Part 1

AIRBORNE EXPRESS

April 24, 1997

Ms. Mary Anne Rosa
Project Manager
Emergency and Remedial Response Division - Region II
U.S. Environmental Protection Agency
290 Broadway, 19th Floor
New York, New York 10007-1866

Re: Reply to Request for Information on Hazardous Substances at the Kodalux Processing Laboratory, Fair Lawn, New Jersey

Dear Ms. Rosa:

This is in response to your February 26, 1997 letter requesting information regarding the Kodalux Processing Laboratory (facility), located in Fair Lawn, New Jersey. Your request was mailed to the facility at Fair Lawn and thereafter forwarded to Eastman Kodak Company ("Kodak") corporate offices in Rochester, New York for my attention and handling. The status of the facility with respect to Kodak ownership is discussed in the accompanying response. The time to respond to this request was extended to April 26, 1997 by Ms. Amelia Wagner, Esq., of your staff.

As stated in Kodak's January 29, 1991 supplemental response to your office's previous request for information regarding handling of hazardous substances at the facility, four petroleum underground storage tanks and a dry well for the fire suppression system have been removed. These activities have been reported to New Jersey Department of Environmental Protection (NJDEP), case nos. 90 06 15 1528 and 90 05 22 1638.

Upon developing the attached response to your request for information, Kodak has concluded that the following reports inappropriately refer to the usage of trichloroethene (TCE) at the Kodalux Processing Laboratory:

298099

Torger N. Dahl, Attorney, Environmental, Health & Safety Legal Staff
Eastman Kodak Company • 343 State Street • Rochester, New York 14650-0217
Telephone: (716) 724-4899 • Facsimile: (716) 724-5515

Kodak
Official Imaging Sponsor of the Olympic Games

September 14, 1979. Memo Assistant Director Bellis, New Jersey Department of Environmental Protection from Mr. Lynch.
June 1983. Draft NUS Remedial Action Master Plan, Fair Lawn Well Field, Fair Lawn, New Jersey: A. Olszewski and E. Escher.
December 1996. Revised Final Interim Report For The Fair Lawn Well Field Site, Bergen County, New Jersey: ICF Kaiser.

Although trichloroethene has been detected at the facility, it has not been utilized in facility operations. In addition, chloroform, which has also not been used at the facility, was detected in groundwater samples from the facility. The presence of chloroform and trichloroethene indicate that the facility has been impacted by off-site sources.

Preliminary evaluation of groundwater monitoring results for the facility indicate that although releases have occurred, the source of the releases have been removed and regional up-gradient sources have contributed to contamination of the facility. Eastman Kodak Company (Kodak) is continuing to evaluate the facility under a Memorandum of Agreement with NJDEP.

Should USEPA become the lead agency with respect the corrective action activities in the area, Kodak would appreciate an opportunity to meet with USEPA and NJDEP representatives to ensure that continued progress at the facility will meet the goals of both agencies.

If additional information is required please contact me at (716)-724-4899.

Very truly yours,

Torger N. Dahl

TND
Enclosures
(CERLCA02)

cc: Amelia Wagner (w/encl.)
Office of Regional Counsel
U.S. Environmental Protection Agency
290 Broadway, 17th Floor
New York, New York 10007-1866

Reply to USEPA
Request for Information Regarding
Hazardous Substances at the
Kodalux Processing Laboratory
Fair Lawn, New Jersey

April 1997

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Introduction

The following are Kodak's responses to a February 26, 1997 request for information, pursuant to CERCLA Section 104, from Ms. Mary Anne Rosa, USEPA Region II regarding the Kodalux Processing Laboratory located in Fair Lawn, New Jersey.

Question 1: Company Information

a. *Legal Company Name:*
Eastman Kodak Company

b. *Presiding Company Officers:*
George M. C. Fisher, Chairman of the Board and Chief Executive Officer
Eastman Kodak Company
343 State Street, Rochester, New York, 14650

c. *State of Incorporation/Agent for Service in NJ:*
Eastman Kodak Company ("Kodak") is incorporated in the state of New Jersey
CT Corporation is Kodak's agent for service

d. *Certificate of Incorporation:*
A copy is enclosed (see Appendix VIII).

e. *Subsidiary Information:*
Kodak has owned the facility to which this request for information was directed since 1961. The facility, however, is currently operated by Qualex, Inc., a wholly owned subsidiary of Kodak.

Question 2 Site Ownership/Operator

a. The facility has been operated as a photographic film processing laboratory since 1961. Kodak maintains facility ownership and initially operated the facility from 1961 to 1988. During 1988, Qualex, Inc. leased the facility from Kodak, and continued to operate the facility as a photo processing laboratory. During 1994, Kodak acquired sole ownership of Qualex, Inc.. Site operations continue to be managed by Qualex, Inc..

b. See response to 2(a) above. At this time, Kodak does not know who it acquired the facility from in 1961 but is seeking to determine such information. Photoprocessing activities commenced in 1961 at the facility shortly after Kodak acquired it.

c. Not applicable

d. Qualex, Inc. operates the facility. Address: 16-31 State Highway No. 208, Fair Lawn,. New Jersey, 17410

Question 3 RCRA and Federal Water Pollution Control Act Permits

a. No

b. The facility discharges process and sanitary wastewater to the Passaic Valley Sewer Commission (PVSC) pursuant to permit no. 08405930

Question 4 Hazardous Substance Usage List

A review of facility records indicates that the following hazardous substances have been utilized at the facility: 1,1,1 trichloroethane, methylene chloride, formaldehyde and BTEX. See Table 1 "Response to Question 4 Regarding Materials Usage."

Question 5 Process Descriptions

(a) and (b) The facility is a service industry that processes photographic film to produce photographic prints and slides. The facility utilizes several aqueous processes to produce images from various types of customer film. The film image is developed by C-41 (color negative), E-6 and K-14 (color slide), and Black and White negative processes. Film images are transferred to photographic paper by controlled light exposure. The photographic paper image is then developed by the RA-4 and R-100 (color print), or Black and White process.

Aqueous processing solutions are utilized throughout the process operations. Processing solutions are regenerated for reuse where possible. Waste processing solutions and wash waters from processing operations are subjected to wastewater pretreatment prior to discharge to the publicly owned treatment works (POTW).

The chemical composition of photographic processing solutions is summarized in Table 1 of Kodak's publication J-47. A copy of Table 1 from this publication is attached as Appendix I. In addition to aqueous processing solutions, non-aqueous cleaning solutions and analytical reagents are utilized in limited quantity in support of processing operations.

Following is a list of hazardous substances utilized at the facility. Where known, process information and usage is provided. The following table describes hazardous substance usage at the facility as follows:

Process	Estimated Annual Usage
Film Processing	
See below	
Laboratory Analysis	
Butyl acetate	Less than one gallon per year
Ethyl acetate	Less than one gallon per year
Methylene chloride	Less than one gallon per year
Wastewater Pretreatment	
Sulfuric Acid	(1990 to 1993) 2,900 gallons per year
Sulfuric Acid	(1994 to present) 250 gallons per year
Maintenance	
Trichloroethane	(circa 1970 to 1990) Limited quantity, utilized in one-gallon containers
Mineral Spirits	(1990 to present) Limited quantity
Film Cleaning	
Trichloroethane	(1984 to 1990) 55 gallons per year
Isopropanol	(1990 to present) 50 to 100 gallons per year
Specialty Processing	
Xylene (50% mixture)	(Unknown to 1991) one gallon quantities
Super 8 & 16 Processing	
Trichloroethane	(1973 to 1982) 3,100 gallons per year
On-site Fleet Vehicle Refueling	
Unleaded gasoline (BTEX)	(circa 1970 to 1990) Usage unknown, total tank capacity was 5,000 gallons

Film Processing:
The facility processes color film, black and white film and color slides. Site records indicate that the following substances have been utilized at the facility, but information regarding the time period utilized or quantities could not be determined

Hazardous substances utilized include:

acetic acid	aluminum sulfate
ethylenediaminetetraacetic acid	ethylenediamine
hydrobromic acid	hydroquinone
phosphoric acid	potassium hydroxide
potassium nitrate	propionic acid
silver halide	silver sulfide
sodium bisulfite	sodium ferricyanide
sodium ferrocyanide	sodium hydroxide

Information regarding the concentration of constituents generally utilized in processing solutions is attached in Appendix I.

Chemical Handling/Storage:
With the exception of gasoline, handling of liquid hazardous substances included the use of one liter to 55 gallon capacity containers for analysis of quality control samples, dispensing and mixing in process tanks, and cleaning operations. The facility utilizes No. 6 fuel oil for generating heat for building operations. An aboveground storage tank for No. 6 fuel oil is located adjacent to the northeast corner of the main building.

Hazardous substances are stored inside buildings. Liquids are stored metal or plastic drums, or are overpacked into fiber containers. Raw material solids are stored in fiber, metal or plastic drums and plastic or paper bags. The raw materials are transferred to process vessels for pre-mixing and are pumped directly to processing equipment.

Waste Generated From Site Operations:
Waste generated from photo processing operations at the facility include:

- process solutions and waste water;
- non-hazardous iron and ferricyanide sludge;
- laboratory wastes, including acids, bases, and solvents; and
- maintenance wastes.

Waste streams are segregated and managed as described in response to *Question 6*.

A productivity index which relates to the hazardous substances described above is not available. However, upon reviewing hazardous waste manifests from 1993 to 1996, the facility has generated less than 1.3 tons of hazardous waste per year.

c) No. Other than photoprocessing, there are no other processes employed at the facility.

Question 6 Methods for collection, storage, treatment and disposal of hazardous substances

a) through d) The following summary describes the practices of Kodak's subsidiary, Qualex, Inc. These practices are believed to have been generally in place in all prior years during which Kodak operated the facility.

Hazardous Substances From Facility Operations:
Hazardous substance waste management operations are presently conducted by Qualex personnel. The facility utilizes on-facility treatment practices for the pretreatment (silver recovery) of process wastewater which contains silver, and neutralization of process wastewater prior to discharge to the POTW. Recovered silver bearing materials are shipped off-site for precious metals recovery. Wastewater management is further discussed in Kodak's response to *Question 7.*

Solid wastes are disposed of off-site. Solid wastes are containerized in metal or fiber drums and accumulated indoors, prior to shipment to an appropriate off-site treatment facility. The accumulation area consists of a concrete floor and secondary containment capable of containing 55 gallons, the largest capacity container utilized.

A table summarizing recent off-site waste management practices for waste generated from facility operations is attached as Table 2 Site Operations Waste Disposal Summary.

Hazardous Substances From Site Investigations/Corrective Actions:
During 1990, CA Rich Consultants, Inc., removed four petroleum underground storage tanks, two floor drains from the basement of the main building, and a dry well utilized for containment of fluids from the solvent storage room's fire suppression system. Subsequent to these activities, Radian Corporation has conducted hydrogeologic studies, at the facility. Ten groundwater monitoring wells have been installed at the facility. Waste generated from these activities include: petroleum contaminated soil, groundwater monitoring well development
and purge water, and soil containing hazardous waste (U226/F002) from these activities were managed as in covered piles on pavement, and metal and fiber containers as described in Table 3 Site Investigation/Corrective Action Waste Disposal Summary:

Question 7 Process Wastewaters

Process and sanitary wastewaters discharge to a main sewer line along the western

portion of the facility, between the building and Route 208. Storm water from roof drains and catch basins located in parking lot and roadway areas discharge to the storm water sewer for the industrial park. Attached as Figure 1, is a January, 1984 drawing of the facility illustrating the location of the storm and sanitary sewer lines.

a. Discharge to Sanitary Sewer

i) Wastewaters generated at the facility are currently, and believed to always have been, discharged to a sanitary sewer managed by the local publicly owned treatment works, Passaic Valley Sewerage Commission (POTW).

ii) Photo processing wastewaters are subject to pretreatment consisting of silver recovery and neutralization as appropriate. Effluent which contains silver is pretreated using primary and secondary precious metal recovery systems consisting of electrolytic precipitation and silver salt precipitation. All process effluents are neutralized prior to discharge to the POTW. See attached Figure 2, for a description of the location of the wastewater process piping locations.

iii) Kodak believes that wastewaters at the facility were always discharged to a sanitary sewer.

iv) Analytical information concerning Kodak waste materials is identified in Appendix IV (PVSC User Charge Self-Monitoring Report) and in the various consultant reports of Appendix II. Kodak has no additional analytical information concerning wastewater compositions at this time.

b. Disposal Floor drains/dry wells

i) Floor drains located in the basement of the facility are connected to sumps which pump the wastewater to the silver recovery unit or the neutralization chamber prior to discharge to the POTW. During 1990, two floor drains and associated sump and piping were excavated and permanently removed from service by CA Rich Consultants, Inc.

ii) Drains, to Kodak's knowledge, were never connected to a septic system.

iii) Drains, to Kodak's knowledge, were never connected to a leach field.

iv) To Kodak's knowledge, the drains at the facility were always connected to the sanitary sewer with the following possible exception. A dry well associated with the fire suppression system in the facility solvent storage room was removed during 1990. The drain in the solvent storage room was connected to the dry well to remove fluids in case the fire suppression sprinklers were activated. The dry well consisted of five foot by ten foot cinder block walls and a clay soil floor. Neither drains in photoprocessing areas of the facility nor wastewater process piping were ever connected to the dry well.

c. Storm sewers/dry wells/catch basins/lagoons

i) No lagoons have ever existed at the facility. Storm water catch basins at the facility are currently lined and have been so at least as early as 1984. Kodak has no information as to the prior lined status of such catch basins.

ii) Not applicable.
iii) Storm water from roof drains and catch basins located in parking lot and roadway areas discharge to the storm water sewer for the industrial park

Discharges, if any, from the drywell referenced in (b)(iv) above passed to the clay soil floor therein.

d. Diagram of wastewater collection system.
A diagram of the wastewater collection system (Figures 2) is attached.

Question 8 Hazardous Substances Generated

As stated in response to *Question 5,* specific information regarding total quantities of hazardous substances generated is not available. However, upon reviewing hazardous waste manifests from 1993 to 1996, facility operations have generated less than 1.3 tons of manifested hazardous waste substances per year. Quantities of hazardous substances discharged to the sanitary sewer and any other solid wastes transported off-site are unknown at this time. Kodak will supplement its response if it finds any additional information relevant to this question.

Question 9 Groundwater Discharge

Waste management at the facility has consisted of on-site pretreatment of process wastewaters, prior to discharge to the POTW and off-site disposal of solid and hazardous waste. Wastes were not discharged directly to groundwater.

Question 10 Accidental Discharge

a) and b)

During 1990, four underground petroleum storage tanks were removed from the facility by CA Rich Consultants, Inc. The tank closure activities consisted of removing two unleaded gasoline tanks (2,000 and 3,000 capacity), two 20,000 gallon No. 6 fuel oil tanks and associated piping. Staining was observed directly below the fuel oil tanks.

Fifteen cubic yards of soil were excavated and disposed of off-site. Although no visible sheen was observed in the area of the unleaded gasoline tank removals, elevated total petroleum hydrocarbon (TPHC) levels were detected in the soil below the former

unleaded gasoline pump. New Jersey Department of Environmental Protection(NJDEP) Action Hotline was notified of the release, and assigned case number 90 05 22 1638. Further investigation and corrective action included the removal and off-site disposal of fifteen cubic yards of soil from below the former gasoline pump area.

In May, 1990, CA Rich Consultants, Inc. removed two floor drains and associated piping from the basement of main processing building. The drains and piping were observed to be corroded. Surrounding soil was stained and moist. Stained soil was excavated and properly disposed of off-site. Soil sample results collected from the bottom and side wall of the excavations detected silver, chromium, cyanide (from the non-toxic ferrocyanide byproduct of photoprocessing), hydroquinone, formaldehyde, and trace levels of acetone, a suspected laboratory contaminant. The NJDEP was notified (case number 90 06 15 1528) of the conditions during a facility visit on July 25, 1990. (CA Rich Consultants, July 1990).

During May through June, 1990, CA Rich Consultants, Inc. removed the dry well associated with the fire suppression system for the solvent storage room. Analysis of dry well construction materials and soil detected the presence of 1,1 dichloroethene, 1,1,1 trichloroethane, and xylene in the dry well construction materials. The NJDEP Action Hotline was notified on June 15, 1990 and the case number 90 06 15 1528 was assigned. The dry well was excavated, including over-excavation below the clay floor, and the floor drains completely grouted to permanently remove from service. (CA Rich Consultants, October 1990).

During September, 1990 Radian Corporation conducted a soil vapor and groundwater investigation in the area of the former petroleum underground storage tanks, the former drywell and exterior wall near the former basement floor drains. Results of this investigation are summarized in Radian's October 29, 1990 report "Soil Vapor Investigation and Groundwater Monitoring Results" for the facility.

In addition to the closure and subsurface assessment activities described above, a September, 1992 Memorandum of Agreement (MOA) between Kodak and NJDEP outlined a remedial investigation and feasibility strategy for the facility. Kodak has implemented groundwater monitoring and hydrologic testing at the facility and reported the results to NJDEP. Copies of these results have been forwarded to USEPA's contractor Roy F. Weston, Inc., who conducted a facility inspection on June 27, 1996.

Additional groundwater monitoring and development of a Remedial Investigation report is planned.

The results of the subsurface investigation activities discussed above are presented in the following reports. Copies of the reports are attached.

July 1990, Basement Floor Drain Subsurface Investigation
Prepared by CA Rich Consultants, Inc.

October 3, 1990, Discharge Investigation and Corrective Action Report
Prepared by CA Rich Consultants, Inc.

October 29, 1990, Soil Vapor Investigation and Groundwater Monitoring Results
Prepared by Radian Corporation

October 1990, Solvent Storage Room Floor Resurfacing and Dry Well Removal
Prepared by CA Rich Consultants, Inc.

September 9, 1991, Final Groundwater Report
Prepared by Radian Corporation

February 7, 1992 Phase II Groundwater Investigation Report
Prepared by Radian Corporation

August 1992, Groundwater Sampling Results
Memorandum to Jamie MacBlane, NJDEP from Joseph Gabriel, Kodak

1993, Groundwater Sampling Results
Prepared by Radian Corporation

Question 11 Sewer Connection to Passaic Valley Sewage Commission

a) The facility discharges process and sanitary wastewater to the Passaic Valley Sewer Commission (PVSC) pursuant to permit no. 08405930. The current permit became effective on November 14, 1993, and will expire on November 14, 1998. A copy of the permit is attached as Appendix III. Analytical results, if any, generated in connection with the facility's permit application have not been found.

b) From 1993 to present, the facility has received seven notices of violations (NOV) relating to electrical problems or operator error, which have resulted in minor pH discharges below the permit value of 5.0 Standard Units. These events were of limited duration, ranging from one minute to less than 90 minutes of interim time periods.

Corrective actions included operator training, equipment modifications, neutralization system piping and connection upgrades and the installation of an un-interruptable power supply with surge and spike protection. In addition, during 1995, a delay in the submittal of a Monthly Self Monitoring Report (MR-2), resulted in a notice of violation. The report was submitted and subsequent reporting activities have been completed on time.

The details of how these NOV's were addressed is provided in Kodak's response to question 12 below.

Question 12 Proceedings/Violations

With respect to operations at the facility, Kodak reports as follows: On May 31, 1995, Qualex entered into a Consent Order and Final Judgment with the PVSC regarding pH discharge limitations for the facility. A sum of $2,600 was paid to PVSC in settlement of all civil penalties for allegedly violating the provisions of NJSA 58:14-1 et seq. by discharging effluent in excess of the pH discharge limitations of the permit.

Qualex has completed the installation of a pH neutralization system, diverted process final overflows away from the pH neutralization system, connected existing floor drains in the Chem Mix Room to the pH neutralization system, and maintains the system to operate within permit limitations.

A copy of the Consent Order and Final Judgment is attached as Appendix V.

Question 13 Environmental Cleanup Responsibility Act/Industrial Site Recovery Act

With respect to this facility, Kodak has not conducted an environmental assessment under the Environmental Cleanup Responsibility Act or the Industrial Site Recovery Act.

Question 14 Additional Environmental Sampling

To Kodak's knowledge, no other environmental sampling at the facility has been conducted other than the sampling activities previously described in the above responses. The borough of Fair Lawn has conducted groundwater monitoring of two municipal supply wells Numbers 23 and 24 located on or adjacent Kodak property.

Data from ;these wells are summarized in "Revised Final Interim Report for the Fair Lawn Wellfield, Bergen County, New Jersey" dated December 1996 by ICF Kaiser for USEPA.

Question 15 Monitoring, Production, Extraction Wells

a) Ten groundwater monitoring wells have been installed at the facility from 1990 to present. The sampling results for these groundwater monitoring wells are contained in the reports previously referenced.

i) through iv). The following summary table describes these groundwater monitoring wells. For additional details about these wells, copies of well construction logs are attached as Appendix VI.

Well ID	Date Installed	Depth (ft bgs)
MW-1	08/02/90	45
MW-2	03/28/97	33.86
MW-3	03/27/91	40.13
MW-4	03/28/91	36.33
MW-5*	03/28/91	36.23
MW-6	10/22/91	36.9
MW-7	10/24/91	35.85
MW-8	10/22/91	36.88
MW-9	10/24/91	39.1
MW-10	10/24/91	35.93

In addition to the groundwater monitoring wells on the facility, an irrigation well and Fair Lawn municipal supply well No. 24 were located on the facility. The irrigation well was located in the northwest corner of the property. This 10-inch diameter, 485-feet deep well was sealed by Summit Drilling on 12/16/92. A copy of the well abandonment report is attached as Appendix VII. Fair Lawn municipal well No. 24 is located adjacent to the facility along Drive. According to a 02/02/90 NJDEP Division of Water Resources Memorandum, this well has been sealed.

v) Due to building construction activities, monitoring well MW-5 was sealed by Wm. T. Hellings & Don, Inc. on 08/23/93. A copy of the well abandonment report is attached.

Question 16 Request for Information Contacts

The person answering this request for information is:
Torger N. Dahl, Esq.
Legal Department
Eastman Kodak Company
343 State Street
Rochester, New York 14650-0217
Phone: (716) 724-4899

The following personnel assisted in the preparation of the response to all questions relating to operations and history at the facility.

Site Operator Representative:
Mr. Michael Carten
HSE Coordinator
Qualex, Inc.
16-31 State Highway No. 208
Fair Lawn, New Jersey 07410
(201) 797-0600

Site Owner Representative:
Mr. Thomas Graham
Environmental Engineer
HSE Programs & Technology
Eastman Kodak Company
Rochester, New York 14652-6279
(716) 588-0776

As stated in response to Question 2, Kodak requests that correspondence relating to the facility be directed to:

Mr. Joseph Gabriel
HSE Programs & Technology
Eastman Kodak Company
Rochester, New York 14652-6279.

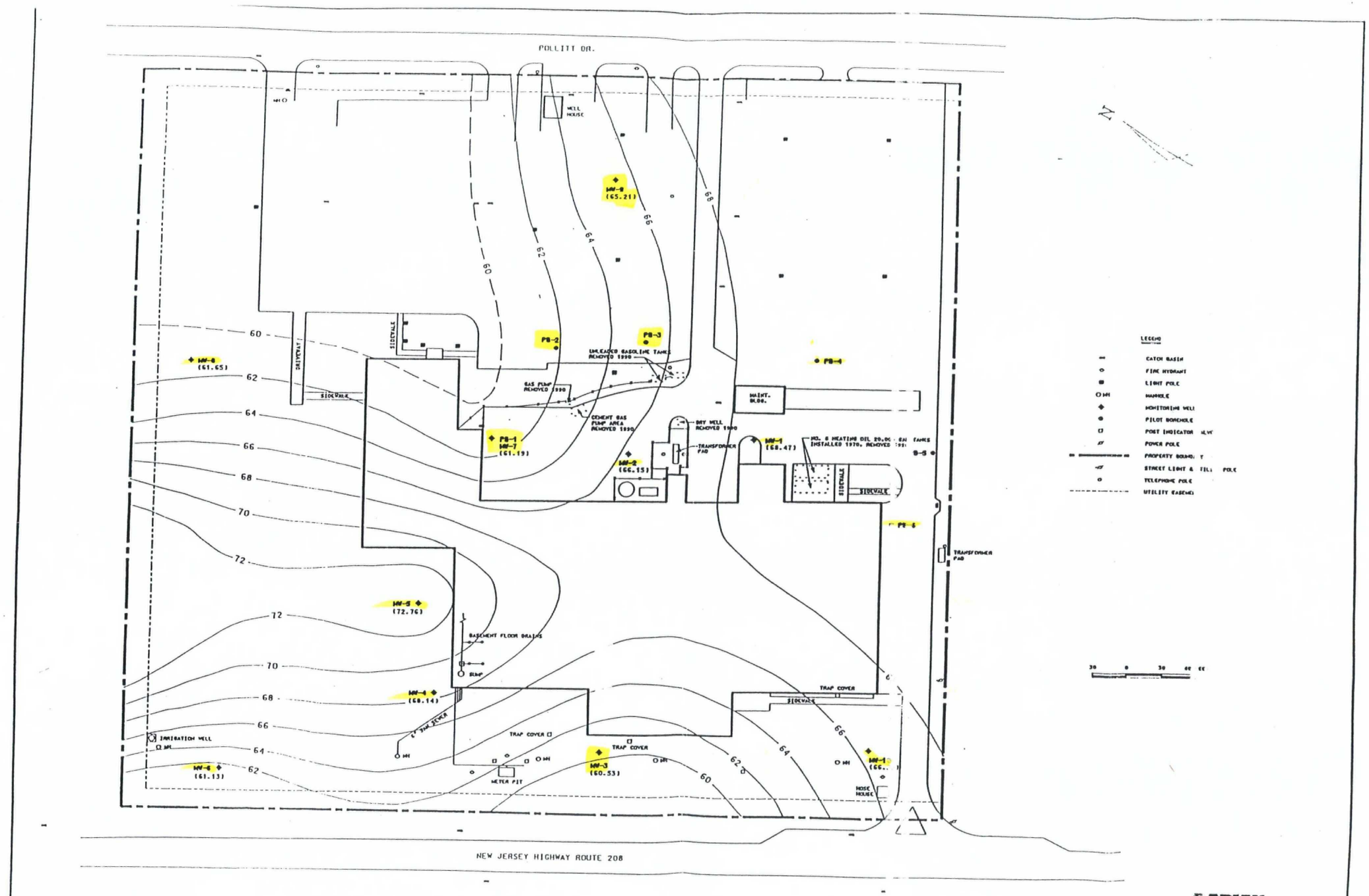

FIGURE 3
GR MO TER ELEVATION MAP
De mber 19, 1991

REVISION	RVSD	CHKD	APPL	DA

ADIAN
CORPORATION

PROJECT	246-080-01-11
SCALE	1" = 85'
DRAWN	D.O.D.
DATE	02/07/92

KODALUX
PROCESSING LABORATORY
FAIR LAWN, N.J.

TABLES

Table 1
Response to Question 4 Regarding Material Usage

SUBSTANCE	YES	NO
Trichloroethylene (TCE)		x
Tetrachloroethylene (PCE)		x
Carbon Tetrachloride		x
Cis - 1,2 - dichloroethylene		x
Trans - 1,2 - dichloroethylene		x
1, 1 - dichloroethylene		x
1, 1, 1 -trichloroethane (1, 1, 1 - TCA)	x	
1, 2 - dichloroethylene		x
Chloroform		x
1, 1 - dichloroethane		x
Methylene Chloride	x	
Trichloroethane	x	
Dichloro benzenes		x
Benzene		x[1]
Toluene		x[1]
Formaldehyde	x	
Ethyl Benzene		x[1]
BTEX (Benzene, Toluene, Ethylbenzene, Xylene)	x[2]	

Notes: [1]The facility used unleaded gasoline for refueling fleet vehicles until 1990. Benzene, toluene, ethylbenzene, and xylene (BTEX) are components of gasoline.
[2]A lacquer, which consisted of 50% xylene, was utilized in small quantity for coating movie film.

Table 2
Response to Question 6
Site Operations Waste Disposal Summary

Year/Volume	Waste Type	Transporter	TSDF	Treatment Method
1993 Less than 1.33 tons hazardous waste	Ignitable solvents and laboratory chemicals.	Pat Perretti Service, Inc. EPA ID NJD000692343 and Chem-met Services, Inc. EPA ID MID 096693194 and Chemical Conservation Corp. EPA ID FLD 980559728	Chemical Conservation of Georgia, Inc. EPA ID GAD093380814	Incineration
1993, continued	Non-hazardous waste photochemical sludge.	Free Hold Cartage, Inc. EPA ID NJD054126164 and JB Hunt Special Commodities, Inc. EPA ID ARD981908551	Chief Supply	Landfill
1994 Less than 1.33 tons hazardous waste	Non-hazardous waste photochemical sludge.	Detrex Corp. EPA ID NJD047318043 and St Joseph Motor Lines EPA ID PAD987358587	Chemtron Corporation EPA ID OHD066060609	Landfill
1995 Less than 1.33 tons hazardous waste	Solvents and laboratory chemicals.	Laidlaw Environmental Services, Inc. EPA ID MDD980554653	Laidlaw Environmental Services, Inc. EPA ID MDD980554653	Incineration
1995, continued	Non-hazardous waste photochemical sludge.	Naumee Express, Inc. EPA ID NJD986607380	Lancaster Oil Company EPA ID PAD987266749	Landfill
1995, continued	Non-hazardous waste photochemical sludge.	Clean Harbors Environmental Services, Inc. EPA ID MAD039322250	Clean Harbors of Conn., Inc. EPA ID CTD000604488	Landfill
1995, continued	Spent flammable solvents and oils.	Clean Harbors Environmental Services, Inc. EPA ID MAD039322250	Clean Harbors of Baltimore, Inc EPA ID MDD980555189	Incineration
1996 Less than 1.33 tons hazardous waste	Spent flammable solvents and oils, containerized in metal drums	Clean Harbors Environmental Services, Inc. EPA ID MAD 039322250	Clean Harbors of Baltimore, Inc EPA ID MDD980555189	Incineration
1996, continued	PCB ballast and capacitors.	Milea Truck Sales Corp. EPA ID NYD986987105	FulCircle Ballast Recyclers EPA ID NYD986980233	Recovery of ballasts and landfill
1996, continued	Non-hazardous waste photochemical sludge.	Naumee Express, Inc. EPA ID NJD986607380 and Clean Harbors Environmental Services, Inc. EPA ID MAD 039322250	Connecticut Waste Oil, Inc. EPA ID CTD018844050 and Clean Harbors of Conn., Inc. EPA ID CTD000604488	Landfill

Table 3
Response to Question 6
Site Investigation/Corrective Action Waste Disposal Summary

Generator's Agent	Waste Type/ Containers	Waste Management	Transporter	TSDF	Treatment Method
CA Rich Consultants, Inc.	Excavated petroleum contaminated soil, staged on plastic, covered with plastic	Segregated pile, northwest corner of paved parking lot	Buffalo Fuel Corp. EPA ID NYD051809952	Modern Landfill EPA ID NYD051817682	Landfilled
CA Rich Consultants, Inc. and Radian Corp.	Excavated contaminated soil from dry well, staged on plastic, covered with plastic	Segregated pile, northwest corner of paved parking lot	Hazmat Environmental Group EPA ID NYD980769947	CWM Chemical Services, Inc. EPA ID NYD049836679	Landfilled
Radian Corp.	Drill cuttings and debris place in metal and fiber drums	Containers were staged in northwest corner of paved parking lot	Hazmat Environmental Group EPA ID NYD980769947	Eastman Kodak Company EPA ID NYD980592497	Incineration
Radian Corp.	Groundwater monitoring well development and purge water	Containers were staged in northwest corner of paved parking lot	Hazmat Environmental Group EPA ID NYD980769947	Eastman Kodak Company EPA ID NYD980592497	Incineration or chemical, physical or biological treatment

APPENDIX I

CHEMICAL COMPOSITION OF PHOTOGRAPHIC PROCESSING SOLUTIONS

Chemical Composition of Photographic Processing Solutions

There is great concern today that waste effluents from all areas of our society be as "clean" as possible. Sanitary engineers, regulating and environmental control agencies, municipal waste-treatment plants, and others concerned with ecology are implementing this concern by asking questions about wastes in general. These wastes may include those from photographic processing. Even though the wastes may be discharged into a municipal waste-treatment plant, an engineer or administrator may wish to know the types of solutions used (developers, stop baths, fixers, etc) and the general composition of each. The table in this publication attempts to provide such information in a meaningful form. For broader coverage it includes some chemicals that are not present in Kodak packaged processing chemicals. The table does not list all chemicals in all processing solutions, but it is sufficient to relate the types and approximate concentrations of most commonly used chemicals. No one processing solution necessarily contains all of the chemicals listed in any one category of the table. The listing of a chemical simply means that it may be present and, if so, it is probably in the range of concentration shown. Sodium hydroxide and sulfuric acid, for example, are not shown in the table, though they may have been used in preparing the solutions. Those two chemicals are usually of little consequence in waste effluents.

A few chemicals are classified as a group (antifoggants, for example). Sequestering agents and polyglycols are also listed as separate groups of compounds rather than as specific formulas. The latter two are widely used in the chemical industry and in many household products.

Some chemicals are listed in more than one concentration range in the tables. When they are commonly used over a very broad range of concentrations, the tables will show this when it is applicable. It is customary for processors to discharge several processing solutions simultaneously, together with wash waters. This combined with other wastes contributes to the concentrations of each chemical. The mixture of wastes generally has a pH range 6.5 to 9.5.

The tabulation presented here is for those chemicals used for processing. Trace amounts of chemicals that may be leached out of the film or paper emulsion during processing are not included, except for the bromide ion and the silver thiosulfate complex ion listed under "Fixing Baths."

The amounts of processing wastes discharged in any given period of time depend upon the amounts of papers and films processed. Also to be considered is the amount of other water wastes that flow into the same sewer system.

Common methods of measuring waste loads are by tests such as biochemical oxygen demand (BOD) or chemical oxygen demand (COD). Approximation of the waste load from photographic processing chemicals can be made by use of the tables in the Kodak publication No. J-41, *BOD_5/COD*. Waste disposal information is available in other publications listed in this publication.

General Composition of Photographic Processing Solutions

Table I • Applies generally to black-and-white, color, and graphic arts processing solutions

Type of Solution and pH Range	Concentration Range in Grams per Liter		
	less than 1	1 to 10	10 to 100
Activators pH 11 to 14	Antifoggant	Sequestering agent Tetramethylammonium chloride	Carbonate 2-Diethylaminoethanol 2-Methylaminoethanol Phosphate Sulfite Urea
Bleach-Fixers pH 6 to 8		Ferrous and ferric EDTA complexes Accelerators	Ammonium Ferric ethylenediamine-tetraacetate (FeEDTA) Sulfite Thiosulfate
Clearing Baths and Washing Agents pH 5 to 10	Citrate Hydroquinone Sequestering agent		Sulfate Sulfite
Color Developers pH 10 to 12	Antifoggant Citrazinic acid Iodide 1-phenyl-3-pyrazolidone Thiocyanate Boron hydrides	Benzyl alcohol Borate Bromide Citrazinic acid, sodium salt Color developing agents Coupling agent Ethylenediamine Hydroxylamine Polyglycols Sequestering agent Sulfate Sulfite	Benzyl alcohol Borate Carbonate Developing agent Phosphate Sulfate Sulfite
Black-and-White Developers pH 9 to 12	Antifoggant Bromide Ethylenediamine Sequestering agent Iodide Pyrazolidone developing agents	Acetate Borate Bromide Carbonate Catechol Citrate Ethylenediamine Glutaraldehyde Hydroquinone Metacresol Pyrazolidone developing agents Phosphates Polyglycols Sequestering agents p-Methylaminophenol sulfate Sulfite Thiocyanate	Aminoethanol Carbonate Chloride Diaminopropanol Ethyleneglycol Formaldehyde Hydroquinone Methylaminoethanol Polyethylene glycols Sequestering agent Sulfite Imino diethanol Tetramethylammonium Borate
Dichromate Bleaches pH 0 to 3		Aluminum Dichromate Sulfate	Acetate Bromide
Ethylenediaminetetra-acetic Acid Bleach pH 5 to 9		EDTA Accelerators	Acetate Ammonium Borate Ferric EDTA (greater than 100) Nitrate

Type of Solution and pH Range	Concentration Range in Grams per Liter		
	less than 1	1 to 10	10 to 100
Ferric Chloride Bleaches pH 0 to 1		Citrate	Ferric choride Citrate
Ferricyanide Bleaches pH 5 to 8		Bicarbonate Nitrate Polyglycols Borate	Bromide Ferricyanide Ferrocyanide Phosphates
Fixers pH 4 to 8		Acetate Aluminum Bicarbonate Bisulfite Borate Bromide Citrate Formalin Sequestering agent Silver thiosulfate complex Sulfate Thiocyanate	Acetate Aluminum Ammonium Borate Bromide Chloride Citrate Sulfite Thiocyanate Thiosulfate
Hardeners, Prehardeners pH 3 to 10	Antifoggant Chromium, trivalent Glycine* p-Toluenesulfinic acid	Aluminum Carbonate Formalin Sequestering agent Succinaldehyde Sulfite Trivalent chromium	Acetate Sulfate
Monobaths pH 10 to 11	Antifoggant	Bromide Sequestering agent.	Borate Hydroquinone Sulfite Thiosulfate Carbonate
Neutralizers pH 4 to 6	Hydroquinone Sequestering agent	Acetate p-Toluenesulfinic acid	Bromide Citrate Hydroxylamine sulfate Sulfate Formate
Reversal Bleach pH 1		Dichromate	Sulfamic acid Sulfate
Stabilizers pH 4 to 5	Benzoate Wetting agent	Aluminum Antifoggant Benzoate Citrate Phosphate Sequestering agent Sulfate Sulfite	Acetate Ammonium Bicarbonate Bisulfite Formaldehyde Phosphate Sulfate Thiocyanate (> 100)—Not present in color process stabilizers.
Stop Baths pH 2 to 4		Aluminum Borate Citrate	Acetate Diethylene glycol Phosphate Sulfate Benzyl Alcohol

*Amino acetic acid, not parahydroxyphenyl glycine which is known commonly as "photographic-grade glycine."

APPENDIX II

COMPENDIUM OF ATTACHED REPORTS

COMPENDIUM OF ATTACHED REPORTS

The results of the subsurface investigation activities for the facility are presented in the following reports. Copies of the reports are attached.

- July 1990, Basement Floor Drain Subsurface Investigation
  Prepared by CA Rich Consultants, Inc.

- October 3, 1990, Discharge Investigation and Corrective Action Report
  Prepared by CA Rich Consultants, Inc.

- October 29, 1990, Soil Vapor Investigation and Groundwater Monitoring Results
  Prepared by Radian Corporation

- October 1990, Solvent Storage Room Floor Resurfacing and Dry Well Removal
  Prepared by CA Rich Consultants, Inc.

- September 9, 1991, Final Groundwater Report
  Prepared by Radian Corporation

- February 7, 1992 Phase II Groundwater Investigation Report
  Prepared by Radian Corporation

- August 1992, Groundwater Sampling Results
  Memorandum to Jamie MacBlane, NJDEP from Joseph Gabriel, Kodak

- 1993, Groundwater Sampling Results
  Prepared by Radian Corporation

April 23, 1993

Jamie A. MacBlane
New Jersey Department of Environmental Protection
Division of Hazardous Waste Management
2 Babcock Place
West Orange, NJ 07052

Dear Ms. MacBlane:

Subject: Kodalux Processing Laboratory - Fair Lawn, NJ: Groundwater Sampling Results - September 1992

Enclosed you will find the analytical results from the September 1992 groundwater sampling event conducted at the Kodalux Processing Laboratory in Fair Lawn, NJ. Specifically, the following information is enclosed:

- Table 1 - Organic Compounds Detected in Kodalux Monitoring Wells
- Table 2 - Inorganic Results for Kodalux Monitoring Wells
- Table 3 - Groundwater Elevation Data
- Table 4 - Field Data for Kodalux Monitoring Wells
- Figure 1 - Groundwater Elevation Contour Map
- Raw Analytical Laboratory Reports

We apologize for the delay of this information transmittal. The new Eastman Kodak groundwater contact for this project is Ms. Judy Ausmus. We expect to submit additional correspondence regarding Fair Lawn groundwater issues to your office within the next two weeks.

If you have any questions regarding this information submittal, please feel free to contact Ms. Ausmus at (716) 726-0827.

Sincerely,

Judith E. Ausmus for

Joseph G. Gabriel
Corporate Environment

JGG:JEA/flnjgw.doc
Enclosure

cc: B. Hudzik - Kodalux

Kodak
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bc: J. Ausmus
D. Bradfield
T. Dahl
D. Fite
H. Lockhart
R. Spiegel

Table 1

Organic Compounds Detected in Kodalux Monitoring Wells - September 1992

Analyte	Method	Labs	Detection Limit* (µg/L)	Results (µg/L)													
				MW-1	MW-1 (DUP)	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Equipment Blank	Trip Blank	Prep Blanks and Method Blanks
Base - Neutral and Acid Extractable Organics (BNAE)	EPA 625	Recra															
Pyrene			1.9	-	NT	4.8	NT	NT	NT	NT	-	NT	NT	NT	NT	NT	-
Tentatively Identified BNAE Compounds	EPA 625	Recra															
Unknown (Scan #406)			c	13	NT	-	NT	NT	NT	NT	-	NT	NT	NT	NT	NT	-
Unknown (Scan #1274)			c	-	NT	6.1	NT	NT	NT	NT	-	NT	NT	NT	NT	NT	-
Unknown Acid (Scan #1487)			c	-	NT	6.4	NT	NT	NT	NT	-	NT	NT	NT	NT	NT	-
Dimethyl Phenanthene Isomer (Scan #1546)			c	-	NT	6.5	NT	NT	NT	NT	-	NT	NT	NT	NT	NT	-
Unknown (Scan #1634)			c	-	NT	12	NT	NT	NT	NT	-	NT	NT	NT	NT	NT	-
Unknown (Scan #1997)			c	-	NT	7.4	NT	NT	NT	NT	-	NT	NT	NT	NT	NT	-
Hydroquinone	EPA 625	Recra	10	-	NT	-	NT	NT	NT	NT	-	NT	NT	NT	NT	NT	-
Volatile Organics	EPA 624	Recra															
Chloroethane			10	-	-	11	-	-	-	-	-	-	-	-	-	-	-
Chloroform			1.6	4.4	4.4	1.7	-	-	-	23	-	-	2.8	-	-	-	-
1,1-Dichloroethane			4.7	20	20	110	93	-	9.8	-	-	-	-	-	-	-	-
1,1-Dichloroethene			2.8	7.7	8.6	320	330	-	-	-	9.9	-	-	-	-	-	-
1,2-Dichloroethene (total)			1.6	-	-	-	1.8	-	-	-	-	-	3.0	-	-	-	-
Carbon Tetrachloride			2.8	-	-	-	-	-	-	-	-	-	-	-	32	-	-
1,1,1-Trichloroethane			3.8	48	46	7900	1300	-	8.0	8.0	95	19	-	-	-	-	-
Trichloroethene			1.9	3.2	2.6	-	-	-	-	-	-	-	8.6	-	-	-	-
Vinyl Chloride			10	-	-	-	29	-	-	-	-	-	-	-	-	-	-

e:\dmp\sept.kodalux.g

Table 1

(Continued)

Analyte	Method	Labs	Detection Limit[a] (µg/L)	Results (µg/L)													
				MW-1	MW-1 (DUP)	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Equipment Blank	Trip Blank	Prep Blanks and Method Blanks
Tentatively Identified Volatile Compounds	EPA 624	Recra	c	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Formaldehyde	NIOSH 3500	Recra	100	-	-	-	1500	230	1500	300	510	-	-	-	-	-	-
Petroleum Hydrocarbons	EPA 418.1	Recra	500	22400	NT	880	NT	NT	NT	NT	600	NT	NT	NT	NT	NT	-

Analysis performed by Recra Environmental, Inc.

[a] Method Detection Limits (MDLs) as reported by Recra. Reported MDLs are less than or equal to Contract Required Quantitation Limits (CRQLs). Detection limits are analyte specific, and correspond to those listed in 40 CFR Part 136.

[c] Tentatively identified compound (TIC) concentrations are estimated based on EPA recommended procedures.

- Not detected above the detection limit.

NT Not analyzed for this constituent.

Associated Client Sample ID:

MW-1, 92092801
MW-1 (DUP), 92092811
MW-2, 92092802
MW-3, 92092803
MW-4, 92092804
MW-5, 92092805
MW-6, 92092806
MW-7, 92092807
MW-8, 92092808
MW-9, 92092809
MW-10, 92092810
Equipment Blank, 92092812
Trip Blank, 92092813

Table 2

Inorganics Results for Kodalux Monitoring Wells - September 1992

Analyte	Method	Lab	Detection Limit[a]	Results (mg/L)													
				MW-1	MW-1 (DUP)	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Equipment Blank	Trip Blank	Prep Blanks and Method Blanks
Total Cyanide	EPA 9010	Recra	0.010	0.0083	-	0.014	0.15	-	-	0.014	0.018	-	-	-	NT	NT	-
Total Chromium	EPA 218.1	Recra	0.010[b]	-	-	-	0.012	0.035	0.010	-	0.025	-	-	-	NT	NT	-
Hexavalent Chromium	EPA 7195	Recra	0.010	-	-	-	-	-	-	-	0.025	-	-	-	NT	NT	-

Analysis performed by Recra Environmental, Inc.

[a] Recra detection limits reported are Instrument Detection Limits (Metals) and Contract Required Quantitation Limits (Cyanide). Total Chromium and Total Cyanide detection limits meet the NYS ASP Superfund CRQLs for these analytes.

[b] The EPA method - listed detection limit is 0.05 mg/L.

- Not detected above the detection limit.

NT Not analyzed for this constituent.

Associated Client Sample ID:

MW-1, 92092801
MW-1 (DUP), 92092811
MW-2, 92092802
MW-3, 92092803
MW-4, 92092804
MW-5, 92092805
MW-6, 92092806
MW-7, 92092807
MW-8, 92092808
MW-9, 92092809
MW-10, 92092810

Table 3

Groundwater Elevation Data

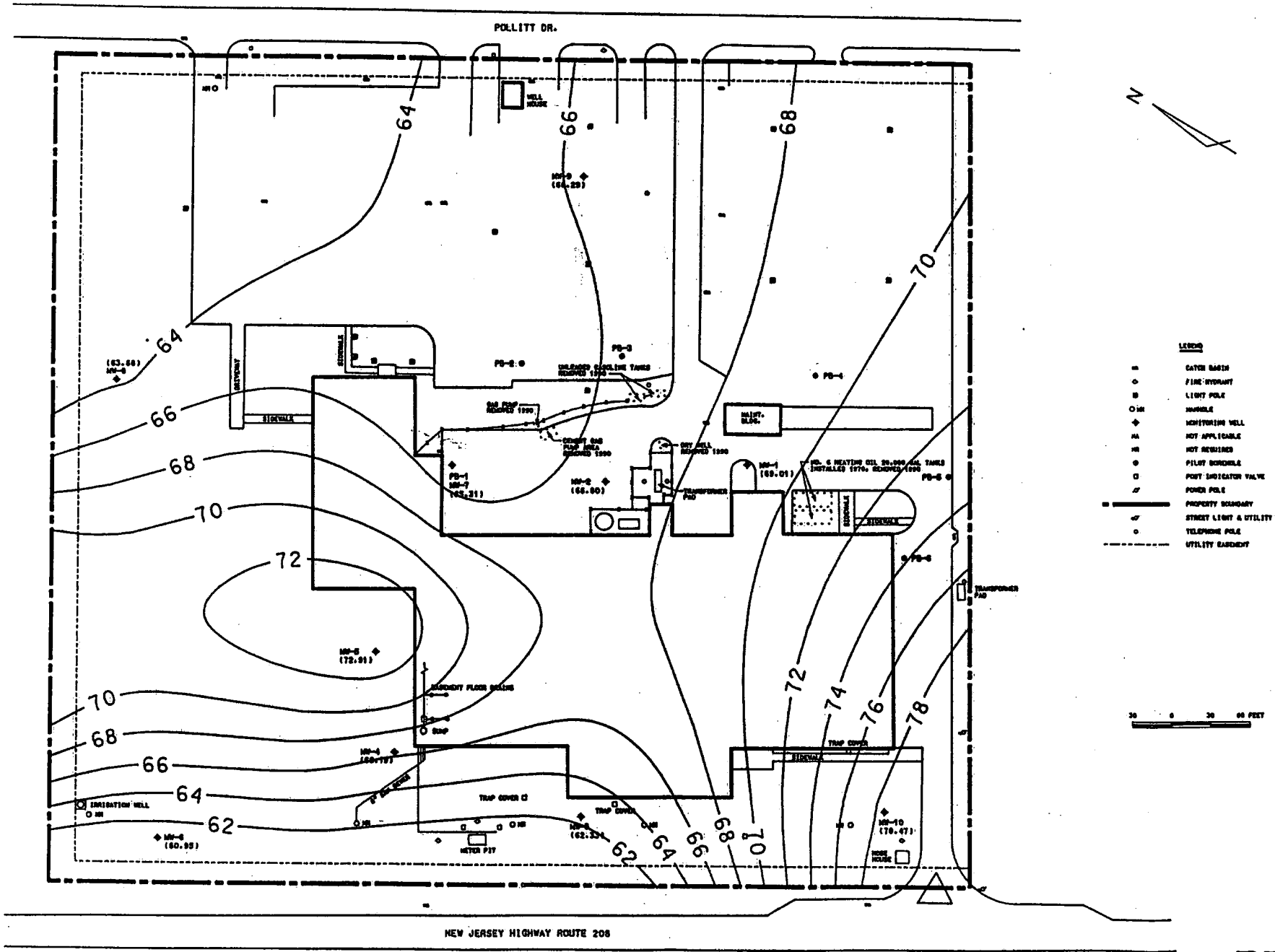
Well ID	Groundwater Elevation (ft) 9/29/92
MW-1	69.01
MW-2	66.80
MW-3	62.33
MW-4	66.19
MW-5	72.91
MW-6	60.95
MW-7	65.31
MW-8	63.68
MW-9	66.29
MW-10	78.47

Table 4

Field Data for Kodalux Monitoring Wells

Well ID	Depth to Water	Vol Purge	pH	Temp °C	Cond. (uS)
MW-1	25.64 ft	55 gal (dry)	7.27	15.0	4330
MW-2	26.70 ft	15 gal (dry)	not measured	not measured	not measured
MW-3	32.93 ft	10 gal (dry)	7.08	14.9	2130
MW-4	27.50 ft	11 gal (dry)	6.85	15.0	935
MW-5	21.75 ft	24 gal (dry)	6.28	16.0	2000
MW-6	27.20 ft	13 gal (dry)	6.80	16.1	736
MW-7	28.0 ft	10 gal (dry)	7.84	17.0	7290
MW-8	24.70 ft	18 gal (dry)	7.27	14.1	451
MW-9	24.95 ft	36 gal (dry)	7.85	15.5	6380
MW-10	17.70 ft	21 gal (dry)	6.76	14.7	765

Field Notes:
(dry) purged to near dryness.



RADIAN CORPORATION

REVISION	RVSD	CHKD	APPD	DATE	PROJECT	246-101-01-20
					SCALE	1" = 65'
					DRAWN	D.O.D.
					DATE	10/19/92

SEPTEMBER 1992
SAMPLING EVENT

KODALUX
PROCESSING LABORATORY
FAIR LAWN, N.J.

August 24, 1992

Ms. Jamie MacBlane
New Jersey Department of Environmental Protection
Division of Hazardous Waste Management
2 Babcock Place
West Orange, NJ 07052

Dear Ms. MacBlane:

Re: **KODALUX PROCESSING LABORATORY, FAIR LAWN, NJ**
JUNE 1992 GROUNDWATER SAMPLING RESULTS

Enclosed are the results of groundwater sample analyses and groundwater elevation measurements from the June 1992 sampling event at the Kodalux Processing Laboratory, Fair Lawn, New Jersey. We have provided the laboratory analytical reports, tabulated test results, groundwater sampling measures, groundwater elevations, and a groundwater contour map for your review. Monitoring well 9 was not sampled during this event due to inaccessibility. This well will be sampled during the September 1992 sampling event.

Summary of Results

A summary of the organic compounds detected in Kodalux monitoring wells in June, 1992 is presented in Table 1. As illustrated in the Table, no Base Neutral Acid Extractables (EPA Method 625) were detected above the Contract Required Quantitation Limits (CRQLs) and no identifiable Tentatively Identified Compounds (TICs) were reported. In addition, TRPH were not detected in monitoring wells at the site, except for well MW-2, which had 0.9 mg/L TRPH. Hydroquinone was not identified above its estimated detection limit of 12 ug/L. The volatile organic compounds (VOCs) detected in the June, 1992 round are comparable to previous rounds, but in most cases, the concentrations of these compounds are greatly decreased from previous rounds. The highest concentration of VOCs were detected in wells MW-1, MW-2, located near the former facility "dry well". Other wells contained significantly fewer compounds at much lower concentrations than MW-1 and MW-2.

A summary of the inorganic compounds detected in monitoring wells in June, 1992 is presented in Table 2. The Total Silver results (EPA Method 7760) were either not detected, or below the Federal Drinking Water Standards Maximum Contaminant Level (MCL) and/or New Jersey MCL. This is consistent with previous sampling events. Total Cyanide, Total Silver, Total and Hexavalent Chromium were not detected in wells MW-1, MW-2, MW-6, and MW-8. Other monitoring wells contained some of these compounds at levels slightly above the limits of detection.

The field data collected during the sampling of monitoring wells is summarized in Table 4. The pH of groundwater ranged from 6.0 to 7.0 and the electrical conductivity ranged from 172 to 1180, within the normal range for groundwater in this area.

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A tabulation of groundwater elevation data is provided in Table 3. Groundwater elevations were measured in all monitoring wells on June 11, 1992 and July 16, 1992. The June, 1992 data have been contoured on the attached figure. These groundwater data are consistent with data presented in the Phase II Kodalux Groundwater Investigation Report (February 7, 1992). Groundwater flow is generally from southeast to northwest across the site, but is strongly influenced by the configuration of the bedrock surface beneath the facility.

DICAR Investigation

With these test results, activities for the fuel oil discharge investigation have been completed in accordance with NJDEP procedures. Reporting requirements and immediate cleanup requirements were addressed and summarized in a DICAR prepared by CA Rich Consultants, Inc. dated October 3, 1990. Discharge mitigation requirements were addressed in the Final Investigation Report (September 9, 1991) and the Phase II Groundwater Investigation Report (February 7, 1992). Closure of Case Number 90 05 22 1638 is requested based on the following findings:

- Soils containing fuel oil in the vicinity of the former storage tanks have been excavated by CA Rich Consultants, Inc.

- The June 1992 round of groundwater analyses did not indicate Base Neutral Acid Extractables (EPA Method 625) in any wells at the site. Moreover, TRPH was only detected in well MW-2, at a concentration below a part per million. Furthermore, no free-product was noted in monitoring wells in June or July 1992, nor was it noted in any of the 6 pilot borings performed in the Phase II Groundwater Investigation.

Dry Well Investigation

As we discussed in our May 18, 1992 meeting at the Kodalux facility, and in a follow-up letter (Gabriel to MacBlane, NJDEP; May 27, 1992), Kodak will be sampling monitoring wells at the site in September, 1992. However, since several classes of compounds have not been detected in monitoring wells at the facility, we will be eliminating them from the current list of analytes. The compounds to be removed from the current list are: Base Neutral Acid Extractables (EPA Method 625), Hydroquinone, Total Silver, and, since closure of the DICAR is requested, TRPH. The list of analytes for the September, 1992 sampling round will be:

- Volatile organics by EPA Method 624, including o-, m-, and p-xylenes, plus the identification of the 15 highest non-targeted compounds, and the total number of peaks report;

- Formaldehyde by modified NIOSH Method 3500;

- Total Chromium by EPA Method 218.1;

- Hexavalent Chromium by EPA Method 7195; and

- Total Cyanide by EPA Method 9010.

We will be contacting the NJDEP at least two weeks in advance of the September, 1992 sampling event. If you have any questions or concerns in regard to this project please do not hesitate to call me at (716) 588-4369 or Mr. Gary Costanzo of my staff at (716) 588-5441.

Sincerely,

Gary V. Costanzo for JGG

Joseph G. Gabriel
Unit Director, Environmental Services
Corporate Environment

JGG/gvc \fairlawn\mcbln824.ltr

bc (letter & tables only):

T. Lee
H. Lockhart
G. Costanzo
T. Dahl
D. Bradfield
D. Fite, CREO
B. Hudzik, Kodalux Lab.
Radian Corp.

Table 1

Organic Compounds Detected in Kodalux Monitoring Wells - June 1992

Analyte	Method	Labs	Detection Limit[a] (µg/L)	Results (µg/L)													
				MW-1	MW-1 (DUP)	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Equipment Blank	Trip Blank	Prep Blanks and Method Blanks
Base - Neutral and Acid Extractable Organics (BNAE)	EPA 625	Recra	b	-	-	-	-	-	-	-	-	-	NS	-	-	-	-
Tentative Identified BNAE Compounds[d]	EPA 625	Recra															
Unknown (Scan #442)			c	-	-	-	-	-	-	-	9.6	-	NS	-	-	-	-
Unknown Acid (Scan #1416)			c	-	-	-	-	-	-	-	-	-	NS	-	-	-	10
Unknown hydrocarbon (Scan #1541)			c	-	-	-	-	-	-	-	-	-	NS	-	-	-	20
Unknown Hydrocarbon (Scan #1545)			c	-	-	-	-	-	-	-	-	-	NS	-	-	-	11
Unknown (Scan #1562)			c	-	-	-	-	-	-	-	-	-	NS	-	-	-	20
Hydroquinone	EPA 625	Recra	12	-	-	-	-	-	-	-	-	-	NS	-	-	-	-
Volatile Organics	EPA 624	Recra															
Benzene			4.0	-	-	-	0.8J	-	-	-	-	-	NS	-	-	-	-
Chloroethane			10	6J	6J	10	-	-	-	-	-	-	NS	-	-	-	-
Chloroform			1	2	2	2	-	-	-	12	-		NS	-	-	-	-
1,1-Dichloroethane			4	22	22	48	9	2J	-	-	0.8J	1J	NS	-	-	-	-
1,1-Dichloroethene			2	6	7	170	10	-	-	-	6	9	NS	-	-	-	-
Tetrachloroethene			4	-	-	0.7J	-	-	-	-	-	-	NS	-	-	-	-

Table 1

(Continued)

Analyte	Method	Labs	Detection Limit[a] (µg/L)	Results (µg/L)													
				MW-1	MW-1 (DUP)	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Equipment Blank	Trip Blank	Prep Blanks and Method Blanks
1,1,1-Trichloroethane			5.0	110	110	4700	55	2J	-	6	70	89	NS	-	-	-	-
Trichloroethene			1.0	1	1	-	-	-	-	-	-	-	NS	-	-	-	-
Vinyl Chloride			10	-	-	2J	6J	-	-	-	-	-	NS	-	-	-	-
Tentatively Identified Volatile Compounds[d]	EPA 624	Recra	b	-	-	-	-	-	-	-	-	-	NS	-	-	-	-
Formaldehyde	NIOSH 3500	Recra	120	-	-	-	180	-	610	-	-	-	NS	-	-	-	-
Petroleum Hydrocarbons	EPA 418.1	Recra	500	-	-	900	-	-	-	-	-	-	NS	-	-		-

Analysis performed by Recra Environmental, Inc.

[a] Method Detection Limits (MDLs) as reported by Recra. Reported MDLs are less than or equal to Contract Required Quantitation Limits (CRQLs).

[b] Detection limits are analyte specific.

[c] Tentatively identified compound concentrations are estimated based on EPA recommended procedures for TIC identifications.

[d] Results for tentatively identified compounds are estimated.

J Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

- Not detected above the detection limit.

NS Not sampled due to monitoring well inaccessability.

Associated Client Sample ID:

MW-1, 92061209
MW-1 (DUP), 92061210
MW-2, 92061208
MW-3, 92061202
MW-4, 92061203
MW-5, 92061204
MW-6, 92061205
MW-7, 92061207
MW-8, 92061206
MW-10, 92061201
Equipment Blank, 92061211

Table 2

Inorganics Results for Kodalux Monitoring Wells - June 1992

Analyte	Method	Lab	Detection Limit	Results (mg/L)													
				MW-1	MW-1 (DUP)	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Equipment Blank	DI Water or Trip Blank	Prep Blanks ans Method Blanks
Total Cyanide	EPA 9010	Recra	0.010	-	-	-	0.034	-	0.010	-	-	-	NS	0.14	-	NA	-
Total Silver	EPA 7760	Recra	0.010	-	-	-	-	0.012	-	-	-	-	NS	0.013	-	NA	-
Total Chromium	EPA 7190	Recra	0.010	-	-	-	-	0.024	-	-	0.034	-	NS	-	-	NA	-
Hexavalent Chromium	EPA 7190	Recra	0.010	-	-	-	-	-	-	-	0.033	-	NS	-	-	NA	-

Analysis performed by Recra Environmental, Inc.
[a] Detection limits reported are Instrument Detection Limits (Metals) and Contract Required Quantitation Limits (Cyanide).
- Not detected above the detection limit.
NA Sample Trip Blank or DI Water was not analyzed for Inorganic Constituents.
NS Not sampled due to monitoring well inaccessability.

Associated Client Sample ID:

MW-1, 92061209
MW-1 (DUP), 92061210
MW-2, 92061208
MW-3, 92061202
MW-4, 92061203
MW-5, 92061204
MW-6, 92061205
MW-7, 92061207
MW-8, 92061206
MW-10, 92061201
Equipment Blank, 92061211

Table 3

Groundwater Elevation Data

Well ID	Groundwater Elevation (ft)	
	6/11/92	7/16/92
MW-1	75.70	67.95
MW-2	69.50	67.90
MW-3	68.36	61.86
MW-4	69.35	68.49
MW-5	72.98	71.96
MW-6	62.57	60.85
MW-7	67.91	65.21
MW-8	65.46	63.38
MW-9	71.60	66.54
MW-10	80.47	77.97

Table 4

Field Data for Kodalux Monitoring Wells

Well ID	Depth to Water	Vol Purge	pH	Temp °C	Cond. (µS)	Recovery Rate
MW-1	18.95 ft	30 gal	7.0	20	510	not measured
MW-2	24.00 ft	30 gal (dry)	6.5	21	530	not measured
MW-3	26.90 ft	18 gal (dry)	7.0	17	540	medium
MW-4	24.34 ft	17 gal (dry)	6.0	16	1850	not measured
MW-5	21.68 ft	23 gal (dry)	6.0	16.5	1180	medium
MW-6	25.58 ft	17 gal (dry)	6.5	16	610	not measured
MW-7	25.40 ft	14 gal (dry)	7.0	18	570	slow
MW-8	22.92 ft	23 gal (dry)	7.0	14.5	282	not measured
MW-9	19.64 ft	28 gal (dry)				fast
MW-10	15.70 ft	30 gal (dry)	6.5	20	172	fast

Field Notes:
MW-1 to avoid ruining the e-line with oil, recovery data was not collected.
MW-2 to avoid ruining the e-line with oil, recovery data was not collected.
MW-9 not sampled because cars were parked over it.
(dry) purged to near dryness.

Soil Vapor Investigation
and Groundwater Monitoring Results
Kodalux Processing Laboratory
Fair Lawn, New Jersey

Prepared for:

Mr. Dick Spiegel
Environmental Technical Services
Health and Environment Laboratories
Eastman Kodak Company
Rochester, New York

Prepared by:

Radian Corporation
155 Corporate Woods
Suite 100
Rochester, New York
14623
(716) 292-1870

October 29, 1990

RADIAN INTERNATIONAL LLC

RADIAN CORPORATION

RECEIVED MAR 2 4 1997

155 Corporate Woods
Suite 100
Rochester, New York 14623
(716)292-1870
FAX: 716-292-1878

October 29 1990

Mr. Dick Spiegel
Environmental Technical Services
Health and Environment Laboratories
Eastman Kodak Company
Rochester, New York 14650

Dear Dick,

Enclosed are four copies of Radian's final report on the activities conducted at the Fair Lawn, New Jersey site. If you should have any questions or require further information, do not hesitate to contact me at this office.

We enjoyed working with you on this project and look forward to assisting on other projects as needed.

Sincerely,

Toby Walters

Toby Walters
Program Manager

cc: J.Gabriel

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Appendix A - Soil Vapor Raw Analytical Data

Appendix B - Monitoring Well Laboratory Report

EXECUTIVE SUMMARY

Radian Corporation was contracted by Eastman Kodak Company to conduct a subsurface vapor investigation and collect a monitoring well sample at the Kodalux Processing Laboratory (Qualex) located in Fair Lawn, New Jersey. The investigation took place 24 through 26 September 1990. The purpose of this investigation was to provide subsurface data on the identity and concentrations of chemical compounds in specific areas of chemical use and processing. Results from the soil vapor investigation and monitoring well analyses are summarized below.

Soil Vapor Investigation Results

Organic vapors were detected in five of 24 soil bores; identified as 1, 7, 10, 14, and 23. Plate 1 shows the bore locations and organic vapor results. Drilling was completed by Target Environmental Services, Inc. The analysis was performed by Target personnel using a field gas chromatograph. The results of the soil vapor investigation are summarized below:

- 1, 1, 1 TCA was detected at 11,000 parts per billion vapor (ppbv) in bore 23 and at 722 ppbv in bore 1. Both of these bores are located in the area of the former dry well along the eastern side of the building near the loading dock.
- TCE was detected at 171 ppbv in bore 7 located six feet south of the former underground gasoline tank excavation. TCE was also detected at a concentration of 546 ppbv in bore 14 located on the west side of the building near the cafeteria.
- Toluene and xylene were detected in bore 7. Vapor concentrations were 705 ppbv toluene and 342 ppbv xylene.
- Small concentrations of unknown volatiles were detected in bore 10 as well as in some of the bores where other known volatiles were detected.

Four vapor bores (15, 16, 17, and 18) were screened for formaldehyde in addition to the GC analysis. These bores are near the location of the basement floor drains. No formaldehyde was detected in the soil vapor at any of these four bores.

Monitoring Well Results

At the time of the investigation, Monitoring Well No. 1 was sampled by Radian. The location of the monitoring well is shown in Plate 1. Analytical work was performed by York Wastewater Consultants, Inc. The results of the analytical work performed on the water sample are summarized below:

- Volatile organics (EPA Method 8240)

  1,1,1 TCA was detected at 41 ppb in the water sample. TCA was not detected in the accompanying trip blank. Acetone was detected at 920 ppb in the water sample, but was also detected in the trip blank at 25 ppb, indicating laboratory contamination of acetone resulted. No other volatile organics were detected within the instrument detection limit using this method.

- Silver (ICPES)

  Silver was detected at 16.5 ppb in the groundwater sample.

- Hydroquinone (EPA Method 8270)

  Hydroquinone was not detected in the groundwater sample.

- Formaldehyde (modified Para-Rosanaline calorimetric method)

  Formaldehyde was not detected in the groundwater sample.

- Cyanide (EPA Method 335.3)

  Cyanide was not detected in the groundwater sample.

1.0 INTRODUCTION

Radian Corporation was contracted by Eastman Kodak Company to conduct a subsurface vapor investigation of the Kodalux Processing Laboratory (Qualex) located in Fair Lawn, New Jersey. The investigation took place 24 through 26 September 1990. The purpose of this investigation was to provide subsurface data on the identity and concentrations of volatile organic compounds (VOC's) and formaldehyde in specific areas of chemical use and processing. Results from the survey are discussed in this final report.

2.0 SITE SETTING

Location

The Kodalux facility is located at 16-31 Route 208, in the Town of Fair Lawn, Bergen County, New Jersey. The facility consists of one main processing building which opened in 1954 with an addition built to the north in 1974. In addition, a maintenance garage exists east of the main building. Plate 1 is a plan view of the facility showing building locations.

Drainage

Surface drainage at the facility flows generally to the north. Storm sewers located in the loading dock area and the parking lots to the east of the main building, parallel the street layout and drain to the northeast. Industrial process water exits the plant through the west wall of the basement and connects to the public sewer running along the west boundary of the site. Excavation in the basement and pressure checks on the pipes conducted earlier have revealed that floor drains leading to the sewer may lack integrity (C.A. Rich, 1990).

Geology

The soil at the site consists of approximately six feet of fill material comprised of red-brown fine sand with some clay according to the log for Well

No. 1, installed by C.A. Rich Consultants, Inc. Below the fill material is a layer of red brown sandy clay with some rock fragments which is in the native soil. Based on the geologic log of Well No. 1, the transition from soil and soil-bedrock contact occurs at approximately 15 feet below grade in the area. The bedrock is described as a resistent shale interbedded with sandstone from this depth to the completion depth of the well (45 feet).

Groundwater

Depth to groundwater was measured in Monitoring Well No. 1 on 26 September 1990 by Radian. The measured depth to water was 27.3 feet. This indicates that the loose soil and overburden is unsaturated beneath the facility. As stated in the well log, bedrock is first encountered at approximately 15 feet below grade in the vicinity of Monitoring Well No. 1.

3.0 INVESTIGATIVE AREAS FOR SOIL VAPOR SURVEY

The field vapor investigation concentrated on areas where leaks were known, or suspected to have occurred. Radian investigated residual vapor concentrations in these areas by "fingerprinting", if possible, the contaminant type and level. The areas investigated during the study are as follows:

- Former dry well (for fire mitigation);
- Unleaded gasoline UST and fuel island area;
- No. 6 heating oil UST; and
- Exterior wall near basement collection and drain system.

A brief description of the areas is discussed in the following paragraphs.

Former Dry Well

The former dry well located east of the facility, adjacent to the present transformer pad, was formerly used in conjunction with a fire

suppression system in the building and was removed in 1990. Soil sampling conducted by C.A. Rich, revealed concentrations of 1,1,1 trichloroethane ranging from 1,200 to 1,500 parts per million (ppm) in the soil adjacent to the former dry well. The dry well was excavated in May, 1990. The excavation terminated at a depth of eight feet.

Radian installed three soil vapor bores (nos. 1,22, and 23) in the vicinity of the former dry well. The bores were drilled to approximately nine feet below grade. Below this depth the soils were difficult to penetrate with the stainless steel probe.

Gasoline UTS's (2) and Fuel Island

Two unleaded fuel tanks and island were removed in 1990. They were formerly located between the loading dock area and the parking lot as shown on Plate 1. However, soils surrounding the excavation revealed strong odors of gasoline when the tanks were removed. Radian installed six soil vapor bores to approximately nine feet below grade (three feet below the excavation) to determine the presence or absence of hydrocarbon vapors in the soil adjacent to the tanks. The bores are labeled, 3,4,5,6,7 and 8 on Plate 1.

No. 6 Fuel Oil USTs (2)

Two 10,000 gallon underground tanks used for the storage of No. 6 fuel oil were removed during a previous remediation project in 1990. They were formerly located along the east side of the building (Plate 1). Radian installed three bores (nos. 11,12, and 13) in this area.

Exterior Wall Near Basement Floor Drains

A total of nine soil vapor bores (nos. 15,16,17,18,19,20 and 21) were installed in the soil adjacent to the basement north of the building (Plate 1). The purpose of drilling in this area was to determine if formaldehyde existed in the shallow soil, as a result of seepage from basement floor

drains. The bores ranged in depth from 6 to 10 feet, as bedrock precluded drilling beyond this depth. The bedrock is shallow in this area, approximately 10 feet below grade.

3.1 Vapor Probe Field Methods

The field investigation was conducted by Radian with subcontractor support from Target Environmental Services, Inc. of Columbia, Maryland. Vapor sample locations were staked by Radian during a previous site visit and the site was cleared for underground utilities prior to commencement of site work.

Target provided all equipment, vans and labor to complete the soil vapor investigation. To collect soil vapor samples, a van-mounted hydraulically driven probe was used to advance three-foot sections of one-inch diameter threaded steel pipe to the desired depth. An electric hammer-drill was used to penetrate pavement where necessary. Target personnel repaired all holes upon completion of sampling. Each soil vapor sample was encapsulated in a pre-evacuated glass vial and pressurized to two atmospheres (15 psig). Final depths ranged between 6 and 10 feet below grade. Depths of bores were selected based on the suspected depth of contamination. In some bores along the northern portion of the site, auger refusal resulted when bedrock was encountered.

Vapor samples were collected through a teflon and stainless steel insert which was inserted down the full length of the pipe and sealed off from the atmosphere.

Two vans were located on-site during the investigation. One contained the sampling equipment and moved from bore to bore. The other van contained the analytical equipment and remained stationary in the parking lot.

3.2 Analytical Parameters

A total of 24 vapor bores were installed during the investigation. Vapor analyses consisted of screening samples on site for the following compounds:

- benzene;
- toluene;
- xylene;
- 1,1,1, trichloroethane (1,1,1 TCA); and
- trichloroethylene (TCE)

These compounds were selected for analysis based on results of prior soil sampling in the area of the former dry well (1,1,1 TCA, TCE), as well as to detect potential leakage or spillage in the area of the removed underground tanks and pump island (benzene, toluene, xylene). Standards were analyzed in order to quantify these compounds. In addition, total PID volatiles were calculated.

Target Environmental Inc. used a field gas chromatograph (GC) (Photovac 10S70) equipped with a photo-ionization detector (PID). Selected locations were also screened for formaldehyde using an MSA pump and MSA detector tubes. These locations were near exterior wall, north of the basement floor drains.

3.3 Monitoring Well Sampling

At the time of the investigation, Monitoring Well No. 1 was sampled by Radian. The location of the monitoring well is shown in Plate 1. Analysis of the water was performed for volatile organics using EPA Method 8020, for hydroquinone using EPA Method 8270, for silver using the ICPES Method, for formaldehyde using a colorimetric method (modified Para-Rosanaline), and for cyanide using EPA Method 335.3. These analyses were selected based on past results of soil analyses and chemicals used on site. Analytical work was performed by York Wastewater Consultants, Inc.

4.0 RESULTS

The following discussion presents the results of the soil vapor investigation.

4.1 Volatile Organics

Organic vapors were detected in five of the 24 vapor bores. Table 1 provides a summary of sample depths and vapor concentrations in parts per billion vapor (ppbv) for each of the sample points. Sample locations are shown in Plate 1 and raw analytical data is shown in Appendix A.

As shown in Plate 1 and in Table 1, organic vapors were detected in five soil bores; identified as 1, 7, 10, 14, and 23. The analytical results are presented below:

- 1,1,1 TCA was detected at 11,000 ppbv in bore 23 and at 722 ppbv in bore 1. Both of these bores are located in the area of the former dry well along the eastern side of the building near the loading dock.

- TCE was detected at 171 ppbv in bore 7 located six feet south of the former underground gasoline tank (excavated) pit. TCE was also detected at a concentration of 546 ppbv in bore 14 located on the west side of the building near the cafeteria. Bore 24 was added to the investigation based on the TCE detected at bore 14, However, no TCE was detected at bore 24.

- Toluene and xylene were detected in bore 7 in addition to TCE. Vapor concentrations were 705 ppbv toluene and 342 ppbv xylene.

- Small concentrations of unknown volatiles were detected in bore 10 as well as in some of the bores where other known volatiles were detected. It was not possible to identify these compounds in the field as the GC was calibrated with standards for the compounds listed in Table 1 only.

TABLE 1. RESULTS OF FIELD VAPOR ANALYSES, CONCENTRATIONS IN PARTS PER BILLION VAPOR (PPBV)

Sample	Depth	Benzene[1]	Toluene[1]	Xylene [1]	111TCA[1]	TCE[1]
1	9'	n.d.	n.d.	n.d.	722	n.d.
2	9'	n.d.	n.d.	n.d.	n.d.	n.d.
3	9'	n.d.	n.d.	n.d.	n.d.	n.d.
4	7.5'	n.d.	n.d.	n.d.	n.d.	n.d.
5	9'	n.d.	n.d.	n.d.	n.d.	n.d.
6	8'	n.d.	n.d.	n.d.	n.d.	n.d.
7	9'	n.d.	705	342	n.d.	171
8	8'	n.d.	n.d.	n.d.	n.d.	n.d.
9	9'	n.d.	n.d.	n.d.	n.d.	n.d.
10	9'	n.d.	n.d.	n.d.	n.d.	n.d.*
11	9'	n.d.	n.d.	n.d.	n.d.	n.d.
12	9'	n.d.	n.d.	n.d.	n.d.	n.d.
13	9'	n.d.	n.d.	n.d.	n.d.	n.d.*
14	8'	n.d.	n.d.	n.d.	n.d.	546
15	8'	n.d.	n.d.	n.d.	n.d.	n.d.
16	7'	n.d.	n.d.	n.d.	n.d.	n.d.
17	9'	n.d.	n.d.	n.d.	n.d.	n.d.
18	6.5'	n.d.	n.d.	n.d.	n.d.	n.d.
19	6'	n.d.	n.d.	n.d.	n.d.	n.d.
20	9.5'	n.d.	n.d.	n.d.	n.d.	n.d.
21	10'	n.d.	n.d.	n.d.	n.d.	n.d.
22	9'	n.d.	n.d.*	n.d.	n.d.	n.d.
23	9'	n.d.	n.d.	n.d.	11,000	n.d.*
24	8'	n.d.	n.d.	n.d.	n.d.	n.d.*
Field Control Samples						
25		n.d.	n.d.	n.d.	n.d.	n.d.
26		n.d.	n.d.	n.d.	n.d.	n.d.
27		n.d.	n.d.	n.d.	n.d.	n.d.
28		n.d.	n.d.	n.d.	n.d.	n.d.

Explanation:

1,1,1 TCA = 1,1,1,-trichloroethane
TCE = trichloroethene
n.d. - not detected
[1]Identification based on retention time
* Value reported at less than instrument detection limit (1 ppbv), could not quantify.

4.2 Formaldehyde

Four vapor bores (nos. 15, 16, 17, and 18) were screened for formaldehyde in addition to the other volatiles at the sample depths shown in Table 1. These bores were presumed to be subject to formaldehyde contamination as they were closest to the location of the basement floor drains. Formaldehyde screening was accomplished using an MSA pump and running the soil vapor through an MSA detector tube. No formaldehyde was detected in the soil vapor at any of these four bores.

4.3 Monitoring Well Results

As indicated above, Monitoring Well No. 1 was sampled on 26 September, 1990 during the time of the investigation. The sample was analyzed by York Wastewater Consultants. The results of the analytical work performed on the water sample are shown in Appendix B and are discussed below:

- Volatile organics (EPA Method 8240)

  1,1,1 TCA was detected at 41 ppb in the water sample. TCA was not detected in the accompanying trip blank indicating that TCA is likely present in the groundwater. Acetone was detected at 920 ppb in the water sample, but was also detected in the trip blank at 25 ppb, indicating laboratory contamination of acetone resulted. No other volatile organics were detected within the instrument detection limit using this method.

- Silver (ICPES)

  Silver was detected at 16.5 ppb in the groundwater sample.

- Hydrioquinone (EPA) Method 8270)

  Hydroquinone was not detected in the groundwater sample

- Formaldehyde (modified Para-Rosanaline calorimetric method)

  Formaldehyde was not detected in the groundwater sample.

- Cyanide (EPA Method 335.3)

  Cyanide was not detected in the groundwater sample.

5.0 SUMMARY

Soil vapor bores were installed at the Kodalux Processing Laboratory 24 and 25 September 1990 at 24 locations. Of these 24 bores, five showed measurable quantities of organic vapor in the soil. Compounds detected include 1,1,1 TCA, TCE, toluene, and xylene at the bores discussed in this report. Additionally, four bores along the northern portion of the main building were screened for formaldehyde, however, results were negative.

Monitoring Well No. 1 was sampled and analyzed for the parameters indicated in the previous section. Results indicate that 1,1,1, TCA and silver exist in concentrations above method detection limits. Formaldehyde, hydroquinone, and cyanide were all undetected in the water sample. Acetone contamination of the trip blank and water sample from the well resulted in a false positive value reported by the laboratory. All other volatiles were undetected based on the detection limit reported for those compounds.

This concludes Radian Corporation's soil vapor survey of the Kodalux facility. Further questions may be directed to Radian Corporation at the address or phone numbers on the cover of this document.

APPENDIX A

Soil Vapor Raw Analytical Data

TARGET ENVIRONMENTAL SERVICES, INC.

September 27, 1990

Mr. Ronald Melkis
Radian Corporation
155 Corporate Woods, Suite 100
Rochester, NY 14623

Dear Mr. Melkis:

Enclosed please find copies of the photoionization data sheets for the Soil Gas Survey performed by **TARGET** at the Kodalux Processing Services site in Fair Lawn, New Jersey.

If you have any questions about the data sheets, please give me a call at (301) 992-6622. We appreciate the opportunity to provide our services to you on this project.

Sincerely,

TARGET ENVIRONMENTAL SERVICES, INC.

Ken Ranlet aef

Kenneth B. Ranlet
Vice President

9180 RUMSEY ROAD, COLUMBIA, MARYLAND 21045 (301) 992-6622 Fax: (301) 992-0347

Printed on recycled paper

PID DATA

JOB CODE MRKF

DATE 9/25/90

SAMPLE NUMBER 1

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK —

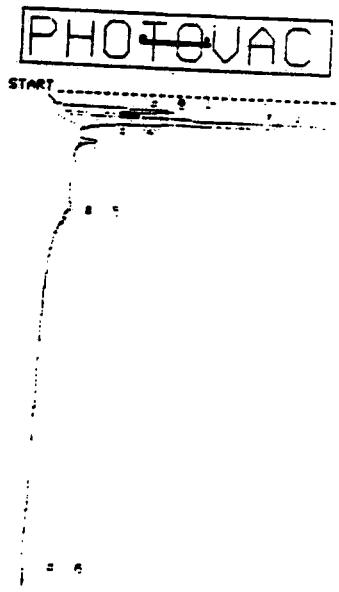
TEMPERATURE

This analysis	34
Standardization	33
Difference + , -	+1

Gain 20

Size 100µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0



STOP 0 400.0
SAMPLE LIBRARY 1 SEP 25 1990 12:55
ANALYSIS # 11 TARGET
INTERNAL TEMP 34 MRKF
GAIN 20 SPL 1

COMPOUND NAME	PEAK	R.T.	AREA/PPM	
UNKNOWN	1	13.8	1.2	VS
UNKNOWN	2	17.1	919.3	AVS
UNKNOWN	3	21.4	4.1	VS
UNKNOWN	4	33.0	178.6	AVS

CALCULATIONS

111 TCA - Rt 39.0

.1786 VS x 24.25 mg/l =

4.33 mg/l

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials KC

PID DATA

JOB CODE MRKF

DATE 9/25/90

SAMPLE NUMBER 2

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK —

TEMPERATURE

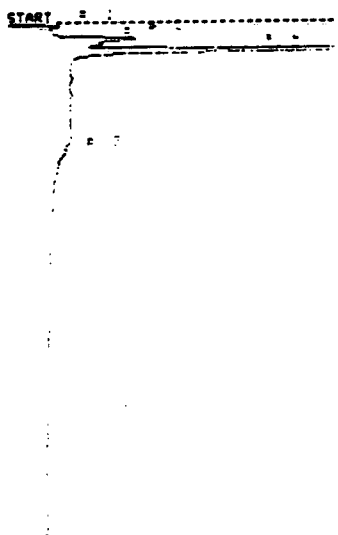
This analysis	34
Standardization	33
Difference + , -	+1

Gain 20

Injection Size 100µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC



STOP @ 400.0
SAMPLE LIBRARY 1 SEP 25 1990 12: 9
ANALYSIS # 12 TARGET
INTERNAL TEMP 34 MRKF
GAIN 20 SPL 2

COMPOUND NAME	PEAK	R.T.	AREA/PPB
UNKNOWN	1	3.6	199.6 mVS
UNKNOWN	2	13.7	494.5 mVS
UNKNOWN	4	21.8	3.9 VS

CALCULATIONS

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials KK

PID DATA

JOB CODE MRKF

DATE 9/25/90

SAMPLE NUMBER 3

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK —

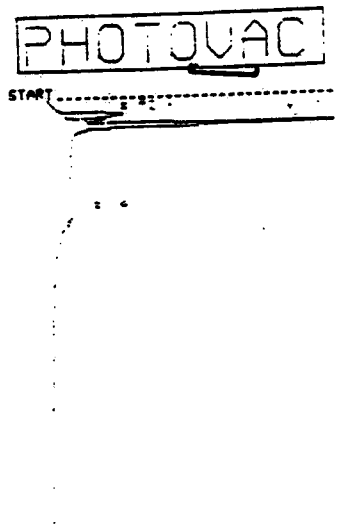
TEMPERATURE

This analysis	34
Standardization	33
Difference + , -	+1

20

ion Size 100µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0



CALCULATIONS

STOP 0 400.0
SAMPLE LIBRARY 1 SEP 25 1990 12:13
ANALYSIS 4 13 TARGET
INTERNAL TEMP 34 MRKF
GAIN 20 SPL 3

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	13.4	657.1 mVS
UNKNOWN	2	17.0	212.9 mVS
UNKNOWN	3	21.3	1.8 VS

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials KC

PID DATA

JOB CODE MRKF

DATE 9/25/90

SAMPLE NUMBER 4

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK —

TEMPERATURE

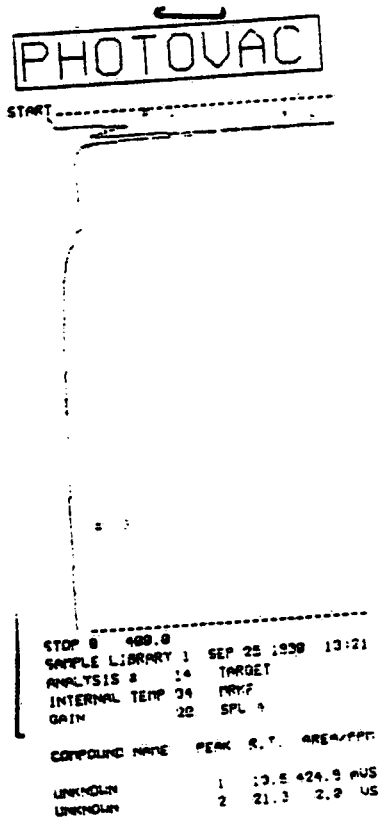
This analysis	34
Standardization	33
Difference + , -	+1

Gain 20

Injection Size 100 µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

CALCULATIONS



Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials KC

PID DATA

JOB CODE MRKF

DATE 9/25/90

SAMPLE NUMBER 5

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK —

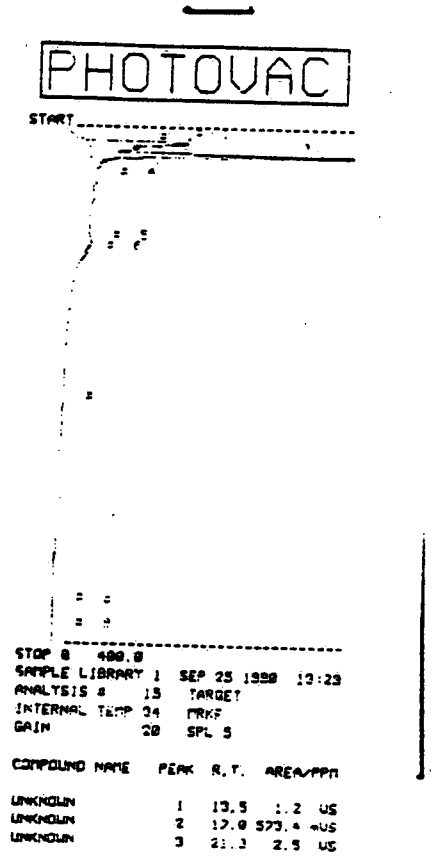
TEMPERATURE

This analysis	34
Standardization	33
Difference + , -	+1

Gain 20

Injection Size 100 µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0



CALCULATIONS

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials KC

PID DATA

JOB CODE MRKF

DATE 9/25/90

SAMPLE NUMBER 6

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK —

TEMPERATURE

This analysis	34
Standardization	33
Difference + , -	+1

Gain 20

on Size 100 µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

STOP 8 400.0
SAMPLE LIBRARY 1 SEP 25 1990 13:37
ANALYSIS 4 16 TARGET
INTERNAL TEMP 24 MRKF
GAIN 20 SPL 6

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	13.5	1.3 US
UNKNOWN	2	16.9	610.5 MUS
UNKNOWN	3	21.3	2.7 US

CALCULATIONS

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials KL

PID DATA

JOB CODE MRKF

DATE 9/25/90

SAMPLE NUMBER 7

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK —

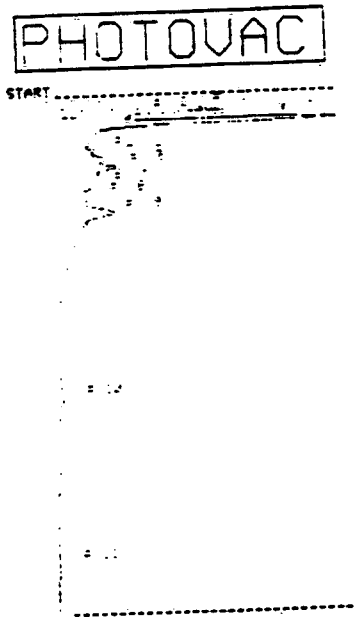
TEMPERATURE

This analysis	34
Standardization	33
Difference + , -	0

Gain 20

Injection Size 100 µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0



STOP @ 400.0
SAMPLE LIBRARY 1 SEP 25 1990 12:47
ANALYSIS # 17 TARGET
INTERNAL TEMP 34 MRKF
GAIN 20 SPL 7

COMPOUND NAME	PEAK	R.T.	AREA/PPM	
UNKNOWN	1	13.5	1.9	US
UNKNOWN	2	17.0	275.0	mUS
UNKNOWN	3	21.4	2.7	US
UNKNOWN	5	59.3	92.1	mUS
UNKNOWN	6	57.1	164.7	mUS
UNKNOWN	9	93.4	561.0	mUS
UNKNOWN	10	235.8	138.2	mUS

CALCULATIONS

TCE - Rt. 57.1
.1647 VS X 6.15 mg/l =
1.01 mg/l

Toluene - Rt. 93.4
.561 VS X 5.1 mg/l =
2.86 mg/l

M&P XYLENE - Rt. 235.8
.1302 VS X 8.63 mg/l =
1.12 mg/l

Total VOC's .948 VS

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials XC

PID DATA

JOB CODE MRKF DATE 9/25/90

SAMPLE NUMBER 8

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK —

TEMPERATURE

This analysis	34
Standardization	34
Difference + , -	0

20
on Size 00µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

STOP 0 400.0
SAMPLE LIBRARY 1 SEP 25 1990 15:42
ANALYSIS # 2 TARGET
INTERNAL TEMP 34 MRKF
GAIN 20 SPL 0

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	13.6	1.2 US
UNKNOWN	2	16.5	506.5 mUS
UNKNOWN	3	21.3	2.9 US

CALCULATIONS

Concentrations:

TOTAL VOC'S _____
BENZENE _____
TOLUENE _____
p-XYLENE _____

COMMENTS: _____

Operator Initials KC

PID DATA

JOB CODE mulS

DATE 9/24/90

SAMPLE NUMBER 9

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK -

TEMPERATURE

This analysis	31
Standardization	32
Difference + , -	-1

20

›n Size 100µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

STOP 0 489.0
SAMPLE LIBRARY 1 SEP 24 1990 18: 5
ANALYSIS # 22 TARGET
INTERNAL TEMP 31 MRKF
GAIN 28 SPL 5

COMPOUND NAME	PEAK	R.T.	AREA/PPM	
UNKNOWN	1	13.8	469.5	AVS
UNKNOWN	2	21.7	3.4	US

CALCULATIONS

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials XC

PID DATA

JOB CODE MRKF

DATE 9/24/90

SAMPLE NUMBER 10

STANDARD –

FIELD BLANK –

CARRIER GAS BLANK –

NEEDLE BLANK –

TEMPERATURE

This analysis	31
Standardization	32
Difference + , -	-1

Gain 20

Injection Size 100 µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

STOP 0 400.0
SAMPLE LIBRARY 1 SEP 24 1990 18:13
ANALYSIS # 23 TARGET
INTERNAL TEMP 31 MRKF
GAIN 20 SPL 10

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	13.6	831.2 mVS
UNKNOWN	2	21.6	2.4 VS
UNKNOWN	4	57.3	70.1 mVS
UNKNOWN	5	73.9	168.4 mVS
UNKNOWN	7	197.2	278.8 mVS

CALCULATIONS

TCE – Rt. 57.3

.0701 VS × 6.15 ug/l =

.43 ug/l

.517 VS Total VOC

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials KC

PID DATA

JOB CODE MRKF

DATE 9/24/90

SAMPLE NUMBER 11

STANDARD –

FIELD BLANK –

CARRIER GAS BLANK –

NEEDLE BLANK –

TEMPERATURE

This analysis	31
Standardization	32
Difference + , -	-1

Gain 20

Injection Size 100µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

CALCULATIONS

PHOTOVAC

START

STOP 0 400.0
SAMPLE LIBRARY 1 SEP 24 1990 18:22
ANALYSIS = 24 TARGET
INTERNAL TEMP 31 MRKF
GAIN 20 SPL 11

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	13.8	934.2 AUS
UNKNOWN	2	17.1	215.3 AUS
UNKNOWN	3	21.8	3.8 US

ncentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials KC

PID DATA

JOB CODE MRKF DATE 9/24/90

SAMPLE NUMBER 12

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK —

TEMPERATURE

This analysis	31
Standardization	32
Difference + , -	-1

Gain 20

Injection Size 100µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

STOP 8 480.0
SAMPLE LIBRARY 1 SEP 24 1990 19:38
ANALYSIS # 23 TARGET
INTERNAL TEMP 31 MRKF
GAIN 22 SPL 12

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	13.2	356.4 AUS
UNKNOWN	2	21.8	1.5 US

CALCULATIONS

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials XC

PID DATA

JOB CODE MRKF

DATE 9/24/90

SAMPLE NUMBER 13

STANDARD –

FIELD BLANK –

CARRIER GAS BLANK –

NEEDLE BLANK –

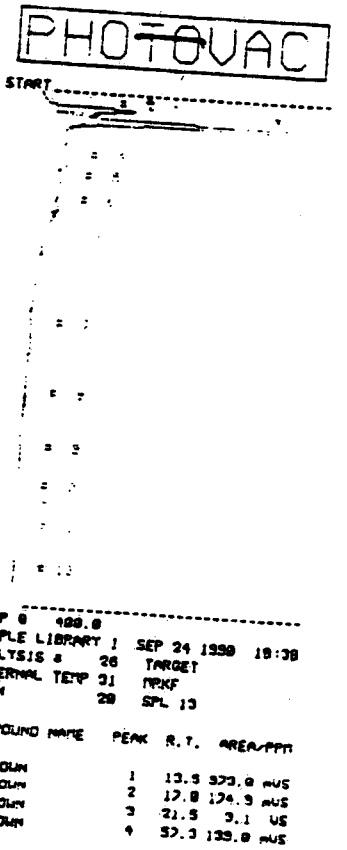
TEMPERATURE

This analysis	31
Standardization	32
Difference + , -	-1

– 2

Size 100µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0



CALCULATIONS

TCE - Rt. 57.3

.139 VS × 6.15 mg/l =

.85 mg/l

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials KC

PID DATA

JOB CODE MRKF DATE 9/25/90

SAMPLE NUMBER —

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK MOD SYS BLK

NEEDLE BLANK —

TEMPERATURE

This analysis	35
Standardization	37
Difference + , -	72

Gain 20

Injection Size 100 µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

—

PHOTOVAC

START

STOP @ 400.0
SAMPLE LIBRARY : SEP 25 1990 14: 9
ANALYSIS # 19 TARGET
INTERNAL TEMP 35 MRKF
GAIN 20 SYS BLK MOD

COMPOUND NAME PEAK R.T. AREA/PPM

CALCULATIONS

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials KC

PID DATA

JOB CODE MRKF

DATE 9/25/90

SAMPLE NUMBER –

STANDARD –

FIELD BLANK –

CARRIER GAS BLANK –

NEEDLE BLANK 104

TEMPERATURE

This analysis	33
Standardization	33
Difference + , -	0

Gain 20

on Size 0.1

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

CALCULATIONS

PHOTOVAC

START

STOP 0 400.0
SAMPLE LIBRARY 1 SEP 25 1990 12: 3
ANALYSIS # 8 TARGET
INTERNAL TEMP 33 MRKF
GAIN 20 NEEDLE BLK

COMPOUND NAME PEAK R.T. AREA/PPT

UNKNOWN 13.2 182.0 mVS

Concentrations:

TOTAL VOC'S

BENZENE

TOLUENE

p-XYLENE

COMMENTS: Needle Blank taken after 111 TCA std and before BTX std

Operator Initials KC

PID DATA

JOB CODE MRKF

DATE 9/25/90

SAMPLE NUMBER 14

STANDARD –

FIELD BLANK –

CARRIER GAS BLANK –

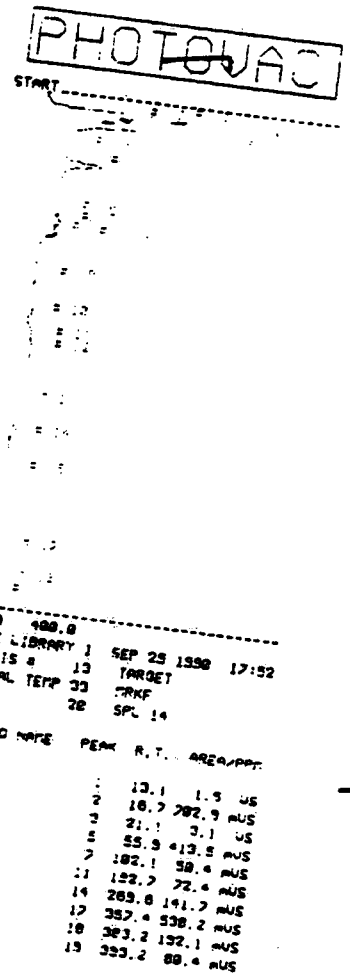
NEEDLE BLANK –

TEMPERATURE

This analysis	33
Standardization	34
Difference + , -	-1

20 on Size 100µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0



CALCULATIONS

TCE-Rt. 55.9

.4135 VS x 7.77 ug/l =

3.21 mg/l

Total Voc's = 1.49 VS

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials JC

PID DATA

JOB CODE MRKF

DATE 9/25/90

SAMPLE NUMBER 15

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK —

TEMPERATURE

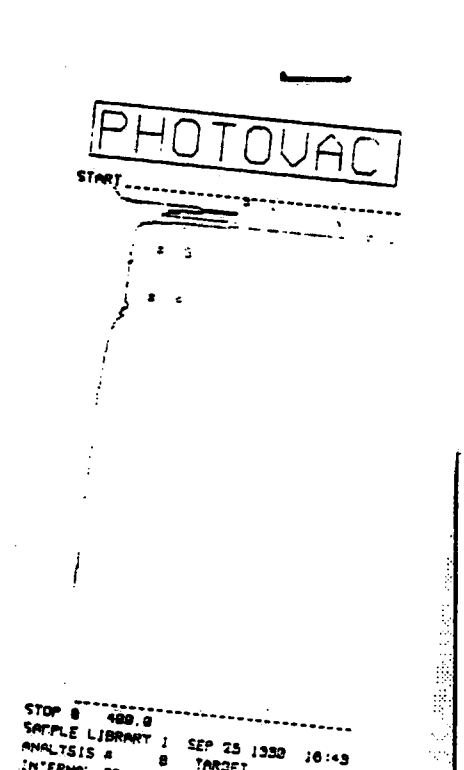
This analysis	34
Standardization	34
Difference + , -	0

Gain 20

Injection Size 100µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

CALCULATIONS



Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials XC

PID DATA

JOB CODE MRKF

DATE 9/25/90

SAMPLE NUMBER 16

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK —

TEMPERATURE

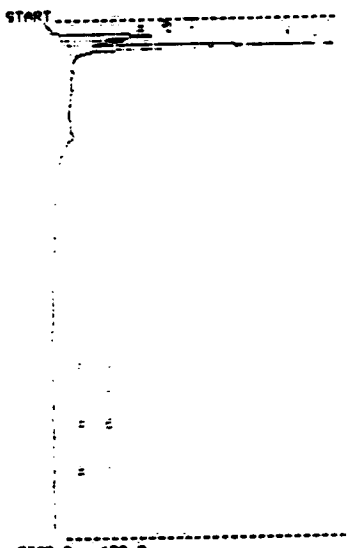
This analysis	34
Standardization	34
Difference + , -	0

20

on Size 100µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC



STOP 0 400.0
SAMPLE LIBRARY 1 SEP 25 1990 16:19
ANALYSIS # 6 TARGET
INTERNAL TEMP 34 MRKF
GAIN 20 SPL 16

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	13.3	1.0 US
UNKNOWN	2	17.0	645.6 mUS
UNKNOWN	3	21.2	2.7 US
UNKNOWN	7	355.2	51.0 mUS

CALCULATIONS

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials XC

PID DATA

JOB CODE MRKF

DATE 9/25/96

SAMPLE NUMBER 17

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK ✓

TEMPERATURE

This analysis	34
Standardization	34
Difference + , -	0

Gain 20

Injection Size 100µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

CALCULATIONS

—

PHOTOVAC

START

STOP @ 482.0

SAMPLE LIBRARY 1 SEP 25 1996 16:33

ANALYSIS # 7 TARGET

INTERNAL TEMP 34 PEAK

GAIN 20 SPL 12

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	13.4	1.2 US
UNKNOWN	2	16.8	589.9 mUS
UNKNOWN	3	21.2	2.8 US

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials KC

PID DATA

JOB CODE MRKF DATE 9/25/90

SAMPLE NUMBER 18

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK —

TEMPERATURE

This analysis	33
Standardization	34
Difference + , -	-1

0

n Size 100µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

CALCULATIONS

STOP 0 400.0
SAMPLE LIBRARY 1 SEP 25 1990 17:41
ANALYSIS # 12 TARGET
INTERNAL TEMP 33 MRKF
GAIN 20 SPL 19

COMPOUND NAME	PEAK	R.T.	AREA/PPM	
UNKNOWN	1	13.1	1.1	US
UNKNOWN	2	16.7	515.1	mUS
UNKNOWN	3	21.0	2.6	US

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials _____

PID DATA

JOB CODE MRKF

DATE 9/25/90

SAMPLE NUMBER 19

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK —

TEMPERATURE

This analysis	33
Standardization	34
Difference + , -	-1

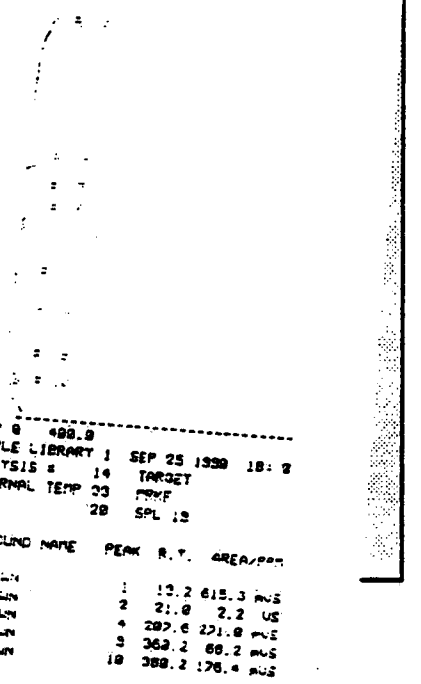
Gain 20

Injection Size 100µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START



CALCULATIONS

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials KC

PID DATA

JOB CODE MRKF

DATE 9/25/90

SAMPLE NUMBER 20

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK —

TEMPERATURE

This analysis	33
Standardization	34
Difference + , -	-1

Gain 20

Injection Size 100µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

STOP 0 400.0
SAMPLE LIBRARY 1 SEP 25 1990 10: 0
ANALYSIS # 15 TARGET
INTERNAL TEMP 33 MRKF
GAIN 20 SPL 20

COMPOUND NAME	PEAK	R.T.	AREA/PPB
UNKNOWN	1	13.2	481.3 mVS
UNKNOWN	2	21.1	3.2 VS
UNKNOWN	7	152.8	281.5 mVS
UNKNOWN	9	365.2	578.3 mVS

CALCULATIONS

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials KC

TABLE 1.0
30900-1828
RADIAN CORPORATION
ANALYTICAL REQUESTS

Sample Identification	Requested Parameters
H0228010	TCL volatile organics, hydroquinone, formaldehyde, total cyanide, silver
TB 09/26/90	TCL volatile organics

Aqueous

TABLE 2.0
30900-1828
RADIAN CORPORATION
EPA TCL VOLATILE ORGANICS

All values are ug/L.

