low concentration of VOCs at both 3 to 5 feet and 9 to 11 feet.

ERM

Soil samples collected in connection with the installation of monitoring well MW-26D indicated that VOCs were present in a concentration of 0.06 mg/Kg at a depth of 3 to 5 feet and a concentration of 0.527 mg/Kg at a depth of 11 to 13 feet. In all soil borings sampled, where samples were collected from a shallow and a deep interval, the concentration of VOCs at the deeper interval, exceeded concentrations in the shallow interval by approximately one order of magnitude. This indicates that the source of VOCs is not derived from a shallow contaminated zone, but is being derived from a deeper zone below surface. This is collaborated by PID measurements which consistently showed the highest concentrations of soil vapor VOC at a depth of approximately eight feet. Concentrations of phenol exceeded action levels in Boring B-108 at a depth of 8 to 10 feet below grade (Table 2). Figure 1 summarizes the distribution of VOCs in soil samples in Area 10.

Ground water flow investigations indicate that the ground water in Area 10 may be affected by more than one upgradient and crossgradient sources and one previously removed proximal source (Area 1, the debris pile). Ground water generally flows to the north across the site. The gradient in Area 10 is significantly less than areas to the south and north (see Plate 5, ERM 1992; and Figures 8-4 and 8-5, ERM 1995). Piezometric couplets installed in the wetland confirm a vertical upward component of ground water flow in the wetland.

A review of the ground water samples collected from monitoring wells in Area 10 (MW-26S, MW-26D, MW-16 and MW-24) indicates that VOCs are present in varying concentrations in the ground water (Table 3) and SVOCs were not detected (Table 4). The compounds can be grouped into three types of VOCs: gasoline constituents, acetone and chlorinated organics. The gasoline constituents are probably derived from the former underground gasoline storage tanks in Area 16. The acetone is probably related to the release in Area 5 and the chlorinated organics and are probably derived from the documented release in Area 5, Area 8 (area of Freon residuals) and Area 1.

A close inspection of the data reveals that the water table monitoring wells (wells screened across the water table) are affected with greater concentrations of gasoline constituents than the deeper wells which are affected with chlorinated solvents. Acetone is a highly soluble and mobile organic compound which was detected in both shallow and deep monitoring wells.

The presence of VOCs in the ground water and in the soil adjacent to the water table but their absence or significantly lower concentrations in the shallow soil indicates that ground water derived compounds controlled by vapor phase migration, and adsorption is the source of VOCs in soil samples form the soil near the water table.

ERM

SUMMARY OF CONFERENCE CALL 20 JUNE 1995

A conference call was conducted on 20 June 1995 between NYSDEC, LMC and ERM. Ed Hinchey (ERM) presented the soil and ground water information discussed above. It was agreed to by NYSDEC that the data indicated that there is no source of organic compounds in the shallow soil of Area 10, and that the probable source of organic compounds identified at depth is associated with other releases at other areas of concern.

There area no exceedances of action levels for soil in Area 10. The organic compounds detected in the deep soil samples is related to ground water migration of analytes from other documented source areas and no further evaluations or investigations are warranted.

Please call me if you have any questions with this letter.

Sincerely,

Edward J. Hinchey
Senior Project Manager

Attachments

EJH/cmd

ATTACHMENTS

1.	Table 1	-Summary of TCL Volatile Organic Data - Soil
2.	Table 2	-Summary of TCL Semi-Volatile Organic Data -Soil
3.	Figure 1	-Location of Soil and Ground Water Samples, Area 10
4.	Table 3	-Summary of TCL Volatile Organic Data - Ground Water
5.	Table 4	-Summary of TCL Semi-Volatile Organic Data - Ground Water

REFERENCES

ERM 1995, 1994 Remedial Investigation at the Farrell Road Plant, May 1995.

ERM 1992, 1992 Environmental Investigation GE Farrell Road Plant Two (FRP-2), 10 July 1992.

