Kost Environmental Services, Inc.

167 North Broadway
Lindenhurst, New York 11757
(516) 226-2156 Fax (516) 957-0646

GROUNDWATER INVESTIGATION
AT
351 Bayshore Road
Deer Park, New York

1-52-107 09194

September, 1994

PREPARED FOR: Evelyn and Stephen Trimboli
52 Collins Avenue
Deer Park, NY 11729

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BACKGROUND AND OBJECTIVES

This report presents the results of a limited groundwater investigation conducted at 351 Bay Shore Road in Deer Park, New York. (Figure I). The subject site is presently listed on the New York State Department of Environmental Conservations "Inactive Hazardous Waste Disposal Sites in New York State", April, 1994, due to discharge of 1,1,1 trichloroethane and other solvents. However, there are also additional sources of possible discharges of 1,1,1 trichbroethane and other solvents in the immediate area surrounding the subject site.

The objectives of this project were to evaluate the impacts to the groundwater by:

- Sampling and analysis of groundwater samples from all monitoring wells at the subject site to evaluate contaminant concentrations.
- Establishing groundwater flow conditions at the site to evaluate potential off-site sources of contamination.

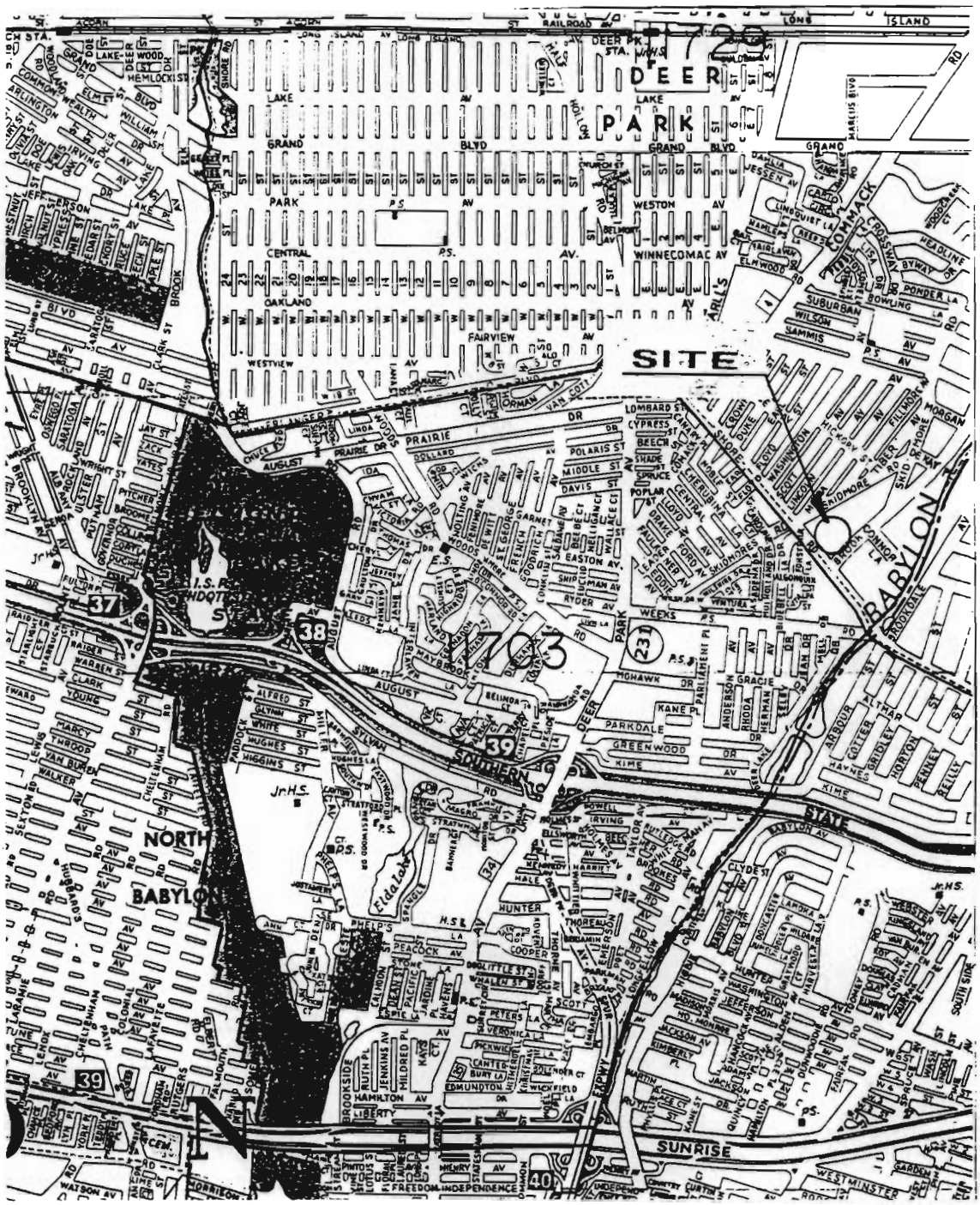


FIGURE 1

LOCATION MAP

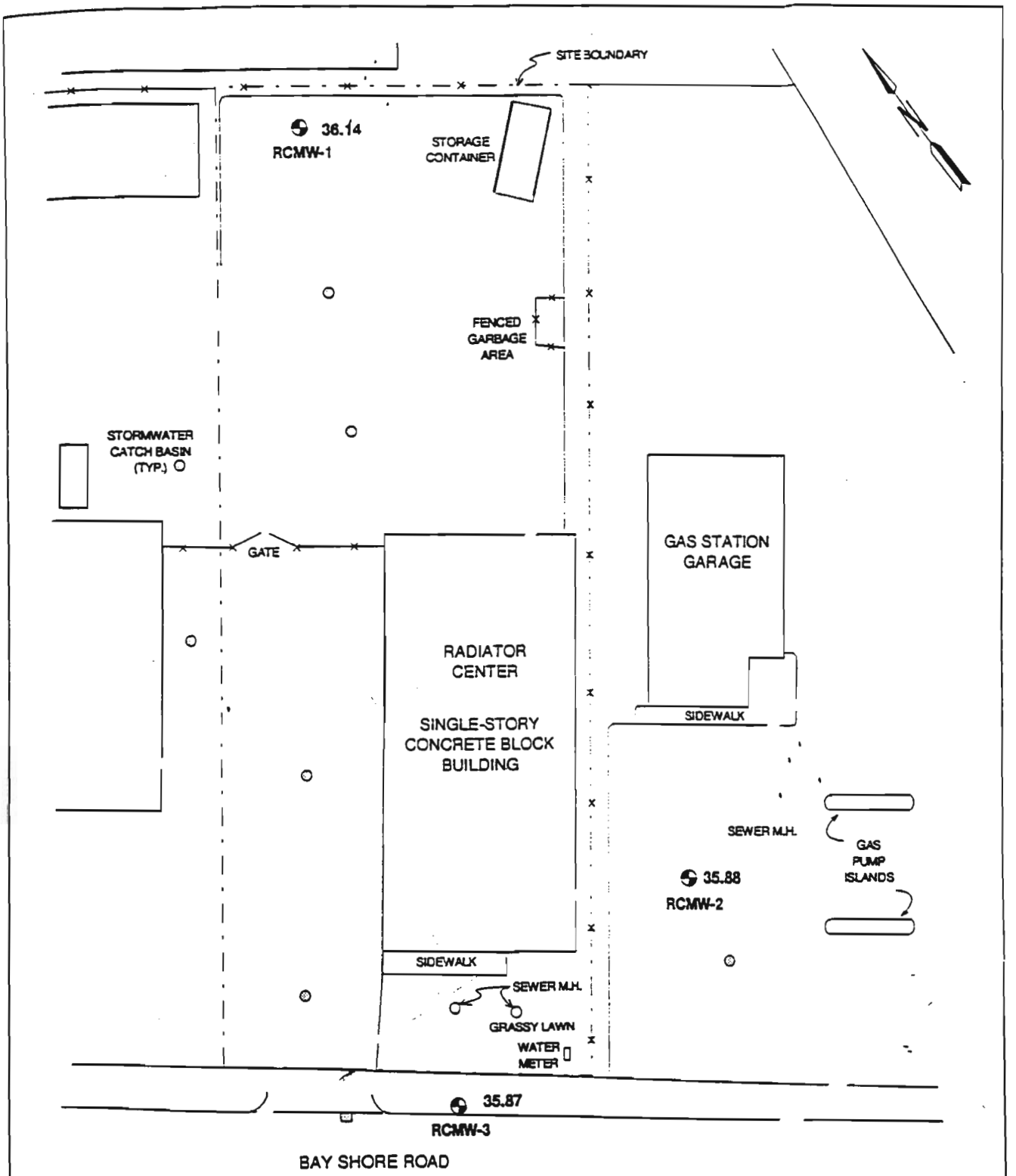
FIELD INVESTIGATION

Well Installation

Three monitoring wells were installed at the site between May 11-13, 1992 as part of the Phase II Investigation performed by Lawler, Matusky & Skelly Engineers for the New York State Department of Environmental Conservation. (See Figure 2). The wells were installed at: (1) the northerly sector of the property and "upgradient" of all leaching basins and cesspools associated