	Sample Identification			
Dilution Factor	1.0	1.0	5.0	
Method Blank I.D.	>G7703	>G7703	>G7703	
Compound	Method Blank	TB 09/26/90	H0228010	Quantitation Limits with no Dilution
Chloromethane	U	U	U	10
Bromomethane	U	U	U	10
Vinyl Chloride	U	U	U	10
Chloroethane	U	U	U	10
Methylene Chloride	1J	U	6JB	5
Acetone	U	25	920	10
Carbon Disulfide	U	6	U	5
1,1-Dichloroethene	U	U	9J	5
1,1-Dichloroethane	U	U	8J	5
1,2-Dichloroethene (total)	U	U	22J	5
Chloroform	U	U	6J	5
1,2-Dichloroethane	U	U	U	5
2-Butanone	U	U	U	10
1,1,1-Trichloroethane	U	U	41	5
Carbon Tetrachloride	U	U	U	5
Vinyl Acetate	U	U	U	10
Bromodichloromethane	U	U	U	5
1,2-Dichloropropane	U	U	U	5
cis-1,3-Dichloropropene	U	U	U	5
Trichloroethene	U	U	7J	5
Dibromochloromethane	U	U	U	5
1,1,2-Trichloroethane	U	U	U	5
Benzene	U	U	U	5
trans-1,3-Dichloropropene	U	U	U	5
Bromoform	U	U	U	5
4-Methyl-2-pentanone	U	U	U	10
2-Hexanone	U	U	U	10
Tetrachloroethene	U	U	U	5
1,1,2,2-Tetrachloroethane	U	U	U	5
Toluene	U	U	U	5
Chlorobenzene	U	U	U	5
Ethylbenzene	U	U	U	5
Styrene	U	U	U	5
Xylene (total)	U	U	U	5

U, J, B - See Appendix for definition.
Note: Sample detection limit = quantitation limit x dilution factor.

Aqueous

TABLE 3.0
30900-1828
RADIAN CORPORATION
MISCELLANEOUS SEMI-VOLATILE ORGANICS

All values are ug/L.

	Sample Identification		
Dilution Factor	1.0	1.0	
Method Blank I.D.	>H0472	>H0472	
Compound	Method Blank	H0228010	Estimated Quantitation Limits with no Dilution
Hydroquinone	U	U	10

U - See Appendix for definition.
Note: Sample detection limit = quantitation limit x dilution factor.

TABLE 4.0
30900-1828
RADIAN CORPORATION
MISCELLANEOUS METALS

All values are ug/L.

Parameter	H0228010
Silver	16.5

TABLE 5.0
30900-1828
RADIAN CORPORATION
MISCELLANEOUS INORGANICS

All values are mg/L.

Parameter	H0228010
Total Cyanide	<0.005
Formaldehyde	<0.05

APPENDIX

U - Indicates that the compound was analyzed for but not detected.

J - Indicates that the compound was analyzed for and determined to be present in the sample. The mass spectrum of the compound meets the identification criteria of the method. The concentration listed is an estimated value, which is less than the specified minimum detection limit but is greater than zero.

B - This flag is used when the analyte is found in the blanks as well as the sample. It indicates possible sample contamination and warns the data user to use caution when applying the results of this analyte.

N - Indicates that the compound was analyzed for but not requested as an analyte. Value will not be listed on tabular result sheet.

X - Matrix spike compound.

(1) - Cannot be separated from diphenylamine.

(2) - Decomposes to azobenzene. Measured and calibrated as azobenzene.

A - This flag indicates that a TIC is a suspected aldol condensation product.

E - Indicates that it exceeds calibration curve range.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

PID DATA

JOB CODE MRKF

DATE 9/25/90

SAMPLE NUMBER 21

STANDARD –

FIELD BLANK –

CARRIER GAS BLANK –

NEEDLE BLANK –

TEMPERATURE

This analysis	32
Standardization	34
Difference + , -	-2

Gain 20

Injection Size 100 µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

STOP 0 489.8
SAMPLE LIBRARY 1 SEP 25 1990 18:31
ANALYSIS # 17 TARGET
INTERNAL TEMP 32 MRKF
GAIN 20 SPL 21

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	13.2	472.3 µVS
UNKNOWN	2	21.0	3.1 US
UNKNOWN	3	162.7	72.6 µVS
UNKNOWN	8	284.6	131.3 µVS

CALCULATIONS

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials KC

PID DATA

JOB CODE MRKF

DATE 9/25/90

SAMPLE NUMBER 22

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK —

TEMPERATURE

This analysis	34
Standardization	34
Difference + , -	0

Gain 20

Inst. on Size 100μ

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

STOP 0 480.0
SAMPLE LIBRARY 1 SEP 25 1990 13:51
ANALYSIS # 4 TARGET
INTERNAL TEMP 34 MRKF
GAIN 22 SPL 27

COMPOUND NAME	PEAK	R.T.	AREA/PPM
	1	12.3	1.5 US
UNKNOWN	2	16.9	293.8 MUS
UNKNOWN	3	21.3	3.8 US
UNKNOWN	5	33.7	52.5 MUS
UNKNOWN			

CALCULATIONS

Toluene - RF 93.7

.0525 VS x 6.17 ng/l =

.32 ng/l

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials KC

PID DATA

JOB CODE MRKF

DATE 9/25/90

SAMPLE NUMBER 23

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK —

TEMPERATURE

This analysis	34
Standardization	33
Difference + , -	+1

Gain 20

Size 100µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

Unknown

STOP @ 400.0
SAMPLE LIBRARY 1 SEP 25 1990 16: 1
ANALYSIS # 5 TARGET
INTERNAL TEMP 34 MRKF
GAIN 20 SPL 22

COMPOUND NAME	PEAK	R.T.	AREA/PPM	
UNKNOWN	1	13.6	1.5	VS
UNKNOWN	2	20.5	5.2	VS
UNKNOWN	3	30.0	2.7	VS
UNKNOWN	4	56.1	114.7	mVS
UNKNOWN	5	78.5	876.0	mVS
UNKNOWN	7	141.6	72.4	mVS
UNKNOWN	8	153.7	38.5	mVS

CALCULATIONS

111 TCA - Rt. 38.8

2.7 VS × 24.25 mg/l =

65.5 mg/l

Peak # 5 is unknown Rt. 78.5

Total VOCs = 3.86 VS

TCE - Rt. 56.1

.1147 VS × 7.77 mg/l =

.89 mg/l

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials _____

PID DATA

JOB CODE MRKF DATE 9/25/90

SAMPLE NUMBER 24

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK —

TEMPERATURE

This analysis	32
Standardization	34
Difference + , -	-2

Gain 20

Injection Size 100 µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

—

PHOTOVAC

START

STOP 0 400.0
SAMPLE LIBRARY 1 SEP 25 1990 18:13
ANALYSIS # 16 TARGET
INTERNAL TEMP 32 MRKF
GAIN 20 SPL 24

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	13.2	481.6 mVS
UNKNOWN	2	21.0	2.5 VS
UNKNOWN	3	55.2	125.2 mVS
UNKNOWN	5	258.2	1.1 VS

CALCULATIONS

TCE - Rt. 55.7

.1252 VS × 7.77 ug/l =

.97 ug/l

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials _____

PID DATA

JOB CODE MRKF

DATE 9/24/90

SAMPLE NUMBER —

STANDARD —

FIELD BLANK 25

CARRIER GAS BLANK —

NEEDLE BLANK —

TEMPERATURE

This analysis 31
Standardization 32
Difference + , - -1

Gain 20

Size 100 µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

—

PHOTOVAC

START

CALCULATIONS

STOP @ 400.0
SAMPLE LIBRARY : SEP 24 1990 17:24
ANALYSIS # 17 TARGET
INTERNAL TEMP 3: MRKF
GAIN 20 FLD BLK 25

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	13.7	321.9 MWS
UNKNOWN	2	21.7	2.3 US

Concentrations:
TOTAL VOC'S _____
BENZENE _____
TOLUENE _____
p-XYLENE _____

COMMENTS: _____

Operator Initials XC

PID DATA

JOB CODE MRKF

DATE 9/24/90

SAMPLE NUMBER —

STANDARD —

FIELD BLANK 26

CARRIER GAS BLANK —

NEEDLE BLANK —

TEMPERATURE

This analysis	31
Standardization	32
Difference + , -	0

Gain 20

n Size 100µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

CALCULATIONS

STOP @ 400.0
SAMPLE LIBRARY : SEP 24 1990 18:46
ANALYSIS # 27 TARGET
INTERNAL TEMP 31 MRKF
GAIN 20 FLD BLK 26

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	13.6	282.3 nVS
UNKNOWN	2	21.7	3.0 VS

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials KC

PID DATA

JOB CODE MRKF DATE 9/25/90

SAMPLE NUMBER —

STANDARD —

FIELD BLANK 27

CARRIER GAS BLANK —

NEEDLE BLANK —

TEMPERATURE

This analysis	33
Standardization	33
Difference + , -	0

Gain 20

Injection Size 100 µ

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

CALCULATIONS

STOP @ 400.0
SAMPLE LIBRARY 1 SEP 25 1990 12:46
ANALYSIS # 18 TARGET
INTERNAL TEMP 33 MRKF
GAIN 20 FLD BLK 27

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	13.5	482.2 AVS
UNKNOWN	2	21.5	3.8 US

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials RC

PID DATA

JOB CODE MRKS

DATE 9/25/90

SAMPLE NUMBER –

STANDARD –

FIELD BLANK 28

CARRIER GAS BLANK –

NEEDLE BLANK –

TEMPERATURE

This analysis	33
Standardization	34
Difference + , -	-1

Gain 20

Injection Size 100µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

STOP 0 400.0
SAMPLE LIBRARY 1 SEP 25 1990 18:50
ANALYSIS # 28 TARGET
INTERNAL TEMP 33 TRKF
GAIN 20 FLD BLK 28

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	13.8	439.7 mUS
UNKNOWN	2	20.7	1.8 US

CALCULATIONS

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials KC

PID DATA

JOB CODE MRKF DATE 9/25/90

SAMPLE NUMBER —

STANDARD EOD BTX STD

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK —

TEMPERATURE

This analysis 33
Standardization 33
Difference + , - 0

Gain 20
Injection Size .100 µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

—

PHOTOVAC

START

STOP @ 400.0
SAMPLE LIBRARY : SEP 25 1990 19:15
ANALYSIS # 22 TARGET
INTERNAL TEMP 22 MRKF
GAIN 22 BTX STD EOD

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	13.3	268.4 mVS
UNKNOWN	2	16.3	388.5 mVS
UNKNOWN	3	21.2	1.6 VS
UNKNOWN	4	43.5	1.0 VS
UNKNOWN	5	93.4	1.1 VS
UNKNOWN	6	237.0	337.8 mVS
UNKNOWN	7	285.9	326.8 mVS

CALCULATIONS

Benzene - Rt. 43.5
1 VS = 8.76 mg/l

Toluene - Rt. 93.4
1.1 VS = 8.67 mg/l
VS = 7.88 mg/l

m&p Xylene - Rt. 237
.9378 VS = 17.25 mg/l
1 VS = 18.39 mg/l

O Xylene - Rt. 285.9
.3268 VS = 8.8 mg/l
1 VS = 26.93 mg/l

Concentrations:

TOTAL VOC'S _____
BENZENE _____
TOLUENE _____
p-XYLENE _____

COMMENTS: _____

Operator Initials XC

PID DATA

JOB CODE MRKF DATE 9/25/90

SAMPLE NUMBER —

STANDARD MOD BTX STD

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK —

TEMPERATURE

This analysis	34
Standardization	34
Difference + , -	0

Gain 20

Injection Size 100 µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

STOP 8 480.0
SAMPLE LIBRARY : SEP 25 1990 15:32
ANALYSIS 8 2 TARGET
INTERNAL TEMP 33 MRKF
GAIN 20 BTX STD

COMPOUND NAME	PEAK	R.T.	AREA/PPM	
UNKNOWN	1	13.1	584.5	mVS
UNKNOWN	2	16.8	544.0	mVS
UNKNOWN	3	21.1	2.8	VS
UNKNOWN	4	42.3	1.9	VS
UNKNOWN	5	93.1	1.4	VS
UNKNOWN	7	235.8	1.7	VS
UNKNOWN	8	284.3	558.9	mVS
UNKNOWN	9	341.2	278.1	mVS

CALCULATIONS

Benzene – Rt. 43.3
1.4 VS = 8.76 mg/l
1 VS = 4.61 mg/l
Toluene – Rt. 93.1
1.4 VS = 8.67 mg/l
1 VS = 6.19 mg/l

m & p XYLENE – Rt. 235.8
1.7 VS = 17.25 mg/l
1 VS = 10.15 mg/l

o XYLENE – Rt. 284.3
.5909 VS = 8.8 mg/l
1 VS = 14.89 mg/l

Concentrations:

TOTAL VOC'S _____
BENZENE _____
TOLUENE _____
p-XYLENE _____

COMMENTS: _____

Operator Initials XC

PID DATA

JOB CODE MRKF

DATE 9/25/90

SAMPLE NUMBER —

STANDARD TCE

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK —

TEMPERATURE

This analysis	31
Standardization	31
Difference + , -	0

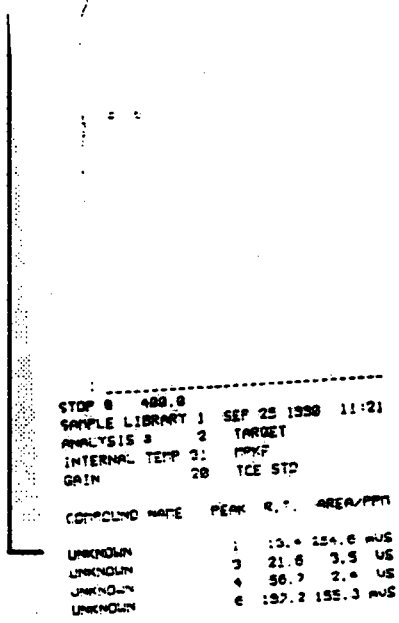
Gain 20

Injection Size 100µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START



CALCULATIONS TCE

2.4 VS = 14.77 mg/l

1 VS = 6.15 mg/l

ncentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials XC

PID DATA

JOB CODE MRKF DATE 9/25/90

SAMPLE NUMBER —

STANDARD BOD BTX STD

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK —

TEMPERATURE

This analysis	33
Standardization	33
Difference + , -	0

Gain 7.0

n Size 100µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

—

PHOTOVAC

START

STOP 0 400.0
SAMPLE LIBRARY 1 SEP 25 1990 12:12
ANALYSIS # 7 TARGET
INTERNAL TEMP 33 MRKF
GAIN 20 BTX STD BOD

COMPOUND NAME	PEAK	R.T.	AREA/HT	
UNKNOWN	1	13.2	243.6	mVS
UNKNOWN	3	21.4	3.0	VS
UNKNOWN	4	43.9	2.4	VS
UNKNOWN	5	94.3	1.7	VS
UNKNOWN	6	238.2	2.0	VS
UNKNOWN	7	287.5	287.6	mVS

CALCULATIONS

Benzene - Rt. 43.9
2.4 VS = 8.76 mg/l
1 VS = 3.65 mg/l

Toluene - Rt. 94.3
1.7 VS = 8.67 mg/l
1 VS = 5.1 mg/l

m&P XYLENE - Rt. 238.2
2 VS = 17.25 mg/l
1 VS = 8.63 mg/l

O XYLENE
.7676 VS = 8.8 mg/l
1 VS = 11.46 mg/l

Concentrations:

TOTAL VOC'S _____
BENZENE _____
TOLUENE _____
p-XYLENE _____

COMMENTS: _____

Operator Initials XL

PID DATA

JOB CODE MRKF

DATE 9/25/90

SAMPLE NUMBER —

STANDARD 111 TCA #2

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK —

TEMPERATURE

This analysis	32
Standardization	32
Difference + , -	0

Gain 20

Injection Size 100µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

—

PHOTOVAC

START

CALCULATIONS

111 TCA - Rt. 39.2

.5522 VS = 13.39 mg/l

1 VS = 24.25 mg/l

TCE

7.5 VS x 6.15 mg/l =

46.1 mg/l

STOP @ 400.0

SAMPLE LIBRARY 1 SEP 25 1990 11:54

ANALYSIS # 5 TARGET

INTERNAL TEMP 32 MRKF

GAIN 20 1,1,1 TCA

COMPOUND NAME	PEAK	R.T.	AREA/PPM	
UNKNOWN	1	13.5	229.5	mVS
UNKNOWN	3	21.8	3.2	VS
UNKNOWN	4	39.2	552.2	mVS
UNKNOWN	5	56.3	7.5	VS

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials _____

PID DATA

JOB CODE MKRF

DATE 9/24/90

SAMPLE NUMBER —

STANDARD BOD STD

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK —

TEMPERATURE

This analysis	31
Standardization	31
Difference + , -	0

Gain 20

Size 100µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

STOP @ 480.0
SAMPLE LIBRARY 1 SEP 24 1990 17: 5
ANALYSIS # 15 TARGET
INTERNAL TEMP 31 MRKF
GAIN 20 BOD STD

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	13.4	483.7 mVS
UNKNOWN	2	17.3	584.5 mVS
UNKNOWN	3	21.8	3.4 VS
UNKNOWN	4	44.7	1.8 VS
UNKNOWN	6	96.1	1.0 VS

CALCULATIONS

1,1,1 TCA - Rt.

BENZENE - Rt. 44.7

1.8 VS = 8.76 mg/l

1 VS = 4.87 mg/l

Toluene - Rt.

1 VS = 8.67 mg/l

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials KC

PID DATA

JOB CODE MRKF DATE 9/25/90

SAMPLE NUMBER —

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK EOO SYS BLK

NEEDLE BLANK —

TEMPERATURE

This analysis	33
Standardization	33
Difference + , -	0

Gain 20

Injection Size 100 µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

STOP 0 400.0
SAMPLE LIBRARY 1 SEP 25 1990 19:23
ANALYSIS # 24 TARGET
INTERNAL TEMP 33 MRKF
GAIN 20 EOO SYS BLK

COMPOUND NAME PEAK R.T. AREA/PPM

CALCULATIONS

Concentrations:

TOTAL VOC'S

BENZENE

TOLUENE

p-XYLENE

COMMENTS:

Operator Initials KC

PID DATA

JOB CODE MRKF DATE 9/25/90

SAMPLE NUMBER —

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK BOD SYS BLK

NEEDLE BLANK —

TEMPERATURE

This analysis 29
Standardization —
Difference + , - —

Gain 20

n Size —

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

CALCULATIONS

STOP 8 480.0
SAMPLE LIBRARY 1 SEP 25 1990 10:44
ANALYSIS # 7 TARGET
INTERNAL TEMP 29 MRKF
GAIN 20 BOD SYS BLK

COMPOUND NAME PEAK R.T. AREA/PPM

Concentrations:
TOTAL VOC'S
BENZENE
TOLUENE
p-XYLENE

COMMENTS:

Operator Initials KC

PID DATA

JOB CODE MRKF

DATE 9/25/90

SAMPLE NUMBER —

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK 104

TEMPERATURE

This analysis	35
Standardization	33
Difference + , -	+2

0

n Size 100 µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

STOP @ 400.0
SAMPLE LIBRARY 1 SEP 25 1990 12:55
ANALYSIS # 18 TARGET
INTERNAL TEMP 35 MRKF
GAIN 20 NEEDLE BLK

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 1 13.[illegible] [illegible] AUS
UNKNOWN 2 16.9 3[illegible].9 AUS

CALCULATIONS

Concentrations:

TOTAL VOC'S

BENZENE

TOLUENE

p-XYLENE

COMMENTS: Needle blank taken after SPL #7

Operator Initials KC

PID DATA

JOB CODE MRKF DATE 9/24/90

SAMPLE NUMBER —

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK BOD SYS BLK

TEMPERATURE

This analysis	29
Standardization	—
Difference + , -	—

Gain 20

Injection Size 100µ

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

STOP @ 400.0
SAMPLE LIBRARY 1 SEP 24 1990 15: 2
ANALYSIS # 6 TARGET
INTERNAL TEMP 29 MRKF
GAIN 20 SYS BLK

COMPOUND NAME PEAK R.T. AREA/PPM

CALCULATIONS

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials KC

PID DATA

JOB CODE MRKF

DATE 9/24/90

SAMPLE NUMBER –

STANDARD –

FIELD BLANK –

CARRIER GAS BLANK –

NEEDLE BLANK 104

TEMPERATURE

This analysis	30
Standardization	–
Difference + , -	–

0

n Size 100.1

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

CALCULATIONS

STOP @ 400.0
SAMPLE LIBRARY 1 SEP 24 1990 15:47
ANALYSIS # 9 TARGET
INTERNAL TEMP 31 MRKF
GAIN 20 NEEDLE BLK

COMPOUND NAME PEAK R.T. AREA/PPM

[illegible] : 13.5 257.4 mVS

Concentrations:

TOTAL VOC'S

BENZENE

TOLUENE

p-XYLENE

COMMENTS: Needle blank taken during STD Prep between 111 TCA and Toluene injections

Operator Initials KC

PID DATA

JOB CODE MRKF DATE 9/24/90

SAMPLE NUMBER —

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK BOD 1mL

TEMPERATURE

This analysis	31
Standardization	31
Difference + , -	0

70

on Size 100 µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

STOP 0 480.0
SAMPLE LIBRARY 1 SEP 24 1990 16: 5
ANALYSIS # 11 TARGET
INTERNAL TEMP 31 MRKF
GAIN 28 NEEDLE BLK

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN : 13.6 250.1 NUS

CALCULATIONS

Concentrations:

TOTAL VOC'S

BENZENE

TOLUENE

p-XYLENE

COMMENTS: Needle blank taken before std

Operator Initials KC

PID DATA

JOB CODE MRKF

DATE 9/24/90

SAMPLE NUMBER —

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK 104

TEMPERATURE

This analysis 32
Standardization 32
Difference + , - 0

Gain 20
on Size 100

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

CALCULATIONS

PHOTOVAC

START

STOP @ 424.2
SAMPLE LIBRARY : SEP 24 1990 18:57
ANALYSIS # 15 TARGET
INTERNAL TEMP 32 MRKF
GAIN 20 NEEDLE BLK

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN : 13.4 257.1 mUS

Concentrations:
TOTAL VOC'S
BENZENE
TOLUENE
p-XYLENE

COMMENTS: Used blank water before std injection

Operator Initials

PID DATA

JOB CODE MRKF DATE 9/25/90

SAMPLE NUMBER —

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK MOD SYS BLK

NEEDLE BLANK —

TEMPERATURE

This analysis	35
Standardization	37
Difference + , -	42

Gain 20

Injection Size 100 µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

—

PHOTOVAC

START

STOP @ 400.0
SAMPLE LIBRARY : SEP 25 1990 14: 9
ANALYSIS # 19 TARGET
INTERNAL TEMP 35 MRKF
GAIN 20 SYS BLK MOD

COMPOUND NAME PEAK R.T. AREA/PPM

CALCULATIONS

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: _____

Operator Initials KC

PID DATA

JOB CODE MRKF

DATE 9/25/90

SAMPLE NUMBER —

STANDARD ✓

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK 104

TEMPERATURE

This analysis	33
Standardization	33
Difference + , -	0

Gain 20

on Size 0.1

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

STOP 0 400.0
SAMPLE LIBRARY 1 SEP 25 1990 12: 3
ANALYSIS # 6 TARGET
INTERNAL TEMP 33 MRKF
GAIN 20 NEEDLE BLK

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 13.2 182.0 AVS

CALCULATIONS

Concentrations:

TOTAL VOC'S

BENZENE

TOLUENE

p-XYLENE

COMMENTS: Needle Blank taken after 111 TCA std and before BTX std

Operator Initials KC

PID DATA

JOB CODE MRKF

DATE 9/25/90

SAMPLE NUMBER —

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK Need

TEMPERATURE

This analysis 32
Standardization —
Difference + , - —

Gain 20
Injection Size 100 µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

STOP 0 400.0
SAMPLE LIBRARY 1 SEP 25 1990 11:30
ANALYSIS # 3 TARGET
INTERNAL TEMP 32 MRKF
GAIN 20 NEEDLE BLK

COMPOUND NAME PEAK R.T. AREA/PPM

UNKNOWN 1 [illegible] [illegible] AVS

CALCULATIONS

Concentrations:
TOTAL VOC'S
BENZENE
TOLUENE
p-XYLENE

COMMENTS: Needle Blank taken Between TCE and TCA

Operator Initials KC

PID DATA

JOB CODE MRKF

DATE 9/25/90

SAMPLE NUMBER —

STANDARD —

FIELD BLANK —

CARRIER GAS BLANK —

NEEDLE BLANK 104

TEMPERATURE

This analysis	33
Standardization	33
Difference + , -	0

0

n Size 100µl

GAIN	VS
2	0.21
5	0.53
10	0.98
20	3.5
50	15.0
100	27.0
200	53.0

PHOTOVAC

START

CALCULATIONS

STOP 8 400.0
SAMPLE LIBRARY 1 SEP 25 1990 12:28
ANALYSIS # 8 TARGET
INTERNAL TEMP 33 MRKF
GAIN 20 NEEDLE BLK

COMPOUND NAME	PEAK	R.T.	AREA/PPM
UNKNOWN	1	13.2	555.2 mUS
UNKNOWN	2	17.1	286.8 mUS

Concentrations:

TOTAL VOC'S _____

BENZENE _____

TOLUENE _____

p-XYLENE _____

COMMENTS: Needle Blank taken after BTX STD and before Field Blk #27

Operator Initials _____

APPENDIX B

Monitoring Well Laboratory Report

YORK LABORATORIES

REPORT TRANSMITTAL

REPORT NUMBER 30900-1828

DATE October 18, 1990

CLIENT Radian Corporation
155 Corporate Woods, Suite 100
Rochester, NY 14623

ATTENTION Mr. Ron Melkis

The above referenced report is enclosed. Copies of this report and supporting data will be retained in our files in the event they are required for future reference.

If there are any questions concerning this report, please do not hesitate to contact us.

Any samples submitted to our Laboratory will be retained for a maximum of sixty (60) days from receipt of this report, unless other arrangements are desired.

200 MONROE TURNPIKE • MONROE, CONNECTICUT 06468 • (203) 261 4458

October 18, 1990

30900-1828
RADIAN CORPORATION
155 Corporate Woods, Suite 100
Rochester, New York 14623

Re: Kodalux

Attention: Mr. Ron Melkis

PURPOSE

One sample and one trip blank collected on September 26, 1990 was submitted to York Laboratories Division of YWC, Inc. by Radian Corporation. The client requested the samples be analyzed for the parameters listed in Table 1.0.

METHODOLOGY

Volatile organics were determined using purge and trap GC/MS. The instrumentation used was a Tekmar Dynamic Headspace Concentrator interfaced with a Hewlett-Packard Model 5995C GC/MS/DS.

Semi-volatile organics were determined using capillary GC/MS. The instrumentation used was a Hewlett-Packard Model 5890 gas chromatograph interfaced with a Model 5970 Mass Selective Detector.

Metals were determined by ICP using either a JA61 simultaneous ICAP or a PE6500 XR sequential ICP.

All other analyses were conducted according to Standard Methods for the Examination of Water and Wastewater, 16th Edition, 1985, APHA-AWWA-WPCF; and Methods for Chemical Analysis of Water and Wastes, USEPA 600/4-79-020.

DISCUSSION

Volatile Organics - Sample TB 09/26/90 was analyzed three times, twice a surrogate was out and once the run was aborted. The client was contacted and requested the lab report only one of the results with the surrogate out of criteria. Since only two VOA vials were sent there was insufficient sample volume to analyze again.

Semi-Volatile Organics - Sample H0228010 was spiked with twice the BNA surrogate concentration than is standard procedure. Recoveries were within criteria based on the actual spiking level.

RESULTS

The results are presented in the following Tables.

Prepared by: _____
Jeffrey C. Curran
Laboratory Manager

JCC/mt

The liability of YWC, Inc. is limited to the actual dollar value of this project.

Discharge Investigation and Corrective Action Report
Kodalux Processing Laboratory
Fair Lawn, New Jersey

October 3, 1990

Prepared for:

Eastman Kodak Company
Environmental Technical Services
Health and Environmental Laboratory
901 Elmgrove Road
Building 9 West
Rochester, New York 14653-5710

Prepared by:

CA Rich Consultants, Inc.
404 Glen Cove Avenue
Sea Cliff, New York 11579

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DISCHARGE INVESTIGATION AND CORRECTIVE ACTION REPORT
KODALUX PROCESSING LABORATORY
FAIR LAWN, NEW JERSEY

1.0 INTRODUCTION

This report summarizes the investigation of a No. 6 heating oil release at the Kodalux Processing Facility in Fair Lawn, N.J. The Kodalux Facility is situated along Route 208. A map of the Facility and environs is illustrated on Figure 1.

In May and June, 1990, CA RICH CONSULTANTS, INC. conducted an Underground Storage Tank (UST) removal program at the Fair Lawn Facility. Details of the removal are included in a written report which was submitted to NJDEP's Water Resources Division on August 1, 1990. Kodalux's UST facility registration number is 0048026 and includes the following four tanks.

Tank No.	0001	0002	0003	0004
Contents	No. 6 heating oil	No. 6 heating oil	Unleaded gasoline	Unleaded gasoline
Age (years)	16	16	12	21
Size (gallons)	20,000	20,000	3,000	2,000
Construction	Single walled steel	Single walled steel	Single walled steel	Single walled steel
Status	Removed June 90	Removed June 90	Removed June 90	Removed June 90

During the removal of both of the No. 6 heating oil UST's, oil was detected in the subsurface soils directly below the tanks. The NJDEP Action Hotline was notified of this release and the site assigned Case Number 90 05 22 1638.

The No. 6 heating oil tanks were installed on a concrete pad located adjacent to the existing building. Due to the proximity of these tanks and their concrete pads to the existing structure, it was not possible to remove any additional soil from this location without jeopardizing the structural integrity of the building's foundation. One shallow bedrock monitoring well was installed adjacent to the former No. 6 heating oil UST's as part of these DICAR field activities. A summary of the analyses of the soil samples collected at the bottom of the excavation are presented on Figure 2 and Table 1.

Soil samples below the exhumed unleaded gasoline UST's and their appurtenant underground pipelines indicated the presence of elevated Total Petroleum Hydrocarbon (TPHC) values, specifically in the soil below the former gasoline pump. These findings are presented in our June 1990 report and summarized on Figure 3. Approximately 15 yards of gasoline-tainted soil was removed from below the former gas pump area as part of the DICAR field activities.

2.0 SITE CHARACTERIZATION

The Borough of Fair Lawn in Bergen County has a population of approximately 33,000 people. The Kodalux Facility is situated in an industrial park in Fair Lawn with frontage on Route 208. Land uses adjoining the Kodalux property include the Fair Lawn Executive Center, Warner Computer Systems, Inc., a vacant warehouse, Becton Dickenson Pharmaceuticals and farmland.

The surficial soil underlying the Kodalux property consists of a sand and clay fill material which, in turn, is underlain by glacial till composed of silty, sandy, gravelly clay - a material that typically has a relatively low permeability. Beneath the till occur the shales of the Brunswick Formation. The Brunswick shale has a low primary permeability, but typically has a moderate to high secondary permeability due to its extensive network of interconnected joints and fractures.

As illustrated on the appended boring log, the monitoring well installed adjacent to the No. 6 heating oil tank excavation encountered approximately 7 feet of fill material followed by glacial till to a depth of approximately 15 feet. The depth to bedrock observed during the excavation program generally ranged from 10 to 15 feet below grade.

Kodalux is serviced by the Fair Lawn Water Department (FLWD) for both its potable and process water supply and by an on-site irrigation well for lawn watering. A list of those wells recorded within a one-half mile radius of the Facility was compiled from a review of information collected at NJDEP's Bureau of Water Allocation, Well Permits Section, and from from the Borough of Fair Lawn Engineering Department. This list is presented on Table 2.

After the release of No. 6 heating oil had been detected, a survey of potential hydrocarbon vapors and free product was performed in the basement of the building, in the boiler room located immediately adjacent to the outside tanks, and in the storm drains near the tanks. In summary, no vapors were detected in the building using an HNU organic vapor detector and an inspection of the storm drains did not reveal the presence of petroleum.

3.0 SOIL REMEDIATION

During the UST removal program, a number of soil samples were collected from below the exhumed underground tanks and appurtenant piping as discussed in our report dated June 1990. One soil sample collected from below the unleaded gasoline pump contained Total Petroleum Hydrocarbon (TPHC) at a concentration of 4,500 parts per million. On August 3 and 6, 1990, additional soil was removed from below the former pump using a backhoe. The soil encountered below the pump was glacial till consisting of a silty, sandy, gravelly clay and bedrock below the till is the Brunswick Shale.

The excavation was advanced to the shale bedrock at a depth of 10 feet, and measured approximately 4 feet wide by 10 feet long as illustrated on Plate 1. The excavation was made as wide as possible without disturbing the existing concrete and asphalt roadway. A gasoline odor was detected during the excavation, but no free product or gasoline sheen was observed. Soil placed in a jar with water and shaken did not produce a sheen.

One soil sample was collected from the bottom of the excavation (GP-1) and one sample was composited from the excavation walls at a depth of 3 feet (GP-2). Each of these were analyzed for volatile organics and TPHC. One additional sample (GP-3) was collected at the southeastern end of the excavation at a depth of 3 feet and tested for TPHC.

The results of these analyses, presented on Table 3, indicated that unleaded gasoline had migrated into the subsurface. Based on the initial TPHC results of 4,500 ppm directly below the pump, it appears that the bulk of the gasoline-tainted soil was removed. The excavated soil was staged and covered with bermed and anchored plastic sheeting and will be disposed of properly pending the results of the waste characterization analysis.

4.0 GROUNDWATER MONITORING

On July 31, 1990, drilling of a test boring for the purposes of installing a monitoring well was initiated using a Mobile B-57 hollow-stem auger drill rig. Subcontractor drilling was performed under the supervision of a CA RICH field representative. The boring was advanced through 8 feet of dry fill material until reaching refusal on a boulder at the contact with the underlying glacial till. No HNU readings were detected in any of the drilled materials.

At this point, CA RICH decided that an alternative drilling method would be required to successfully, and cost-effectively, complete the installation of a well that could yield meaningful information. On August 2, 1990, Wm. Stothoff Co. completed installation of Well Number 1, a 6-inch diameter, shallow bedrock monitoring well using a Schramm air rotary drill rig. A log of the well is attached to this report. The well was cased to land surface and completed as an open hole in rock from 45 to 20 feet. A trace of No. 6 heating oil was noted in the drill cuttings at approximately 29 feet below grade. Continued development and bailing of this well indicate that although some oil is present in the fractures encountered by this well, the oil does not flow into the well.

Sampling of Well Number 1 and of an on-site irrigation well took place on August 21, 1990. The monitoring well was developed and purged using a new 3-inch diameter PVC bailer. The bailer was washed with Alconox and tap water and then dedicated to this well. Prior to collecting the sample, a water level of 23.69 feet below top of casing was measured and three casing volumes of water were bailed from the well. A groundwater sample was then collected using a decontaminated 3-inch diameter stainless steel bailer equipped with a Teflon (TM) foot valve and bottom emptying device.

The bailer was decontaminated following NJDEP protocol:

1. Alconox wash
2. Tapwater rinse
3. Deionized water rinse
4. 10% nitric acid rinse
5. Deionized water rinse
6. Pesticide grade acetone rinse
7. Air dry
8. Deionized water rinse

The sampling bailer was lowered slowly into the well so as not to aerate the water. A slow, steady stream of water was achieved to fill the sample bottles using a Teflon (TM) bottom emptying device.

Prior to collecting a sample from the irrigation well, the lawn sprinkler system was allowed to run for 30 minutes to purge the well. After 30 minutes, the sample bottles were collected directly from a spigot located at the well head.

A field blank was collected by passing laboratory-issued deionized water through the stainless steel bailer and into laboratory-issued sample bottles. The field blank was analyzed for volatile and base neutral extractable organics. A laboratory-issued trip blank was obtained the morning of the sample collection and traveled with the sample cooler throughout the day.

The water samples were analyzed for volatile organics using EPA Method 624 + 15 + MTBE and TBA and base neutral extractable organics using EPA Method 625 + 15. The irrigation well was also sampled for silver, hydroquinone and formaldehyde. The results of these analyses, presented on Table 4, do not reveal the presence of semivolatile organic compounds associated with No. 6 heating oil. Bis(2-ethylhexyl)phthalate, a common plasticizer compound was detected in the irrigation water well. This compound is believed to be either a laboratory artifact or associated with plastic piping between the well pump and the sampling spigot at the well head.

Several volatile organic chemical compounds not associated with No. 6 heating oil were also detected. Potential sources of these compounds include other nearby industries with documented groundwater contamination plumes. Also, an on-going investigation of the Kodalux dry well is being conducted by Kodak under the auspices of the DEP's Division of Water Resources-Enforcement, Metro Region under Case No. 90 06 15 1528.

5.0 CONCLUSIONS

5.1 No. 6 heating oil released from the former heating oil UST's is presently contained in the soils below the existing Kodalux building and the concrete slab located below the former tanks. Due to the proximity of the former tanks to the existing buildings, it is not technically feasible to remove additional soil from this location without threatening the stability of the building's foundation.

5.2 The water samples collected from monitoring well W-1 and the on-site irrigation well do not indicate the presence of semivolatile organic compounds associated with No. 6 heating oil. A second, confirmatory round of sampling was performed on September 21st with sample results due in mid October. These results will be delivered to NJDEP upon receipt.

5.3 Several volatile organic compounds were detected in both the newly installed monitoring well and the on-site irrigation well. Neighboring industries with documented groundwater contamination plumes are a potential source of these compounds. Kodak is presently investigating a former dry well in conjunction with the NJDEP's Division of Water Resources-Enforcement, Metro Region under Case No. 90 06 15 1528.

5.4 Approximately 15 cubic yards of soil were removed from below the former unleaded gasoline pump. Based on the initial TPHC value of 4,500 ppm, and the 1450 ppm value measured at the bottom of the excavation, it appears that the bulk of the gasoline contaminated soil has been removed.

TABLE 1

Summary of Base Neutral Extractable Organic Analysis for Sample 6-1

Parameter	Detections (ppm)
2-Methylnapththalene	2,100
Phenanthrene	2,800
Pyrene	3,500
Benzo (a) Anthracene	1,500

TABLE 2

One Half Mile Radius Well Inventory
Kodalux Processing Laboratory
Fair Lawn, NJ

Well owner/ Number	Distance from tanks (feet)	Depth of well (feet)	Screened interval (feet)	Pumping rate (mgd)	Well Use
Kodalux	30	45	20 to 45	n/a	M
Kodalux	570	485	39 to 485	varies seasonally	F
FLWD #24	400	325	18 to 325	n/a	N
FLWD #23	600	390	46 to 390	n/a	N
FLWD #10	2,500	300	35 to 300	0.108	P
FLWD #11	2,500	400	54 to 400	0.108	P
FLWD #12	2,500	400	40 to 400	n/a	N
FLWD #14	2,500	400 (est.)	n/a	0.144	P

Note: M = monitor well, F = irrigation well, P = public supply well, N = not in use, n/a = not available

TABLE 3

SUMMARY OF RESULTS FROM GASOLINE PUMP EXCAVATION

PARAMETER (units)	GP-1 (bottom)	GP-2 (side walls)	GP-3 (s.e. corner)	Field Blank	Trip Blank
Total Petroleum Hydrocarbon (ppm)	1450	354	<27.8	0.42	NA
Toluene (ppb)	32806	119082	NA	ND	ND
Ethylbenzene (ppb)	ND	109093	NA	ND	ND
M, P-Xylene (ppb)	148020	466024	NA	ND	ND
O-Xylene (ppb)	71821	212068	NA	ND	ND

ND - Not detected at method detection limit

NA - Not analyzed

TABLE 4

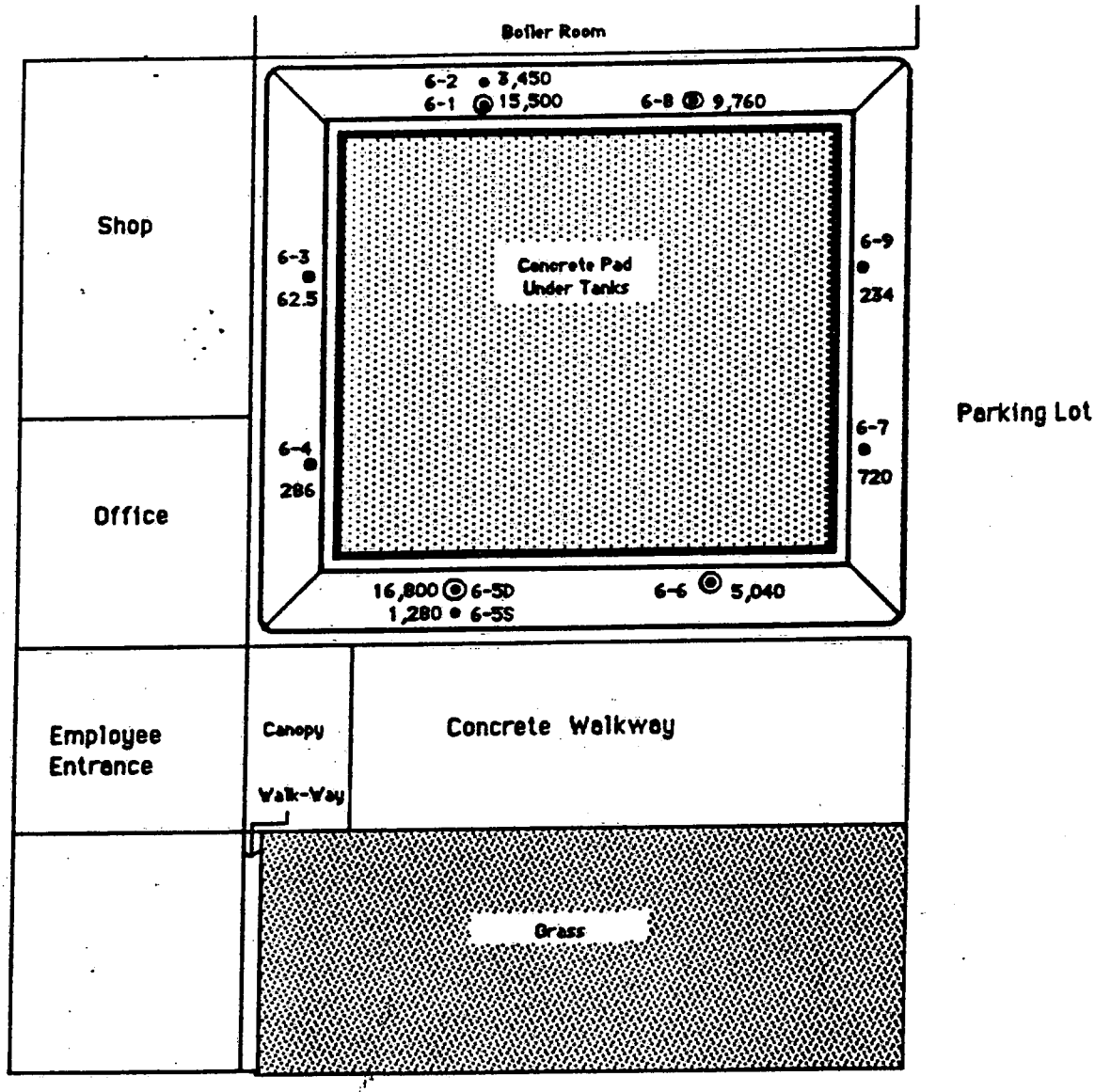
GROUNDWATER QUALITY
Kodalux , Fair Lawn, N J

PARAMETER	SAMPLE ID#		FIELD BLANK	TRIP BLANK
	Well #1 W - 1	Irrig. Well #1W	FB-8/21	TB-8/21
VOLATILES (PPB)				
1,1-Dichloroethene	9	94	ND	ND
Methylene Chloride	13 B	9 B	ND	9B
1,1-Dichloroethane	25	37	ND	ND
1,1,1-Trichloroethane	110	218	ND	ND
Chloroform	ND	122	ND	ND
Carbon Tetrachloride	ND	36	ND	ND
Trichloroethene	ND	66	ND	ND
Tetrachloroethene	ND	14	ND	ND
Tert-Butyl-Alcohol	34	ND	ND	ND
BASE NEUTRALS (PPB)				
Bis(2-Ethylhexyl)Phthalate	ND	17	ND	N/A
OTHER PARAMETERS (PPM)				
Formaldehyde	N/A	68	N/A	N/A
Hydroquinone	N/A	ND	N/A	N/A
Silver	N/A	ND	N/A	N/A

B - Indicates compound also present in blank.
ND - Not Detected.
N/A - Not Applicable.
PPB - Parts per billion

Location Map of Kodalux Facility and Adjacent Properties

CA RICH CONSULTANTS, INC. Certified Ground-Water and Environmental Specialists	Kodalux Facility DICAR Fair Lawn, New Jersey	
	Prepared By: STS	Date: August 1990
404 Glen Cove Avenue, Sea Cliff, N.Y. 11579	Reviewed By: EAW	Figure: 1



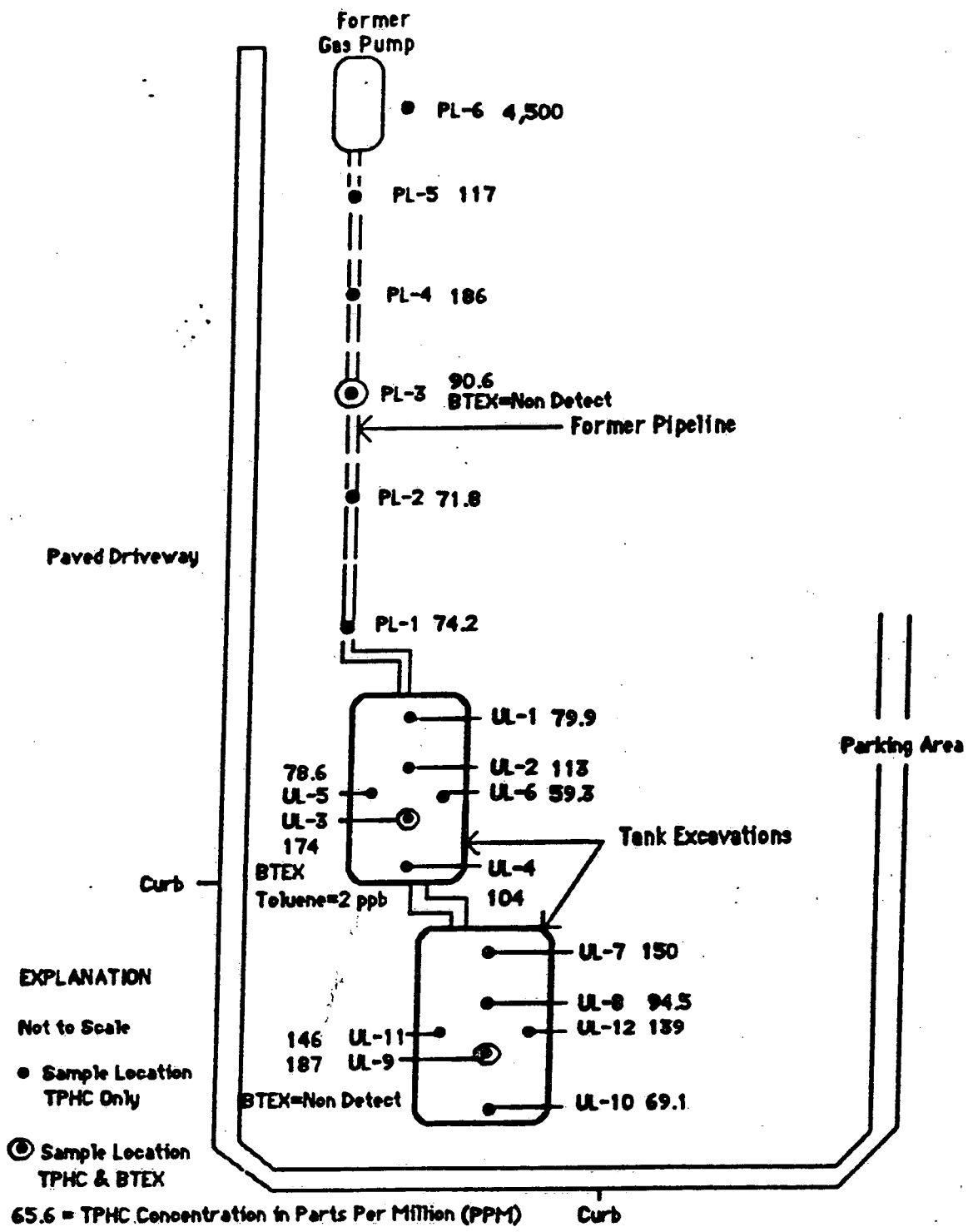
EXPLANATION (Not to Scale)

- Sample Location TPHC only
- Sample Location TPHC & BNE

84.5 = TPHC Concentration in Parts Per Million (PPM)

Map of No. 6 Heating Oil Excavation & Soil Sample Locations

CA RICH CONSULTANTS, INC. Certified Ground-Water and Environmental Specialists	Kodalux Processing Laboratory Fair Lawn, New Jersey	
	Prepared By: STS	Date: July 1990
404 Glen Cove Avenue, Sea Cliff, N.Y. 11579	Reviewed By: EAW	Figure: 2



Map of Unleaded Gasoline Excavations & Soil Sample Locations

CA RICH CONSULTANTS, INC. Certified Ground-Water and Environmental Specialists	Kodalux Processing Laboratory Fair Lawn, New Jersey		
	Prepared By: STS	Date: July 1990	
404 Glen Cove Avenue, Sea Cliff, N.Y. 11579	Reviewed By: EAW	Figure: 3	

CA Rich Consultants Inc.
Well/Boring Log

Well/Boring No. MW-1 Geologist/Inspector on site: Steven Sobstyl (CA Rich Consultants) Page 1 of 2

Project: Kodalux Facility Location 16-31 Rt 208 Fair Lawn, N.J. Date Drilled 8-2-90 Depth: 45 ft.

Drilling Co. William Stothoff Co. Inc. Drilling Method: Hollow Stem Auger/Air Org. Vapor Instrmts. HNU

Depth (ft)	Sample No.	Blows per 6"	Smpl. Intvl.	Adv/Rec (inch)	Org.Vap (ppm)	Sample Description	Strata Change	Remarks
2		5 7 12 28	0 to 2.5	24/18	0.0	Red brown fine sand with some clay		Fill Material
4		7 12 14 14	2.5 to 5	24/12	0.0	Red brown fine sand with some clay		Fill Material
6		7 12 21 28	5 to 7.5	24/12	0.0	Red brown fine sand with some clay and concrete fragments		Fill Material
8		12 26 28 21	7.5 to 10	24/0	0.0	Red brown sandy clay with some rock fragments		Native Soil Refusal
10		Refusal	Switch to Air Rotary					
12								
14						Sandstone and Shale apprx. 15 ft		Bedrock
16								
18								

CA Rich Consultants Inc.
Well/Boring Log

Well/Boring No. MW-1 Geologist/Inspector on site: Steven Sobstyl (CA Rich Consultants)

Project: Kodalux Facility Location 16-31 Rt 208 Fair Lawn, N.J. Date Drilled 8-2-90 Depth: 45 ft.

Drilling Co. William Stothoff Co. Inc. Drilling Method: Hollow Stem Auger/Air Org. Vapor Instrmts. HNU

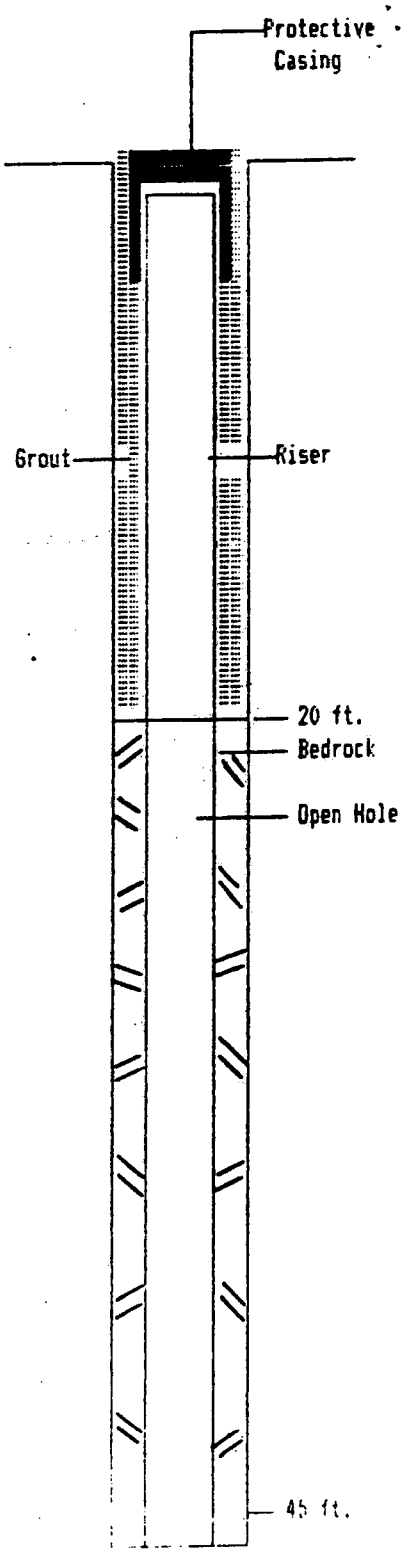
Depth (ft)	Sample No.	Blows per 6"	Smpl. Intvl.	Adv/Rec (inch)	Org.Vap (ppm)	Sample Description	Strata Change	Remarks
20		Air Rotary				Sandstone and Shale		Bedrock
25								
30								Oil sheen on drilling water @ 29 ft. Water table @ 33 ft.
35								
40								
45								End Boring 45 feet

WELL CONSTRUCTION SUMMARY

CA RICH CONSULTANTS, INC.

Project: Kodalux Facility Client: Kodalux Well No: MW-1

NO SCALE



DRILLING SUMMARY

Drilling Company: William Stothoff Company, Inc. Driller: Charles M.

Drill Rig Make/Model: Schramm Rotadrill

Borehole Diameter: 10 inches

Drilling Fluid: None

Total Depth: 45 feet below grade Depth to Water: 33 feet

Supervisory Geologists: Steven Sobstyl (CA Rich Consultants, Inc.)

WELL DESIGN

Casing Material: Stainless Steel Diameter: 4 inch Length: 20 FT.

Screen Material: None/Bedrock Well Diameter: ----- Length: ------

Slot Size: ----- Setting: ------

Filter Material: ----- Setting: ------

Seals Material: ----- Setting: -----

Grout ----- Setting: 20 feet to grade

Surface Casing Material: Iron Setting: Flush

TIME LOG

	Started	Completed
Drilling:	8-2-90	8-2-90
Installation:	8-2-90	8-2-90
Development:	8-2-90	8-2-90

WELL DEVELOPMENT

Method: Air Lift

Static Depth to Water: Approx. 33 feet Specific Capacity:

Pumping Depth to Water:

Pumping Rate: 1 Gallon per Minute Volume Pumped: 20 gallons

BASEMENT FLOOR DRAIN
SUBSURFACE INVESTIGATION
Kodalux Processing Laboratory
Fair Lawn, New Jersey

July 1990

Prepared for:

Eastman Kodak Company
Environmental Technical Services
Health and Environmental Laboratory
901 Elmgrove Road
Bulding 9 West
Rochester, New York 14653-5710

Prepared by:

CA Rich Consultants, Inc.
404 Glen Cove Avenue
Sea Cliff, New York 11579

BASEMENT FLOOR DRAIN SUBSURFACE INVESTIGATION
Kodalux Processing Laboratory
Fair Lawn, New Jersey

1.0 INTRODUCTION

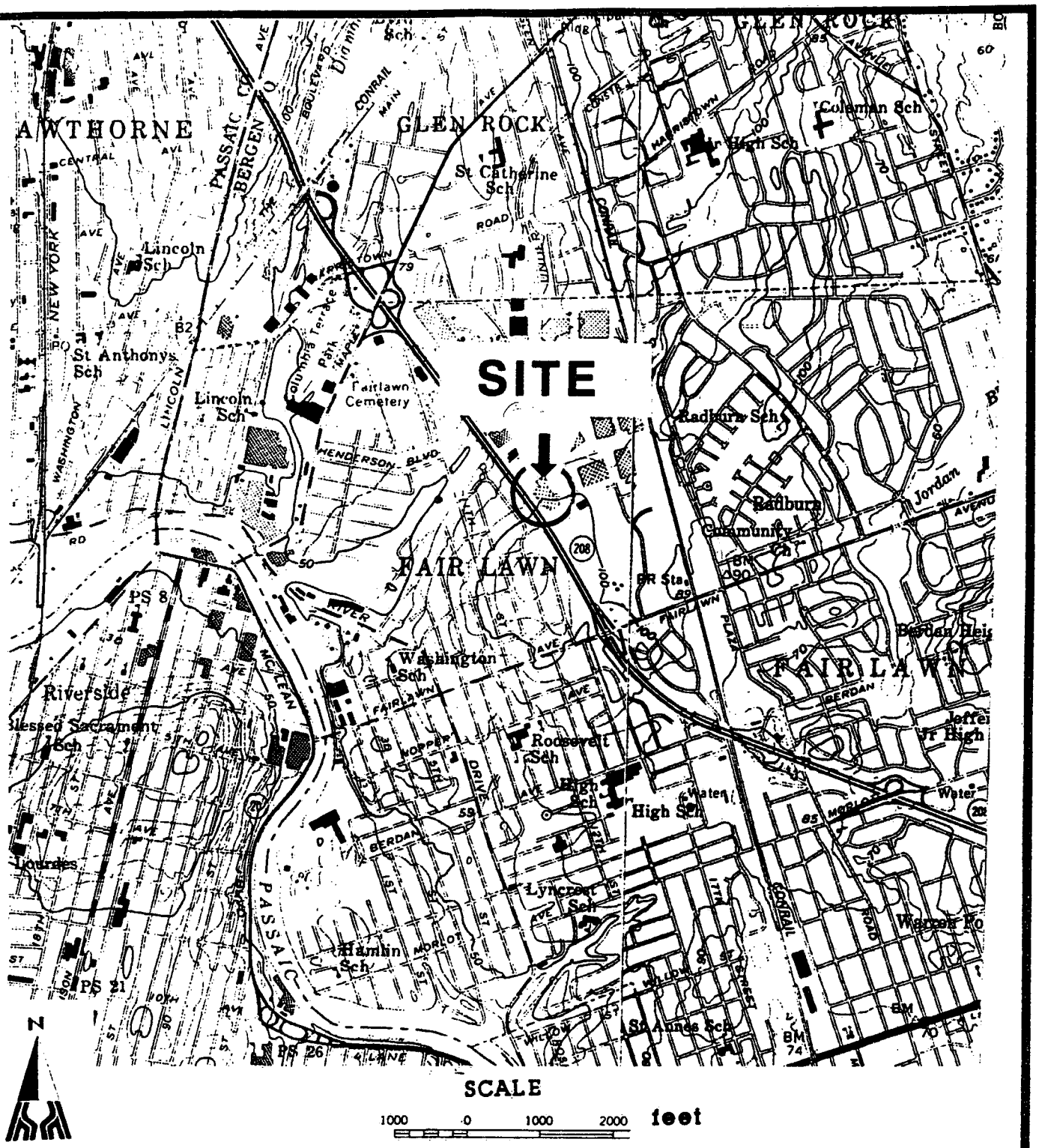
This summary report of field and analytical activities documents the excavation of two basement floor drains, the sampling of adjacent soil, and the pressure-testing of a floor drain system at the Kodalux Processing Laboratory in Fair Lawn, New Jersey (Figure 1). This work was performed in accordance with our proposals dated May 9 and 30, 1990 and authorized by Kodak's Purchase Order No. LR-KD7-32571W.

Corrosion of the drain system was discovered at both of the drains that were excavated, as well as the point where the drain system enters the floor sump (see Figure 2). Laboratory analysis of the soils beneath the drains indicate contamination of both inorganic and organic constituents. Drain rehabilitation and a groundwater monitoring program are recommended for this facility.

CA Rich Consultants, Inc. (CA RICH) provided oversight and project coordination of the excavation activities, including the collection of confirmatory soil samples. The excavation was performed by State-registered Direct Environmental, Inc., while analysis of soil samples collected from the excavation were performed by State-certified Nytest Environmental, Inc. Pressure-testing services were provided by Tank Automation. All excavated materials are temporarily stored on-site, pending analytical results for proper disposal.

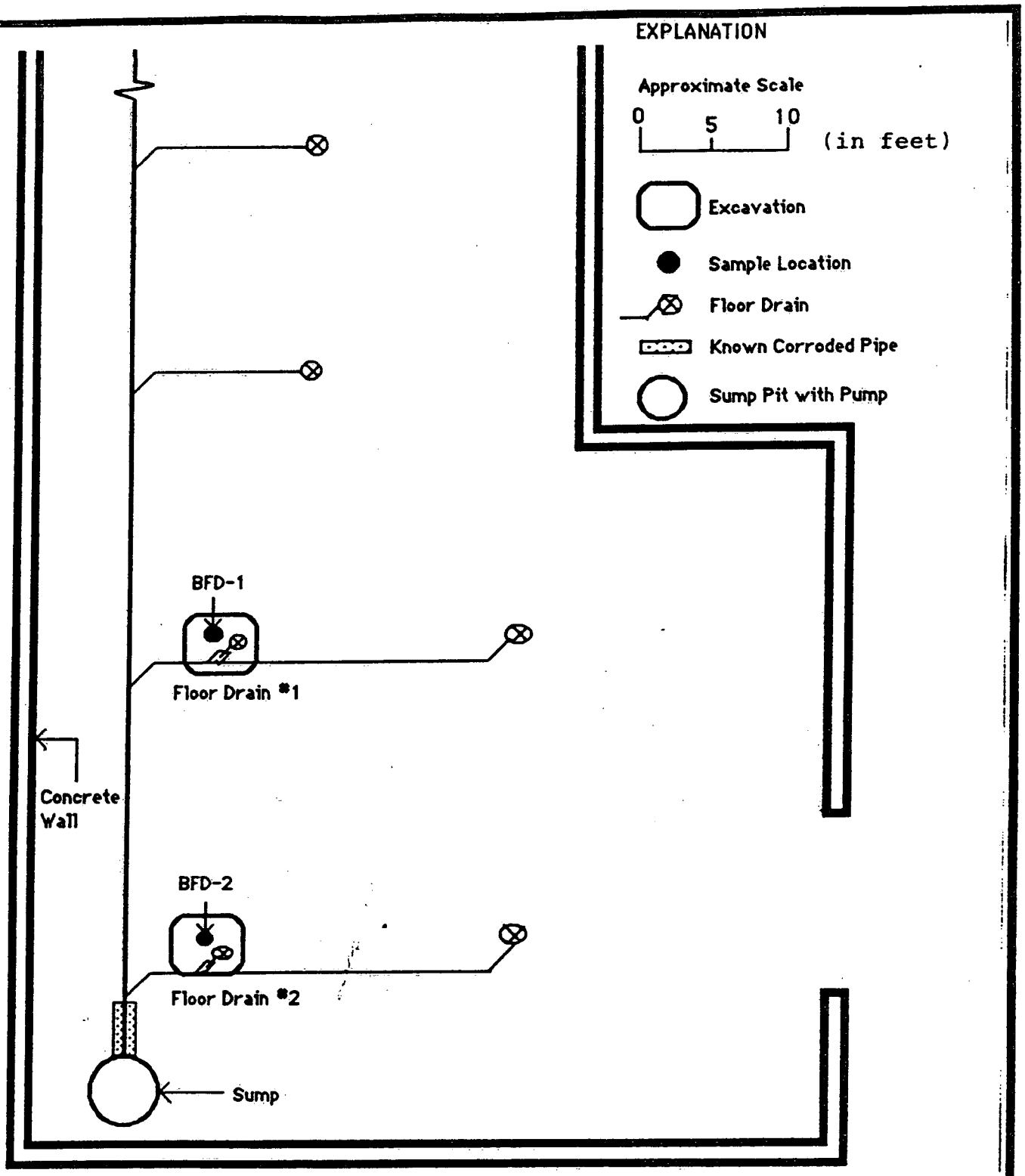
The basement floor drain program began on May 30 and was completed on June 4, 1990. The program included the following:

- Excavation of two basement floor drains.
- Removal of corroded sections of pipe.
- Temporary plugging of adjacent drain pipe.
- Sampling of the soil adjacent to and beneath the drains.
- Pressure-testing of the basement floor drain system.



SITE LOCATION MAP

CA RICH CONSULTANTS, INC. Certified Ground-Water and Environmental Specialists	Kodalux Processing Laboratory Fair Lawn, New Jersey	
	Prepared By: STS	Date: June 1990
404 Glen Cove Avenue, Sea Cliff, N.Y. 11579	Reviewed By: EAW	Figure: 1



SCHEMATIC REPRESENTATION OF BASEMENT
FLOOR DRAIN SYSTEM & SAMPLING LOCATIONS

CA RICH CONSULTANTS, INC. Certified Ground-Water and Environmental Specialists	KODALUX PROCESSING LABORATORY FAIR LAWN, NJ	
	Prepared By: STS	Date: JULY 1990
404 Glen Cove Avenue, Sea Cliff, N.Y. 11579	Reviewed By: EAW	Figure: 2

2.0 FIELD ACTIVITIES

2.1 Site Preparation

Site preparation consisted of reviewing blueprints of the floor drain system in the portion of the basement used to recover silver and to pretreat the photochemical waste stream, before discharging the liquid to the municipal, Publicly Operated Treatment Works (POTW). A drum staging area was set aside in a fenced, unused corner of the parking lot, so that 55 gallon drums of excavated soil could be temporarily staged.

2.2 Excavation of Drains

Two of the six floor drains, connected to a main underground pipe servicing the south-west portion of the basement, were excavated. An opening approximately five (5) feet by five (5) feet was excavated through the concrete floor around both drains. The concrete was removed and placed into 55 gallon drums. The excavation was continued by manually digging down and around the floor drain. The excavated soil was also placed into 55 gallon drums.

In each case, as much as six (6) inches of the cast iron trap had been corroded away. The soil adjacent to the pipes was found to be moist and discolored. When each trap was cleared of the surrounding soil, the trap was cut off and the drain pipe stub was sealed tightly with an expandable plug. This prevented backflow of liquid to the excavation from the drain system.

Each excavation was deepened in an attempt to remove the moist and discolored soil, prior to digging a sample pit. The total depth of each excavation was approximately three (3) feet below the concrete floor. As the excavations are adjacent to several large process tanks, the digging was limited to this depth.

2.3 Collection of Confirmatory Samples

One (1) composite soil sample was collected from the bottom and side walls of each excavation using a decontaminated, stainless steel sampling spoon. These sample locations are designated BFD-1 and BFD-2. The two samples were collected to determine the quality of the soil below the corroded drains. Each sample was placed into a clean, laboratory-issued glass jar and submitted to Nytest Environmental, Inc., to be analyzed for the following parameters: volatile organics, silver, total chromium, cyanide, hydroquinone, formaldehyde, and pH.

Additionally, one (1) composite sample of the excavated soil from each excavation was collected for waste characterization analyses. These analytical parameters include: ignitability, corrosivity, reactivity, EP Toxicity metals, cyanide, volatile organics, formaldehyde, and pH.

2.4 Temporary Securing of Excavations

As this portion of the basement and the floor drains are in an area of frequent traffic, the two floor drain excavations were temporarily secured. In addition to the plugs in the drain pipe, one excavation was lined with plastic and the other was covered with plastic, to prevent liquids on the floor from reaching the soil exposed in the excavations. Also, a 3/4-inch plywood cover was placed over the less-traveled area of the basement and 1/2-inch steel plate cover was placed over the more frequently traveled area, where a fork-lift truck is used to refill adjacent tanks.

2.5 Pressure-Testing of Drain Line

In order to determine the extent of corrosion in the floor drain system, a pressure-test was performed on the drain line. Previously, CA RICH had used building plans to locate all ten (10) of the openings in the drain system. The pressure-test, conducted by Tank Automation, consisted of attempting to seal all of the openings with 4-inch, expansion-type sewer plugs, to create a "closed" pipe system. Water would then be allowed to fill the system, in preparation for pressurizing the line.

However, repeated attempts to seal the line at the sump revealed that the drain system could not hold water. Apparently, corrosion of the 4-inch main leading to the sump allowed water to exit the pipe, flow through the soil (around the plug), re-enter the pipe and flow into the sump.

3.0 SAMPLE ANALYSIS

The results of the samples collected from the excavations are summarized in Table 1.

3.1 Floor Drain #1 (Sample I.D. BFD1-CS-1)

The following inorganic constituents were detected in soil sample BFD-1: silver at 41.6 ppm; cyanide at 0.13 ppm; chromium at 7.0 ppm; formaldehyde at 28.2 ppm; and hydroquinone at 936 ppm.

TABLE 1

SUMMARY OF ANALYTICAL DATA FOR SOIL SAMPLES
Basement Floor Drain Investigation
Kodalux Processing Laboratory, Fair Lawn, N.J.

PARAMETER	SAMPLE IDENTIFICATION				TRIP BLANK
	Excava. Composite Samples		Waste Chara. Samples		
	BFD1-CS-1	BFD2-CS-1	BFD1-WC-1	BFD2-WC-1	
Volatile Organics (PPB)					
Methylene Chloride	2.0 J	ND	2.0	3.0	ND
2-Propanone	27	43.0	28.0	37.0	ND
EP Toxicity (PPM)					
Arsenic	N/A	N/A	<0.5	<0.5	N/A
Barium	N/A	N/A	<10.0	<10.0	N/A
Cadmium	N/A	N/A	<0.1	<0.1	N/A
Chromium	N/A	N/A	<0.5	<0.5	N/A
Lead	N/A	N/A	<0.5	<0.5	N/A
Mercury	N/A	N/A	<0.02	<0.02	N/A
Selenium	N/A	N/A	<0.1	<0.1	N/A
Silver	N/A	N/A	<0.5	<0.5	N/A
Others (PPM)					
Silver	41.6	<5.0	N/A	N/A	N/A
Chromium	7.0	9.5	N/A	N/A	N/A
Cyanide	0.13	12.20	0.75	0.445	N/A
Hydroquinone	936.0	69.4	N/A	N/A	N/A
Formaldehyde	28.2	35.0	57.6	84.9	N/A
Hazardous Characteristics					
pH	N/A	N/A	7.2	7.3	N/A
Corrosivity (inches/year)	N/A	N/A	<0.01	<0.01	N/A
Ignitability (° F)	N/A	N/A	>212°	>212°	N/A
Reactivity to Cyanide (PPM)	N/A	N/A	<1.0	<1.0	N/A
Reactivity to Sulfide (PPM)	N/A	N/A	<1.0	<1.0	N/A

ND - Not Detected.
N/A - Not Analyzed.
J - Indicates an estimated value (see original lab report).

Two volatile organic compounds were detected in this sample. Methylene chloride, at a concentration of 2.0 parts per billion (ppb) and 2-propanone (acetone), at a concentration of 27.0 ppb. As these are both common laboratory cleaning agents, the origin of these detections is believed to be from the laboratory.

3.2 Floor Drain #2 (Sample I.D. BFD2-CS-1)

The following inorganic constituents were detected in soil sample BFD-2: cyanide at 12.2 ppm; chromium at 9.5 ppm; formaldehyde at 35.0 ppm; hydroquinone at 69.4 ppm.

Acetone was also detected in floor drain #2 at 43 ppb, but is believed to be an artifact of the laboratory.

4.0 DISPOSAL OF HAZARDOUS MATERIALS

4.1 Concrete and Soil from Excavation

At the present time, the material excavated from the floor drains is contained in DOT 17H 55 gallon drums, which are staged in a fenced, unused corner of the parking lot at the Kodalux facility. Analytical results for the drummed soil are summarized in Table 1.

4.2 Excavated Soil from Floor Drain #1 (Sample I.D. BFD1-WC-1)

The pH of this soil is 7.21 and the sample did not exhibit a flash at temperatures exceeding 212 degrees Fahrenheit. The soil sample was not corrosive and did not react with cyanide or sulfide. Formaldehyde was detected at a concentration of 57.6 ppm and cyanide was detected at 0.75 ppm. Results of the EP toxicity metal extraction procedure revealed concentrations less than the maximum allowable levels.

Methylene chloride and acetone were also detected in this sample, but are believed to be an artifact of the laboratory.

4.3 Excavated Soil from Floor Drain #2 (Sample I.D. BFD2-WC-1)

The pH of soil is 7.32 and the sample did not exhibit a flash at temperatures exceeding 212 degrees Fahrenheit. The soil sample was not corrosive and did not react with cyanide or sulfide. Formaldehyde was detected at a concentration of 84.9 ppm and cyanide was detected at 0.445 ppm. The results of the EP Toxicity metal extraction procedure revealed concentrations less than the maximum allowable levels.

Methylene chloride and acetone were also detected in this sample, but are believed to be an artifact of the laboratory.

5.0 CONCLUSIONS

1. The present floor drain system has sustained corrosion, as evidenced by the two excavated floor drains and the results of the pressure-test.

2. Soil samples collected and analyzed for hazardous waste characterization (BFD1-WC-1 and BFD2-WC-1) exhibited trace amounts of methylene chloride and acetone which most probably are laboratory artifacts. These observed concentrations, however, are below the standards set by the Environmental Protection Agency (EPA) Document CCWG-40, Land Ban Thresholds. The sample results of the EP Toxicity metals analysis were well below the maximum allowable concentrations established by the EPA. Based on the waste characterization parameters analyzed for these drums, the soils are not classified as hazardous.

3. NJDEP case number 90 06 15 1528 has already been opened for the possible releases associated with a former dry well. NJDEP representatives were advised of the basement floor drain situation during a site visit on July 25, 1990 for case number 90 06 15 1528.

APPENDIX A

PHOTOGRAPHIC LOG

Overview of Basement Floor Drain #1

Overview of Basement Floor Drain #2

Basement Floor Drain #1 Hub, Showing Corroded and Missing Trap Area

APPENDIX B

ANALYTICAL DATA

Project No.: 9016835
Log in No. : 4885,4886
P.O. No. : PENDING
Date :June 29, 1990

ANALYTICAL DATA REPORT
PACKAGE FOR

C.A. Rich Consultants

404 Glen Cove Avenue

Sea Cliff, NY 11579

ATTN: Eric Weinstock
REF: Kodalux-Fairlawn, NJ

SAMPLE IDENTIFICATION	LABORATORY NUMBER	SAMPLE MATRIX
EAW BFD2-WC-1 ~~BFD2W001~~	4885001	SOIL
BFD2-CS-1	4885002	SOIL
BFD1-CS-1	4886001	SOIL
BFD1-WC-1	4886002	SOIL
TB 5/30	4886003	WATER

REPORT PREPARED BY:
PARAG K. SHAH, Ph. D.
ORGANIC LAB. MANAGER

DOUGLAS SHEELEY D. Sheley
LABORATORY DIRECTOR

mp

WE CERTIFY THAT THIS REPORT IS A TRUE REPORT OF RESULTS OBTAINED FROM OUR TESTS OF THIS MATERIAL.

RESPECTFULLY SUBMITTED,
NYTEST ENVIRONMENTAL INC.

Remo Gigante
REMO GIGANTE
EXECUTIVE V.P.

Report on sample(s) furnished by client applies to sample(s) Report on sample(s) obtained by us applies only to lot sampled. Information contained herein is not to be used for reproduction except by special permission Sample(s) will be retained for thirty days maximum after date of report unless specifically requested otherwise by client In the event that there are portions or parts of sample(s) remaining after Nytest has completed the required tests. Nytest shall have the option of returning such sample(s) to the client at the client's expense

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Table of Contents

Log In No: 4885, 4886

		Page
I.	Sample Analysis Request Form	NA
II.	Chain of Custody	1 - 2
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IV.	Laboratory Chronicle	4
V.	Non Conformance Summary (Case Narrative)	5
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VII.	Data Reporting Qualifiers	9
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CHAIN OF CUSTODY RECORD

Page 1 of 1

SHIP TO: Nytest Environmental Inc.
60 Seaview Blvd.
Port Washington, NY 11050
(516) 625-5500
Attn.

REPORT TO: Client Name C A RICH
Address 404 GLEN COVE AVE.
SEA CLIFF, NY 11579
Phone 516-674-3588
Attn ERIC WEINSTOCK

Project No.	Project Name KODALUK - BASEMENT	Date Shipped 6/4/90	Carrier
Sampler: (Signature) R. H. Young 6/4/90	Analytical Protocol NJ	Air Bill No.	Cooler No.

Sample I.D.	Date/Time Sampled		Sample Description	No. Of Containers	ANALYSIS REQUESTED
BFD2-~~WCT~~ WC-1	6/4/90	2pm	SOIL	7	WASTE CHARACTERIZATION, VOA,
					IGNITABILITY, CORROSIVITY, REACTIVITY,
					EP TOXICITY METALS, CYANIDE, pH,
					VOLATILE ORGANICS, FORMALDEHYDE.
BFD2-CS-1	6/4/90	3pm	SOIL	7	VOA, SILVER, TOTAL CHROMIUM,
					CYANIDE, HYDROQUINONE, FORMALDEHYDE, pH

Relinquished by (Signature)	Date / Time	Rec'd By (Signature)	Date / Time
Richard H. Young	6/5/90 10:30am	Robert Lombardo	6-5-90 1245 pm
Print Name R. H. YOUNG		Print Name Robert Lombardo	
Relinquished by (Signature)	Date / Time	Rec'd by (Signature)	Date / Time
Print Name		Print Name	
Relinquished by (Signature) Robert Lombardo	Date / Time 6-5-90 5:30 pm	Received for Laboratory by (Signature)	Date / Time 6/5 5:30
Print Name Robert Lombardo		Print Name	

Special Instructions/Comments

00001

Client Retains Yellow Copy Only

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CHAIN OF CUSTODY RECORD

Page 1 of 1

SHIP TO: Nytest Environmental Inc.
60 Seaview Blvd.
Port Washington, NY 11050
(516) 625-5500
Attn.

REPORT TO: Client Name C.A. RICH
Address 904 GLEN COVE AVE.
SEACLIFF, NY 11579
Phone 516-674-3559
Attn. ERIC WEINSTOCK

Project No.	Project Name KODALUX-FAIR LAWN DA SMITH	Date Shipped 6/1	Carrier FED. EXP.
Sampler: (Signature) R. H. Young 5/30	Analytical Protocol NJ	Air Bill No. –	Cooler No. –

Sample I.D.	Date/Time Sampled		Sample Description	No. Of Containers	ANALYSIS REQUESTED
~~[illegible]~~	~~5/30~~	~~PM~~	~~SOIL~~	~~5~~	~~VOA, WASTE CHARACTERIZATION, CYANIDE, HYDROQUINONE~~
BFD1-CS-1	5/30	PM	SOIL	4	VOA, SILVER, TOTAL CHROMIUM, CYANIDE
					HYDROQUINONE, FORMALDEHYDE, pH
BFD1-WC-1	5/30	PM	SOIL	5	VOA, WASTE CHARACTERIZATION,
					IGNITABILITY, CORROSIVITY, REACTIVITY
					EP TOXICITY METALS, CYANIDE, VOLATILE
					ORGANICS, FORMALDEHYDE, pH.
TRIP BLANK	–	–	WATER	2	

Relinquished by (Signature)	Date	Time	Rec'd By (Signature)	Date	Time
Richard H. Young	6/1/90	9 pm	MAYWOOD FEDERAL EXP	6/1/90	9:15
Print Name RICHARD H. YOUNG			Print Name — MAYWOOD " "		
Relinquished by (Signature)	Date	Time	Rec'd by (Signature)	Date	Time
Print Name			Print Name		
Relinquished by (Signature)	Date	Time	Received for Laboratory by (Signature) Pierre Pierides	6/2	9:30
Print Name			Print Name Pierre Pierides		

Special Instructions/Comments

00002

Client Retains Yellow Copy Only

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Laboratory Deliverable
Check List

		Check if Complete
I.	Cover Page, Format, and Laboratory Certification (Include Cross Reference Table of Field I.D. # and Laboratory I.D. #)	✓
II.	Chain of Custody	✓
III.	Summary Sheets Listing Analytical Results Including QA Data Information	✓
IV.	Laboratory Chronicle and Methodology Summary including Sampling Holding Time Check	✓
V.	Initial Calibration and Continuing Calibration (Time & Date Summary)	✓
VI.	Tune Summary (MS)	✓
VII.	Blanks (Method, Field, Trip)	✓
VIII.	Surrogate Recovery Summary	✓
IX.	Non-Conformance Summary	✓

Laboratory Manager

7/5/94
Date

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Laboratory Chronicle

Log In No:4885,4886

Client Name: C.A. Rich Consultants

Date Received: 6/2/90, 6/5/90
Sample ID: As per chain of custody

Organics Extraction:

1. Acids _____
2. Base/Neutrals _____
3. Pesticides/PCBs _____
4. Dioxin _____

Analysis:

1. Volatiles 6/8/90
2. Acids _____
3. Base/Neutrals _____
4. Pesticides/PCBs _____
5. Dioxin _____

Section Supervisor Review & Approval D. Shealy

Inorganics:

1. Metals 6/27/90, 6/29/90
2. Cyanides 6/14/90
3. Phenols _____

Other Analysis:

_____

_____

_____

Section Supervisor Review & Approval D. Shealy

Quality Control Supervisor Review & Approval D. Shay

00004

If fractions are re-extracted and re-analyzed include dates for both.

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NON-CONFORMANCE SUMMARY
(Case Narrative)

Log In No: 4885, 4886

Samples were analyzed as per required protocols, no problems were encountered.

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METHODOLOGY SUMMARY

AQUEOUS SAMPLE PREPARATION	REFERENCE 1	REFERENCE 2
BNA, Pesticides/PCB's Extraction		3510
AA/ICP Sample Preparation	200.7	
Furnace Sample Preparation	200.0	
Mercury Sample Preparation	245.1	
Hexavalent Chromium Sample Preparation	218.5	
NON-AQUEOUS EXTRACTIONS		
SOIL AND SEDIMENT SAMPLES:		
BNA, Pesticides/PCB's Extraction		3550
AA/ICP Sample Preparation	3050	
Furnace Sample Preparation	3050	
Mercury Sample Preparation	7471	
SLUDGE/PETROLEUM BASED SAMPLES:		
AA/ICP Sample Preparation		3050
Furnace Sample Preparation		3020/3030/3050
Mercury Sample Preparation		7471
ICP (INDUCTIVELY COUPLED PLASMA):		
Aluminum	200.7	6010
Antimony	200.7	6010
Barium	200.7	6010
Beryllium	200.7	6010
Cadmium	200.7	6010
Calcium	200.7	6010
Chromium	200.7	6010
Cobalt	200.7	6010
Copper	200.7	6010
Iron	200.7	6010
Lead	200.7	6010
Magnesium	200.7	6010
Manganese	200.7	6010
Molybdenum	200.7	6010
Nickel	200.7	6010
Potassium	200.7	6010
Silver	200.7	6010
Sodium	200.7	6010
Tin	200.7	6010
Titanium	200.7	6010
Vanadium	200.7	6010
Zinc	200.7	6010

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METHODOLOGY SUMMARY

FURNACE AA:	REFERENCE 1	REFERENCE 2	REFERENCE 3
Antimony	204.1	7041	
Arsenic	206.2	7060	
Lead	239.2	7421	
Selenium	270.2	7740	
Thallium	279.2	7841	
Tin	282.2		
Vanadium	286.2	7911	
Mercury	245.1	7470	
AQUEOUS METHODOLOGIES:			
Organochlorine Pesticides and PCB's by Gas Chromatography			608
Herbicides by Gas Chromatography			362
Purgeable Organics by GC/MS			624
Base/Neutral, Acids by GC/MS			625
2,3,7,8-TCDD by GC/MS			613/625
NON-AQUEOUS METHODOLOGIES:			
Gas Chromatography/Mass Spectrometry:			
Purgeable Organics		8240	
Base/Neutral and Acid Extractables		8270	
Organochlorine Pesticides and PCB's by Gas Chromatography		8080	
MISCELLANEOUS ANALYSIS:			
Extraction Procedure Toxicity		1310	
Ignitability		1010	
Corrosivity		1110	
Reactivity		Chapter 8.3	
Toxicity Characteristic Leaching Procedure (TCLP)		(Reference 5)	

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METHODOLOGY SUMMARY

ADDITIONAL INORGANIC PARAMETERS	REFERENCE 1	REFERENCE 2
Bromide	320.1	
Color	110.2	
Conductance	120.1	
Conductance		9050
Odor	140.1	
pH	150.1	
pH		9040
TDS	160.2	
TSS	160.2	
TS	160.3	
Hardness	130.1	
Temperature	170.1	
Turbidity	180.1	
Acidity	305.1	
Alkalinity	310.1	
Ammonia	350.2/350.3	
Chloride	325.3	
Chloride		9252
Residual Chlorine	330.2	
COD	410.3/405.1	
Cyanide	335.3	
Oil and Grease	413.1/413.2	
Oil and Grease		9070
Fluoride	340.2	
TKN	351.2	
NO2/NO3	353.2	
D.O.	360.2	
Petroleum Hydrocarbons (Reference 4)	418.1	
Phenol	420.2	
Phosphorous	365.1	
Silica	370.1	
Sulfate	375.2/375.4	
Sulfide	376.1	
Surfactants	425.1	
TOC	415.1	

REFERENCES:

(1) USEPA-600/4-79-002, Methods for Chemical Analysis of Water and Waste
(2) USEPA SW 846, Test Methods for Evaluating Solid Waste, Third Edition
(3) Federal Register 40 CFR Part 136, Vol. 49, No. 209 Test Parameters for the Analysis of Pollutants
(4) as modified by NJDEP-BISE (for non-aqueous samples)
(5) Federal Register Vol. 51, No. 216 Friday, 11/7/86, pp. 40643-40652

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DATA REPORTING QUALIFIERS

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U) based on necessary concentration dilution actions. (This is not necessarily the instrument detection limit.) The footnote should read U-Compound was analyzed for but not detected. The number is the minimum attainable detected limit for the sample.