TABLE 1
SUMMARY OF TCL VOLATILE ORGANIC DATA - SOILS
AREA OF CONCERN 10
FARRELL ROAD PLANT RI

BORING		B-75	B-75	B-76	B-108	B-108	B-109	B-109	B-110	B-110	B-112	B-112	MW-26D	MW-26D
DEPTH (ft)	GUIDANCE	3	8-10	8-10	3-5	7-9	3-5	9-11	3-5	7-9	3-5	9-11	3-5	11-13
DATE COLLECTED	(ug/Kg)	7/10/92	7/10/92	7/10/92	4/29/94	4/29/94	5/2/94	5/2/94	4/28/94	4/28/94	4/27/94	4/27/94	5/3/94	5/3/94
COMPOUND														
chloromethane	NG	na	na	na	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13
bromomethane	NG	<12	<11	<12	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13
vinyl chloride	200	<12	<11	<12	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13
chloroethane	1,900	<12	<11	<12	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13
methylene chloride	100	<12	<11	<12	<16	<61	<12 J	<12	<11 J	<13	**6 J**	**7 J**	<12	<13
acetone	200	na	**27**	**240**	**42**	<61	<12 J	<12	<11 J	<13	<11	<11	**53**	**41**
carbon disulfide	2,700	na	na	na	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13
1,1-dichloroethene	400	<12	<11	**55**	<12	**40 J**	<12 J	<12	<11 J	<13	<11	<11	<12	<13
1,1-dichloroethane	200	<12	<11	**1400**	**2 J**	**660**	<12 J	<12	<11 J	<13	<11	<11	<12	<13
1,2-dichloroethene	300	<12	<11	<12	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13
chloroform	300	<12	<11	<12	**0.8 J**	<61	<12 J	<12	<11 J	**1 J**	<11	<11	**1 J**	**3 J**
1,2-dichloroethane	100	<12	<11	<12	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13
2-butanone	300	na	na	na	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13
1,1,1-trichloroethane	800	<12	**7**	**1,400**	<12	<61	<12 J	<12	<11 J	<13	<11	<11	**9 J**	<13
carbon tetrachloride	600	<12	<11	<12	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13 J
bromodichloromethane	NG	<12	<11	<12	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13
1,2-dichloropropane	NG	<12	<11	<12	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13
cis-1,3-dichloropropene	300	<12	<11	<12	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13
trichloroethene	700	<12	<11	<12	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13
dibromochloromethane	NG	<12	<11	<12	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13
1,1,2-trichloroethane	NG	<12	<11	<12	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13
benzene	60	<12	<11	<12	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13
trans-1,3-dichloropropene	300	<12	<11	<12	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13
bromoform	NG	<12	<11	<12	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13
4-methyl-2-pentanone	1,000	na	na	na	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13
2-hexanone	NG	<12	<11	<12	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13
tetrachloroethene	1,400	<12	<11	<12	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13
1,1,2,2-tetrachloroethane	600	<12	<11	<12	<12 J	<61 J	<12 J	<12	<11 J	<13 J	<11	<11	<12	<13
toluene	1,500	<12	<11	**35**	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13
chlorobenzene	1,700	<12	<11	<12	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13
ethylbenzene	5,500	<12	**16**	**30**	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	**93**
styrene	NG	<12	<11	<12	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13
xylenes (total)	1,200	na	**58**	**160**	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	**390**
trichlorofluoromethane	NG	<12	<11	<12	<12	<61	<12 J	<12	<11 J	<13	<11	<11	<12	<13

NOTES:

- concentrations reported as micrograms per kilogram (ug/Kg).

J - Value is estimated since it falls below the detection limit.

GUIDANCE - Division of Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels, HWR-94-4046, 24 January 1994

NG - No Guidance Available

(a) - All results with detectable concentrations appear in bold type

(b) - All results that exceed Guidance appear in white numbers on black background