with the subject property. This well was identified as RCMW-1; (2) on an adjacent gas station property to the east and "downgradient" of leaching basins and cesspools associated with the subject site. This well was identified as RCMW-2; and (3) on Town of Babylon property just to the south and "downgradient" of leaching basins and cesspools associated with the subject site.

The soil encountered during the drilling consisted of light brown to tan sand and gravel. Groundwater was encountered at a depth of approximately 14 ft. at all three locations.

The wells were constructed with 10 ft. of screen: 8 ft. of screen penetrated the water table; 2 ft. extended above the water table. The well casing and screen were 2 in. diameter PVC with threaded endcaps and joints; screen slot size was 0.020 in. Filter packs consisting of No. 2 Morie sand extended 2 ft. above the top of the screen section. A 2 ft. seal of thoroughly hydrated bentonite pellets was installed above the sand pack. Bentonite-cement grout used to fill the borehole above the bentonite formed a second seal and anchored the well casing in place. Locking well caps and flush-mount curb boxes were installed at each well.



LEGEND

35.81 — Monitoring well location with water table elevation in feet above MSL

Water table contours (dashed where inferred)

0 — 30 ft

SCALE
1 in. = 30 ft

Map source: YEC survey, 26 June 1992.

FIGURE 2

FIELD INVESTIGATION CONT.

Well Development

The three monitoring wells were developed subsequent to their installation in May of 1992. The Phase II report states:

"A centrifugal pump was used to develop each well after a minimum of 24 hrs. had elapsed from the time of completion. Each well was pumped at a rate of 10 gallons per minute (gpm) and was surged at the bottom, middle, and top of the water column at various times throughout development.