J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g.: If limit of detection is 10 ug/l and a concentration of 3 ug/l is calculated, report as 3J.)

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

T This flag indentifies all targeted compounds that were found above the method detection limits.

NA This flag indicates that the data is not applicable

Note: Data on soil samples expressed on a dry weight basis.

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REPORT OF ANALYSIS

Log In #:4886

We find as follows:

Parameter(s)	Sample Identification		
	BFD1-CS-1 (4886001)	BFD1-WC-1 (4886002)	METHOD BLANK
pH	6.14	7.21	NA
Ignitability, F PM	>212	>212	NA
Corrosivity, in./year	<0.01	<0.01	NA
Reactivity to Cyanide, ppm	<1	<1	NA
Reactivity to Sulfide, ppm	<1	<1	NA
Results in ppm:			
Formaldehyde	28.2	57.6	<0.1
Total Cyanide	0.130	0.755	<0.02
Hydroquinone	936	--	<1
Chromium	7.0	--	<5.0
Silver	41.6	--	<5.0

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LOG IN NO.: 4885

Sample Identification and Results (EAW)

Sample No: ~~BFD2-W001~~ BFD2-WC-1
Lab Sample ID No.: 4885001

Results	Max. Allowable Levels	Found
pH @ 20 C	2 - 12.5	7.32
Ignitability, F PM	140	>212
Corrosivity, inches/year	0.250	<0.01
Reactivity to Cyanide, PPM	-	<1
Reactivity to Sulfide, PPM	-	<1
Cyanide, PPM	-	0.445
Formaldehyde, PPM	-	84.9

E P Toxicity (PPM)

Arsenic	5.0	< .5
Barium	100.0	<10.0
Cadmium	1.0	< .1
Chromium	5.0	< .5
Lead	5.0	< .5
Mercury	0.2	< .02
Selenium	1.0	< .1
Silver	5.0	< .5

ND = None Detected
< = Less than

1A-P

NYTEST ENVIRONMENTAL INC.

VOLATILE ORGANICS ANALYSIS DATA SHEET

EAW BF02-WC-1

SAMPLE MATRIX: SOIL
CONC. LEVEL: LOW
ANALYSIS DATE: 6/8/90

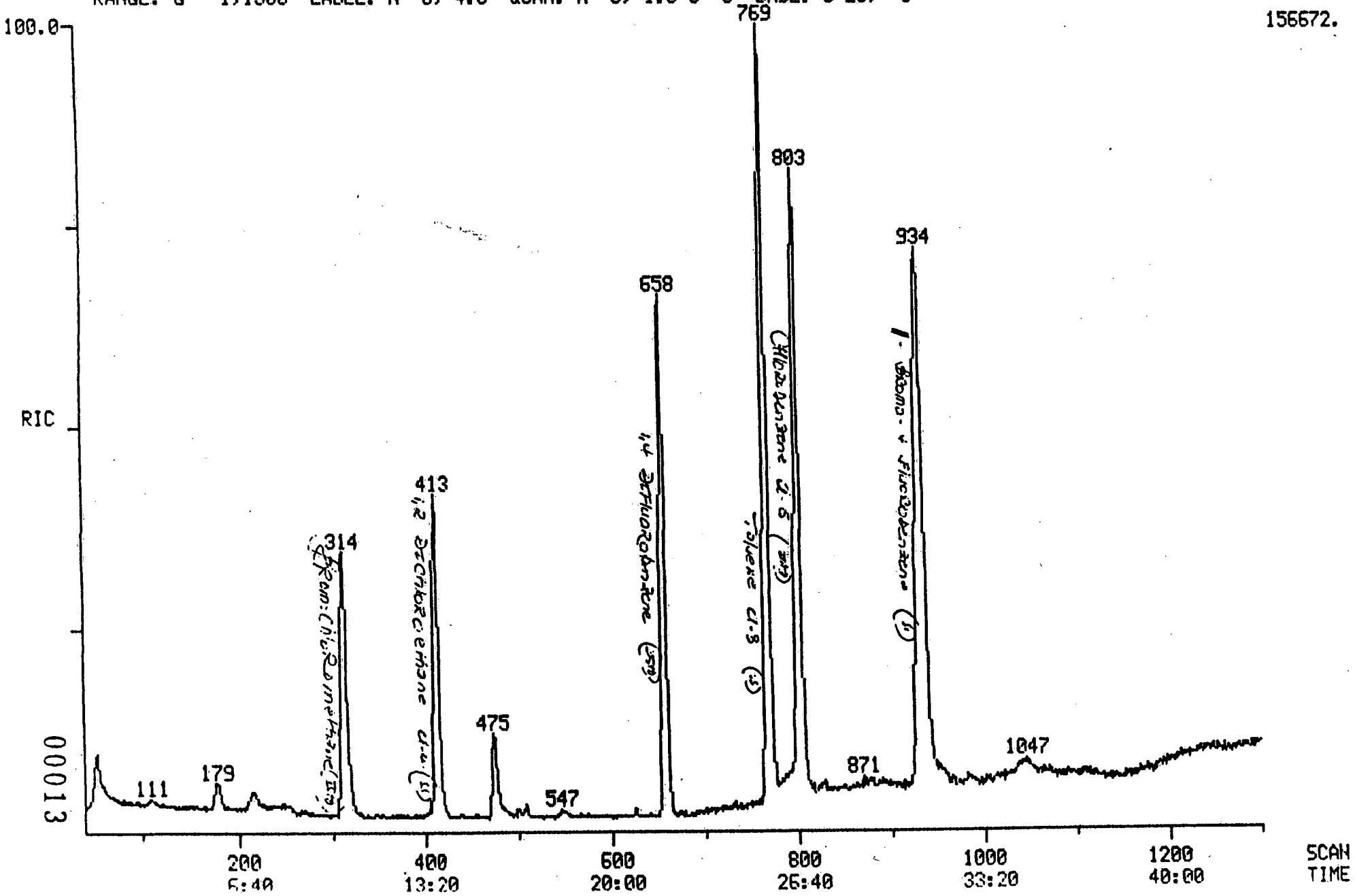
SAMPLE ID: ~~BF02-WB01~~
LAB ID: 4885001
DIL FACTOR: 1.00
% MOISTURE: 12

CMPD #	CAS Number	VOLATILE COMPOUNDS	UG/KG (DRY BASIS)
1	74-87-3	Chloromethane	10.0 U.
2	74-83-9	Bromomethane	10.0 U.
3	75-01-4	Vinyl Chloride	10.0 U.
4	75-00-3	Chloroethane	10.0 U.
5	75-09-2	Methylene Chloride	3.0 J.
6	67-64-1	2-Propanone	37.0 T.
7	75-15-0	Carbon disulfide	6.0 U.
8	75-35-4	1,1-Dichloroethene	6.0 U.
9	75-34-3	1,1-Dichloroethane	6.0 U.
10	540-59-0	1,2-Dichloroethene (total)	6.0 U.
11	67-66-3	Chloroform	6.0 U.
12	107-06-2	1,2-Dichloroethane	6.0 U.
13	78-93-3	2-Butanone	10.0 U.
14	71-55-6	1,1,1-Trichloroethane	6.0 U.
15	56-23-5	Carbon Tetrachloride	6.0 U.
16	108-05-4	Vinyl Acetate	10.0 U.
17	75-27-4	Bromodichloromethane	6.0 U.
18	78-87-5	1,2-Dichloropropane	6.0 U.
19	10061-01-5	cis-1,3-Dichloropropene	6.0 U.
20	79-01-6	Trichloroethene	6.0 U.
21	124-48-1	Dibromochloromethane	6.0 U.
22	79-00-5	1,1,2-Trichloroethane	6.0 U.
23	71-43-2	Benzene	6.0 U.
24	10061-02-6	Trans-1,3-Dichloropropene	6.0 U.
25	75-25-2	Bromoform	6.0 U.
26	108-10-1	4-Methyl-2-Pentanone	10.0 U.
27	591-78-6	2-Hexanone	10.0 U.
28	127-18-4	Tetrachloroethene	6.0 U.
29	79-34-5	1,1,2,2-Tetrachloroethane	6.0 U.
30	108-88-3	Toluene	6.0 U.
31	108-90-7	Chlorobenzene	6.0 U.
32	100-41-4	Ethylbenzene	6.0 U.
33	100-42-5	Styrene	6.0 U.
34	1330-20-7	Xylene (total)	6.0 U.
35	107-02-8	Acrolein	110.0 U.
36	107-13-1	Acrylonitrile	110.0 U.
37	110-75-8	2-Chloroethylvinylether	10.0 U.
38		Dichlorodifluoromethane	10.0 U.
39		Dichlorobenzene (total)	30.0 U.
40			
41			

RIC
06/08/90 14:40:00
SAMPLE: C.A.RICH,BFD2-W001/4885001,REC'D 06/05/90
CONDS.: 5G/5MLS,INST.E
RANGE: G 1,1300 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: E7233 #1
CALI: E7233 #2

SCANS 40 TO 1300



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REPORT OF ANALYSIS

LOG IN NO.: 4885

We find as follows:

Parameter(s)	Sample Identification	
	BFD2-CS-1 (4885002)	METHOD BLANK
pH	8.23	NA
RESULTS IN PPM:		
CYANIDE	12.2	<0.02
CHROMIUM	9.5	<5.0
FORMALDEHYDE	35.0	<0.1
HYDROQUINONE	69.4	NA
SILVER	<5.0	<5.0

1A-P

NYTEST ENVIRONMENTAL INC.

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: SOIL
CONC. LEVEL: LOW
ANALYSIS DATE: 6/8/90

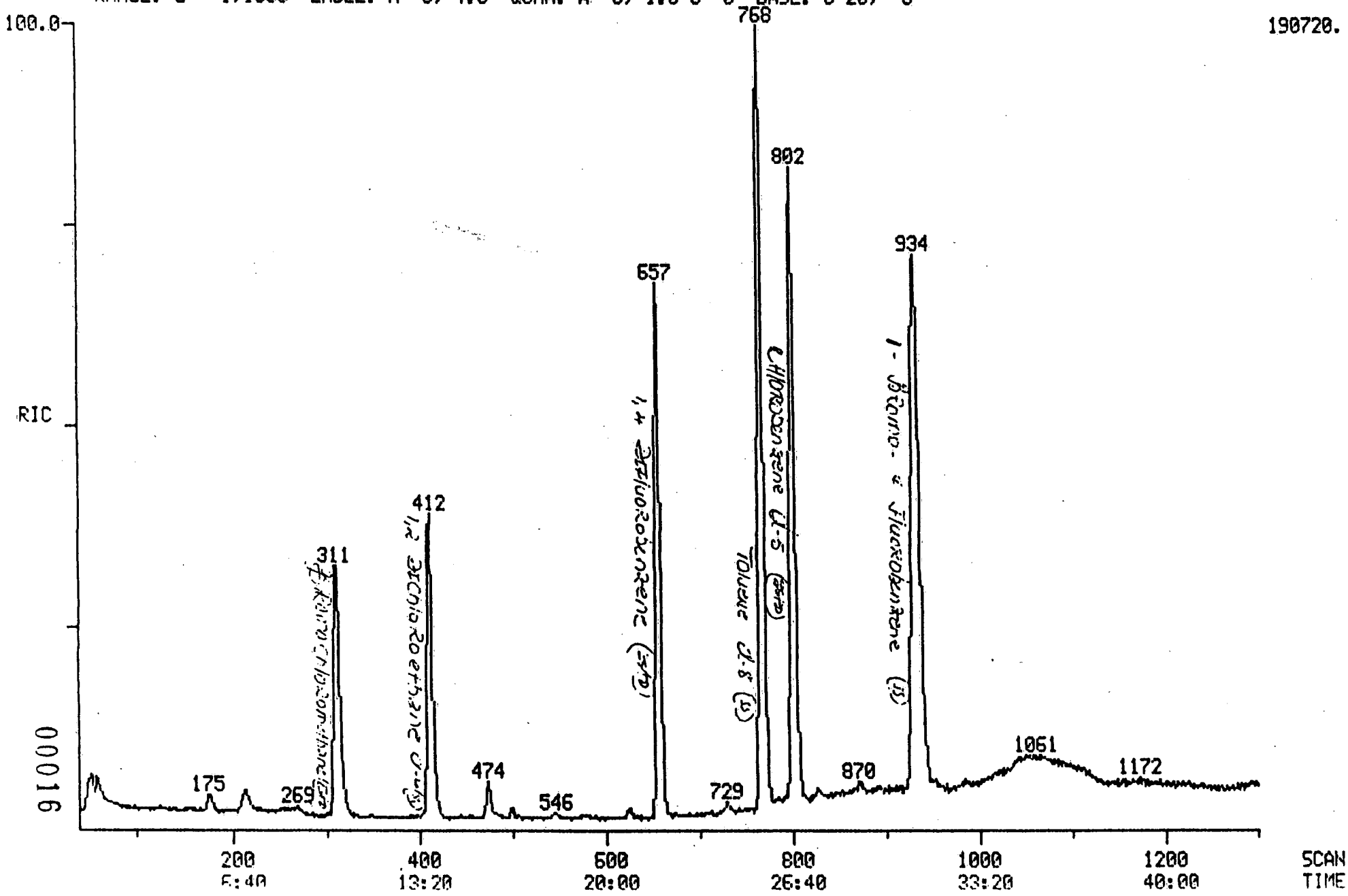
SAMPLE ID: BFD2-CS-1
LAB ID: 4885002
DIL FACTOR: 1.00
% MOISTURE: 10

CMPD #	CAS Number	VOLATILE COMPOUNDS	UG/KG (DRY BASIS)
1	74-87-3	Chloromethane	10.0 U.
2	74-83-9	Bromomethane	10.0 U.
3	75-01-4	Vinyl Chloride	10.0 U.
4	75-00-3	Chloroethane	10.0 U.
5	75-09-2	Methylene Chloride	6.0 U.
6	67-64-1	2-Propanone	43.0 T.
7	75-15-0	Carbon disulfide	6.0 U.
8	75-35-4	1,1-Dichloroethene	6.0 U.
9	75-34-3	1,1-Dichloroethane	6.0 U.
10	540-59-0	1,2-Dichloroethene (total)	6.0 U.
11	67-66-3	Chloroform	6.0 U.
12	107-06-2	1,2-Dichloroethane	6.0 U.
13	78-93-3	2-Butanone	10.0 U.
14	71-55-6	1,1,1-Trichloroethane	6.0 U.
15	56-23-5	Carbon Tetrachloride	6.0 U.
16	108-05-4	Vinyl Acetate	10.0 U.
17	75-27-4	Bromodichloromethane	6.0 U.
18	78-87-5	1,2-Dichloropropane	6.0 U.
19	10061-01-5	cis-1,3-Dichloropropene	6.0 U.
20	79-01-6	Trichloroethene	6.0 U.
21	124-48-1	Dibromochloromethane	6.0 U.
22	79-00-5	1,1,2-Trichloroethane	6.0 U.
23	71-43-2	Benzene	6.0 U.
24	10061-02-6	Trans-1,3-Dichloropropene	6.0 U.
25	75-25-2	Bromoform	6.0 U.
26	108-10-1	4-Methyl-2-Pentanone	10.0 U.
27	591-78-6	2-Hexanone	10.0 U.
28	127-18-4	Tetrachloroethene	6.0 U.
29	79-34-5	1,1,2,2-Tetrachloroethane	6.0 U.
30	108-88-3	Toluene	6.0 U.
31	108-90-7	Chlorobenzene	6.0 U.
32	100-41-4	Ethylbenzene	6.0 U.
33	100-42-5	Styrene	6.0 U.
34	1330-20-7	Xylene (total)	6.0 U.
35	107-02-8	Acrolein	110.0 U.
36	107-13-1	Acrylonitrile	110.0 U.
37	110-75-8	2-Chloroethylvinylether	10.0 U.
38		Dichlorodifluoromethane	10.0 U.
39		Dichlorobenzene (total)	30.0 U.
40			
41			

RIC
06/08/90 15:32:00
SAMPLE: C.A.RICH,BFD2-CS-1/4885002,REC'D 06/05/90
CONDS.: 5G/5MLS,INST.E
RANGE: G 1,1300 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: E7234 #1
CALI: E7234 #2

SCANS 40 TO 1300



1A-P

NYTEST ENVIRONMENTAL INC.

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: SOIL
CONC. LEVEL: LOW
ANALYSIS DATE: 6/8/90

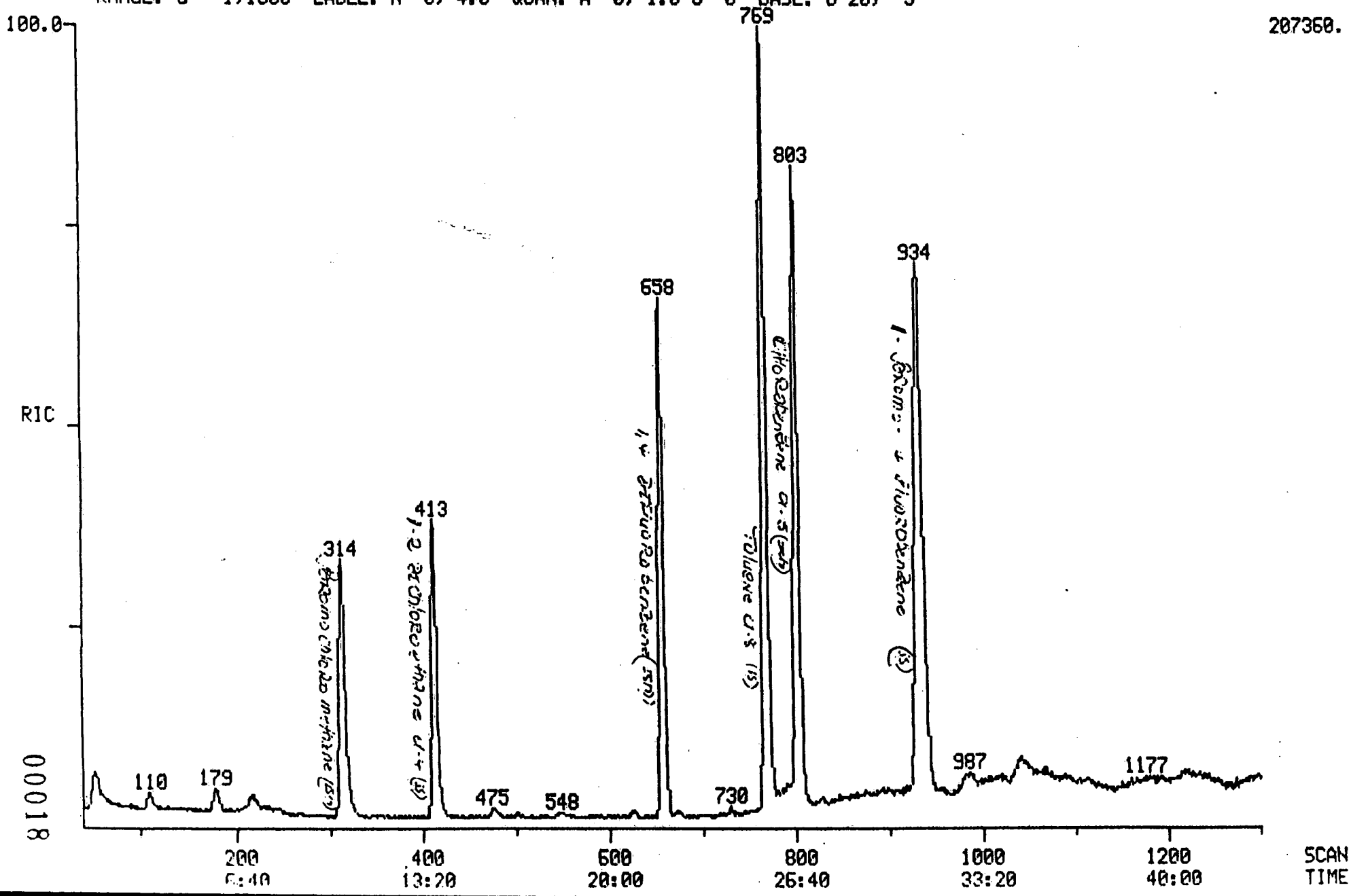
SAMPLE ID: BFD1-CS-1
LAB ID: 4886001
DIL FACTOR: 1.00
% MOISTURE: 9

CMPD #	CAS Number	VOLATILE COMPOUNDS	UG/KG (DRY BASIS)
1	74-87-3	Chloromethane	10.0 U.
2	74-83-9	Bromomethane	10.0 U.
3	75-01-4	Vinyl Chloride	10.0 U.
4	75-00-3	Chloroethane	10.0 U.
5	75-09-2	Methylene Chloride	2.0 J.
6	67-64-1	2-Propanone	27.0 T.
7	75-15-0	Carbon disulfide	5.0 U.
8	75-35-4	1,1-Dichloroethene	5.0 U.
9	75-34-3	1,1-Dichloroethane	5.0 U.
10	540-59-0	1,2-Dichloroethene (total)	5.0 U.
11	67-66-3	Chloroform	5.0 U.
12	107-06-2	1,2-Dichloroethane	5.0 U.
13	78-93-3	2-Butanone	10.0 U.
14	71-55-6	1,1,1-Trichloroethane	5.0 U.
15	56-23-5	Carbon Tetrachloride	5.0 U.
16	108-05-4	Vinyl Acetate	10.0 U.
17	75-27-4	Bromodichloromethane	5.0 U.
18	78-87-5	1,2-Dichloropropane	5.0 U.
19	10061-01-5	cis-1,3-Dichloropropene	5.0 U.
20	79-01-6	Trichloroethene	5.0 U.
21	124-48-1	Dibromochloromethane	5.0 U.
22	79-00-5	1,1,2-Trichloroethane	5.0 U.
23	71-43-2	Benzene	5.0 U.
24	10061-02-6	Trans-1,3-Dichloropropene	5.0 U.
25	75-25-2	Bromoform	5.0 U.
26	108-10-1	4-Methyl-2-Pentanone	10.0 U.
27	591-78-6	2-Hexanone	10.0 U.
28	127-18-4	Tetrachloroethene	5.0 U.
29	79-34-5	1,1,2,2-Tetrachloroethane	5.0 U.
30	108-88-3	Toluene	5.0 U.
31	108-90-7	Chlorobenzene	5.0 U.
32	100-41-4	Ethylbenzene	5.0 U.
33	100-42-5	Styrene	5.0 U.
34	1330-20-7	Xylene (total)	5.0 U.
35	107-02-8	Acrolein	110.0 U.
36	107-13-1	Acrylonitrile	110.0 U.
37	110-75-8	2-Chloroethylvinylether	10.0 U.
38		Dichlorodifluoromethane	10.0 U.
39		Dichlorobenzene (total)	30.0 U.

RIC
06/08/90 13:47:00
SAMPLE: C.A.RICH,BFD1-CS-1/4886001,REC'D 06/02/90
CONDS.: 5G/5MLS,INST.E
RANGE: G 1,1300 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: E7232 #1
CALI: E7232 #2

SCANS 40 TO 1300



00018

nytest environmental inc

Log In No: 4886

Sample Identification and Results

Sample No: BFD1-WC-1
Lab Sample ID: 4886002

Results	Max. Allowable Levels	Found
E P Toxicity (PPM)		
Arsenic	5.0	< .5
Barium	100.0	<10.0
Cadmium	1.0	< .1
Chromium	5.0	< .5
Lead	5.0	< .5
Mercury	0.2	< .02
Selenium	1.0	< .1
Silver	5.0	< .5

ND = None Detected
< = Less than

1A-P

NYTEST ENVIRONMENTAL INC.

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: SOIL
CONC. LEVEL: LOW
ANALYSIS DATE: 6/8/90

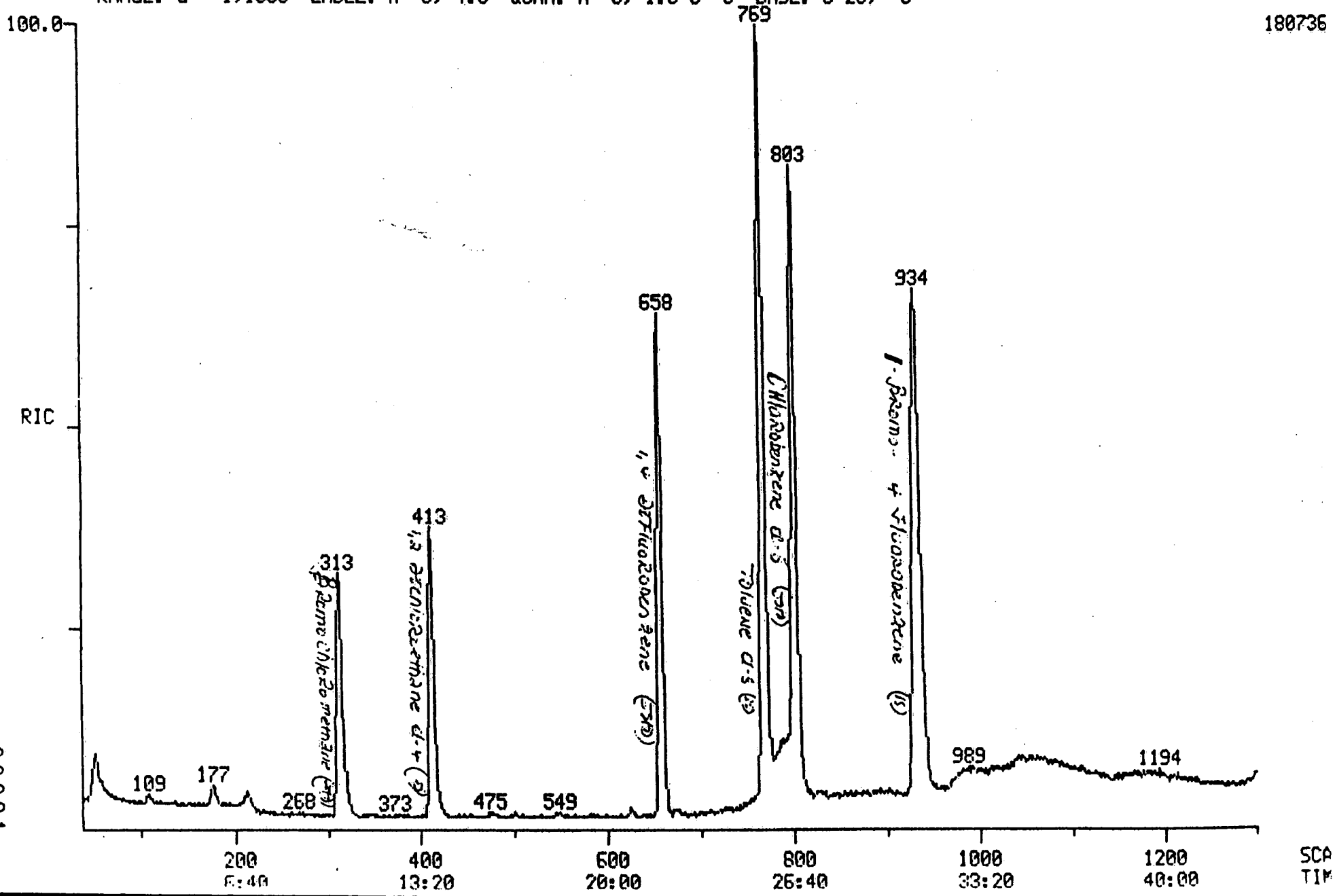
SAMPLE ID: BFD1-WC-1
LAB ID: 4886002
DIL FACTOR: 1.00
% MOISTURE: 8

CMPD #	CAS Number	VOLATILE COMPOUNDS	UG/KG (DRY BASIS)
1	74-87-3	Chloromethane	10.0 U.
2	74-83-9	Bromomethane	10.0 U.
3	75-01-4	Vinyl Chloride	10.0 U.
4	75-00-3	Chloroethane	10.0 U.
5	75-09-2	Methylene Chloride	2.0 J.
6	67-64-1	2-Propanone	28.0 T.
7	75-15-0	Carbon disulfide	5.0 U.
8	75-35-4	1,1-Dichloroethene	5.0 U.
9	75-34-3	1,1-Dichloroethane	5.0 U.
10	540-59-0	1,2-Dichloroethene (total)	5.0 U.
11	67-66-3	Chloroform	5.0 U.
12	107-06-2	1,2-Dichloroethane	5.0 U.
13	78-93-3	2-Butanone	10.0 U.
14	71-55-6	1,1,1-Trichloroethane	5.0 U.
15	56-23-5	Carbon Tetrachloride	5.0 U.
16	108-05-4	Vinyl Acetate	10.0 U.
17	75-27-4	Bromodichloromethane	5.0 U.
18	78-87-5	1,2-Dichloropropane	5.0 U.
19	10061-01-5	cis-1,3-Dichloropropene	5.0 U.
20	79-01-6	Trichloroethene	5.0 U.
21	124-48-1	Dibromochloromethane	5.0 U.
22	79-00-5	1,1,2-Trichloroethane	5.0 U.
23	71-43-2	Benzene	5.0 U.
24	10061-02-6	Trans-1,3-Dichloropropene	5.0 U.
25	75-25-2	Bromoform	5.0 U.
26	108-10-1	4-Methyl-2-Pentanone	10.0 U.
27	591-78-6	2-Hexanone	10.0 U.
28	127-18-4	Tetrachloroethene	5.0 U.
29	79-34-5	1,1,2,2-Tetrachloroethane	5.0 U.
30	108-88-3	Toluene	5.0 U.
31	108-90-7	Chlorobenzene	5.0 U.
32	100-41-4	Ethylbenzene	5.0 U.
33	100-42-5	Styrene	5.0 U.
34	1330-20-7	Xylene (total)	5.0 U.
35	107-02-8	Acrolein	110.0 U.
36	107-13-1	Acrylonitrile	110.0 U.
37	110-75-8	2-Chloroethylvinylether	10.0 U.
38		Dichlorodifluoromethane	10.0 U.
39		Dichlorobenzene (total)	30.0 U.

RIC
06/08/90 12:54:00
SAMPLE: C.A.RICH,BFD1-WC-1/4886002,REC'D 05/02/90
CONDS.: 5G/5ML5,INST.E
RANGE: G 1,1300 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: E7231 #1
CALI: E7231 #2

SCANS 40 TO 1300



00021

1A-P

NYTEST ENVIRONMENTAL INC.

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: WATER
CONC. LEVEL: LOW
ANALYSIS DATE: 6/8/90

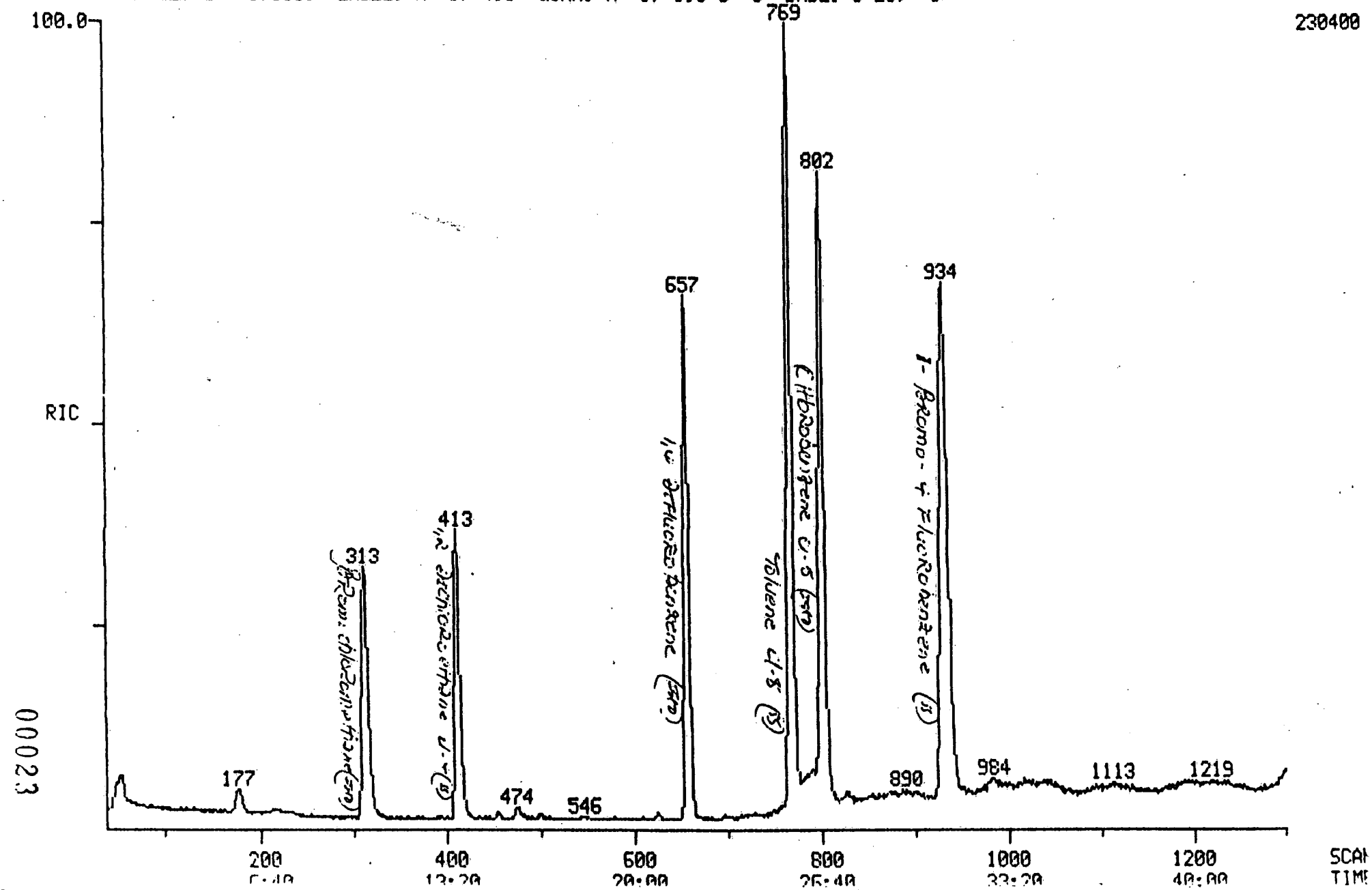
SAMPLE ID: TB 5/30
LAB ID: 4886003
DIL FACTOR: 1.00
% MOISTURE: NA

CMPD #	CAS Number	VOLATILE COMPOUNDS	UG/L
1	74-87-3	Chloromethane	10.0 U.
2	74-83-9	Bromomethane	10.0 U.
3	75-01-4	Vinyl Chloride	10.0 U.
4	75-00-3	Chloroethane	10.0 U.
5	75-09-2	Methylene Chloride	5.0 U.
6	67-64-1	2-Propanone	10.0 U.
7	75-15-0	Carbon disulfide	5.0 U.
8	75-35-4	1,1-Dichloroethene	5.0 U.
9	75-34-3	1,1-Dichloroethane	5.0 U.
10	540-59-0	1,2-Dichloroethene (total)	5.0 U.
11	67-66-3	Chloroform	5.0 U.
12	107-06-2	1,2-Dichloroethane	5.0 U.
13	78-93-3	2-Butanone	10.0 U.
14	71-55-6	1,1,1-Trichloroethane	5.0 U.
15	56-23-5	Carbon Tetrachloride	5.0 U.
16	108-05-4	Vinyl Acetate	10.0 U.
17	75-27-4	Bromodichloromethane	5.0 U.
18	78-87-5	1,2-Dichloropropane	5.0 U.
19	10061-01-5	cis-1,3-Dichloropropene	5.0 U.
20	79-01-6	Trichloroethene	5.0 U.
21	124-48-1	Dibromochloromethane	5.0 U.
22	79-00-5	1,1,2-Trichloroethane	5.0 U.
23	71-43-2	Benzene	5.0 U.
24	10061-02-6	Trans-1,3-Dichloropropene	5.0 U.
25	75-25-2	Bromoform	5.0 U.
26	108-10-1	4-Methyl-2-Pentanone	10.0 U.
27	591-78-6	2-Hexanone	10.0 U.
28	127-18-4	Tetrachloroethene	5.0 U.
29	79-34-5	1,1,2,2-Tetrachloroethane	5.0 U.
30	108-88-3	Toluene	5.0 U.
31	108-90-7	Chlorobenzene	5.0 U.
32	100-41-4	Ethylbenzene	5.0 U.
33	100-42-5	Styrene	5.0 U.
34	1330-20-7	Xylene (total)	5.0 U.
35	107-02-8	Acrolein	100.0 U.
36	107-13-1	Acrylonitrile	100.0 U.
37	110-75-8	2-Chloroethylvinylether	10.0 U.
38		Dichlorodifluoromethane	10.0 U.
39		Dichlorobenzene (total)	30.0 U.

RIC
06/08/90 12:02:00
SAMPLE: C.A.RICH,TB-5/30/4886003,REC'D 06/02/90
CONDS.: 5MLS,INST.E
RANGE: G 1,1300 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: E7230 #1
CALI: E7230 #2

SCANS 40 TO 1300



00023

1A-P

NYTEST ENVIRONMENTAL INC.

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: SOIL
CONC. LEVEL: LOW
ANALYSIS DATE: 6/8/90

SAMPLE ID: VBLKE2
LAB ID: E7229
DIL FACTOR: 1.00
% MOISTURE: NA

CMPD #	CAS Number	VOLATILE COMPOUNDS	UG/KG (DRY BASIS)
1	74-87-3	Chloromethane	10.0 U.
2	74-83-9	Bromomethane	10.0 U.
3	75-01-4	Vinyl Chloride	10.0 U.
4	75-00-3	Chloroethane	10.0 U.
5	75-09-2	Methylene Chloride	5.0 U.
6	67-64-1	2-Propanone	10.0 U.
7	75-15-0	Carbon disulfide	5.0 U.
8	75-35-4	1,1-Dichloroethene	5.0 U.
9	75-34-3	1,1-Dichloroethane	5.0 U.
10	540-59-0	1,2-Dichloroethene (total)	5.0 U.
11	67-66-3	Chloroform	5.0 U.
12	107-06-2	1,2-Dichloroethane	5.0 U.
13	78-93-3	2-Butanone	10.0 U.
14	71-55-6	1,1,1-Trichloroethane	5.0 U.
15	56-23-5	Carbon Tetrachloride	5.0 U.
16	108-05-4	Vinyl Acetate	10.0 U.
17	75-27-4	Bromodichloromethane	5.0 U.
18	78-87-5	1,2-Dichloropropane	5.0 U.
19	10061-01-5	cis-1,3-Dichloropropene	5.0 U.
20	79-01-6	Trichloroethene	5.0 U.
21	124-48-1	Dibromochloromethane	5.0 U.
22	79-00-5	1,1,2-Trichloroethane	5.0 U.
23	71-43-2	Benzene	5.0 U.
24	10061-02-6	Trans-1,3-Dichloropropene	5.0 U.
25	75-25-2	Bromoform	5.0 U.
26	108-10-1	4-Methyl-2-Pentanone	10.0 U.
27	591-78-6	2-Hexanone	10.0 U.
28	127-18-4	Tetrachloroethene	5.0 U.
29	79-34-5	1,1,2,2-Tetrachloroethane	5.0 U.
30	108-88-3	Toluene	5.0 U.
31	108-90-7	Chlorobenzene	5.0 U.
32	100-41-4	Ethylbenzene	5.0 U.
33	100-42-5	Styrene	5.0 U.
34	1330-20-7	Xylene (total)	5.0 U.
35	107-02-8	Acrolein	100.0 U.
36	107-13-1	Acrylonitrile	100.0 U.
37	110-75-8	2-Chloroethylvinylether	10.0 U.
38		Dichlorodifluoromethane	10.0 U.
39		Dichlorobenzene (total)	30.0 U.

nytest environmental inc

Log In No: 4886

Sample Identification and Results

Sample No: METHOD BLANK

Results	Max. Allowable Levels	Found
E P Toxicity (PPM)		
Arsenic	5.0	< .5
Barium	100.0	<10.0
Cadmium	1.0	< .1
Chromium	5.0	< .5
Lead	5.0	< .5
Mercury	0.2	< .02
Selenium	1.0	< .1
Silver	5.0	< .5

ND = None Detected

< = Less than

2 A

NYTEST ENVIRONMENTAL INC.

VOLATILE SURROGATE RECOVERY

LOG IN #: 4885,4886 PAGE #: 1

MATRIX: SOIL

	SAMPLE #	1,2-DICHLORO ETHANE-D4	TOLUENE -D8	BFB	VOAS OUT
		<<<<<<<<<<<<< VOLATILE		>>>>>>>>>>>	
01	VBLKE2	99 OK	100 OK	104 OK	0
02	TB 5/30.	90 OK	100 OK	101 OK	0
03	BFD1-WC-1	92 OK	99 OK	99 OK	0
04	BFD1-CS-1	90 OK	98 OK	101 OK	0
05	BFD2-W001	92 OK	98 OK	101 OK	0
06	BFD2-CS-1	92 OK	98 OK	99 OK	0
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

	LIMITS
1,2-DICHLOROETHANE-D4	53 -131
TOLUENE- D8	75 -123
BFB	69 -127

* SURROGATES OUTSIDE QC LIMITS

3 A

NYTEST ENVIRONMENTAL INC.

VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

LOGIN #: 4885,4886 MATRIX: SOIL PAGE: 1

FRACTION	COMPOUND	CONC. SPIKE ADDED (ug)	SAMPLE RESULT	CONC. MS	% RECOVERY	CONC. MSD	% RECOVERY	RPD	QC LIMITS RPD	QC LIMITS RECOVERY
	1,1-DICHLOROETHENE	50	0.00	33.30	66.60 OK	42.21	84.42 OK	23.60 *	16	15 -160
SAMPLE #	TRICHLOROETHENE	50	0.00	29.74	59.48 OK	36.50	73.00 OK	20.41 OK	40	50 -115
WLSLTP57	BENZENE	50	0.00	34.53	69.06 OK	42.71	85.42 OK	21.18 *	18	60 -125
NYTEST #	TOLUENE	50	2.00	35.08	66.16 OK	48.94	93.88 OK	34.64 *	17	25 -175
4770002	CHLOROBENZENE	50	0.00	31.98	63.96 OK	39.33	78.66 OK	20.61 *	15	45 -135

OF % MS/MSD 0 OF 10

VOA OUT: ___

OF RPD 4 OF 5

VOA OUT: ___

GC/MS TUNING AND MASS CALIBRATION
BROMOFLUOROBENZENE (BFB)

Contractor:NYTEST ENVIRONMENTAL INC.
Instrument ID:E Date:5/21/90 Time: 12:58:00
Lab ID:E7092 Data Release Authorized By: DLG

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of the base peak	24.78
75	30.0 - 60.0% of the base peak	42.76
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of the base peak	6.90
173	Less than 2.0% of mass 174	0.00 [0.00]*
174	Greater than 50.0% of the base peak	91.61
175	5.0 - 9.0% of mass 174	5.99 [6.54]*
176	Greater than 95.0%, but less than 101.0% of mass 174	88.13 [96.20]*
177	5.0 - 9.0% of mass 176	4.96 [5.62]**

* Value in parenthesis is % mass 174.
** Value in parenthesis is % mass 176.

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS.

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS
PERFORMANCE STANDARD	E7092	5/21/90	12:58
VSTD050	E7093	5/21/90	13:48
VSTD100	E7096	5/21/90	16:42
VSTD150	E7098	5/21/90	18:28
VSTD200	E7101	5/21/90	21:04
VSTD020	E7102	5/21/90	21:53

GC/MS TUNING AND MASS CALIBRATION
BROMOFLUOROBENZENE (BFB)

Contractor: NYTEST ENVIRONMENTAL INC.
Instrument ID: E Date: 6/8/90 Time: 9:31:00
Lab ID: E7227 Data Release Authorized By: DVS

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of the base peak	28.20
75	30.0 - 60.0% of the base peak	46.27
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of the base peak	7.10
173	Less than 2.0% of mass 174	0.00 [0.00]*
174	Greater than 50.0% of the base peak	70.07
175	5.0 - 9.0% of mass 174	4.36 [6.22]*
176	Greater than 95.0%, but less than 101.0% of mass 174	68.66 [97.99]*
177	5.0 - 9.0% of mass 176	3.92 [5.71]**

* Value in parenthesis is % mass 174.
** Value in parenthesis is % mass 176.

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS.

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS
PERFORMANCE STANDARD	E7227	6/8/90	9:31
WORKING STANDARD	E7228	6/8/90	9:59
VBLKE2	E7229	6/8/90	11:10
TB 5/30	4886003	6/8/90	12:02
BFD1-WC-1	4886002	6/8/90	12:54
BFD1-CS-1	4886001	6/8/90	13:47
BFD2-WOO1	4885001	6/8/90	14:40
BFD2-CS-1	4885002	6/8/90	15:32

Part 2

AIRBORNE EXPRESS

April 24, 1997

Ms. Mary Anne Rosa
Project Manager
Emergency and Remedial Response Division - Region II
U.S. Environmental Protection Agency
290 Broadway, 19th Floor
New York, New York 10007-1866

Re: Reply to Request for Information on Hazardous Substances at the Kodalux Processing Laboratory, Fair Lawn, New Jersey

Dear Ms. Rosa:

This is in response to your February 26, 1997 letter requesting information regarding the Kodalux Processing Laboratory (facility), located in Fair Lawn, New Jersey. Your request was mailed to the facility at Fair Lawn and thereafter forwarded to Eastman Kodak Company ("Kodak") corporate offices in Rochester, New York for my attention and handling. The status of the facility with respect to Kodak ownership is discussed in the accompanying response. The time to respond to this request was extended to April 26, 1997 by Ms. Amelia Wagner, Esq., of your staff.

As stated in Kodak's January 29, 1991 supplemental response to your office's previous request for information regarding handling of hazardous substances at the facility, four petroleum underground storage tanks and a dry well for the fire suppression system have been removed. These activities have been reported to New Jersey Department of Environmental Protection (NJDEP), case nos. 90 06 15 1528 and 90 05 22 1638.

Upon developing the attached response to your request for information, Kodak has concluded that the following reports inappropriately refer to the usage of trichloroethene (TCE) at the Kodalux Processing Laboratory:

Torger N. Dahl, Attorney, Environmental, Health & Safety Legal Staff
Eastman Kodak Company • 343 State Street • Rochester, New York 14650-0217
Telephone: (716) 724-4899 • Facsimile: (716) 724-5515

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DCN: 92-246-080-02

PHASE II GROUNDWATER INVESTIGATION REPORT
KODALUX PROCESSING LABORATORY
FAIR LAWN, NEW JERSEY

Prepared for:

Mr. Gary Costanzo
Environmental Technical Services
Health and Environment Laboratories
Eastman Kodak Company
Rochester, New York

Prepared by:

Radian Corporation
155 Corporate Woods, Suite 100
Rochester, New York 14623
(716) 292-1870

February 7, 1992

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EXECUTIVE SUMMARY

A Phase II investigation was conducted at the Kodalux Processing Laboratory in Fair Lawn, New Jersey. This investigation included:

- Advancement of six pilot boreholes (PB-1 through PB-6);
- Collection of groundwater samples from the pilot boreholes for Total Recoverable Petroleum Hydrocarbon (TRPH) analysis;
- Installation of five monitoring wells (MW-6 through MW-10);
- Collection of groundwater samples from new and existing monitoring wells for volatile organics, base/neutral and acid-extractable compounds, total cyanide, formaldehyde, TRPH, silver, and total and hexavalent chromium;
- Collection of one composite sample from drummed drill cuttings for waste characterization; and
- Collection of water elevation data for use in interpretation of site hydrology.

No visual signs of fuel oil were observed in any of the drilling cuttings or groundwater samples collected from the six pilot boreholes. Total recoverable petroleum hydrocarbons (TRPH) was detected in PB-6 at 680 μg/L (0.680 mg/L) and was not detected in groundwater samples collected from the other five pilot boreholes.

No zones of detectable vapor concentrations or visual signs of contamination were observed in any of the drilling cuttings from the installed monitoring wells (MW-6 through MW-10). No analytes on the Method 625 Priority Pollutants list were detected above the Contract Required Quantitation Limits (CRQL) in the monitoring well groundwater samples. Up to nine Tentatively Identified Compounds (TICs) were reported for each sample. No hydroquinone was detected in any well sample above the estimated detection limit.

The following analytes on the Method 624 Priority Pollutants list were detected above the CRQL. 1,1,1-Trichlorethane was detected in eight wells. Detected concentrations ranged from 5.5 μg/L in MW-4 to 13000 μg/L in MW-2. 1,1-Dichloroethane was detected in five wells. Detected concentrations ranged from 8.6 μg/L in MW-8 to 110 μg/L in MW-3. 1,1-Dichloroethene was detected in four wells, and ranged from 17 μg/L (in MW-1) to 460 μg/L (in MW-7). Chloroform was detected in three wells at concentrations ranging from 6.0 μg/L to a high of 12 μg/L (in MW-6). Trichlorethene was detected in three wells. A maximum concentration of 13 μg/L was detected in MW-9. Trans-1,2-Dichloroethene was detected at 9.0 μg/L in MW-1. Vinyl chloride was detected in MW-3 at 110 μg/L. Chloroethane was detected at 15 μg/L in MW-2. Benzene was detected at 13 μg/L in MW-3. The TICs hexachlorobutadiene and 1,1,2-trimethyl-1,2,2-trifluoroethane were each estimated present in one well.

Seven wells contained detectable levels of TRPH. Concentrations ranged from 610 μg/L to 12,000 μg/L. MW-2 contained the highest quantity of petroleum hydrocarbons, with 12,000 μg/L. MW-1 contained the lowest detected quantity of petroleum hydrocarbons. Formaldehyde was detected in six wells. MW-3 contained the highest quantity of formaldehyde, with 260 μg/L. MW-3, MW-6, MW-7 and MW-8 contained total cyanide at concentrations ranging from 0.017 mg/L to 0.24 mg/L. Total silver concentrations ranged from 0.01 mg/L to 0.013 mg/L in MW-4, MW-6, MW-7, and MW-10. MW-1 through MW-7 contained concentrations of total chromium ranging from 0.011 mg/L to 0.093 mg/L. Hexavalent chromium was detected in MW-2 and MW-7 at 0.016 mg/L and 0.028 mg/L, respectively.

No volatile organics, semivolatile organics, or isobutanol were detected in the drill cuttings composite sample. In addition, analyses indicated the cuttings do not exhibit any hazardous waste characteristics.

Groundwater is entering the site predominantly from the east-southeast. A localized groundwater mound exists in the vicinity of monitoring wells MW-4 and MW-5; this mound diverts groundwater flow to the north and to the west. This diversion is possibly due to a bedrock "high," located beneath the facility.

1.0 INTRODUCTION

1.1 Project Description

At the request of Eastman Kodak Company, Radian Corporation has conducted a second phase of subsurface environmental investigation at the Kodalux Processing Laboratory (Kodalux) in Fair Lawn, New Jersey. This report discusses the field activities and analytical results of Phase II groundwater investigation activities at the site.

In accordance with our September 13, 1991 letter of technical approach and scheduling, the scope of the Phase II Investigation included:

- Installation of five monitoring wells (MW-6 through MW-10);
- Advancement of six pilot boreholes (PB-1 through PB-6);
- Collection of groundwater samples from the pilot boreholes for Total Recoverable Petroleum Hydrocarbon (TRPH) analysis;
- Collection of groundwater samples from new and existing monitoring wells for volatile organics, base/neutral and acid-extractable compounds, total cyanide, formaldehyde, TRPH, silver, and total and hexavalent chromium;
- Collection of one composite sample from drummed drill cuttings for waste characterization; and
- Collection of groundwater elevation data for use in interpretation of site hydrology.

Boring, monitoring well installation, and well development activities for this project were conducted by Summit Drilling Corp., Inc., New Jersey-licensed well drillers. These activities were supervised by a hydrogeologist from Radian Corporation.

1.2 Historical Environmental Activities

In May and June 1990, CA Rich Consultants, Inc., conducted an Underground Storage Tank (UST) closure program at the Kodalux site. A report detailing the closure program was submitted to the New Jersey Department of Environmental Protection (NJDEP) on August 1, 1990. USTs removed during closure activities included two 20,000-gallon No. 6 heating oil tanks, one 3,000-gallon unleaded gasoline tank, and one 2,000-gallon unleaded gasoline tank. Heating oil was detected in soil underlying both of the No. 6 heating oil tanks. The NJDEP Hotline was notified of the No. 6 heating oil discharge (May 22, 1990) and the site was assigned Case Number 90 05 22 1638.

In response to the above observations and a June 5, 1990, letter from Mr. Joseph Miller of NJDEP to Mr. Dick Spiegel of Eastman Kodak Company, CA Rich Consultants, Inc., installed one monitoring well (MW-1, see Figure 1) adjacent to the former No. 6 heating oil tank locations, and excavated approximately 15 cubic yards of soil from below the former gasoline pump area. A Discharge Investigation and Corrective Action Report (DICAR) dated October 3, 1990, discusses the above activities, and addresses site characterization, soil remediation, and groundwater monitoring.

In September 1990, Radian Corporation conducted a subsurface vapor investigation in specific chemical use and processing areas at the facility. The objective of this investigation was to quantify subsurface vapor concentrations of chemical constituents, and provide information to be used for locating potential monitoring wells.

In March and April 1991, Radian conducted a Phase I Groundwater Investigation at the facility, which consisted of the installation of four monitoring wells (MW-2 through MW-5) and sampling of five monitoring wells (MW-1 through MW-5). The activities and findings of this investigation were presented to Kodak in a report entitled "Final Groundwater Inverstigation Report, Kodalux Processing Laboratory, Fair Lawn, New Jersey," dated September 9, 1991. It was determined during this

investigation that:

- In MW-2 a saturated parting was noted in the bedrock from 29.0 to 29.5 feet below grade. Perched water and hydrocarbons believed to be No. 6 fuel oil were encountered in this zone. The thickness of the fuel oil floating in MW-2 was estimated between 0.5 and 0.75 inches. Below this zone, an underlying confined aquifer was encountered at MW-2 at 34.0 to 35.0 feet below grade.

- Review of data from MW-1 indicated that the perched zone and confined aquifer encountered in MW-2 also exists at this location.

- The uppermost aquifer in the area of MW-3, and MW-4, and MW-5 appears to be under unconfined conditions.

- Approximately 0.25 inches of fuel oil was observed in the purge water from MW-2 at the time of sampling. In addition, fuel oil droplets were observed in the purge water from MW-1.

- Of the five wells, MW-2 showed the highest concentrations of petroleum hydrocarbons. Hydrocarbons were also detected in MW-1.

- More extractable organics were detected in MW-2 than in the other four wells, although generally at levels just above the CRQL.

- 1,1,1-Trichloroethane was present in every well, with the highest concentration present in MW-2. 1,1-Dichloroethane was detected in four wells (MW-1, MW-2, MW-3, and MW-4), with the highest concentration occurring in MW-3. MW-3 also contained the highest level of 1,1-dichloroethene, which was found in three wells (MW-2, MW-3, and MW-4). Vinyl chloride also was detected in MW-3. Other volatiles detected in MW-3, MW-1, and/or MW-5, included benzene, toluene, cis-1,2-dichloroethane, and chloroform.

- Formaldehyde was detected in MW-3, MW-4 and MW-5 at levels from 140 μg/L to 2500 μg/L. In addition, cyanide was detected in MW-3, and total chromium in MW-4 and MW-5.

- No organic compounds were detected in drummed drilling cuttings.

2.0 MONITORING WELL LOCATIONS

Five monitoring wells (MW-6 through MW-10) were installed as part of the Phase II investigation at Kodalux to further investigate groundwater conditions at the facility. The well locations were slightly modified from the locations stated in the original work plan, due to the presence of underground utilities and overhead interferences. Final monitoring well locations are described below, and are shown on a site map, presented in Figure 1.

MW-6	Located near the southwestern corner of the property.
MW-7	Located approximately 110 feet west of MW-2, just north of the westernmost loading dock.
MW-8	Located along the western property boundary, approximately 370 feet north of NJ Highway 208.
MW-9	Located in the north parking lot, approximately 220 feet north of MW-2.
MW-10	Located approximately 30 feet south of the southeastern corner of the building.

Coordinates and elevations of the resultant wells were measured by Donald H. Stires Associates, New Jersey-licensed surveyors. Data were tied to New Jersey Geodetic Survey Control and are included on the site map (Figure 1).

3.0 MONITORING WELL AND PILOT BOREHOLE INSTALLATION

3.1 Methodology - Monitoring Well Drilling

Five monitoring wells were installed during this investigation. All borings were completed as bedrock monitoring wells in accordance with NJDEP specifications (Appendix A), and were designed to monitor the uppermost aquifer.

Split-spoon samples were collected at 5-foot intervals during well construction. Borings, 10 inches in diameter, were advanced to each split spoon sample interval using air rotary methods. Spoons were driven and samples collected until refusal at the bedrock surface. The soils were classified and inspected for signs of visible contamination.

After bedrock was encountered, the 10-inch diameter borings were advanced 5 feet into competent bedrock using air rotary methods, after which 6-inch diameter steel casings were set. A cement-bentonite grout was emplaced into the annular space from the bottom of the casing to the ground surface. The grout was pumped under pressure through a tremie pipe to ensure positive placement of the grout. Grout was allowed to set for a minimum of 12 hours. After allowing the grout to set, 6-inch diameter borings were then advanced below the steel casings to approximately 10 feet below the water table but not greater than 25 feet below the bottom of the casing. Rock cuttings were visually inspected. Bedrock stratigraphy was classified based on visual inspection of the cuttings, drilling time, and drilling method responses to lithologic variability. Logs of borings are presented in Appendix B.

To protect the wells against damage from vandalism or vehicular traffic, flush-mount manholes were slipped over the casing and anchored 1 foot below grade with grout. The steel casings were fitted with sealed locking caps and locks. A 2-foot by 2-foot by 4-inch thick concrete pad was poured into a flush mount form fitted around the manhole cover.

Efforts were made to reduce the possibility of introducing or carrying-over contamination from one borehole to another via the well bore. Equipment was steam-cleaned prior to each borehole. Cleaning was performed at a temporary decontamination pad. The decontamination materials and pad were containerized in a 55-gallon drum upon project completion, and the drum was labeled to identify the date filled and the source (i.e., decon pad and sediment). Soil and rock cuttings from each well were placed in 55-gallon DOT drums upon generation, and the drums were labeled to identify the date filled and the source (i.e., MW-3 soil cuttings).

During drilling activities, an HNu, and Drager tubes for formaldehyde and vinyl chloride, were used periodically to monitor air quality in the breathing zone of the worker closest to the borehole. These results are reported in Section 3.3.

3.2 Methodology - Pilot Borehole Drilling

Six pilot boreholes were advanced during this investigation. The pilot boreholes were designed to investigate (and attempt to delineate) the No. 6 fuel oil that was encountered in a perched zone in monitoring wells MW-1 and MW-2. All pilot boreholes were abandoned after sampling with the exception of PB-1, which was completed as monitoring well MW-7.

Borings 6 inches in diameter were advanced using air rotary methods. Undisturbed split-spoon samples were collected at 5-foot intervals in advance of the drill bit, until refusal at bedrock. The soils were classified by a Radian geologist and inspected for signs of visible contamination. Logs are presented in Appendix B.

The borings were advanced into bedrock until groundwater was encountered. Close attention was paid to the cuttings, drilling time, and drilling responses to determine whether any perched water or fuel oil was encountered. Bedrock stratigraphy was described based on visual inspection of the cuttings, drilling time, and drilling responses to lithologic variability.

The pilot boreholes were left open until a sufficient volume of groundwater had accumulated to fill 1-liter sample containers required for TRPH analyses. Upon sufficient accumulation, the groundwater samples were collected; these boreholes were not developed prior to sampling. Following sampling, the boreholes were abandoned by filling with a cement-bentonite grout. The grout was pumped under pressure through a tremie pipe to ensure positive placement.

To prevent cross-contamination of groundwater, all drilling equipment was steam-cleaned prior to drilling each pilot borehole. Soil and rock cuttings from each borehole were stored in labeled 55-gallon drums.

During drilling, Draeger tubes for formaldehyde and vinyl chloride were used periodically to monitor air quality in the breathing zone of the worker closest to the borehole. These results are presented in Section 3.3.

3.3 Results

HNu screening was conducted during the drilling of MW-6, MW-7, and MW-8, before the unit malfunctioned. HNu screening of the soils and breathing zone indicated no zones of detectable vapor concentrations. Drager tubes for formaldehyde and vinyl chloride (used to screen the breathing zone during all drilling activities) indicated no zones of detectable vapor concentrations. No visual signs of contamination were observed in any of the soils.

The unconsolidated overburden encountered consisted of predominantly fine-grained to medium-grained sand, containing variable concentrations of silt, clay, gravel, and rock fragments. As a general rule, the sands were medium-grained and silty; gravel was fine and consisted of sandstone, granite, and aphanitic rock. Rock fragments were predominantly sandstone from the underlying bedrock, with some granite. The majority of the overburden was glacially derived, with the upper materials possibly being fill. HNu screening values and soil classifications were recorded with depth, and are presented in the Drilling Logs, Appendix B.

Bedrock was encountered from approximately 8.5 feet (PB-5) to 20 feet (MW-7/PB-1) below grade. Bedrock encountered generally consisted of hard, red, medium-grained sandstone. All casings were set within this sandstone.

Bedrock encountered beneath the cased sections consisted predominantly of hard to very hard, red, medium-grained sandstone, with softer, water-bearing sandstone and shale zones noted periodically (in Appendix B).

None of the pilot boreholes intersected the perched zone containing fuel oil that had been encountered during the installation of MW-1 and MW-2. This conclusion is based on close observation of the drilling activities, and groundwater sampling activities that failed to show any indication of a free-phase hydrocarbon layer.

Total depths for completed monitoring wells varied from 36.25 feet (MW-7) to 39.52 feet (MW-9) below top of casing. Total boring depths ranged from approximately 36.7 to 39.9 feet below surface grade. Bedrock lithologies and observations were recorded with depth and are presented in the Drilling Logs, Appendix B. Monitoring well schematics are presented in Appendix C.

Thirty-two drums were generated during this phase of work; 22 contained soil and rock cuttings, 5 contained development water, 3 contained purge water, 1 contained the decon pad and sediment, and 1 contained sample tubing and bailers. A total of 58 drums have been generated during drilling and sampling activities to date.

Following completion, the wells were surveyed by Donald H. Stires Associates, a professional land surveyor licensed in the State of New Jersey. A copy of each "Monitoring Well Certification Form - B" is included in Appendix D.

4.0 WELL DEVELOPMENT

4.1 Methodology

All newly installed monitoring wells were developed to remove any material (solid or liquid) introduced to the well during drilling and well installation and to promote groundwater flow into the well. Development was conducted on October 28 and 29, 1991. Initial static water levels were collected prior to development of each well. A submersible pump was used to develop MW-7. The remaining wells were developed with a bailer. Each well was pumped or bailed to dryness at least once. Following development, total well depth was measured in each well. Field records of well development are presented in Appendix E. Development water was containerized in labeled 55-gallon DOT drums. The labels identified date filled and the source (i.e., MW-3 development water). Five drums contained development water.

4.2 Static Water Measurements

Depths to static water from top of well casings for MW-6 through MW-10 were measured prior to development activities. These and subsequent measures are recorded on the well logs (Appendix B). Depths to static water from top of well casings for all monitoring wells were measured on November 14, 1991, prior to well purging and sampling activities. A second set of water level measures were collected on December 19, 1991. November water level elevations varied from 56.25 ft. MSL (MW-6) to 70.86 ft. MSL (MW-5). December water level elevations varied from 60.53 ft. MSL (MW-3) to 72.76 ft. MSL (MW-5). Water level elevations generally rose (MW-1 through MW-9) from November to December, with a maximum rise of 4.88 ft (MW-6) and an average rise of 1.7 ft. Water level elevation decreased 2.74 ft. in MW-10.

Water level elevations are presented in Table 1, and the configurations of the groundwater table for November and December are depicted in Figures 2 and 3, respectively.

4.3 Groundwater Flow

Based on this investigation and the Phase I investigation, groundwater appears to exist under both confined and unconfined conditions under the facility. Near MW-1 and MW-2, the aquifer is under slightly artisan conditions due to a locally confining sandstone bed overlying the saturated zone. The aquifer is unconfined at the remainder of the site.

Groundwater is entering the site predominantly from the east-southeast. A localized groundwater mound exists in the vicinity of monitoring wells MW-4 and MW-5, as indicated in the groundwater elevation maps for measurements taken November and December 1991 (Figures 2 and 3, respectively). This mound, which is possibly due to a bedrock "high" located beneath the facility, diverts groundwater to the north and to the west. Bedrock elevation contours are presented in Figure 4. It is not known what impact, if any, the basement floor drains in this vicinity may have on groundwater flow.

The groundwater surface roughly parallels the bedrock surface and is generally located approximately 15 feet below the bedrock surface. Cross-sections depicting the hydrogeology are presented in Figures 5 and 6.

5.0 SAMPLING PROCEDURES

5.1 General

This section describes procedures used in the sampling of the groundwater monitoring wells (MW-1 through MW-10), pilot boreholes (PB-1 through PB-6), and drilling cuttings. Sampling and analysis were performed as described in the September 13, 1991 work plan. Monitoring well and pilot borehole locations are shown in Figure 1. Monitoring well groundwater samples were analyzed for volatile organics, base/neutral and acid-extractable compounds, total cyanide, formaldehyde, total recoverable petroleum hydrocarbons, silver, chromium, and total and hexavalent chromium. Pilot borehole groundwater samples were analyzed for total recoverable petroleum hydrocarbons. Drilling cuttings were analyzed for waste disposal characterization. Groundwater sampling procedures discussed in RCRA Ground-Water Monitoring Technical Enforcement Guidance Document, USEPA, September 1986, were followed. The following subsections discuss sampling procedures and analytical methods.

5.2 Sampling Equipment

Groundwater sampling was performed using dedicated, non-dedicated, and miscellaneous equipment and reagents. Dedicated equipment was used at only one well. Non-dedicated equipment was used in all wells, and a strict decontamination regimen was followed between wells. Miscellaneous equipment was used at each well but did not require decontamination as there was no direct contact with the samples. Each type of equipment necessary to complete the sampling is discussed below.

Dedicated Equipment: Each monitoring well and pilot borehole had a dedicated Teflon bailer and Teflon-coated stainless steel line to avoid potential cross-contamination of wells. Tubing associated with the purge pump was dedicated to each well.

Non-Dedicated Equipment: Non-dedicated equipment included a purge pump and an electronic water level indicator.

Miscellaneous Equipment and Reagents: Other equipment and reagents used during the sampling are listed below:

- Conductivity/temperature/pH meter, capable of measuring conductivity to 20,000 uS, temperature from -30.0 to 105.0°C. and pH from 0.01 to 14.00;
- 200-mL wide-mouth glass bottle;
- Rinse bottles for Alconox® and water;
- Sample labels;
- Clear tape (to protect sample labels);
- Ice for sample preservation;
- Chemicals for sample preservation;
- Distilled water;
- Teflon tape (for wrapping the sample labels);
- Calibration buffers for pH meter;
- Calibration solution for conductivity meter;
- Safety equipment (detailed in health and safety plan); and
- Sample containers.

5.3 Monitoring Well Sampling Procedures

The sampling procedures presented below represent the minimum requirements to ensure the collection of acceptable monitoring well groundwater samples. The procedures are listed in the order in which they were performed in the field.

Static water level measurement: An electronic water level indicator was used to determine the static water level in each well before purging and sampling were performed. Markings on the tape allowed for measurement to 0.01 foot. The tape was decontaminated before advancing to the next well.

Well Purging: Standing water from the well casing was removed before samples were collected. Purging was performed as follows: Teflon tubing was placed into each well with the open end just above the well bottom. For wells with medium recharge rates, a minimum of one well volume was removed with removal continuing until well drawdown approached dryness. Wells with low recovery rates were purged once to near dryness. Evacuation rates were kept below 5 gallons per minute, and the well was never pumped completely to dryness. In addition, the pump intake was never placed more than six feet below the static water level in the well.

A total of 3 drums of water were containerized during well purging. Purge tubing and sample bailers were containerized in one drum.

Temperature, pH, and conductivity: Before and after collection of samples, the temperature, pH, and conductivity probes were placed in a wide-mouthed glass bottle into which a representative sample of well water has been poured. The probes were allowed to equilibrate with the water sample before final readings were taken from the meters. The glass bottle was rinsed with distilled water and a portion of the groundwater sample before use at each well.

Sample Collection: A total of ten groundwater samples were collected. The samples were collected at MW-1, through MW-10. The water level within each well had recovered (within 2 feet of the pre-purge static water level) before samples were collected. A dedicated bailer was unwrapped, tied to a new draw line, and lowered slowly into the well, to minimize volatilization of organic compounds.

Once the bailer was filled, it was slowly withdrawn from the well. The sample was poured from the top of the bailer into each sample container as appropriate, and into a separate container for field measurements, as previously described.

Trip Blanks: For each analytical parameter, one sample container was filled with Type II reagent grade water in the laboratory, shipped to the site with the empty containers, handled like a sample, and returned to the laboratory for analysis.

Equipment Blanks: For each analytical parameter, one sample container was filled with Type II reagent grade water by running it through a decontaminated bailer prior to use. The container was then sealed, handled like a sample, and sent to the laboratory for analysis.

5.4 Pilot Borehole Sampling Procedures

The pilot boreholes were left open until a sufficient volume of groundwater had accumulated to fill a 1-liter sample container required for TRPH analyses. Samples, trip blanks, and equipment blanks were collected in the same manner as described above.

5.5 Drilling Cutting Sampling Procedures

Sample Collection: Drilling cuttings were collected from each 5-foot increment during monitoring well and borehole installation. Cuttings were collected in individual 4-ounce jars. Upon completion of drilling, the cuttings from these jars were transferred into a stainless steel bowl, composited into one sample, and transferred into the appropriate sample containers.

Trip Blanks: For each analytical parameter, one sample container was filled with Type II reagent grade water in the laboratory, shipped to the site with the empty containers, handled like a sample, and returned to the laboratory for analysis.

5.6 Decontamination

Dedicated equipment does not require the strict decontamination regimen that is applied to non-dedicated equipment. Dedicated bailers were disposed of at the conclusion of sampling.

All non-dedicated equipment was decontaminated immediately after sampling, and before moving on to the next sampling station, to prevent cross-contamination of well water samples. The decontamination regimen was performed as follows:

- Non-phosphate soap and water rinse; and
- Final distilled water rinse.

5.7 Analytical Parameters

This section discusses the analytical parameters and methods performed on the monitoring well groundwater samples, pilot borehole groundwater samples, and drilling cutting samples. Recra Environmental, Inc. (New Jersey Lab ID #73455) in Amherst, New York, performed the following analyses:

Monitoring Well Groundwater Samples:

- Base neutral and acid extractable compounds, by EPA Method 625, plus the identification and quantification of the 15 highest non-targeted compounds and the total number of peaks;
- Hydroquinone, by EPA Method 8270;
- Volatile organics, by EPA Method 624, including o-, m-, and p-xylenes, plus the identification and quantification of the 15 highest non-targeted compounds and the total number of peaks;

- Formaldehyde, by NIOSH Method 3500;
- Total petroleum hydrocarbons, by EPA Method 418.1;
- Total cyanide, by EPA Method 9010;
- Total silver, by atomic absorption, EPA Method 272.1;
- Total chromium, by EPA Method 218.2; and
- Hexavalent chromium, by EPA Method 7195.

One field duplicate, one trip blank, and one equipment blank were collected for analysis of each of the parameters listed above. Due to a laboratory oversight, the trip blank was not analyzed for hexavalent chromium.

Pilot Borehole Groundwater Samples:

- Total recoverable petroleum hydrocarbons (TRPH) by EPA Method 418.1.

One field duplicate, one trip blank, and one equipment blank were collected for analysis. Due to a laboratory oversight, the trip blank was not analyzed for TRPH.

Drilling Cuttings:

- Target Compound List (TCL) volatile organics plus trichlorofluoromethane and 1,1,2-trichloro-1,2,2-trifluoroethane, by EPA Method 8240;
- TCL semi-volatile organics plus 1,2-dichlorobenzene, nitrobenzene, and pyridene, by EPA Method 8270;
- Isobutanol, by EPA Method 8015;
- TCLP metals;
- Ignitability;

- Corrosivity; and
- Reactivity.

One trip blank was collected for analysis of TCL volatile organics plus trichlorofluoromethane and 1,1,2-trichloro-1,2,2-trifluoroethane by EPA Method 8240; and isobutanol by EPA Method 8015.

6.0 ANALYTICAL RESULTS

The five pilot boreholes, and the pilot borehole and monitoring well drilling cuttings, were sampled October 24 through October 28, 1991. The ten monitoring wells were sampled November 15, 1991. The location of the pilot boreholes and monitoring wells is shown in Figure 1. Samples were sent to Recra Environmental, Inc. for analysis.

The field data collected with the samples are presented below. Also discussed below are the analytical results for these analyses, followed by a brief discussion of the blank and quality control results. Copies of the analytical results are found in Appendix F.

6.1 Field Data

Water table elevation data are provided in Table 1. Table 2 presents the field measurement data collected concurrently with the monitoring well groundwater samples. The field data includes the depth to water; purge start and stop times; total volume purged from the well; well water pH, temperature and conductivity; and a general assessment of the well recovery rate.

6.2 Monitoring Well Groundwater Analytical Results

Table 3 and Table 4 present the results of the organic and inorganic analyses, respectively. Table 3 presents results for only those Base-Neutral and Acid Extractable (BNAE) Organics and Volatile Organics which were detected in any of the monitoring wells. Table 4 presents results for all the inorganic analytes, whether they were detected in the monitoring wells or not. Both tables list the analytical methods used and note which laboratory performed the analysis. Results are also shown in Figure 7.

Any results detected above the detection limit were reported in the Recra Environmental Inc. laboratory report. Any results detected below the detection limit were reported in the laboratory report with a "J" qualifier, indicating that concentrations were estimated, but were greater than zero. In Tables 3 and 4, results reported by Recra less than the detection limit have been replaced with the symbol "J," to indicate that low levels of the analyte were detected but with less quantitative certainty. The reported values for these low-level results are contained in the individual Recra laboratory report in Appendix F.

Base/Neutral and Acid Extractables: As seen in Table 3, no analytes on the Method 625 Priority Pollutant list were detected above the CRQL. MW-2 contained two Method 625 analytes at levels less than the CRQL. These included naphthalene and phenanthrene. In addition, one other compound - 1,3-dichlorobenzene - was detected in MW-3 at a level below the CRQL. The presence of phenanthrene appears to be possibly due to the shipping and handling process, laboratory contamination, or imprecision in detection at low concentrations (Section 6.5.).

Up to nine Tentatively Identified Compounds (TICs) were also reported for each sample. The TICs are not included in the calibration of the instrument; results should be considered estimates only. Similarly, since no external calibration is performed for TICs, specific detection limits are not available; the concentrations are estimated based on EPA recommended procedures for TIC identification. Concentrations of 2-fluoro-4-nitrophenol, unsaturated hydrocarbon, dimethyl naphthaline, and an unknown were estimated in MW-2. 1,3-Dithiolane, dichlorobenzenamine, chlorodimethyl phenol isomer, alkly substituted hydrocarbon, and five unknown analyte concentrations were estimated in MW-3. One oxygenated compound concentration was estimated in each of the following: MW-6, MW-7, and MW-9.

The gas chromatography/mass spectrometry results for each well sample were examined for the presence of hydroquinone. Hydroquinone was not one of the compounds contained in the Method 625 target analyte list, and therefore was not in the external calibration standards; instead, concentrations would have been estimated against an internal standard. However, no hydroquinone was detected in any well sample above the estimated detection limit of 12 μg/L.

Volatiles: 1,1,1-trichlorethane was detected in eight wells and estimated present in one well. Detected concentrations ranged from 5.5 μg/L in MW-4 to 13000 μg/L in MW-2. 1,1-Dichloroethane was detected in five wells and estimated present in one well. Detected concentrations ranged 8.6 μg/L in MW-8 to 110 μg/L in MW-3. 1,1-Dichloroethene was detected in four wells and estimated present in three wells. MW-1 contained the lowest detected concentration of 17 μg/L and MW-7 contained the highest level at 460 μg/L. Chloroform was detected in three wells at concentrations ranging from 6.0 μg/L to 12 μg/L and estimated present in three wells. MW-6 contained the highest level at 12 μg/L. Trichlorethene was detected in three wells and estimated present in two wells. A maximum concentration of 13 μg/L was detected in MW-9. Trans-1,2-Dichloroethene was detected at 9.0 μg/L in MW-1 and estimated present in three other wells. Vinyl chloride was detected in MW-3 at 110 μg/L and estimated present in three other wells. Chloroethane was detected at 15 μg/L in MW-2 and estimated present in two other wells. Benzene was detected at 13 μg/L in MW-3. Tetrachloroethane was estimated present in MW-2 and MW-7 and Bromodichloromethane, chlorodibromomethane, toluene, 1,1,2-Trichloroethane and o/p-xylene were each estimated present in on well. Chlorobenzene was estimated present in the equipment blank.

The tentatively identified compounds (TICs) hexachlorobutadiene and 1,1,2-trimethyl-1,2,2-trifluoroethane were each estimated present in one well, MW-3 at 90 μg/L, and MW-6 at 4.3 μg/L, respectively.

Petroleum Hydrocarbons: Seven wells (MW-1, MW-2, MW-4, MW-6, MW-7, MW-8, and MW-9) contained detectable levels of total recoverable petroleum hydrocarbons (TRPH), as analyzed by EPA Method 418.1. The amount reported ranged from 610 μg/L to 12,000 μg/L. MW-2 contained the highest quantity of petroleum hydrocarbons, with 12,000 μg/L. MW-1 contained the lowest detected quantity of petroleum hydrocarbons, with ND (Not Detected) in one sample and 610 μg/L in the sample duplicate. Low levels of TRPH appeared to be possibly due to the shipping and handling process, laboratory contamination or imprecision in detection at low concentrations (see Section 6.5).

Formaldehyde: Formaldehyde was detected in six wells MW-1, MW-3, MW-4, MW-5, MW-6, and MW-10. MW-3 contained the highest quantity of formaldehyde, with 260 μg/L.

Inorganics: MW-3, MW-6, MW-7 and MW-8 contained total cyanide at concentrations ranging from 0.017 mg/L to 0.24 mg/L. Total silver concentrations ranged from 0.01 mg/L to 0.013 mg/L in MW-4, MW-6, MW-7, and MW-10. MW-1 through MW-7 contained concentrations of total chromium ranging from 0.011 mg/L to 0.093 mg/L. Low levels of total chromium appeared to be possibly due to sampling, the shipping and handling process, laboratory contamination, or imprecision in detection at low concentrations (Section 6.5). Hexavalent chromium was detected in MW-2 and MW-7 at 0.016 mg/L and 0.028 mg/L, respectively.

6.3 Pilot Borehole Analytical Results

Table 5 presents the results of the total recoverable hydrocarbon (TRPH) analyses. TRPH was detected in PB-6 at 680 μg/L (0.680 mg/L), and was not detected in samples collected from the other five pilot boreholes.

6.4 Drilling Cuttings Analytical Results

Table 6 presents the results of the drilling cutting waste disposal characterization. No volatile organics, semivolatile organics, or isobutanol were detected in the cuttings. In addition, analyses indicated the cuttings do not exhibit any hazardous waste characteristics.

6.5 Quality Assurance/Quality Control

Blanks

One equipment blank and one trip blank were collected with the monitoring well samples. Similarly, one equipment blank and one trip blank were collected with the pilot bore and drill cutting samples.

Equipment blank results were intended to indicate if contamination was associated with the sampling, shipping, or handling phases of the project, or with the equipment itself. (Disposable bailers were used for the monitoring well sampling and pilot borehole sampling, so decontamination technique was not a source of possible equipment contamination. Soil boring equipment was steam-cleaned between sample locations, so equipment blank results for pilot borings do not include the effects of any possible soil boring equipment contamination.) Trip blank results indicate whether contamination has occurred due to the shipping and handling phase itself. Method blanks also were analyzed and reported for each analytical method, and indicate if contamination occurred during sample analysis or preparation.

As seen in Table 7, no compounds were detected in any of the method blanks associated with the monitoring well groundwater samples, indicating that laboratory processing did not contribute to sample analyte concentrations. Low concentrations of chlorobenzene and total chromium were detected in the equipment blank collected with the monitoring well samples. Low concentrations of phenanthrene

and TRPH were also detected in the trip blank. The concentrations of chlorobenzene and phenanthrene were less than the laboratory quantitation limits for these compounds; the concentrations of the total chromium and TRPH were just above their respective quantitation limits. It is possible that similar low levels of these compounds may be found in the monitoring well samples; however, no high levels of contamination due to shipping or sampling equipment are indicated by these results.

No contaminants were detected in the blanks collected with the pilot boring samples or the drilling cuttings sample.

Field Duplicates

One set of field duplicates was collected for the monitoring well samples (MW-1), and one for the pilot boring samples (PB-4). Table 8 presents the results for each duplicate set, along with the Relative Percent Differences (RPDs) for each data set.

The RPDs for the monitoring well duplicate samples indicated good analytical and sample-to-sample precision. All RPD values were less than 10%. In a few cases, the RPD value could not be calculated since one of the duplicate results was ND (Not Detected). This was true for the vinyl chloride, TRPH, and the total chromium analyses. In all these cases, the detected amounts were just above the laboratory quantitation limit; at low levels, this analytical variability may be expected. Furthermore, for TRPH and total chromium, the concentrations of the detected compounds were roughly equal to the concentrations of these same compounds found in the blank samples. These results are indicative of the imprecision in detection of the low level of contaminants seen both in the field duplicate and in the blank samples.

RDP values could not be calculated for the pilot borehole duplicate samples since both of the sample results for TRPH were ND (Not Detected).

Surrogates

All surrogate recoveries for the semi-volatile analyses were within the specified limits. All but one of the surrogate recoveries for the volatiles analyses were within the specified limits.

7.0 CONCLUSIONS

Activities have been completed in response to the fuel oil discharge, in accordance with NJDEP procedures required to investigate and initiate corrective actions for a hazardous substance discharge from an underground storage tank system. Reporting Requirements and Immediate Cleanup Requirements were addressed and summarized in a Discharge Investigation and Corrective Action Report (DICAR), authored by CA Rich Consultants, Inc., dated October 3, 1990. Completion of this Phase II Groundwater Investigation and the Final Investigation Report of September 9, 1991, address Discharge Mitigation Requirements.

Soil containing fuel oil in the vicinity of the tanks was excavated by CA Rich Consultants. No visual signs of fuel oil were observed by Radian Corporation in any of the soil or rock cuttings during installation of MW-2 through MW-10. However, fuel oil was noted in water from a perched water zone at MW-2. Similar conditions were noted by CA Rich during installation of MW-1. Pilot boreholes, PB-1 through PB-6, were installed in order to further define the areal extent of fuel oil noted in this perched zone. No visual signs of fuel oil were observed in any of the drilling cuttings or groundwater samples collected from these boreholes. During resampling of MW-2, oil droplets were noted in the water.

Total Recoverable Petroleum Hydrocarbon (TRPH) was detected in PB-6 at 680 μg/L (0.680 mg/L) and was not detected in samples collected from the other five pilot boreholes. TRPH concentrations detected in MW-1, MW-2, and MW-7, November 15, 1991 samples, were ND (Not Detected) and 610 μg/L (Duplicate), 12,000 μg/L, and 1,100 μg/L, respectively. The low levels of TRPH detected in PB-6 and MW-1 appear to be possibly due to the shipping and handling process, laboratory contamination, or imprecision in detection at low concentrations. These levels were less than concentrations detected in MW-6, MW-8, and MW-9. MW-6, MW-8, and MW-9 results indicated that up to 5,200 μg/L (MW-8) may represent regional groundwater quality.

Elevated concentrations of TRPH were confined to MW-2, where the fuel oil was noted in a perched zone overlying the uppermost bedrock aquifer. The uppermost aquifer in this area is under slightly confined conditions, reducing the potential for vertical migration of the fuel oil.

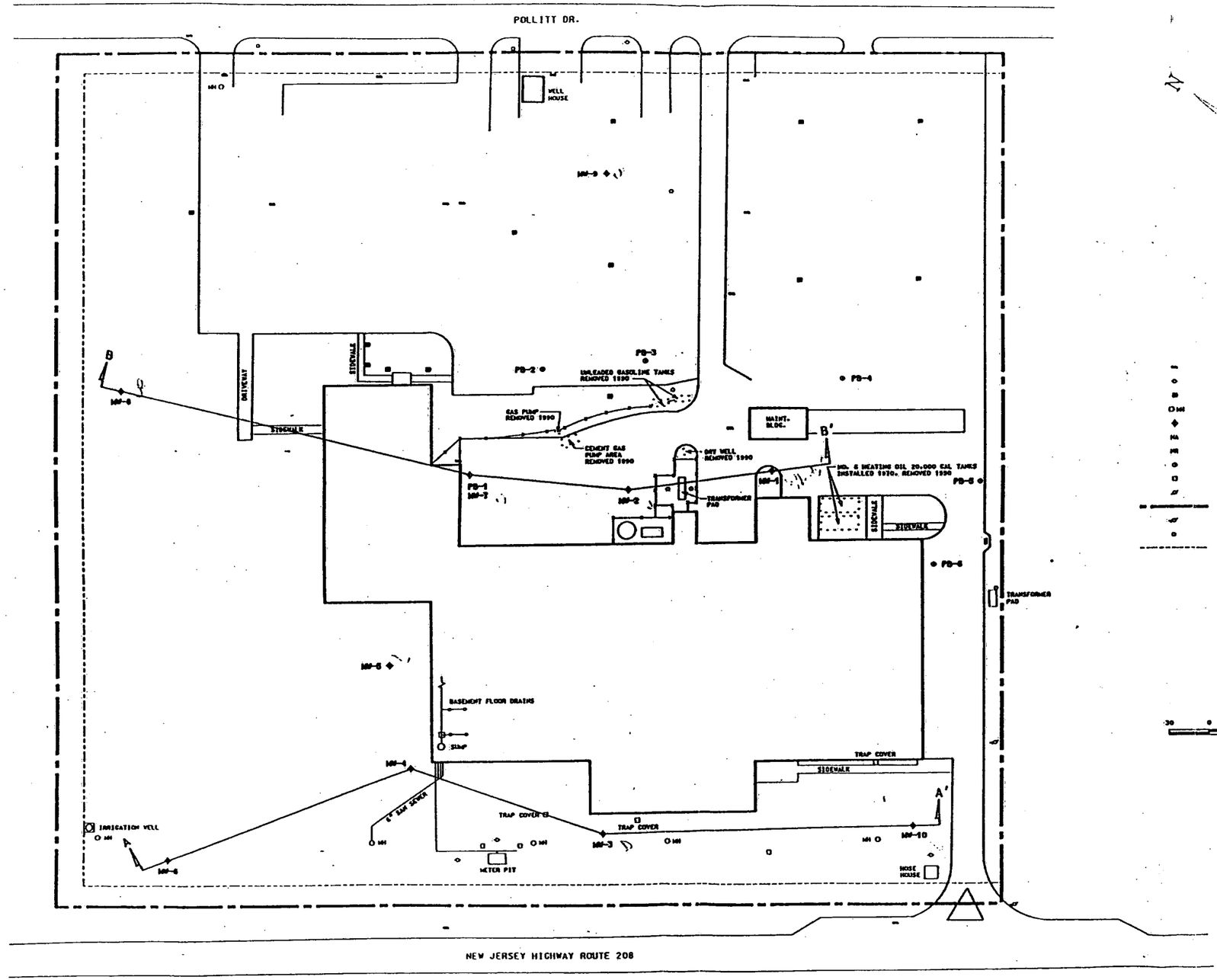
Concentrations of several detected constituents in monitoring well samples exceeded the Federal Drinking Water Standards Maximum Contaminant Level (MCL) and/or the New Jersey MCL (NJMCL) values. Exceedances included:

- Benzene in MW-3 at 13 μg/L (MCL 5 μg/L, 1 NJMCL μg/L);
- 1,1-Dichloroethene in MW-1 at 17 μg/L, MW-3 at 100 μg/L, MW-7 at 460 μg/L, and MW-8 at 46 μg/L (MCL 7 μg/L, NJMCL 2 μg/L);
- 1,1,1-Trichloroethane in MW-1 at 87 μg/L, MW-2 at 13,000 μg/L, MW-3 at 500 μg/L, MW-7 at 2,700 μg/L, and MW-8 at 370 μg/L (MCL 200 μg/L, NJMCL 26 μg/L);
- Trichloroethene in MW-1 at 6.7 μg/L, MW-2 at 7.2 μg/L, and MW-9 at 13 μg/L (MCL 5 μg/L, NJMCL 1 μg/L);
- Vinyl chloride in MW-3 at 100 μg/L (MCL 2 μg/L, NJMCL 2 μg/L); and
- Total Chromium in MW-2 at 0.064 mg/L, MW-4 at 0.093 mg/L, MW-6 at 0.13 mg/L, and MW-7 at 0.065 mg/L (MCL 0.1 mg/L, NJMCL 0.05 mg/L).

Detected trans-1,2-dichloroethane and total silver concentrations did not exceed MCL or MJMCL values. Chloroethane, chloroform, 1,1-dichloroethane, formaldehyde, petroleum hydrocarbons, total cyanide, and hexavalent chromium do not have MCL or NJMCL values; neither do any of the tentatively identified base-neutral and acid extractable organics or volatile organics.

Cyanide concentrations detected in MW-7 (0.24 mg/L) exceeded the New Jersey groundwater quality criteria of 0.2 mg/L.

FIGURES



WELL ID	SURFACE ELEVATION	WELL CASING ELEVATION	LATITUDE	LONGITUDE
MW-1	90.00	91.88	40°56'56.0"	74°07'00.0"
MW-2	90.00	90.00	40°56'56.0"	74°07'00.0"
MW-3	88.70	90.38	40°56'55.0"	74°07'00.0"
MW-4	86.00	88.00	40°56'55.0"	74°07'00.0"
MW-5	90.00	91.40	40°56'55.0"	74°07'00.0"
MW-6	90.00	NA	40°56'55.0"	74°07'00.0"
MW-7	90.00	90.50	40°56'55.0"	74°07'00.0"
MW-8	90.00	90.31	40°56'55.0"	74°07'00.0"
MW-9	90.00	90.34	40°56'55.0"	74°07'00.0"
MW-10	90.00	91.34	40°56'55.0"	74°07'00.0"
PB-1	90.00	90.10	40°56'55.0"	74°07'00.0"
PB-2	NA	NA	40°56'55.0"	74°07'00.0"
PB-3	NA	NA	40°56'55.0"	74°07'00.0"
PB-4	NA	NA	40°56'55.0"	74°07'00.0"
PB-5	NA	NA	40°56'55.0"	74°07'00.0"
PB-6	NA	NA	40°56'55.0"	74°07'00.0"

SURVEY DATA PROVIDED BY:
DONALD H. SEIMES ASSOCIATES
43 WEST HIGH STREET
SOMERVILLE, NJ 08876

FIGURE 1
MONITORING WELL LOCATIONS

RADIAN CORPORATION

REVISION	RVSD	CHKD	APPD	DATE

PROJECT	246-080-01-11
SCALE	1" = 65'
DRAWN	D.D.D.
DATE	02/07/92

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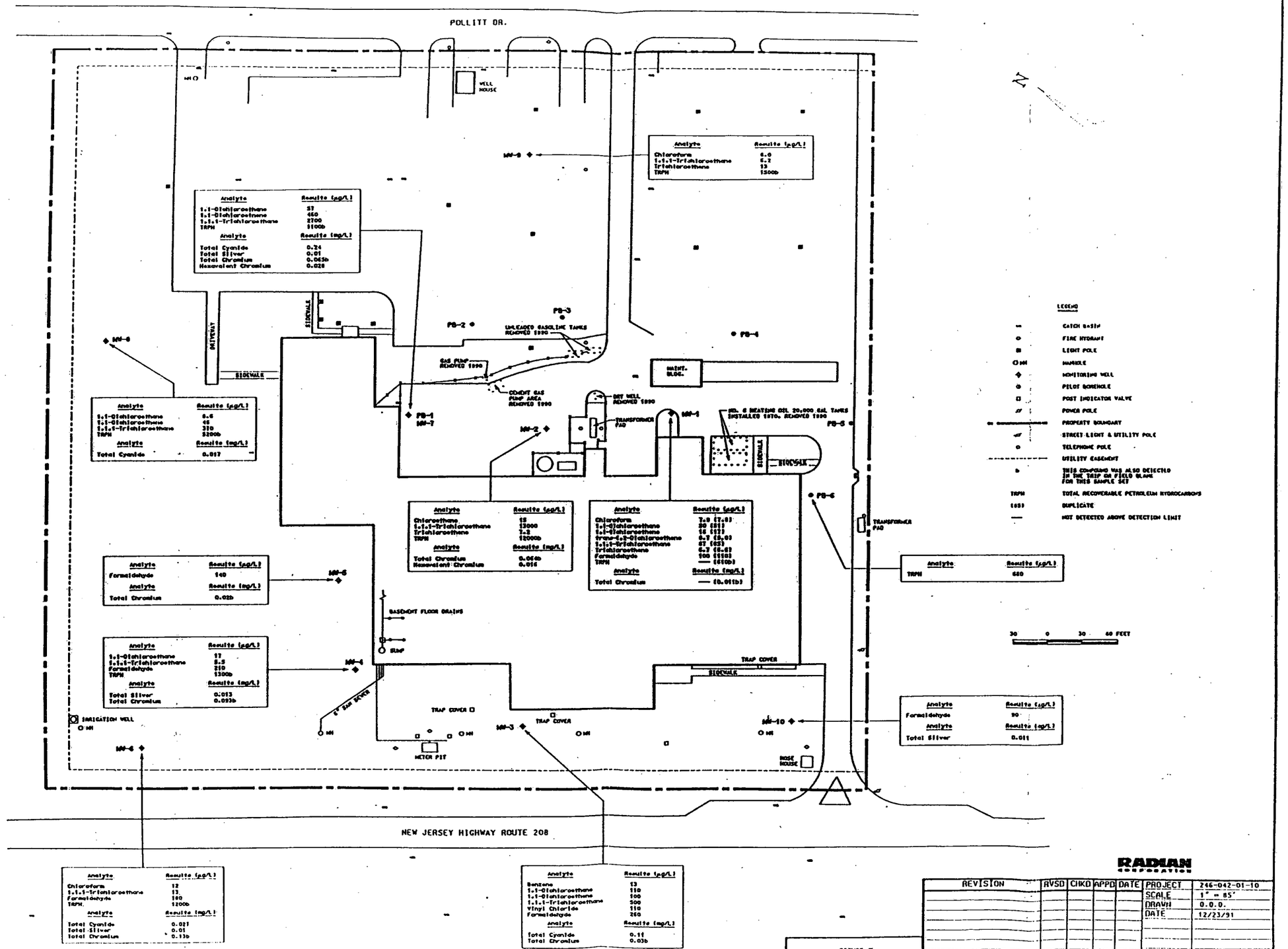
FAIR LAWN, N.J.