na - not analyzed this sampling event

TABLE 2
SUMMARY OF TCL SEMI-VOLATILE ORGANIC DATA - SOILS
AREA OF CONCERN 10
FARRELL ROAD PLANT RI

BORING DEPTH (ft) DATE COLLECTED COMPOUND	GUIDANCE (ug/Kg)	B-108 3-5 4/29/94	B-108 7-9 4/29/94	B-109 3-5 5/2/94	B-109 9-11 5/2/94	B-110 3-5 4/28/94	B-110 7-9 4/28/94	B-112 3-5 4/27/94	B-112 9-11 4/27/94	MW-26D 3-5 5/3/94	MW-26D 11-13 5/3/94
phenol	30 or MDL	<390 J	840 J	<410	<400	<370	<410	<380	<400	<390	<410
bis (-2-chloroethyl) ether	NG	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
2-chlorophenol	800	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
1,3-dichlorobenzene	NG	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
1,4-dichlorobenzene	NG	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
1,2-dichlorobenzene	NG	<390 J	<410 J	<410 J	<400 J	<370 J	<410 J	<380	<400 J	<390 J	<410 J
2-methylphenol	100 or MDL	<390	<410	<410 J	<400 J	<370	<410	<380	<400	<390	<410
2,2-oxybis (1-chloropropane)	NG	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
4-methylphenol	900	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
N-nitroso-di-n-propylamine	NG	<390 J	<410 J	<410	<400	<370	<410	<380	<400	<390	<410
hexachloroethane	NG	<390	<410	<410 J	<400 J	<370	<410	<380	<400	<390 J	<410 J
nitrobenzene	200 or MDL	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
isophrone	4,400	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
2-nitrophenol	330 or MDL	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
2,4-dimethylphenol	NG	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
bis (-2-chloroethoxy) methane	NG	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
2,4-dichlorophenol	400	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
1,2,4-trichlorobenzene	NG	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
naphthalene	13,000	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
4-chloroaniline	220 or MDL	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
hexachlorobutadiene	NG	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
4-chloro-3-methylphenol	240 or MDL	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
2-methylnaphthalene	36,400	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
hexachlorocyclopentadiene	NG	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
2,4,6-trichlorophenol	NG	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
2,4,5-trichlorophenol	100	<970	<1000	<1000	<990	<940	<1000	<960	<990	<970	<1000
2-chloronaphthalene	NG	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
2-nitroaniline	430 or MDL	<970	<1000	<1000	<990	<940	<1000	<960	<990	<970	<1000
dimethyl phthalate	2,000	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
acenaphthylene	41,000	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
2,6-dinitrotoluene	1,000	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
3-nitroaniline	500 or MDL	<970	<1000	<1000	<990	<940	<1000	<960	<990	<970	<1000
acenaphthene	50,000	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
2,4-dinitrophenol	200 or MDL	<970	<1000	<1000	<990	<940	<1000	<960	<990	<970	<1000
4-nitrophenol	100 or MDL	<970	<1000	<1000	<990	<940	<1000	<960	<990	<970	<1000
dibenzofuran	6,200	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
2,4-dinitrotoluene	NG	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410

TABLE 2 (cont'd)
SUMMARY OF TCL SEMI-VOLATILE ORGANIC DATA - SOILS
AREA OF CONCERN 10
FARRELL ROAD PLANT RI

BORING DEPTH (ft) DATE COLLECTED COMPOUND	GUIDANCE (ug/Kg)	B-108 3-5 4/29/94	B-108 7-9 4/29/94	B-109 3-5 5/2/94	B-109 9-11 5/2/94	B-110 3-5 4/28/94	B-110 7-9 4/28/94	B-112 3-5 4/27/94	B-112 9-11 4/27/94	MW-26D 3-5 5/3/94	MW-26D 11-13 5/3/94
diethylphthalate	7,100	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
4-chlorophenyl-phenylether	NG	<390 J	<410 J	<410 J	<400 J	<370 J	<410 J	<380 J	<400	<390 J	<410 J
fluorene	50,000	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
4-nitroaniline	NG	<970	<1000	<1000	<990	<940	<1000	<960	<990	<970	<1000
4,6-dinitro-2-methylphenol	NG	<970	<1000	<1000	<990	<940	<1000	<960	<990	<970 J	<1000 J
n-nitrosodiphenylamine	NG	<390	<410	<410	<400	<370	<410	<380	<400	<390 J	<410 J
4-bromophenyl-phenylether	NG	<390	<410	<410	<400	<370	<410	<380 J	<400	<390 J	<410 J
hexachlorobenzene	410	<390	<410	<410	<400	<370	<410	<380	<400	<390 J	<410 J
pentachlorophenol	1,000 or MDL	<970	<1000	<1000 J	<990 J	<940	<1000	<960	<990	<970 J	<1000 J
phenanthrene	50,000	<390	<410	<410	<400	<370	<410	<380	<400	<390 J	<410 J
anthracene	50,000	<390	<410	<410	<400	<370	<410	<380	<400	<390 J	<410 J
carbazole	NG	<390	<410	<410	<400	<370	<410	<380	<400	<390 J	<410 J
di-n-butylphthalate	NG	<390	<410	<410	<400	<370	<410	<380	<400	<390 J	<410 J
fluoranthene	50,000	<390	<410	<410	<400	**20 J**	<410	<380	<400	<390 J	<410 J
pyrene	50,000	<390	<410	<410 J	<400 J	**20 J**	<410	<380	<400	<390	<410
butylbenzylphthalate	50,000	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
3,3-dichlorobenzidine	N/A	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
benzo (a) anthracene	224 or MDL	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
chrysene	400	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
bis (2-ethylhexyl) phthalate	50,000	**47 J**	**37 J**	<410	<400	<370	<410	<380	<400	**160 J**	**48 J**
di-n-octyl phthalate	50,000	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
benzo (b) fluoranthene	1,100	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
benzo (k) fluoranthene	1,100	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
benzo (a) pyrene	61 or MDL	<390	<410	<410	<400	<370	<410	<380	<400	<390	<410
indeno (1,2,3-cd) pyrene	3,200	<390	<410	<410	<400	<370	<410	<380	<400 J	<390	<410
dibenzo (a,h) anthracene	14 or MDL	<390	<410	<410	<400	<370	<410	<380 J	<400 J	<390	<410
benzo (g,h,i) perylene	50,000	<390	<410	<410	<400	<370	<410	<380	<400 J	<390	<410
Tenatively Identified Compounds	NG	9	18	6	3	12	11	6	6	13	13