Temperature, pH, specific conductivity, and turbidity measurements were recorded periodically (Ref.5). Development was terminated when temperature, pH, and conductivity values had stabilized and turbidity was less than 50 nephelometric turbidity units (NTU). Conductivity is corrected by the meter and is displayed as if the measurement was recorded at 25 C. Generally, the groundwater cleared up well; final turbidity values for each well were below 10 NTU."

FIELD INVESTIGATION CONT.

Groundwater Monitoring Well Sampling

Groundwater was sampled over the period 26-27 May 1992 as part of the Phase II Investigation. Dedicated bailers were used at each well and samples were packed on ice and sent to a laboratory for analysis using chain-of-custody protocol. In addition, groundwater sampling was also performed for the NYSDEC in October, 1993 as part of this investigation.

On August 16, 1994, the three monitoring wells were sampled by Land, Air, Water Environmental Services, Inc.. Prior to sampling the monitoring wells were measured for depth to water. The interface probe was decontaminated with detergent and distilled water after each measurement.

Five well volumes were purged from each well with a submersible pump using new dedicated polyethylene tubing. The submersible pump was decontaminated with detergent and distilled water after each measurement. Dedicated bailers were used at each well.

Groundwater samples were preserved on ice and delivered to EcoTest Laboratories, Inc., in North Babylon, New York, for analysis on the same day as sampling. The samples were analyzed for purgeable halocarbons (EPA Method 601).

FIELD INVESTIGATION CONT.