Analyte	Results (µg/L)
1,1-Dichloroethane	57
1,1-Dichloroethene	460
1,1,1-Trichloroethane	2700
TRPH	5100b
Analyte	**Results (mg/L)**
Total Cyanide	0.24
Total Silver	0.01
Total Chromium	0.045b
Hexavalent Chromium	0.028

Analyte	Results (µg/L)
Chloroform	6.0
1,1,1-Trichloroethane	6.2
Trichloroethene	13
TRPH	1300b

Analyte	Results (µg/L)
1,1-Dichloroethane	6.6
1,1-Dichloroethene	45
1,1,1-Trichloroethane	310
TRPH	5200b
Analyte	**Results (mg/L)**
Total Cyanide	0.017

Analyte	Results (µg/L)
Chloroethane	55
1,1,1-Trichloroethane	13000
Trichloroethene	1.5
TRPH	12000b
Analyte	**Results (mg/L)**
Total Chromium	0.064b
Hexavalent Chromium	0.016

Analyte	Results (µg/L)
Chloroform	7.0 (7.0)
1,1-Dichloroethane	30 (31)
1,1-Dichloroethene	16 (17)
trans-1,2-Dichloroethene	6.7 (6.0)
1,1,1-Trichloroethane	87 (85)
Trichloroethene	6.7 (6.6)
Formaldehyde	100 (110)
TRPH	— (650b)
Analyte	**Results (mg/L)**
Total Chromium	— (0.011b)

Analyte	Results (µg/L)
TRPH	680

Analyte	Results (µg/L)
Formaldehyde	140
Analyte	**Results (mg/L)**
Total Chromium	0.02b

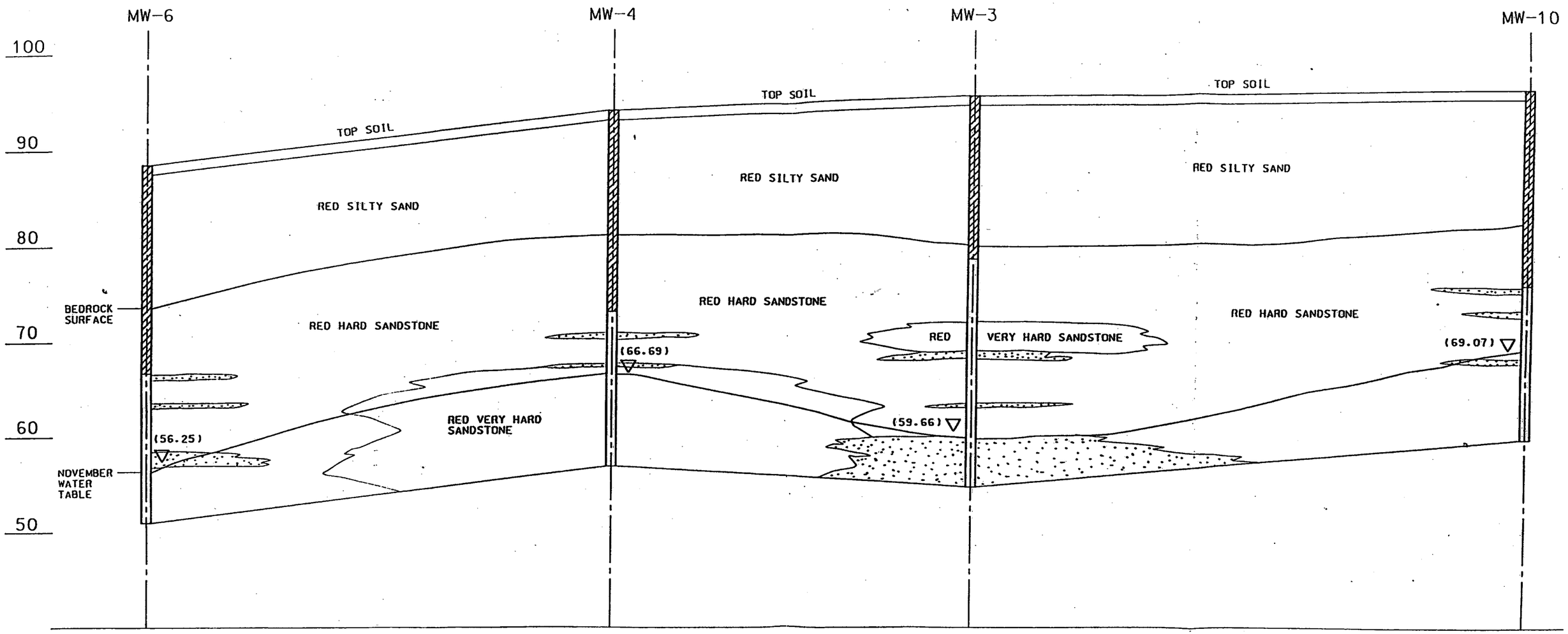
Analyte	Results (µg/L)
1,1-Dichloroethane	17
1,1,1-Trichloroethane	8.5
Formaldehyde	210
TRPH	1300b
Analyte	**Results (mg/L)**
Total Silver	0.013
Total Chromium	0.093b

Analyte	Results (µg/L)
Formaldehyde	90
Analyte	**Results (mg/L)**
Total Silver	0.011

Analyte	Results (µg/L)
Chloroform	12
1,1,1-Trichloroethane	13
Formaldehyde	180
TRPH	1200b
Analyte	**Results (mg/L)**
Total Cyanide	0.021
Total Silver	0.01
Total Chromium	0.13b

Analyte	Results (µg/L)
Benzene	13
1,1-Dichloroethane	110
1,1-Dichloroethene	100
1,1,1-Trichloroethane	500
Vinyl Chloride	110
Formaldehyde	260
Analyte	**Results (mg/L)**
Total Cyanide	0.11
Total Chromium	0.03b

FIGURE 7
ANALYTICAL RESULTS FOR MONITORING WELLS
November 1991



LEGEND

▽ (56.25) NOVEMBER WATER LEVELS

OPEN WELL INTERVAL

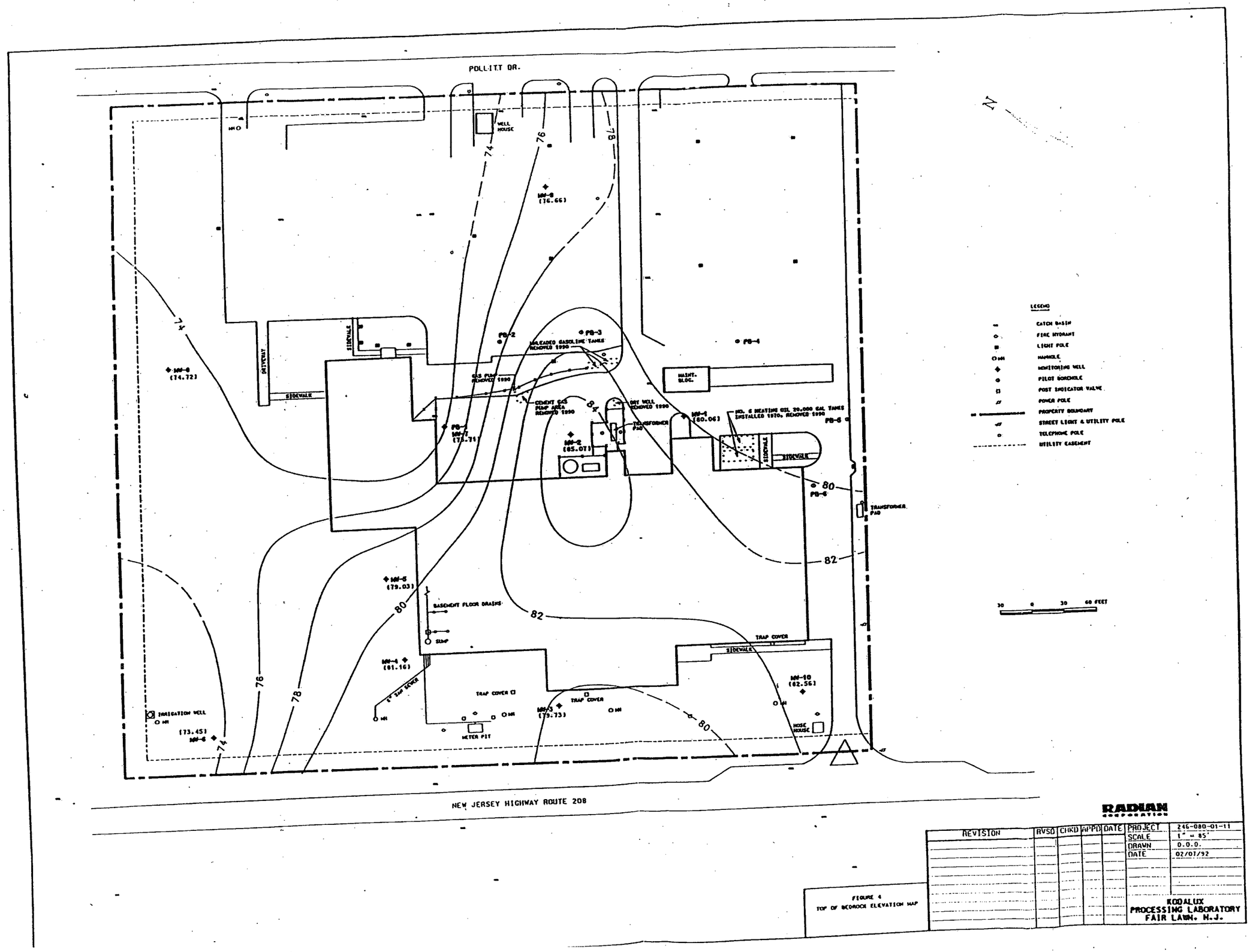
SOFT SANDSTONE OR SHALE

WELL CASING

SECTION A-A'

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

Figure 5
Section A-A'



RADIAN CORPORATION

REVISION	RVSD	CHKD	APPD	DATE		
					PROJECT	246-080-01-11
					SCALE	1" = 85'
					DRAWN	D.D.D.
					DATE	02/07/92

FIGURE 4
TOP OF BEDROCK ELEVATION MAP

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FAIR LAWN, N.J.

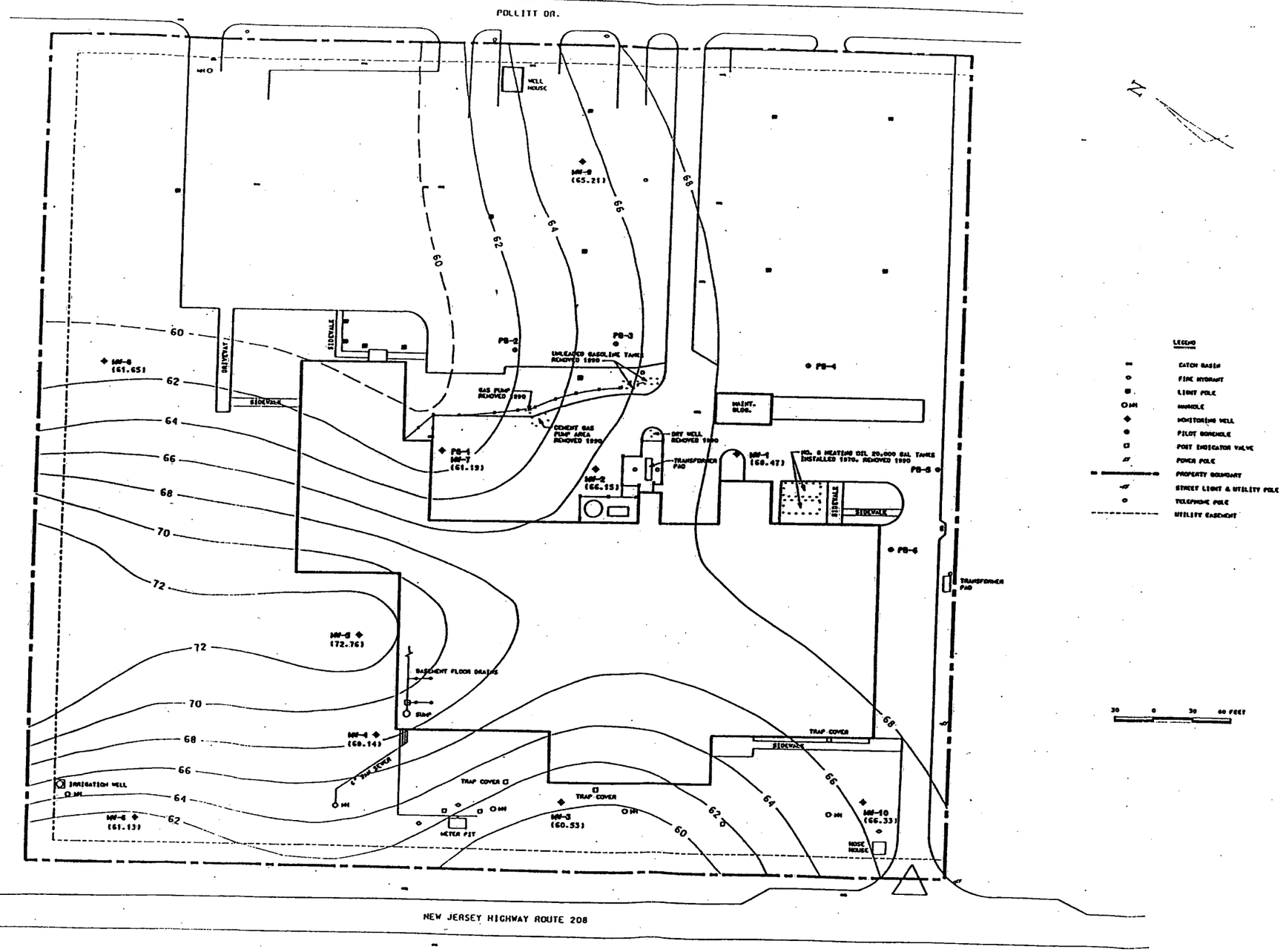


FIGURE 3
GROUNDWATER ELEVATION MAP
December 18, 1991

RADIAN CORPORATION

REVISION	AVSD	CHKD	APPD	DATE

PROJECT	246-080-01-11
SCALE	1" = 65'
DRAWN	D.D.D.
DATE	02/07/92

KODALUX
PROCESSING LABORATORY
FAIR LAWN, N.J.

TABLES

Table 1

Groundwater Elevation Data

Well ID	Groundwater Elevation (ft)	
	11/14/91	12/19/91
MW-1	65.20	68.47
MW-2	66.00	66.15
MW-3	59.66	60.53
MW-4	66.69	68.14
MW-5	70.86	72.76
MW-6	56.25	61.13
MW-7	60.46	61.19
MW-8	60.73	61.65
MW-9	63.29	65.21
MW-10	69.07	66.33

Table 2

Field Data for Kodalux Monitoring Wells

Well ID	Depth to Water	Purge Start Time	Purge Stop Time	Vol Purge	pH	Temp °C	Cond. (µS)	Recovery Rate
MW-1	29.45 ft	1347	1353	35 gal	6.5	17, 17, 17	630, 620, 600	medium
MW-2	27.50 ft	1255	1323	25 gal	6.5	18, 18, 18, 18	830, 750, 670. 650	medium
MW-3	35.60 ft	0845	0910	6 gal (dry)	7, 6.5	16, 17	2390, 2400	slow
MW-4	27.90 ft	1020	1025	14 gal (dry)	6.5	16, 16, 17	4060, 4040, 3930	slow
MW-5	23.80 ft	1045	1050	18 gal (dry)	6.5, 6.0, 6.0	16, 17, 17	2020, 1970, 1920	slow
MW-6	31.90 ft	1140	1145	7 gal (dry)	6.5	15, 15	600, 520	slow
MW-7	32.85 ft	1233	1236	5 gal (dry)	7.5	17, 17	410, 340	slow
MW-8	27.65 ft	1120	1127	13 gal (dry)	7.0	13, 14, 14	620, 390, 370	slow
MW-9	27.95 ft	1203	1217	17 gal (dry)	6.5	16, 17, 17	530, 510, 520	slow
MW-10	27.10 ft	0930	1000	16 gal (dry)	7	14	930, 850	slow

Field Notes:
MW-2 water appeared brownish-clear with oil droplets
MW-4 water appeared brownish-clear
MW-5 water appeared brownish-clear
MW-6 water appeared brownish-clear
MW-7 water appeared clear
MW-8 water appeared clear
MW-9 water appeared brownish-clear
MW-10 water appeared yellowish-clear
(dry) purged to near dryness

Table 3

Organic Compounds Detected in Kodalux Monitoring Wells - November 1991

Analyte	Method	Lab	Detection Limit[a] (µg/L)	Results (µg/L)													
				MW-1	MW-1 (DUP)	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Equipment Blank	Trip Blank	Method Blank
Base - Neutral and Acid Extractable Organics (BNAE)	EPA 625	Recra															
1,3-Dichlorobenzene			14	-	-	-	-	J	-	-	-	-	-	-	-	-	-
Naphthalene			14	-	-	J	-	-	-	-	-	-	-	-	-	-	-
Phenanthrene			14	-	-	J[b]	-	-	-	-	-	-	-	-	-	J	-
Tentative Identified BNAE Compounds[d]	EPA 625	Recra															
Unknown (Scan #722)			c	-	-	11	-	-	-	-	-	-	-	-	-	-	-
2-Fluoro-4-Nitrophenol (Scan #746)			c	-	-	7.3	-	-	-	-	-	-	-	-	-	-	-
Unsaturated hydrocarbon (Scan #938)			c	-	-	6.3	-	-	-	-	-	-	-	-	-	-	-
Dimethyl naphthalene isomer (Scan #1053)			c	-	-	6.4	-	-	-	-	-	-	-	-	-	-	-
1,3-Dithiolane (Scan #525)			c	-	-	-	7.1	-	-	-	-	-	-	-	-	-	-
Dichlorobenzenamine isomer (Scan #955)			c	-	-	-	26	-	-	-	-	-	-	-	-	-	-
Chlorodimethyl phenol isomer (Scan #1017)			c	-	-	-	10	-	-	-	-	-	-	-	-	-	-
Unknown (Scan #1153)			c	-	-	-	8.0	-	-	-	-	-	-	-	-	-	-
Unknown (Scan #1312)			c	-	-	-	130	-	-	-	-	-	-	-	-	-	-
Unknown (Scan #1363)			c	-	-	-	6.0	-	-	-	-	-	-	-	-	-	-

Table 3

(Continued)

Analyte	Method	Labs	Detection Limit[a] (µg/L)	Results (µg/L) MW-1	MW-1 (DUP)	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Equipment Blank	Trip Blank	Method Blank
Alkyl substituted hydrocarbon (Scan #1456)			c	-	-	-	12	-	-	-	-	-	-	-	-	-	-
Unknown (Scan #1577)			c	-	-	-	21	-	-	-	-	-	-	-	-	-	-
Unknown (Scan #1745)			c	-	-	-	34	-	-	-	-	-	-	-	-	-	-
Oxygenated Compound (Scan #874)			c	-	-	-	-	-	-	9.9	-	-	-	-	-	-	-
Oxygenated Compound (Scan #872)			c	-	-	-	-	-	-	-	6.4	-	-	-	-	-	-
Oxygenated Compound (Scan #860)			c	-	-	-	-	-	-	-	-	-	13	-	-	-	-
Hydroquinone	EPA 8270	Recra	12	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
Volatile Organics	EPA 624	Recra															
Benzene			5.0	-	-	-	13	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane			5.0	-	-	-	-	-	-	J	-	-	-	-	-	-	-
Chlorobenzene			5.0	-	-	-	-	-	-	-	-	-	-	-	J	-	-
Chlorodibromomethane			5.0	-	-	-	-	-	-	J	-	-	-	-	-	-	-
Chloroethane			10	J	J	15	J	-	-	-	-	-	-	-	-	-	-
Chloroform			5.0	7.9	7.8	J	J	-	-	12	J	-	6.0	-	-	-	-
1,1-Dichloroethane			5.0	50	51	J[1]	110	17	-	-	57	8.6	-	-	-	-	-
1,1-Dichloroethene			5.0	16	17	J[1]	100	J	-	-	460[3]	46	J	-	-	-	-
trans-1,2-Dichloroethene			5.0	8.7	9.0	J	-	-	-	-	J	-	J	-	-	-	-
Tetrachloroethene			5.0	-	-	J	-	-	-	-	J	-	-	-	-	-	-
Toluene			5.0	-	-	-	-	-	-	-	J	-	-	-	-	-	-

Table 3

(Continued)

Analyte	Method	Labs	Detection Limit[a] (µg/L)	Results (µg/L) MW-1	MW-1 (DUP)	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Equipment Blank	Trip Blank	Method Blank
1,1,1-Trichloroethane			5.0	87	85	13000(1)	500(2)	5.5	-	13	2700(3)	370(4)	6.2	J	-	-	-
1,1,2-Tricloroethane			5.0	-	-	-	J	-	-	-	-	-	-	-	-	-	-
Trichloroethene			5.0	6.7	6.6	7.2	J	-	-	-	J	-	13	-	-	-	-
Vinyl Chloride			10	J	-	J	110	J	-	-	-	-	-	-	-	-	-
o/p-Xylene			5.0	-	-	J	-	-	-	-	-	-	-	-	-	-	-
Tentatively Identified Volatile Compounds[d]	EPA 624	Recra															
Hexachlorobutadiene			c	-	-	-	90(2)e	-	-	-	-	-	-	-	-	-	-
1,1,2-Trimethyl-1,2,2-trifluoroethane			c	-	-	-	-	-	-	4.3	-	-	-	-	-	-	-
Formaldehyde	NIOSH 3500	Recra	84	100	110	-	260	210	140	180	-	-	-	90	-	-	-
Petroleum Hydrocarbons	EPA 418.1	Recra	500	-	610[b]	12000[b]	-	1300[b]	-	1200[b]	1'100[b]	5200[b]	1500[b]	-	-	530	-

Analysis performed by Recra Environmental, Inc.

a Detection limits reported are Method Detection Limits (Formaldehyde and Petroleum Hydrocarbons) and Contract Required Quantitation Limits (Organics).

b This compound was also detected in the trip or field blank for this sample set.

c Tentatively identified compound concentratins are estimated based on EPA recommended procedures for TIC identifications.

d Results for tentatively identified compounds are estimated.

e TIC was found in the dilution of this sample, but not in the undiluted sample.

J Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

\- Not detected above the detection limit.

(1) Dilution factor 100 versus 1.0; detection limit for this compound will change accordingly.

(2) Dilution factor 5 versus 1.0; detection limit for this compound will change accordingly.

(3) Dilution factor 50 versus 1.0; detection limit for this compound will change accordingly.

(4) Dilution factor 4.0 versus 1.0; detection limit for this compound will change accordingly.

NA Due to a laboratory oversite sample Method Blank was not analyzed for Hydroquinone.

Table 4

Inorganics Results for Kodalux Monitoring Wells - November 1991

Analyte	Method	Lab	Detection Limit[a]	Results (mg/L)													
				MW-1	MW-1 (DUP)	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Equipment Blank	Trip Blank	Method Blank
Total Cyanide	EPA 9010	Recra	0.01	-	-	-	0.11	-	-	0.027	0.24	0.017	-	-	-	-	-
Total Silver	EPA 272.1	Recra	0.01	-	-	-	-	0.013	-	0.01	0.01	-	-	0.011	-	-	-
Total Chromium	EPA 218.1	Recra	0.01	-	0.011[b]	0.064[b]	0.03[b]	0.093[b]	0.02[b]	0.13[b]	0.065[b]	-	-	-	0.016	-	-
Hexavalent Chromium	EPA 7195	Recra	0.01	-	-	0.016	-	-	-	-	0.028	-	-	-	-	NA	-

Analysis performed by Recra Environmental, Inc.

[a] Detection limits reported are Instrument Detection Limits (Metals) and Contract Required Quantitation Limits (Cyanide).

[b] This component was also detected in the trip or equipment blank for this sample set.

\- Not detected above the detection limit.

NA Due to laboratory oversite, sample Trip Blank was not analyzed for Hexavalent Chromium.

Table 5

Total Recoverable Petroleum Hydrocarbon Detected in Kodalux Pilot Boreholes - October 1991

Analyte	Method	Lab	Detection Limit[a] (mg/L)	RESULTS (mg/L)								
				PB-1	PB-2	PB-3	PB-4	PB-4 (DUP)	PB-5	PB-6	Trip Blank	Equipment Blank
Total Recoverable Petroleum Hydrocarbons	EPA 418.1	Recra	0.5	-	-	-	-	-	-	0.68	NA	-

Analysis performed by Recra Environmental, Inc.

a Detection limits reported are Method Detection Limits.

\- Not detected above the detection limit.

NA Due to laboratory oversite sample Trip Blank was not analyzed for Total Recoverable Hydrocarbons.

Table 6

Kodalux Drilling Cuttings Waste Characterization Analytical Results - October 1991

Analyte	Method	Lab	Detection Limit[a]	Results: Drilling Cuttings	Results: Trip Blank or TCLP Blank
TCL volatile organics (µg/kg) plus Trichlorofluoromethane and 1,1,2-Trichloro-1,2,2-trifluoroethane	EPA 8240	Recra			
1,1,1-Tricholoroethane			5	J	-
TCL semivolatile organics (µg/kg) plus 1,2-dichlorobenzene, nitrobenzene, and pyridine	EPA 8270	Recra	NA	-	NA
Isobutanol (µg/kg)	EPA 8015	Recra	490[b]	-	-
TCLP Metals (mg/L)		Recra			
Total Arsenic	EPA 7060		0.005	-	-
Total Barium	EPA 6010		0.03	1.0	-
Total Cadmium	EPA 6010		0.005	-	-
Total Chromium	EPA 7190		0.01	0.015[b]	0.017
Total Lead	EPA 7420		0.06	-	-
Total Mercury	EPA 7470		0.0004	-	-
Total Selenium	EPA 7740		0.005	-	-
Total Silver	EPA 7760		0.01	-	-
Ignitability (Flash Point)	EPA 1010	Recra	NA	>200°F	NA
Corrosivity		Recra	NA	7.9 STD uni	NA
Reactivity		Recra			
Total Available Cyanide (Reactivity)	SW-846 7.3.2		NA	-	NA
Total Available Sulfide (Reactivity)	SW-846 7.3.4.1		NA	-	NA

Analysis performed by Recra Environmental, Inc.

a Detection limits reported are Contract Required Quantitation Limits (Organics) and Instrument Detection Limits (Metals).

b Detection Limit for isobutanol in the trip blank is 1000 µg/L.

\- Not detected above the detection limit.

NA Detection Limit was not applicable or sample Trip Blank was not analyzed for this parameter.

J Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria and the result is less than the sample quantitation limit but greater than zero.

Table 7

Blank Sample Results[a]

Monitoring Well Groundwater Samples Equipment Blank	2.9 μg/L Chlorobenzene (J) 0.016 μg/L Total Chromium
Monitoring Well Groundwater Samples Trip Blank	0.93 μg/L Phenanthrene (J) 0.53 mg/L TRPH
Monitoring Well Groundwater Samples Method Blanks	No compounds detected
Pilot Borehole Groundwater Samples Blank Equipment	No compounds detected
Drilling Cuttings Sample Trip Blank	No compounds detected

Analyses performed by Recra Environmental, Inc.

[a] Only analytes detected above detection limits are reported here.

J Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

Table 8

Field Duplicate Results ($\mu g/L$)

Analyte	Results					
	MW-1	MW-1 Dup	RPD (%)	PB-4	PB-4 Dup	RPD
Chloroethane	7.5 (J)	7.3 (J)	3	-	-	-
Chloroform	7.9	7.8	1	-	-	-
1,1-Dichloroethane	50	51	2	-	-	-
1,1-Dichloroethene	16	17	6	-	-	-
trans-1,2-Dichloroethane	8.7	9.0	3	-	-	-
1,1,1-Trichloroethane	87	85	2	-	-	-
Trichloroethene	6.7	6.6	2	-	-	-
Vinyl chloride	0.95 (J)	ND	NC	-	-	-
Formaldehyde	100	110	10	-	-	-
TRPH	ND	610[b]	NC	ND	ND	NC
Total Chromium	ND	0.011[b]	NC	-	-	-

Analysis performed by Recra Environmental, Inc.

J Estimated value, less than the quantitation limit.

b This component was detected in the equipment blank for this sample set.

RPD Relative percent difference determined as the difference between two values, divided by their average, and expressed in percent.

NC Not calculated, one or both of the values was ND.

MW Monitoring Well

PB Pilot Boring.

ND Not detected above the detection limit.

\- Not analyzed.

APPENDIX A

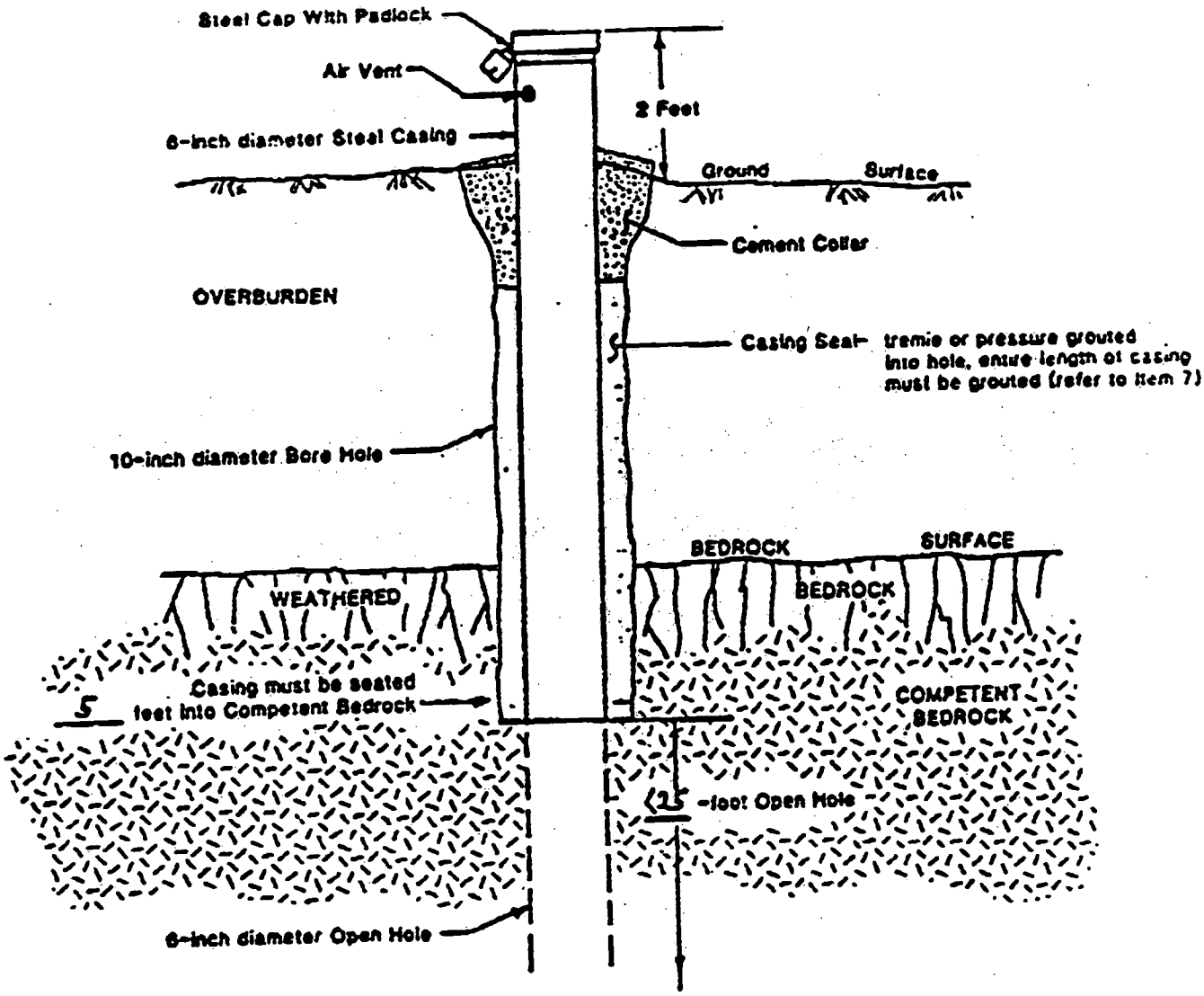
NJDEP BEDROCK MONITORING WELL SPECIFICATIONS

BEDROCK FORMATIONS

SITE NAME: KODALUX PROCESSING LAB

LOCATION: N.J. ROUTE 208, FAIRLAWN, BERGEN COUNTY

DATE: 12/6/90



NOT TO SCALE

NJGS Revised 9-87

BEDROCK MONITORING WELL REQUIREMENTS
Revised 9/87

1. Notification to the NJDEP is required two weeks prior to drilling.

2. State well permits are required for each monitoring well constructed by the driller. The well permit tag must be permanently affixed to each monitoring well.

3. Copies of the site specific well specifications must be maintained at the drilling site by the driller.

4. The monitoring well must be installed by a New Jersey licensed well driller.

5. Monitoring well design must conform with NJAC 7:9-7, 8, and 9.

6. Drill an oversize borehole a minimum of 4 inches greater than the casing diameter through the overburden and bedrock so that the casing can be sealed into competent rock as indicated in the diagram.

7. Acceptable grouting materials are:

   Neat Cement - 6 gallons of water per 94 pound bag of cement.

   Granular Bentonite - 1 gallon of water per 1.5 pounds of bentonite.

   Cement-Bentonite - 8 gallons of water to 5 pounds of bentonite dry mixed per 94 pound bag of cement.

   Cement-Bentonite - 10 gallons of water per 8 pounds of bentonite water-mixed with a 94 pound bag of cement.

   Non-expandable cement - 7.5 gallons of water per 1/2 teaspoon of aluminum hydroxide mixed with 4 pounds of bentonite and 94 pounds of cement.

   Non-expandable cement - 7 gallons of water per 1/2 teaspoon of aluminum hydroxide mixed with 94 pounds of cement (Type I or Type II).

8. Potable water must be used for mixing grouting materials and drilling fluids.

9. Only threaded or welded joints are acceptable as couplings.

10. The driller must maintain an accurate written log of all materials encountered, record construction details for each well, and record the depth of water bearing zones. This information must be submitted to the Bureau of Water Allocation as required by N.J.S.A. 58:4A.

11. Flush mount monitoring wells are acceptable provided they have manholes, locking caps, and seals (seals) to prevent leakage of surface water down the well.

12. Top of each well casing (excluding cap) must be surveyed to the nearest 0.01 foot by a New Jersey licensed surveyor. The survey point must be marked on each well.

13. Wells must be developed to a turbidity-free discharge.

14. Modifications to designs are allowed only with NJDEP approval.

Additional Requirements (If checked):

Rock Core Samples ( ) _____

Split Spoon Samples (X) EVERY TWO FEET AT WELLS MW-3, MW-5 AND MW-7

Borehole Geophysical Logs ( ) _____

Dedicated Bailer (Sampler) in Well ( ) _____

Other ( ) _____

_____

_____

Notice is Hereby Given of the Following:

Review by the Department of well locations and depths is limited solely to review for compliance with the law and Department rules.

The Department does not review well locations or depths to ascertain the presence of, nor the potential for, damage to any pipeline, cable, or other structures.

The permittee (applicant) is solely responsible for the safety and adequacy of the design and construction of monitoring well(s) required by the Department.

The permittee (applicant) is solely responsible for any harm or damage to person or property which results from the construction or maintenance of any well; this provision is not intended to relieve third parties of any liabilities or responsibilities which are legally theirs.

APPENDIX B

DRILLING LOGS

DRILLING LOG

1. COMPANY NAME: Kodaiux	2. DRILLING SUBCONTRACTOR: Summit Drilling Co., Inc.
3. Fair Lawn, NJ	4. LOCATION: Bridgewater, NJ
5. NAME OF DRILLER: Sean	6. MANUFACTURER'S DESIGNATION OF DRILL: Mobile B0
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Mobile B0 - Air Rotary Drill; 10" OD hammer bit; 2" OD 24" split spoon sampler; 6" OD hammer bit	8. HOLE LOCATION: NJ GEODETIC SURVEY CONTROL LAT. 40° 56'35.7"; LONG. 74° 07'50.6"
	9. SURFACE ELEVATION: NJ GEODETIC SURVEY CONTROL 88.45
	10. DATE STARTED: 10/21/91
	11. DATE COMPLETED: 10/22/91
12. OVERBURDEN THICKNESS: 15.0'	15. DEPTH GROUNDWATER ENCOUNTERED: Water at 30'
13. DEPTH DRILLED INTO ROCK: 22.5'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: Static water level at 30.34' below top of casing (10/29/91)
14. TOTAL DEPTH OF HOLE: 37.5'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): Water elev: 56.25' (11/14/91 sampling); 61.13' (12/19/91)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA X

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		✓		Lynn M. Moody

ELEV. (ft)	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
					10" Hammer bit
88.45 Top		Top soil			
		Red, fine-grained sand wtih silt, with some hard, red, sandstone fragments		Air Rotary	
	5		HNu = ND	29, 23, 25, 28	Dense
81.45		Red, fine-grained sand with silt, (weathered red, fine-grained sandstone)		Air Rotary	
	10		HNu = ND	30, 50/3"	Refusal at 10'- 3"
				Air Rotary	
73.45 Bedrock	15	Hard, red sandstone, fine to medium-grained, with thin interbeds of softer rock (red shale?) at 22', 25', and from 30' to 32'		Air Rotary	
	20				At 20'- 6" steel casing and grout in place. After 24 hrs. re-enter with 6" hammer bit
	25				
	30				Water at 30' (no clear indication)
	35				
50.95 Bottom	40	Bottom of hole at 37.5'			

DRILLING LOG

MW-77PB-1

1. COMPANY NAME Kodalux	2. DRILLING SUBCONTRACTOR Summit Drilling Co., Inc.	SHEET 1 OF 1 SHEETS
3. Fair Lawn, NJ	4. LOCATION Bridgewater, NJ	
NAME OF DRILLER Sean	6. MANUFACTURER'S DESIGNATION OF DRILL Mobile B0	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT Mobile B0 - Air Rotary Drill 10" OD hammer bit 2" OD 24" split spoon sampler 6" OD hammer bit	8. HOLE LOCATION NJ GEODETIC SURVEY CONTROL LAT. 40°56'36.1"; LONG. 74°07'45.9"	
	9. SURFACE ELEVATION NJ GEODETIC SURVEY CONTROL 93.71	
	10. DATE STARTED 10/22/91	11. DATE COMPLETED 10/24/91
12. OVERBURDEN THICKNESS 20.0'	15. DEPTH GROUNDWATER ENCOUNTERED	
13. DEPTH DRILLED INTO ROCK 16.7'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED Static water level at 33.15' below top of casing (10/29/91)	
14. TOTAL DEPTH OF HOLE 36.7'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) Water Elev: 60.46' (11/14/91 - sampling); 61.19' (12/19/91)	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		✓		Lynn M. Moody

ELEV. (ft)	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
93.71 Top		Black top and stone			10" Hammer bit
				Air Rotary	
	5	Red, silty-fine sand with clay and fragments of sandstone	HNu = ND	3, 3, 3, 3	Soft
				Air Rotary	
	10	Red, sandy silt with clay and fragments of sandstone	HNu = ND	6, 11, 15, 16	Medium dense
				Air Rotary	
	15	Red, sandy silt to silty sand with fragments of red sandstone	HNu = ND	10, 13, 37, 27	Dense
				Air Rotary	
73.71 Bedrock	20	Hard, red sandstone		Air Rotary	
	25				At 25'- 6" steel casing and grout in place. After 48 hrs. re-enter with 6" hammer bit. Water used to settle dust.
	30				
	35				
57.01 Bottom		Bottom of hole at 36.7'			
	40				

DRILLING LOG

MW-8

SHEET 1 OF 1 SHEETS

1. COMPANY NAME: Keeaux	2. DRILLING SUBCONTRACTOR: Summit Drilling Co., Inc.
3. Fair Lawn, NJ	4. LOCATION: Bridgewater, NJ
NAME OF DRILLER: Sean	6. MANUFACTURER'S DESIGNATION OF DRILL: Mobile B0
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Mobile B0 - Air Rotary Drill; 10" OD hammer bit; 2" OD 24" split spoon sampler; 6" OD hammer bit	8. HOLE LOCATION: NJ GEODETIC SURVEY CONTROL LAT. 40°56'38.3"; LONG. 74°07'47.6"
	9. SURFACE ELEVATION: NJ GEODETIC SURVEY CONTROL 88.72
	10. DATE STARTED: 10/21/91
	11. DATE COMPLETED: 10/22/91
12. OVERBURDEN THICKNESS: 14.0'	15. DEPTH GROUNDWATER ENCOUNTERED: Water at 27'
13. DEPTH DRILLED INTO ROCK: 23.6'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: Static water level at 27.32' below top of casing (10/29/91)
14. TOTAL DEPTH OF HOLE: 37.6'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): Water Elev: 60.73' (11/14/91 - sampling); 61.65' (12/19/91)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		✓		Lynn M. Mazdy

ELEV. (ft)	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
					10" hammer bit
88.72 Top		Top soil			
		Red, sandy, silty clay with hard, red sandstone fragments		Air Rotary	
	5		HNu = ND	20, 20, 50/4"	Refusal at 6'- 4"
				Air Rotary	
	10		HNu = ND	20, 50/1"	Refusal at 10'- 7"
				Air Rotary	
74.72 Bedrock	15	Very hard, red sandstone		Air Rotary	
	20	Soft, weathered rock		Air Rotary	
		Hard, red sandstone			
	25	Softer, and slighty wet			At 25'- 6" steel casing and grout in place. After 24 hrs. re-enter with 6" hammer bit
	30				
	35				
51.12 Bottom	40	Bottom of hole at 37.6'			

DRILLING LOG

1. COMPANY NAME: Koedlux	2. DRILLING SUBCONTRACTOR: Summit Drilling Co., Inc.
3. Fair Lawn, NJ	4. LOCATION: Bridgewater, NJ
NAME OF DRILLER: Sean	6. MANUFACTURER'S DESIGNATION OF DRILL: Mobile 80
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Mobile 80 - Air Rotary Drill; 10" OD hammer bit; 2" OD 24" split spoon sampler; 6" OD hammer bit	8. HOLE LOCATION: NJ GEODETIC SURVEY CONTROL LAT. 40°56'36.9"; LONG. 74°07'42.9"
	9. SURFACE ELEVATION: NJ GEODETIC SURVEY CONTROL 91.66
	10. DATE STARTED: 10/23/91
	11. DATE COMPLETED: 10/24/91
12. OVERBURDEN THICKNESS: 15.0'	15. DEPTH GROUNDWATER ENCOUNTERED: Water at 26 to 27'
13. DEPTH DRILLED INTO ROCK: 24.9'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: Static water level at 27.50' below top of casing (10/29/91)
14. TOTAL DEPTH OF HOLE: 39.9'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): Water Elev: 63.29' (11/14/91 - sampling); 65.21' (12/19/91)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		✓		Lynn M. Moody

ELEV. (ft)	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
					10" Hammer bit
91.66 Top		Black top and stone			
		Red, sandy silt		Air Rotary	
	5	Red, silty medium grained sand with fragments of red sandstone	HNu - ND	13, 13, 17, 26	Dense
				Air Rotary	
	10	Red, silty fine to medium grained sand with fragments of red sandstone. Weathered rock at 13'	HNu - ND	9, 14, 25, 20	Dense
				Air Rotary	
76.66 Bearrock	15	Hard, red sandstone wtih thin interbeds of softer rock (shale?) at 23', 25' and 33'		50/0	Refusal at 15'
	20			Air Rotary	At 20'- 6" steel casing and grout in place. After 24 hrs. re-enter with 6" hammer bit
	25				
	30				
	35				
51.76 Bottom	40	Bottom of hole at 39.9'			

DRILLING LOG

1. COMPANY NAME: Kodaiux	2. DRILLING SUBCONTRACTOR: Summit Drilling Co., Inc.
3. Fair Lawn, NJ	4. LOCATION: Bridgewater, NJ
5. NAME OF DRILLER: Sean	6. MANUFACTURER'S DESIGNATION OF DRILL: Mobile B3
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Mobile B3 - Air Rotary Drill; 10" OD hammer bit; 2" OD 24" split spoon sampler; 6" OD hammer bit	8. HOLE LOCATION: NJ GEODETIC SURVEY CONTROL LAT. 40°56'31.9"; LONG. 74°07'45.3"
	9. SURFACE ELEVATION: NJ GEODETIC SURVEY CONTROL 96.56
	10. DATE STARTED: 10/23/91
	11. DATE COMPLETED: 10/24/91
12. OVERBURDEN THICKNESS: 14.0'	15. DEPTH GROUNDWATER ENCOUNTERED
13. DEPTH DRILLED INTO ROCK: 22.7'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: Static water level at 25.33' below top of casing (10/29/91)
14. TOTAL DEPTH OF HOLE: 36.7'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): Water Elev: 69.07' (11/14/91 - sampling); 66.33' (12/19/91)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		✓		Lynn M. Moody

ELEV. (ft)	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
96.56 Top		Top soil			10" Hammer bit
				Air Rotary	
	5	Red, silty sand with fragments of red fine grained sandstone	HNu - ND	21, 25, 38, 30	Dense
				Air Rotary	
	10	Red, silty sand with fragments of red fine grained sandstone	HNu - ND	12, 20, 21, 20	Dense
				Air Rotary	
82.56 Bedrock	15	Hard, red sandstone with zones of softer rock (shale?) at 20.5', 23', and 28'		Air Rotary	
	20				At 20'- 6" steel casing and grout in place. After 24 hrs. re-enter with 6" hammer bit
	25				
	30				
	35				
59.86 Bottom	40	Bottom of hole at 36.7'			

DRILLING LOG

FB-2

SHEET 1 OF 1 SHEETS

1. COMPANY NAME: Koeplux	2. DRILLING SUBCONTRACTOR: Summit Drilling Co., Inc.
3. Fair Lawn, NJ	4. LOCATION: Bridgewater, NJ
NAME OF DRILLER: Sean	6. MANUFACTURER'S DESIGNATION OF DRILL: Mobile B3
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Mobile B3 - Air Rotary Drill; 6" OD hammer bit; 2" OD 24" split spoon sampler	8. HOLE LOCATION: NJ GEODETIC SURVEY CONTROL LAT. 40°56'36.2"; LONG. 74°07'44.7"
	9. SURFACE ELEVATION: NJ GEODETIC SURVEY CONTROL Not Measured
	10. DATE STARTED: 10/23/91
	11. DATE COMPLETED: 10/23/91
12. OVERBURDEN THICKNESS: 18.0'	15. DEPTH GROUNDWATER ENCOUNTERED: 30.0' (possibly)
13. DEPTH DRILLED INTO ROCK: 18.0'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: Not Measured
14. TOTAL DEPTH OF HOLE: 36.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): —

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Abandoned with grout	✓			Lynn M. Moody

ELEV.	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
				Air Rotary	
	5	Red sandy silt with some clay		8, 15, 17, 15	
				Air Rotary	
	10	Sandy silt with clay		31, 51, 36, 32	
				Air Rotary	
	15	Red sandy silt with clay, with some rock fragments		12, 9, 10, 8	
Bedrock	20	Hard red sandstone with zones of softer rock at 19', 21', 28', and 31'.		Air Rotary	
	25				
	30				Possible water zone
	35				
	40	Bottom of hole at 36.0'			

DRILLING LOG

FB-3

1. COMPANY NAME Kodalux	2. DRILLING SUBCONTRACTOR Summit Drilling Co., Inc.	SHEET 1 OF 1 SHEETS
3. Fair Lawn, NJ	4. LOCATION Bridgewater, NJ	
5. NAME OF DRILLER Sean	6. MANUFACTURER'S DESIGNATION OF DRILL Mobile 80	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT Mobile 80 - Air Rotary Drill 6" OD hammer bit 2" OD 24" split spoon sampler	8. HOLE LOCATION NJ GEODETIC SURVEY CONTROL LAT. 40°56'35.7"; LONG. 74°07'43.9"	
	9. SURFACE ELEVATION NJ GEODETIC SURVEY CONTROL Not Measured	
	10. DATE STARTED 10/24/91	11. DATE COMPLETED 10/24/91
12. OVERBURDEN THICKNESS 13.0'	15. DEPTH GROUNDWATER ENCOUNTERED Not Encountered	
13. DEPTH DRILLED INTO ROCK 27.0'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED Not Measured	
14. TOTAL DEPTH OF HOLE 40.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) —	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Abandoned with grout	✓			Lynn M. Moody

ELEV.	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
		Black top and stone			6" Hammer bit
		Red brown silty sand grading into weathered red sandstone		Air Rotary	
	5			10, 31, 5/5"	Hard
				Air Rotary	
	10	Red brown silty sand with fragments of red sandstone		18, 12, 7, 11	Med. dense
Bedrock		Hard red sandstone		Air Rotary	
	15				
	20				
	25				
	30				
	35				Water used to settle dust
	40	Bottom of hole at 40.0'			

DRILLING LOG

1. COMPANY NAME: Kodaiux	2. DRILLING SUBCONTRACTOR: Summit Drilling Co., Inc.
3. Fair Lawn, NJ	4. LOCATION: Bridgewater, NJ
5. NAME OF DRILLER: Sean	6. MANUFACTURER'S DESIGNATION OF DRILL: Mobile B0
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Mobile B0 - Air Rotary Drill; 6" OD hammer bit; 2" OD 24" split spoon sampler	8. HOLE LOCATION: NJ GEODETIC SURVEY CONTROL LAT. 40°56'34.6"; LONG. 74°07'42.7"
	9. SURFACE ELEVATION: NJ GEODETIC SURVEY CONTROL Not Measured
	10. DATE STARTED: 10/25/91
	11. DATE COMPLETED: 10/25/91
12. OVERBURDEN THICKNESS: 10.0'	15. DEPTH GROUNDWATER ENCOUNTERED: Not Encountered
13. DEPTH DRILLED INTO ROCK: 30.0'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: Not Measured
14. TOTAL DEPTH OF HOLE: 40.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): —

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Abandoned with grout	✓			Lynn M. Moody

ELEV.	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
		Black top and stone			6" hammer bit
		Red brown silty sand with fragments of weathered sandstone		Air Rotary	
	5			16, 50, 44, 38	
				Air Rotary	
Bedrock	10	Hard red sandstone		Air Rotary	Water used to settle dust
	15				
	20				
	25				
	30				
	35				
	40	Bottom of hole at 40.0'			

DRILLING LOG

1. COMPANY NAME Koadlux	2. DRILLING SUBCONTRACTOR Summit Drilling Co., Inc.	SHEET 1 OF 1 SHEETS
3. Fair Lawn, NJ	4. LOCATION Bridgewater, NJ	
5. NAME OF DRILLER Kean	6. MANUFACTURER'S DESIGNATION OF DRILL Mobile 80	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT Mobile 80 - Air Rotary Drill 6" OD hammer bit 2" OD 24" split spoon sampler	8. HOLE LOCATION NJ GEODETIC SURVEY CONTROL LAT. 40°56'33.3"; LONG. 74°07'42.5"	
	9. SURFACE ELEVATION NJ GEODETIC SURVEY CONTROL Not Measured	
	10. DATE STARTED 10/25/91	11. DATE COMPLETED 10/25/91
12. OVERBURDEN THICKNESS 8.5'	15. DEPTH GROUNDWATER ENCOUNTERED Not Encountered	
13. DEPTH DRILLED INTO ROCK 28.5'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED Not Measured	
14. TOTAL DEPTH OF HOLE 37.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) —	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Abandoned with grout	✓			Lynn M. Moody

ELEV.	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
		Black top and stone			6" Hammer bit
		Red-brown silty sand with weathered red sandstone		Air Rotary	
	5			10, 44, 38, 15	Dense
Bedrock		Hard red sandstone		Air Rotary	Water used to settle dust
	10				
	15				
	20				
	25				
	30				
	35				
		Bottom of hole at 37.0'			
	40				

DRILLING LOG

1. COMPANY NAME Keddux	2. DRILLING SUBCONTRACTOR Summit Drilling Co., Inc.	SHEET 1 OF 1 SHEETS
3. Fair Lawn, NJ	4. LOCATION Bridgewater, NJ	
5. NAME OF DRILLER Sean	6. MANUFACTURER'S DESIGNATION OF DRILL Mobile B3	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT Mobile B3 - Air Rotary Drill 6" OD hammer bit 2" OD 24" split spoon sampler	8. HOLE LOCATION NJ GEODETIC SURVEY CONTROL LAT. 40°56'33.7"; LONG. 74°07'43.4"	
	9. SURFACE ELEVATION NJ GEODETIC SURVEY CONTROL Not Measured	
	10. DATE STARTED 10/25/91	11. DATE COMPLETED 10/25/91
12. OVERBURDEN THICKNESS 11.0'	15. DEPTH GROUNDWATER ENCOUNTERED Not Encountered	
13. DEPTH DRILLED INTO ROCK 26.0'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED Not Measured	
14. TOTAL DEPTH OF HOLE 37.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) —	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Abandoned with grout	✓			Lynn M. Moody

ELEV.	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
		Black top and stone			6" Hammer bit
		Red -brown silty sand with fragments of weathered red sandstone		Air Rotary	
	5			50/0"	No recovery
				Air Rotary	
	10			8, 50/5"	
Bedrock		Hard red sandstone		Air Rotary	Water used to settle dust
	15				
	20				
	25				
	30				
	35				
		Bottom of hole at 37.0'			
	40				

APPENDIX C

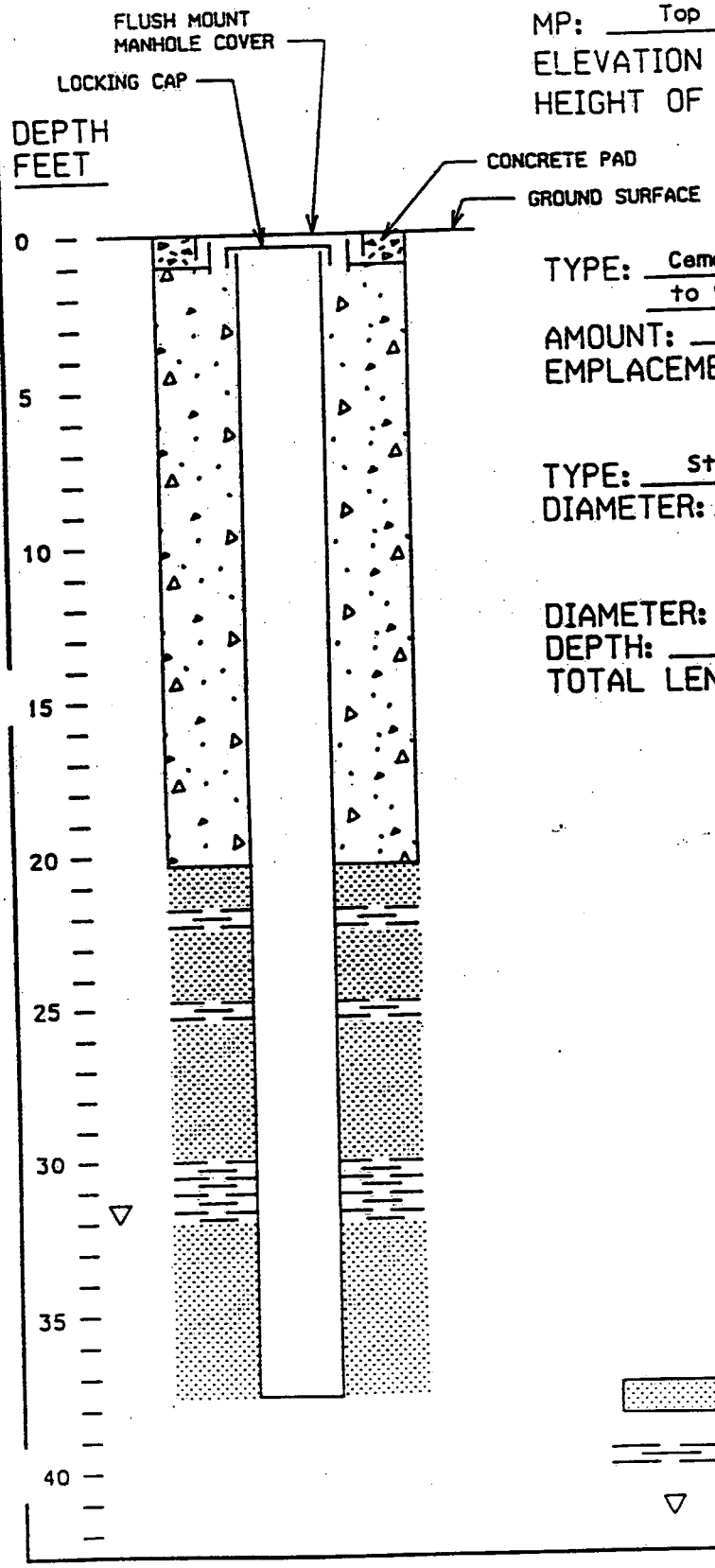
MONITORING WELL SCHEMATICS

RADIAN CORPORATION

MONITOR WELL CONSTRUCTION SCHEMATIC

PROJECT: Kodalux, Fair Lawn, NJ
DRILLING CO.: Summit Drilling Co., Inc.
SUPERVISED BY: LRM, Radian Corporation
DRILLING METHOD: Air Rotary
DATE COMPLETED: 10/22/91

WELL ID: MW-6
COORDINATES: Lat 40°56'35.7"; Long 74°07'50.6"
AQUIFER: Uppermost
DEPTH TO WATER FROM MEASURING POINT (MP): 31.90' (11/14/91)



MP: Top of casing
ELEVATION OF MP: 88.15
HEIGHT OF MP RELATIVE TO GROUND LEVEL: -.30'

GROUT

TYPE: Cement-bentonite (8 gal. water to 5 lb. bentonite to 94 lb. Portland cement)
AMOUNT: 4.5 - 94 lb. bags
EMPLACEMENT METHOD: Tremie pipe

RISER PIPE

TYPE: Steel (20.0' pipe)
DIAMETER: 6-inch

BOREHOLE

DIAMETER: 10" cased; 6" open rock
DEPTH: 37.20' below MP
TOTAL LENGTH OPEN ROCK: 17.20'

LEGEND

SANDSTONE
SHALE
STATIC WATER LEVEL (11/14/91)

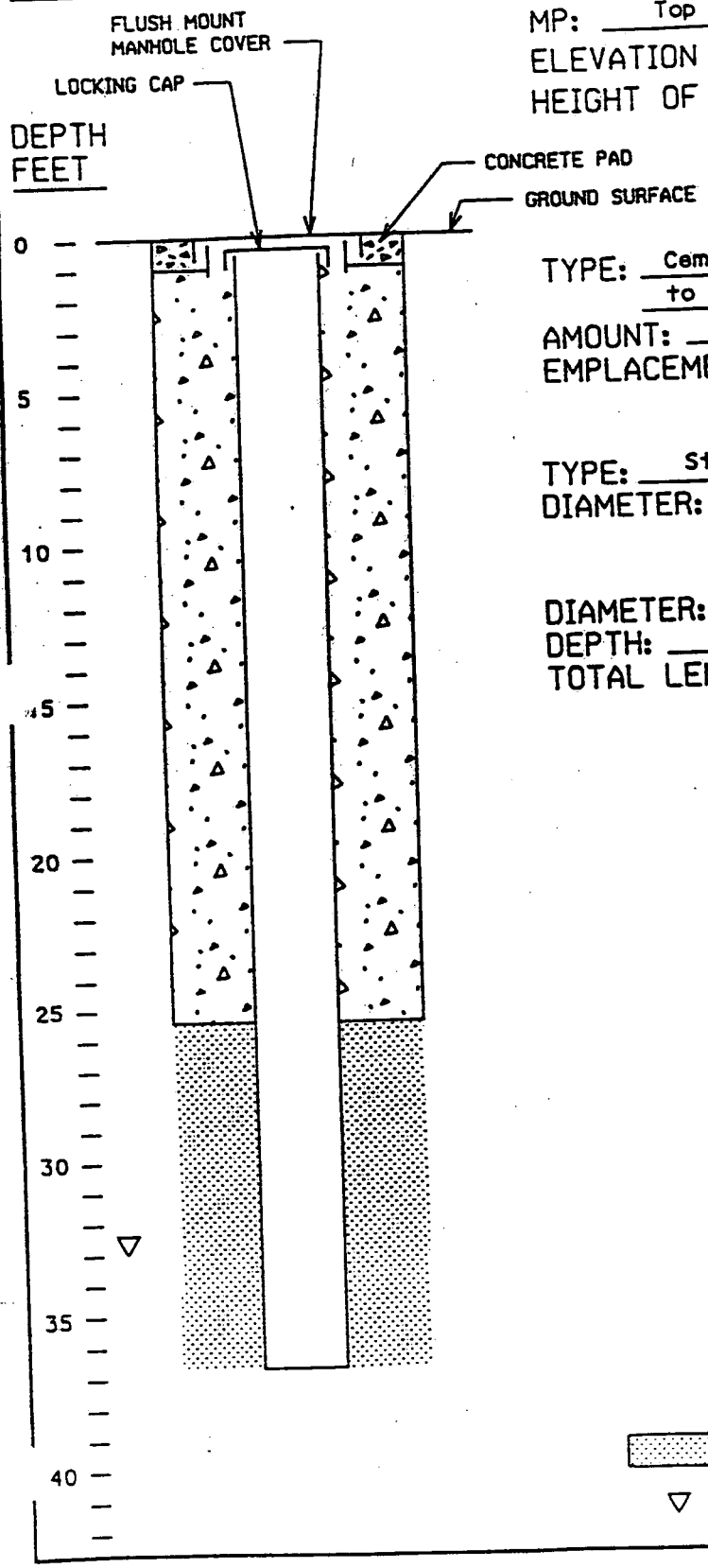
RADIAN CORPORATION

MONITOR WELL CONSTRUCTION SCHEMATIC

PROJECT: Kodalux, Fair Lawn, NJ
DRILLING CO.: Summit Drilling Co., Inc.
SUPERVISED BY: LRM, Radian Corporation
DRILLING METHOD: Air Rotary
DATE COMPLETED: 10/24/91

WELL ID: MW-7/PB-1
COORDINATES: Lat 40°56'36.1"; Long 74°07'45.9"
AQUIFER: Uppermost
DEPTH TO WATER FROM MEASURING POINT (MP): 33.15' (10-29-91)

MP: Top of casing
ELEVATION OF MP: 93.31
HEIGHT OF MP RELATIVE TO GROUND LEVEL: -0.4'



GROUT

TYPE: Cement-bentonite (8 gal. water to 5 lb. bentonite to 94 lb. Portland cement)
AMOUNT: 9 - 94 lb. bags
EMPLACEMENT METHOD: Tremie pipe

RISER PIPE

TYPE: Steel (25.0' pipe)
DIAMETER: 6-inch

BOREHOLE

DIAMETER: 10" cased; 6" open rock
DEPTH: 36.25' below MP
TOTAL LENGTH OPEN ROCK: 11.25'

LEGEND

SANDSTONE
STATIC WATER LEVEL

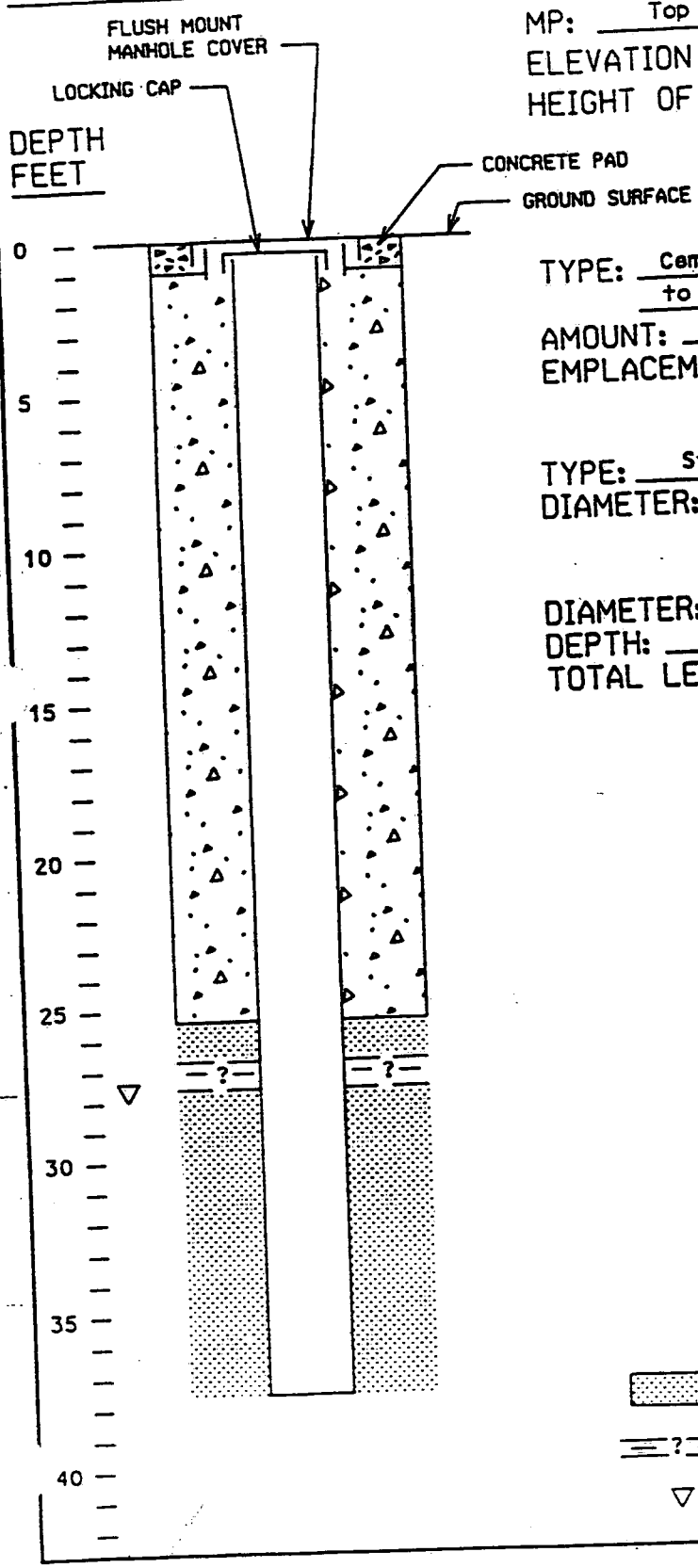
RADIAN CORPORATION

MONITOR WELL CONSTRUCTION SCHEMATIC

PROJECT: Kodalux, Fair Lawn, NJ
DRILLING CO.: Summit Drilling Co., Inc.
SUPERVISED BY: LRM, Radian Corporation
DRILLING METHOD: Air Rotary
DATE COMPLETED: 10/22/91

WELL ID: MW-8
COORDINATES: Lat 40°56'38.3"; Long 74°07'47.6"
AQUIFER: Uppermost
DEPTH TO WATER FROM MEASURING POINT (MP): 27.32' (10-29-91)

MP: Top of casing
ELEVATION OF MP: 88.38
HEIGHT OF MP RELATIVE TO GROUND LEVEL: -0.34'



GROUT

TYPE: Cement-bentonite (8 gal. water to 5 lb. bentonite to 94 lb. Portland cement)
AMOUNT: 9 - 94 lb. bags
EMPLACEMENT METHOD: Tremie pipe

RISER PIPE

TYPE: Steel (25.0' pipe)
DIAMETER: 6-inch

BOREHOLE

DIAMETER: 10" cased; 6" open rock
DEPTH: 37.22' below MP
TOTAL LENGTH OPEN ROCK: 12.22'

LEGEND

SANDSTONE
SOFT ZONE
STATIC WATER LEVEL (11/14/91)

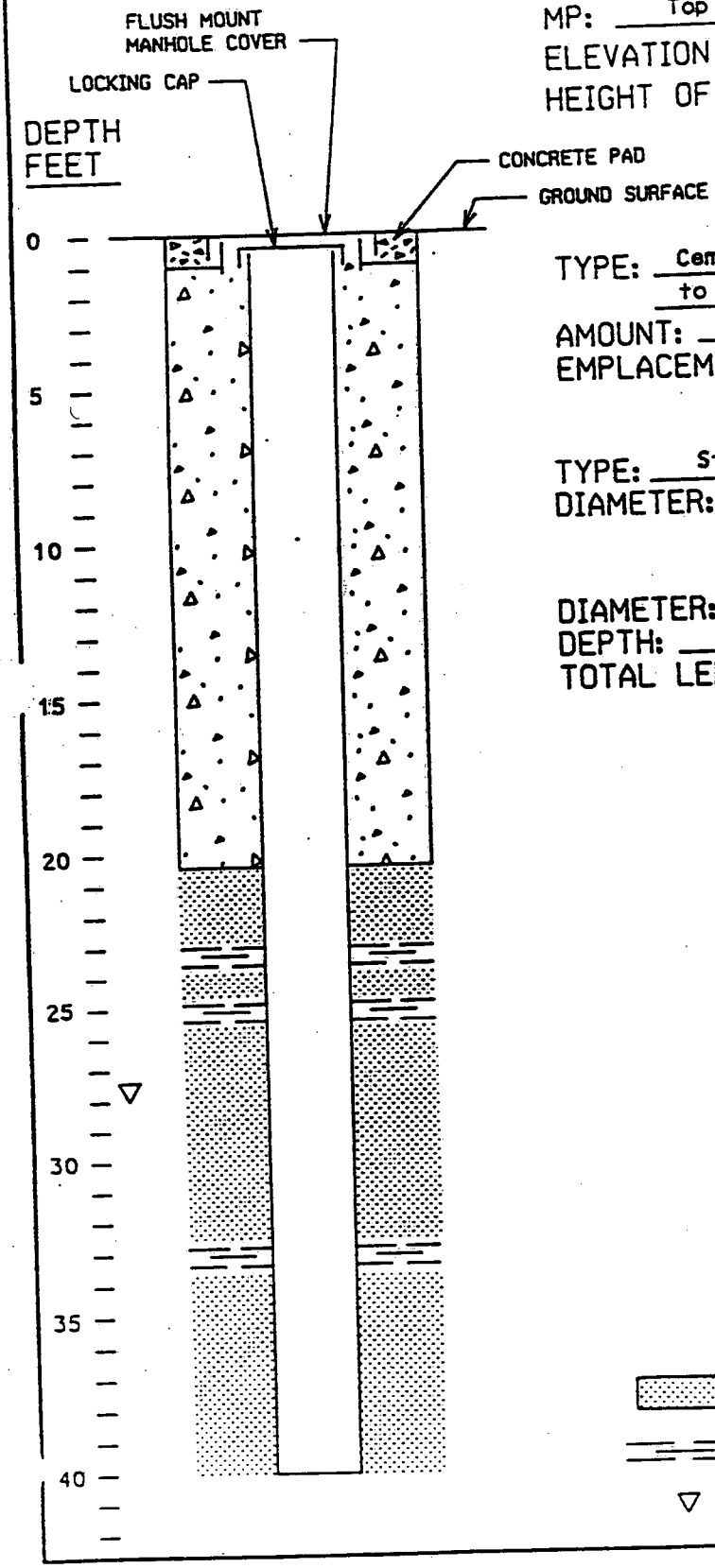
RADIAN CORPORATION

MONITOR WELL CONSTRUCTION SCHEMATIC

PROJECT: Kodalux, Fair Lawn, NJ
DRILLING CO.: Summit Drilling Co., Inc.
SUPERVISED BY: LRM, Radian Corporation
DRILLING METHOD: Air Rotary
DATE COMPLETED: 10/24/91

WELL ID: MW-9
COORDINATES: Lat 40°56'36.9"; Long 74°07'42.9"
AQUIFER: Uppermost
DEPTH TO WATER FROM MEASURING POINT (MP): 27.50' (10-29-91)

MP: Top of casing
ELEVATION OF MP: 91.24
HEIGHT OF MP RELATIVE TO GROUND LEVEL: -0.42'



GROUT

TYPE: Cement-bentonite (8 gal. water to 5 lb. bentonite to 94 lb. Portland cement)
AMOUNT: 7 - 94 lb. bags
EMPLACEMENT METHOD: Tremie pipe

RISER PIPE

TYPE: Steel (20.0' pipe)
DIAMETER: 6-inch

BOREHOLE

DIAMETER: 10" cased; 6" open rock
DEPTH: 39.52' below MP
TOTAL LENGTH OPEN ROCK: 19.52'

LEGEND

SANDSTONE
SHALE
STATIC WATER LEVEL (11/14/91)

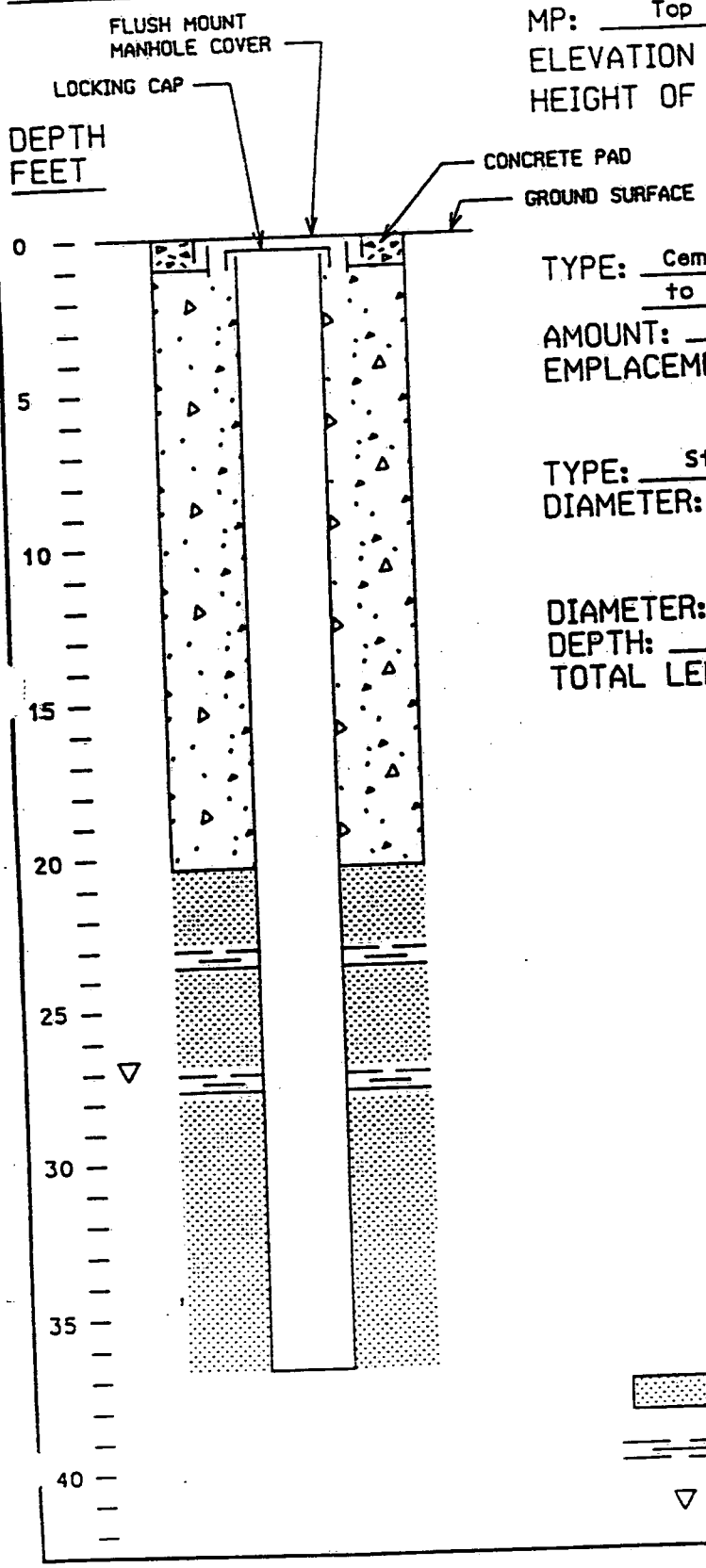
RADIAN CORPORATION

MONITOR WELL CONSTRUCTION SCHEMATIC

PROJECT: Kodalux, Fair Lawn, NJ
DRILLING CO.: Summit Drilling Co., Inc.
SUPERVISED BY: LRM, Radian Corporation
DRILLING METHOD: Air Rotary
DATE COMPLETED: 10/24/91

WELL ID: MW-10
COORDINATES: Lat 40°56'31.9"; Long 74°07'45.3"
AQUIFER: Uppermost
DEPTH TO WATER FROM MEASURING POINT (MP): 25.33' (10-29-91)

MP: Top of casing
ELEVATION OF MP: 96.17
HEIGHT OF MP RELATIVE TO GROUND LEVEL: -0.39



GROUT

TYPE: Cement-bentonite (8 gal. water to 5 lb. bentonite to 94 lb. Portland cement)
AMOUNT: 7 - 94 lb. bags
EMPLACEMENT METHOD: Tremie pipe

RISER PIPE

TYPE: Steel (20.0' pipe)
DIAMETER: 6-inch

BOREHOLE

DIAMETER: 10" cased; 6" open rock
DEPTH: 36.32' below MP
TOTAL LENGTH OPEN ROCK: 16.32'

LEGEND

SANDSTONE
SHALE
STATIC WATER LEVEL (11/14/91)

APPENDIX D

MONITORING WELL CERTIFICATION FORMS

THIS FORM MUST BE COMPLETED BY THE PERMITTEE OR HIS/HER AGENT
MONITORING WELL CERTIFICATION - FORM B - LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. ___ ___-___ ___ ___ ___ ___-___

Longitude (one-half of a second): West 74 07 50.6
Latitude (one-half of a second): North 40 56 35.7
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): Casing 88.15 RIM 88.45
Source of elevation datum (benchmark, etc.) Rte 208 Control Mon. Station 109+0
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation: 99.58

Owners Well Number (As shown on application or plan): MW-6

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Richard C. Mathews
PROFESSIONAL LAND SURVEYOR'S SIGNATURE

Richard C. Mathews
PROFESSIONAL LAND SURVEYOR'S NAME
(Please print or type)

SEAL

New Jersey License #29353
PROFESSIONAL LAND SURVEYOR'S LICENSE #

THIS FORM MUST BE COMPLETED BY THE PERMITTEE OR HIS/HER AGENT
MONITORING WELL CERTIFICATION - FORM B - LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. ___ ___-___ ___ ___ ___ ___-___

Longitude (one-half of a second): West 74 07 45.9
Latitude (one-half of a second): North 40 56 36.1
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): Casing 93.31 RIM 93.71
Source of elevation datum (benchmark, etc.) Rte 208 Control Mon. Sta. 109+0
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation: 99.58

Owners Well Number (As shown on application or plan): MW-7

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Richard C. Mathews
PROFESSIONAL LAND SURVEYOR'S SIGNATURE

Richard C. Mathews
PROFESSIONAL LAND SURVEYOR'S NAME
(Please print or type)

SEAL

New Jersey License #29353
PROFESSIONAL LAND SURVEYOR'S LICENSE #

THIS FORM MUST BE COMPLETED BY THE PERMITTEE OR HIS/HER AGENT
MONITORING WELL CERTIFICATION - FORM B - LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. ___ ___-___ ___ ___ ___ ___-___

Longitude (one-half of a second): West 74 07 47.6
Latitude (one-half of a second): North 40 56 38.3
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): Casing 88.38 RIM 88.72
Source of elevation datum (benchmark, etc.) Rte 208 Control Mon. Sta. 109+0
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation: 99.58

Owners Well Number (As shown on application or plan): MW-8

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Richard C. Mathews
PROFESSIONAL LAND SURVEYOR'S SIGNATURE

Richard C. Mathews
PROFESSIONAL LAND SURVEYOR'S NAME
(Please print or type)

SEAL

New Jersey License #29353
PROFESSIONAL LAND SURVEYOR'S LICENSE #

THIS FORM MUST BE COMPLETED BY THE PERMITTEE OR HIS/HER AGENT
MONITORING WELL CERTIFICATION - FORM B - LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. ___ ___-___ ___ ___ ___ ___-___

Longitude (one-half of a second): West 74 07 42.9
Latitude (one-half of a second): North 40 56 36.9
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): Casing 91.24 RIM 91.66
Source of elevation datum (benchmark, etc.) Rte 208 Control Mon. Sta. 109+0
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation: 99.58

Owners Well Number (As shown on application or plan): MW-9

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Richard C. Mathews
PROFESSIONAL LAND SURVEYOR'S SIGNATURE

Richard C. Mathews
PROFESSIONAL LAND SURVEYOR'S NAME
(Please print or type)

New Jersey License #29353
PROFESSIONAL LAND SURVEYOR'S LICENSE #

SEAL

THIS FORM MUST BE COMPLETED BY THE PERMITTEE OR HIS/HER AGENT
MONITORING WELL CERTIFICATION - FORM B - LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. ___ ___-___ ___ ___ ___ ___ ___-___

Longitude (one-half of a second): West 74 07 45.3
Latitude (one-half of a second): North 40 56 31.9
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): Casing 96.17 RIM 96.56
Source of elevation datum (benchmark, etc.) Rte 208 Control Mon. Sta. 109+0
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation: 99.58

Owners Well Number (As shown on application or plan): MW-10

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Richard C. Mathews
PROFESSIONAL LAND SURVEYOR'S SIGNATURE

Richard C. Mathews
PROFESSIONAL LAND SURVEYOR'S NAME
(Please print or type)

New Jersey License #29353
PROFESSIONAL LAND SURVEYOR'S LICENSE #

SEAL

THIS FORM MUST BE COMPLETED BY THE PERMITTEE OR HIS/HER AGENT
MONITORING WELL CERTIFICATION - FORM B - LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. ___ ___-___ ___ ___ ___ ___-___

Longitude (one-half of a second): West 74 07 44.7
Latitude (one-half of a second): North 40 56 36.2
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): Not requested
Source of elevation datum (benchmark, etc.)
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation:

Owners Well Number (As shown on application or plan): PB-2

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Richard C. Mathews
PROFESSIONAL LAND SURVEYOR'S SIGNATURE

Richard C. Mathews
PROFESSIONAL LAND SURVEYOR'S NAME
(Please print or type)

SEAL

New Jersey License #29353
PROFESSIONAL LAND SURVEYOR'S LICENSE #

THIS FORM MUST BE COMPLETED BY THE PERMITTEE OR HIS/HER AGENT
MONITORING WELL CERTIFICATION - FORM B - LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. ___ ___-___ ___ ___ ___ ___ ___-___

Longitude (one-half of a second): West 74 07 43.9
Latitude (one-half of a second): North 40 56 35.7
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): Not requested
Source of elevation datum (benchmark, etc.)
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation:

Owners Well Number (As shown on application or plan): PB-3

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Richard C. Mathews
PROFESSIONAL LAND SURVEYOR'S SIGNATURE

Richard C. Mathews
PROFESSIONAL LAND SURVEYOR'S NAME
(Please print or type)

SEAL

New Jersey License #29353
PROFESSIONAL LAND SURVEYOR'S LICENSE #

THIS FORM MUST BE COMPLETED BY THE PERMITTEE OR HIS/HER AGENT
MONITORING WELL CERTIFICATION - FORM B - LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. ___ ___-___ ___ ___ ___ ___-___

Longitude (one-half of a second): West 74 07 42.7
Latitude (one-half of a second): North 40 56 34.6
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): Not requested
Source of elevation datum (benchmark, etc.)
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation:

Owners Well Number (As shown on application or plan): PB-4

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Richard C. Mathews
PROFESSIONAL LAND SURVEYOR'S SIGNATURE

Richard C. Mathews
PROFESSIONAL LAND SURVEYOR'S NAME
(Please print or type)

SEAL

New Jersey License #29353
PROFESSIONAL LAND SURVEYOR'S LICENSE #

THIS FORM MUST BE COMPLETED BY THE PERMITTEE OR HIS/HER AGENT
MONITORING WELL CERTIFICATION - FORM B - LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. ___ ___-___ ___ ___ ___ ___-___

Longitude (one-half of a second): West 74 07 42.5
Latitude (one-half of a second): North 40 56 33.3
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): Not Requested
Source of elevation datum (benchmark, etc.)
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation:

Owners Well Number (As shown on application or plan): PB-5

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Richard C. Mathews
PROFESSIONAL LAND SURVEYOR'S SIGNATURE

Richard C. Mathews
PROFESSIONAL LAND SURVEYOR'S NAME
(Please print or type)

SEAL

New Jersey License 29353
PROFESSIONAL LAND SURVEYOR'S LICENSE #

THIS FORM MUST BE COMPLETED BY THE PERMITTEE OR HIS/HER AGENT
MONITORING WELL CERTIFICATION - FORM B - LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. ___ ___-___ ___ ___ ___ ___-___

Longitude (one-half of a second): West 74 07 43.4
Latitude (one-half of a second): North 40 56 33.1
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): Not requested
Source of elevation datum (benchmark, etc.)
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation:

Owners Well Number (As shown on application or plan): PB-6

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Richard C. Mathews
PROFESSIONAL LAND SURVEYOR'S SIGNATURE

Richard C. Mathews
PROFESSIONAL LAND SURVEYOR'S NAME
(Please print or type)

SEAL

New Jersey License #29353
PROFESSIONAL LAND SURVEYOR'S LICENSE #

APPENDIX E

GROUNDWATER DEVELOPMENT RECORDS

Groundwater Development Record

Well ID MW-6
Time/Date Start Development 0915/10-29-91
Installation ID 6"
Project Kodalux, Fairlawn, NJ
Initial/Final Groundwater Depth 30.34 / _____ (FT) Below Measuring Point
Initial/Final Depth to Bottom of Well _____ / 37.20 (FT) Below Measuring Point
Time/Date Finish Development 0930/10-29-91
Logger Code LM
Type, Size/Capacity of Pump or Bailer plastic/bottom filling/3 gallon
Total Volume to Purge for 3/5 (circle one) Well Volumes 30 Gallons
Actual Purged Volume 15 Gallons

Time	Cummulative Volume (Gallons)	Clarity/Color	pH	Specific Conductivity (µmhos)	Temp °C	Comments
0930	~15	silty	7.52	600	Not Measured	bailed dry

Phase2.fnl/g

Groundwater Development Record

Well ID MW-7
Time/Date Start Development 0915/10-28-91
Installation ID 6"
Project Kodalux, Fairlawn, NJ
Initial/Final Groundwater Depth 33.15 / _____ (FT) Below Measuring Point
Initial/Final Depth to Bottom of Well _____ / 36.25 (FT) Below Measuring Point
Time/Date Finish Development 0930/10-28-91
Logger Code LM
Type, Size/Capacity of Pump or Bailer submersible pump
Total Volume to Purge for (3)/5 (circle one) Well Volumes 14 Gallons
Actual Purged Volume 15 Gallons

Time	Cummulative Volume (Gallons)	Clarity/Color	pH	Specific Conductivity (µ mhos)	Temp °C	Comments
0920	15	cloudy	7.52	630	Not Measured	pumped dry

Phase2.fnl/g

Groundwater Development Record

Well ID MW-8
Time/Date Start Development 0845/10-29-91
Installation ID 6"
Project Kodalux, Fairlawn, NJ
Initial/Final Groundwater Depth 27.32 / _____ (FT) Below Measuring Point
Initial/Final Depth to Bottom of Well _____ / 37.22 (FT) Below Measuring Point
Time/Date Finish Development 0900/10-29-91
Logger Code LM
Type, Size/Capacity of Pump or Bailer plastic, bottom filling/3 gal
Total Volume to Purge for (3)/5 (circle one) Well Volumes 44 Gallons
Actual Purged Volume 20 Gallons

Time	Cummulative Volume (Gallons)	Clarity/Color	pH	Specific Conductivity (µmhos)	Temp °C	Comments
0900	~20	cloudy, silty	7.58	570	Not Measured	bailed dry

Phase2.fnl/g

Groundwater Development Record

Well ID MW-9
Time/Date Start Development 9:45 10-28-91
Installation ID 6"
Project Kodalux, Fairlawn, NJ
Initial/Final Groundwater Depth 27.50 / _____ (FT) Below Measuring Point
Initial/Final Depth to Bottom of Well _____ / 39.52 (FT) Below Measuring Point
Time/Date Finish Development 0830/10-29-91
Logger Code LM
Type, Size/Capacity of Pump or Bailer Plastic bottom-filling, 3 gal
Total Volume to Purge for (3)/5 (circle one) Well Volumes 53 Gallons
Actual Purged Volume 25 Gallons

Time	Cummulative Volume (Gallons)	Clarity/Color	pH	Specific Conductivity (µmhos)	Temp °C	Comments
1015	5	cloudy	9.4	580	Not Measured	pumped dry
0830	20	cloudy	7.79	640	Not Measured	bailed dry

Phase2.fnl/g

Groundwater Development Record

Well ID MW-10
Time/Date Start Development 1030/10-29-91
Installation ID 6"
Project Kodalux, Fairlawn, NJ
Initial/Final Groundwater Depth 25.33 / _____ (FT) Below Measuring Point
Initial/Final Depth to Bottom of Well _____ / 36.32 (FT) Below Measuring Point
Time/Date Finish Development 1050/10-29-91
Logger Code _____
Type, Size/Capacity of Pump or Bailer Plastic, bottom filling, 3 gal
Total Volume to Purge for 3/5 (circle one) Well Volumes 48 Gallons
Actual Purged Volume 20 Gallons

Time	Cummulative Volume (Gallons)	Clarity/Color	pH	Specific Conductivity (µmhos)	Temp °C	Comments
1050	~20	cloudy	7.64	650	Not Measured	Bailed Dry

Phase2.fnl/g

APPENDIX F

ANALYTICAL RESULTS

20492.1

ANALYTICAL RESULTS

Prepared For

Radian Corporation
155 Corporate Woods, Suite 100
Rochester, NY 14623

Prepared By

Recra Environmental, Inc.
10 Hazelwood Drive, Suite 106
Amherst, New York 14228-2298

METHODOLOGIES

The specific methodologies employed in obtaining the enclosed analytical results are indicated on the specific data table. The method numbers presented refer to one of the following U.S. Environmental Protection Agency references unless noted otherwise in this report.

- 40 CFR Part 136 "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act" October 24, 1984 (Federal Register) U.S. Environmental Protection Agency.
- U.S. Environmental Protection Agency "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods." Office of Solid Waste and Emergency Response. November 1986, SW-846, Third Edition.
- The analysis for Formaldehyde was performed in accordance with Method 3500 from the National Institute of Occupational Safety and Health.

COMMENTS

Comments pertain to data on one or all pages of this report.

The enclosed data has been reported utilizing data qualifiers (Q) as defined on the Organic and Inorganic Data Comment Pages.

Quality control analysis was performed on a batch basis. All results were within acceptable limits.

The extraction date for Hexavalent Chromium was November 16, 1991.

RECRA
ENVIRONMENTAL
INC.