NOTES: - all concentrations reported as micrograms per kilogram (ug/Kg).

J - Value is estimated since it falls below the detection limit.

GUIDANCE - Division of Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels, HWR-94-4046, 24 January 1994

NG - No Guidance Available

(a) - All results with detectable concentrations appear in bold type

(b) - All results that exceed Guidance appear in white numbers on black background

MDL - Minimum Detection Limit

TABLE 3
SUMMARY OF TCL VOLATILE ORGANIC DATA - GROUND WATER
AREA OF CONCERN 10
FARRELL ROAD PLANT RI

LOCATION / DATE / COMPOUND	GUIDANCE (ug/L)	MW-03S 2/3/91	MW-03S 3/26/92	MW-03S 5/18/94	MW-03D 3/26/92	MW-03D 5/18/94	MW-16 3/26/92	MW-16 10/1/92	MW-16 5/17/94	MW-24 6/16/92	MW-24 6/19/92	MW-24 5/17/94	MW-26S 5/18/94	MW-26D 5/18/94
benzene	0.7	ND	ND	<0.5	ND	**0.12 J**	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
bromobenzene	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
bromochloromethane	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
bromodichloromethane	50	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
bromoform	50	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
bromomethane	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
n-butlybenzene	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
sec-butlybenzene	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	**0.15 J**	<1.0
tert-butlybenzene	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
carbon tetrachloride	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
chlorobenzene	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
chloroethane	5	ND	ND	<0.5 J	ND	<0.5 J	ND	ND	<0.5 J	ND	ND	<0.5 J	<2.5 J	<1.0 J
chloroform	7	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
chloromethane	NG	ND	ND	<0.5 J	ND	<0.5 J	ND	ND	<0.5 J	ND	ND	<0.5 J	<2.5 J	<1.0 J
2-chlorotoluene	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
4-chlorotoluene	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
dibromochloromethane	50	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
1,2-dibromo-3chloropropane	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
1,2-dibromoethane	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
dibromoethane	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
1,2-dichlorobenzene	4.7	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
1,3-dichlorobenzene	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
1,4-dichlorobenzene	4.7	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
dichlorodifluoromethane	5	ND	ND	<0.5 J	ND	<0.5 J	ND	ND	<0.5	ND	ND	<0.5	<2.5 J	<1.0 J
1,1-dichloroethane	5	ND	ND	**0.2 J**	ND	**0.18 J**	ND	ND	<0.5	ND	ND	**5**	**58**	**23**
1,2-dichloroethane	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	**2**
1,1-dichloroethene	5	ND	ND	<0.5	ND	**1.1**	ND	ND	<0.5	ND	ND	**0.63**	**24**	**50 J**