Field Survey and Groundwater Contours

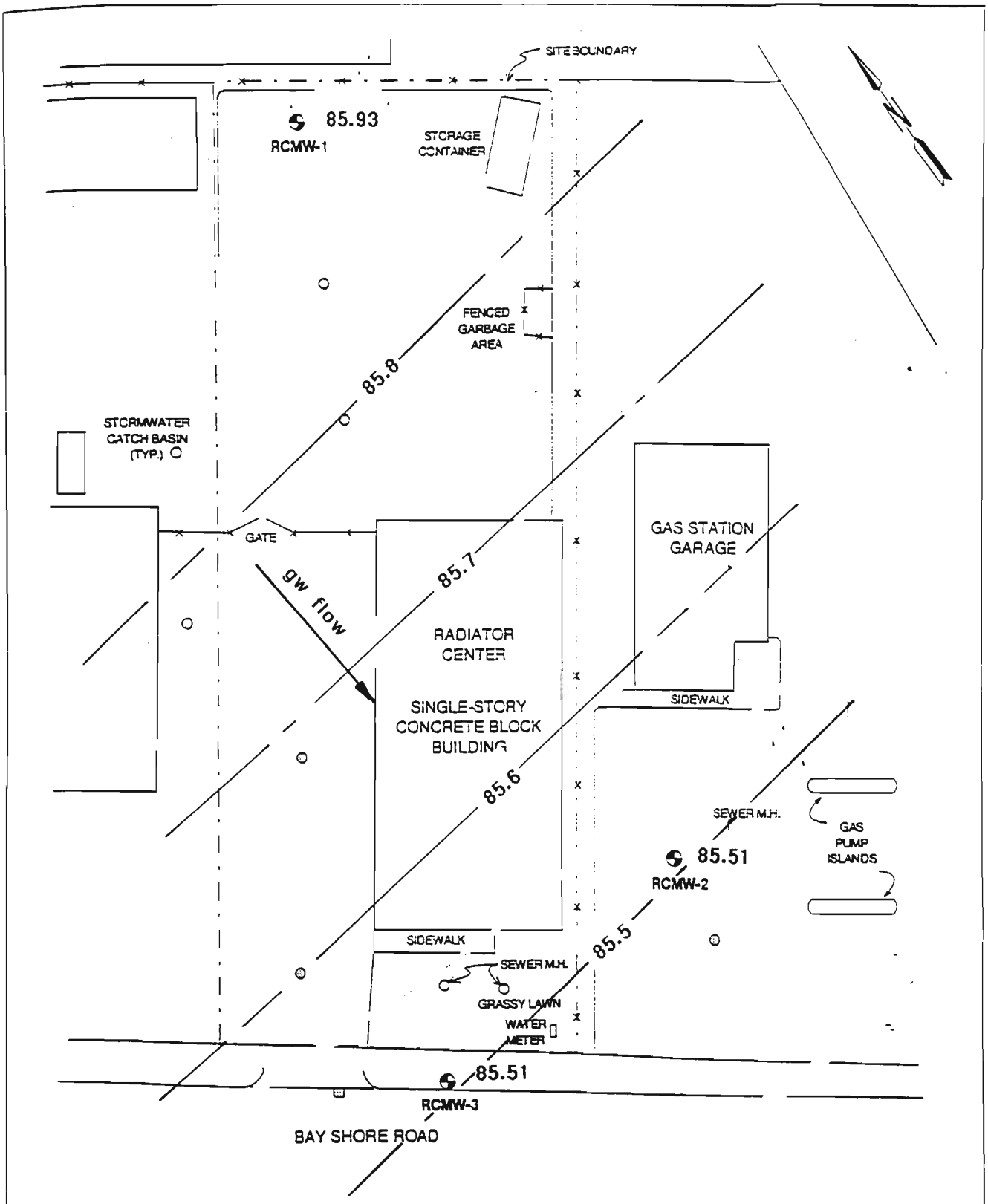
On September 1, 1994, the three monitoring wells at the subject site were surveyed for elevation and depth to groundwater. (Table I). The monitoring wells were surveyed on the north side of the casing and measured to groundwater from the same point. The depths to groundwater varied between 13.16 ft. and 14.07 ft.