VOLATILES DATA

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9

ANALYSIS DATE 11/18/

SAMPLE NO. MW-1

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	7.5	J
2-Chloroethylvinyl ether	10	U
Chloroform	7.9	
Chloromethane	10	U
1,1-Dichloroethane	50	
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	16	
trans-1,2-Dichloroethene	8.7	
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	87	
1,1,2-Trichloroethane	5.0	U
Trichloroethene	6.7	
Vinyl chloride	0.95	J

DILUTION FACTOR = 1.0

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

ANALYSIS DATE 11/18/91

SAMPLE NO. MW-1

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9

ANALYSIS DATE 11/18/

SAMPLE NO. MW-1

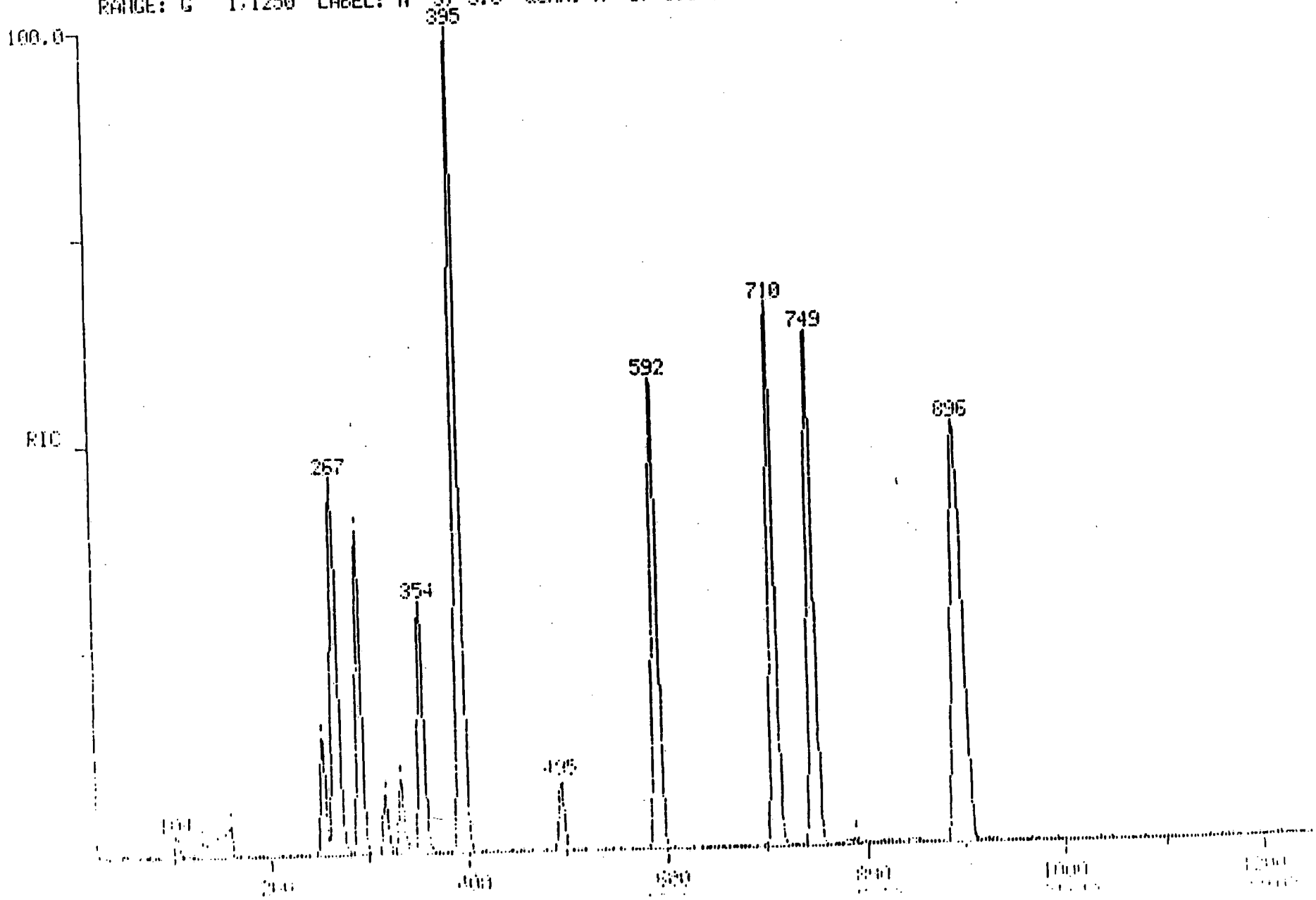
COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	91	
1,4-Difluorobenzene	92	
Chlorobenzene-D5	95	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	99	
1,2-Dichloroethane-D4	96	
Toluene-D8	97	-

MIDRIC
11/18/91 15:18:00
SAMPLE: MW1 JOB3386
CONDS.: 51A
RANGE: G 1.1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4761 #46
CALI: A4761 #2

SCANS 25 TO 1250

5862



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-1

JOB#:91-3386.12
FILE:A4761

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

8

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC MW-1 FIELD DUP
SAMPLE NO. FIELD DUP

SAMPLE DATE 11/15/91

ANALYSIS DATE 11/18/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	7.3	J
2-Chloroethylvinyl ether	10	U
Chloroform	7.8	
Chloromethane	10	U
1,1-Dichloroethane	51	
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	17	
trans-1,2-Dichloroethene	9.0	
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	85	
1,1,2-Trichloroethane	5.0	U
Trichloroethene	6.6	
Vinyl chloride	10	U

DILUTION FACTOR = 1.0

ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC MW-1 FIELD DUP
SAMPLE NO. FIELD DUP

SAMPLE DATE 11/15/9
ANALYSIS DATE 11/18/

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

SAMPLE DATE 11/15/91

ANALYSIS DATE 11/18/91

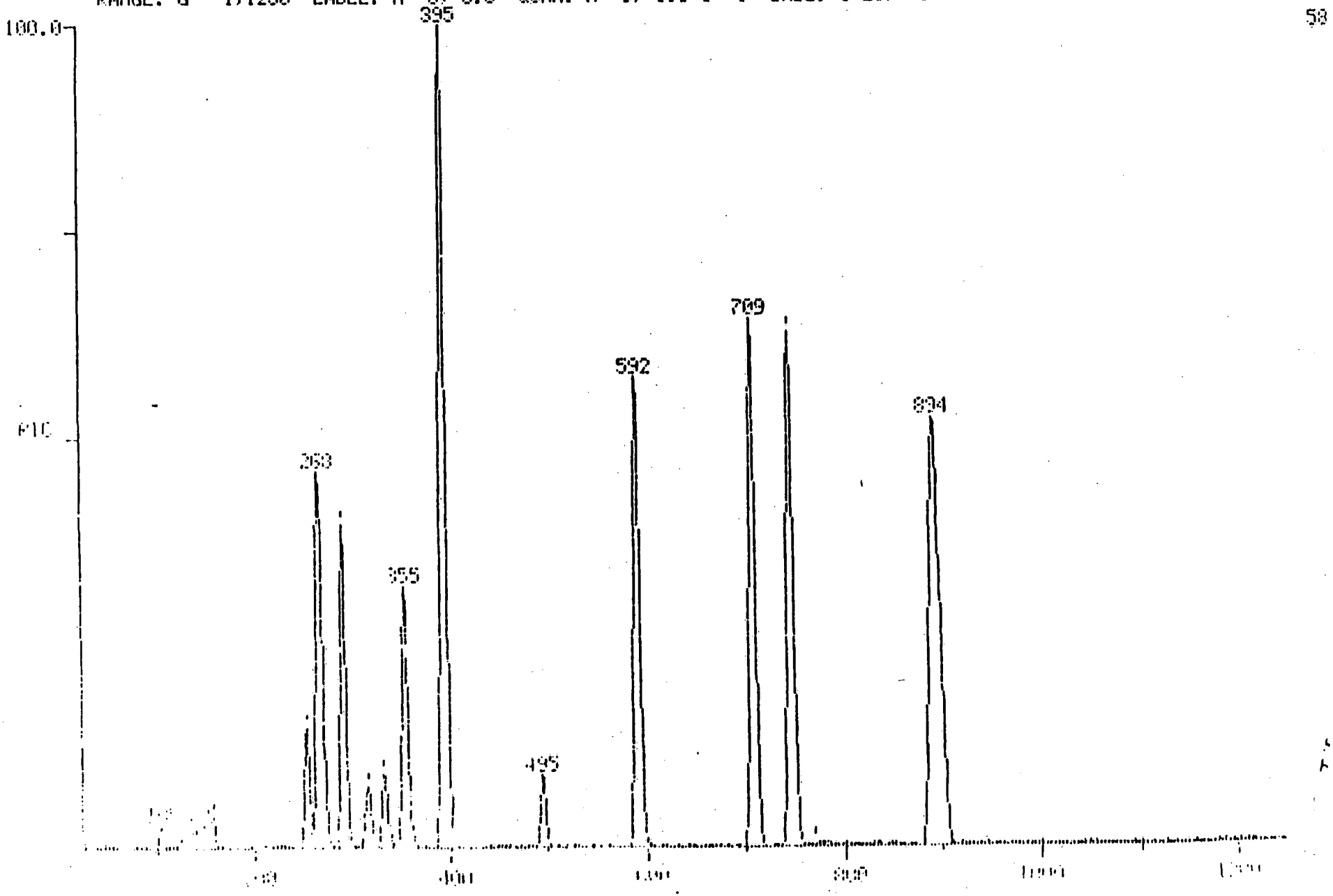
NAME RECRA ENVIRONMENTAL INC.
NO. 91-3386
ESC MW-1 FIELD DUP
SAMPLE NO. FIELD DUP

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	91	
1,4-Difluorobenzene	92	
Chlorobenzene-D5	94	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	97	
1,2-Dichloroethane-D4	99	
Toluene-D8	98	

MIDRIC
11/18/91 16:02:00
SAMPLE: MW1DUP JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: H 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4762 #46
CALI: A4762 #2

SCANS 25 TO 1250



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-1 FIELD DUP

JOB#:91-3386.11
FILE:A4762

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9

ANALYSIS DATE 11/18/-

SAMPLE NO. MW-2

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	15	
2-Chloroethylvinyl ether	10	U
Chloroform	0.67	J-
Chloromethane	10	U
1,1-Dichloroethane	210	J*
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	460	J*
trans-1,2-Dichloroethene	1.5	J
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	3.8	J
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	13,000	*
1,1,2-Trichloroethane	5.0	U
Trichloroethene	7.2	
Vinyl chloride	1.6	J

DILUTION FACTOR = 1.0
*DILUTION FACTOR = 100

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9

ANALYSIS DATE 11/18/9

SAMPLE NO. MW-2

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	1.5	J

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE. THE REPORTED VALUE IS, THEREFORE, AN "AND/OR" VALUE.

130

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

ANALYSIS DATE 11/18/9

SAMPLE NO. MW-2

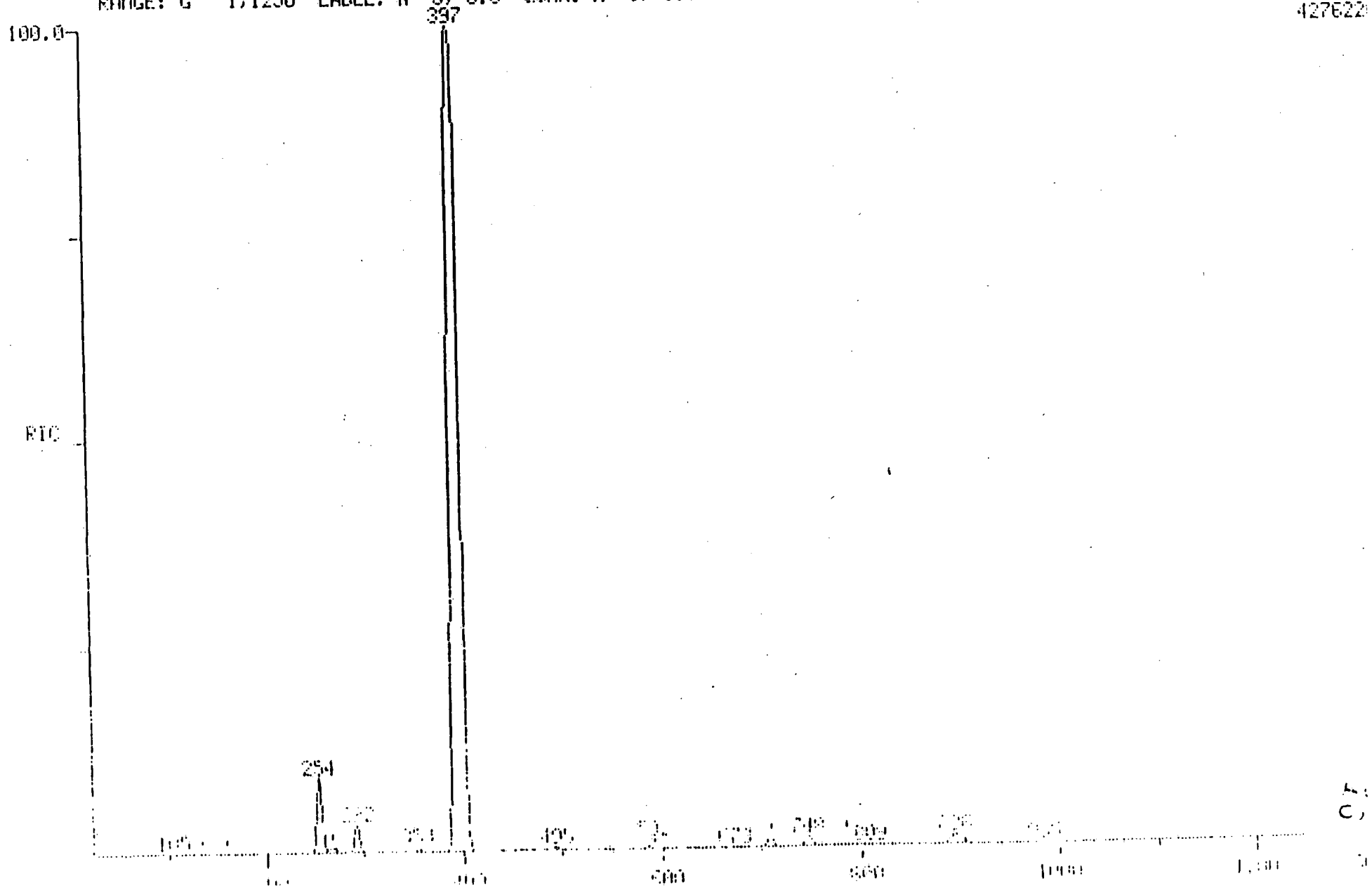
COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	95	
1,4-Difluorobenzene	142	
Chlorobenzene-D5	132	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	117	**
1,2-Dichloroethane-D4	101	
Toluene-D8	95	-

**SURROGATE RECOVERY OUTSIDE OF QUALITY CONTROL LIMITS.

MIDRIC
11/18/91 16:46:00
SAMPLE: MW2 JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4763 #46
CALI: A4763 #2

SCANS 25 TO 1250



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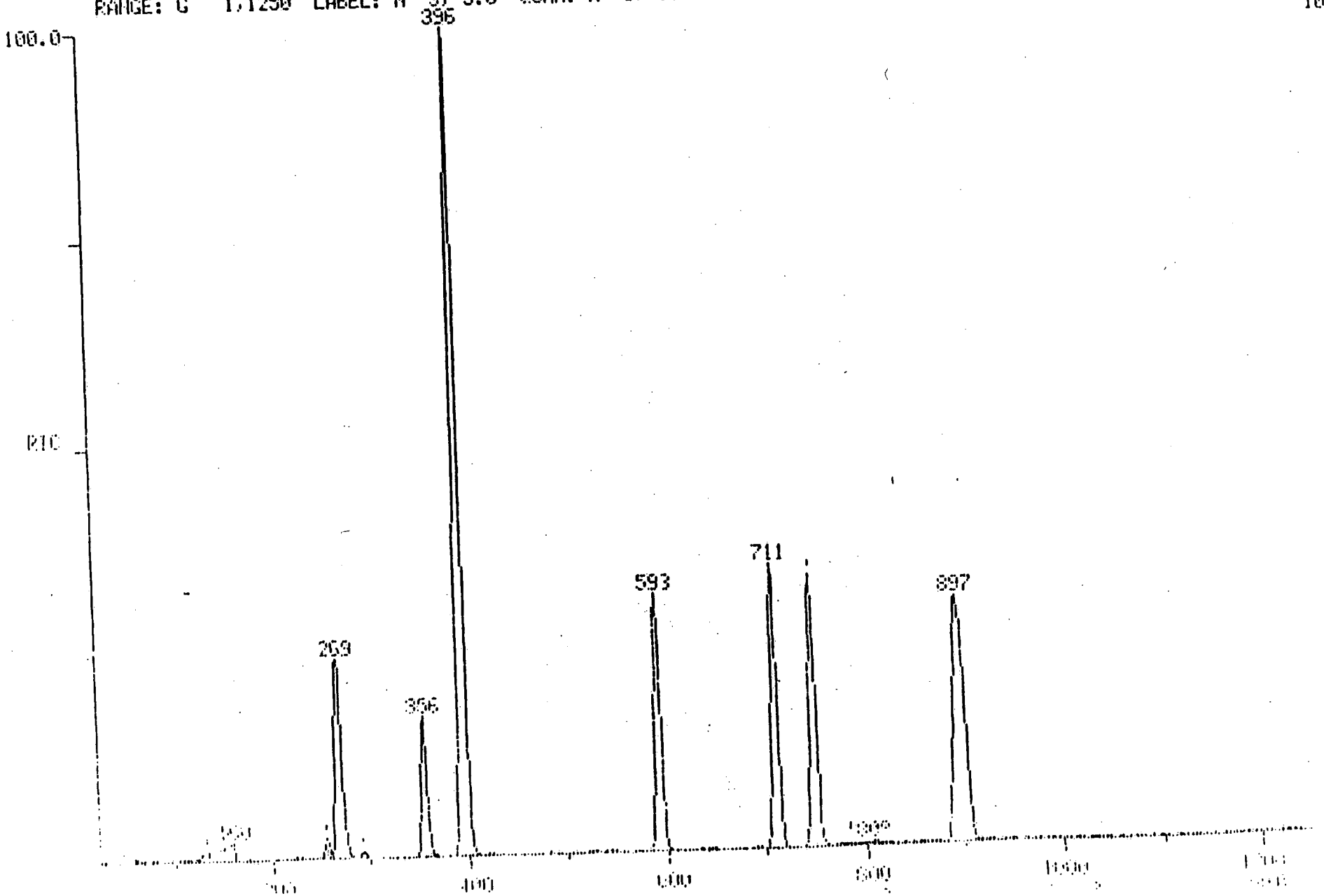
11/19/91 13:04:00
SAMPLE: MW2DL JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4777 #46
CALI: A4777 #2

SCANS 25 TO 1250

102272



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-2

JOB#:91-3386.1
FILE:A4763/A4777

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9

ANALYSIS DATE 11/19/9

SAMPLE NO. MW-3

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	13	
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	5.7	J
2-Chloroethylvinyl ether	10	U
Chloroform	0.96	J
Chloromethane	10	U
1,1-Dichloroethane	110	
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	100	
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	500	*
1,1,2-Trichloroethane	1.8	J
Trichloroethene	0.64	J
Vinyl chloride	110	

DILUTION FACTOR = 1.0
*DILUTION FACTOR = 5.0

ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9:

ANALYSIS DATE 11/19/9:

SAMPLE NO. MW-3

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

ANALYSIS DATE 11/19/9

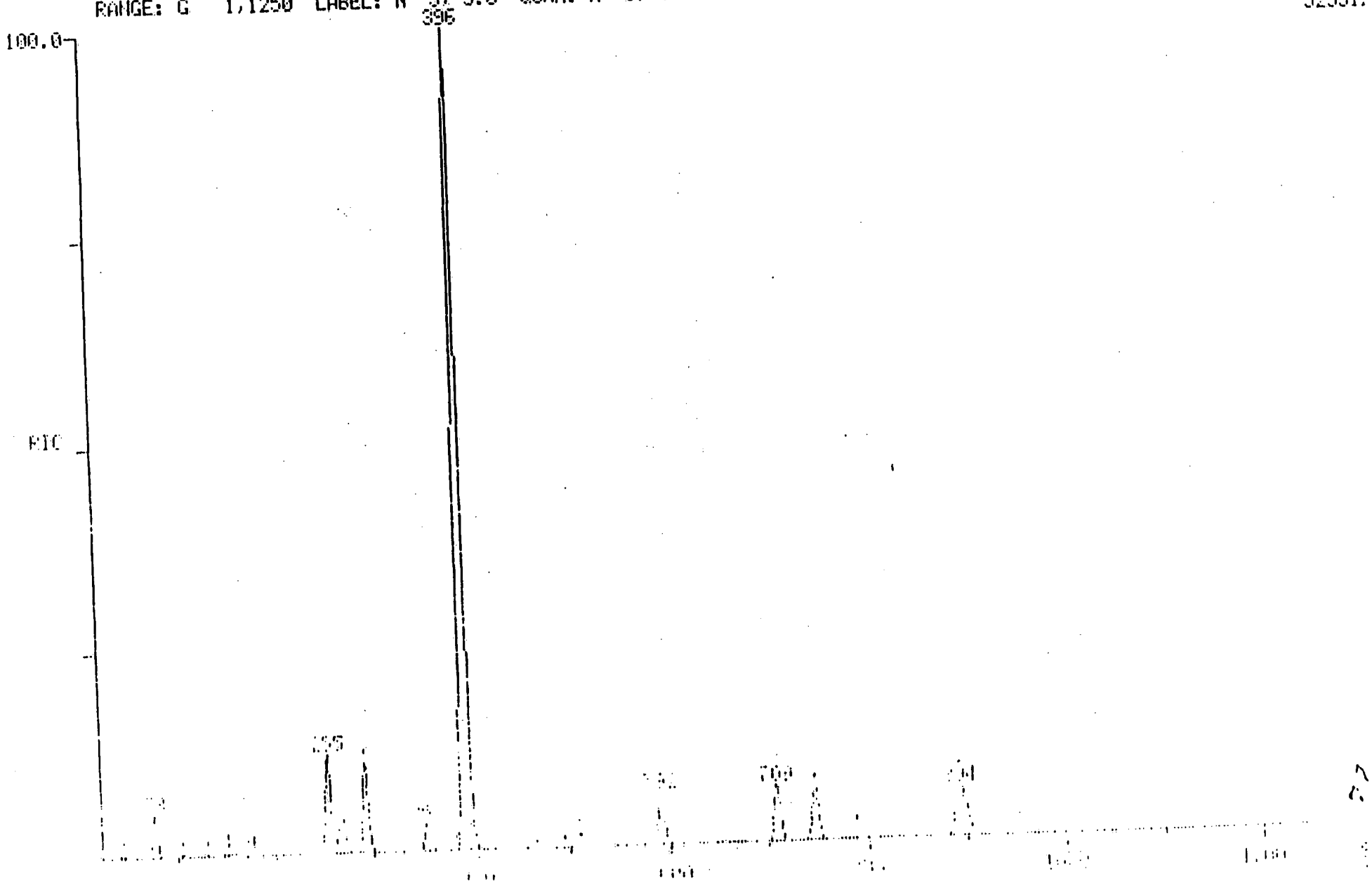
SAMPLE NO. MW-3

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	101	
1,4-Difluorobenzene	94	
Chlorobenzene-D5	95	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	99	
1,2-Dichloroethane-D4	95	
Toluene-D8	99	-

MIDRIC
11/19/91 13:48:00
SAMPLE: MW3 JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4778 #46
CALI: A4778 #2

SCANS 25 TO 1250

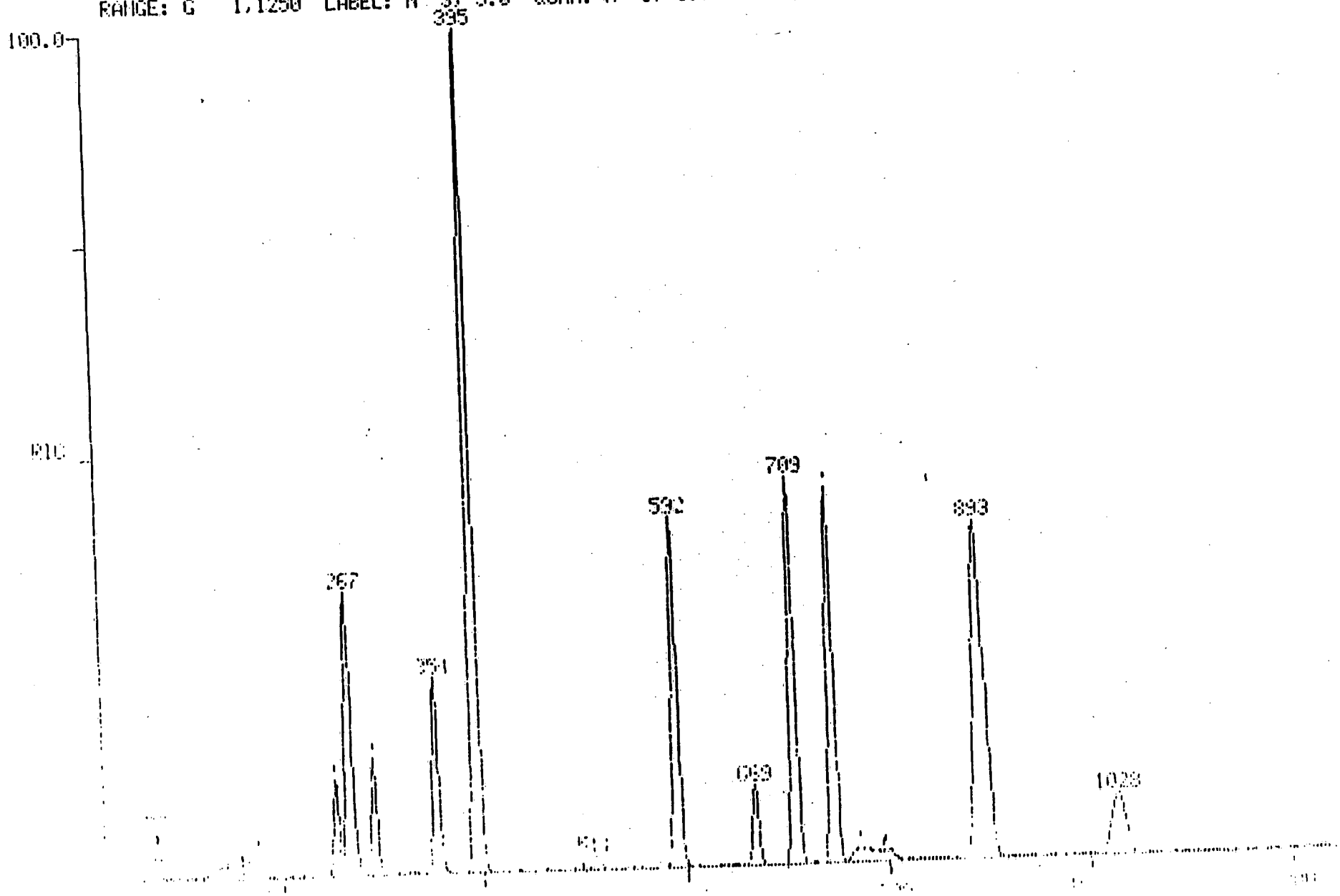


MIDRIC
11/19/91 19:43:00
SAMPLE: ~~105R~~ ~~JOB3335~~ MW 3 DL Job 3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4786 #46
CALI: A4786 #2

SCANS 25 TO 1250

73600.



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-3/DL

JOB#:91-3386.4
FILE:A4778 & A4786

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)
1028	HEXACHLOROBUTADIENE	90

*Tic found in dilution of sample MW-3.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9:

ANALYSIS DATE 11/19/ :

SAMPLE NO. MW-4

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	10	U
2-Chloroethylvinyl ether	10	U
Chloroform	5.0	U
Chloromethane	10	U
1,1-Dichloroethane	17	
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	2.1	J
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	5.5	
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl chloride	2.0	J

DILUTION FACTOR = 1.0

ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9

ANALYSIS DATE 11/19/9

SAMPLE NO. MW-4

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

2.

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/

ANALYSIS DATE 11/19/

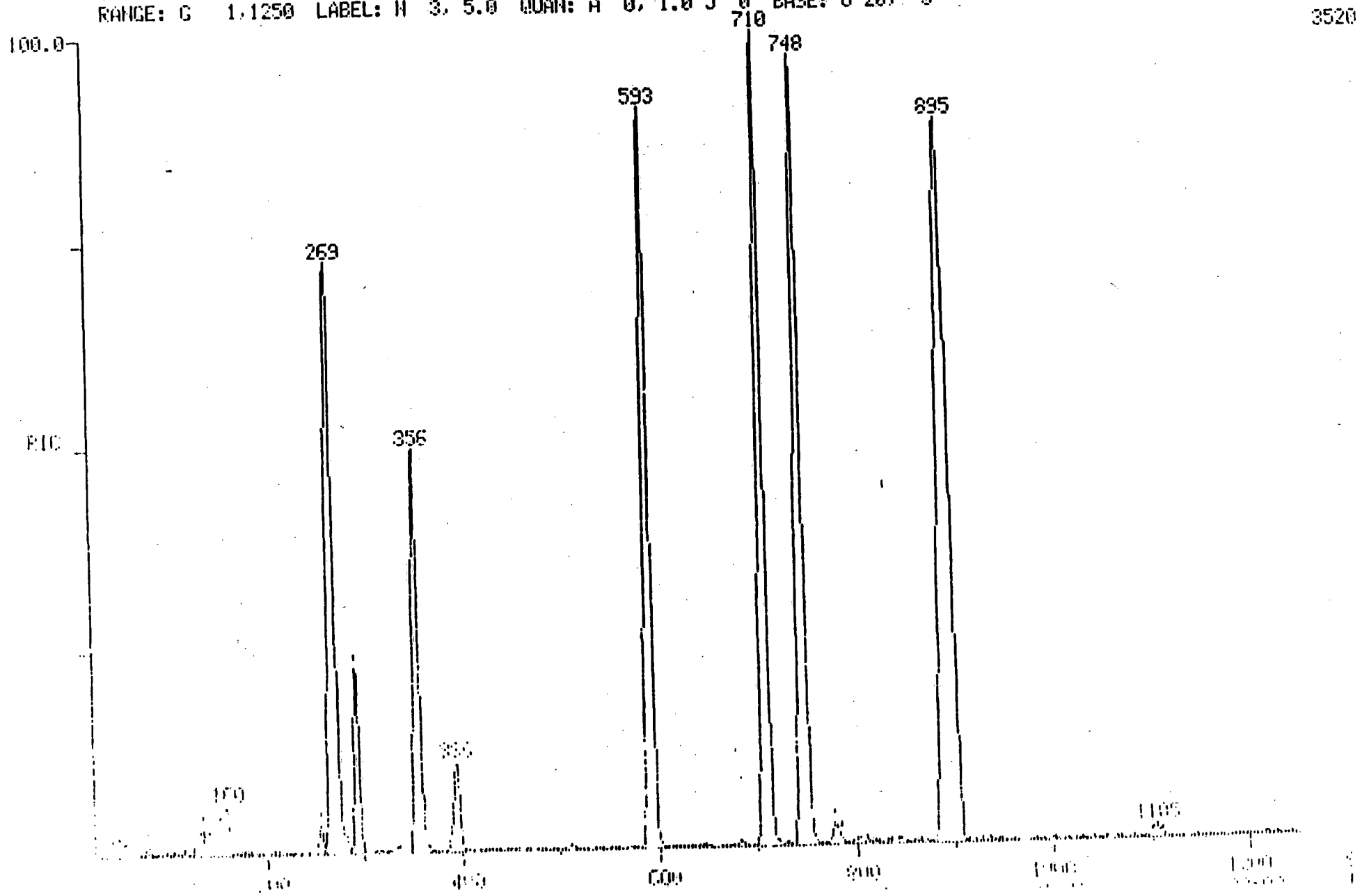
SAMPLE NO. MW-4

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	98	
1,4-Difluorobenzene	90	
Chlorobenzene-D5	90	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	104	
1,2-Dichloroethane-D4	96	
Toluene-D8	101	

MIDRIC
11/19/91 14:33:00
SAMPLE: MW4 JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4779 #46
CALI: A4779 #2

SCANS 25 TO 1250



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-4

JOB#:91-3386.6
FILE:A4779

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9

ANALYSIS DATE 11/19/9

SAMPLE NO. MW-5

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	10	U
2-Chloroethylvinyl ether	10	U
Chloroform	5.0	U
Chloromethane	10	U
1,1-Dichloroethane	5.0	U
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	5.0	U
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	5.0	U
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl chloride	10	U

DILUTION FACTOR = 1.0

ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

ANALYSIS DATE 11/19/9

SAMPLE NO. MW-5

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9

ANALYSIS DATE 11/19/9

SAMPLE NO. MW-5

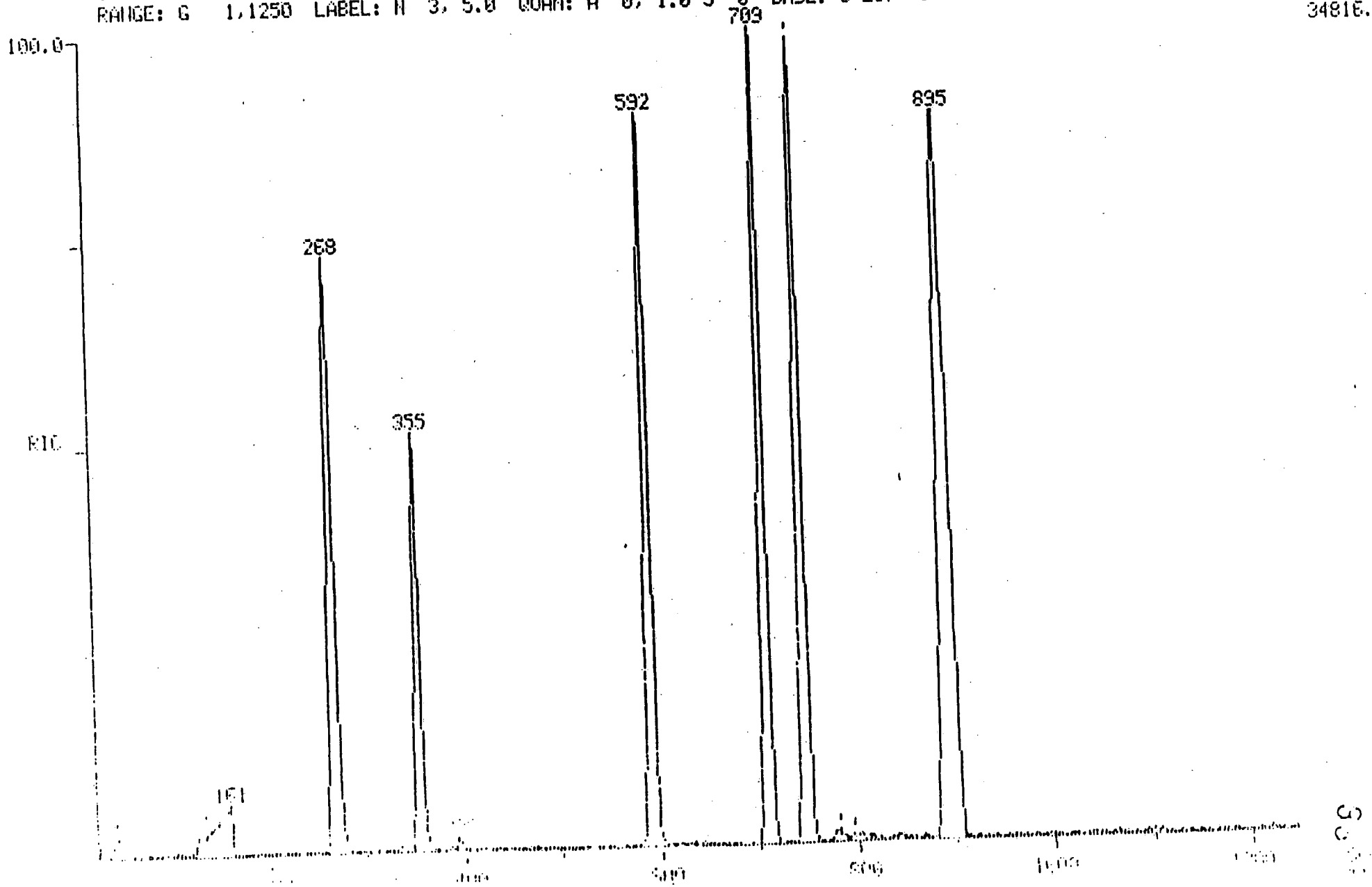
COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	94	
1,4-Difluorobenzene	91	
Chlorobenzene-D5	91	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	106	
1,2-Dichloroethane-D4	101	
Toluene-D8	99	-

MIDRIC
11/19/91 15:17:00
SAMPLE: MW5 JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4780 #46
CALI: A4780 #2

SCANS 25 TO 1250

34816.



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-5

JOB#:91-3386.5
FILE:A4780

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9

ANALYSIS DATE 11/18/

SAMPLE NO. MW-6

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	3.1	J
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	0.61	J
Chloroethane	10	U
2-Chloroethylvinyl ether	10	U
Chloroform	12	
Chloromethane	10	U
1,1-Dichloroethane	5.0	U
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	5.0	U
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	13	
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl chloride	10	U

DILUTION FACTOR = 1.0

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9

ANALYSIS DATE 11/18/9

SAMPLE NO. MW-6

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

ANALYSIS DATE 11/18/9

SAMPLE NO. MW-6

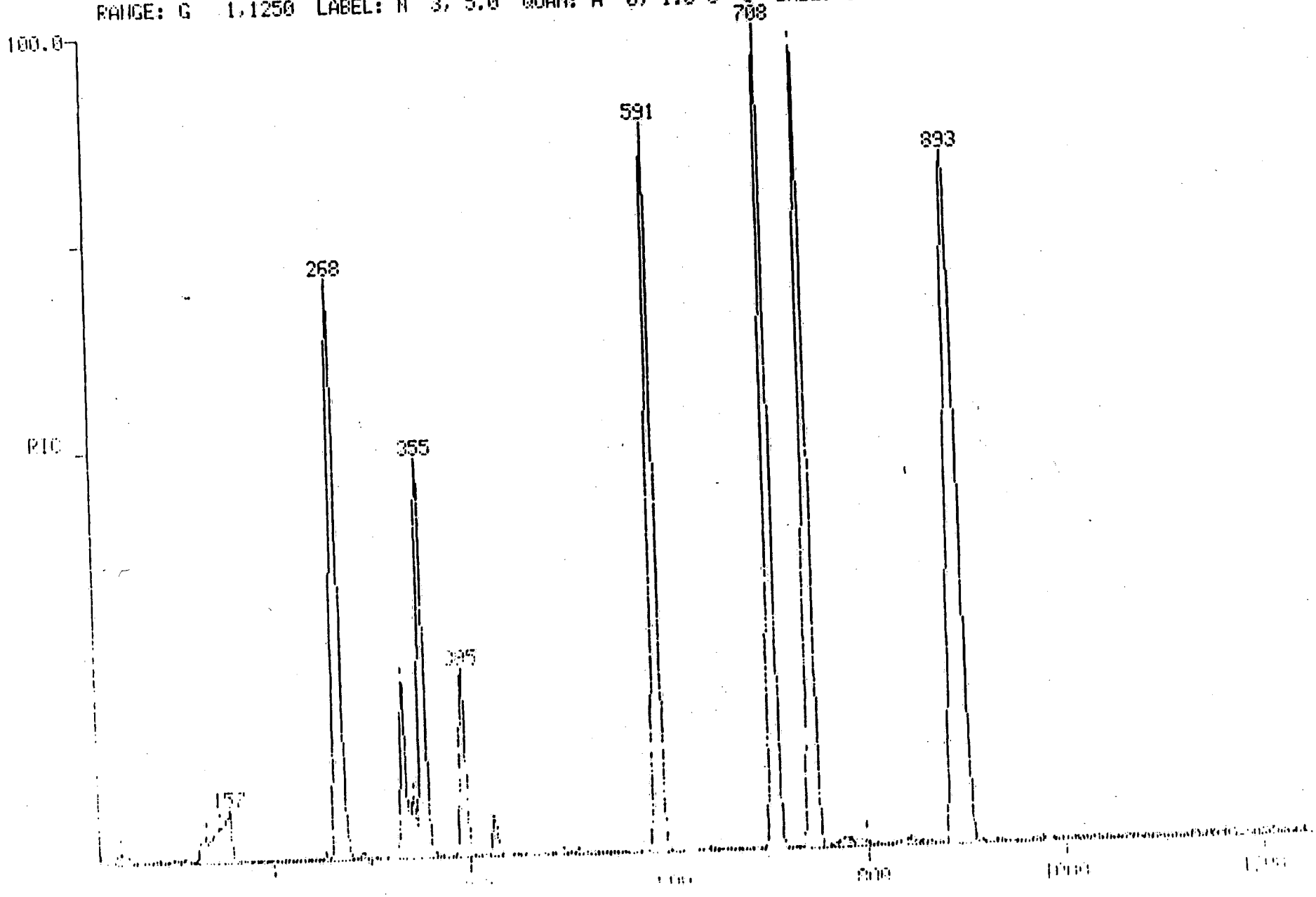
COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	92	
1,4-Difluorobenzene	91	
Chlorobenzene-D5	90	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	100	
1,2-Dichloroethane-D4	94	
Toluene-D8	99	-

MIDRIC
11/18/91 20:22:00
SAMPLE: MW6 JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4767 #46
CALI: A4767 #2

SCANS 25 TO 1250

36736.



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-6

JOB#:91-3386.10
FILE:A4767

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)
344	1,1,2=TRIMETHYL-1,2,2-TRIFLUOROETHANE (76-13-1)	4.3

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9

ANALYSIS DATE 11/18/9

SAMPLE NO. MW-7

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	1.2	J
2-Chloroethylvinyl ether	10	U
Chloroform	0.98	J
Chloromethane	10	U
1,1-Dichloroethane	57	
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	460	*
trans-1,2-Dichloroethene	0.69	J
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	1.5	J
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	1.6	J
1,1,1-Trichloroethane	2,700	*
1,1,2-Trichloroethane	5.0	U
Trichloroethene	1.9	J
Vinyl chloride	10	U

DILUTION FACTOR = 1.0
*DILUTION FACTOR = 50

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9

ANALYSIS DATE 11/18/9

SAMPLE NO. MW-7

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9

ANALYSIS DATE 11/18/9

SAMPLE NO. MW-7

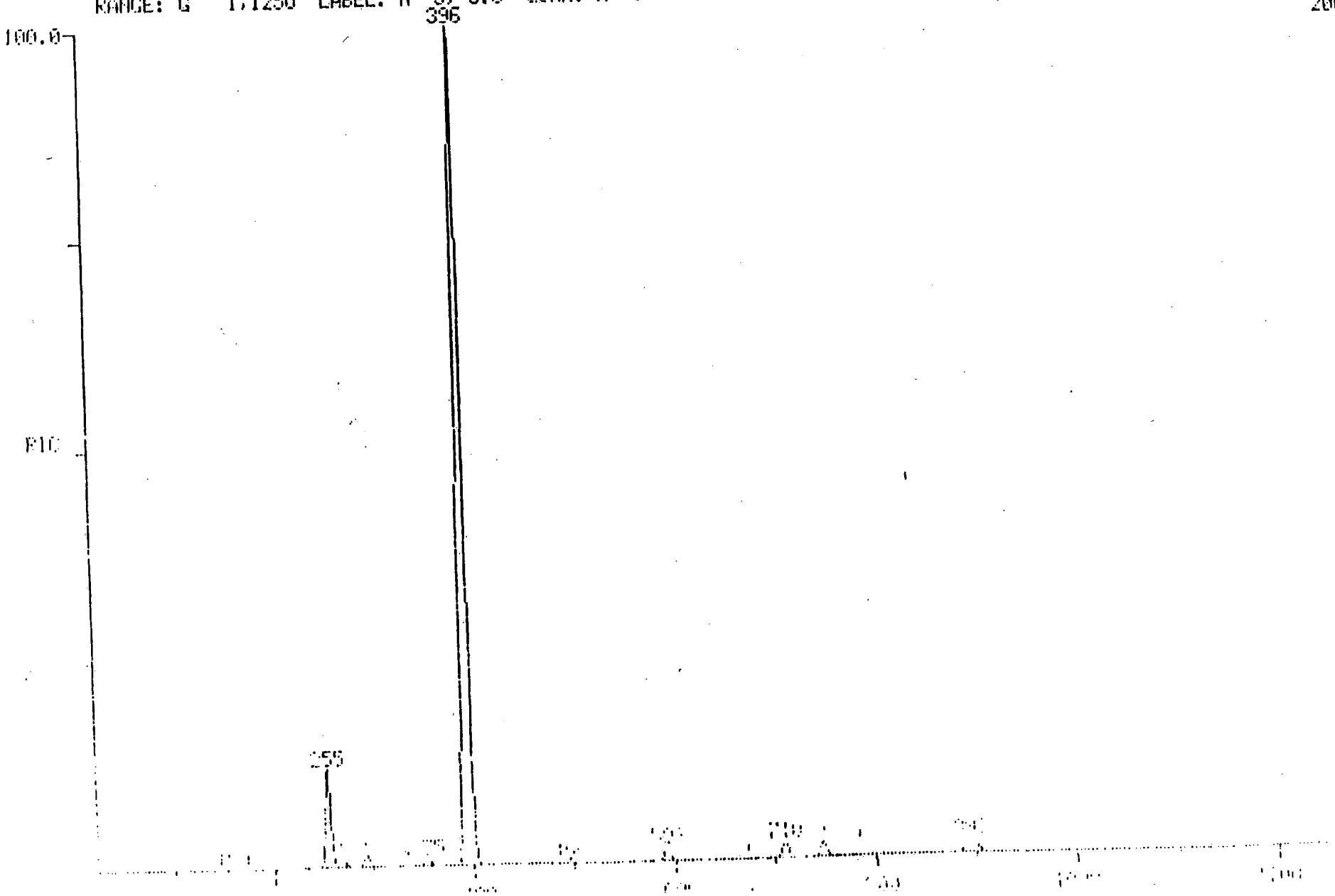
COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	94	
1,4-Difluorobenzene	92	
Chlorobenzene-D5	91	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	99	
1,2-Dichloroethane-D4	99	
Toluene-D8	99	-

MIDRIC
11/18/91 21:06:00
SAMPLE: MW7 JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4768 #46
CALI: A4768 #2

SCANS 25 TO 1250

2000890

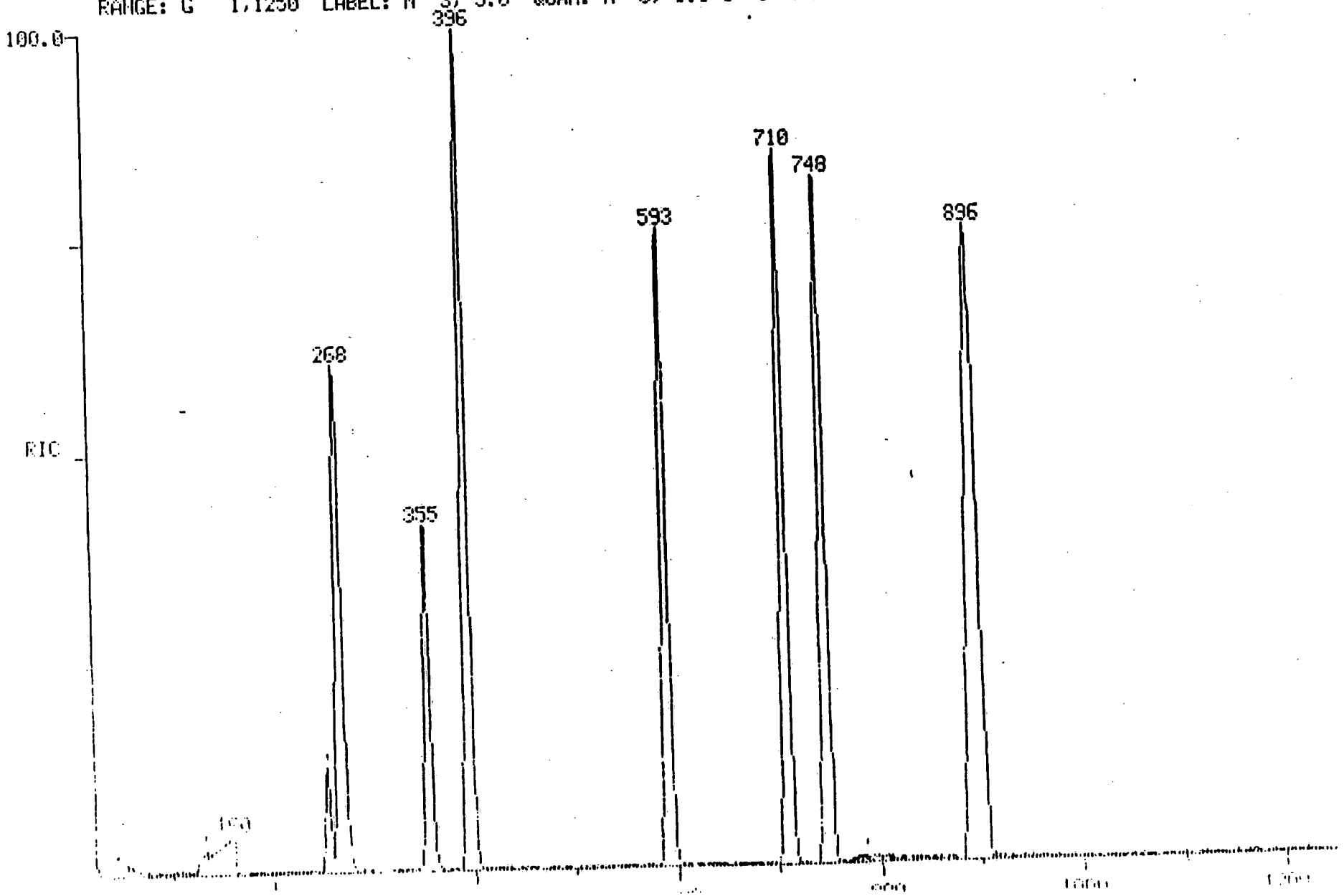


45

MIDRIC
11/19/91 16:02:00
SAMPLE: MW7DL JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4781 #46
CALI: A4781 #2

SCANS 25 TO 1250



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-7

JOB#:91-3386.7
FILE:A4768/A4781

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9:

ANALYSIS DATE 11/18/9:

SAMPLE NO. MW-8

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	10	U
2-Chloroethylvinyl ether	10	U
Chloroform	5.0	U
Chloromethane	10	U
1,1-Dichloroethane	8.6	
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	46	
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	370	*
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl chloride	10	U

DILUTION FACTOR = 1.0
*DILUTION FACTOR = 4.0

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9

ANALYSIS DATE 11/18/

SAMPLE NO. MW-8

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9

ANALYSIS DATE 11/18/9

SAMPLE NO. MW-8

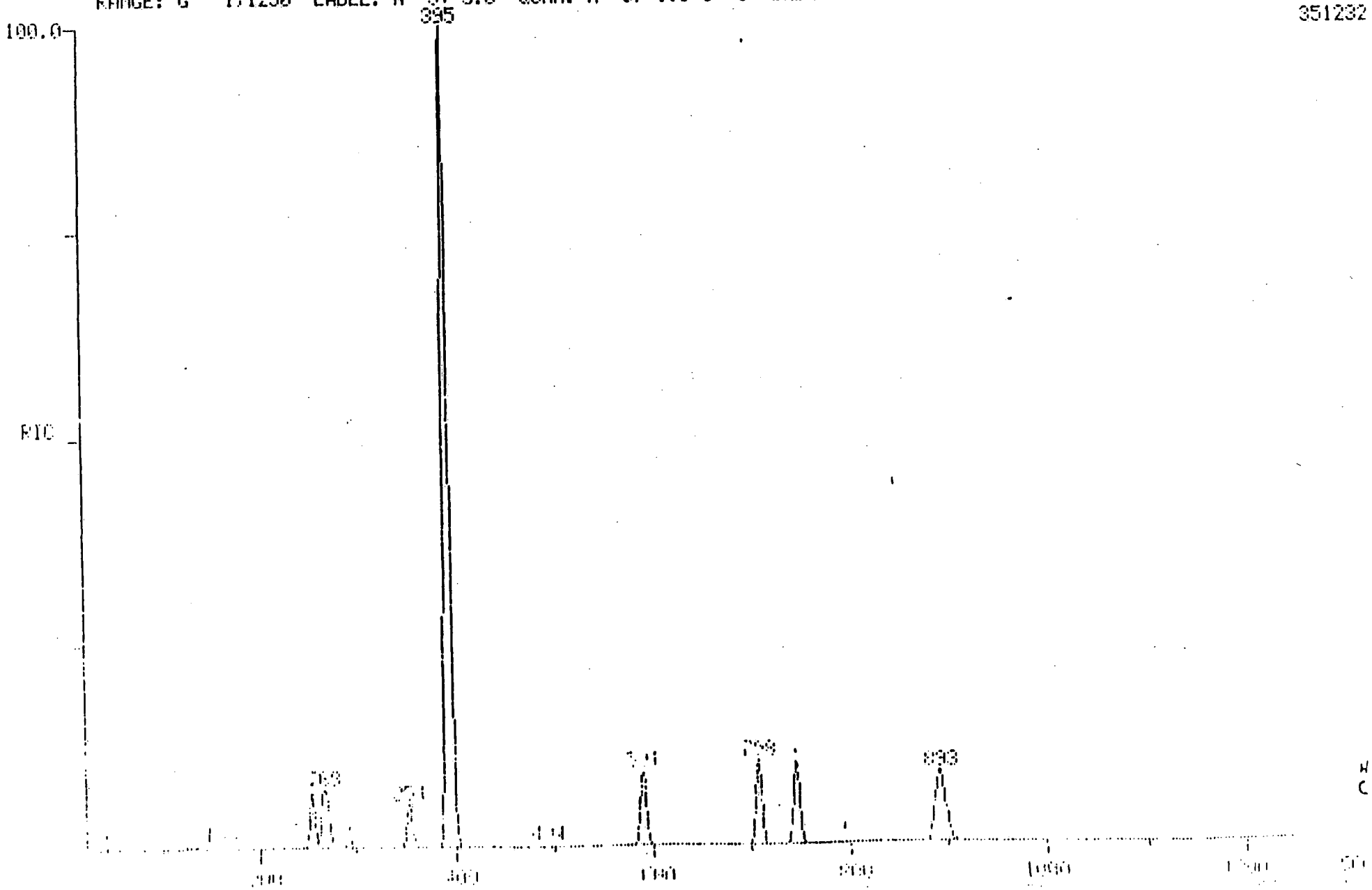
COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	92	
1,4-Difluorobenzene	89	
Chlorobenzene-D5	89	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	102	
1,2-Dichloroethane-D4	95	
Toluene-D8	97	-

MIDRIC
11/18/91 21:51:00
SAMPLE: MW8 JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4769 #46
CALI: A4769 #2

SCANS 25 TO 1250

351232

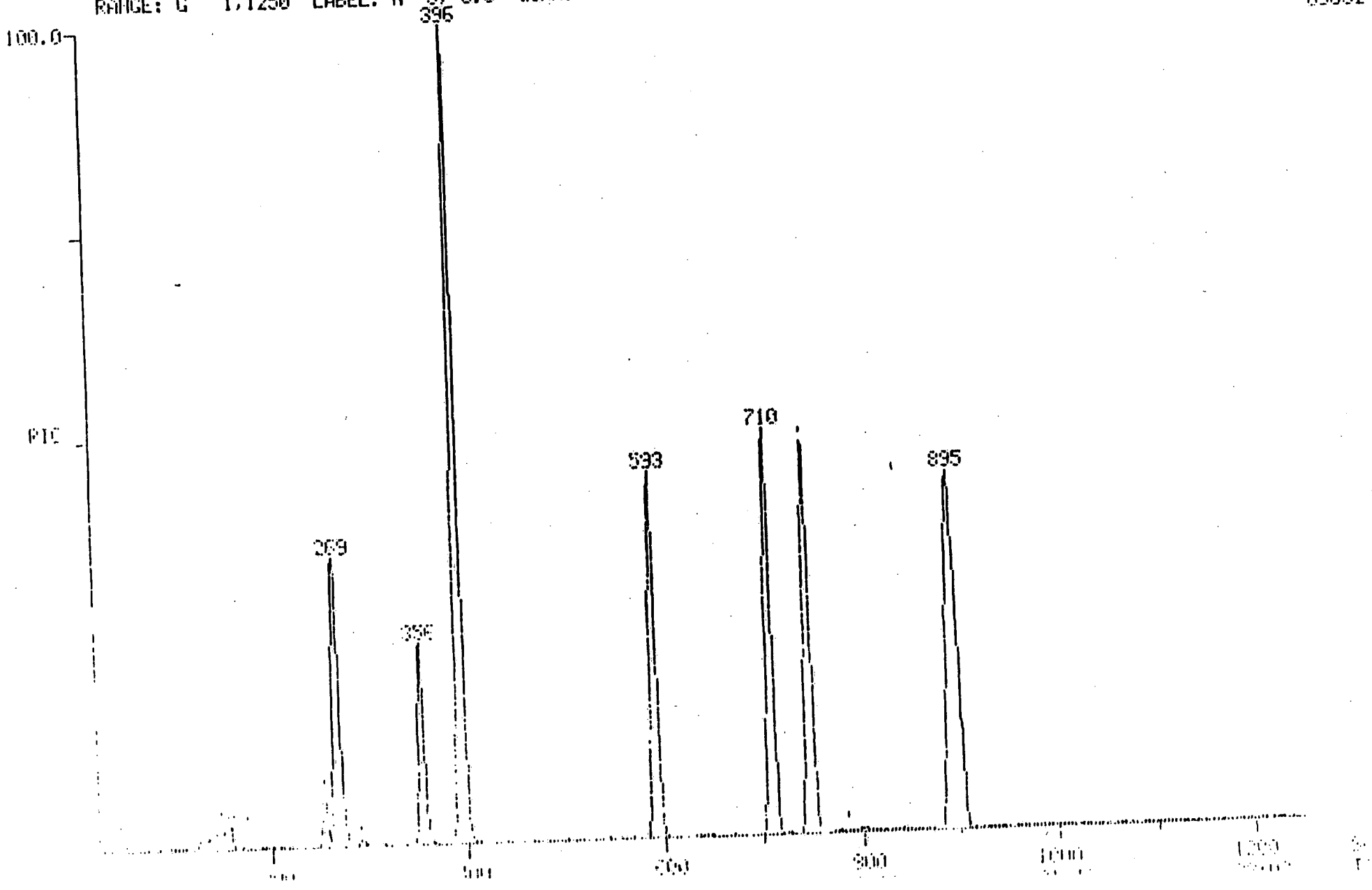


MIDRIC
11/19/91 16:46:00
SAMPLE: MW8 JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4782 #46
CALI: A4782 #2

SCANS 25 TO 1250

69632



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-8

JOB#:91-3386.2
FILE:A4769/A4782

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

ANALYSIS DATE 11/18/91

SAMPLE NO. MW-9

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	10	U
2-Chloroethylvinyl ether	10	U
Chloroform	6.0	
Chloromethane	10	U
1,1-Dichloroethane	5.0	U
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	2.8	J
trans-1,2-Dichloroethene	4.9	J
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	6.2	
1,1,2-Trichloroethane	5.0	U
Trichloroethene	13	
Vinyl chloride	10	U

DILUTION FACTOR = 1.0

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-9

ANALYSIS DATE 11/18/9

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

ANALYSIS DATE 11/18/91

SAMPLE NO. MW-9

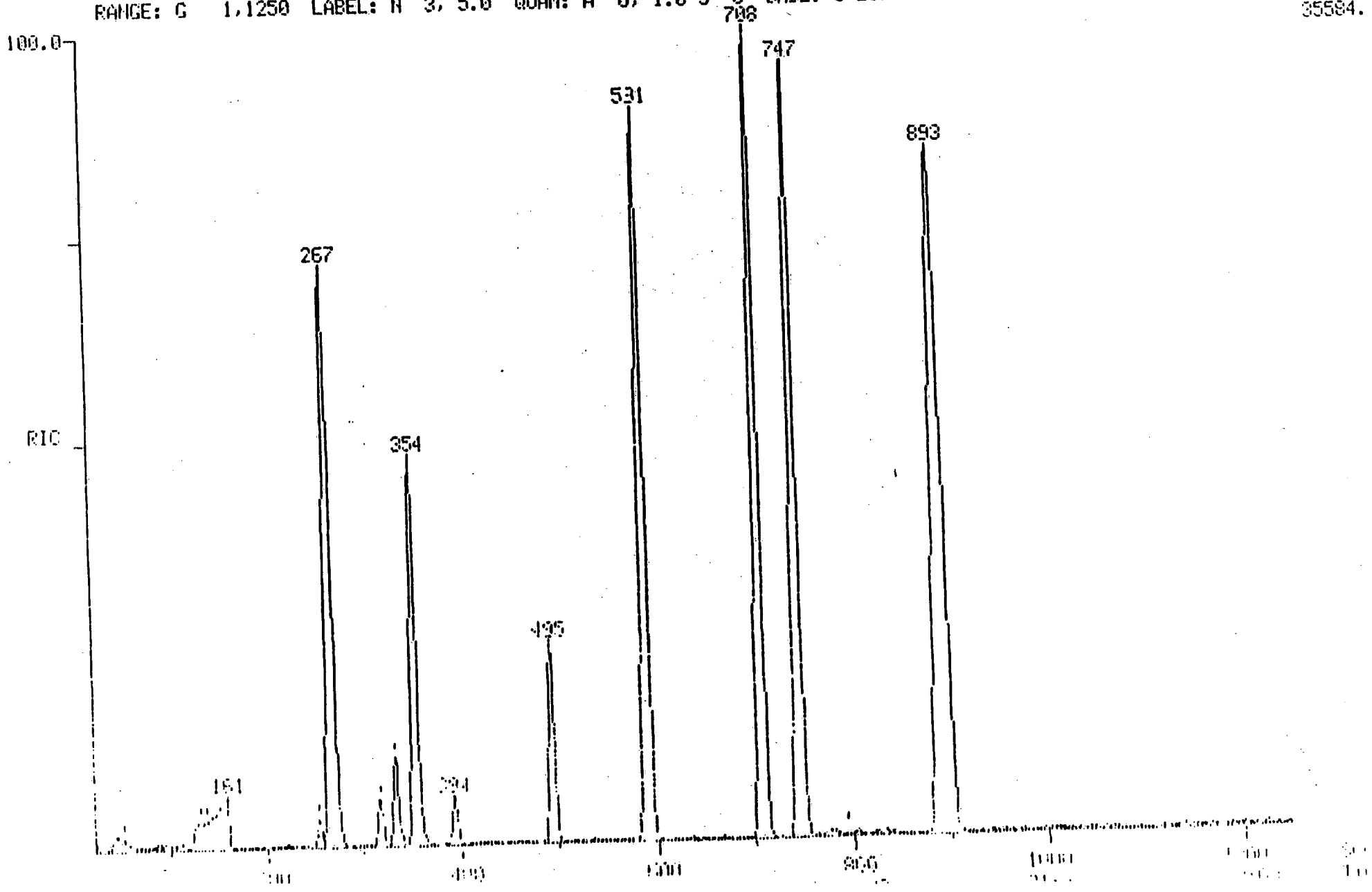
COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	86	
1,4-Difluorobenzene	86	
Chlorobenzene-D5	87	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	101	
1,2-Dichloroethane-D4	101	-
Toluene-D8	98	

MIDRIC
11/18/91 22:35:00
SAMPLE: MW9 JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4770 #46
CALI: A4770 #2

SCANS 25 TO 1250

35584.



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-9

JOB#:91-3386.9
FILE:A4770

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

ANALYSIS DATE 11/18/

SAMPLE NO. MW-10

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	10	U
2-Chloroethylvinyl ether	10	U
Chloroform	5.0	U
Chloromethane	10	U
1,1-Dichloroethane	5.0	U
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	5.0	U
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	1.1	J
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl chloride	10	U

DILUTION FACTOR = 1.0

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

ANALYSIS DATE 11/18/91

SAMPLE NO. MW-10

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

ANALYSIS DATE 11/18/9_

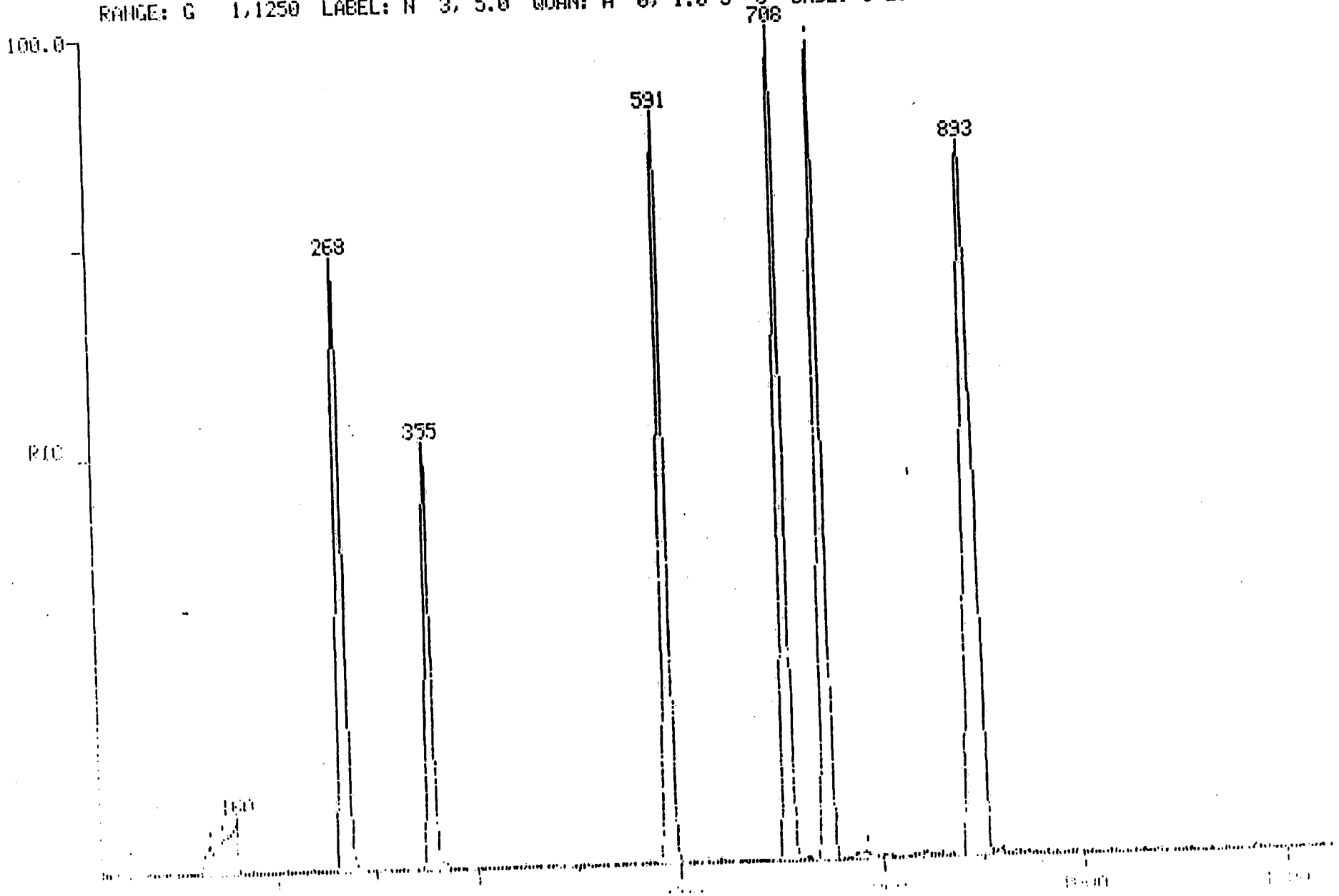
SAMPLE NO. MW-10

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	88	
1,4-Difluorobenzene	85	
Chlorobenzene-D5	86	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	98	
1,2-Dichloroethane-D4	96	
Toluene-D8	98	

MIDRIC
11/18/91 23:19:00
SAMPLE: MW10 JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4771 #46
CALI: A4771 #2

SCANS 25 TO 1250



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-10

JOB#:91-3386.8
FILE:A4771

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9:

ANALYSIS DATE 11/18/9:

SAMPLE NO. FIELD BLANK

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	2.9	J
Chlorodibromomethane	5.0	U
Chloroethane	10	U
2-Chloroethylvinyl ether	10	U
Chloroform	5.0	U
Chloromethane	10	U
1,1-Dichloroethane	5.0	U
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	5.0	U
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	5.0	U
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl chloride	10	U

DILUTION FACTOR = 1.0

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9

ANALYSIS DATE 11/18/91

SAMPLE NO. FIELD BLANK

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9

ANALYSIS DATE 11/18/9

SAMPLE NO. FIELD BLANK

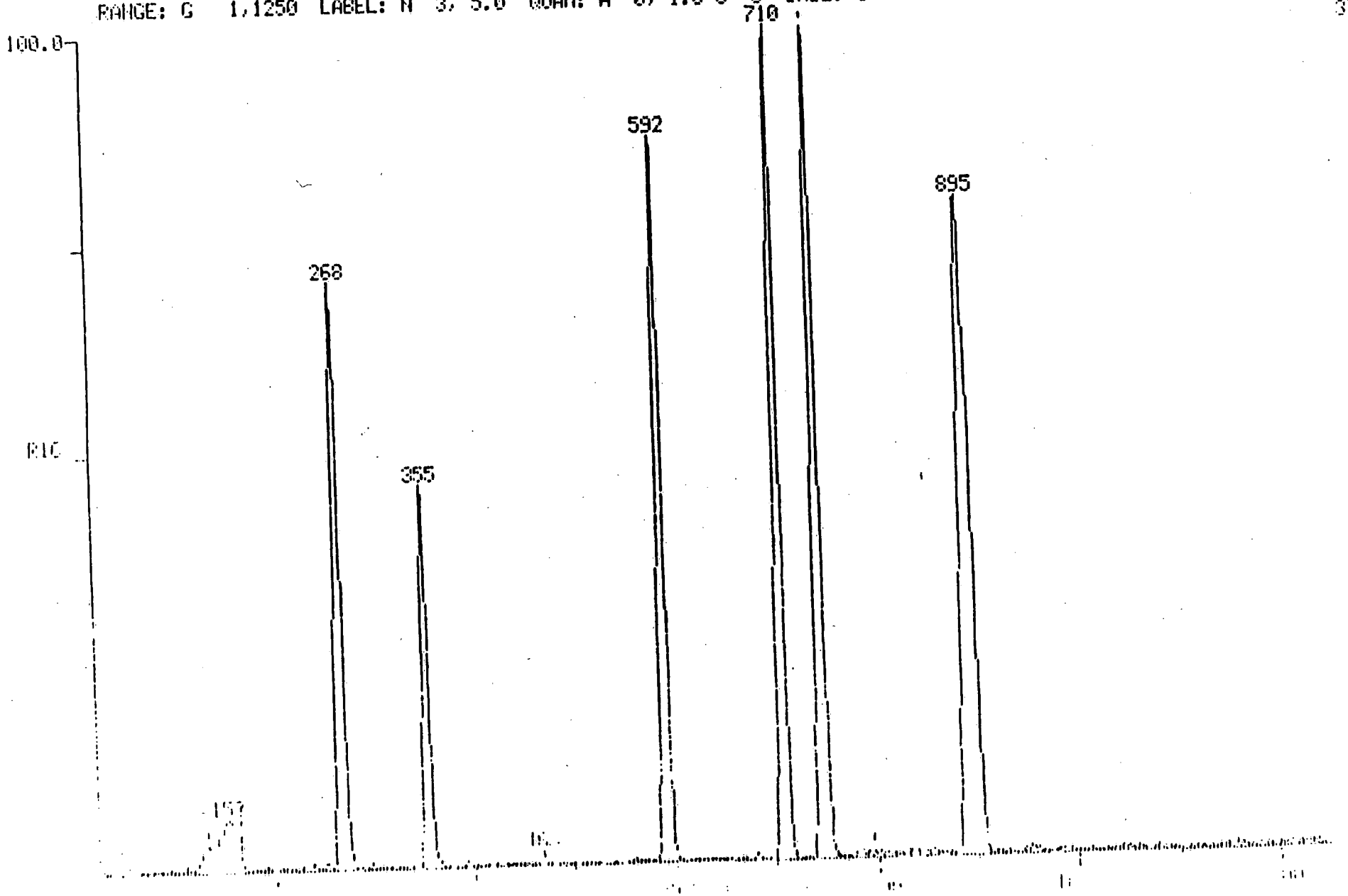
COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	91	
1,4-Difluorobenzene	92	
Chlorobenzene-D5	93	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	101	
1,2-Dichloroethane-D4	97	
Toluene-D8	100	-

MIDRIC
11/18/91 14:34:00
SAMPLE: FIELDBLANK JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4760 #46
CALI: A4760 #2

SCANS 25 TO 1250

37824.



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:FIELD BLANK

JOB#:91-3386.13
FILE:A4760

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9

ANALYSIS DATE 11/18/.

SAMPLE NO. TRIP BLANK

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	10	U
2-Chloroethylvinyl ether	10	U
Chloroform	5.0	U
Chloromethane	10	U
1,1-Dichloroethane	5.0	U
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	5.0	U
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	5.0	U
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl chloride	10	U

DILUTION FACTOR = 1.0

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

ANALYSIS DATE 11/18/91

SAMPLE NO. TRIP BLANK

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

ANALYSIS DATE 11/18/9

SAMPLE NO. TRIP BLANK

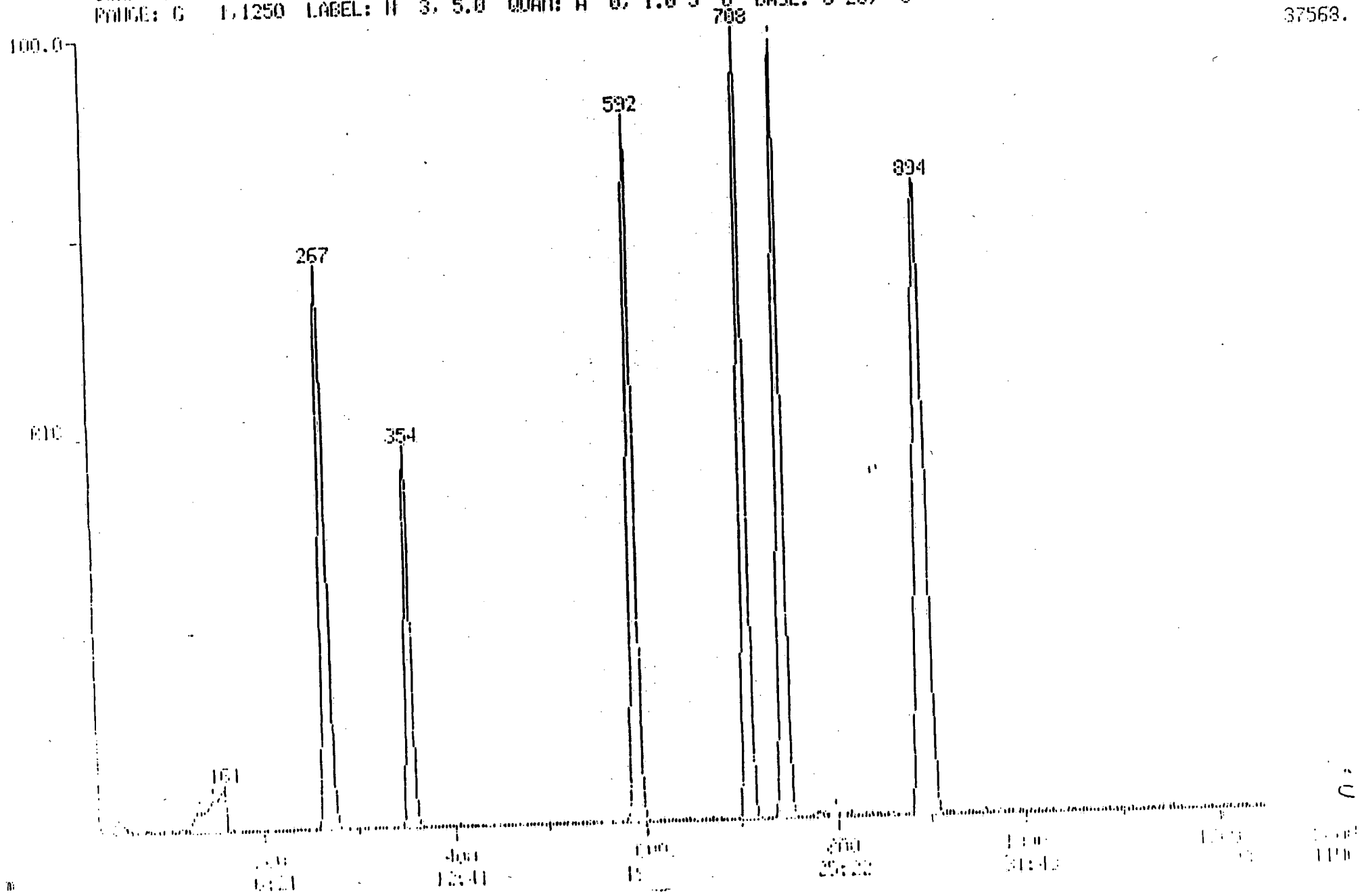
COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	96	
1,4-Difluorobenzene	92	
Chlorobenzene-D5	96	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	98	
1,2-Dichloroethane-D4	94	
Toluene-D8	95	

MIDRIC
11/18/91 13:50:00
SAMPLE: TRIPBLANK JOB3386
COMDS.: 51A
PAGE: G 1,1250 LABEL: H 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4759 #46
CALI: A4759 #2

SCANS 25 TO 1250

37568.



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:TRIP BLANK

JOB#:91-3386.14
FILE:A4759

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC VOLATILE METHOD BLANK
SAMPLE NO. VBLK53

ANALYSIS DATE 11/19/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	10	U
2-Chloroethylvinyl ether	10	U
Chloroform	5.0	U
Chloromethane	10	U
1,1-Dichloroethane	5.0	U
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	5.0	U
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	5.0	U
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl chloride	10	U

DILUTION FACTOR = 1.0

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC VOLATILE METHOD BLANK
SAMPLE NO. VBLK53

ANALYSIS DATE 11/19/

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC VOLATILE METHOD BLANK
SAMPLE NO. VBLK53

ANALYSIS DATE 11/19/91

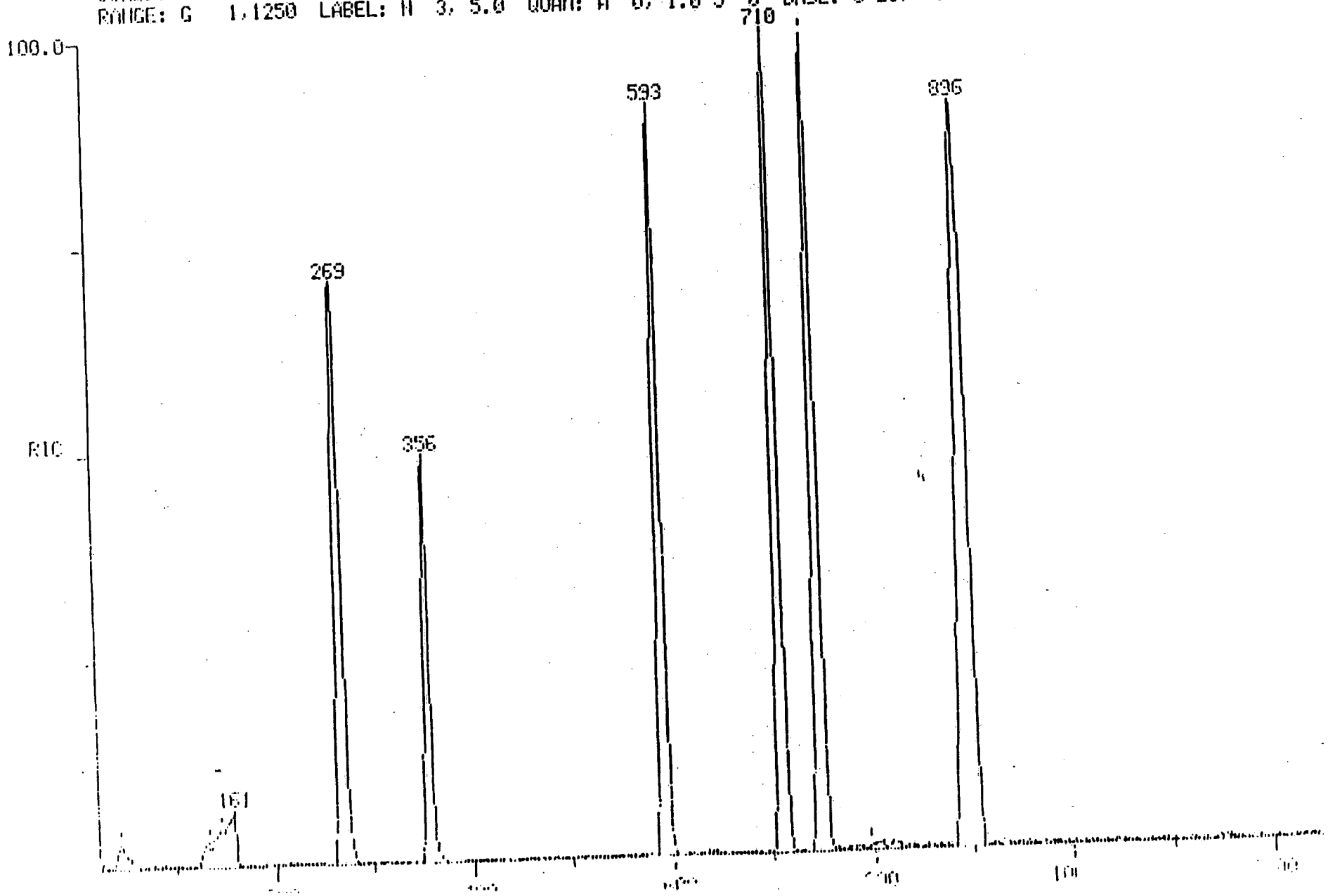
COMPOUND	RESULT	C
Internal Standards		
(%Recovery)		
Bromochloromethane	99	
1,4-Difluorobenzene	95	
Chlorobenzene-D5	96	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	102	
1,2-Dichloroethane-D4	100	
Toluene-D8	98	

MIDRIC
11/19/91 11:35:00
SAMPLE: VBLK53
COMDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4775 #46
CALI: A4775 #2

SCANS 25 TO 1250

36736.



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:VBLK 53

JOB#:91-3386.3
FILE:A4775

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

SEMI-VOLATILE DATA

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

SAMPLE NO. MW-1

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	14	U
Isophorone	14	U
2-Methyl-4,6-dinitrophenol	71	U
Naphthalene	14	U
Nitrobenzene	14	U
2-Nitrophenol	14	U
4-Nitrophenol	71	U
N-nitrosodi-n-propylamine	14	U
N-Nitrosodimethylamine	14	U
N-Nitrosodiphenylamine	14	U
Pentachlorophenol	71	U
Phenanthrene	14	U
Phenol	14	U
Pyrene	14	U
1,2,4-Trichlorobenzene	14	U
2,4,6-Trichlorophenol	14	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 700 ML

RADIAN CORPORATION

METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
COB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

SAMPLE NO. MW-1

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	14	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 700 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

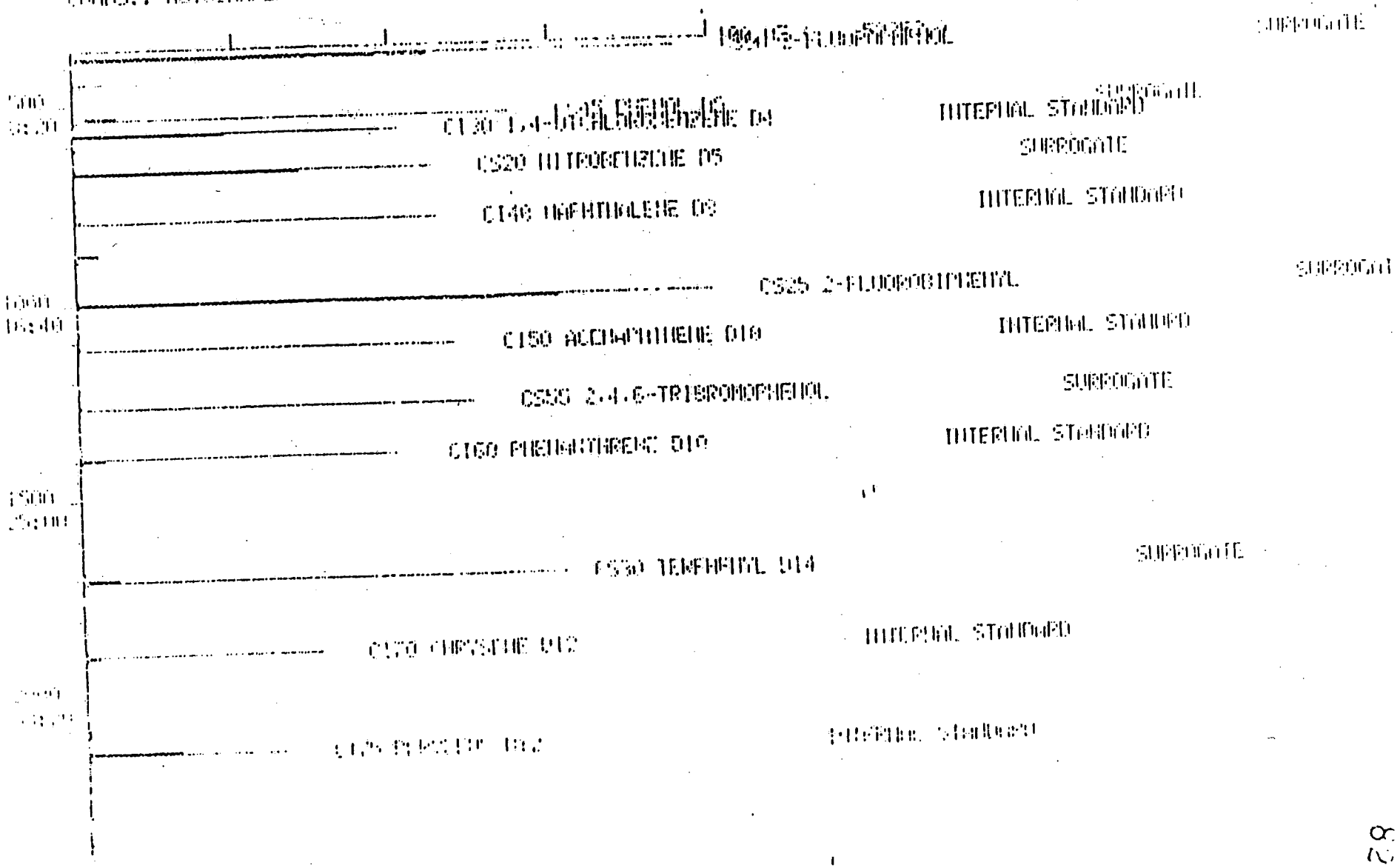
SAMPLE DATE 11/15/9
EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/9

SAMPLE NO. MW-1

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	97	
Naphthalene-D8	95	
Acenaphthene-D10	105	
Phenanthrene-D10	109	
Chrysene-D12	78	
Perylene-D12	87	
Surrogates		
(%Recovery)		
2-Fluorophenol	49	
Phenol-D5	33	
2,4,6-Tribromophenol	67	
Nitrobenzene-D5	67	
2-Fluorobiphenyl	65	
Terphenyl-D14	92	

Data FROM FILE: 7160W SCANS 30 TO 2520 ACQUIRED: 11/30/91 18:46:00
CAL 1: 7160W #3

SAMPLE: MN1 JOB 3386 AP14436-97
COMMS.: AUTOSAMPLR 150W



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-1

JOB#:91-3386.21
FILE:7160W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NO.: 91-3386
DESC: MW-1 FIELD DUP
SAMPLE NO.: FIELD DUP

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	14	U
Acenaphthylene	14	U
Anthracene	14	U
Benzo(a)anthracene	14	U
Benzo(b)fluoranthene	14	U
Benzo(k)fluoranthene	14	U
Benzo(a)pyrene	14	U
Benzo(g,h,i)perylene	14	U
Benzidine	110	U
Bis(2-chloroethyl)ether	14	U
Bis(2-chlorethoxy)methane	14	U
Bis(2-chloroisopropyl)ether	14	U
Bis(2-ethylhexyl)phthalate	14	U
4-Bromophenylphenylether	14	U
Butyl benzyl phthalate	14	U
4-Chloro-3-methylphenol	14	U
2-Chloronaphthalene	14	U
2-Chlorophenol	14	U
4-Chlorophenylphenylether	14	U
Chrysene	14	U
Dibenzo(a,h)anthracene	14	U
Di-n-butyl phthalate	14	U
1,2-Dichlorobenzene	14	U
1,3-Dichlorobenzene	14	U
1,4-Dichlorobenzene	14	U
3,3'-Dichlorobenzidine	28	U
2,4-Dichlorophenol	14	U
Diethylphthalate	14	U
2,4-Dimethylphenol	14	U
Dimethylphthalate	14	U
2,4-Dinitrophenol	71	U
1,2-Diphenyl hydrazine	110	U
2,4-Dinitrotoluene	14	U
2,6-Dinitrotoluene	14	U
Di-n-octylphthalate	14	U
Fluoranthene	14	U
Fluorene	14	U
Hexachlorobenzene	14	U
Hexachlorobutadiene	14	U
Hexachlorocyclopentadiene	14	U
Hexachloroethane	14	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 700 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC MW-1 FIELD DUP
SAMPLE NO. FIELD DUP

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	14	U
Isophorone	14	U
2-Methyl-4,6-dinitrophenol	71	U
Naphthalene	14	U
Nitrobenzene	14	U
2-Nitrophenol	14	U
4-Nitrophenol	71	U
N-nitrosodi-n-propylamine	14	U
N-Nitrosodimethylamine	14	U
N-Nitrosodiphenylamine	14	U
Pentachlorophenol	71	U
Phenanthrene	14	U
Phenol	14	U
Pyrene	14	U
1,2,4-Trichlorobenzene	14	U
2,4,6-Trichlorophenol	14	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 700 ML

RADIAN CORPORATION

METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC MW-1 FIELD DUP
SAMPLE NO. FIELD DUP

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	14	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 700 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

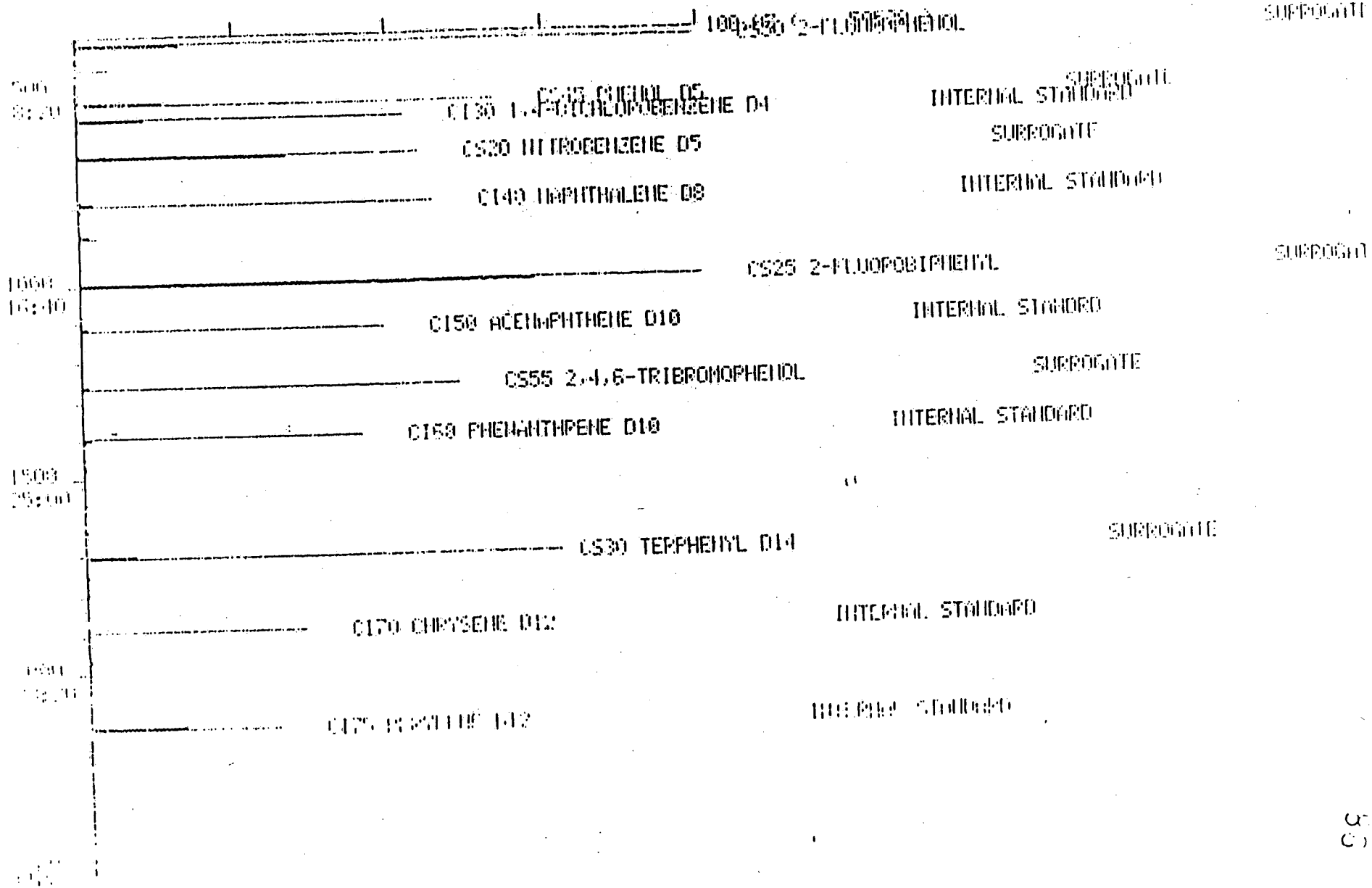
LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC MW-1 FIELD DUP
SAMPLE NO. FIELD DUP

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/9

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	97	
Naphthalene-D8	94	
Acenaphthene-D10	103	
Phenanthrene-D10	109	
Chrysene-D12	75	
Perylene-D12	89	
Surrogates		
(%Recovery)		
2-Fluorophenol	49	
Phenol-D5	33	
2,4,6-Tribromophenol	76	
Nitrobenzene-D5	80	
2-Fluorobiphenyl	74	
Terphenyl-D14	103	

DATA FROM FILE: 7161W SCANS 360 TO 2570 ACQUIRED: 11/30/91 19:37:00
CALI: 7161W #3

SAMPLE: MW1FIELDDUP JOB 3386 AP14438/39
CONDS.: AUTOSAMPLR I50W



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-1 FIELD DUP

JOB#:91-3386.22
FILE:7161W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

SAMPLE NO. MW-2

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	14	U
Acenaphthylene	14	U
Anthracene	14	U
Benzo(a)anthracene	14	U
Benzo(b)fluoranthene	14	U
Benzo(k)fluoranthene	14	U
Benzo(a)pyrene	14	U
Benzo(g,h,i)perylene	14	U
Benzidine	110	U
Bis(2-chloroethyl)ether	14	U
Bis(2-chlorethoxy)methane	14	U
Bis(2-chloroisopropyl)ether	14	U
Bis(2-ethylhexyl)phthalate	14	U
4-Bromophenylphenylether	14	U
Butyl benzyl phthalate	14	U
4-Chloro-3-methylphenol	14	U
2-Chloronaphthalene	14	U
2-Chlorophenol	14	U
4-Chlorophenylphenylether	14	U
Chrysene	14	U
Dibenzo(a,h)anthracene	14	U
Di-n-butyl phthalate	14	U
1,2-Dichlorobenzene	14	U
1,3-Dichlorobenzene	14	U
1,4-Dichlorobenzene	14	U
3,3'-Dichlorobenzidine	28	U
2,4-Dichlorophenol	14	U
Diethylphthalate	14	U
2,4-Dimethylphenol	14	U
Dimethylphthalate	14	U
2,4-Dinitrophenol	71	U
1,2-Diphenyl hydrazine	110	U
2,4-Dinitrotoluene	14	U
2,6-Dinitrotoluene	14	U
Di-n-octylphthalate	14	U
Fluoranthene	14	U
Fluorene	14	U
Hexachlorobenzene	14	U
Hexachlorobutadiene	14	U
Hexachlorocyclopentadiene	14	U
Hexachloroethane	14	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 700 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/9

SAMPLE NO. MW-2

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	14	U
Isophorone	14	U
2-Methyl-4,6-dinitrophenol	71	U
Naphthalene	2.4	J
Nitrobenzene	14	U
2-Nitrophenol	14	U
4-Nitrophenol	71	U
N-nitrosodi-n-propylamine	14	U
N-Nitrosodimethylamine	14	U
N-Nitrosodiphenylamine	14	U
Pentachlorophenol	71	U
Phenanthrene	2.1	J
Phenol	14	U
Pyrene	14	U
1,2,4-Trichlorobenzene	14	U
2,4,6-Trichlorophenol	14	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 700 ML

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9
EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/9

SAMPLE NO. MW-2

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	14	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 700 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

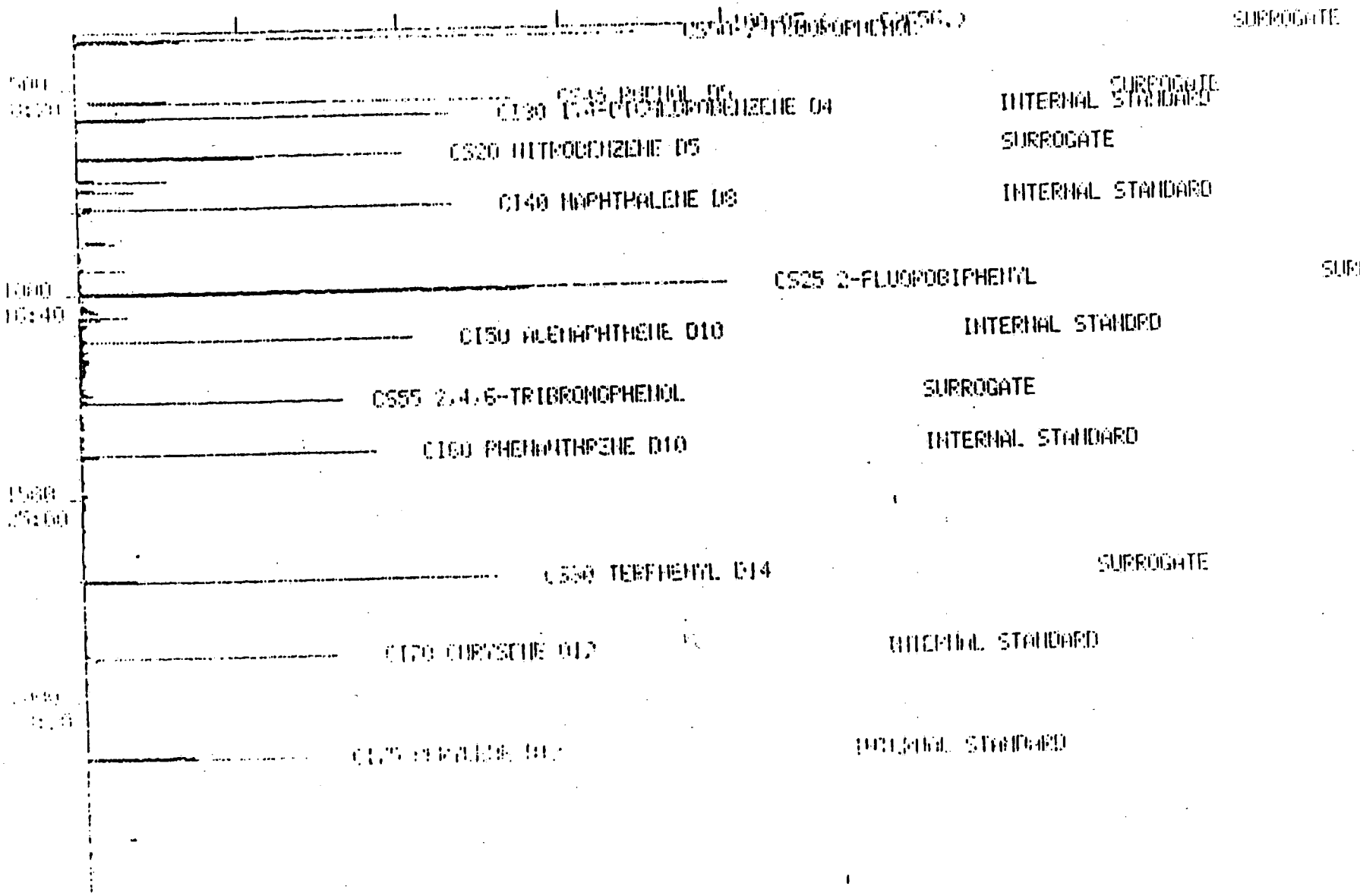
SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/9

SAMPLE NO. MW-2

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	109	
Naphthalene-D8	105	
Acenaphthene-D10	119	
Phenanthrene-D10	121	
Chrysene-D12	101	
Perylene-D12	116	
Surrogates		
(%Recovery)		
2-Fluorophenol	42	
Phenol-D5	33	
2,4,6-Tribromophenol	49	
Nitrobenzene-D5	65	
2-Fluorobiphenyl	66	
Terphenyl-D14	58	

DATA FROM FILE: 7162W SCANS 360 TO 2520 ACQUIRED: 11-30-91 20:28:00
CALI: 7162W #3

SAMPLE: MW2 JOB 3386 AP14440 41
CONDS.: AUTOSAMPLR I50W



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-2

JOB#:91-3386.23
FILE:7162W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)
722	UNKNOWN	11
746	2-FLUORO-4-NITRO PHENOL (403-19-0)	7.3
938	UNSATURATED HYDROCARBON	6.3
1053	DIMETHYL NAPHTHALENE ISOMER	6.4

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9:
EXTRACTION DATE 11/22/9:
ANALYSIS DATE 11/30/9:

SAMPLE NO. MW-3

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	14	U
Acenaphthylene	14	U
Anthracene	14	U
Benzo(a)anthracene	14	U
Benzo(b)fluoranthene	14	U
Benzo(k)fluoranthene	14	U
Benzo(a)pyrene	14	U
Benzo(g,h,i)perylene	14	U
Benzidine	110	U
Bis(2-chloroethyl)ether	14	U
Bis(2-chlorethoxy)methane	14	U
Bis(2-chloroisopropyl)ether	14	U
Bis(2-ethylhexyl)phthalate	14	U
4-Bromophenylphenylether	14	U
Butyl benzyl phthalate	14	U
4-Chloro-3-methylphenol	14	U
2-Chloronaphthalene	14	U
2-Chlorophenol	14	U
4-Chlorophenylphenylether	14	U
Chrysene	14	U
Dibenzo(a,h)anthracene	14	U
Di-n-butyl phthalate	14	U
1,2-Dichlorobenzene	14	U
1,3-Dichlorobenzene	14	U
1,4-Dichlorobenzene	14	U
3,3'-Dichlorobenzidine	28	U
2,4-Dichlorophenol	14	U
Diethylphthalate	14	U
2,4-Dimethylphenol	14	U
Dimethylphthalate	14	U
2,4-Dinitrophenol	71	U
1,2-Diphenyl hydrazine	110	U
2,4-Dinitrotoluene	14	U
2,6-Dinitrotoluene	14	U
Di-n-octylphthalate	14	U
Fluoranthene	14	U
Fluorene	14	U
Hexachlorobenzene	14	U
Hexachlorobutadiene	14	U
Hexachlorocyclopentadiene	14	U
Hexachloroethane	14	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 700 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/9

SAMPLE NO. MW-3

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	14	U
Isophorone	14	U
2-Methyl-4,6-dinitrophenol	71	U
Naphthalene	14	U
Nitrobenzene	14	U
2-Nitrophenol	14	U
4-Nitrophenol	71	U
N-nitrosodi-n-propylamine	14	U
N-Nitrosodimethylamine	14	U
N-Nitrosodiphenylamine	14	U
Pentachlorophenol	71	U
Phenanthrene	14	U
Phenol	14	U
Pyrene	14	U
1,2,4-Trichlorobenzene	14	U
2,4,6-Trichlorophenol	14	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 700 ML

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9:
EXTRACTION DATE 11/22/9:
ANALYSIS DATE 11/30/9:

SAMPLE NO. MW-3

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	14	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 700 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/9

SAMPLE NO. MW-3

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	116	
Naphthalene-D8	113	
Acenaphthene-D10	124	
Phenanthrene-D10	125	
Chrysene-D12	90	
Perylene-D12	102	
Surrogates		
(%Recovery)		
2-Fluorophenol	42	
Phenol-D5	33	
2,4,6-Tribromophenol	49	
Nitrobenzene-D5	65	
2-Fluorobiphenyl	66	
Terphenyl-D14	58	

Part 3

AIRBORNE EXPRESS

April 24, 1997

Ms. Mary Anne Rosa
Project Manager
Emergency and Remedial Response Division - Region II
U.S. Environmental Protection Agency
290 Broadway, 19th Floor
New York, New York 10007-1866

Re: Reply to Request for Information on Hazardous Substances at the Kodalux Processing Laboratory, Fair Lawn, New Jersey

Dear Ms. Rosa:

This is in response to your February 26, 1997 letter requesting information regarding the Kodalux Processing Laboratory (facility), located in Fair Lawn, New Jersey. Your request was mailed to the facility at Fair Lawn and thereafter forwarded to Eastman Kodak Company ("Kodak") corporate offices in Rochester, New York for my attention and handling. The status of the facility with respect to Kodak ownership is discussed in the accompanying response. The time to respond to this request was extended to April 26, 1997 by Ms. Amelia Wagner, Esq., of your staff.