TABLE 3 (cont'd)
SUMMARY OF TCL VOLATILE ORGANIC DATA - GROUND WATER
AREA OF CONCERN 10
FARRELL ROAD PLANT RI

LOCATION / DATE / COMPOUND	GUIDANCE (ug/L)	MW-03S 2/3/91	MW-03S 3/26/92	MW-03S 5/18/94	MW-03D 3/26/92	MW-03D 5/18/94	MW-16 3/26/92	MW-16 10/1/92	MW-16 5/17/94	MW-24 6/16/92	MW-24 6/19/92	MW-24 5/17/94	MW-26S 5/18/94	MW-26D 5/18/94
cis-1,2-dichloroethene	5	ND	ND	<0.5	ND	87	ND	ND	5.6	ND	ND	<0.5	<2.5	130
trans-1,2-dichloroethene	5	ND	ND	13	ND	3.2	ND	ND	0.28 J	ND	ND	<0.5	<2.5	0.66 J
1,2-dichloroethene	5	1900	2200	NA	8 J	NA	ND	ND	NA	ND	ND	NA	NA	NA
1,2-dichloropropane	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
1,3-dichloropropane	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
2,2-dichloropropane	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
1,1-dichloropropene	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
cis-1,3-dichloropropene	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
trans-1,3-dichloropropene	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
ethylbenzene	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	68	<1.0
hexachlorobutadiene	0.5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
isopropylbenzene	5	ND	ND	<0.5	ND	0.02 J	ND	ND	<0.5	ND	ND	<0.5	2.1 J	<1.0
4-isopropyltoluene	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	1.7 J	<1.0
methylene chloride	5	490 B	ND	<0.5	ND	<0.5 J	ND	ND	<0.5 J	ND	ND	<0.5 J	<9.5 J	<3.0 J
naphthalene	10	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0 J
n-propylbenzene	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	0.76 J	<1.0
styrene	5	ND	ND	<0.5	ND	<0.5	ND	NA	<0.5	NA	NA	<0.5	<2.5	<1.0
1,1,1,2-tetrachloroethane	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
1,1,2,2-tetrachloroethane	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
tetrachloroethene	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5 J	ND	ND	<0.5 J	<2.5 J	<1.0 J
toluene	5	ND	ND	<0.5	ND	<0.5	5 J	150	<0.5	ND	ND	<0.5	<2.5	<1.0
1,2,3-trichlorobenzene	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0 J
1,2,4-trichlorobenzene	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
1,1,1-trichloroethane	5	ND	ND	<0.5	9 J	0.99	ND	ND	<0.5	ND	ND	<0.5	18	10
1,1,2-trichloroethane	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
trichloroethene	5	4200	3300	39	250	160	4 J	ND	4.2	ND	ND	<0.5	<2.5 J	96 BJ
trichlorofluoromethane	5	ND	ND	<0.5 J	ND	10 J	ND	ND	<0.5 J	ND	ND	<0.5 J	<2.5 J	1.5 J

TABLE 3 (cont'd)
SUMMARY OF TCL VOLATILE ORGANIC DATA - GROUND WATER
AREA OF CONCERN 10
FARRELL ROAD PLANT RI

LOCATION / DATE / COMPOUND	GUIDANCE (ug/L)	MW-03S 2/3/91	MW-03S 3/26/92	MW-03S 5/18/94	MW-03D 3/26/92	MW-03D 5/18/94	MW-16 3/26/92	MW-16 10/1/92	MW-16 5/17/94	MW-24 6/16/92	MW-24 6/19/92	MW-24 5/17/94	MW-26S 5/18/94	MW-26D 5/18/94
1,2,3-trichloropropane	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
1,2,4-trimethylbenzene	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	**24**	<1.0
1,3,5-trimethylbenzene	5	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	**9**	<1.0
vinyl chloride	2	ND	ND	**4.7 J**	ND	<0.5 J	ND	ND	<0.5 J	ND	ND	<0.5 J	<2.5 J	<1.0 J
o-xylenes	NG	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	**4.6 B**	<1.0
m & p-xylenes	NG	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	**180 B**	<1.0
xylenes (total)	5	ND	ND	NA	ND	NA	ND	NA	NA	NA	ND	NA	NA	NA
ethyl ether	NG	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
acetone	50	ND	ND	<0.5	ND	<0.5	ND	NA	<0.5	NA	NA	<0.5	**125 J**	<1.0
carbon disulfide	NG	ND	ND	<0.5	ND	<0.5	ND	NA	**2 J**	NA	NA	<0.5	<2.5	<1.0
2-butanone	50	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
4-methyl-2-pentanone	NG	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
2-hexanone	50	ND	ND	<0.5	ND	<0.5	ND	NA	<0.5	NA	NA	<0.5	<2.5	<1.0
butane, 2-methyl	NG	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0
methyl tert butyl ether	NG	ND	ND	<0.5	ND	<0.5	ND	ND	<0.5	ND	ND	<0.5	<2.5	<1.0