Groundwater contours were then developed utilizing a topographic survey of the area and the calculated groundwater elevations. (Figure 3).

TABLE 1

WATER LEVEL MEASUREMENTS

MONITORING WELLS	MEASUREMENT DATE	WELL DEPTH	DEPTH TO WATER
RCMW1	9/1/94	21.21	14.07
RCMW2		21.83	13.16
RCMW3		21.65	13.40



LEGEND

85.93 Monitoring well location with water table elevation in feet

Water table contours

0 30 ft

SCALE
1 in. = 30 ft

Map source: YEC survey, 26 June 1992.

FIGURE 3

RESULTS

Results of the sample analyses indicate that chlorinated hydrocarbon compounds were detected in all three monitoring wells at low concentrations.

The "ugradient" well, RCMW-1, had 1 ppb of 1,1,1 trichloroethane; "downgradient" well RCMW-2 had 2 ppb of 1,2 dichloroethene and trichloroethylene respectively; and "downgradient" well RCMW-3 had the highest concentrations which were 5 ppb of 1,1 dichloroethane and 11 ppb of 1,1,1 trichloroethane. The concentration of 1,1,1 trichlorethane in RCMW-3 exceeded the NYSDEC Class GA groundwater standard of 5 ppb.

The results of the groundwater contour determination indicated a south-southwesterly flow with respect to the subject site. The hydraulic gradient was established at 0.0025 ft./ft.

CONCLUSIONS

The analytical results for the groundwater samples obtained from the three monitoring wells, RCMW-1, RCMW-2 and RCMW-3, indicate the continued presence of low concentrations of chlorinated hydrocarbons in all three wells. (Table 2). The "upgradient" well RCMW-1 continues to have lower concentrations of 1,1,1 trichloroethane then the "downgradient" well RCMW-3 i.e. 1 ppb versus 11 ppb. However, groundwater contours obtained from the 9/1/94 survey indicates that well RCMW-1 and the suspect catch basin RCSW/SD-1 are not located directly "upgradient" of well RCMW-3. The groundwater contours obtained from the 9/1/94 survey indicate that well RCMW-2 is directly "downgradient" from RCMW-1 and RCSW/SD-1. However, well RCMW-2 had no detectable concentrations of 1,1,1 trichloroethane (TCA) when sampled.

The "change" in groundwater contours raises the following possibilities:

1. the contamination in RCMW-3 may be caused by an off-site source. A monitoring well and sampling would be needed to prove this;
2. the contamination in RCMW-3 may be caused by leaching basins located at the southerly portion of the property. The same monitoring well installation as noted in #1 would prove this;
3. the contamination in RCMW-3 may be caused by the on-site septic system and concentrations of TCA may be higher just to the east of the monitoring well RCMW-3; and
4. the cleanup of "catchbasin located in the rear paved lot" (RCSW/SD-1) may not have any significant impact on the groundwater quality in well RCMW-3. The cleanup of this basin was a recommendation of the Phase II Study.

CONCLUSIONS CONT.

In summary, the installation of an additional monitoring well and subsequent sampling should occur prior to undertaking of any cleanup operations as recommended in the Phase II Report.

TABLE #2

GROUNDWATER ANALYSIS (ppb)

	RCMW1	RCMW2	RCMW3			G.W. STD.
1,2 dichloroethane			5			5
1,2 dichloroethene		2				5
111 trichloroethane	1		11			5
trichloroethylene		2				5

APPENDIX

LABORATORY RESULTS

ECOTEST LABORATORIES, INC. ENVIRONMENTAL TESTING

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO.C943580/3 08/24/94

Kost, Darrel
167 North Broadway
Lindenhurst, NY 11757

ATTN:

SOURCE OF SAMPLE: TrimBoli, Deer Park
COLLECTED BY: Client DATE COL'D:08/16/94 RECEIVED:08/16/94