As stated in Kodak's January 29, 1991 supplemental response to your office's previous request for information regarding handling of hazardous substances at the facility, four petroleum underground storage tanks and a dry well for the fire suppression system have been removed. These activities have been reported to New Jersey Department of Environmental Protection (NJDEP), case nos. 90 06 15 1528 and 90 05 22 1638.

Upon developing the attached response to your request for information, Kodak has concluded that the following reports inappropriately refer to the usage of trichloroethene (TCE) at the Kodalux Processing Laboratory:

Torger N. Dahl, Attorney, Environmental, Health & Safety Legal Staff
Eastman Kodak Company • 343 State Street • Rochester, New York 14650-0217
Telephone: (716) 724-4899 • Facsimile: (716) 724-5515

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FILE COPY

Phase II Groundwater Investigation Report Kodalux Processing Laboratory Fair Lawn, New Jersey

Prepared for:

Eastman Kodak Company

Prepared by:

Radian Corporation

February 7, 1992

RADIAN CORPORATION

KD001

PART 1

DCN: 92-246-080-02

PHASE II GROUNDWATER INVESTIGATION REPORT
KODALUX PROCESSING LABORATORY
FAIR LAWN, NEW JERSEY

Prepared for:

Mr. Gary Costanzo
Environmental Technical Services
Health and Environment Laboratories
Eastman Kodak Company
Rochester, New York

Prepared by:

Radian Corporation
155 Corporate Woods, Suite 100
Rochester, New York 14623
(716) 292-1870

February 7, 1992

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EXECUTIVE SUMMARY

A Phase II investigation was conducted at the Kodalux Processing Laboratory in Fair Lawn, New Jersey. This investigation included:

- Advancement of six pilot boreholes (PB-1 through PB-6);
- Collection of groundwater samples from the pilot boreholes for Total Recoverable Petroleum Hydrocarbon (TRPH) analysis;
- Installation of five monitoring wells (MW-6 through MW-10);
- Collection of groundwater samples from new and existing monitoring wells for volatile organics, base/neutral and acid-extractable compounds, total cyanide, formaldehyde, TRPH, silver, and total and hexavalent chromium;
- Collection of one composite sample from drummed drill cuttings for waste characterization; and
- Collection of water elevation data for use in interpretation of site hydrology.

No visual signs of fuel oil were observed in any of the drilling cuttings or groundwater samples collected from the six pilot boreholes. Total recoverable petroleum hydrocarbons (TRPH) was detected in PB-6 at 680 μg/L (0.680 mg/L) and was not detected in groundwater samples collected from the other five pilot boreholes.

No zones of detectable vapor concentrations or visual signs of contamination were observed in any of the drilling cuttings from the installed monitoring wells (MW-6 through MW-10). No analytes on the Method 625 Priority Pollutants list were detected above the Contract Required Quantitation Limits (CRQL) in the monitoring well groundwater samples. Up to nine Tentatively Identified Compounds (TICs) were reported for each sample. No hydroquinone was detected in any well sample above the estimated detection limit.

The following analytes on the Method 624 Priority Pollutants list were detected above the CRQL. 1,1,1-Trichlorethane was detected in eight wells. Detected concentrations ranged from 5.5 μg/L in MW-4 to 13000 μg/L in MW-2. 1,1-Dichloroethane was detected in five wells. Detected concentrations ranged from 8.6 μg/L in MW-8 to 110 μg/L in MW-3. 1,1-Dichloroethene was detected in four wells, and ranged from 17 μg/L (in MW-1) to 460 μg/L (in MW-7). Chloroform was detected in three wells at concentrations ranging from 6.0 μg/L to a high of 12 μg/L (in MW-6). Trichlorethene was detected in three wells. A maximum concentration of 13 μg/L was detected in MW-9. Trans-1,2-Dichloroethene was detected at 9.0 μg/L in MW-1. Vinyl chloride was detected in MW-3 at 110 μg/L. Chloroethane was detected at 15 μg/L in MW-2. Benzene was detected at 13 μg/L in MW-3. The TICs hexachlorobutadiene and 1,1,2-trimethyl-1,2,2-trifluoroethane were each estimated present in one well.

Seven wells contained detectable levels of TRPH. Concentrations ranged from 610 μg/L to 12,000 μg/L. MW-2 contained the highest quantity of petroleum hydrocarbons, with 12,000 μg/L. MW-1 contained the lowest detected quantity of petroleum hydrocarbons. Formaldehyde was detected in six wells. MW-3 contained the highest quantity of formaldehyde, with 260 μg/L. MW-3, MW-6, MW-7 and MW-8 contained total cyanide at concentrations ranging from 0.017 mg/L to 0.24 mg/L. Total silver concentrations ranged from 0.01 mg/L to 0.013 mg/L in MW-4, MW-6, MW-7, and MW-10. MW-1 through MW-7 contained concentrations of total chromium ranging from 0.011 mg/L to 0.093 mg/L. Hexavalent chromium was detected in MW-2 and MW-7 at 0.016 mg/L and 0.028 mg/L, respectively.

No volatile organics, semivolatile organics, or isobutanol were detected in the drill cuttings composite sample. In addition, analyses indicated the cuttings do not exhibit any hazardous waste characteristics.

Groundwater is entering the site predominantly from the east-southeast. A localized groundwater mound exists in the vicinity of monitoring wells MW-4 and MW-5; this mound diverts groundwater flow to the north and to the west. This diversion is possibly due to a bedrock "high," located beneath the facility.

1.0 INTRODUCTION

1.1 Project Description

At the request of Eastman Kodak Company, Radian Corporation has conducted a second phase of subsurface environmental investigation at the Kodalux Processing Laboratory (Kodalux) in Fair Lawn, New Jersey. This report discusses the field activities and analytical results of Phase II groundwater investigation activities at the site.

In accordance with our September 13, 1991 letter of technical approach and scheduling, the scope of the Phase II Investigation included:

- Installation of five monitoring wells (MW-6 through MW-10);
- Advancement of six pilot boreholes (PB-1 through PB-6);
- Collection of groundwater samples from the pilot boreholes for Total Recoverable Petroleum Hydrocarbon (TRPH) analysis;
- Collection of groundwater samples from new and existing monitoring wells for volatile organics, base/neutral and acid-extractable compounds, total cyanide, formaldehyde, TRPH, silver, and total and hexavalent chromium;
- Collection of one composite sample from drummed drill cuttings for waste characterization; and
- Collection of groundwater elevation data for use in interpretation of site hydrology.

Boring, monitoring well installation, and well development activities for this project were conducted by Summit Drilling Corp., Inc., New Jersey-licensed well drillers. These activities were supervised by a hydrogeologist from Radian Corporation.

1.2 Historical Environmental Activities

In May and June 1990, CA Rich Consultants, Inc., conducted an Underground Storage Tank (UST) closure program at the Kodalux site. A report detailing the closure program was submitted to the New Jersey Department of Environmental Protection (NJDEP) on August 1, 1990. USTs removed during closure activities included two 20,000-gallon No. 6 heating oil tanks, one 3,000-gallon unleaded gasoline tank, and one 2,000-gallon unleaded gasoline tank. Heating oil was detected in soil underlying both of the No. 6 heating oil tanks. The NJDEP Hotline was notified of the No. 6 heating oil discharge (May 22, 1990) and the site was assigned Case Number 90 05 22 1638.

In response to the above observations and a June 5, 1990, letter from Mr. Joseph Miller of NJDEP to Mr. Dick Spiegel of Eastman Kodak Company, CA Rich Consultants, Inc., installed one monitoring well (MW-1, see Figure 1) adjacent to the former No. 6 heating oil tank locations, and excavated approximately 15 cubic yards of soil from below the former gasoline pump area. A Discharge Investigation and Corrective Action Report (DICAR) dated October 3, 1990, discusses the above activities, and addresses site characterization, soil remediation, and groundwater monitoring.

In September 1990, Radian Corporation conducted a subsurface vapor investigation in specific chemical use and processing areas at the facility. The objective of this investigation was to quantify subsurface vapor concentrations of chemical constituents, and provide information to be used for locating potential monitoring wells.

In March and April 1991, Radian conducted a Phase I Groundwater Investigation at the facility, which consisted of the installation of four monitoring wells (MW-2 through MW-5) and sampling of five monitoring wells (MW-1 through MW-5). The activities and findings of this investigation were presented to Kodak in a report entitled "Final Groundwater Inverstigation Report, Kodalux Processing Laboratory, Fair Lawn, New Jersey," dated September 9, 1991. It was determined during this

investigation that:

- In MW-2 a saturated parting was noted in the bedrock from 29.0 to 29.5 feet below grade. Perched water and hydrocarbons believed to be No. 6 fuel oil were encountered in this zone. The thickness of the fuel oil floating in MW-2 was estimated between 0.5 and 0.75 inches. Below this zone, an underlying confined aquifer was encountered at MW-2 at 34.0 to 35.0 feet below grade.

- Review of data from MW-1 indicated that the perched zone and confined aquifer encountered in MW-2 also exists at this location.

- The uppermost aquifer in the area of MW-3, and MW-4, and MW-5 appears to be under unconfined conditions.

- Approximately 0.25 inches of fuel oil was observed in the purge water from MW-2 at the time of sampling. In addition, fuel oil droplets were observed in the purge water from MW-1.

- Of the five wells, MW-2 showed the highest concentrations of petroleum hydrocarbons. Hydrocarbons were also detected in MW-1.

- More extractable organics were detected in MW-2 than in the other four wells, although generally at levels just above the CRQL.

- 1,1,1-Trichloroethane was present in every well, with the highest concentration present in MW-2. 1,1-Dichloroethane was detected in four wells (MW-1, MW-2, MW-3, and MW-4), with the highest concentration occurring in MW-3. MW-3 also contained the highest level of 1,1-dichloroethene, which was found in three wells (MW-2, MW-3, and MW-4). Vinyl chloride also was detected in MW-3. Other volatiles detected in MW-3, MW-1, and/or MW-5, included benzene, toluene, cis-1,2-dichloroethane, and chloroform.

- Formaldehyde was detected in MW-3, MW-4 and MW-5 at levels from 140 μg/L to 2500 μg/L. In addition, cyanide was detected in MW-3, and total chromium in MW-4 and MW-5.

- No organic compounds were detected in drummed drilling cuttings.

2.0 MONITORING WELL LOCATIONS

Five monitoring wells (MW-6 through MW-10) were installed as part of the Phase II investigation at Kodalux to further investigate groundwater conditions at the facility. The well locations were slightly modified from the locations stated in the original work plan, due to the presence of underground utilities and overhead interferences. Final monitoring well locations are described below, and are shown on a site map, presented in Figure 1.

MW-6	Located near the southwestern corner of the property.
MW-7	Located approximately 110 feet west of MW-2, just north of the westernmost loading dock.
MW-8	Located along the western property boundary, approximately 370 feet north of NJ Highway 208.
MW-9	Located in the north parking lot, approximately 220 feet north of MW-2.
MW-10	Located approximately 30 feet south of the southeastern corner of the building.

Coordinates and elevations of the resultant wells were measured by Donald H. Stires Associates, New Jersey-licensed surveyors. Data were tied to New Jersey Geodetic Survey Control and are included on the site map (Figure 1).

3.0 MONITORING WELL AND PILOT BOREHOLE INSTALLATION

3.1 Methodology - Monitoring Well Drilling

Five monitoring wells were installed during this investigation. All borings were completed as bedrock monitoring wells in accordance with NJDEP specifications (Appendix A), and were designed to monitor the uppermost aquifer.

Split-spoon samples were collected at 5-foot intervals during well construction. Borings, 10 inches in diameter, were advanced to each split spoon sample interval using air rotary methods. Spoons were driven and samples collected until refusal at the bedrock surface. The soils were classified and inspected for signs of visible contamination.

After bedrock was encountered, the 10-inch diameter borings were advanced 5 feet into competent bedrock using air rotary methods, after which 6-inch diameter steel casings were set. A cement-bentonite grout was emplaced into the annular space from the bottom of the casing to the ground surface. The grout was pumped under pressure through a trèmie pipe to ensure positive placement of the grout. Grout was allowed to set for a minimum of 12 hours. After allowing the grout to set, 6-inch diameter borings were then advanced below the steel casings to approximately 10 feet below the water table but not greater than 25 feet below the bottom of the casing. Rock cuttings were visually inspected. Bedrock stratigraphy was classified based on visual inspection of the cuttings, drilling time, and drilling method responses to lithologic variability. Logs of borings are presented in Appendix B.

To protect the wells against damage from vandalism or vehicular traffic, flush-mount manholes were slipped over the casing and anchored 1 foot below grade with grout. The steel casings were fitted with sealed locking caps and locks. A 2-foot by 2-foot by 4-inch thick concrete pad was poured into a flush mount form fitted around the manhole cover.

Efforts were made to reduce the possibility of introducing or carrying-over contamination from one borehole to another via the well bore. Equipment was steam-cleaned prior to each borehole. Cleaning was performed at a temporary decontamination pad. The decontamination materials and pad were containerized in a 55-gallon drum upon project completion, and the drum was labeled to identify the date filled and the source (i.e., decon pad and sediment). Soil and rock cuttings from each well were placed in 55-gallon DOT drums upon generation, and the drums were labeled to identify the date filled and the source (i.e., MW-3 soil cuttings).

During drilling activities, an HNu, and Drager tubes for formaldehyde and vinyl chloride, were used periodically to monitor air quality in the breathing zone of the worker closest to the borehole. These results are reported in Section 3.3.

3.2 Methodology - Pilot Borehole Drilling

Six pilot boreholes were advanced during this investigation. The pilot boreholes were designed to investigate (and attempt to delineate) the No. 6 fuel oil that was encountered in a perched zone in monitoring wells MW-1 and MW-2. All pilot boreholes were abandoned after sampling with the exception of PB-1, which was completed as monitoring well MW-7.

Borings 6 inches in diameter were advanced using air rotary methods. Undisturbed split-spoon samples were collected at 5-foot intervals in advance of the drill bit, until refusal at bedrock. The soils were classified by a Radian geologist and inspected for signs of visible contamination. Logs are presented in Appendix B.

The borings were advanced into bedrock until groundwater was encountered. Close attention was paid to the cuttings, drilling time, and drilling responses to determine whether any perched water or fuel oil was encountered. Bedrock stratigraphy was described based on visual inspection of the cuttings, drilling time, and drilling responses to lithologic variability.

The pilot boreholes were left open until a sufficient volume of groundwater had accumulated to fill 1-liter sample containers required for TRPH analyses. Upon sufficient accumulation, the groundwater samples were collected; these boreholes were not developed prior to sampling. Following sampling, the boreholes were abandoned by filling with a cement-bentonite grout. The grout was pumped under pressure through a tremie pipe to ensure positive placement.

To prevent cross-contamination of groundwater, all drilling equipment was steam-cleaned prior to drilling each pilot borehole. Soil and rock cuttings from each borehole were stored in labeled 55-gallon drums.

During drilling, Draeger tubes for formaldehyde and vinyl chloride were used periodically to monitor air quality in the breathing zone of the worker closest to the borehole. These results are presented in Section 3.3.

3.3 Results

HNu screening was conducted during the drilling of MW-6, MW-7, and MW-8, before the unit malfunctioned. HNu screening of the soils and breathing zone indicated no zones of detectable vapor concentrations. Drager tubes for formaldehyde and vinyl chloride (used to screen the breathing zone during all drilling activities) indicated no zones of detectable vapor concentrations. No visual signs of contamination were observed in any of the soils.

The unconsolidated overburden encountered consisted of predominantly fine-grained to medium-grained sand, containing variable concentrations of silt, clay, gravel, and rock fragments. As a general rule, the sands were medium-grained and silty; gravel was fine and consisted of sandstone, granite, and aphanitic rock. Rock fragments were predominantly sandstone from the underlying bedrock, with some granite. The majority of the overburden was glacially derived, with the upper materials possibly being fill. HNu screening values and soil classifications were recorded with depth, and are presented in the Drilling Logs, Appendix B.

Bedrock was encountered from approximately 8.5 feet (PB-5) to 20 feet (MW-7/PB-1) below grade. Bedrock encountered generally consisted of hard, red, medium-grained sandstone. All casings were set within this sandstone.

Bedrock encountered beneath the cased sections consisted predominantly of hard to very hard, red, medium-grained sandstone, with softer, water-bearing sandstone and shale zones noted periodically (in Appendix B).

None of the pilot boreholes intersected the perched zone containing fuel oil that had been encountered during the installation of MW-1 and MW-2. This conclusion is based on close observation of the drilling activities, and groundwater sampling activities that failed to show any indication of a free-phase hydrocarbon layer.

Total depths for completed monitoring wells varied from 36.25 feet (MW-7) to 39.52 feet (MW-9) below top of casing. Total boring depths ranged from approximately 36.7 to 39.9 feet below surface grade. Bedrock lithologies and observations were recorded with depth and are presented in the Drilling Logs, Appendix B. Monitoring well schematics are presented in Appendix C.

Thirty-two drums were generated during this phase of work; 22 contained soil and rock cuttings, 5 contained development water, 3 contained purge water, 1 contained the decon pad and sediment, and 1 contained sample tubing and bailers. A total of 58 drums have been generated during drilling and sampling activities to date.

Following completion, the wells were surveyed by Donald H. Stires Associates, a professional land surveyor licensed in the State of New Jersey. A copy of each "Monitoring Well Certification Form - B" is included in Appendix D.

4.0 WELL DEVELOPMENT

4.1 Methodology

All newly installed monitoring wells were developed to remove any material (solid or liquid) introduced to the well during drilling and well installation and to promote groundwater flow into the well. Development was conducted on October 28 and 29, 1991. Initial static water levels were collected prior to development of each well. A submersible pump was used to develop MW-7. The remaining wells were developed with a bailer. Each well was pumped or bailed to dryness at least once. Following development, total well depth was measured in each well. Field records of well development are presented in Appendix E. Development water was containerized in labeled 55-gallon DOT drums. The labels identified date filled and the source (i.e., MW-3 development water). Five drums contained development water.

4.2 Static Water Measurements

Depths to static water from top of well casings for MW-6 through MW-10 were measured prior to development activities. These and subsequent measures are recorded on the well logs (Appendix B). Depths to static water from top of well casings for all monitoring wells were measured on November 14, 1991, prior to well purging and sampling activities. A second set of water level measures were collected on December 19, 1991. November water level elevations varied from 56.25 ft. MSL (MW-6) to 70.86 ft. MSL (MW-5). December water level elevations varied from 60.53 ft. MSL (MW-3) to 72.76 ft. MSL (MW-5). Water level elevations generally rose (MW-1 through MW-9) from November to December, with a maximum rise of 4.88 ft (MW-6) and an average rise of 1.7 ft. Water level elevation decreased 2.74 ft. in MW-10.

Water level elevations are presented in Table 1, and the configurations of the groundwater table for November and December are depicted in Figures 2 and 3, respectively.

4.3 Groundwater Flow

Based on this investigation and the Phase I investigation, groundwater appears to exist under both confined and unconfined conditions under the facility. Near MW-1 and MW-2, the aquifer is under slightly artisan conditions due to a locally confining sandstone bed overlying the saturated zone. The aquifer is unconfined at the remainder of the site.

Groundwater is entering the site predominantly from the east-southeast. A localized groundwater mound exists in the vicinity of monitoring wells MW-4 and MW-5, as indicated in the groundwater elevation maps for measurements taken November and December 1991 (Figures 2 and 3, respectively). This mound, which is possibly due to a bedrock "high" located beneath the facility, diverts groundwater to the north and to the west. Bedrock elevation contours are presented in Figure 4. It is not known what impact, if any, the basement floor drains in this vicinity may have on groundwater flow.

The groundwater surface roughly parallels the bedrock surface and is generally located approximately 15 feet below the bedrock surface. Cross-sections depicting the hydrogeology are presented in Figures 5 and 6.

5.0 SAMPLING PROCEDURES

5.1 General

This section describes procedures used in the sampling of the groundwater monitoring wells (MW-1 through MW-10), pilot boreholes (PB-1 through PB-6), and drilling cuttings. Sampling and analysis were performed as described in the September 13, 1991 work plan. Monitoring well and pilot borehole locations are shown in Figure 1. Monitoring well groundwater samples were analyzed for volatile organics, base/neutral and acid-extractable compounds, total cyanide, formaldehyde, total recoverable petroleum hydrocarbons, silver, chromium, and total and hexavalent chromium. Pilot borehole groundwater samples were analyzed for total recoverable petroleum hydrocarbons. Drilling cuttings were analyzed for waste disposal characterization. Groundwater sampling procedures discussed in RCRA Ground-Water Monitoring Technical Enforcement Guidance Document, USEPA, September 1986, were followed. The following subsections discuss sampling procedures and analytical methods.

5.2 Sampling Equipment

Groundwater sampling was performed using dedicated, non-dedicated, and miscellaneous equipment and reagents. Dedicated equipment was used at only one well. Non-dedicated equipment was used in all wells, and a strict decontamination regimen was followed between wells. Miscellaneous equipment was used at each well but did not require decontamination as there was no direct contact with the samples. Each type of equipment necessary to complete the sampling is discussed below.

Dedicated Equipment: Each monitoring well and pilot borehole had a dedicated Teflon bailer and Teflon-coated stainless steel line to avoid potential cross-contamination of wells. Tubing associated with the purge pump was dedicated to each well.

Non-Dedicated Equipment: Non-dedicated equipment included a purge pump and an electronic water level indicator.

Miscellaneous Equipment and Reagents: Other equipment and reagents used during the sampling are listed below:

- Conductivity/temperature/pH meter, capable of measuring conductivity to 20,000 uS, temperature from -30.0 to 105.0°C, and pH from 0.01 to 14.00;
- 200-mL wide-mouth glass bottle;
- Rinse bottles for Alconox® and water;
- Sample labels;
- Clear tape (to protect sample labels);
- Ice for sample preservation;
- Chemicals for sample preservation;
- Distilled water;
- Teflon tape (for wrapping the sample labels);
- Calibration buffers for pH meter;
- Calibration solution for conductivity meter;
- Safety equipment (detailed in health and safety plan); and
- Sample containers.

5.3 Monitoring Well Sampling Procedures

The sampling procedures presented below represent the minimum requirements to ensure the collection of acceptable monitoring well groundwater samples. The procedures are listed in the order in which they were performed in the field.

Static water level measurement: An electronic water level indicator was used to determine the static water level in each well before purging and sampling were performed. Markings on the tape allowed for measurement to 0.01 foot. The tape was decontaminated before advancing to the next well.

Well Purging: Standing water from the well casing was removed before samples were collected. Purging was performed as follows: Teflon tubing was placed into each well with the open end just above the well bottom. For wells with medium recharge rates, a minimum of one well volume was removed with removal continuing until well drawdown approached dryness. Wells with low recovery rates were purged once to near dryness. Evacuation rates were kept below 5 gallons per minute, and the well was never pumped completely to dryness. In addition, the pump intake was never placed more than six feet below the static water level in the well.

A total of 3 drums of water were containerized during well purging. Purge tubing and sample bailers were containerized in one drum.

Temperature, pH, and conductivity: Before and after collection of samples, the temperature, pH, and conductivity probes were placed in a wide-mouthed glass bottle into which a representative sample of well water has been poured. The probes were allowed to equilibrate with the water sample before final readings were taken from the meters. The glass bottle was rinsed with distilled water and a portion of the groundwater sample before use at each well.

Sample Collection: A total of ten groundwater samples were collected. The samples were collected at MW-1, through MW-10. The water level within each well had recovered (within 2 feet of the pre-purge static water level) before samples were collected. A dedicated bailer was unwrapped, tied to a new draw line, and lowered slowly into the well, to minimize volatilization of organic compounds.

Once the bailer was filled, it was slowly withdrawn from the well. The sample was poured from the top of the bailer into each sample container as appropriate, and into a separate container for field measurements, as previously described.

Trip Blanks: For each analytical parameter, one sample container was filled with Type II reagent grade water in the laboratory, shipped to the site with the empty containers, handled like a sample, and returned to the laboratory for analysis.

Equipment Blanks: For each analytical parameter, one sample container was filled with Type II reagent grade water by running it through a decontaminated bailer prior to use. The container was then sealed, handled like a sample, and sent to the laboratory for analysis.

5.4 Pilot Borehole Sampling Procedures

The pilot boreholes were left open until a sufficient volume of groundwater had accumulated to fill a 1-liter sample container required for TRPH analyses. Samples, trip blanks, and equipment blanks were collected in the same manner as described above.

5.5 Drilling Cutting Sampling Procedures

Sample Collection: Drilling cuttings were collected from each 5-foot increment during monitoring well and borehole installation. Cuttings were collected in individual 4-ounce jars. Upon completion of drilling, the cuttings from these jars were transferred into a stainless steel bowl, composited into one sample, and transferred into the appropriate sample containers.

Trip Blanks: For each analytical parameter, one sample container was filled with Type II reagent grade water in the laboratory, shipped to the site with the empty containers, handled like a sample, and returned to the laboratory for analysis.

5.6 Decontamination

Dedicated equipment does not require the strict decontamination regimen that is applied to non-dedicated equipment. Dedicated bailers were disposed of at the conclusion of sampling.

All non-dedicated equipment was decontaminated immediately after sampling, and before moving on to the next sampling station, to prevent cross-contamination of well water samples. The decontamination regimen was performed as follows:

- Non-phosphate soap and water rinse; and
- Final distilled water rinse.

5.7 Analytical Parameters

This section discusses the analytical parameters and methods performed on the monitoring well groundwater samples, pilot borehole groundwater samples, and drilling cutting samples. Recra Environmental, Inc. (New Jersey Lab ID #73455) in Amherst, New York, performed the following analyses:

Monitoring Well Groundwater Samples:

- Base neutral and acid extractable compounds, by EPA Method 625, plus the identification and quantification of the 15 highest non-targeted compounds and the total number of peaks;
- Hydroquinone, by EPA Method 8270; – [illegible]
- Volatile organics, by EPA Method 624, including o-, m-, and p-xylenes, plus the identification and quantification of the 15 highest non-targeted compounds and the total number of peaks;

- Formaldehyde, by NIOSH Method 3500;
- Total petroleum hydrocarbons, by EPA Method 418.1;
- Total cyanide, by EPA Method 9010;
- Total silver, by atomic absorption, EPA Method 272.1;
- Total chromium, by EPA Method 218.2; and WP-218.1
- Hexavalent chromium, by EPA Method 7195. WP-218.4

One field duplicate, one trip blank, and one equipment blank were collected for analysis of each of the parameters listed above. Due to a laboratory oversight, the trip blank was not analyzed for hexavalent chromium.

VOs only anyway

Pilot Borehole Groundwater Samples:

- Total recoverable petroleum hydrocarbons (TRPH) by EPA Method 418.1.

One field duplicate, one trip blank, and one equipment blank were collected for analysis. Due to a laboratory oversight, the trip blank was not analyzed for TRPH.

Drilling Cuttings:

- Target Compound List (TCL) volatile organics plus trichlorofluoromethane and 1,1,2-trichloro-1,2,2-trifluoroethane, by EPA Method 8240;
- TCL semi-volatile organics plus 1,2-dichlorobenzene, nitrobenzene, and pyridene, by EPA Method 8270;
- Isobutanol, by EPA Method 8015;
- TCLP metals;
- Ignitability;

- Corrosivity; and
- Reactivity.

One trip blank was collected for analysis of TCL volatile organics plus trichlorofluoromethane and 1,1,2-trichloro-1,2,2-trifluoroethane by EPA Method 8240; and isobutanol by EPA Method 8015.

6.0 ANALYTICAL RESULTS

The five pilot boreholes, and the pilot borehole and monitoring well drilling cuttings, were sampled October 24 through October 28, 1991. The ten monitoring wells were sampled November 15, 1991. The location of the pilot boreholes and monitoring wells is shown in Figure 1. Samples were sent to Recra Environmental, Inc. for analysis.

The field data collected with the samples are presented below. Also discussed below are the analytical results for these analyses, followed by a brief discussion of the blank and quality control results. Copies of the analytical results are found in Appendix F.

6.1 Field Data

Water table elevation data are provided in Table 1. Table 2 presents the field measurement data collected concurrently with the monitoring well groundwater samples. The field data includes the depth to water; purge start and stop times; total volume purged from the well; well water pH, temperature and conductivity; and a general assessment of the well recovery rate.

6.2 Monitoring Well Groundwater Analytical Results

Table 3 and Table 4 present the results of the organic and inorganic analyses, respectively. Table 3 presents results for only those Base-Neutral and Acid Extractable (BNAE) Organics and Volatile Organics which were detected in any of the monitoring wells. Table 4 presents results for all the inorganic analytes, whether they were detected in the monitoring wells or not. Both tables list the analytical methods used and note which laboratory performed the analysis. Results are also shown in Figure 7.

Any results detected above the detection limit were reported in the Recra Environmental Inc. laboratory report. Any results detected below the detection limit were reported in the laboratory report with a "J" qualifier, indicating that concentrations were estimated, but were greater than zero. In Tables 3 and 4, results reported by Recra less than the detection limit have been replaced with the symbol "J," to indicate that low levels of the analyte were detected but with less quantitative certainty. The reported values for these low-level results are contained in the individual Recra laboratory report in Appendix F.

Base/Neutral and Acid Extractables: As seen in Table 3, no analytes on the Method 625 Priority Pollutant list were detected above the CRQL. MW-2 contained two Method 625 analytes at levels less than the CRQL. These included naphthalene and phenanthrene. In addition, one other compound - 1,3-dichlorobenzene - was detected in MW-3 at a level below the CRQL. The presence of phenanthrene appears to be possibly due to the shipping and handling process, laboratory contamination, or imprecision in detection at low concentrations (Section 6.5.).

Up to nine Tentatively Identified Compounds (TICs) were also reported for each sample. The TICs are not included in the calibration of the instrument; results should be considered estimates only. Similarly, since no external calibration is performed for TICs, specific detection limits are not available; the concentrations are estimated based on EPA recommended procedures for TIC identification. Concentrations of 2-fluoro-4-nitrophenol, unsaturated hydrocarbon, dimethyl naphthaline, and an unknown were estimated in MW-2. 1,3-Dithiolane, dichlorobenzenamine, chlorodimethyl phenol isomer, alkly substituted hydrocarbon, and five unknown analyte concentrations were estimated in MW-3. One oxygenated compound concentration was estimated in each of the following: MW-6, MW-7, and MW-9.

The gas chromatography/mass spectrometry results for each well sample were examined for the presence of hydroquinone. Hydroquinone was not one of the compounds contained in the Method 625 target analyte list, and therefore was not in the external calibration standards; instead, concentrations would have been estimated against an internal standard. However, no hydroquinone was detected in any well sample above the estimated detection limit of 12 μg/L.

Volatiles: 1,1,1-trichlorethane was detected in eight wells and estimated present in one well. Detected concentrations ranged from 5.5 μg/L in MW-4 to 13000 μg/L in MW-2. 1,1-Dichloroethane was detected in five wells and estimated present in one well. Detected concentrations ranged 8.6 μg/L in MW-8 to 110 μg/L in MW-3. 1,1-Dichloroethene was detected in four wells and estimated present in three wells. MW-1 contained the lowest detected concentration of 17 μg/L and MW-7 contained the highest level at 460 μg/L. Chloroform was detected in three wells at concentrations ranging from 6.0 μg/L to 12 μg/L and estimated present in three wells. MW-6 contained the highest level at 12 μg/L. Trichlorethene was detected in three wells and estimated present in two wells. A maximum concentration of 13 μg/L was detected in MW-9. Trans-1,2-Dichloroethene was detected at 9.0 μg/L in MW-1 and estimated present in three other wells. Vinyl chloride was detected in MW-3 at 110 μg/L and estimated present in three other wells. Chloroethane was detected at 15 μg/L in MW-2 and estimated present in two other wells. Benzene was detected at 13 μg/L in MW-3. Tetrachloroethane was estimated present in MW-2 and MW-7 and Bromodichloromethane, chlorodibromomethane, toluene, 1,1,2-Trichloroethane and o/p-xylene were each estimated present in on well. Chlorobenzene was estimated present in the equipment blank.

The tentatively identified compounds (TICs) hexachlorobutadiene and 1,1,2-trimethyl-1,2,2-trifluoroethane were each estimated present in one well, MW-3 at 90 μg/L, and MW-6 at 4.3 μg/L, respectively.

Petroleum Hydrocarbons: Seven wells (MW-1, MW-2, MW-4, MW-6, MW-7, MW-8, and MW-9) contained detectable levels of total recoverable petroleum hydrocarbons (TRPH), as analyzed by EPA Method 418.1. The amount reported ranged from 610 μg/L to 12,000 μg/L. MW-2 contained the highest quantity of petroleum hydrocarbons, with 12,000 μg/L. MW-1 contained the lowest detected quantity of petroleum hydrocarbons, with ND (Not Detected) in one sample and 610 μg/L in the sample duplicate. Low levels of TRPH appeared to be possibly due to the shipping and handling process, laboratory contamination or imprecision in detection at low concentrations (see Section 6.5).

Formaldehyde: Formaldehyde was detected in six wells MW-1, MW-3, MW-4, MW-5, MW-6, and MW-10. MW-3 contained the highest quantity of formaldehyde, with 260 μg/L.

Inorganics: MW-3, MW-6, MW-7 and MW-8 contained total cyanide at concentrations ranging from 0.017 mg/L to 0.24 mg/L. Total silver concentrations ranged from 0.01 mg/L to 0.013 mg/L in MW-4, MW-6, MW-7, and MW-10. MW-1 through MW-7 contained concentrations of total chromium ranging from 0.011 mg/L to 0.093 mg/L. Low levels of total chromium appeared to be possibly due to sampling, the shipping and handling process, laboratory contamination, or imprecision in detection at low concentrations (Section 6.5). Hexavalent chromium was detected in MW-2 and MW-7 at 0.016 mg/L and 0.028 mg/L, respectively.

6.3 Pilot Borehole Analytical Results

Table 5 presents the results of the total recoverable hydrocarbon (TRPH) analyses. TRPH was detected in PB-6 at 680 μg/L (0.680 mg/L), and was not detected in samples collected from the other five pilot boreholes.

6.4 Drilling Cuttings Analytical Results

Table 6 presents the results of the drilling cutting waste disposal characterization. No volatile organics, semivolatile organics, or isobutanol were detected in the cuttings. In addition, analyses indicated the cuttings do not exhibit any hazardous waste characteristics.

6.5 Quality Assurance/Quality Control

Blanks

One equipment blank and one trip blank were collected with the monitoring well samples. Similarly, one equipment blank and one trip blank were collected with the pilot bore and drill cutting samples.

Equipment blank results were intended to indicate if contamination was associated with the sampling, shipping, or handling phases of the project, or with the equipment itself. (Disposable bailers were used for the monitoring well sampling and pilot borehole sampling, so decontamination technique was not a source of possible equipment contamination. Soil boring equipment was steam-cleaned between sample locations, so equipment blank results for pilot borings do not include the effects of any possible soil boring equipment contamination.) Trip blank results indicate whether contamination has occurred due to the shipping and handling phase itself. Method blanks also were analyzed and reported for each analytical method, and indicate if contamination occurred during sample analysis or preparation.

As seen in Table 7, no compounds were detected in any of the method blanks associated with the monitoring well groundwater samples, indicating that laboratory processing did not contribute to sample analyte concentrations. Low concentrations of chlorobenzene and total chromium were detected in the equipment blank collected with the monitoring well samples. Low concentrations of phenanthrene

and TRPH were also detected in the trip blank. The concentrations of chlorobenzene and phenanthrene were less than the laboratory quantitation limits for these compounds; the concentrations of the total chromium and TRPH were just above their respective quantitation limits. It is possible that similar low levels of these compounds may be found in the monitoring well samples; however, no high levels of contamination due to shipping or sampling equipment are indicated by these results.

No contaminants were detected in the blanks collected with the pilot boring samples or the drilling cuttings sample.

Field Duplicates

One set of field duplicates was collected for the monitoring well samples (MW-1), and one for the pilot boring samples (PB-4). Table 8 presents the results for each duplicate set, along with the Relative Percent Differences (RPDs) for each data set.

The RPDs for the monitoring well duplicate samples indicated good analytical and sample-to-sample precision. All RPD values were less than 10%. In a few cases, the RPD value could not be calculated since one of the duplicate results was ND (Not Detected). This was true for the vinyl chloride, TRPH, and the total chromium analyses. In all these cases, the detected amounts were just above the laboratory quantitation limit; at low levels, this analytical variability may be expected. Furthermore, for TRPH and total chromium, the concentrations of the detected compounds were roughly equal to the concentrations of these same compounds found in the blank samples. These results are indicative of the imprecision in detection of the low level of contaminants seen both in the field duplicate and in the blank samples.

RDP values could not be calculated for the pilot borehole duplicate samples since both of the sample results for TRPH were ND (Not Detected).

Surrogates

All surrogate recoveries for the semi-volatile analyses were within the specified limits. All but one of the surrogate recoveries for the volatiles analyses were within the specified limits.

7.0 CONCLUSIONS

Activities have been completed in response to the fuel oil discharge, in accordance with NJDEP procedures required to investigate and initiate corrective actions for a hazardous substance discharge from an underground storage tank system. Reporting Requirements and Immediate Cleanup Requirements were addressed and summarized in a Discharge Investigation and Corrective Action Report (DICAR), authored by CA Rich Consultants, Inc., dated October 3, 1990. Completion of this Phase II Groundwater Investigation and the Final Investigation Report of September 9, 1991, address Discharge Mitigation Requirements.

Soil containing fuel oil in the vicinity of the tanks was excavated by CA Rich Consultants. No visual signs of fuel oil were observed by Radian Corporation in any of the soil or rock cuttings during installation of MW-2 through MW-10. However, fuel oil was noted in water from a perched water zone at MW-2. Similar conditions were noted by CA Rich during installation of MW-1. Pilot boreholes, PB-1 through PB-6, were installed in order to further define the areal extent of fuel oil noted in this perched zone. No visual signs of fuel oil were observed in any of the drilling cuttings or groundwater samples collected from these boreholes. During resampling of MW-2, oil droplets were noted in the water.

Total Recoverable Petroleum Hydrocarbon (TRPH) was detected in PB-6 at 680 μg/L (0.680 mg/L) and was not detected in samples collected from the other five pilot boreholes. TRPH concentrations detected in MW-1, MW-2, and MW-7, November 15, 1991 samples, were ND (Not Detected) and 610 μg/L (Duplicate), 12,000 μg/L, and 1,100 μg/L, respectively. The low levels of TRPH detected in PB-6 and MW-1 appear to be possibly due to the shipping and handling process, laboratory contamination, or imprecision in detection at low concentrations. These levels were less than concentrations detected in MW-6, MW-8, and MW-9. MW-6, MW-8, and MW-9 results indicated that up to 5,200 μg/L (MW-8) may represent regional groundwater quality.

Elevated concentrations of TRPH were confined to MW-2, where the fuel oil was noted in a perched zone overlying the uppermost bedrock aquifer. The uppermost aquifer in this area is under slightly confined conditions, reducing the potential for vertical migration of the fuel oil.

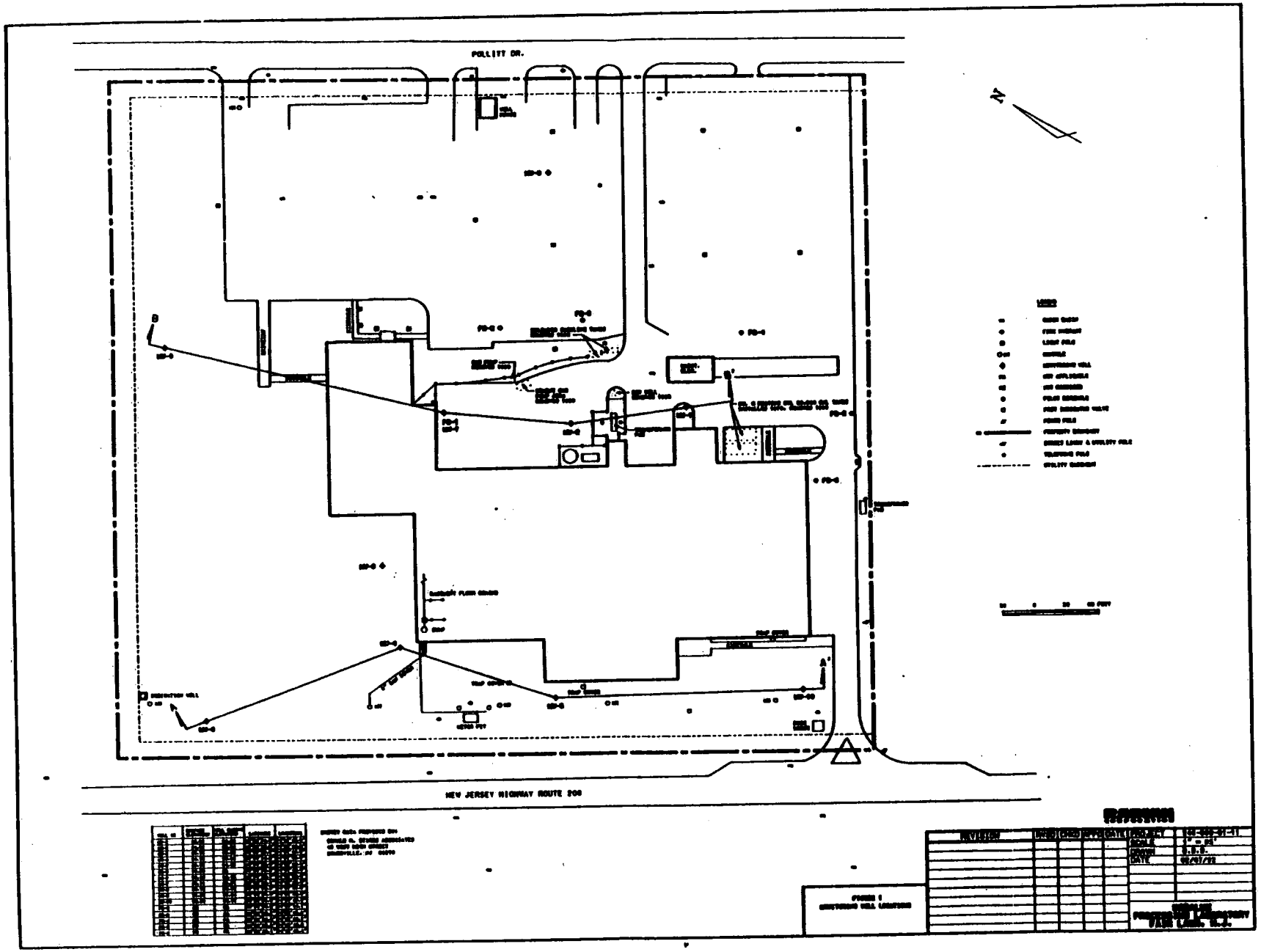
Concentrations of several detected constituents in monitoring well samples exceeded the Federal Drinking Water Standards Maximum Contaminant Level (MCL) and/or the New Jersey MCL (NJMCL) values. Exceedances included:

- Benzene in MW-3 at 13 μg/L (MCL 5 μg/L, 1 NJMCL μg/L);
- 1,1-Dichloroethene in MW-1 at 17 μg/L, MW-3 at 100 μg/L, MW-7 at 460 μg/L, and MW-8 at 46 μg/L (MCL 7 μg/L, NJMCL 2 μg/L);
- 1,1,1-Trichloroethane in MW-1 at 87 μg/L, MW-2 at 13,000 μg/L, MW-3 at 500 μg/L, MW-7 at 2,700 μg/L, and MW-8 at 370 μg/L (MCL 200 μg/L, NJMCL 26 μg/L);
- Trichloroethene in MW-1 at 6.7 μg/L, MW-2 at 7.2 μg/L, and MW-9 at 13 μg/L (MCL 5 μg/L, NJMCL 1 μg/L);
- Vinyl chloride in MW-3 at 100 μg/L (MCL 2 μg/L, NJMCL 2 μg/L); and
- Total Chromium in MW-2 at 0.064 mg/L, MW-4 at 0.093 mg/L, MW-6 at 0.13 mg/L, and MW-7 at 0.065 mg/L (MCL 0.1 mg/L, NJMCL 0.05 mg/L).

Detected trans-1,2-dichloroethane and total silver concentrations did not exceed MCL or MJMCL values. Chloroethane, chloroform, 1,1-dichloroethane, formaldehyde, petroleum hydrocarbons, total cyanide, and hexavalent chromium do not have MCL or NJMCL values; neither do any of the tentatively identified base-neutral and acid extractable organics or volatile organics.

Cyanide concentrations detected in MW-7 (0.24 mg/L) exceeded the New Jersey groundwater quality criteria of 0.2 mg/L.

FIGURES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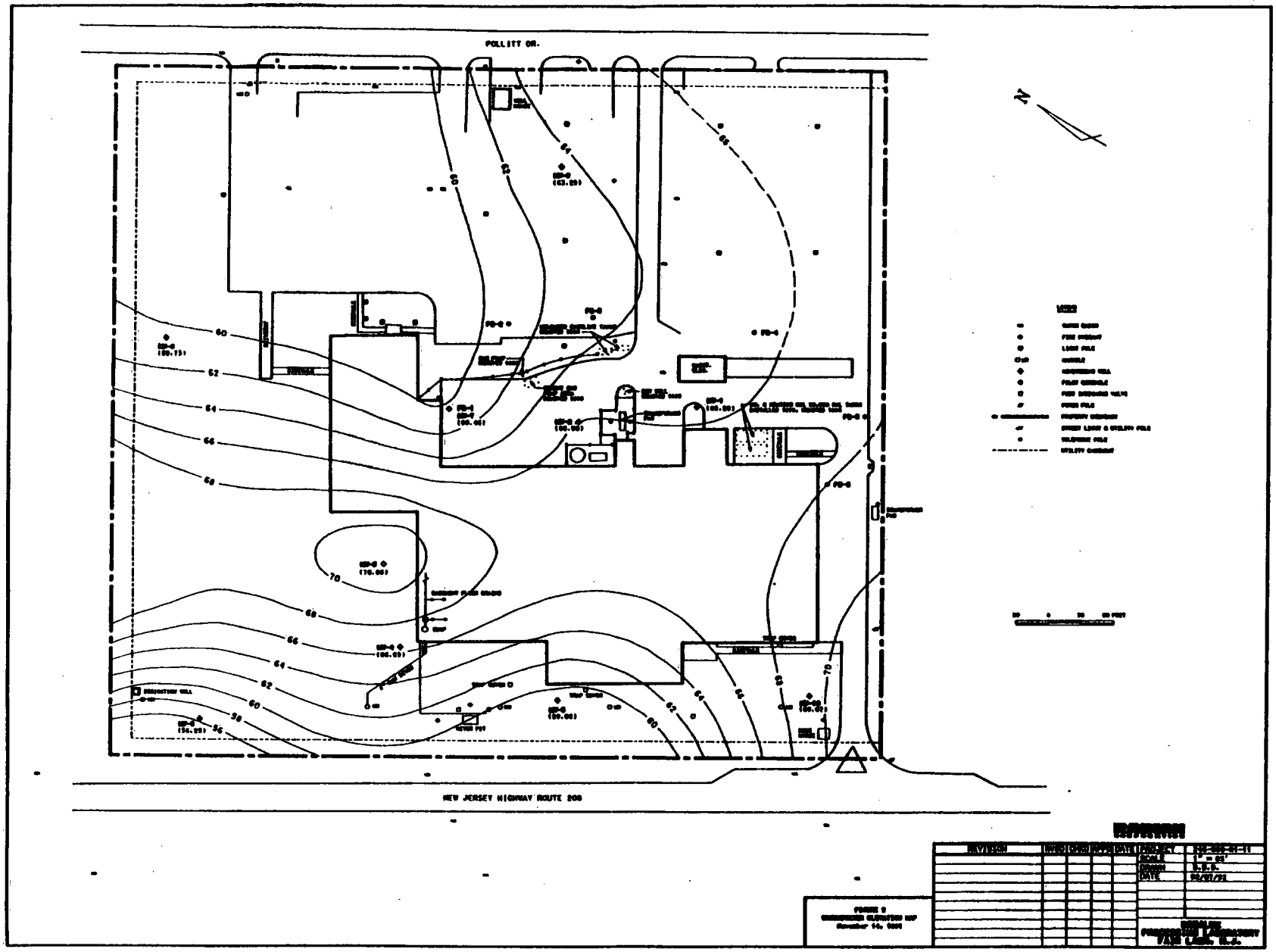
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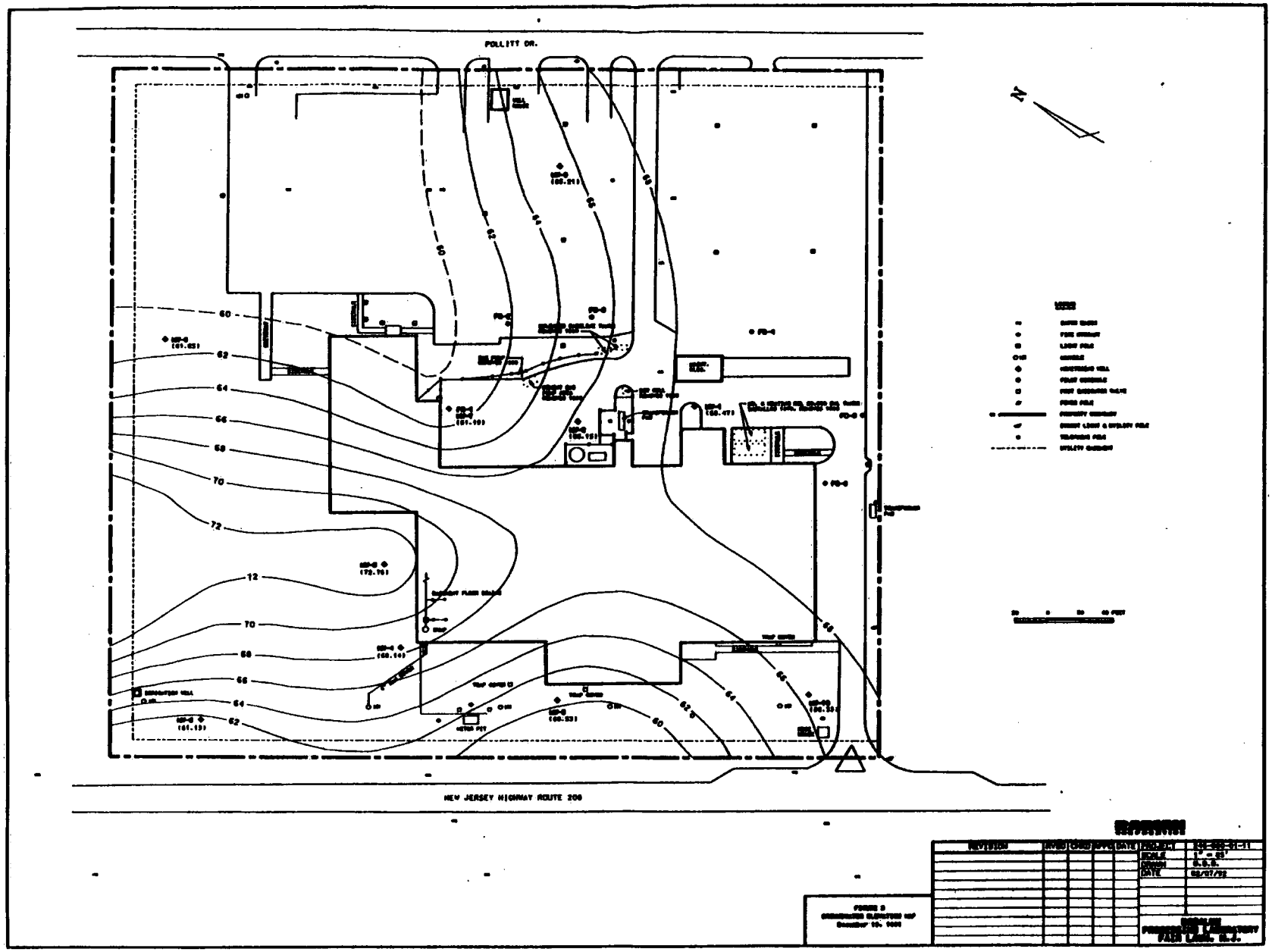
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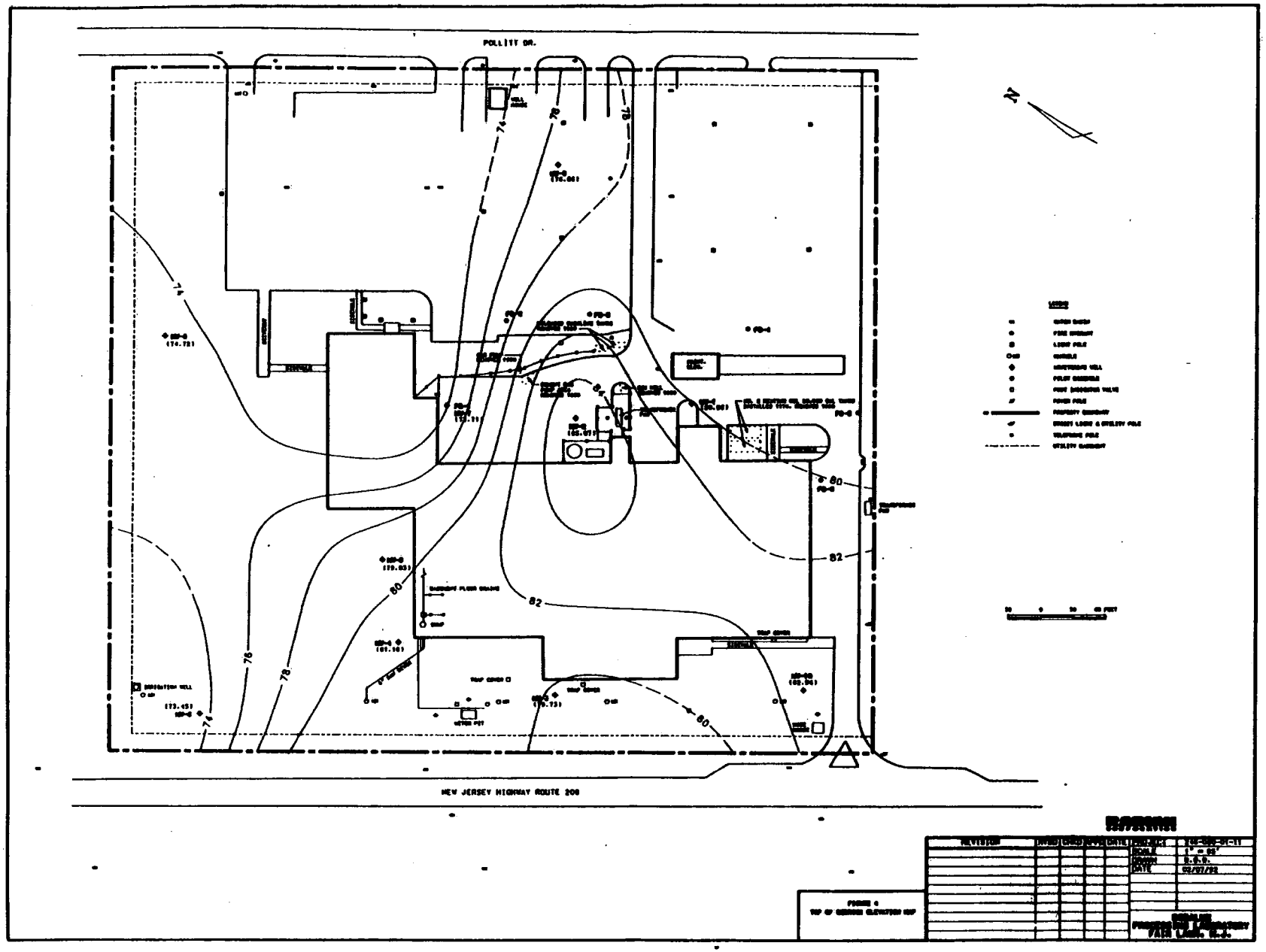
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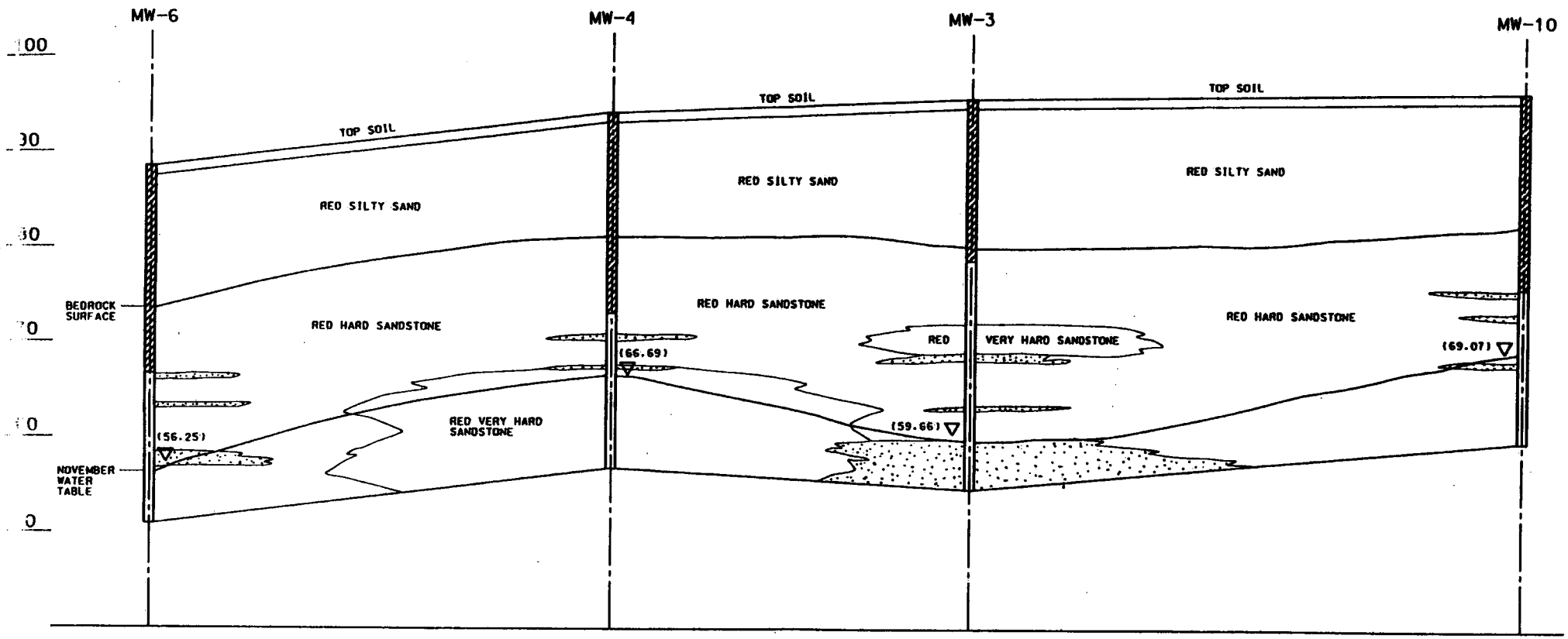


LEGEND

▽ (56.25) NOVEMBER WATER LEVELS

OPEN WELL INTERVAL

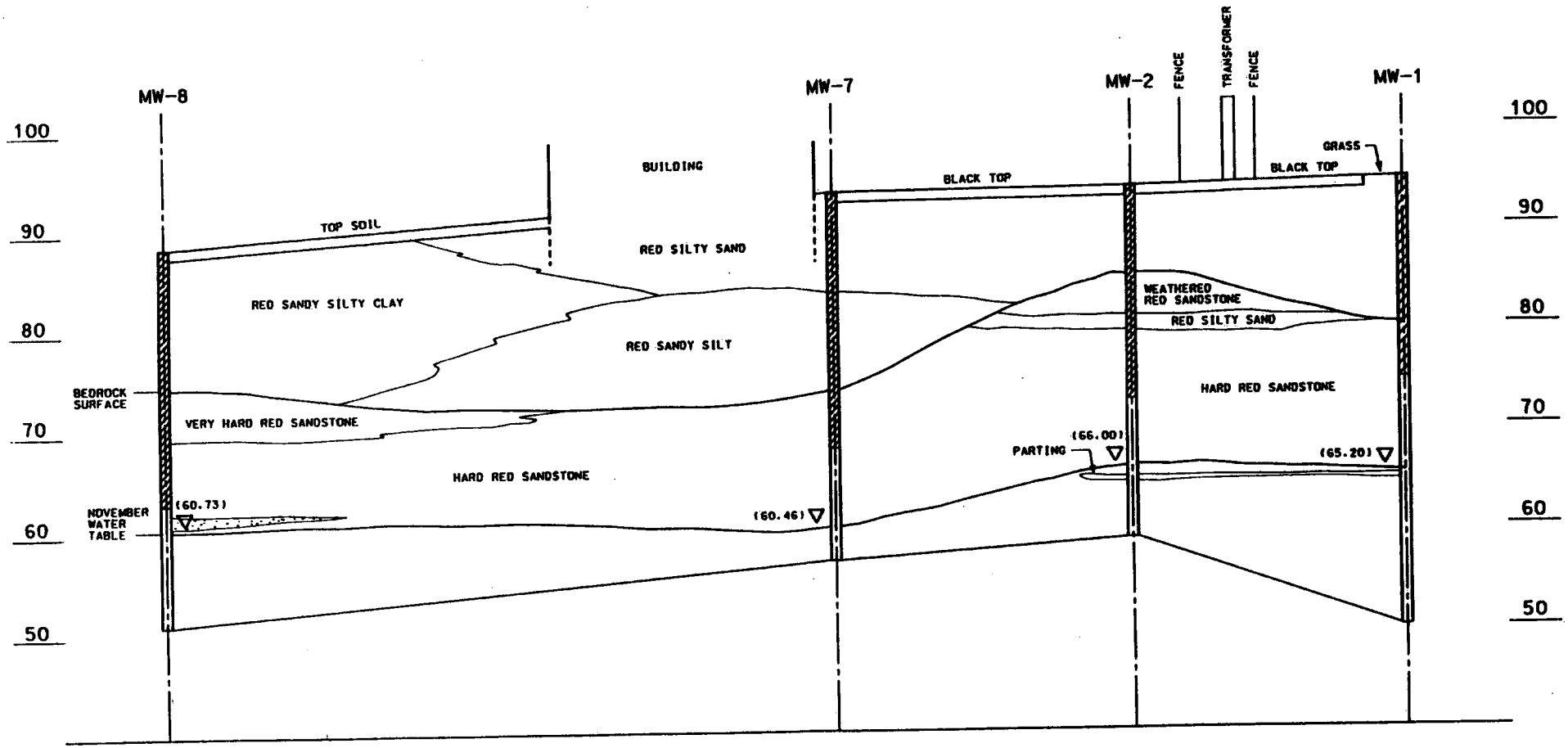
SOFT SANDSTONE OR SHALE

WELL CASING

SECTION A-A'

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

Figure 5
Section A-A'



LEGEND

▽ (60.73) NOVEMBER WATER LEVELS

OPEN WELL INTERVAL

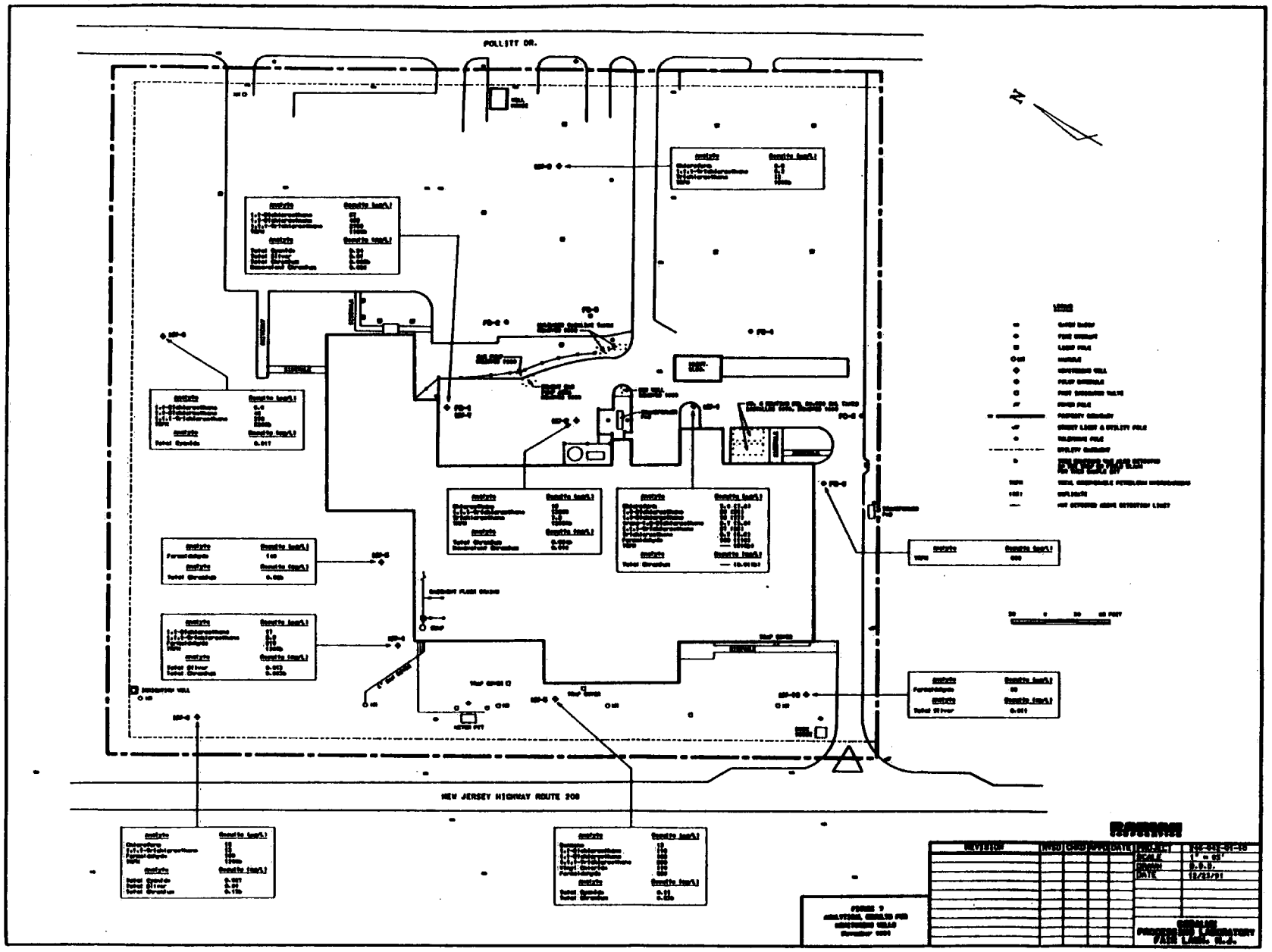
SOFT SANDSTONE OR SHALE

WELL CASING

SECTION B-B'

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

Figure 6
Section B-B'


POLLITT DR.
NEW JERSEY HIGHWAY ROUTE 208
N
REVISION
PROJECT
SCALE
DRAWN
DATE
12/23/91
PROCESSING LABORATORY
FAIR LAWN, N.J.

TABLES

Table 1

Groundwater Elevation Data

Well ID	Groundwater Elevation (ft)	
	11/14/91	12/19/91
MW-1	65.20	68.47
MW-2	66.00	66.15
MW-3	59.66	60.53
MW-4	66.69	68.14
MW-5	70.86	72.76
MW-6	56.25	61.13
MW-7	60.46	61.19
MW-8	60.73	61.65
MW-9	63.29	65.21
MW-10	69.07	66.33

Table 2

Field Data for Kodalux Monitoring Wells

Well ID	Depth to Water	Purge Start Time	Purge Stop Time	Vol Purge	pH	Temp °C	Cond. (µS)	Recovery Rate
MW-1	29.45 ft	1347	1353	35 gal	6.5	17, 17, 17	630, 620, 600	medium
MW-2	27.50 ft	1255	1323	25 gal	6.5	18, 18, 18, 18	830, 750, 670. 650	medium
MW-3	35.60 ft	0845	0910	6 gal (dry)	7, 6.5	16, 17	2390, 2400	slow
MW-4	27.90 ft	1020	1025	14 gal (dry)	6.5	16, 16, 17	4060, 4040, 3930	slow
MW-5	23.80 ft	1045	1050	18 gal (dry)	6.5, 6.0, 6.0	16, 17, 17	2020, 1970, 1920	slow
MW-6	31.90 ft	1140	1145	7 gal (dry)	6.5	15, 15	600, 520	slow
MW-7	32.85 ft	1233	1236	5 gal (dry)	7.5	17, 17	410, 340	slow
MW-8	27.65 ft	1120	1127	13 gal (dry)	7.0	13, 14, 14	620, 390, 370	slow
MW-9	27.95 ft	1203	1217	17 gal (dry)	6.5	16, 17, 17	530, 510, 520	slow
MW-10	27.10 ft	0930	1000	16 gal (dry)	7	14	930, 850	slow

Field Notes:
MW-2 water appeared brownish-clear with oil droplets
MW-4 water appeared brownish-clear
MW-5 water appeared brownish-clear
MW-6 water appeared brownish-clear
MW-7 water appeared clear
MW-8 water appeared clear
MW-9 water appeared brownish-clear
MW-10 water appeared yellowish-clear
(dry) purged to near dryness

1.469 TD - DTW

Table 3

Organic Compounds Detected in Kodalux Monitoring Wells - November 1991

Analyte	Method	Lab	Detection Limit[a] (ug/L)	Results (ug/L)													
				MW-1	MW-1 (DUP)	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Equipment Blank	Trip Blank	Method Blank
Base - Neutral and Acid Extractable Organics (BNAE)	EPA 625	Recra															
1,3-Dichlorobenzene			14	-	-	-	-	J	-	-	-	-	-	-	-	-	-
Naphthalene			14	-	-	J	-	-	-	-	-	-	-	-	-	-	-
Phenanthrene			14	-	-	J[b]	-	-	-	-	-	-	-	-	-	J	-
Tentative Identified BNAE Compounds[d]	EPA 625	Recra															
Unknown (Scan #722)			c	-	-	11	-	-	-	-	-	-	-	-	-	-	-
2-Fluoro-4-Nitrophenol (Scan #746)			c	-	-	7.3	-	-	-	-	-	-	-	-	-	-	-
Unsaturated hydrocarbon (Scan #938)			c	-	-	6.3	-	-	-	-	-	-	-	-	-	-	-
Dimethyl naphthalene isomer (Scan #1053)			c	-	-	6.4	-	-	-	-	-	-	-	-	-	-	-
1,3-Dithiolane (Scan #525)			c	-	-	-	7.1	-	-	-	-	-	-	-	-	-	-
Dichlorobenzenamine isomer (Scan #955)			c	-	-	-	26	-	-	-	-	-	-	-	-	-	-
Chlorodimethyl phenol isomer (Scan #1017)			c	-	-	-	10	-	-	-	-	-	-	-	-	-	-
Unknown (Scan #1153)			c	-	-	-	8.0	-	-	-	-	-	-	-	-	-	-
Unknown (Scan #1312)			c	-	-	-	130	-	-	-	-	-	-	-	-	-	-
Unknown (Scan #1363)			c	-	-	-	6.0	-	-	-	-	-	-	-	-	-	-

Table 3

(Continued)

Analyte	Method	Lab	Detection Limit[a] (µg/L)	Results (µg/L)													
				MW-1	MW-1 (DUP)	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Equipment Blank	Trip Blank	Method Blank
Alkyl substituted hydrocarbon (Scan #1456)			c	-	-	-	12	-	-	-	-	-	-	-	-	-	-
Unknown (Scan #1577)			c	-	-	-	21	-	-	-	-	-	-	-	-	-	-
Unknown (Scan #1745)			c	-	-	-	34	-	-	-	-	-	-	-	-	-	-
Oxygenated Compound (Scan #874)			c	-	-	-	-	-	-	9.9	-	-	-	-	-	-	-
Oxygenated Compound (Scan #872)			c	-	-	-	-	-	-	-	6.4	-	-	-	-	-	-
Oxygenated Compound (Scan #860)			c	-	-	-	-	-	-	-	-	-	13	-	-	-	-
Hydroquinone	EPA 8270	Recra	12	-	-	-	-	-	-	-	-	-	-	-	-	-	NA
Volatile Organics	EPA 624	Recra															
Benzene			5.0	-	-	-	13	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane			5.0	-	-	-	-	-	-	J	-	-	-	-	-	-	-
Chlorobenzene			5.0	-	-	-	-	-	-	-	-	-	-	-	J	-	-
Chlorodibromomethane			5.0	-	-	-	-	-	-	J	-	-	-	-	-	-	-
Chloroethane			10	J	J	15	J	-	-	-	-	-	-	-	-	-	-
Chloroform			5.0	7.9	7.8	J	J	-	-	12	J	-	6.0	-	-	-	-
1,1-Dichloroethane			5.0	50	51	J[1]	110	17	-	-	57	8.6	-	-	-	-	-
1,1-Dichloroethene			5.0	16	17	J[1]	100	J	-	-	460[3]	46	J	-	-	-	-
trans-1,2-Dichloroethene			5.0	8.7	9.0	J	-	-	-	-	J	-	J	-	-	-	-
Tetrachloroethene			5.0	-	-	J	-	-	-	-	J	-	-	-	-	-	-
Toluene			5.0	-	-	-	-	-	-	-	J	-	-	-	-	-	-

Phase2.fnl/g

Table 3

(Continued)

Analyte	Method	Lab	Detection Limit[a] (µg/L)	Results (µg/L)													
				MW-1	MW-1 (DUP)	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Equipment Blank	Trip Blank	Method Blank
1,1,1-Trichloroethane			5.0	87	85	13000(1)	500(2)	5.5	-	13	2700(3)	370(4)	6.2	J	-	-	-
1,1,2-Tricloroethane			5.0	-	-	-	J	-	-	-	-	-	-	-	-	-	-
Trichloroethene			5.0	6.7	6.6	7.2	J	-	-	-	J	-	13	-	-	-	-
Vinyl Chloride			10	J	-	J	110	J	-	-	-	-	-	-	-	-	-
o/p-Xylene			5.0	-	-	J	-	-	-	-	-	-	-	-	-	-	-
Tentatively Identified Volatile Compounds[d]	EPA 624	Recra															
Hexachlorobutadiene			c	-	-	-	90(2)e	-	-	-	-	-	-	-	-	-	-
1,1,2-Trimethyl-1,2,2-trifluoroethane			c	-	-	-	-	-	-	4.3	-	-	-	-	-	-	-
Formaldehyde	NIOSH 3500	Recra	84	100	110	-	260	210	140	180	-	-	-	90	-	-	-
Petroleum Hydrocarbons	EPA 418.1	Recra	500	-	610[b]	12000[b]	-	1300[b]	-	1200[b]	1100[b]	5200[b]	1500[b]	-	-	530	-

Analysis performed by Recra Environmental, Inc.

a Detection limits reported are Method Detection Limits (Formaldehyde and Petroleum Hydrocarbons) and Contract Required Quantitation Limits (Organics).

b This compound was also detected in the trip or field blank for this sample set.

c Tentatively identified compound concentratins are estimated based on EPA recommended procedures for TIC identifications.

d Results for tentatively identified compounds are estimated.

e TIC was found in the dilution of this sample, but not in the undiluted sample.

J Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

\- Not detected above the detection limit.

(1) Dilution factor 100 versus 1.0; detection limit for this compound will change accordingly.

(2) Dilution factor 5 versus 1.0; detection limit for this compound will change accordingly.

(3) Dilution factor 50 versus 1.0; detection limit for this compound will change accordingly.

(4) Dilution factor 4.0 versus 1.0; detection limit for this compound will change accordingly.

NA Due to a laboratory oversite sample Method Blank was not analyzed for Hydroquinone.

Phase2.fnl/g

Table 4

Inorganics Results for Kodalux Monitoring Wells - November 1991

Analyte	Method	Lab	Detection Limit[a]	Results (mg/L)													
				MW-1	MW-1 (DUP)	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	Equipment Blank	Trip Blank	Method Blank
Total Cyanide	EPA 9010	Recra	0.01	-	-	-	0.11	-	-	0.027	0.24	0.017	-	-	-	-	-
Total Silver	EPA 272.1	Recra	0.01	-	-	-	-	0.013	-	0.01	0.01	-	-	0.011	-	-	-
Total Chromium	EPA 218.1	Recra	0.01	-	0.011[b]	0.064[b]	0.03[b]	0.093[b]	0.02[b]	0.13[b]	0.065[b]	-	-	-	0.016	-	-
Hexavalent Chromium	EPA 7195	Recra	0.01	-	-	0.016	-	-	-	-	0.028	-	-	-	-	NA	-

Analysis performed by Recra Environmental, Inc.

a Detection limits reported are Instrument Detection Limits (Metals) and Contract Required Quantitation Limits (Cyanide).

b This component was also detected in the trip or equipment blank for this sample set.

\- Not detected above the detection limit.

NA Due to laboratory oversite, sample Trip Blank was not analyzed for Hexavalent Chromium.

Table 5

Total Recoverable Petroleum Hydrocarbon Detected in Kodalux Pilot Boreholes - October 1991

Analyte	Method	Lab	Detection Limit[a] (mg/L)	RESULTS (mg/L)								
				PB-1	PB-2	PB-3	PB-4	PB-4 (DUP)	PB-5	PB-6	Trip Blank	Equipment Blank
Total Recoverable Petroleum Hydrocarbons	EPA 418.1	Recra	0.5	-	-	-	-	-	-	0.68	NA	-

Analysis performed by Recra Environmental, Inc.

[a] Detection limits reported are Method Detection Limits.

\- Not detected above the detection limit.

NA Due to laboratory oversite sample Trip Blank was not analyzed for Total Recoverable Hydrocarbons.

Table 6

Kodalux Drilling Cuttings Waste Characterization Analytical Results - October 1991

Analyte	Method	Lab	Detection Limit[a]	Results	
				Drilling Cuttings	Trip Blank or TCLP Blank
TCL volatile organics (µg/kg) plus Trichlorofluoromethane and 1,1,2-Trichloro-1,2,2-trifluoroethane	EPA 8240	Recra			
1,1,1-Tricholoroethane			5	J	-
TCL semivolatile organics (µg/kg) plus 1,2-dichlorobenzene, nitrobenzene, and pyridine	EPA 8270	Recra	NA	-	NA
Isobutanol (µg/kg)	EPA 8015	Recra	490[b]	-	-
TCLP Metals (mg/L)		Recra			
Total Arsenic	EPA 7060		0.005	-	-
Total Barium	EPA 6010		0.03	1.0	-
Total Cadmium	EPA 6010		0.005	-	-
Total Chromium	EPA 7190		0.01	0.015[b]	0.017
Total Lead	EPA 7420		0.06	-	-
Total Mercury	EPA 7470		0.0004	-	-
Total Selenium	EPA 7740		0.005	-	-
Total Silver	EPA 7760		0.01	-	-
Ignitability (Flash Point)	EPA 1010	Recra	NA	>200 °F	NA
Corrosivity		Recra	NA	7.9 STD uni	NA
Reactivity		Recra			
Total Available Cyanide (Reactivity)	SW-846 7.3.2		NA	-	NA
Total Available Sulfide (Reactivity)	SW-846 7.3.4.1		NA	-	NA

Analysis performed by Recra Environmental, Inc.

a Detection limits reported are Contract Required Quantitation Limits (Organics) and Instrument Detection Limits (Metals).

b Detection Limit for isobutanol in the trip blank is 1000 µg/L.

\- Not detected above the detection limit.

NA Detection Limit was not applicable or sample Trip Blank was not analyzed for this parameter.

J Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria and the result is less than the sample quantitation limit but greater than zero.

Table 7

Blank Sample Results[a]

Monitoring Well Groundwater Samples Equipment Blank	2.9 μg/L Chlorobenzene (J) 0.016 μg/L Total Chromium
Monitoring Well Groundwater Samples Trip Blank	0.93 μg/L Phenanthrene (J) 0.53 mg/L TRPH
Monitoring Well Groundwater Samples Method Blanks	No compounds detected
Pilot Borehole Groundwater Samples Blank Equipment	No compounds detected
Drilling Cuttings Sample Trip Blank	No compounds detected

Analyses performed by Recra Environmental, Inc.

[a] Only analytes detected above detection limits are reported here.

J Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

Table 8

Field Duplicate Results (μg/L)

Analyte	Results					
	MW-1	MW-1 Dup	RPD (%)	PB-4	PB-4 Dup	RPD
Chloroethane	7.5 (J)	7.3 (J)	3	-	-	-
Chloroform	7.9	7.8	1	-	-	-
1,1-Dichloroethane	50	51	2	-	-	-
1,1-Dichloroethene	16	17	6	-	-	-
trans-1,2-Dichloroethane	8.7	9.0	3	-	-	-
1,1,1-Trichloroethane	87	85	2	-	-	-
Trichloroethene	6.7	6.6	2	-	-	-
Vinyl chloride	0.95 (J)	ND	NC	-	-	-
Formaldehyde	100	110	10	-	-	-
TRPH	ND	610[b]	NC	ND	ND	NC
Total Chromium	ND	0.011[b]	NC	-	-	-

Analysis performed by Recra Environmental, Inc.

J Estimated value, less than the quantitation limit.

b This component was detected in the equipment blank for this sample set.

RPD Relative percent difference determined as the difference between two values, divided by their average, and expressed in percent.

NC Not calculated, one or both of the values was ND.

MW Monitoring Well

PB Pilot Boring.

ND Not detected above the detection limit.

\- Not analyzed.

APPENDIX A

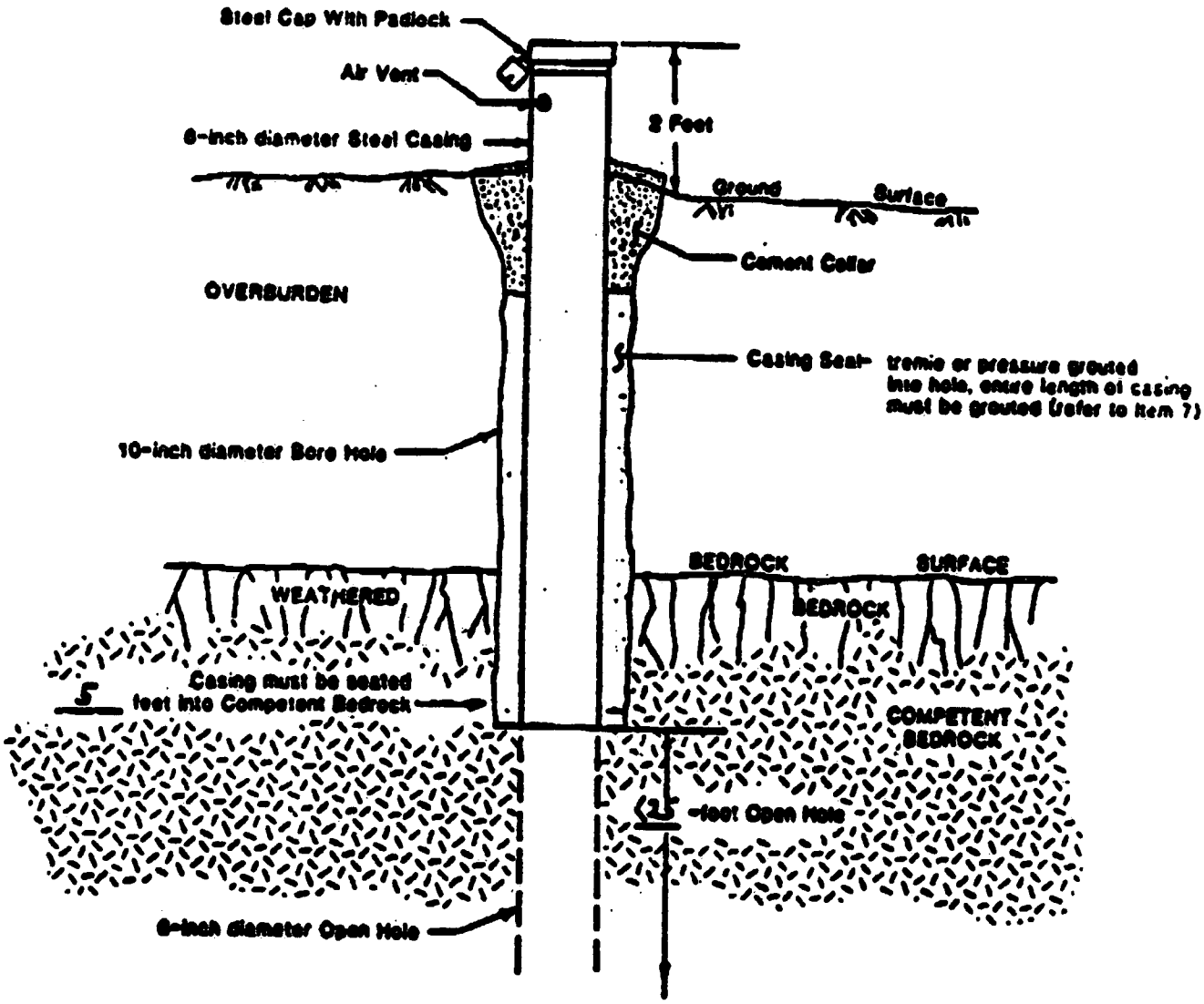
NJDEP BEDROCK MONITORING WELL SPECIFICATIONS

MONITOR WELL SPECIFICATIONS FOR BEDROCK FORMATIONS

SITE NAME : KODALUX PROCESSING LAB

LOCATION : N.J. ROUTE 208, FAIRLAWN, BERGEN COUNTY

DATE : 12/6/90



NOT TO SCALE

NJGS Revised 9-87

BEDROCK MONITORING WELL REQUIREMENTS
Revised 9/87

1. Notification to the NJDEP is required two weeks prior to drilling.

2. State well permits are required for each monitoring well constructed by the driller. The well permit tag must be permanently affixed to each monitoring well.