NOTE: (concentrations reported as micrograms per liter (ug/L))

ND - Non Detect

B - Compound also detected in reagent blank.

J - Value is estimated since it falls below the detection limit.

NA - Compound not analyzed for in this sample.

GUIDANCE - Division of Water Technical and Operational Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values (22 October 1993)

NG - No Guidance Available

(a) - All results with detectable concentrations appear in bold type

(b) - All results that exceed guidance appear in white numbers on black background

TABLE 4
SUMMARY OF TCL SEMI-VOLATILE ORGANIC DATA - GROUND WATER
AREA OF CONCERN 10
FARRELL ROAD PLANT RI

LOCATION / DATE / COMPOUND	GUIDANCE (ug/L)	MW-03S 5/18/94	MW-03D 5/18/94	MW-16 5/17/94	MW-24 5/17/94	MW-26S 5/18/94	MW-26D 5/18/94
phenol	1	<10	<10	<10	<10	<20	<10 J
bis (-2-chloroethyl) ether	1	<10	<10	<10 J	<10	<20	<10
2-chlorophenol	NG	<10	<10	<10	<10	<20	<10 J
1,3-dichlorobenzene	5	<10	<10	<10	<10	<20	<10
1,4-dichlorobenzene	4.7	<10	<10	<10	<10	<20	<10
1,2-dichlorobenzene	4.7	<10 J	<10 J	<10 J	<10 J	<20 J	<10 J
2-methylphenol	NG	<10	<10	<10	<10	<20	<10 J
2,2-oxybis (1-chloropropane)	NG	<10	<10	<10	<10	<20	<10
4-methylphenol	NG	<10	<10	<10 J	<10	**130**	<10 J
N-nitroso-di-n-propylamine	NG	<10	<10	<10	<10	<20	<10
hexachloroethane	5	<10 J	<10 J	<10	<10 J	<20 J	<10 J
nitrobenzene	5	<10	<10	<10	<10	<20	<10
isophrone	50	<10	<10	<10	<10	<20	<10
2-nitrophenol	NG	<10	<10	<10	<10	<20	<10 J
2,4-dimethylphenol	NG	<10	<10	<10	<10	<20	<10 J
bis (-2-chloroethoxy) methane	5	<10	<10	<10	<10	<20 J	<10
2,4-dichlorophenol	NG	<10	<10	<10	<10	<20	<10 J
1,2,4-trichlorobenzene	5	<10	<10	<10	<10	<20	<10
naphthalene	10	<10	<10	<10	<10	<20	<10
4-chloroaniline	5	<10	<10	<10	<10	<20	<10
hexachlorobutadiene	5	<10	<10	<10	<10	<20	<10
4-chloro-3-methylphenol	NG	<10	<10	<10	<10	<20	<10 J
2-methylnaphthalene	NG	<10 J	<10 J	<10	<10 J	<20 J	<10 J
hexachlorocyclopentadiene	5	<10	<10	<10	<10	<20	<10
2,4,6-trichlorophenol	NG	<10	<10	<10	<10	<20	<10 J
2,4,5-trichlorophenol	NG	<25	<25	<25	<25	<50	<25 J
2-chloronaphthalene	10	<10	<10	<10	<10	<20	<10
2-nitroaniline	5	<25	<25	<25	<25	<50	<25
dimethyl phthalate	50	<10	<10	<10	<10	<20	<10
acenaphthylene	NG	<10	<10	<10	<10	<20	<10
2,6-dinitrotoluene	5	<10	<10	<10	<10	<20	<10
3-nitroaniline	NG	<25	<25	<25	<25	<50	<25
acenaphthene	20	<10	<10	<10 J	<10 J	<20	<10 J
2,4-dinitrophenol	NG	<25	<25	<25	<25	<50	<25
4-nitrophenol	NG	<25	<25	<25	<25	<50	<25 J
dibenzofuran	NG	<10	<10	<10	<10	<20	<10
2,4-dinitrotoluene	5	<10	<10	<10	<10	<20	<10
diethylphthalate	50	<10	<10	<10	<10	<20	<10
4-chlorophenyl-phenylether	NG	<10 J	<10 J	<10 J	<10 J	<20 J	<10 J
fluorene	50	<10 J	<10 J	<10	<10 J	<20	<10 J
4-nitroaniline	5	<25	<25	<25	<25	<50	<25
4,6-dinitro-2-methylphenol	NG	<25	<25	<25	<25	<50	<25 J
n-nitrosodiphenylamine	50	<10	<10	<10	<10	<20	<10
4-bromophenyl-phenylether	NG	<10	<10	<10	<10	<20	<10
hexachlorobenzene	0.35	<10	<10	<10	<10	<20	<10
pentachlorophenol	1	<25	<25	<25	<25	<50	<25 J
phenanthrene	50	<10	<10	<10	<10	<20	<10
anthracene	50	<10	<10	<10	<10	<20	<10
carbazole	NG	<10	<10	<10	<10	<20	<10
di-n-butylphthalate	NG	<10	<10	<10	<10	<20	<10
fluoranthene	50	<10	<10	<10	<10	<20	<10
pyrene	50	<10	<10	<10	<10	<20 J	<10