SAMPLE: Water sample, RCMW1, 10:30 am

ANALYTICAL PARAMETERS		
Chloromethane	ug/L	<1
Bromomethane	ug/L	<1
Dichlordifluomethane	ug/L	<2
Vinyl Chloride	ug/L	<1
Chloroethane	ug/L	<1
Methylene Chloride	ug/L	<1
Trichlorofluomethane	ug/L	<2
1,1 Dichloroethene	ug/L	<1
1,1 Dichloroethane	ug/L	<1
1,2 Dichloroethene	ug/L	<1
Chloroform	ug/L	<1
1,2 Dichloroethane	ug/L	<1
111 Trichloroethane	ug/L	1
Carbon Tetrachloride	ug/L	<1
Bromodichloromethane	ug/L	<1
1,2 Dichloropropane	ug/L	<1
t-1,3Dichloropropene	ug/L	<2
Trichloroethylene	ug/L	<1
Chlorodibromomethane	ug/L	<1
112 Trichloroethane	ug/L	<2
c 13 Dichloropropene	ug/L	<2
2chloroethvinylether	ug/L	<2
Bromoform	ug/L	<2
1122Tetrachloroethan	ug/L	<2
Tetrachloroethene	ug/L	<1

ANALYTICAL PARAMETERS		
Chlorobenzene	ug/L	<1
1,3 Dichlorobenzene	ug/L	<2
1,2 Dichlorobenzene	ug/L	<2
1,4 Dichlorobenzene	ug/L	<2

cc:

REMARKS:

DIRECTOR

rn= 17892 NYSDOH ID# 10320

ECOTEST LABORATORIES, INC. ENVIRONMENTAL TESTING

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO.C943580/1 08/24/94

Kost, Darrel
167 North Broadway
Lindenhurst, NY 11757
ATTN:

SOURCE OF SAMPLE: TrimBoli, Deer Park
COLLECTED BY: Client DATE COL'D:08/16/94 RECEIVED:08/16/94

SAMPLE: Water sample, RCMW2, 9:30 am

ANALYTICAL PARAMETERS		
Chloromethane	ug/L	<1
Bromomethane	ug/L	<1
Dichlordifluomethane	ug/L	<2
Vinyl Chloride	ug/L	<1
Chloroethane	ug/L	<1
Methylene Chloride	ug/L	<1
Trichlorofluomethane	ug/L	<2
1,1 Dichloroethene	ug/L	<1
1,1 Dichloroethane	ug/L	<1
1,2 Dichloroethene	ug/L	2
Chloroform	ug/L	<1
1,2 Dichloroethane	ug/L	<1
111 Trichloroethane	ug/L	<1
Carbon Tetrachloride	ug/L	<1
Bromodichloromethane	ug/L	<1
1,2 Dichloropropane	ug/L	<1
t-1,3Dichloropropene	ug/L	<2
Trichloroethylene	ug/L	2
Chlorodibromomethane	ug/L	<1
112 Trichloroethane	ug/L	<2
c 13 Dichloropropene	ug/L	<2
2chloroethvinylether	ug/L	<2
Bromoform	ug/L	<2
1122Tetrachloroethan	ug/L	<2
Tetrachloroethene	ug/L	<1

ANALYTICAL PARAMETERS		
Chlorobenzene	ug/L	<1
1,3 Dichlorobenzene	ug/L	<2
1,2 Dichlorobenzene	ug/L	<2
1,4 Dichlorobenzene	ug/L	<2

cc:

REMARKS:

DIRECTOR

rn= 17890 NYSDOH ID# 10320

ECOTEST LABORATORIES, INC. ENVIRONMENTAL TESTING

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LAB NO.C943580/2 08/24/94

Kost, Darrel
167 North Broadway
Lindenhurst, NY 11757

ATTN:

SOURCE OF SAMPLE: TrimBoli, Deer Park
COLLECTED BY: Client DATE COL'D:08/16/94 RECEIVED:08/16/94