3. Copies of the site specific well specifications must be maintained at the drilling site by the driller.

4. The monitoring well must be installed by a New Jersey licensed well driller.

5. Monitoring well design must conform with NJAC 7:9-7, 8, and 9.

6. Drill an oversize borehole a minimum of 4 inches greater than the casing diameter through the overburden and bedrock so that the casing can be sealed into competent rock as indicated in the diagram.

7. Acceptable grouting materials are:

   Neat Cement - 6 gallons of water per 94 pound bag of cement.

   Granular Bentonite - 1 gallon of water per 1.5 pounds of bentonite.

   Cement-Bentonite - 8 gallons of water to 5 pounds of bentonite dry mixed per 94 pound bag of cement.

   Cement-Bentonite - 10 gallons of water per 8 pounds of bentonite water-mixed with a 94 pound bag of cement.

   Non-expandable cement - 7.5 gallons of water per 1/2 teaspoon of aluminum hydroxide mixed with 4 pounds of bentonite and 94 pounds of cement.

   Non-expandable cement - 7 gallons of water per 1/2 teaspoon of aluminum hydroxide mixed with 94 pounds of cement (Type I or Type II).

8. Potable water must be used for mixing grouting materials and drilling fluids.

9. Only threaded or welded joints are acceptable as couplings.

10. The driller must maintain an accurate written log of all materials encountered, record construction details for each well, and record the depth of water bearing zones. This information must be submitted to the Bureau of Water Allocation as required by N.J.S.A. 58:4A.

11. Flush mount monitoring wells are acceptable provided they have manholes, locking caps, and seals to prevent leakage of surface water down the well.

12. Top of each well casing (excluding cap) must be surveyed to the nearest 0.01 foot by a New Jersey licensed surveyor. The survey point must be marked on each well.

13. Wells must be developed to a turbidity-free discharge.

14. Modifications to designs are allowed only with NJDEP approval.

Additional Requirements (if checked):

Rock Core Samples ( ) _____

Split Spoon Samples (X) EVERY TWO FEET AT WELLS MW-3, MW-5 AND MW-7

Borehole Geophysical Logs ( ) _____

Dedicated Bailer (Sampler) in Well ( ) _____

Other ( ) _____

Notice is Hereby Given of the Following:

Review by the Department of well locations and depths is limited solely to review for compliance with the law and Department rules.

The Department does not review well locations or depths to ascertain the presence of, nor the potential for, damage to any pipeline, cable, or other structures.

The permittee (applicant) is solely responsible for the safety and adequacy of the design and construction of monitoring well(s) required by the Department.

The permittee (applicant) is solely responsible for any harm or damage to person or property which results from the construction or maintenance of any well; this provision is not intended to relieve third parties of any liabilities or responsibilities which are legally theirs.

APPENDIX B

DRILLING LOGS

DRILLING LOG

HOLE NO.	MW-6
SHEET	1 OF 1 SHEETS

1. COMPANY NAME	Kodalux
2. DRILLING SUBCONTRACTOR	Summit Drilling Co., Inc.
3.	Fair Lawn, NJ
4. LOCATION	Bridgewater, NJ
5. NAME OF DRILLER	Sean
6. MANUFACTURER'S DESIGNATION OF DRILL	Mobile 80
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Mobile 80 - Air Rotary Drill 10" OD hammer bit 2" OD 24" split spoon sampler 6" OD hammer bit
8. HOLE LOCATION	NJ GEODETIC SURVEY CONTROL LAT. 40°56'35.7": LONG. 74°07'50.6"
9. SURFACE ELEVATION	NJ GEODETIC SURVEY CONTROL 88.45
10. DATE STARTED	10/21/91
11. DATE COMPLETED	10/22/91
12. OVERBURDEN THICKNESS	15.0'
13. DEPTH DRILLED INTO ROCK	22.5'
14. TOTAL DEPTH OF HOLE	37.5'
15. DEPTH GROUNDWATER ENCOUNTERED	Water at 30'
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	Static water level at 30.34' below top of casing (10/29/91)
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	Water elev: 56.25' (11/14/91 sampling): 61.13' (12/19/91)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		✓		Lynn M. Moody

ELEV. (ft)	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
88.45 Top		Top soil			10" Hammer bit
	5	Red, fine-grained sand wtih silt, with some hard, red, sandstone fragments		Air Rotary	
81.45			HNu = ND	29, 23, 25, 28	Dense
	10	Red, fine-grained sand with silt, (weathered red, fine-grained sandstone)		Air Rotary	
			HNu = ND	30, 50/3"	Refusal at 10'- 9"
73.45 Bedrock	15			Air Rotary	
	20	Hard, red sandstone, fine to medium-grained, with thin interbeds of softer rock (red shale?) at 22', 25', and from 30' to 32'		Air Rotary	At 20'- 6" steel casing and grout in place. After 24 hrs. re-enter with 6" hammer bit
	25				
	30				Water at 30' (no clear indication)
	35				
50.95 Bottom	40	Bottom of hole at 37.5'			

DRILLING LOG

HOLE NO.	MW-7/PB-1
SHEET	1 OF 1 SHEETS

1. COMPANY NAME	Kodalux
2. DRILLING SUBCONTRACTOR	Summit Drilling Co., Inc.
3.	Fair Lawn, NJ
4. LOCATION	Bridgewater, NJ
5. NAME OF DRILLER	Sean
6. MANUFACTURER'S DESIGNATION OF DRILL	Mobile 80
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Mobile 80 - Air Rotary Drill 10" OD hammer bit 2" OD 24" split spoon sampler 6" OD hammer bit
8. HOLE LOCATION	NJ GEODETIC SURVEY CONTROL LAT. 40°56'36.1"; LONG. 74°07'45.9"
9. SURFACE ELEVATION	NJ GEODETIC SURVEY CONTROL 93.71
10. DATE STARTED	10/22/91
11. DATE COMPLETED	10/24/91
12. OVERBURDEN THICKNESS	20.0'
13. DEPTH DRILLED INTO ROCK	16.7'
14. TOTAL DEPTH OF HOLE	36.7'
15. DEPTH GROUNDWATER ENCOUNTERED	
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	Static water level at 33.15' below top of casing (10/29/91)
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	Water Elev: 60.46' (11/14/91 - sampling); 61.19' (12/19/91)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		✓		Lynn M. Moody

ELEV. (ft)	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
93.71 Top		Black top and stone			10" Hammer bit
				Air Rotary	
	5	Red, silty-fine sand with clay and fragments of sandstone	HNu = ND	3, 3, 3, 3	Soft
				Air Rotary	
	10	Red, sandy silt with clay and fragments of sandstone	HNu = ND	6, 11, 15, 16	Medium dense
				Air Rotary	
	15	Red, sandy silt to silty sand with fragments of red sandstone	HNu = ND	10, 13, 37, 27	Dense
				Air Rotary	
73.71 Bedrock	20	Hard, red sandstone		Air Rotary	
	25				At 25'- 6" steel casing and grout in place. After 48 hrs. re-enter with 6" hammer bit. Water used to settle dust.
	30				
	35				
57.01 Bottom		Bottom of hole at 36.7'			
	40				

DRILLING LOG

HOLE NO.	MW-8
SHEET	1 OF 1 SHEETS
1. COMPANY NAME	Kodalux
2. DRILLING SUBCONTRACTOR	Summit Drilling Co., Inc.
3.	Fair Lawn, NJ
4. LOCATION	Bridgewater, NJ
5. NAME OF DRILLER	Sean
6. MANUFACTURER'S DESIGNATION OF DRILL	Mobile 80
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Mobile 80 - Air Rotary Drill 10" OD hammer bit 2" OD 24" split spoon sampler 6" OD hammer bit
8. HOLE LOCATION	NJ GEODETIC SURVEY CONTROL LAT. 40°56'38.3": LONG. 74° 07'47.6"
9. SURFACE ELEVATION	NJ GEODETIC SURVEY CONTROL 88.72
10. DATE STARTED	10/21/91
11. DATE COMPLETED	10/22/91
12. OVERBURDEN THICKNESS	14.0'
13. DEPTH DRILLED INTO ROCK	23.6'
14. TOTAL DEPTH OF HOLE	37.6'
15. DEPTH GROUNDWATER ENCOUNTERED	Water at 27'
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	Static water level at 27.32' below top of casing (10/29/91)
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	Water Elev: 60.73' (11/14/91 - sampling); 61.65' (12/19/91)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		✓		Thomas M. Moody

ELEV. (ft)	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
88.72 Top		Top soil			10" Hammer bit
		Red, sandy, silty clay with hard, red sandstone fragments		Air Rotary	
	5		HNu = ND	20, 20, 50/4"	Refusal at 6'- 4"
				Air Rotary	
	10		HNu = ND	20, 50/1"	Refusal at 10'- 7"
				Air Rotary	
74.72 Bedrock	15	Very hard, red sandstone		Air Rotary	
	20	Soft, weathered rock			
		Hard, red sandstone		Air Rotary	
	25	Softer, and slighty wet			At 25'- 6" steel casing and grout in place. After 24 hrs. re-enter with 6" hammer bit
	30				
	35				
51.12 Bottom	40	Bottom of hole at 37.6'			

DRILLING LOG

HOLE NO.	MW-9
SHEET	1 OF 1 SHEETS
1. COMPANY NAME	Kodalux
2. DRILLING SUBCONTRACTOR	Summit Drilling Co., Inc.
3.	Fair Lawn, NJ
4. LOCATION	Bridgewater, NJ
5. NAME OF DRILLER	Sean
6. MANUFACTURER'S DESIGNATION OF DRILL	Mobile 80
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Mobile 80 - Air Rotary Drill 10" OD hammer bit 2" OD 24" split spoon sampler 6" OD hammer bit
8. HOLE LOCATION	NJ GEODETIC SURVEY CONTROL LAT. 40°56'36.9"; LONG. 74°07'42.9"
9. SURFACE ELEVATION	NJ GEODETIC SURVEY CONTROL 91.66
10. DATE STARTED	10/23/91
11. DATE COMPLETED	10/24/91
12. OVERBURDEN THICKNESS	15.0'
13. DEPTH DRILLED INTO ROCK	24.9'
14. TOTAL DEPTH OF HOLE	39.9'
15. DEPTH GROUNDWATER ENCOUNTERED	Water at 26 to 27'
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	Static water level at 27.50' below top of casing (10/29/91)
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	Water Elev: 63.29' (11/14/91 - sampling); 65.21' (12/19/91)
18. GEOTECHNICAL SAMPLES	None
DISTURBED	NA
UNDISTURBED	NA
19. TOTAL NUMBER OF CORE BOXES	None
20. SAMPLES FOR CHEMICAL ANALYSIS	None
VOC	NA
METALS	NA
OTHER (SPECIFY)	NA
OTHER (SPECIFY)	NA
OTHER (SPECIFY)	NA
21. TOTAL CORE RECOVERY	NA %
22. DISPOSITION OF HOLE	BACKFILLED: ; MONITORING WELL: ✓ ; OTHER (SPECIFY):
23. SIGNATURE OF INSPECTOR	Lynn M. Moody

ELEV. (ft)	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
91.66 Top		Black top and stone			10" Hammer bit
		Red, sandy silt		Air Rotary	
	5	Red, silty medium grained sand with fragments of red sandstone	HNu = ND	13, 13, 17, 26	Dense
				Air Rotary	
	10	Red, silty fine to medium grained sand with fragments of red sandstone. Weathered rock at 13'	HNu = ND	9, 14, 25, 20	Dense
				Air Rotary	
76.66 Bedrock	15	Hard, red sandstone with thin interbeds of softer rock (shale?) at 23', 25' and 33'		50/0	Refusal at 15'
	20			Air Rotary	At 20'- 6" steel casing and grout in place. After 24 hrs. re-enter with 6" hammer bit
	25				
	30				
	35				
51.76 Bottom	40	Bottom of hole at 39.9'			

DRILLING LOG

HOLE NO.	MW-10
SHEET	1 OF 1 SHEETS
1. COMPANY NAME	Kodatux
2. DRILLING SUBCONTRACTOR	Summit Drilling Co., Inc.
3.	Fair Lawn, NJ
4. LOCATION	Bridgewater, NJ
5. NAME OF DRILLER	Sean
6. MANUFACTURER'S DESIGNATION OF DRILL	Mobile 80
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Mobile 80 - Air Rotary Drill 10" OD hammer bit 2" OD 24" split spoon sampler 6" OD hammer bit
8. HOLE LOCATION	NJ GEODETIC SURVEY CONTROL LAT. 40°56'31.9"; LONG. 74°07'45.3"
9. SURFACE ELEVATION	NJ GEODETIC SURVEY CONTROL 96.56
10. DATE STARTED	10/23/91
11. DATE COMPLETED	10/24/91
12. OVERBURDEN THICKNESS	14.0'
13. DEPTH DRILLED INTO ROCK	22.7'
14. TOTAL DEPTH OF HOLE	36.7'
15. DEPTH GROUNDWATER ENCOUNTERED	
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	Static water level at 25.33' below top of casing (10/29/91)
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	Water Elev: 69.07' (11/14/91 - sampling); 66.33' (12/19/91)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		✓		Glynn M. Moody

ELEV. (ft)	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
96.56 Top		Top soil			10" Hammer bit
	5	Red, silty sand with fragments of red fine grained sandstone		Air Rotary	
			HNu = ND	21, 25, 38, 30	Dense
	10	Red, silty sand with fragments of red fine grained sandstone		Air Rotary	
			HNu = ND	12, 20, 21, 20	Dense
82.56 Bedrock	15	Hard, red sandstone with zones of softer rock (shale?) at 20.5', 23', and 28'		Air Rotary Air Rotary	At 20'- 6" steel casing and grout in place. After 24 hrs. re-enter with 6" hammer bit
	20				
	25				
	30				
	35				
59.86 Bottom		Bottom of hole at 36.7'			
	40				

DRILLING LOG

HOLE NO. PB-2

SHEET 1 OF 1 SHEETS

1. COMPANY NAME: Kodalux	2. DRILLING SUBCONTRACTOR: Summit Drilling Co., Inc.
3. Fair Lawn, NJ	4. LOCATION: Bridgewater, NJ
5. NAME OF DRILLER: Sean	6. MANUFACTURER'S DESIGNATION OF DRILL: Mobile 80
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Mobile 80 - Air Rotary Drill; 6" OD hammer bit; 2" OD 24" split spoon sampler	8. HOLE LOCATION: NJ GEODETIC SURVEY CONTROL LAT. 40°56'36.2"; LONG. 74°07'44.7"
	9. SURFACE ELEVATION: NJ GEODETIC SURVEY CONTROL Not Measured
	10. DATE STARTED: 10/22/91 — 11. DATE COMPLETED: 10/23/91
12. OVERBURDEN THICKNESS: 18.0'	15. DEPTH GROUNDWATER ENCOUNTERED: 30.0' (possibly)
13. DEPTH DRILLED INTO ROCK: 18.0'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: Not Measured
14. TOTAL DEPTH OF HOLE: 36.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): —

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Abandoned with grout	✓			Lynn M. Moody

ELEV.	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
Bedrock	5	Red sandy silt with some clay		Air Rotary	
				8, 15, 17, 15	
	10	Sandy silt with clay		Air Rotary	
				31, 51, 36, 32	
	15	Red sandy silt with clay, with some rock fragments		Air Rotary	
				12, 9, 10, 8	
	20	Hard red sandstone with zones of softer rock at 19', 21', 28', and 31'.		Air Rotary	Possible water zone
	25				
	30				
	35				
	40	Bottom of hole at 36.0'			

DRILLING LOG

PB-3

1. COMPANY NAME: Kodalux	2. DRILLING SUBCONTRACTOR: Summit Drilling Co., Inc.
SHEET 1 OF 1 SHEETS	
3. Fair Lawn, NJ	4. LOCATION: Bridgewater, NJ
5. NAME OF DRILLER: Sean	6. MANUFACTURER'S DESIGNATION OF DRILL: Mobile 80
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Mobile 80 - Air Rotary Drill; 6" OD hammer bit; 2" OD 24" split spoon sampler	8. HOLE LOCATION: NJ GEODETIC SURVEY CONTROL LAT. 40°56'35.7"; LONG. 74°07'43.9"
	9. SURFACE ELEVATION: NJ GEODETIC SURVEY CONTROL Not Measured
	10. DATE STARTED: 10/24/91 — 11. DATE COMPLETED: 10/24/91
12. OVERBURDEN THICKNESS: 13.0'	15. DEPTH GROUNDWATER ENCOUNTERED: Not Encountered
13. DEPTH DRILLED INTO ROCK: 27.0'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: Not Measured
14. TOTAL DEPTH OF HOLE: 40.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): —

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Abandoned with grout	✓			Lynn M. Moody

ELEV.	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
Bedrock		Black top and stone			6" Hammer bit
	5	Red brown silty sand grading into weathered red sandstone		Air Rotary	
				10, 31, 5/5"	Hard
	10	Red brown silty sand with fragments of red sandstone		Air Rotary	
				18, 12, 7, 11	Med. dense
	15	Hard red sandstone		Air Rotary	
	20				
	25				
	30				
	35				Water used to settle dust
	40				
		Bottom of hole at 40.0'			

DRILLING LOG

HOLE NO.	PB-4
SHEET	1 OF 1 SHEETS

1. COMPANY NAME	Kodalux
2. DRILLING SUBCONTRACTOR	Summit Drilling Co., Inc.
3.	Fair Lawn, NJ
4. LOCATION	Bridgewater, NJ
5. NAME OF DRILLER	Sean
6. MANUFACTURER'S DESIGNATION OF DRILL	Mobile 80
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Mobile 80 - Air Rotary Drill 6" OD hammer bit 2" OD 24" split spoon sampler
8. HOLE LOCATION	NJ GEODETIC SURVEY CONTROL LAT. 40°56'34.6": LONG. 74°07'42.7"
9. SURFACE ELEVATION	NJ GEODETIC SURVEY CONTROL Not Measured
10. DATE STARTED	10/25/91
11. DATE COMPLETED	10/25/91
12. OVERBURDEN THICKNESS	10.0'
13. DEPTH DRILLED INTO ROCK	30.0'
14. TOTAL DEPTH OF HOLE	40.0'
15. DEPTH GROUNDWATER ENCOUNTERED	Not Encountered
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	Not Measured
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	—

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Abandoned with grout	✓			Lynn M. Moody

ELEV.	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
		Black top and stone			6" Hammer bit
	5	Red brown silty sand with fragments of weathered sandstone		Air Rotary	
				16, 50, 44, 38	
Bedrock	10			Air Rotary	
		Hard red sandstone		Air Rotary	Water used to settle dust
	15				
	20				
	25				
	30				
	35				
	40				
		Bottom of hole at 40.0'			

DRILLING LOG

HOLE NO. PB-5

1. COMPANY NAME: Kodalux	2. DRILLING SUBCONTRACTOR: Summit Drilling Co., Inc.
SHEET 1 OF 1 SHEETS	
3. Fair Lawn, NJ	4. LOCATION: Bridgewater, NJ
5. NAME OF DRILLER: Sean	6. MANUFACTURER'S DESIGNATION OF DRILL: Mobile 80
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: Mobile 80 - Air Rotary Drill; 6" OD hammer bit; 2" OD 24" split spoon sampler	8. HOLE LOCATION: NJ GEODETIC SURVEY CONTROL LAT. 40°56'33.3"; LONG. 74°07'42.5"
	9. SURFACE ELEVATION: NJ GEODETIC SURVEY CONTROL Not Measured
	10. DATE STARTED: 10/25/91 — 11. DATE COMPLETED: 10/25/91
12. OVERBURDEN THICKNESS: 8.5'	15. DEPTH GROUNDWATER ENCOUNTERED: Not Encountered
13. DEPTH DRILLED INTO ROCK: 28.5'	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: Not Measured
14. TOTAL DEPTH OF HOLE: 37.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): —

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Abandoned with grout	✓			Lynn M. Moody

ELEV.	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
		Black top and stone			6" Hammer bit
	5	Red-brown silty sand with weathered red sandstone		Air Rotary	
Bedrock				10, 44, 38, 15	Dense
	10	Hard red sandstone		Air Rotary	Water used to settle dust
	15				
	20				
	25				
	30				
	35				
	40	Bottom of hole at 37.0'			

DRILLING LOG

HOLE NO.	PB-6
SHEET	1 OF 1 SHEETS

1. COMPANY NAME	Kodalux
2. DRILLING SUBCONTRACTOR	Summit Drilling Co., Inc.
3.	Fair Lawn, NJ
4. LOCATION	Bridgewater, NJ
5. NAME OF DRILLER	Sean
6. MANUFACTURER'S DESIGNATION OF DRILL	Mobile 80
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Mobile 80 - Air Rotary Drill 6" OD hammer bit 2" OD 24" split spoon sampler
8. HOLE LOCATION	NJ GEODETIC SURVEY CONTROL LAT. 40°56'33.1": LONG. 74°07'43.4"
9. SURFACE ELEVATION	NJ GEODETIC SURVEY CONTROL Not Measured
10. DATE STARTED	10/25/91
11. DATE COMPLETED	10/25/91
12. OVERBURDEN THICKNESS	11.0'
13. DEPTH DRILLED INTO ROCK	26.0'
14. TOTAL DEPTH OF HOLE	37.0'
15. DEPTH GROUNDWATER ENCOUNTERED	Not Encountered
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	Not Measured
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	—

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
Abandoned with grout	✓			Lynn M. Moody

ELEV.	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
		Black top and stone			6" Hammer bit
		Red -brown silty sand with fragments of weathered red sandstone		Air Rotary	
	5			50/0"	No recovery
				Air Rotary	
Bedrock	10			8, 50/5"	
		Hard red sandstone		Air Rotary	Water used to settle dust
	15				
	20				
	25				
	30				
	35				
		Bottom of hole at 37.0'			
	40				

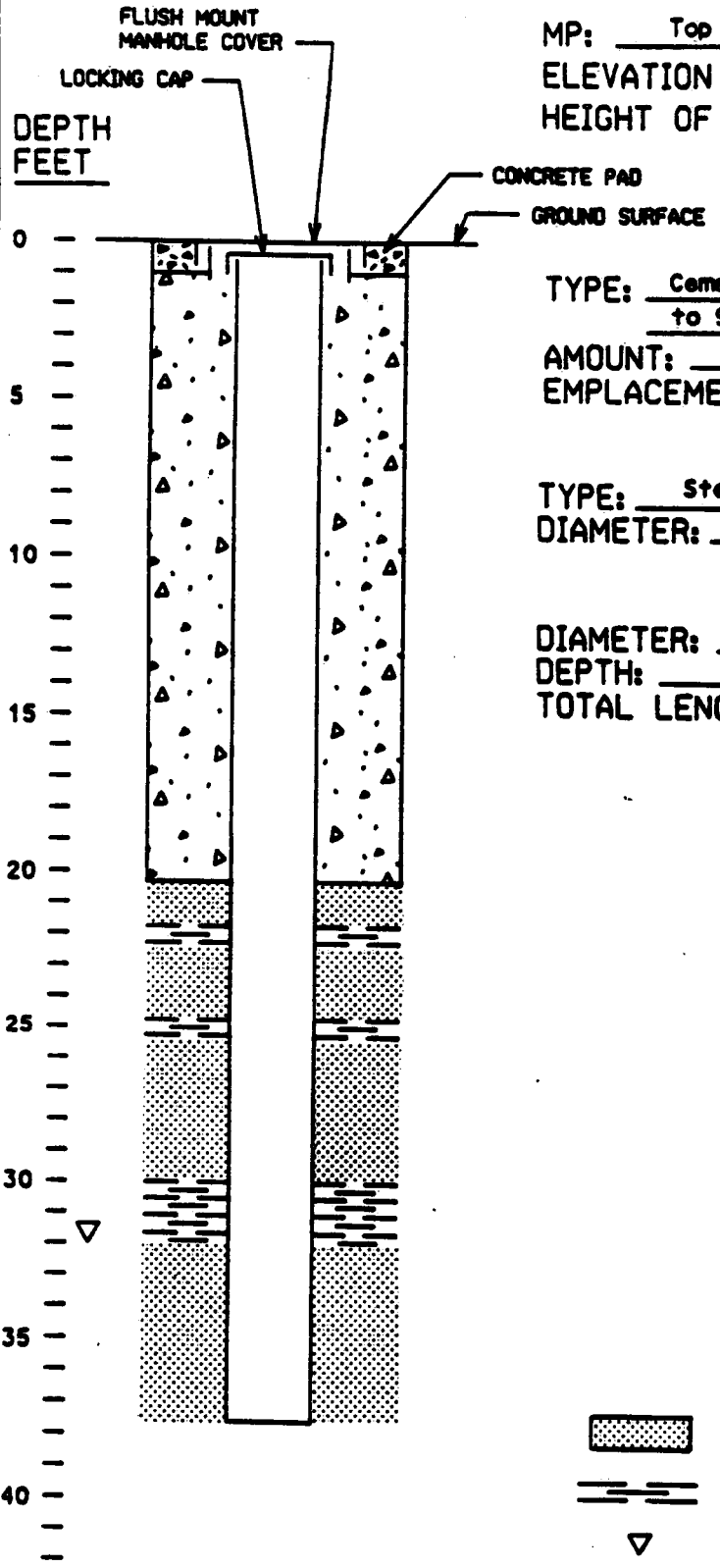
APPENDIX C

MONITORING WELL SCHEMATICS

MONITOR WELL CONSTRUCTION SCHEMATIC

PROJECT: Kodalux, Fair Lawn, NJ
DRILLING CO.: Summit Drilling Co., Inc.
SUPERVISED BY: LRM, Radian Corporation
DRILLING METHOD: Air Rotary
DATE COMPLETED: 10/22/91

WELL ID: MW-6
COORDINATES: Lat 40°56'35.7"; Long 74°07'50.6"
AQUIFER: Uppermost
DEPTH TO WATER FROM MEASURING POINT (MP): 31.90' (11/14/91)



MP: Top of casing
ELEVATION OF MP: 88.15
HEIGHT OF MP RELATIVE TO GROUND LEVEL: -.30'

GROUT

TYPE: Cement-bentonite (8 gal. water to 5 lb. bentonite to 94 lb. Portland cement)
AMOUNT: 4.5 - 94 lb. bags
EMPLACEMENT METHOD: Tremie pipe

RISER PIPE

TYPE: Steel (20.0' pipe)
DIAMETER: 6-inch

BOREHOLE

DIAMETER: 10" cased; 6" open rock
DEPTH: 37.20' below MP
TOTAL LENGTH OPEN ROCK: 17.20'

LEGEND

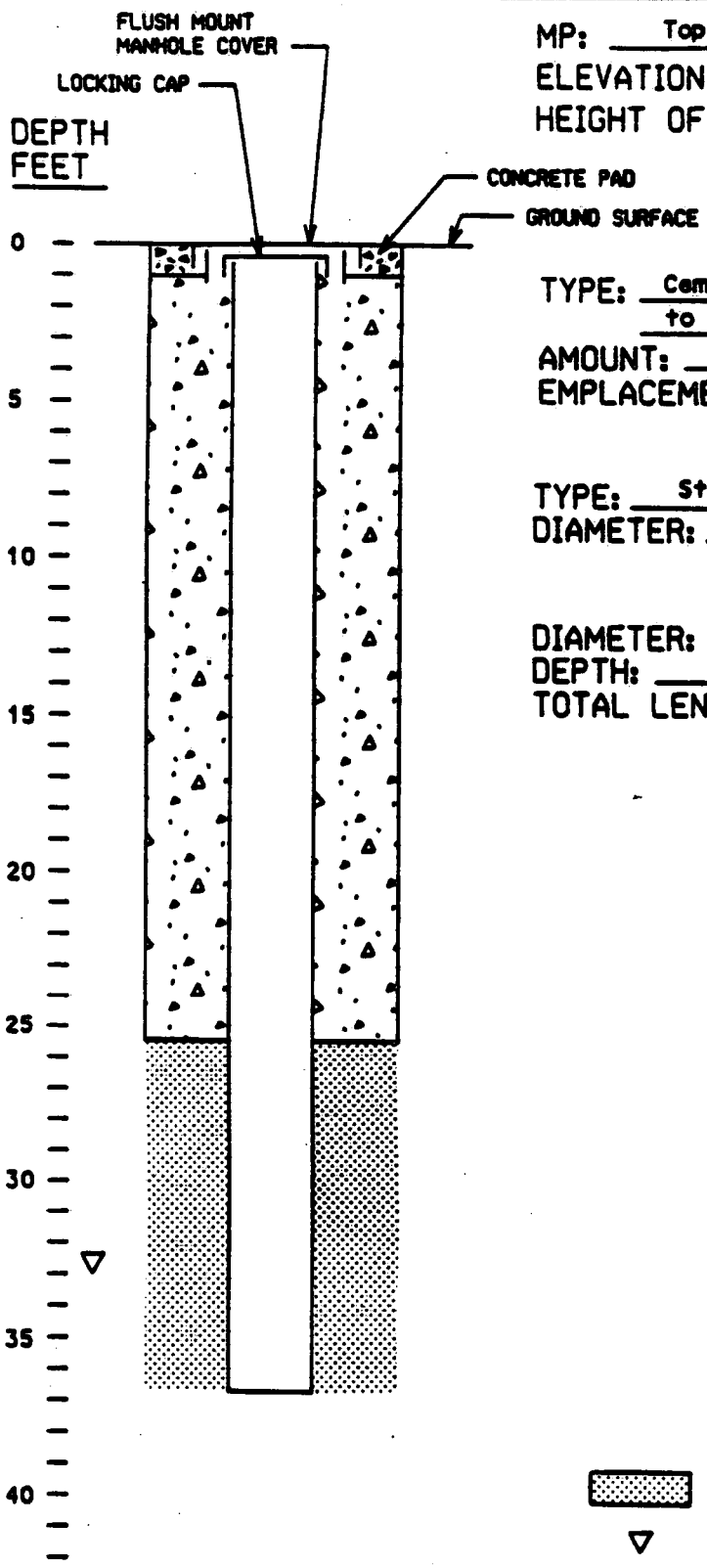
SANDSTONE
SHALE
STATIC WATER LEVEL (11/14/91)

RADIAN CORPORATION

MONITOR WELL CONSTRUCTION SCHEMATIC

PROJECT: Kodalux, Fair Lawn, NJ
DRILLING CO.: Summit Drilling Co., Inc.
SUPERVISED BY: LRM, Radian Corporation
DRILLING METHOD: Air Rotary
DATE COMPLETED: 10/24/91

WELL ID: MW-7/PB-1
COORDINATES: Lat 40°56'36.1"; Long 74°07'45.9"
AQUIFER: Uppermost
DEPTH TO WATER FROM MEASURING POINT (MP): 33.15' (10-29-91)



MP: Top of casing
ELEVATION OF MP: 93.31
HEIGHT OF MP RELATIVE TO GROUND LEVEL: -0.4'

GROUT

TYPE: Cement-bentonite (8 gal. water to 5 lb. bentonite to 94 lb. Portland cement)
AMOUNT: 9 - 94 lb. bags
EMPLACEMENT METHOD: Tremie pipe

RISER PIPE

TYPE: Steel (25.0' pipe)
DIAMETER: 6-inch

BOREHOLE

DIAMETER: 10" cased; 6" open rock
DEPTH: 36.25' below MP
TOTAL LENGTH OPEN ROCK: 11.25'

LEGEND

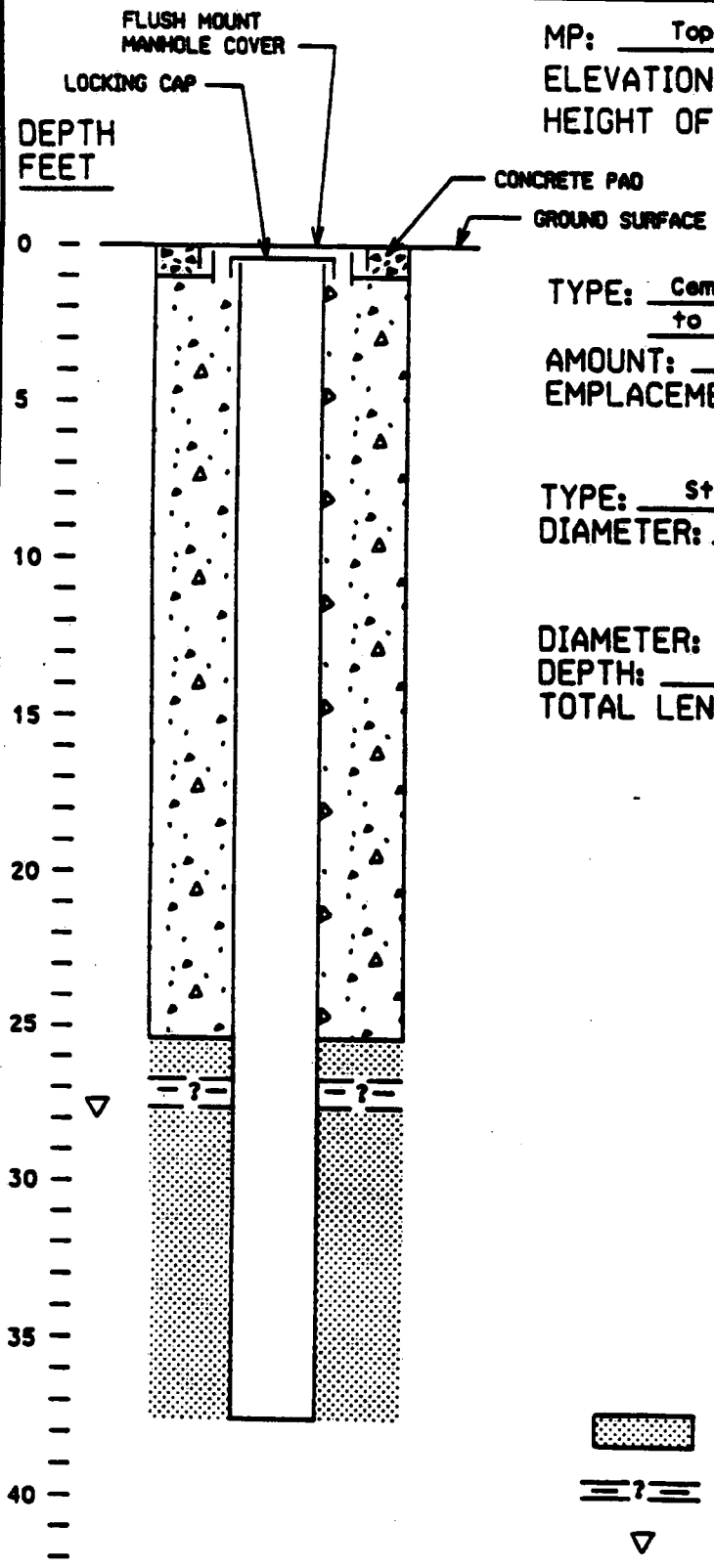
SANDSTONE
STATIC WATER LEVEL

RADIAN CORPORATION

MONITOR WELL CONSTRUCTION SCHEMATIC

PROJECT: Kodalux, Fair Lawn, NJ
DRILLING CO.: Summit Drilling Co., Inc.
SUPERVISED BY: LRM, Radian Corporation
DRILLING METHOD: Air Rotary
DATE COMPLETED: 10/22/91

WELL ID: MW-8
COORDINATES: Lat 40°56'38.3"; Long 74°07'47.6"
AQUIFER: Uppermost
DEPTH TO WATER FROM MEASURING POINT (MP): 27.32' (10-29-91)



MP: Top of casing
ELEVATION OF MP: 88.38
HEIGHT OF MP RELATIVE TO GROUND LEVEL: -0.34'

GROUT

TYPE: Cement-bentonite (8 gal. water to 5 lb. bentonite to 94 lb. Portland cement)
AMOUNT: 9 - 94 lb. bags
EMPLACEMENT METHOD: Tremie pipe

RISER PIPE

TYPE: Steel (25.0' pipe)
DIAMETER: 6-inch

BOREHOLE

DIAMETER: 10" cased; 6" open rock
DEPTH: 37.22' below MP
TOTAL LENGTH OPEN ROCK: 12.22'

LEGEND

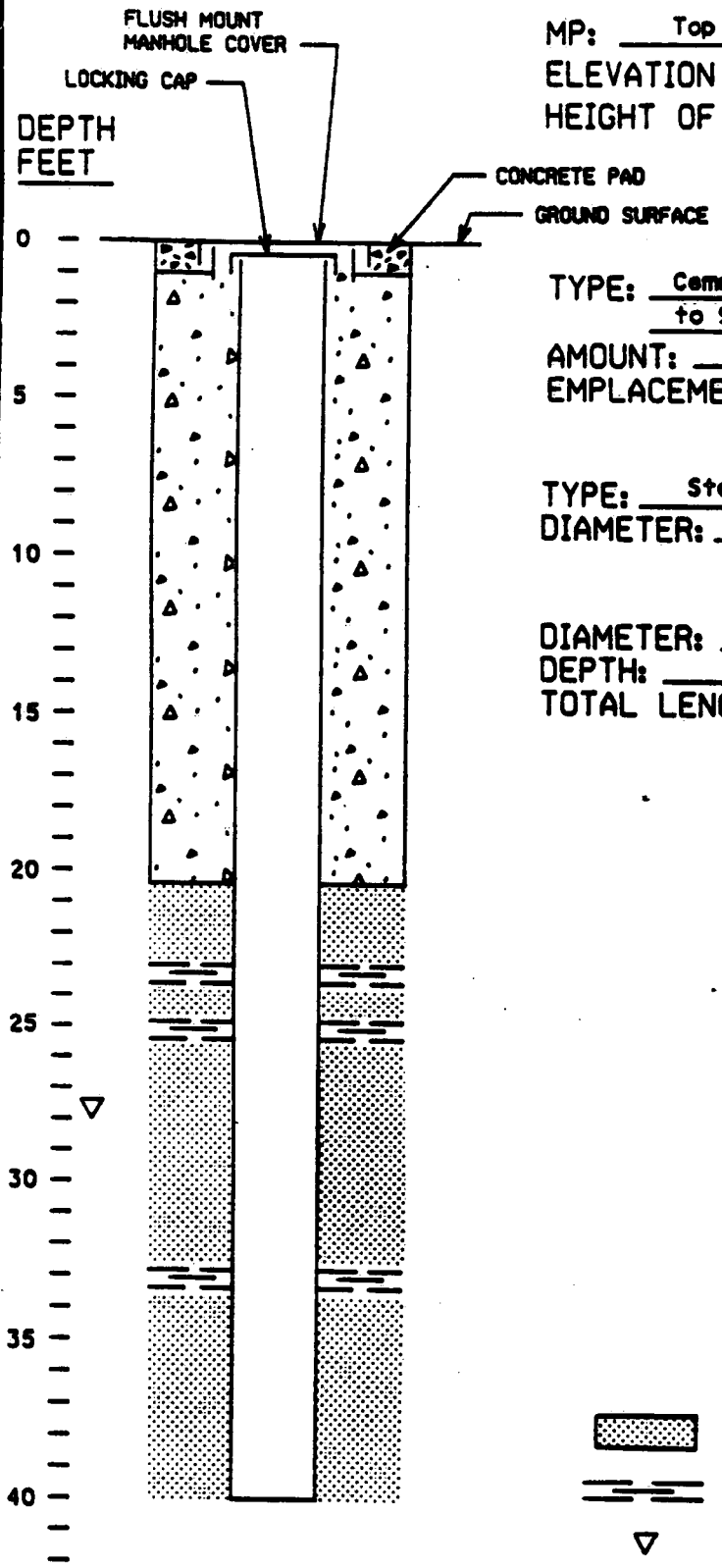
SANDSTONE
SOFT ZONE
STATIC WATER LEVEL (11/14/91)

RADIAN CORPORATION

MONITOR WELL CONSTRUCTION SCHEMATIC

PROJECT: Kodalux, Fair Lawn, NJ
DRILLING CO.: Summit Drilling Co., Inc.
SUPERVISED BY: LRM, Radian Corporation
DRILLING METHOD: Air Rotary
DATE COMPLETED: 10/24/91

WELL ID: MW-9
COORDINATES: Lat 40°56'36.9"; Long 74°07'42.9"
AQUIFER: Uppermost
DEPTH TO WATER FROM MEASURING POINT (MP): 27.50' (10-29-91)



MP: Top of casing
ELEVATION OF MP: 91.24
HEIGHT OF MP RELATIVE TO GROUND LEVEL: -0.42'

GROUT

TYPE: Cement-bentonite (8 gal. water to 5 lb. bentonite to 94 lb. Portland cement)
AMOUNT: 7 - 94 lb. bags
EMPLACEMENT METHOD: Tremie pipe

RISER PIPE

TYPE: Steel (20.0' pipe)
DIAMETER: 6-inch

BOREHOLE

DIAMETER: 10" cased; 6" open rock
DEPTH: 39.52' below MP
TOTAL LENGTH OPEN ROCK: 19.52'

LEGEND

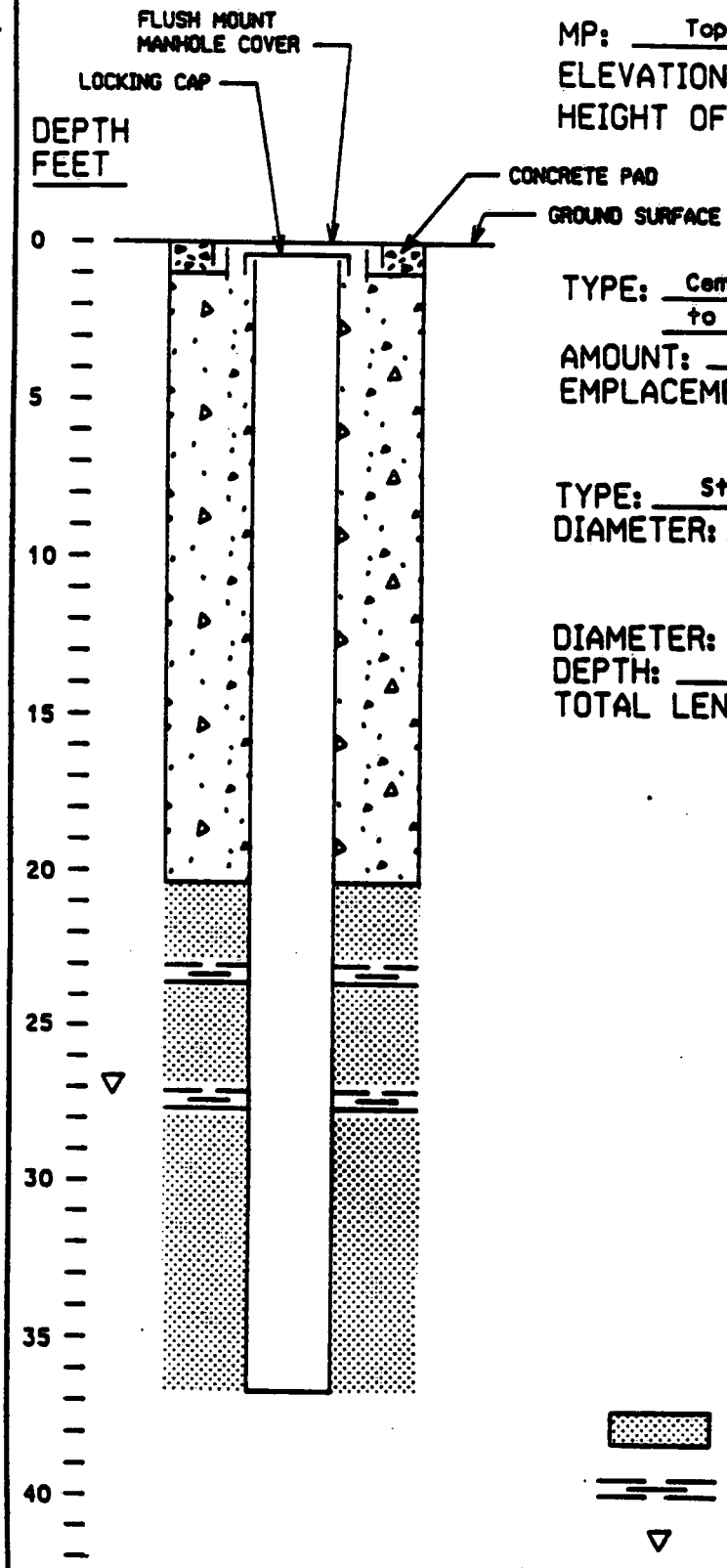
SANDSTONE
SHALE
STATIC WATER LEVEL (11/14/91)

RADIAN CORPORATION

MONITOR WELL CONSTRUCTION SCHEMATIC

PROJECT: Kodalux, Fair Lawn, NJ
DRILLING CO.: Summit Drilling Co., Inc.
SUPERVISED BY: LRM, Radian Corporation
DRILLING METHOD: Air Rotary
DATE COMPLETED: 10/24/91

WELL ID: MW-10
COORDINATES: Lat 40°56'31.9"; Long 74°07'45.3"
AQUIFER: Uppermost
DEPTH TO WATER FROM MEASURING POINT (MP): 25.33' (10-29-91)



MP: Top of casing
ELEVATION OF MP: 96.17
HEIGHT OF MP RELATIVE TO GROUND LEVEL: -0.39

GROUT

TYPE: Cement-bentonite (8 gal. water to 5 lb. bentonite to 94 lb. Portland cement)
AMOUNT: 7 - 94 lb. bags
EMPLACEMENT METHOD: Tremie pipe

RISER PIPE

TYPE: Steel (20.0' pipe)
DIAMETER: 6-inch

BOREHOLE

DIAMETER: 10" cased; 6" open rock
DEPTH: 36.32' below MP
TOTAL LENGTH OPEN ROCK: 16.32'

LEGEND

SANDSTONE
SHALE
STATIC WATER LEVEL (11/14/91)

APPENDIX D

MONITORING WELL CERTIFICATION FORMS

THIS FORM MUST BE COMPLETED BY THE PERMITTEE OR HIS/HER AGENT
MONITORING WELL CERTIFICATION - FORM B - LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. ___-_____-__

Longitude (one-half of a second): West 74 07 50.6
Latitude (one-half of a second): North 40 56 35.7
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): Casing 88.15 RIM 88.45
Source of elevation datum (benchmark, etc.) Rte 208 Control Mon. Station 109+0
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation: 99.58

Owners Well Number (As shown on application or plan): MW-6

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Richard C. Mathews

PROFESSIONAL LAND SURVEYOR'S SIGNATURE

Richard C. Mathews

PROFESSIONAL LAND SURVEYOR'S NAME
(Please print or type)

New Jersey License #29353

PROFESSIONAL LAND SURVEYOR'S LICENSE #

SEAL

THIS FORM MUST BE COMPLETED BY THE PERMITTEE OR HIS/HER AGENT
MONITORING WELL CERTIFICATION - FORM B - LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. — — - — — — — — - —

Longitude (one-half of a second): West 74 07 45.9
Latitude (one-half of a second): North 40 56 36.1
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): Casing 93.31 RIM 93.71
Source of elevation datum (benchmark, etc.) Rte 208 Control Mon. Sta. 109+0
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation: 99.58

Owners Well Number (As shown on application or plan): MW-7

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

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PROFESSIONAL LAND SURVEYOR'S LICENSE #

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MONITORING WELL CERTIFICATION - FORM B - LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. ___ ___-___ ___ ___ ___ ___-___

Longitude (one-half of a second): West 74 07 47.6
Latitude (one-half of a second): North 40 56 38.3
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): Casing 88.38 RIM 88.72
Source of elevation datum (benchmark, etc.) Rte 208 Control Mon. Sta. 109+0
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation: 99.58

Owners Well Number (As shown on application or plan): MW-8

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

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MONITORING WELL CERTIFICATION - FORM B - LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. ___-_____-___

Longitude (one-half of a second): West 74 07 42.9
Latitude (one-half of a second): North 40 56 36.9
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): Casing 91.24 RIM 91.66
Source of elevation datum (benchmark, etc.) Rte 208 Control Mon. Sta. 109+0
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation: 99.58

Owners Well Number (As shown on application or plan): MW-9

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

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MONITORING WELL CERTIFICATION - FORM B - LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. ___-_____-___

Longitude (one-half of a second): West 74 07 45.3
Latitude (one-half of a second): North 40 56 31.9
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): Casing 96.17 RIM 96.56
Source of elevation datum (benchmark, etc.) Rte 208 Control Mon. Sta. 109+0
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation: 99.58

Owners Well Number (As shown on application or plan): MW-10

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

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MONITORING WELL CERTIFICATION - FORM B - LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. ___ - ___ - ___ - ___

Longitude (one-half of a second): West 74 07 44.7
Latitude (one-half of a second): North 40 56 36.2
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): Not requested
Source of elevation datum (benchmark, etc.)
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation:

Owners Well Number (As shown on application or plan): PB-2

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

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MONITORING WELL CERTIFICATION - FORM B - LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. ___ - ___ ___ ___ ___ ___ - ___

Longitude (one-half of a second): West 74 07 43.9
Latitude (one-half of a second): North 40 56 35.7
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): Not requested
Source of elevation datum (benchmark, etc.)
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation:

Owners Well Number (As shown on application or plan): PB-3

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

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MONITORING WELL CERTIFICATION - FORM B - LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. ___ - ___ ___ ___ ___ - ___

Longitude (one-half of a second): West 74 07 42.7
Latitude (one-half of a second): North 40 56 34.6
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): Not requested
Source of elevation datum (benchmark, etc.)
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation:

Owners Well Number (As shown on application or plan): PB-4

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

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New Jersey License #29353
PROFESSIONAL LAND SURVEYOR'S LICENSE #

THIS FORM MUST BE COMPLETED BY THE PERMITTEE OR HIS/HER AGENT
MONITORING WELL CERTIFICATION - FORM B - LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. ___ - ___ ___ ___ ___ ___ - ___

Longitude (one-half of a second): West 74 07 42.5
Latitude (one-half of a second): North 40 56 33.3
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): Not Requested
Source of elevation datum (benchmark, etc.)
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation:

Owners Well Number (As shown on application or plan): PB-5

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

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PROFESSIONAL LAND SURVEYOR'S LICENSE #

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MONITORING WELL CERTIFICATION - FORM B - LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. ___ ___ - ___ ___ ___ ___ ___ - ___

Longitude (one-half of a second): West 74 07 43.4
Latitude (one-half of a second): North 40 56 33.1
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): Not requested
Source of elevation datum (benchmark, etc.)
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation:

Owners Well Number (As shown on application or plan): PB-6

AUTHENTICATION

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(Please print or type)

New Jersey License #29353
PROFESSIONAL LAND SURVEYOR'S LICENSE #

SEAL

APPENDIX E

GROUNDWATER DEVELOPMENT RECORDS

Groundwater Development Record

Well ID MW-6
Time/Date Start Development 0915/10-29-91
Installation ID 6"
Project Kodalux, Fairlawn, NJ
Initial/Final Groundwater Depth 30.34 / _____ (FT) Below Measuring Point
Initial/Final Depth to Bottom of Well _____ / 37.20 (FT) Below Measuring Point
Time/Date Finish Development 0930/10-29-91
Logger Code LM
Type, Size/Capacity of Pump or Bailer plastic/bottom filling/3 gallon
Total Volume to Purge for 3/5 (circle one) Well Volumes 30 Gallons
Actual Purged Volume 15 Gallons

Time	Cummulative Volume (Gallons)	Clarity/Color	pH	Specific Conductivity (µ mhos)	Temp °C	Comments
0930	~15	silty	7.52	600	Not Measured	bailed dry

Groundwater Development Record

Well ID MW-7
Time/Date Start Development 0915/10-28-91
Installation ID 6"
Project Kodalux, Fairlawn, NJ
Initial/Final Groundwater Depth 33.15 / _____ (FT) Below Measuring Point
Initial/Final Depth to Bottom of Well _____ / 36.25 (FT) Below Measuring Point
Time/Date Finish Development 0930/10-28-91
Logger Code LM
Type, Size/Capacity of Pump or Bailer submersible pump
Total Volume to Purge for (3)/5 (circle one) Well Volumes 14 Gallons
Actual Purged Volume 15 Gallons

Time	Cummulative Volume (Gallons)	Clarity/Color	pH	Specific Conductivity (µ mhos)	Temp °C	Comments
0920	15	cloudy	7.52	630	Not Measured	pumped dry

Groundwater Development Record

Well ID MW-8
Time/Date Start Development 0845/10-29-91
Installation ID 6"
Project Kodalux, Fairlawn, NJ
Initial/Final Groundwater Depth 27.32 / _____ (FT) Below Measuring Point
Initial/Final Depth to Bottom of Well _____ / 37.22 (FT) Below Measuring Point
Time/Date Finish Development 0900/10-29-91
Logger Code LM
Type, Size/Capacity of Pump or Bailer plastic, bottom filling/3 gal
Total Volume to Purge for (3)/5 (circle one) Well Volumes 44 Gallons
Actual Purged Volume 20 Gallons

Time	Cummulative Volume (Gallons)	Clarity/Color	pH	Specific Conductivity (µ mhos)	Temp °C	Comments
0900	~20	cloudy, silty	7.58	570	Not Measured	bailed dry

Groundwater Development Record

Well ID MW-9
Time/Date Start Development 9:45 10-28-91
Installation ID 6"
Project Kodalux, Fairlawn, NJ
Initial/Final Groundwater Depth 27.50 / _____ (FT) Below Measuring Point
Initial/Final Depth to Bottom of Well _____ / 39.52 (FT) Below Measuring Point
Time/Date Finish Development 0830/10-29-91
Logger Code LM
Type, Size/Capacity of Pump or Bailer Plastic bottom-filling, 3 gal
Total Volume to Purge for ③/5 (circle one) Well Volumes 53 Gallons
Actual Purged Volume 25 Gallons

Time	Cummulative Volume (Gallons)	Clarity/Color	pH	Specific Conductivity (µmhos)	Temp °C	Comments
1015	5	cloudy	9.4	580	Not Measured	pumped dry
0830	20	cloudy	7.79	640	Not Measured	bailed dry

Groundwater Development Record

Well ID MW-10
Time/Date Start Development 1030/10-29-91
Installation ID 6"
Project Kodalux, Fairlawn, NJ
Initial/Final Groundwater Depth 25.33 / _____ (FT) Below Measuring Point
Initial/Final Depth to Bottom of Well _____ / 36.32 (FT) Below Measuring Point
Time/Date Finish Development 1050/10-29-91
Logger Code _____
Type, Size/Capacity of Pump or Bailer Plastic, bottom filling, 3 gal
Total Volume to Purge for 3/5 (circle one) Well Volumes 48 Gallons
Actual Purged Volume 20 Gallons

Time	Cummulative Volume (Gallons)	Clarity/Color	pH	Specific Conductivity (µmhos)	Temp °C	Comments
1050	~20	cloudy	7.64	650	Not Measured	Bailed Dry

APPENDIX F

ANALYTICAL RESULTS

20492.0

RECRA ENVIRONMENTAL, INC.

Chemical and Environmental Analysis Services

World University Games Buffalo '93
GRAND PATRON
HELPING TO BRING THE WORLD TO BUFFALO

December 9, 1991

Ms. Lynn M. Moody
Radian Corporation
155 Corporate Woods, Suite 100
Rochester, NY 14623

Re: Analytical Results

Dear Ms. Moody:

Please find enclosed results concerning the analyses of the samples recently submitted by your firm. The Pertinent Information regarding these analyses is listed below:

Quote #:	NY91-945R
Project Name:	Kodalux-Fairlawn, NJ
Matrix:	Aqueous
Samples Received:	11/16/91
Sample Date:	11/15/91

If you have any questions concerning these data, please contact Ms. Donna Bateman, Project Manager at (716) 691-2600 and refer to the I.D. number listed below. It has been our pleasure to provide Radian Corporation with Environmental Testing Services. We look forward to serving you in the future.

Sincerely,

RECRA ENVIRONMENTAL, INC.

Kenneth C. Malinowski, PhD
Vice President

KLWW/KCM/nmm
Enclosure

I.D. #91-3386
#NY2A3811

Audubon Business Centre • 10 Hazelwood Drive • Amherst, New York 14228-2298 • (716) 691-2600 • FAX (716) 691-3011

20492.1

ANALYTICAL RESULTS

Prepared For

Radian Corporation
155 Corporate Woods, Suite 100
Rochester, NY 14623

Prepared By

Recra Environmental, Inc.
10 Hazelwood Drive, Suite 106
Amherst, New York 14228-2298

METHODOLOGIES

The specific methodologies employed in obtaining the enclosed analytical results are indicated on the specific data table. The method numbers presented refer to one of the following U.S. Environmental Protection Agency references unless noted otherwise in this report.

- 40 CFR Part 136 "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act" October 24, 1984 (Federal Register) U.S. Environmental Protection Agency.
- U.S. Environmental Protection Agency "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods." Office of Solid Waste and Emergency Response. November 1986, SW-846, Third Edition.
- The analysis for Formaldehyde was performed in accordance with Method 3500 from the National Institute of Occupational Safety and Health.

COMMENTS

Comments pertain to data on one or all pages of this report.

The enclosed data has been reported utilizing data qualifiers (Q) as defined on the Organic and Inorganic Data Comment Pages.

Quality control analysis was performed on a batch basis. All results were within acceptable limits.

The extraction date for Hexavalent Chromium was November 16, 1991.

RECRA
ENVIRONMENTAL
INC.

VOLATILES DATA

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-1

ANALYSIS DATE 11/18/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	7.5	J
2-Chloroethylvinyl ether	10	U
Chloroform	7.9	
Chloromethane	10	U
1,1-Dichloroethane	50	
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	16	
trans-1,2-Dichloroethene	8.7	
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	87	
1,1,2-Trichloroethane	5.0	U
Trichloroethene	6.7	
Vinyl chloride	0.95	J

DILUTION FACTOR = 1.0

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-1

ANALYSIS DATE 11/18/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-1

ANALYSIS DATE 11/18/91

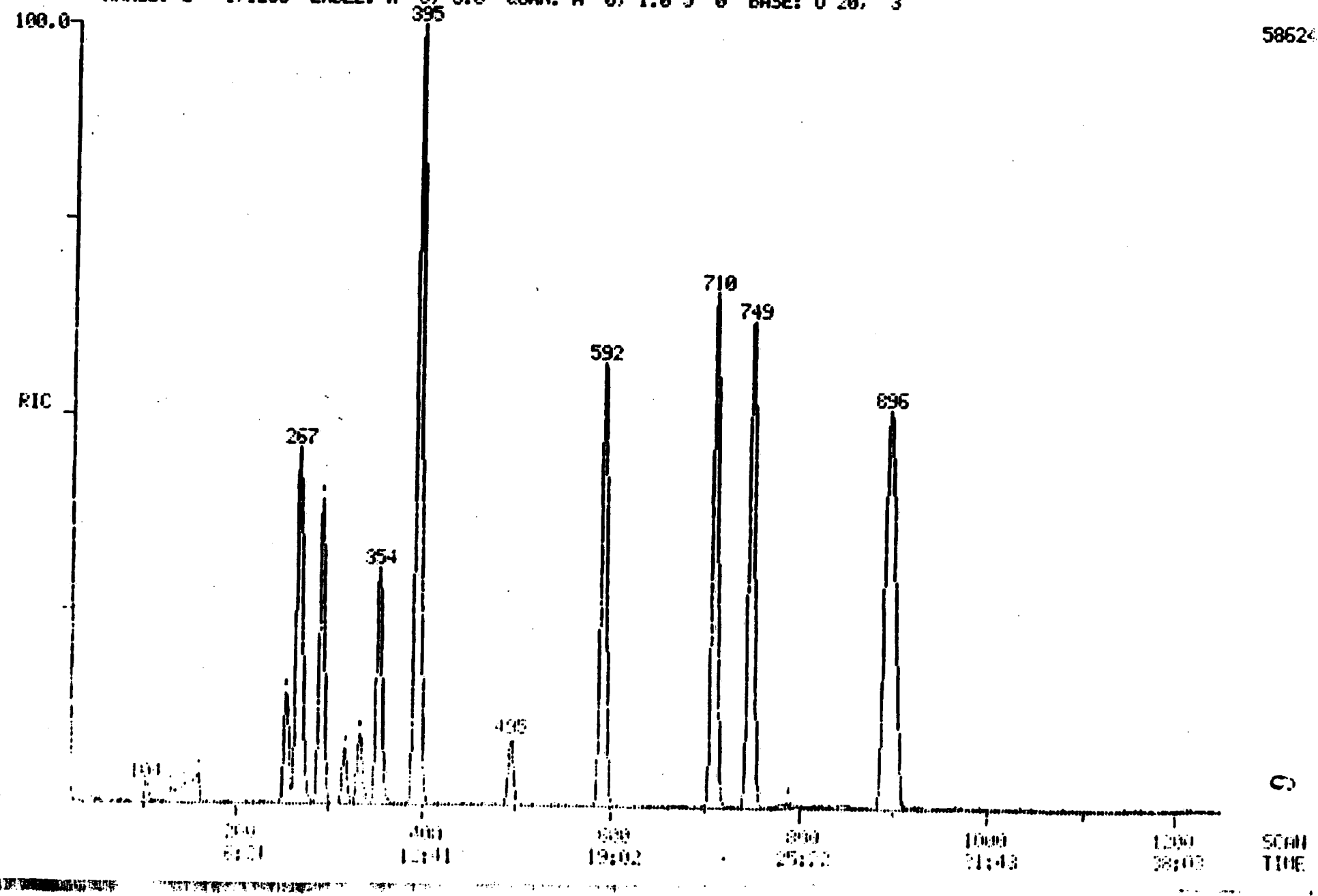
COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	91	
1,4-Difluorobenzene	92	
Chlorobenzene-D5	95	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	99	
1,2-Dichloroethane-D4	96	
Toluene-D8	97	

115

MIDRIC
11/18/91 15:18:00
SAMPLE: MW1 JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4761 #46
CALI: A4761 #2

SCANS 25 TO 1250



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-1

JOB#:91-3386.12
FILE:A4761

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

8

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC MW-1 FIELD DUP
SAMPLE NO. FIELD DUP

SAMPLE DATE 11/15/91

ANALYSIS DATE 11/18/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	7.3	J
2-Chloroethylvinyl ether	10	U
Chloroform	7.8	
Chloromethane	10	U
1,1-Dichloroethane	51	
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	17	
trans-1,2-Dichloroethene	9.0	
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	85	
1,1,2-Trichloroethane	5.0	U
Trichloroethene	6.6	
Vinyl chloride	10	U

DILUTION FACTOR = 1.0

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC MW-1 FIELD DUP
SAMPLE NO. FIELD DUP

SAMPLE DATE 11/15/91
ANALYSIS DATE 11/18/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

.B NAME RECRA ENVIRONMENTAL INC.
.B NO. 91-3386
:SC MW-1 FIELD DUP
.MPLE NO. FIELD DUP

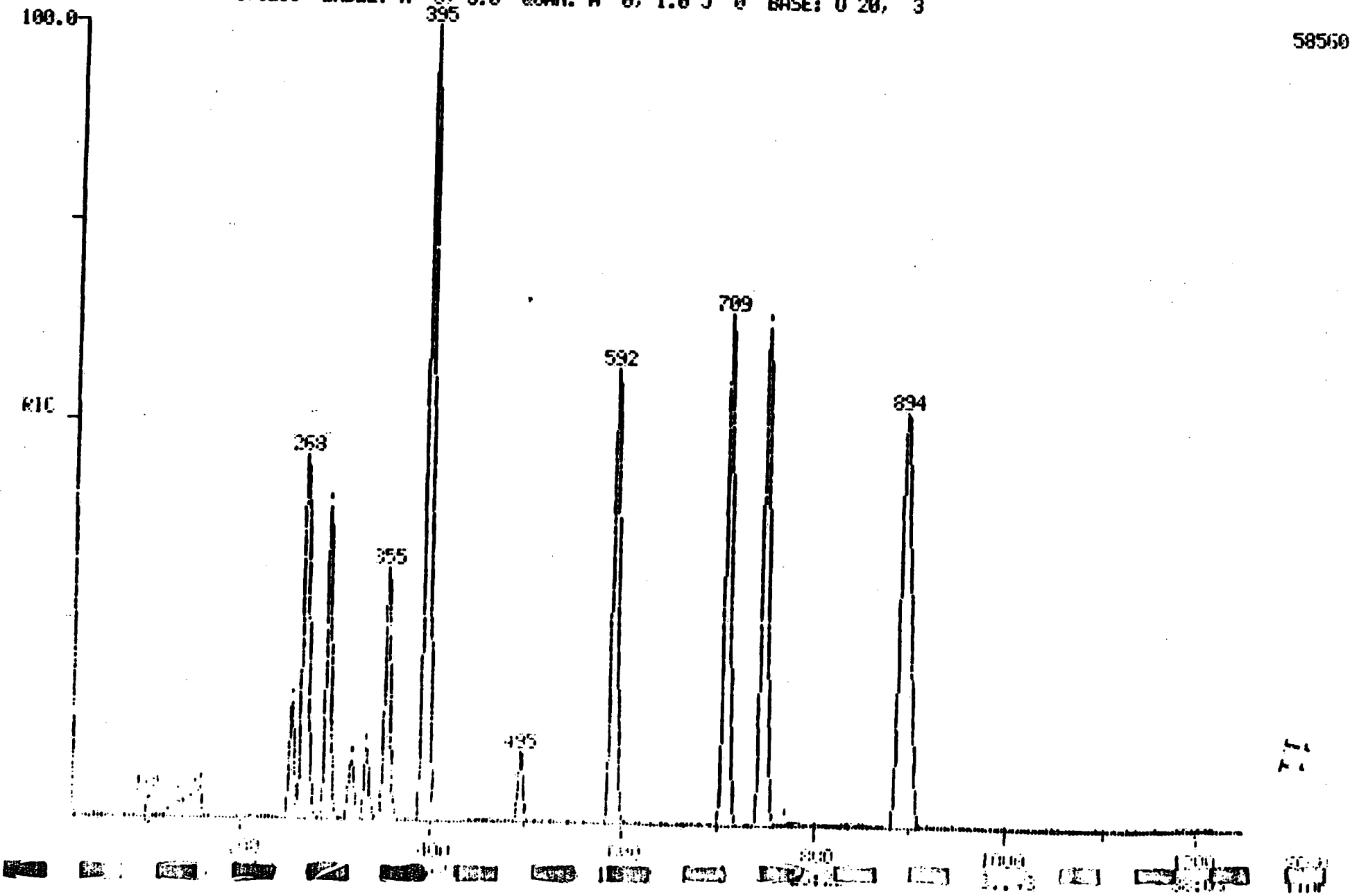
SAMPLE DATE 11/15/91
ANALYSIS DATE 11/18/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	91	
1,4-Difluorobenzene	92	
Chlorobenzene-D5	94	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	97	
1,2-Dichloroethane-D4	99	
Toluene-D8	98	

MIDRIC
11/18/91 16:02:00
SAMPLE: MWIDUP JOB3396
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4762 #46
CALI: A4762 #2

SCANS 25 TO 1250



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-1 FIELD DUP

JOB#:91-3386.11
FILE:A4762

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

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LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-2

ANALYSIS DATE 11/18/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	15	
2-Chloroethylvinyl ether	10	U
Chloroform	0.67	J-
Chloromethane	10	U
1,1-Dichloroethane	210	J*
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	460	J*
trans-1,2-Dichloroethene	1.5	J
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	3.8	J
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	13,000	*
1,1,2-Trichloroethane	5.0	U
Trichloroethene	7.2	
Vinyl chloride	1.6	J

DILUTION FACTOR = 1.0
*DILUTION FACTOR = 100

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-2

ANALYSIS DATE 11/18/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	1.5	J

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE. THE REPORTED VALUE IS, THEREFORE, AN "AND/OR" VALUE.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-2

ANALYSIS DATE 11/18/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	95	
1,4-Difluorobenzene	142	
Chlorobenzene-D5	132	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	117	**
1,2-Dichloroethane-D4	101	
Toluene-D8	95	-

**SURROGATE RECOVERY OUTSIDE OF QUALITY CONTROL LIMITS.

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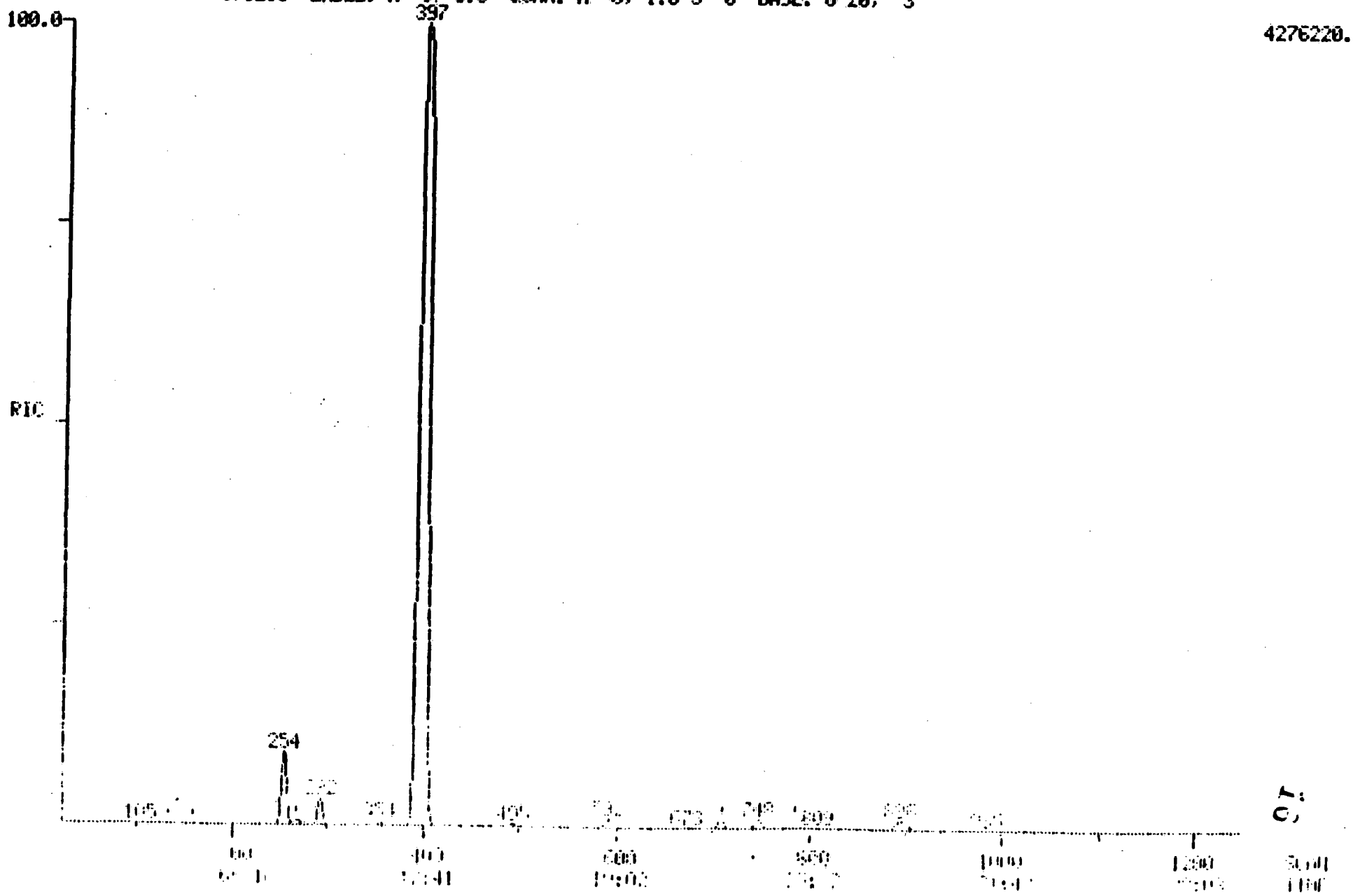
MIDRIC
11/18/91 16:46:00
SAMPLE: MW2 JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4763 #46
CALI: A4763 #2

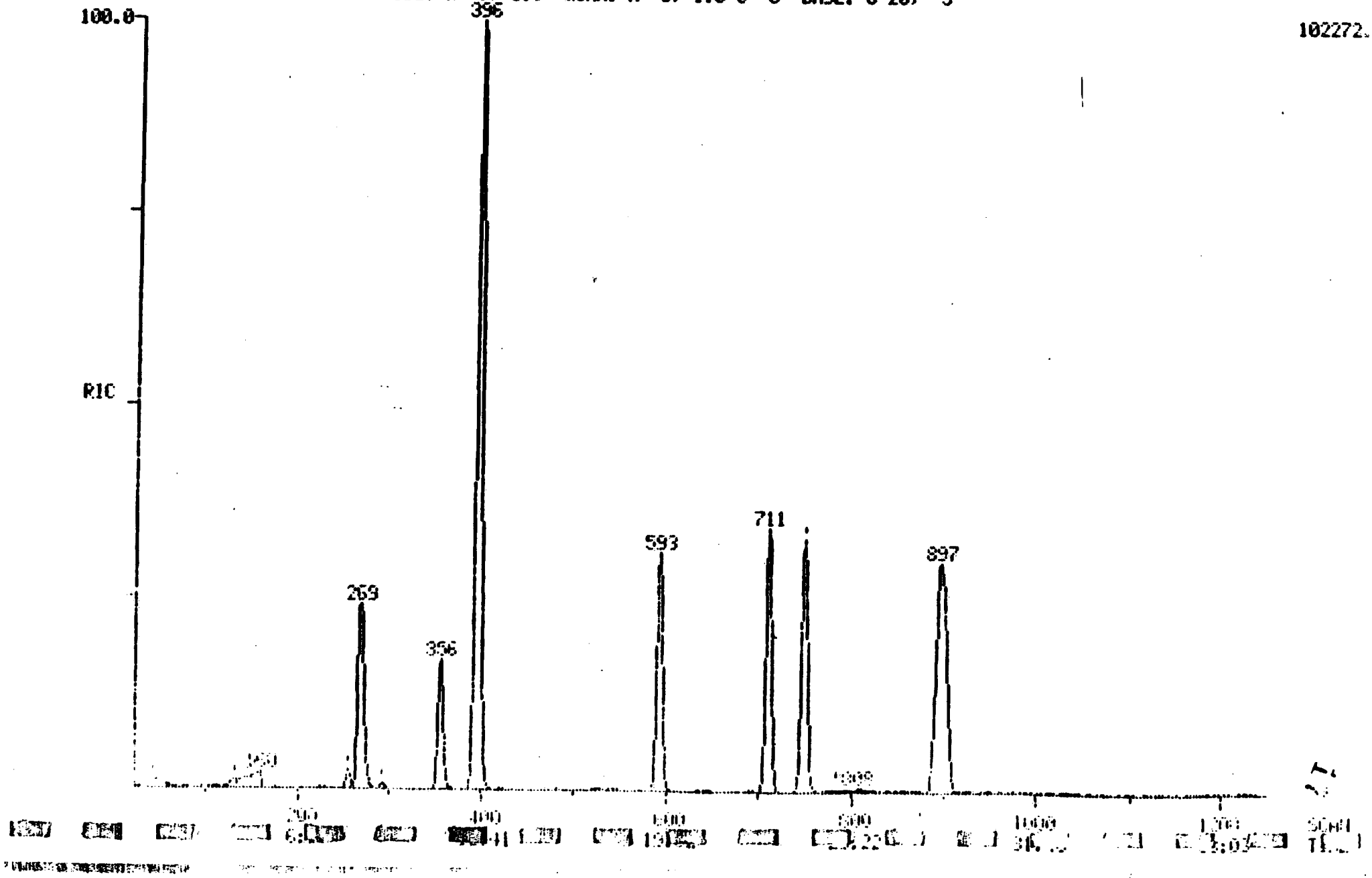
SCANS 25 TO 1250



MIDRIC
11/19/91 13:04:00
SAMPLE: MW2DL JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4777 #46
CALI: A4777 #2

SCANS 25 TO 1250



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-2

JOB#:91-3386.1
FILE:A4763/A4777

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-3

ANALYSIS DATE 11/19/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	13	
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	5.7	J
2-Chloroethylvinyl ether	10	U
Chloroform	0.96	J
Chloromethane	10	U
1,1-Dichloroethane	110	
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	100	
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	500	*
1,1,2-Trichloroethane	1.8	J
Trichloroethene	0.64	J
Vinyl chloride	110	

DILUTION FACTOR = 1.0
*DILUTION FACTOR = 5.0

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

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LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-3

ANALYSIS DATE 11/19/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-3

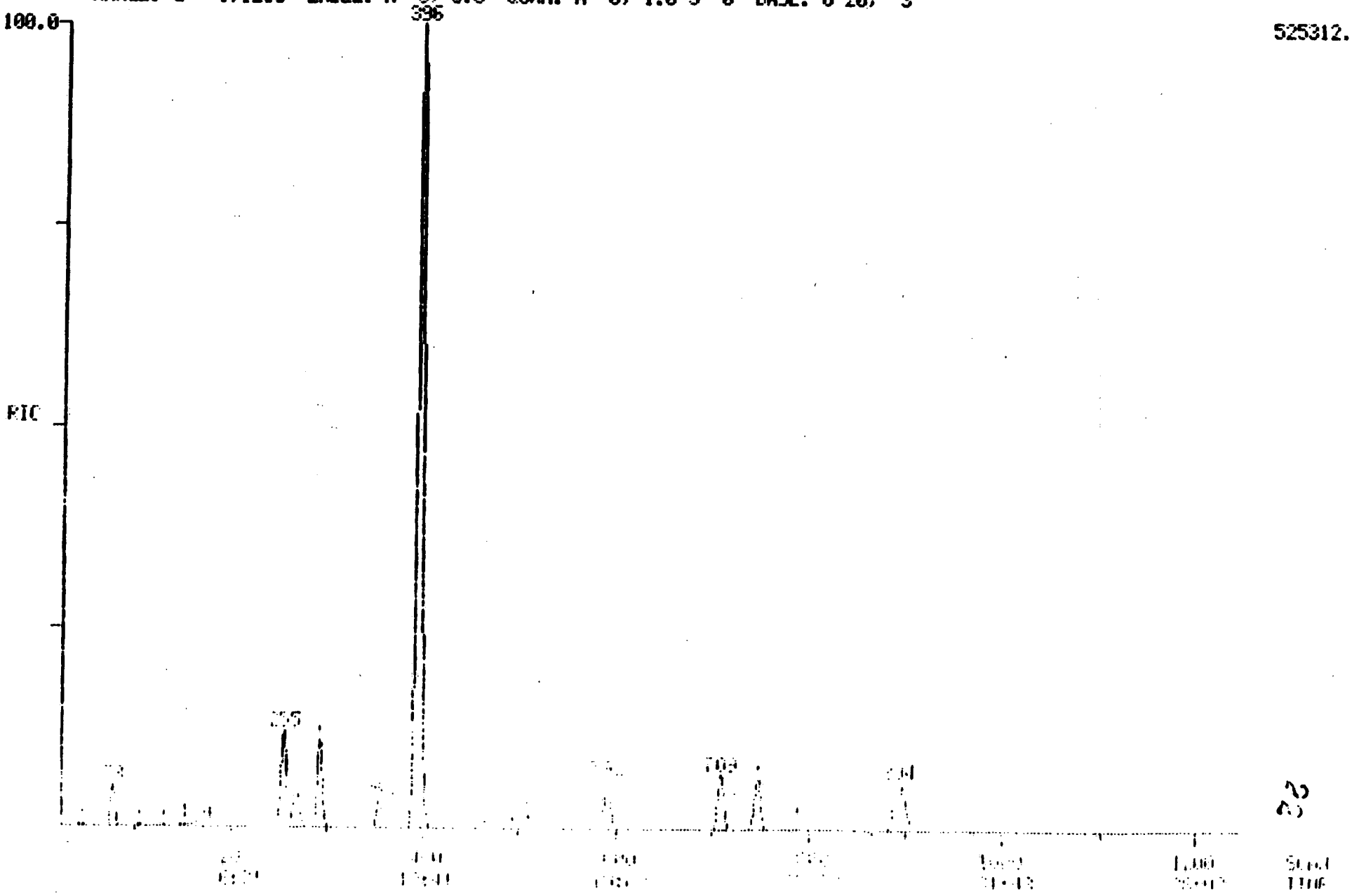
ANALYSIS DATE 11/19/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	101	
1,4-Difluorobenzene	94	
Chlorobenzene-D5	95	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	99	
1,2-Dichloroethane-D4	95	
Toluene-D8	99	-

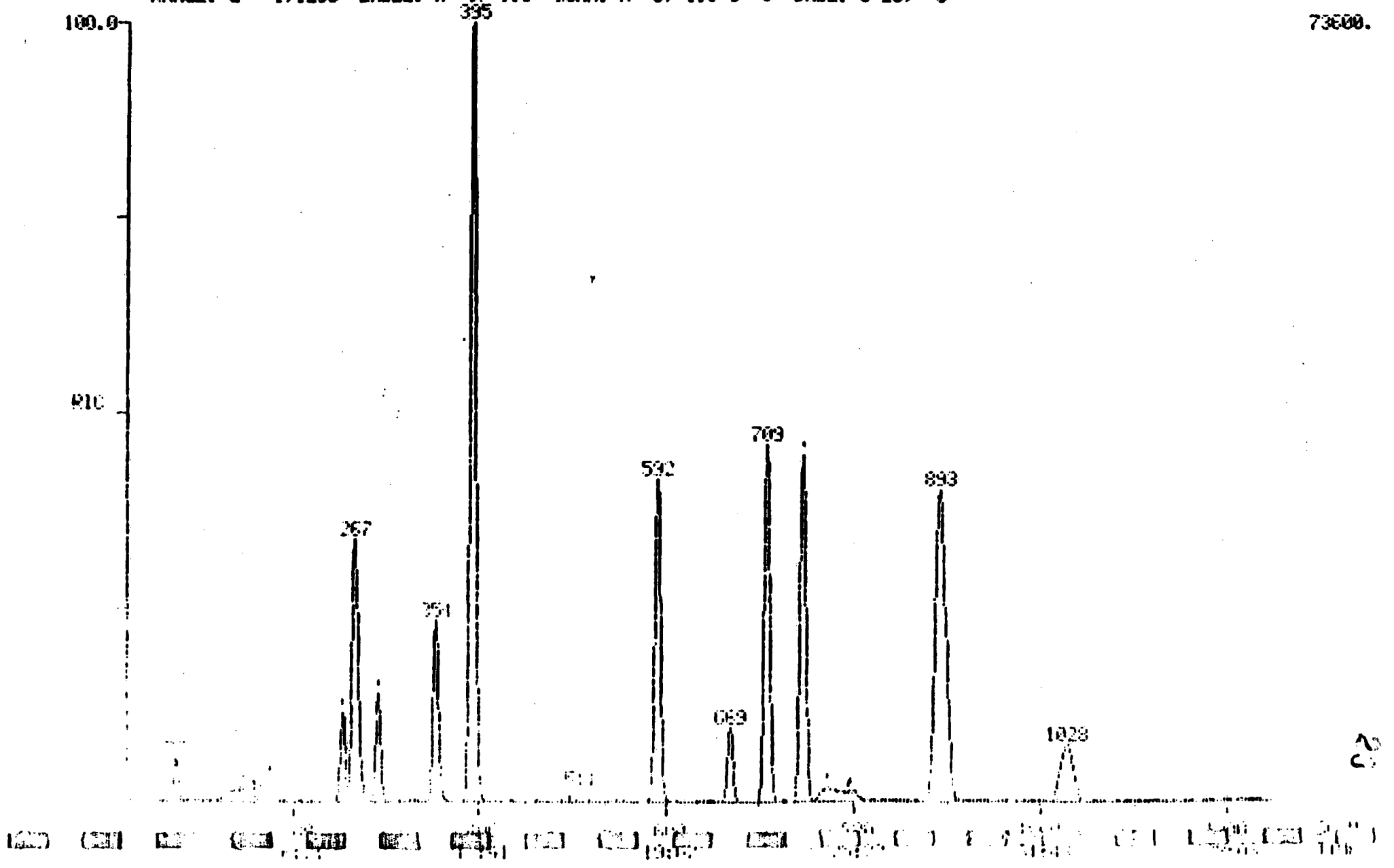
MIDRIC
11/19/91 13:48:00
SAMPLE: MW3 JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4778 #46
CALI: A4778 #2

SCANS 25 TO 1250



MIDRIC DATA: A4786 #46 SCANS 25 TO 1250
11/19/91 19:43:00 CALI: A4786 #2
SAMPLE: ~~105R~~ ~~J000995~~ MW 3DL Job 3346
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-3/DL

JOB#:91-3386.4
FILE:A4778 & A4786

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)
1028	HEXACHLOROBUTADIENE	90

*Tic found in dilution of sample MW-3.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-4

ANALYSIS DATE 11/19/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	10	U
2-Chloroethylvinyl ether	10	U
Chloroform	5.0	U
Chloromethane	10	U
1,1-Dichloroethane	17	
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	2.1	J
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	5.5	
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl chloride	2.0	J

DILUTION FACTOR = 1.0

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-4

ANALYSIS DATE 11/19/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-4

ANALYSIS DATE 11/19/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	98	
1,4-Difluorobenzene	90	
Chlorobenzene-D5	90	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	104	
1,2-Dichloroethane-D4	96	
Toluene-D8	101	

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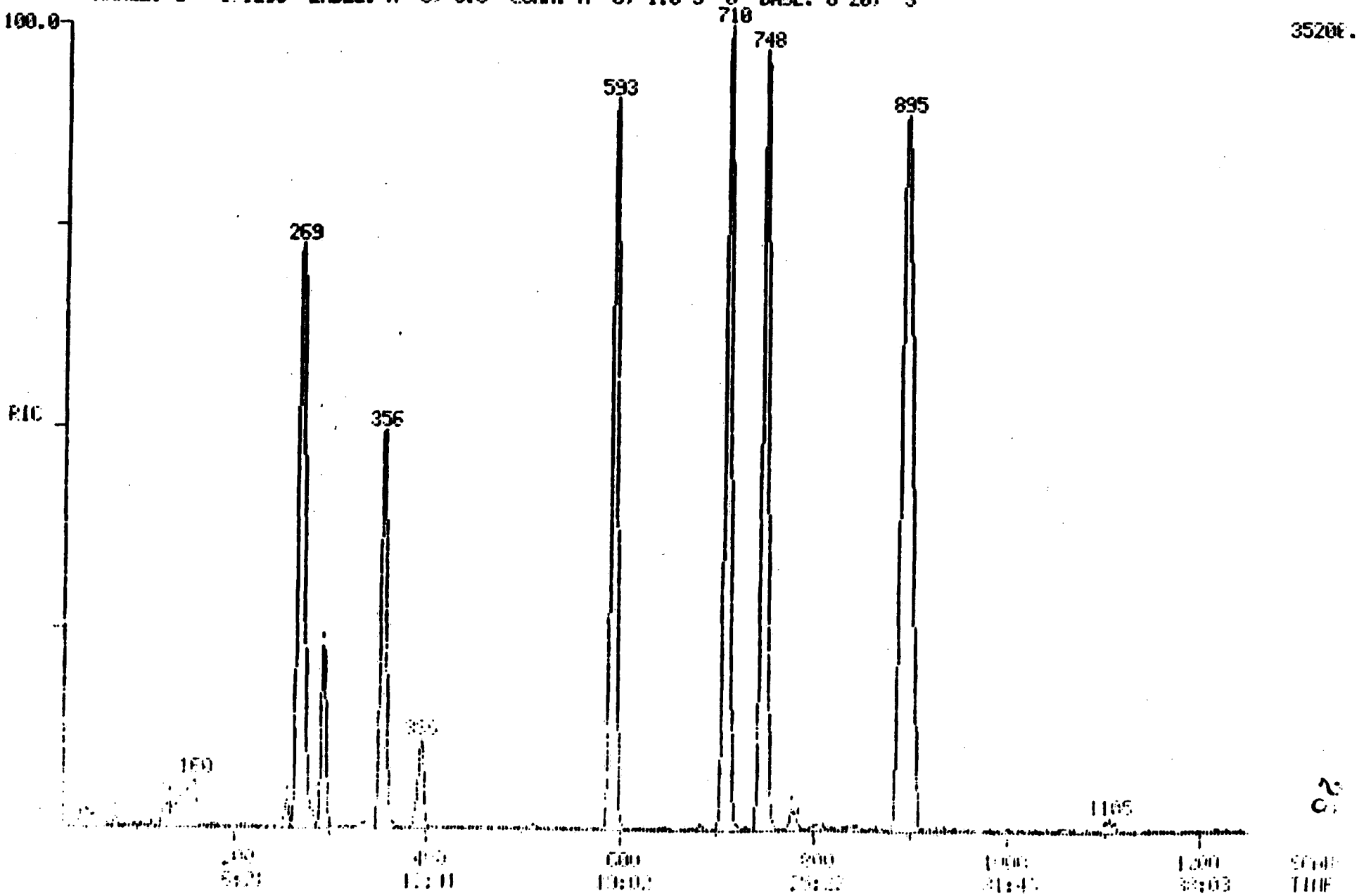
MIDRIC
11/19/91 14:33:00
SAMPLE: MW4 J083386
CONDS.: 51A
RANGE: G 1.1250 LABEL: N 3. 5.0 QUAN: A 0. 1.0 J 0 BASE: U 20. 3

DATA: A4779 #46
CALI: A4779 #2

SCANS 25 TO 1250



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-4

JOB#:91-3386.6
FILE:A4779

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

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LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-5

ANALYSIS DATE 11/19/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	10	U
2-Chloroethylvinyl ether	10	U
Chloroform	5.0	U
Chloromethane	10	U
1,1-Dichloroethane	5.0	U
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	5.0	U
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	5.0	U
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl chloride	10	U

DILUTION FACTOR = 1.0

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-5

ANALYSIS DATE 11/19/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-5

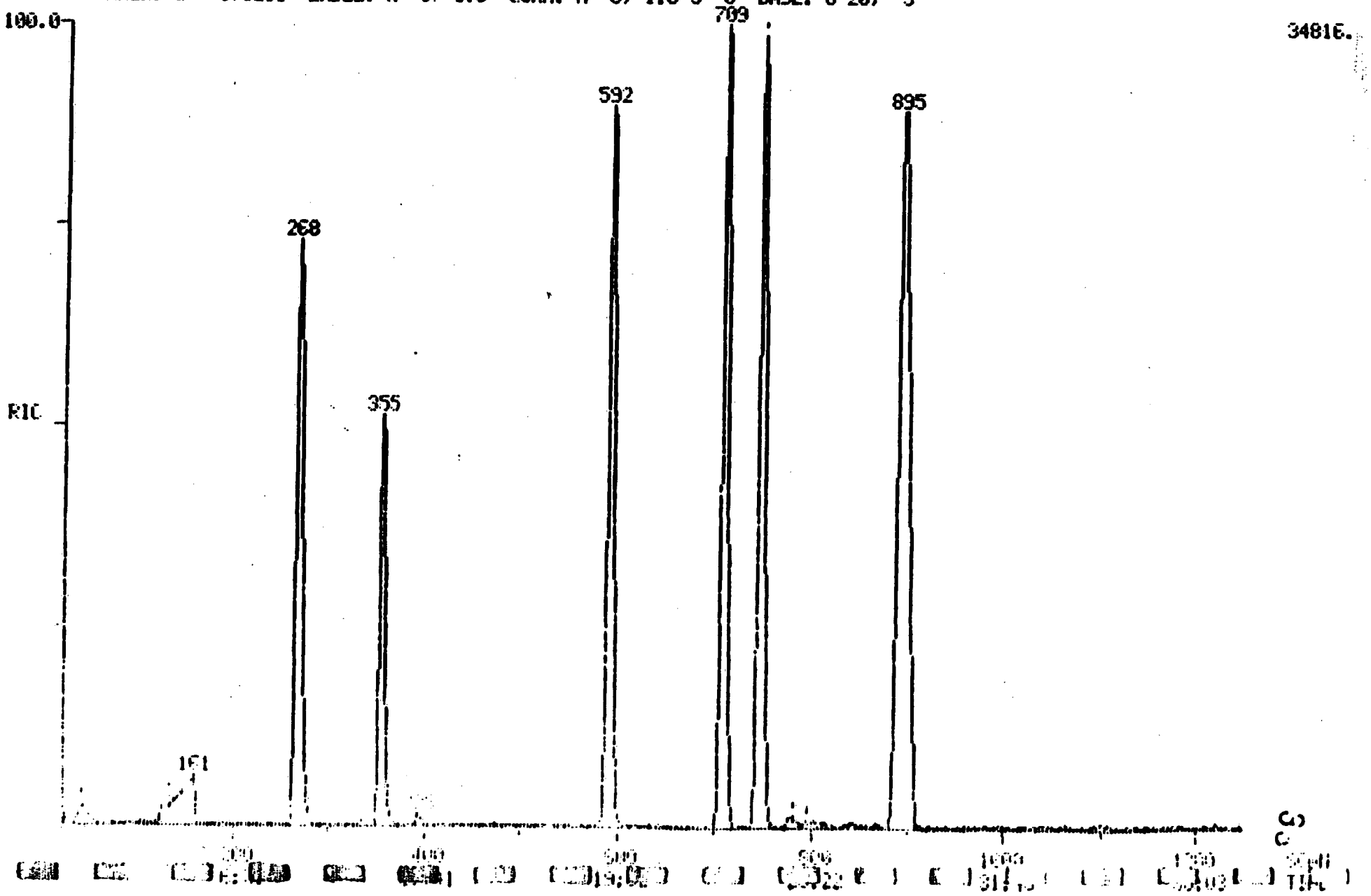
ANALYSIS DATE 11/19/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	94	
1,4-Difluorobenzene	91	
Chlorobenzene-D5	91	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	106	
1,2-Dichloroethane-D4	101	
Toluene-D8	99	

MIDRIC
11/19/91 15:17:00
SAMPLE: MW5 J083386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4780 #46
CALI: A4780 #2