TABLE 4 (cont'd)
SUMMARY OF TCL SEMI-VOLATILE ORGANIC DATA - GROUND WATER
AREA OF CONCERN 10
FARRELL ROAD PLANT RI

LOCATION / DATE / COMPOUND	GUIDANCE (ug/L)	MW-03S 5/18/94	MW-03D 5/18/94	MW-16 5/17/94	MW-24 5/17/94	MW-26S 5/18/94	MW-26D 5/18/94
butylbenzylphthalate	50	<10	<10	<10	<10	<20	<10
3,3-dichlorobenzidine	5	<10	<10	<10	<10	<20	<10
benzo (a) anthracene	0.002	<10	<10	<10	<10	<20	<10
chrysene	NG	<10	<10	<10	<10	<20	<10
bis (2-ethylhexyl) phthalate	50	<10	<10	<10	<10	<20	<10
di-n-octyl phthalate	50	<10	<10	<10	<10	<20	<10
benzo (b) fluoranthene	0.002	<10 J	<10 J	<10	<10 J	<20	<10 J
benzo (k) fluoranthene	0.002	<10	<10	<10	<10	<20	<10
benzo (a) pyrene	ND	<10	<10	<10	<10	<20	<10
indeno (1,2,3-cd) pyrene	0.002	<10	<10	<10	<10	<20	<10
dibenzo (a,h) anthracene	NG	<10	<10	<10	<10	<20	<10
benzo (g,h,i) perylene	NG	<10	<10	<10	<10	<20	<10
Tenatively Identified Compounds	NG	4	7	2	5	19	1

NOTES:

- concentrations reported as micrograms per liter (ug/L).