SAMPLE: Water sample, RCMW3, 10:00 am

ANALYTICAL PARAMETERS		
Chloromethane	ug/L	<1
Bromomethane	ug/L	<1
Dichlordifluomethane	ug/L	<2
Vinyl Chloride	ug/L	<1
Chloroethane	ug/L	<1
Methylene Chloride	ug/L	<1
Trichlorofluomethane	ug/L	<2
1,1 Dichloroethene	ug/L	<1
1,1 Dichloroethane	ug/L	5
1,2 Dichloroethene	ug/L	<1
Chloroform	ug/L	<1
1,2 Dichloroethane	ug/L	<1
111 Trichloroethane	ug/L	11
Carbon Tetrachloride	ug/L	<1
Bromodichloromethane	ug/L	<1
1,2 Dichloropropane	ug/L	<1
t-1,3Dichloropropene	ug/L	<2
Trichloroethylene	ug/L	<1
Chlorodibromomethane	ug/L	<1
112 Trichloroethane	ug/L	<2
c 13 Dichloropropene	ug/L	<2
2chloroethvinylether	ug/L	<2
Bromoform	ug/L	<2
1122Tetrachloroethan	ug/L	<2
Tetrachloroethene	ug/L	<1

ANALYTICAL PARAMETERS		
Chlorobenzene	ug/L	<1
1,3 Dichlorobenzene	ug/L	<2
1,2 Dichlorobenzene	ug/L	<2
1,4 Dichlorobenzene	ug/L	<2

cc:

REMARKS:

DIRECTOR

rn= 17891 NYSDOH ID# 10320

ECOTEST LABORATORIES, INC. ENVIRONMENTAL TESTING

377 SHEFFIELD AVE. • N. BABYLON, N.Y. 11703 • (516) 422-5777 • FAX (516) 422-5770

LAB NO.C943580/5 08/24/94

Kost, Darrel
167 North Broadway
Lindenhurst, NY 11757
ATTN:

SOURCE OF SAMPLE: TrimBoli, Deer Park
COLLECTED BY: Client DATE COL'D:08/16/94 RECEIVED:08/16/94

SAMPLE: Water sample, TB

ANALYTICAL PARAMETERS		
Chloromethane	ug/L	<1
Bromomethane	ug/L	<1
Dichlordifluomethane	ug/L	<2
Vinyl Chloride	ug/L	<1
Chloroethane	ug/L	<1
Methylene Chloride	ug/L	<1
Trichlorofluomethane	ug/L	<2
1,1 Dichloroethene	ug/L	<1
1,1 Dichloroethane	ug/L	<1
1,2 Dichloroethene	ug/L	<1
Chloroform	ug/L	<1
1,2 Dichloroethane	ug/L	<1
111 Trichloroethane	ug/L	<1
Carbon Tetrachloride	ug/L	<1
Bromodichloromethane	ug/L	<1
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t-1,3Dichloropropene	ug/L	<2
Trichloroethylene	ug/L	<1
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Bromoform	ug/L	<2
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Tetrachloroethene	ug/L	<1

ANALYTICAL PARAMETERS		
Chlorobenzene	ug/L	<1
1,3 Dichlorobenzene	ug/L	<2
1,2 Dichlorobenzene	ug/L	<2
1,4 Dichlorobenzene	ug/L	<2

cc:

REMARKS:

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rn= 17894 NYSDOH ID# 10320

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LAB NO.C943580/4 08/24/94

Kost, Darrel
167 North Broadway
Lindenhurst, NY 11757
ATTN:

SOURCE OF SAMPLE: TrimBoli, Deer Park
COLLECTED BY: Client DATE COL'D:08/16/94 RECEIVED:08/16/94

SAMPLE: Water sample, FB, 10:30 am

ANALYTICAL PARAMETERS		
Chloromethane	ug/L	<1
Bromomethane	ug/L	<1
Dichlordifluomethane	ug/L	<2
Vinyl Chloride	ug/L	<1
Chloroethane	ug/L	<1
Methylene Chloride	ug/L	<1
Trichlorofluomethane	ug/L	<2
1,1 Dichloroethene	ug/L	<1
1,1 Dichloroethane	ug/L	<1
1,2 Dichloroethene	ug/L	<1
Chloroform	ug/L	<1
1,2 Dichloroethane	ug/L	<1
111 Trichloroethane	ug/L	<1
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2chloroethvinylether	ug/L	<2
Bromoform	ug/L	<2
1122Tetrachloroethan	ug/L	<2
Tetrachloroethene	ug/L	<1

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1,2 Dichlorobenzene	ug/L	<2
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