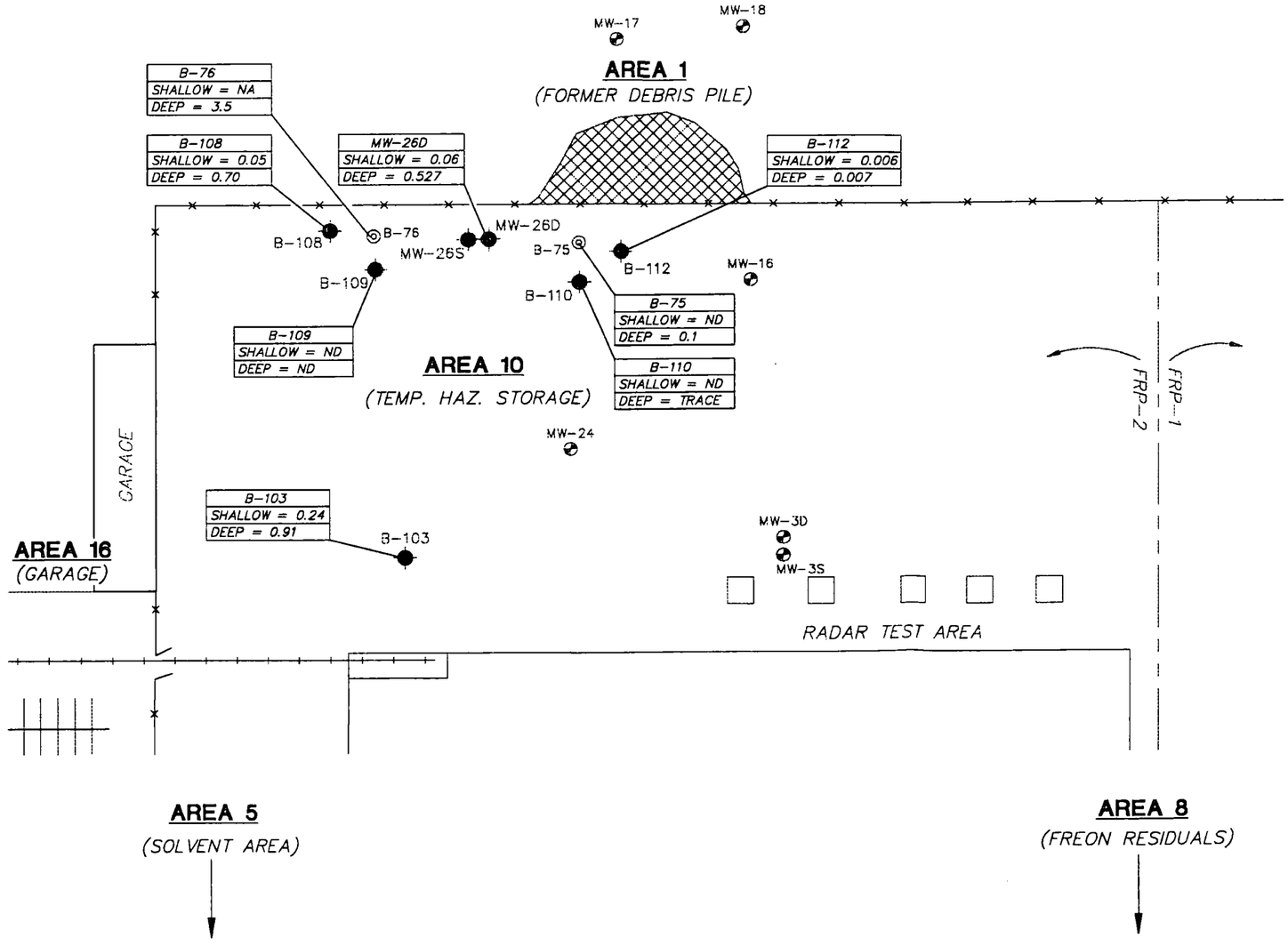
J - Value is estimated since it falls below the detection limit.

GUIDANCE - Division of Water Technical and Operational Guidance Series (1.1.1), Ambient Water Quality Standards and Guidance Values (22 October 1993)

NG - No Guidance Available

(a) - All results with detectable concentrations appear in bold type

(b) - All results that exceed guidance appear in white numbers on black background



LEGEND

⊙	1992 BORING LOCATION
⊕	EXISTING MONITORING WELL LOCATION
◕	1991–1992 MONITORING WELL LOCATION
⊕	1992 HYDROPUNCH LOCATION
●	1994 RI BORING/MONITORING WELL LOCATION
▩	FORMER DEBRIS PILE LOCATION
NA	NOT ANALYZED
ND	NON-DETECT
B-n/MW-n SHALLOW = DEEP =	BORING OR MONITORING WELL SAMPLE LOCATION VOC CONCENTRATIONS IN mg/Kg; SHALLOW = < 5 FEET DEEP = > 7 FEET

BORING & MONITORING WELL LOCATIONS RELATING TO AREA 10 FARRELL ROAD PLANT GEDDES, NEW YORK

PREPARED FOR

LOCKHEED MARTIN CORP.

ERM-Northeast
Environmental Resources Management
5788 Widewaters Parkway, Dewitt, NY 13214
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SCALE 1"=80'

DATE 7/95

FIGURE 1

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