SCANS 25 TO 1250



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-5

JOB#:91-3386.5
FILE:A4780

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-6

ANALYSIS DATE 11/18/9

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	3.1	J
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	0.61	J
Chloroethane	10	U
2-Chloroethylvinyl ether	10	U
Chloroform	12	
Chloromethane	10	U
1,1-Dichloroethane	5.0	U
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	5.0	U
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	13	
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl chloride	10	U

DILUTION FACTOR = 1.0

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-6

ANALYSIS DATE 11/18/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9

SAMPLE NO. MW-6

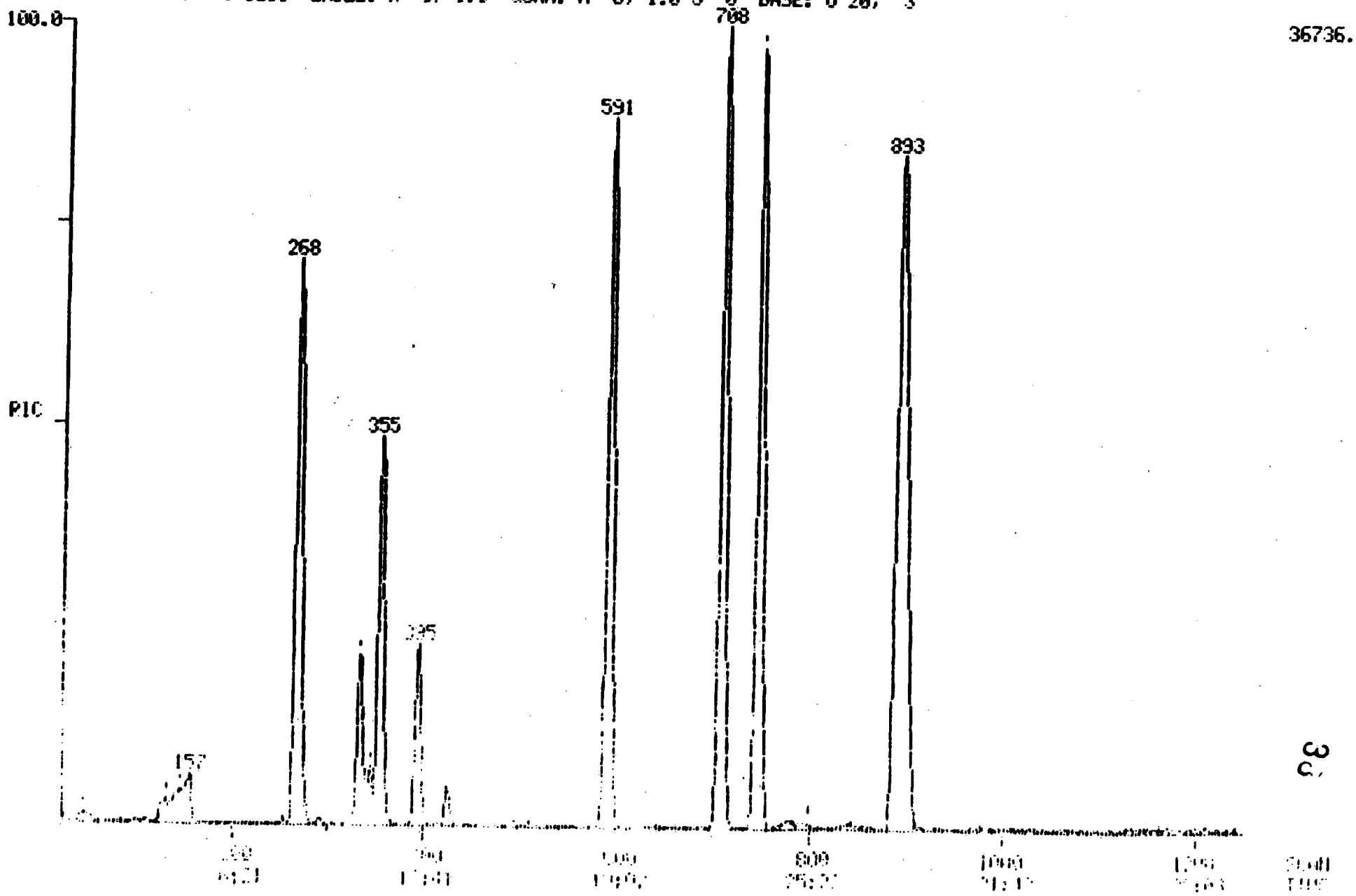
ANALYSIS DATE 11/18/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	92	
1,4-Difluorobenzene	91	
Chlorobenzene-D5	90	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	100	
1,2-Dichloroethane-D4	94	
Toluene-D8	99	

MIDRIC
11/18/91 20:22:00
SAMPLE: MW6 JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4767 #46
CALI: A4767 #2

SCANS 25 TO 1250



3c

ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-6

JOB#:91-3386.10
FILE:A4767

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)
344	1,1,2=TRIMETHYL-1,2,2-TRIFLUOROETHANE (76-13-1)	4.3

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-7

ANALYSIS DATE 11/18/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	1.2	J
2-Chloroethylvinyl ether	10	U
Chloroform	0.98	J
Chloromethane	10	U
1,1-Dichloroethane	57	
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	460	*
trans-1,2-Dichloroethene	0.69	J
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	1.5	J
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	1.6	J
1,1,1-Trichloroethane	2,700	*
1,1,2-Trichloroethane	5.0	U
Trichloroethene	1.9	J
Vinyl chloride	10	U

DILUTION FACTOR = 1.0
*DILUTION FACTOR = 50

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-7

ANALYSIS DATE 11/18/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-7

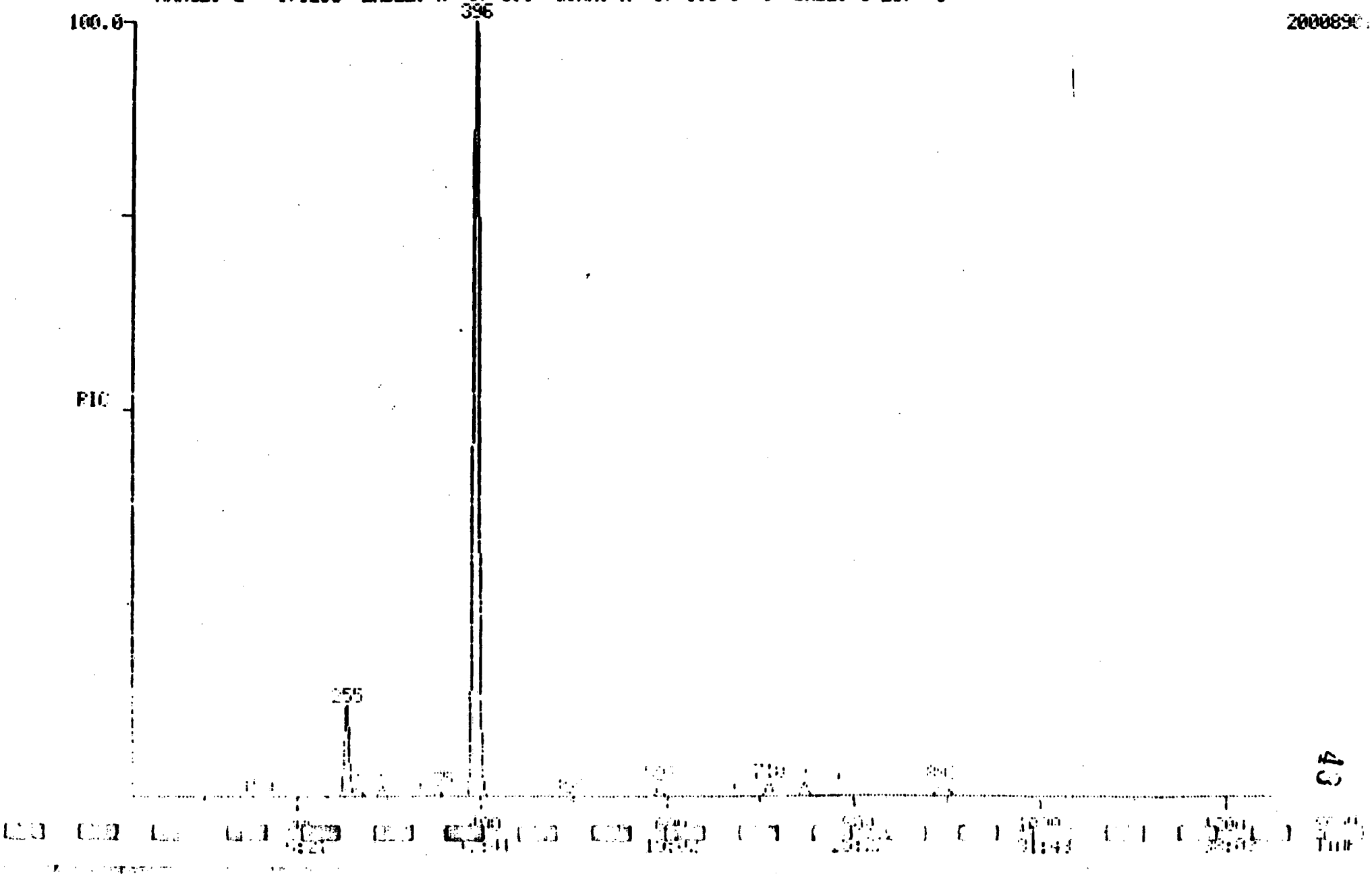
ANALYSIS DATE 11/18/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	94	
1,4-Difluorobenzene	92	
Chlorobenzene-D5	91	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	99	
1,2-Dichloroethane-D4	99	
Toluene-D8	99	-

MIDRIC
11/18/91 21:06:00
SAMPLE: MW7 JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4768 #46
CALI: A4768 #2

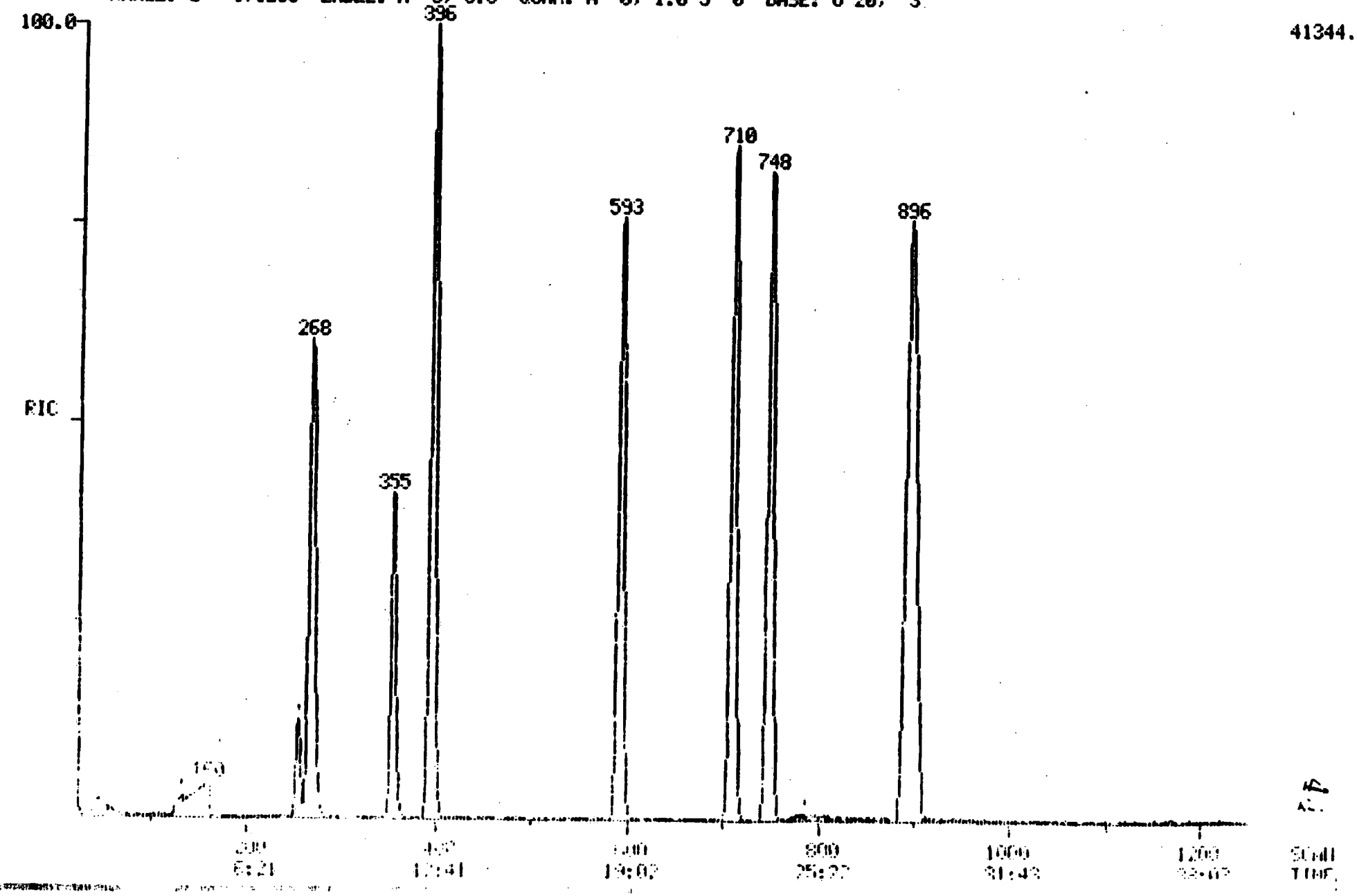
SCANS 25 TO 1250



MIDRIC
11/19/91 16:02:00
SAMPLE: MW7DL JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4781 #46
CALI: A4781 #2

SCANS 25 TO 1250



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-7

JOB#:91-3386.7
FILE:A4768/A4781

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-8

ANALYSIS DATE 11/18/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	10	U
2-Chloroethylvinyl ether	10	U
Chloroform	5.0	U
Chloromethane	10	U
1,1-Dichloroethane	8.6	
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	46	
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	370	*
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl chloride	10	U

DILUTION FACTOR = 1.0
*DILUTION FACTOR = 4.0

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-8

ANALYSIS DATE 11/18/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-8

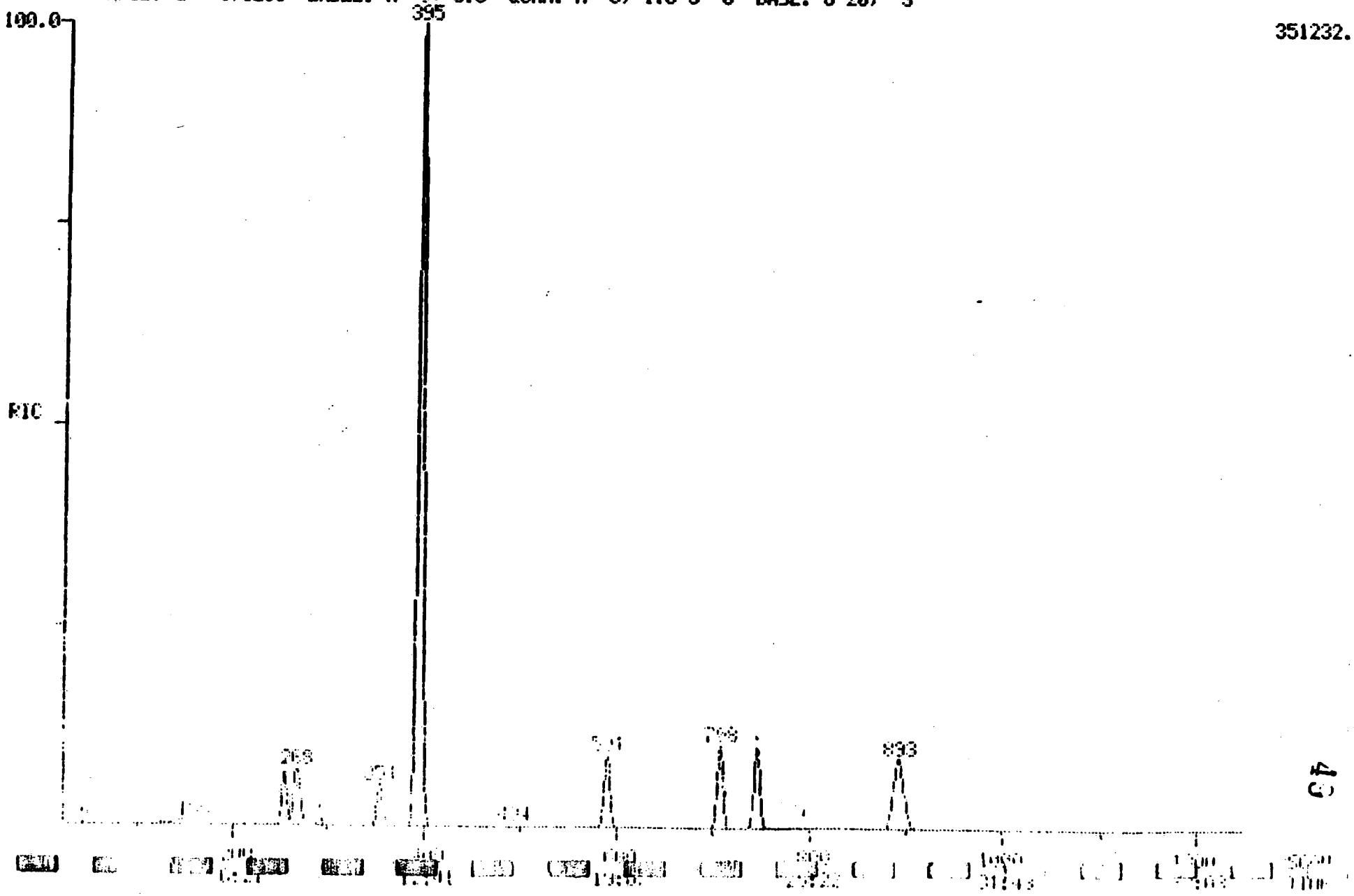
ANALYSIS DATE 11/18/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	92	
1,4-Difluorobenzene	89	
Chlorobenzene-D5	89	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	102	
1,2-Dichloroethane-D4	95	
Toluene-D8	97	-

MIDRIC
11/18/91 21:51:00
SAMPLE: MW8 JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4769 #46
CALI: A4769 #2

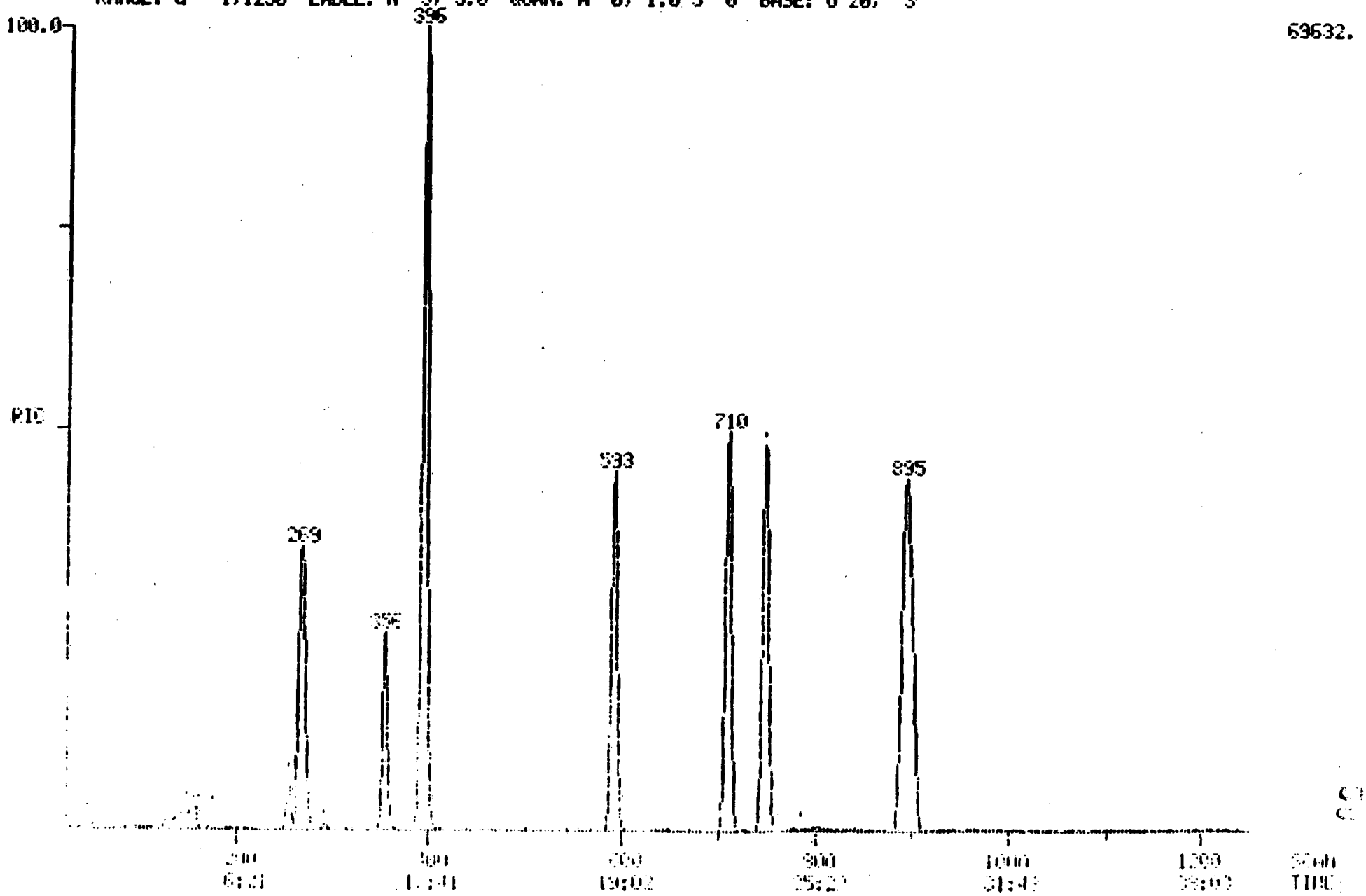
SCANS 25 TO 1250



MIDRIC
11/19/91 16:46:00
SAMPLE: MWB JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4782 #46
CALI: A4782 #2

SCANS 25 TO 1250



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-8

JOB#:91-3386.2
FILE:A4769/A4782

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-9

ANALYSIS DATE 11/18/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	10	U
2-Chloroethylvinyl ether	10	U
Chloroform	6.0	
Chloromethane	10	U
1,1-Dichloroethane	5.0	U
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	2.8	J
trans-1,2-Dichloroethene	4.9	J
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	6.2	
1,1,2-Trichloroethane	5.0	U
Trichloroethene	13	
Vinyl chloride	10	U

DILUTION FACTOR = 1.0

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-9

ANALYSIS DATE 11/18/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-9

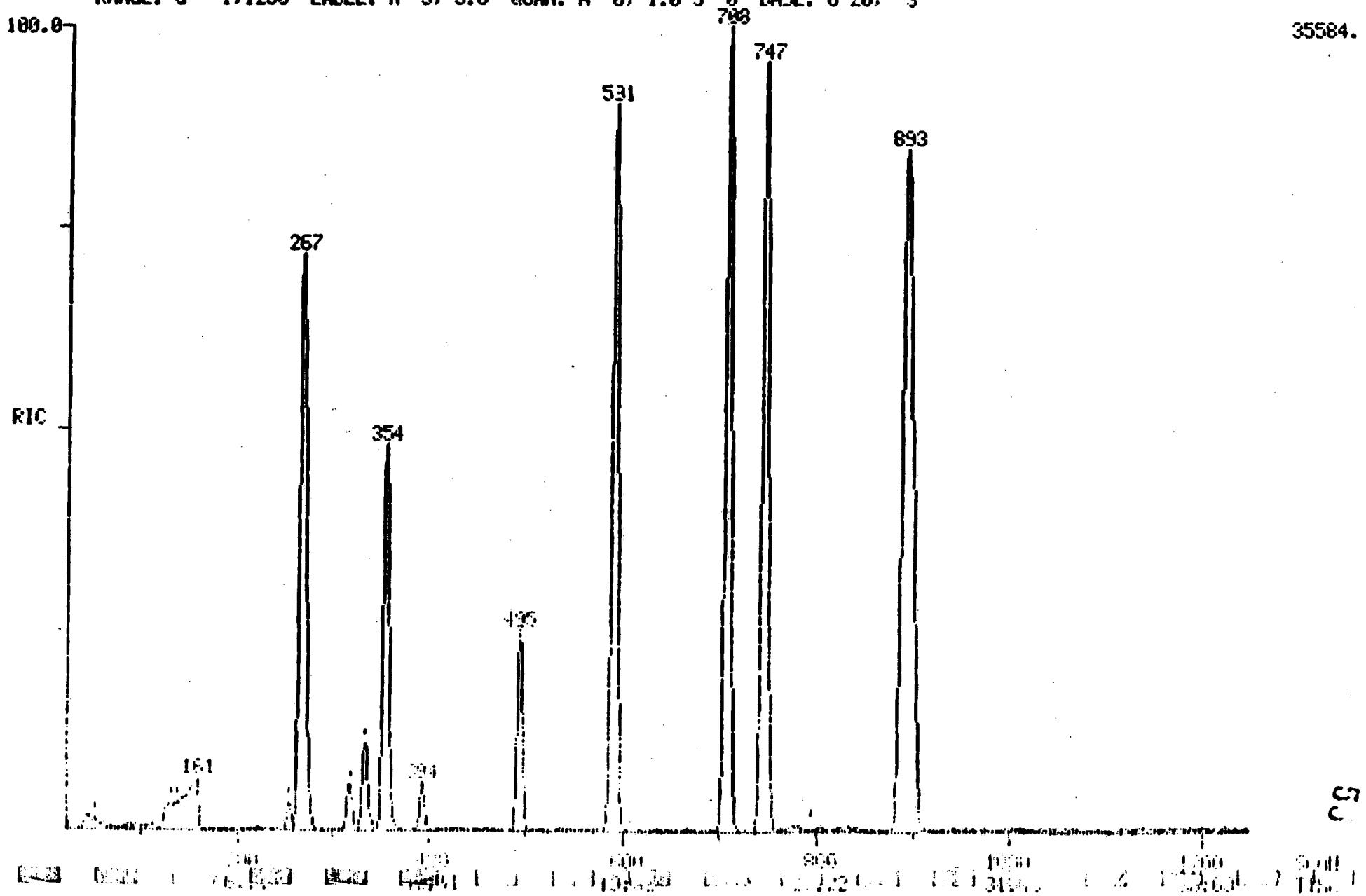
ANALYSIS DATE 11/18/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	86	
1,4-Difluorobenzene	86	
Chlorobenzene-D5	87	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	101	
1,2-Dichloroethane-D4	101	
Toluene-D8	98	

MIDRIC
11/18/91 22:35:00
SAMPLE: MW9 JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4770 #46
CALI: A4770 #2

SCANS 25 TO 1250



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-9

JOB#:91-3386.9
FILE:A4770

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

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LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-10

ANALYSIS DATE 11/18/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	10	U
2-Chloroethylvinyl ether	10	U
Chloroform	5.0	U
Chloromethane	10	U
1,1-Dichloroethane	5.0	U
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	5.0	U
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	1.1	J
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl chloride	10	U

DILUTION FACTOR = 1.0

ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-9

JOB#:91-3386.9
FILE:A4770

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-10

ANALYSIS DATE 11/18/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-10

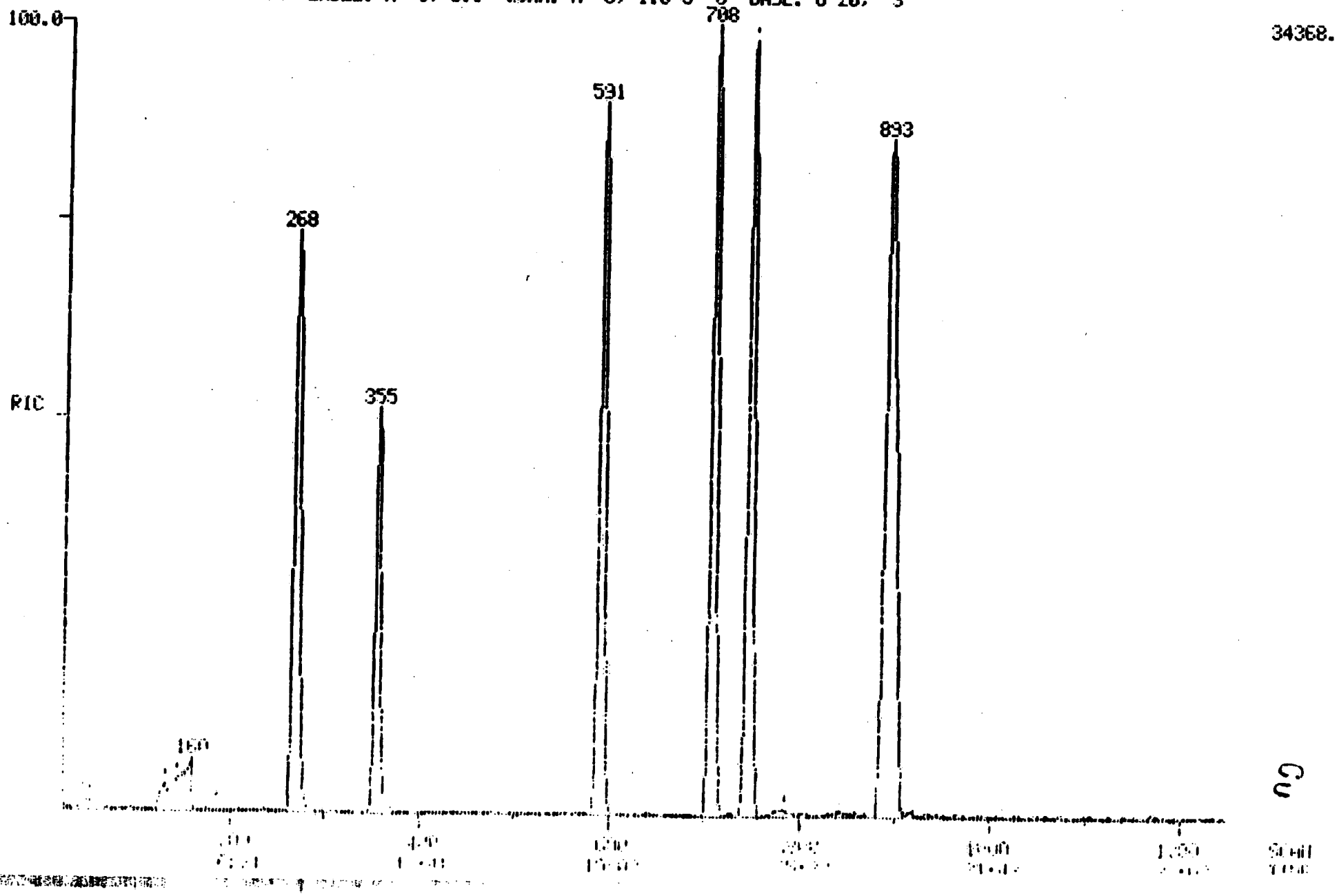
ANALYSIS DATE 11/18/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	88	
1,4-Difluorobenzene	85	
Chlorobenzene-D5	86	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	98	
1,2-Dichloroethane-D4	96	
Toluene-D8	98	-

MIDRIC
11/18/91 23:19:00
SAMPLE: MW10 J083386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4771 #46
CALI: A4771 #2

SCANS 25 TO 1250



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-10

JOB#:91-3386.8
FILE:A4771

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. FIELD BLANK

ANALYSIS DATE 11/18/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	2.9	J
Chlorodibromomethane	5.0	U
Chloroethane	10	U
2-Chloroethylvinyl ether	10	U
Chloroform	5.0	U
Chloromethane	10	U
1,1-Dichloroethane	5.0	U
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	5.0	U
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	5.0	U
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl chloride	10	U

DILUTION FACTOR = 1.0

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. FIELD BLANK

ANALYSIS DATE 11/18/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

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LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. FIELD BLANK

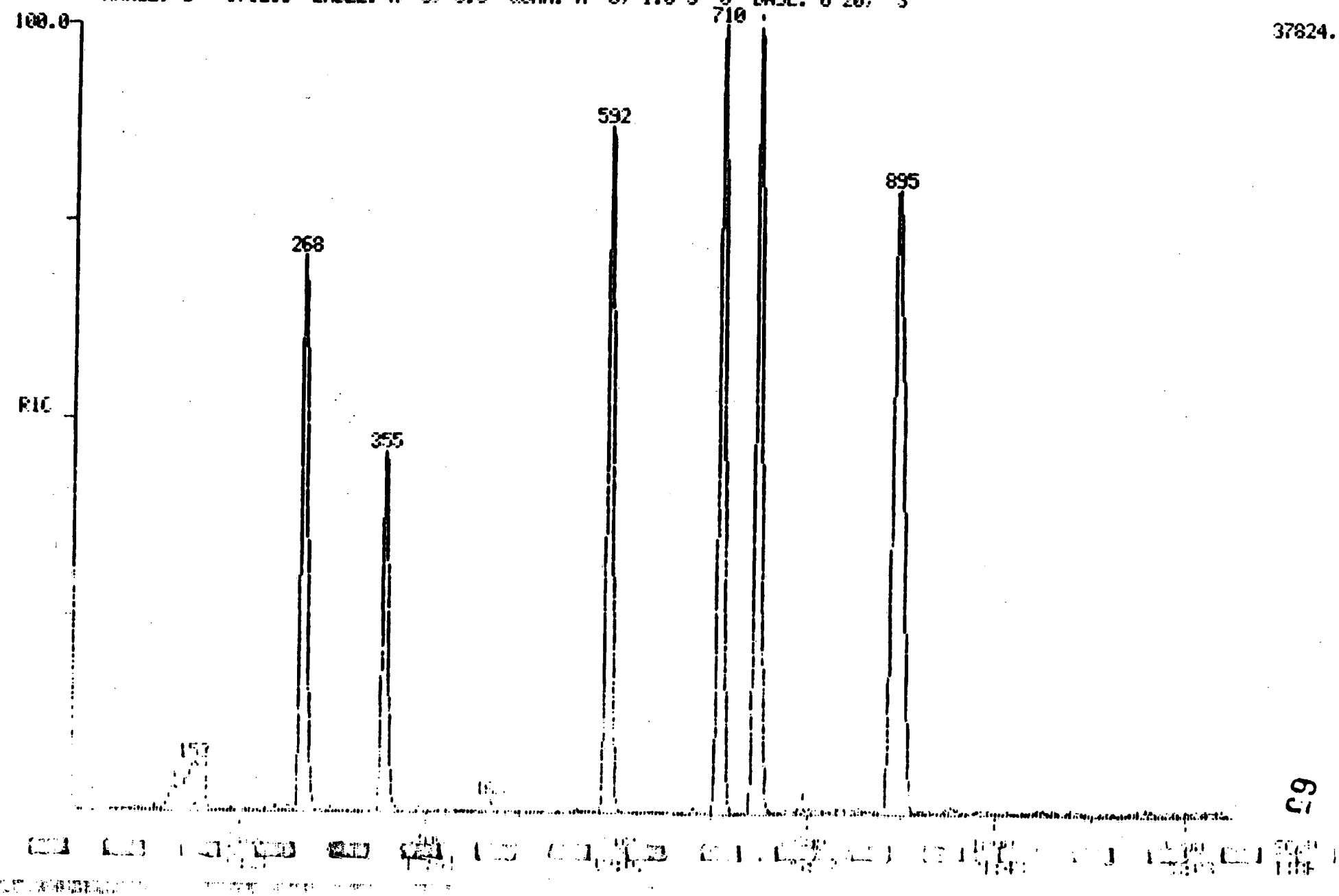
ANALYSIS DATE 11/18/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	91	
1,4-Difluorobenzene	92	
Chlorobenzene-D5	93	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	101	
1,2-Dichloroethane-D4	97	
Toluene-D8	100	-

MIDRIC
11/18/91 14:34:00
SAMPLE: FIELDBLANK JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4760 #46
CALI: A4760 #2

SCANS 25 TO 1250



C9

ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:FIELD BLANK

JOB#:91-3386.13
FILE:A4760

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. TRIP BLANK

ANALYSIS DATE 11/18/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	10	U
2-Chloroethylvinyl ether	10	U
Chloroform	5.0	U
Chloromethane	10	U
1,1-Dichloroethane	5.0	U
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	5.0	U
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	5.0	U
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl chloride	10	U

DILUTION FACTOR = 1.0

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. TRIP BLANK

ANALYSIS DATE 11/18/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

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LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. TRIP BLANK

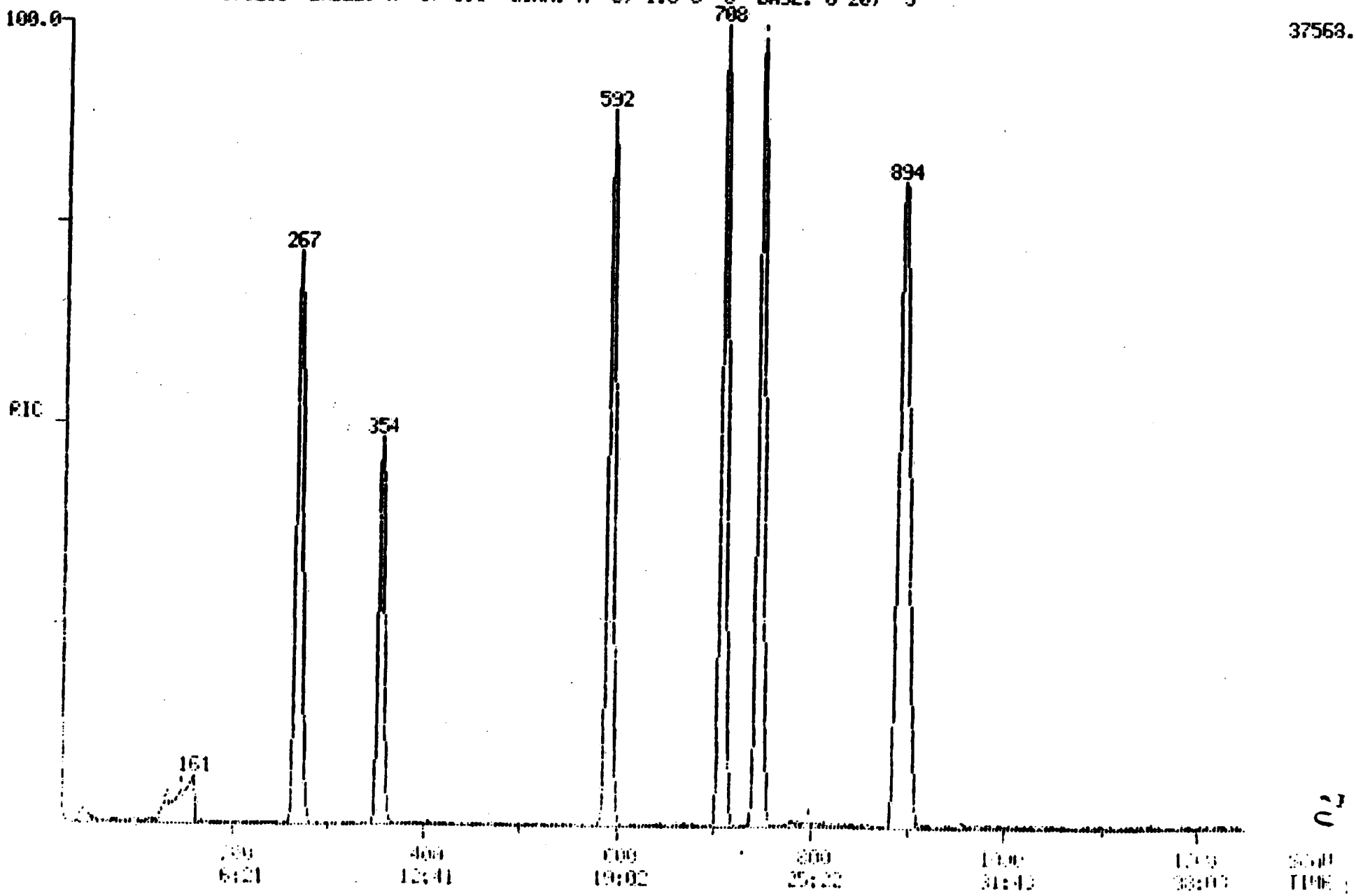
ANALYSIS DATE 11/18/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	96	
1,4-Difluorobenzene	92	
Chlorobenzene-D5	96	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	98	
1,2-Dichloroethane-D4	94	
Toluene-D8	95	

MIDRIC
11/18/91 13:50:00
SAMPLE: TRIPBLANK JOB3386
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4759 #46
CALI: A4759 #2

SCANS 25 TO 1250



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:TRIP BLANK

JOB#:91-3386.14
FILE:A4759

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

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LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC VOLATILE METHOD BLANK
SAMPLE NO. VBLK53

ANALYSIS DATE 11/19/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acrolein	100	U
Acrylonitrile	100	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon Tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	10	U
2-Chloroethylvinyl ether	10	U
Chloroform	5.0	U
Chloromethane	10	U
1,1-Dichloroethane	5.0	U
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	5.0	U
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
Cis-1,3-Dichloropropene	5.0	U
trans-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
Methylene chloride	5.0	U
Tetrachloroethene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	5.0	U
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl chloride	10	U

DILUTION FACTOR = 1.0

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC VOLATILE METHOD BLANK
SAMPLE NO. VBLK53

ANALYSIS DATE 11/19/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
m-Xylene	5.0	U
o/p-Xylene *	5.0	U

DILUTION FACTOR = 1.0
CHROMATOGRAPHICALLY ORTHO-XYLENE AND PARA-XYLENE COELUTE.

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 624 - PRIORITY POLLUTANT
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC VOLATILE METHOD BLANK
SAMPLE NO. VBLK53

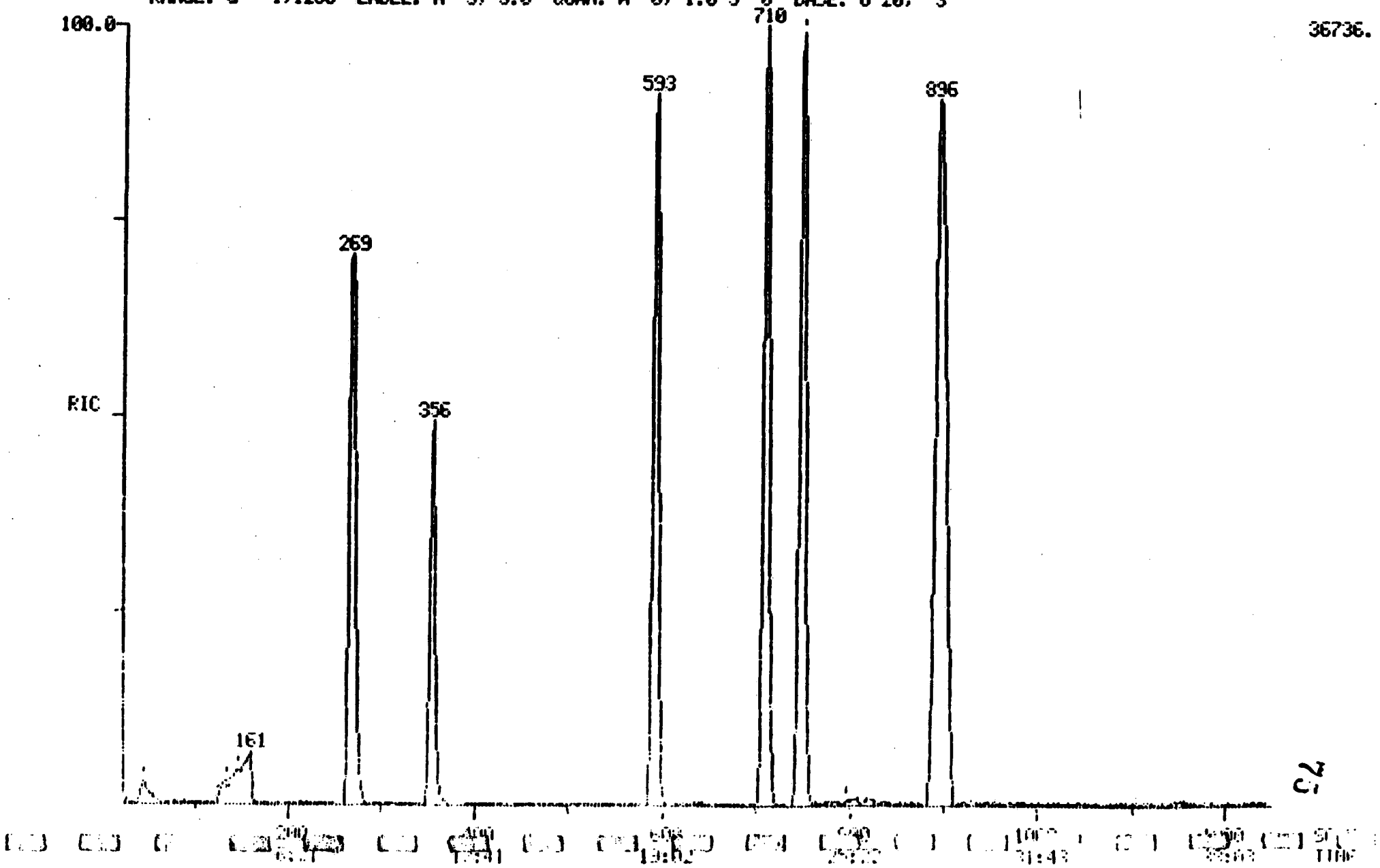
ANALYSIS DATE 11/19/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	99	
1,4-Difluorobenzene	95	
Chlorobenzene-D5	96	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	102	
1,2-Dichloroethane-D4	100	
Toluene-D8	98	-

MIDRIC
11/19/91 11:35:00
SAMPLE: VBLK53
CONDS.: 51A
RANGE: G 1,1250 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: A4775 #46
CALI: A4775 #2

SCANS 25 TO 1250



C2

ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
VOLATILE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:VBLK 53

JOB#:91-3386.3
FILE:A4775

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

SEMI-VOLATILE DATA

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

7J

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-1

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	14	U
Isophorone	14	U
2-Methyl-4,6-dinitrophenol	71	U
Naphthalene	14	U
Nitrobenzene	14	U
2-Nitrophenol	14	U
4-Nitrophenol	71	U
N-nitrosodi-n-propylamine	14	U
N-Nitrosodimethylamine	14	U
N-Nitrosodiphenylamine	14	U
Pentachlorophenol	71	U
Phenanthrene	14	U
Phenol	14	U
Pyrene	14	U
1,2,4-Trichlorobenzene	14	U
2,4,6-Trichlorophenol	14	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 700 ML

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

8U

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-1

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	14	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 700 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

81

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

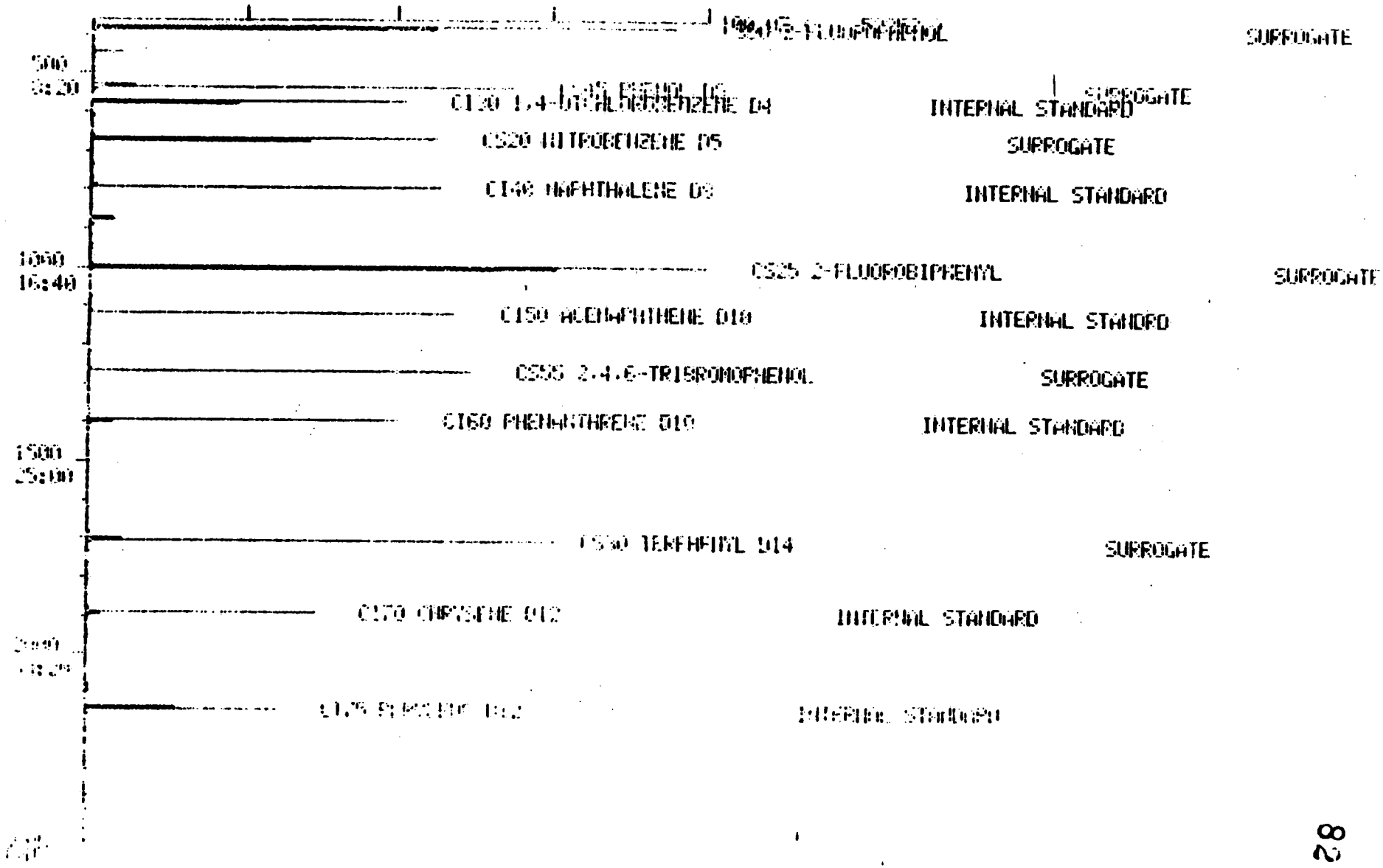
SAMPLE NO. MW-1

SAMPLE DATE 11/15/9
EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	97	
Naphthalene-D8	95	
Acenaphthene-D10	105	
Phenanthrene-D10	109	
Chrysene-D12	78	
Perylene-D12	87	
Surrogates		
(%Recovery)		
2-Fluorophenol	49	
Phenol-D5	33	
2,4,6-Tribromophenol	67	
Nitrobenzene-D5	67	
2-Fluorobiphenyl	65	
Terphenyl-D14	92	

DATA FROM FILE: 7160W SCANS 310 TO 2520 ACQUIRED: 11/30/91 18:46:00
CAL I: 7160W #3

SAMPLE: MW1 JOB 3386 AP14436-37
COMDS.: AUTOSAMPLE 150W



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-1

JOB#:91-3386.21
FILE:7160W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC MW-1 FIELD DUP
SAMPLE NO. FIELD DUP

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	14	U
Acenaphthylene	14	U
Anthracene	14	U
Benzo(a)anthracene	14	U
Benzo(b)fluoranthene	14	U
Benzo(k)fluoranthene	14	U
Benzo(a)pyrene	14	U
Benzo(g,h,i)perylene	14	U
Benzidine	110	U
Bis(2-chloroethyl)ether	14	U
Bis(2-chlorethoxy)methane	14	U
Bis(2-chloroisopropyl)ether	14	U
Bis(2-ethylhexyl)phthalate	14	U
4-Bromophenylphenylether	14	U
Butyl benzyl phthalate	14	U
4-Chloro-3-methylphenol	14	U
2-Chloronaphthalene	14	U
2-Chlorophenol	14	U
4-Chlorophenylphenylether	14	U
Chrysene	14	U
Dibenzo(a,h)anthracene	14	U
Di-n-butyl phthalate	14	U
1,2-Dichlorobenzene	14	U
1,3-Dichlorobenzene	14	U
1,4-Dichlorobenzene	14	U
3,3'-Dichlorobenzidine	28	U
2,4-Dichlorophenol	14	U
Diethylphthalate	14	U
2,4-Dimethylphenol	14	U
Dimethylphthalate	14	U
2,4-Dinitrophenol	71	U
1,2-Diphenyl hydrazine	110	U
2,4-Dinitrotoluene	14	U
2,6-Dinitrotoluene	14	U
Di-n-octylphthalate	14	U
Fluoranthene	14	U
Fluorene	14	U
Hexachlorobenzene	14	U
Hexachlorobutadiene	14	U
Hexachlorocyclopentadiene	14	U
Hexachloroethane	14	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 700 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC MW-1 FIELD DUP
SAMPLE NO. FIELD DUP

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	14	U
Isophorone	14	U
2-Methyl-4,6-dinitrophenol	71	U
Naphthalene	14	U
Nitrobenzene	14	U
2-Nitrophenol	14	U
4-Nitrophenol	71	U
N-nitrosodi-n-propylamine	14	U
N-Nitrosodimethylamine	14	U
N-Nitrosodiphenylamine	14	U
Pentachlorophenol	71	U
Phenanthrene	14	U
Phenol	14	U
Pyrene	14	U
1,2,4-Trichlorobenzene	14	U
2,4,6-Trichlorophenol	14	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 700 ML

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC MW-1 FIELD DUP
SAMPLE NO. FIELD DUP

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	14	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 700 ML

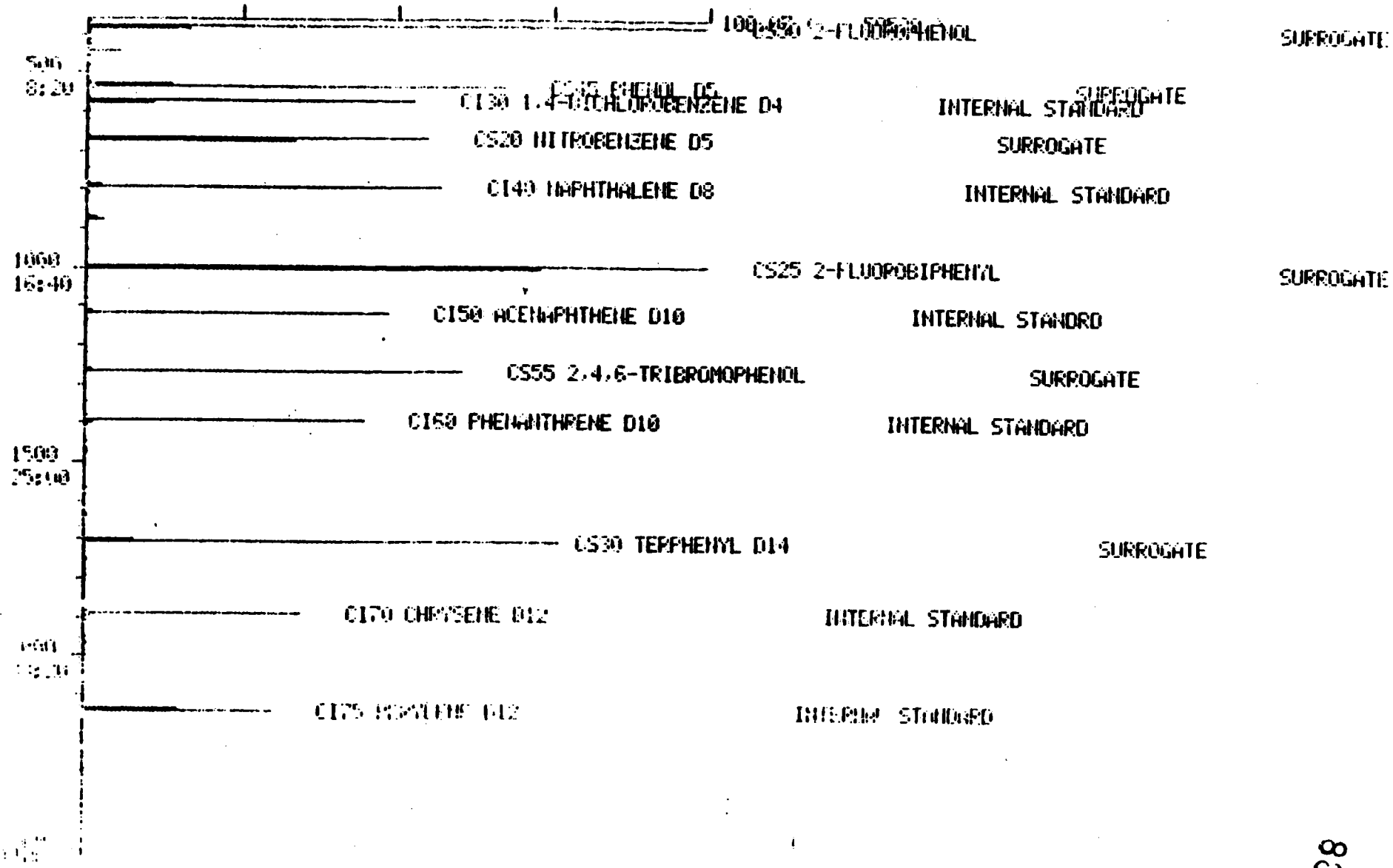
RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC MW-1 FIELD DUP
SAMPLE NO. FIELD DUP

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	97	
Naphthalene-D8	94	
Acenaphthene-D10	103	
Phenanthrene-D10	109	
Chrysene-D12	78	
Perylene-D12	89	
Surrogates		
(%Recovery)		
2-Fluorophenol	49	
Phenol-D5	33	
2,4,6-Tribromophenol	76	
Nitrobenzene-D5	80	
2-Fluorobiphenyl	74	
Terphenyl-D14	103	

DATA FROM FILE: 7161W SCANS 360 TO 2520 ACQUIRED: 11/30/91 19:37:00
CALI: 7161W #3
SAMPLE: MW1FIELDDUP JOB 3386 AP14438/39
CONDS.: AUTOSAMPLR 150W



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-1 FIELD DUP

JOB#:91-3386.22
FILE:7161W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

50

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-2

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	14	U
Acenaphthylene	14	U
Anthracene	14	U
Benzo(a)anthracene	14	U
Benzo(b)fluoranthene	14	U
Benzo(k)fluoranthene	14	U
Benzo(a)pyrene	14	U
Benzo(g,h,i)perylene	14	U
Benzidine	110	U
Bis(2-chloroethyl)ether	14	U
Bis(2-chlorethoxy)methane	14	U
Bis(2-chloroisopropyl)ether	14	U
Bis(2-ethylhexyl)phthalate	14	U
4-Bromophenylphenylether	14	U
Butyl benzyl phthalate	14	U
4-Chloro-3-methylphenol	14	U
2-Chloronaphthalene	14	U
2-Chlorophenol	14	U
4-Chlorophenylphenylether	14	U
Chrysene	14	U
Dibenzo(a,h)anthracene	14	U
Di-n-butyl phthalate	14	U
1,2-Dichlorobenzene	14	U
1,3-Dichlorobenzene	14	U
1,4-Dichlorobenzene	14	U
3,3'-Dichlorobenzidine	28	U
2,4-Dichlorophenol	14	U
Diethylphthalate	14	U
2,4-Dimethylphenol	14	U
Dimethylphthalate	14	U
2,4-Dinitrophenol	71	U
1,2-Diphenyl hydrazine	110	U
2,4-Dinitrotoluene	14	U
2,6-Dinitrotoluene	14	U
Di-n-octylphthalate	14	U
Fluoranthene	14	U
Fluorene	14	U
Hexachlorobenzene	14	U
Hexachlorobutadiene	14	U
Hexachlorocyclopentadiene	14	U
Hexachloroethane	14	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 700 ML

K0001

PART 2

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-2

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/9

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	14	U
Isophorone	14	U
2-Methyl-4,6-dinitrophenol	71	U
Naphthalene	2.4	J
Nitrobenzene	14	U
2-Nitrophenol	14	U
4-Nitrophenol	71	U
N-nitrosodi-n-propylamine	14	U
N-Nitrosodimethylamine	14	U
N-Nitrosodiphenylamine	14	U
Pentachlorophenol	71	U
Phenanthrene	2.1	J
Phenol	14	U
Pyrene	14	U
1,2,4-Trichlorobenzene	14	U
2,4,6-Trichlorophenol	14	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 700 ML

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-2

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	14	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 700 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

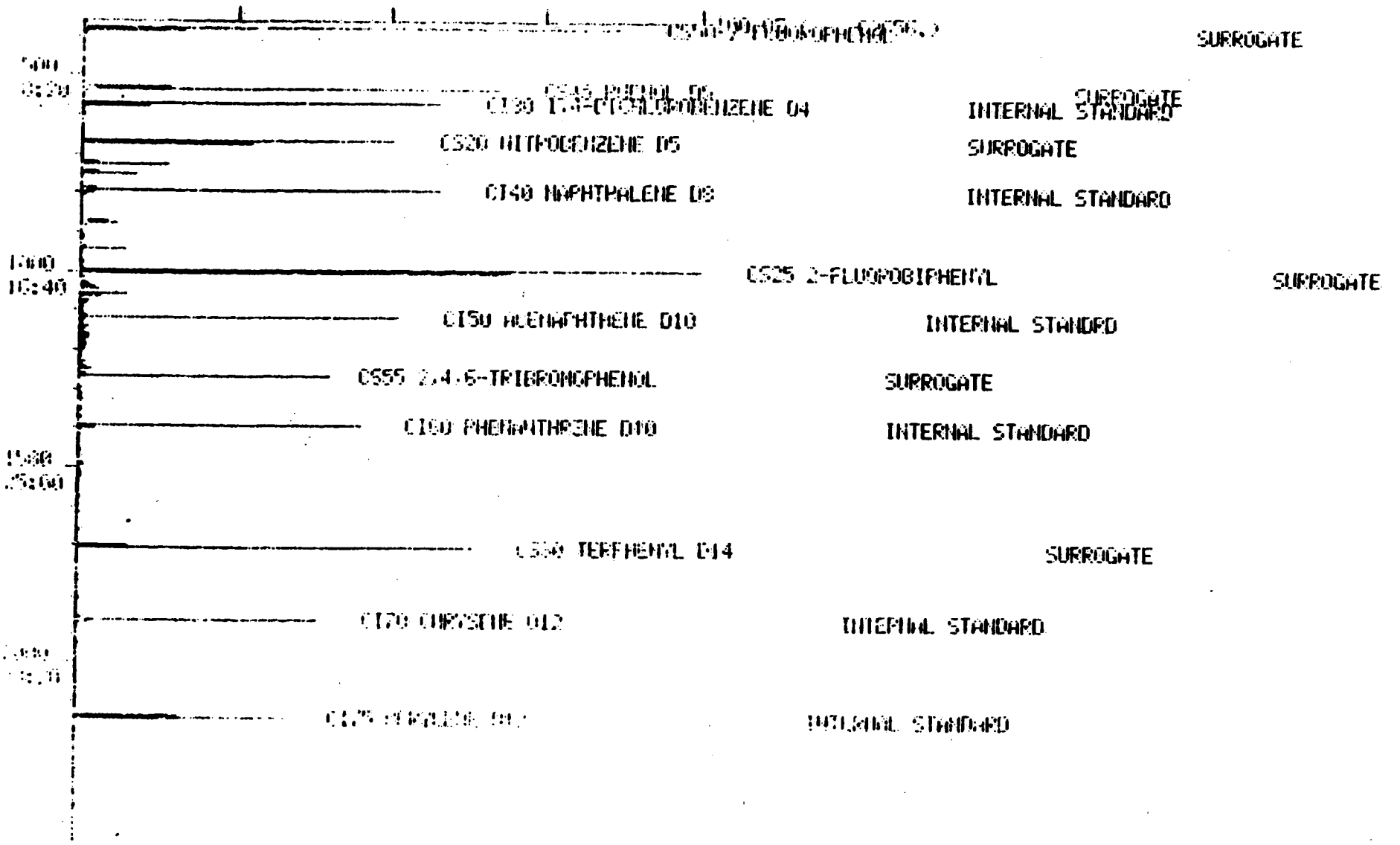
LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-2

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/9

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	109	
Naphthalene-D8	105	
Acenaphthene-D10	119	
Phenanthrene-D10	121	
Chrysene-D12	101	
Perylene-D12	116	
Surrogates		
(%Recovery)		
2-Fluorophenol	42	
Phenol-D5	33	
2,4,6-Tribromophenol	49	
Nitrobenzene-D5	65	
2-Fluorobiphenyl	66	
Terphenyl-D14	58	

DATA FROM FILE: 7162W SCANS 360 TO 2520 ACQUIRED: 11-30-91 20:28:00
CALI: 7162W #3
SAMPLE: MW2 JOB 3386 AP14440 #1
CONDS.: AUTOSAMPLR I50W



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-2

JOB#:91-3386.23
FILE:7162W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)
722	UNKNOWN	11
746	2-FLUORO-4-NITRO PHENOL (403-19-0)	7.3
938	UNSATURATED HYDROCARBON	6.3
1053	DIMETHYL NAPHTHALENE ISOMER	6.4

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-3

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	14	U
Acenaphthylene	14	U
Anthracene	14	U
Benzo(a)anthracene	14	U
Benzo(b)fluoranthene	14	U
Benzo(k)fluoranthene	14	U
Benzo(a)pyrene	14	U
Benzo(g,h,i)perylene	14	U
Benzidine	110	U
Bis(2-chloroethyl)ether	14	U
Bis(2-chlorethoxy)methane	14	U
Bis(2-chloroisopropyl)ether	14	U
Bis(2-ethylhexyl)phthalate	14	U
4-Bromophenylphenylether	14	U
Butyl benzyl phthalate	14	U
4-Chloro-3-methylphenol	14	U
2-Chloronaphthalene	14	U
2-Chlorophenol	14	U
4-Chlorophenylphenylether	14	U
Chrysene	14	U
Dibenzo(a,h)anthracene	14	U
Di-n-butyl phthalate	14	U
1,2-Dichlorobenzene	14	U
1,3-Dichlorobenzene	14	U
1,4-Dichlorobenzene	14	U
3,3'-Dichlorobenzidine	28	U
2,4-Dichlorophenol	14	U
Diethylphthalate	14	U
2,4-Dimethylphenol	14	U
Dimethylphthalate	14	U
2,4-Dinitrophenol	71	U
1,2-Diphenyl hydrazine	110	U
2,4-Dinitrotoluene	14	U
2,6-Dinitrotoluene	14	U
Di-n-octylphthalate	14	U
Fluoranthene	14	U
Fluorene	14	U
Hexachlorobenzene	14	U
Hexachlorobutadiene	14	U
Hexachlorocyclopentadiene	14	U
Hexachloroethane	14	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 700 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-3

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	14	U
Isophorone	14	U
2-Methyl-4,6-dinitrophenol	71	U
Naphthalene	14	U
Nitrobenzene	14	U
2-Nitrophenol	14	U
4-Nitrophenol	71	U
N-nitrosodi-n-propylamine	14	U
N-Nitrosodimethylamine	14	U
N-Nitrosodiphenylamine	14	U
Pentachlorophenol	71	U
Phenanthrene	14	U
Phenol	14	U
Pyrene	14	U
1,2,4-Trichlorobenzene	14	U
2,4,6-Trichlorophenol	14	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 700 ML

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-3

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	14	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 700 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

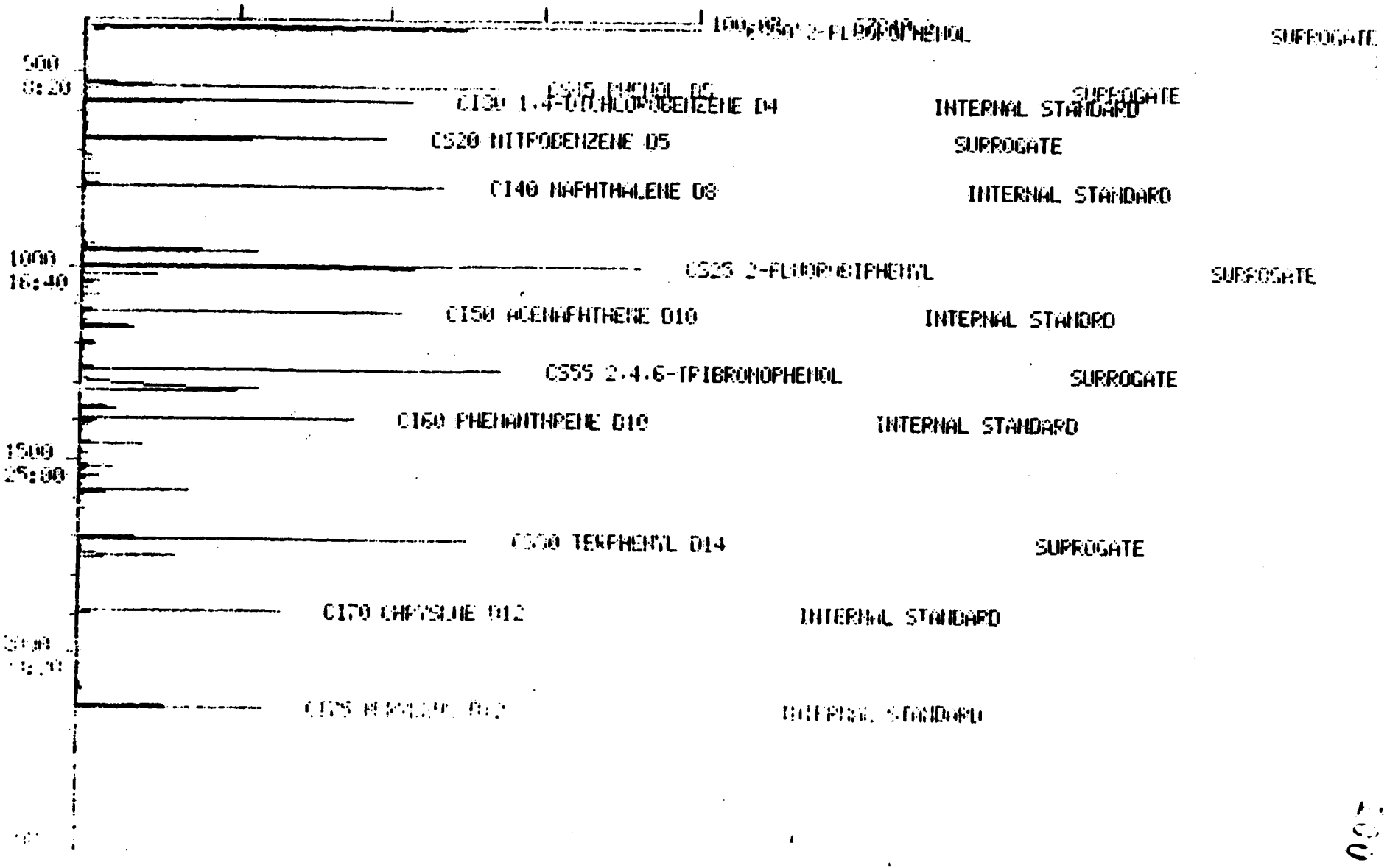
SAMPLE NO. MW-3

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/9

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	116	
Naphthalene-D8	113	
Acenaphthene-D10	124	
Phenanthrene-D10	125	
Chrysene-D12	90	
Perylene-D12	102	
Surrogates		
(%Recovery)		
2-Fluorophenol	42	
Phenol-D5	33	
2,4,6-Tribromophenol	49	
Nitrobenzene-D5	65	
2-Fluorobiphenyl	66	
Terphenyl-D14	58	

DATA FROM FILE: 7163W SCANS 350 TO 2520 ACQUIRED: 11/30/91 21:20:00
CALI: 7163W #3

SAMPLE: MW3 JOB 3386 AP1442/43
CONDS.: AUTOSAMPLR 150W



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-3

JOB#:91-3386.24
FILE:7163W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)
525	1,3-DITHIOLANE (4829-04-3)	7.1
955	DICHLOROBENZENAMINE ISOMER	26
1017	CHLORO DIMETHYL PHENOL ISOMER	10
1153	UNKNOWN	8.0
1312	UNKNOWN	130
1363	UNKNOWN	6.0
1456	ALKYL SUBSTITUTED HYDROCARBON	12
1577	UNKNOWN	21
1745	UNKNOWN	34

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-4

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	12	U
Acenaphthylene	12	U
Anthracene	12	U
Benzo(a)anthracene	12	U
Benzo(b)fluoranthene	12	U
Benzo(k)fluoranthene	12	U
Benzo(a)pyrene	12	U
Benzo(g,h,i)perylene	12	U
Benzidine	100	U
Bis(2-chloroethyl)ether	12	U
Bis(2-chlorethoxy)methane	12	U
Bis(2-chloroisopropyl)ether	12	U
Bis(2-ethylhexyl)phthalate	12	U
4-Bromophenylphenylether	12	U
Butyl benzyl phthalate	12	U
4-Chloro-3-methylphenol	12	U
2-Chloronaphthalene	12	U
2-Chlorophenol	12	U
4-Chlorophenylphenylether	12	U
Chrysene	12	U
Dibenzo(a,h)anthracene	12	U
Di-n-butyl phthalate	12	U
1,2-Dichlorobenzene	12	U
1,3-Dichlorobenzene	12	U
1,4-Dichlorobenzene	3.5	J
3,3'-Dichlorobenzidine	12	U
2,4-Dichlorophenol	25	U
Diethylphthalate	12	U
2,4-Dimethylphenol	12	U
Dimethylphthalate	12	U
2,4-Dinitrophenol	12	U
1,2-Diphenyl hydrazine	62	U
2,4-Dinitrotoluene	100	U
2,6-Dinitrotoluene	12	U
Di-n-octylphthalate	12	U
Fluoranthene	12	U
Fluorene	12	U
Hexachlorobenzene	12	U
Hexachlorobutadiene	12	U
Hexachlorocyclopentadiene	12	U
Hexachloroethane	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/9

SAMPLE NO. MW-4

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	12	U
Isophorone	12	U
2-Methyl-4,6-dinitrophenol	62	U
Naphthalene	12	U
Nitrobenzene	12	U
2-Nitrophenol	12	U
4-Nitrophenol	62	U
N-nitrosodi-n-propylamine	12	U
N-Nitrosodimethylamine	12	U
N-Nitrosodiphenylamine	12	U
Pentachlorophenol	62	U
Phenanthrene	12	U
Phenol	12	U
Pyrene	12	U
1,2,4-Trichlorobenzene	12	U
2,4,6-Trichlorophenol	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-4

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

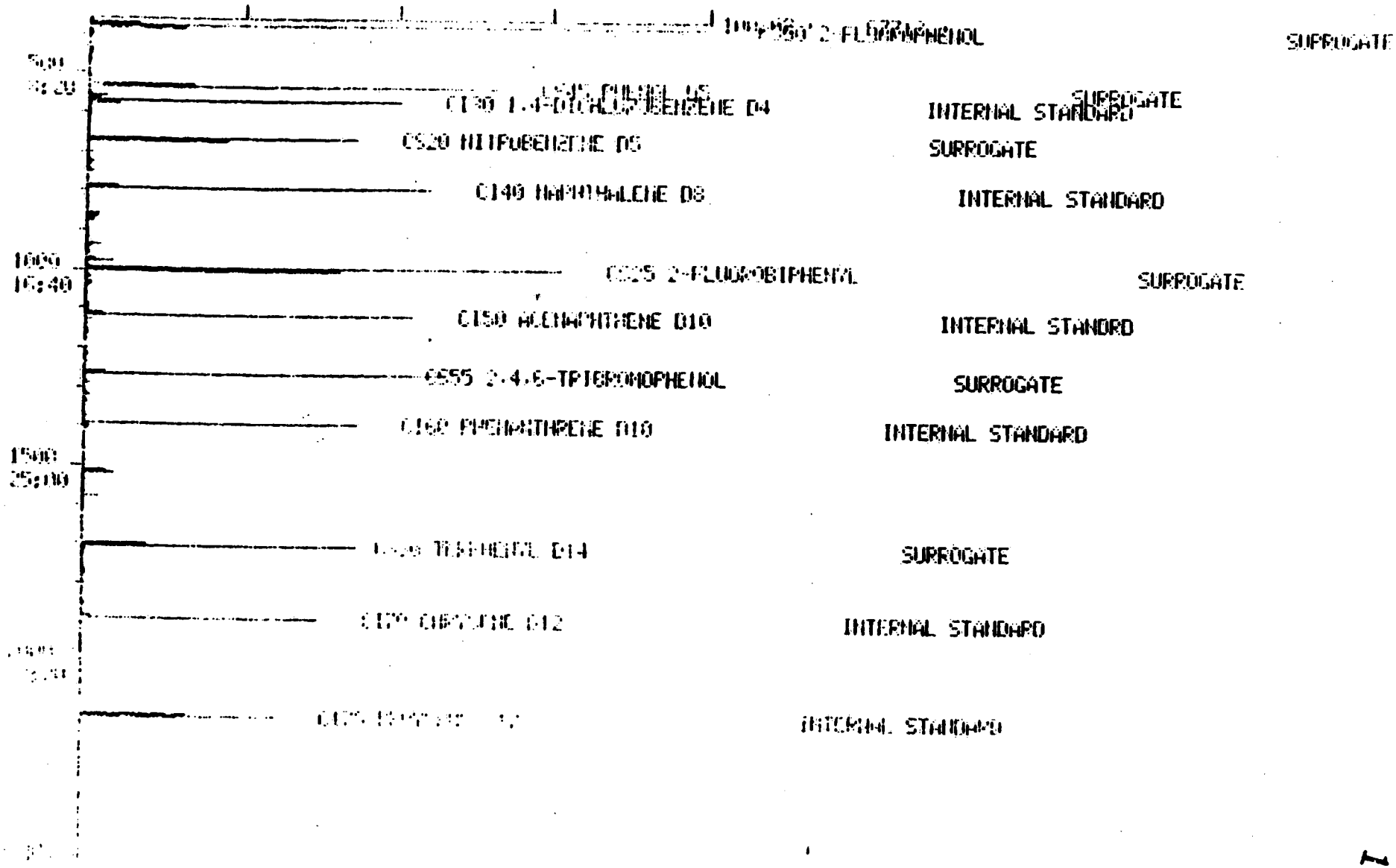
LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-4

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	108	
Naphthalene-D8	105	
Acenaphthene-D10	112	
Phenanthrene-D10	111	
Chrysene-D12	88	
Perylene-D12	97	
Surrogates		
(%Recovery)		
2-Fluorophenol	51	
Phenol-D5	34	
2,4,6-Tribromophenol	78	
Nitrobenzene-D5	71	
2-Fluorobiphenyl	61	
Terphenyl-D14	57	

DATA FROM FILE: 7164H SCANS 360 TO 2520 ACQUIRED: 11/30/91 22:11:00
CALI: 7164H #3
SAMPLE: MW4 JOB 3386 AP14445 4
CONDS.: AUTOSAMPLR I56H



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-4

JOB#:91-3386.25
FILE:7164W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-5

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	12	U
Acenaphthylene	12	U
Anthracene	12	U
Benzo(a)anthracene	12	U
Benzo(b)fluoranthene	12	U
Benzo(k)fluoranthene	12	U
Benzo(a)pyrene	12	U
Benzo(g,h,i)perylene	12	U
Benzidine	100	U
Bis(2-chloroethyl)ether	12	U
Bis(2-chlorethoxy)methane	12	U
Bis(2-chloroisopropyl)ether	12	U
Bis(2-ethylhexyl)phthalate	12	U
4-Bromophenylphenylether	12	U
Butyl benzyl phthalate	12	U
4-Chloro-3-methylphenol	12	U
2-Chloronaphthalene	12	U
2-Chlorophenol	12	U
4-Chlorophenylphenylether	12	U
Chrysene	12	U
Dibenzo(a,h)anthracene	12	U
Di-n-butyl phthalate	12	U
1,2-Dichlorobenzene	12	U
1,3-Dichlorobenzene	12	U
1,4-Dichlorobenzene	12	U
3,3'-Dichlorobenzidine	25	U
2,4-Dichlorophenol	12	U
Diethylphthalate	12	U
2,4-Dimethylphenol	12	U
Dimethylphthalate	12	U
2,4-Dinitrophenol	62	U
1,2-Diphenyl hydrazine	100	U
2,4-Dinitrotoluene	12	U
2,6-Dinitrotoluene	12	U
Di-n-octylphthalate	12	U
Fluoranthene	12	U
Fluorene	12	U
Hexachlorobenzene	12	U
Hexachlorobutadiene	12	U
Hexachlorocyclopentadiene	12	U
Hexachloroethane	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-5

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/9

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	12	U
Isophorone	12	U
2-Methyl-4,6-dinitrophenol	62	U
Naphthalene	12	U
Nitrobenzene	12	U
2-Nitrophenol	12	U
4-Nitrophenol	62	U
N-nitrosodi-n-propylamine	12	U
N-Nitrosodimethylamine	12	U
N-Nitrosodiphenylamine	12	U
Pentachlorophenol	62	U
Phenanthrene	12	U
Phenol	12	U
Pyrene	12	U
1,2,4-Trichlorobenzene	12	U
2,4,6-Trichlorophenol	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-5

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

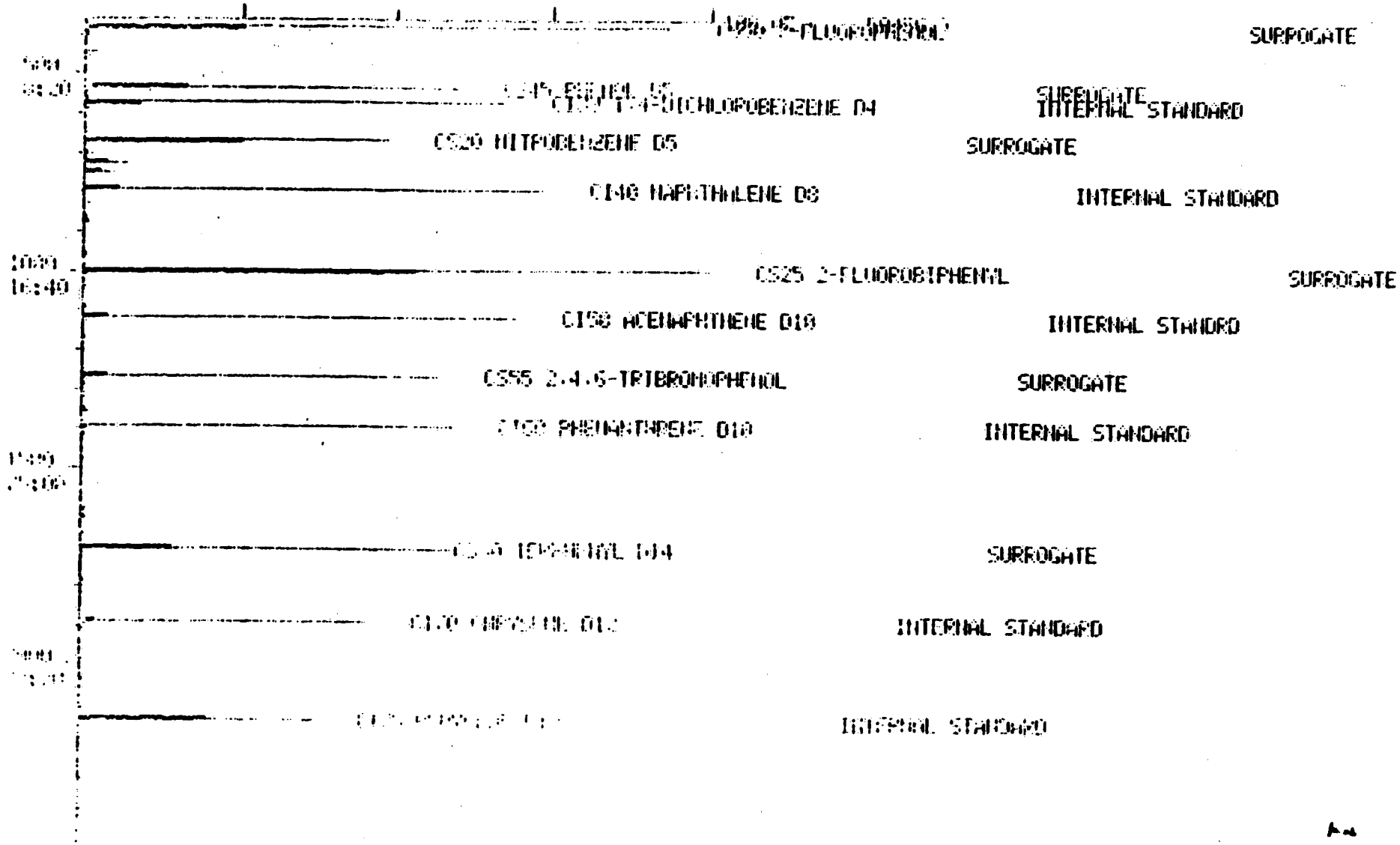
SAMPLE NO. MW-5

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	121	
Naphthalene-D8	119	
Acenaphthene-D10	131	
Phenanthrene-D10	132	
Chrysene-D12	96	
Perylene-D12	108	
Surrogates		
(%Recovery)		
2-Fluorophenol	38	
Phenol-D5	24	
2,4,6-Tribromophenol	53	
Nitrobenzene-D5	63	
2-Fluorobiphenyl	59	
Terphenyl-D14	61	

DATA FROM FILE: 7165H SCANS 200 TO 2520 ACQUIRED: 11/30/91 23:02:00
UNIT: 7165H #3

SAMPLE: NNS JOB 3306 AP14446 47
COMMS.: AUTOSAMPLE 150H



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-5

JOB#:91-3386.26
FILE:7165W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

114

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-6

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	12	U
Acenaphthylene	12	U
Anthracene	12	U
Benzo(a)anthracene	12	U
Benzo(b)fluoranthene	12	U
Benzo(k)fluoranthene	12	U
Benzo(a)pyrene	12	U
Benzo(g,h,i)perylene	12	U
Benzidine	100	U
Bis(2-chloroethyl)ether	12	U
Bis(2-chlorethoxy)methane	12	U
Bis(2-chloroisopropyl)ether	12	U
Bis(2-ethylhexyl)phthalate	12	U
4-Bromophenylphenylether	12	U
Butyl benzyl phthalate	12	U
4-Chloro-3-methylphenol	12	U
2-Chloronaphthalene	12	U
2-Chlorophenol	12	U
4-Chlorophenylphenylether	12	U
Chrysene	12	U
Dibenzo(a,h)anthracene	12	U
Di-n-butyl phthalate	12	U
1,2-Dichlorobenzene	12	U
1,3-Dichlorobenzene	12	U
1,4-Dichlorobenzene	12	U
3,3'-Dichlorobenzidine	25	U
2,4-Dichlorophenol	12	U
Diethylphthalate	12	U
2,4-Dimethylphenol	12	U
Dimethylphthalate	12	U
2,4-Dinitrophenol	62	U
1,2-Diphenyl hydrazine	100	U
2,4-Dinitrotoluene	12	U
2,6-Dinitrotoluene	12	U
Di-n-octylphthalate	12	U
Fluoranthene	12	U
Fluorene	12	U
Hexachlorobenzene	12	U
Hexachlorobutadiene	12	U
Hexachlorocyclopentadiene	12	U
Hexachloroethane	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/9

SAMPLE NO. MW-6

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	12	U
Isophorone	12	U
2-Methyl-4,6-dinitrophenol	62	U
Naphthalene	12	U
Nitrobenzene	12	U
2-Nitrophenol	12	U
4-Nitrophenol	62	U
N-nitrosodi-n-propylamine	12	U
N-Nitrosodimethylamine	12	U
N-Nitrosodiphenylamine	12	U
Pentachlorophenol	62	U
Phenanthrene	12	U
Phenol	12	U
Pyrene	12	U
1,2,4-Trichlorobenzene	12	U
2,4,6-Trichlorophenol	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-6

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

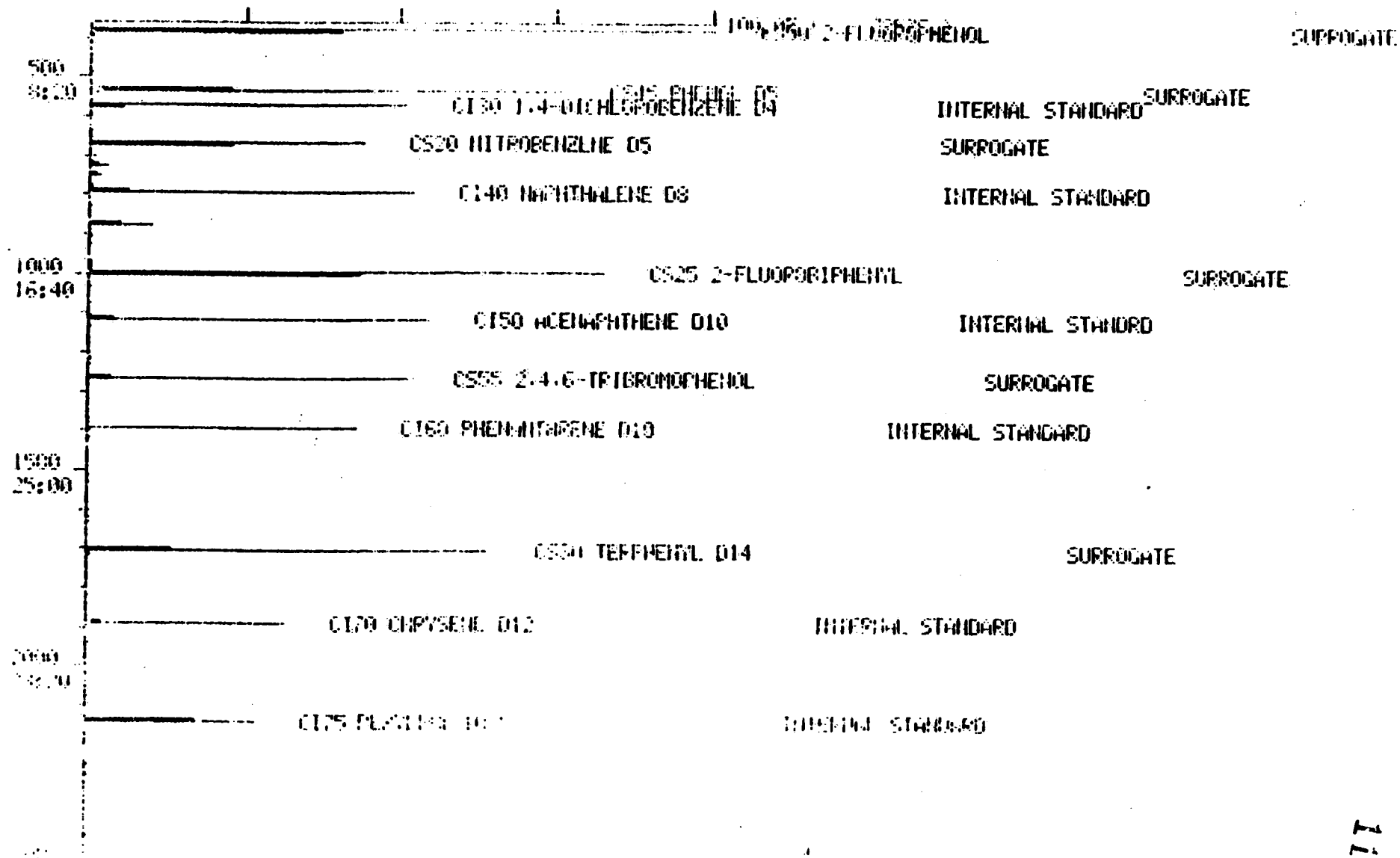
SAMPLE NO. MW-6

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/9

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	114	
Naphthalene-D8	110	
Acenaphthene-D10	119	
Phenanthrene-D10	115	
Chrysene-D12	86	
Perylene-D12	94	
Surrogates		
(%Recovery)		
2-Fluorophenol	58	
Phenol-D5	40	
2,4,6-Tribromophenol	76	
Nitrobenzene-D5	75	
2-Fluorobiphenyl	69	
Terphenyl-D14	83	

DATA FROM FILE: 7166W SCANS 360 TO 2520 ACQUIRED: 11/20 91 23:54:00
CALI: 7166W #3

SAMPLE: MW6 JOB 3386 AP14448-49
CONDS.: AUTOSAMPLR I50N



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-6

JOB#:91-3386.27
FILE:7166W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)
874	OXYGENATED COMPOUND	9.9

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

120

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-7

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/01/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	12	U
Acenaphthylene	12	U
Anthracene	12	U
Benzo(a)anthracene	12	U
Benzo(b)fluoranthene	12	U
Benzo(k)fluoranthene	12	U
Benzo(a)pyrene	12	U
Benzo(g,h,i)perylene	12	U
Benzidine	100	U
Bis(2-chloroethyl)ether	12	U
Bis(2-chlorethoxy)methane	12	U
Bis(2-chloroisopropyl)ether	12	U
Bis(2-ethylhexyl)phthalate	12	U
4-Bromophenylphenylether	12	U
Butyl benzyl phthalate	12	U
4-Chloro-3-methylphenol	12	U
2-Chloronaphthalene	12	U
2-Chlorophenol	12	U
4-Chlorophenylphenylether	12	U
Chrysene	12	U
Dibenzo(a,h)anthracene	12	U
Di-n-butyl phthalate	12	U
1,2-Dichlorobenzene	12	U
1,3-Dichlorobenzene	12	U
1,4-Dichlorobenzene	12	U
3,3'-Dichlorobenzidine	25	U
2,4-Dichlorophenol	12	U
Diethylphthalate	12	U
2,4-Dimethylphenol	12	U
Dimethylphthalate	12	U
2,4-Dinitrophenol	62	U
1,2-Diphenyl hydrazine	100	U
2,4-Dinitrotoluene	12	U
2,6-Dinitrotoluene	12	U
Di-n-octylphthalate	12	U
Fluoranthene	12	U
Fluorene	12	U
Hexachlorobenzene	12	U
Hexachlorobutadiene	12	U
Hexachlorocyclopentadiene	12	U
Hexachloroethane	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

121

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-7

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/01/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	12	U
Isophorone	12	U
2-Methyl-4,6-dinitrophenol	62	U
Naphthalene	12	U
Nitrobenzene	12	U
2-Nitrophenol	12	U
4-Nitrophenol	62	U
N-nitrosodi-n-propylamine	12	U
N-Nitrosodimethylamine	12	U
N-Nitrosodiphenylamine	12	U
Pentachlorophenol	62	U
Phenanthrene	12	U
Phenol	12	U
Pyrene	12	U
1,2,4-Trichlorobenzene	12	U
2,4,6-Trichlorophenol	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-7

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/01/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

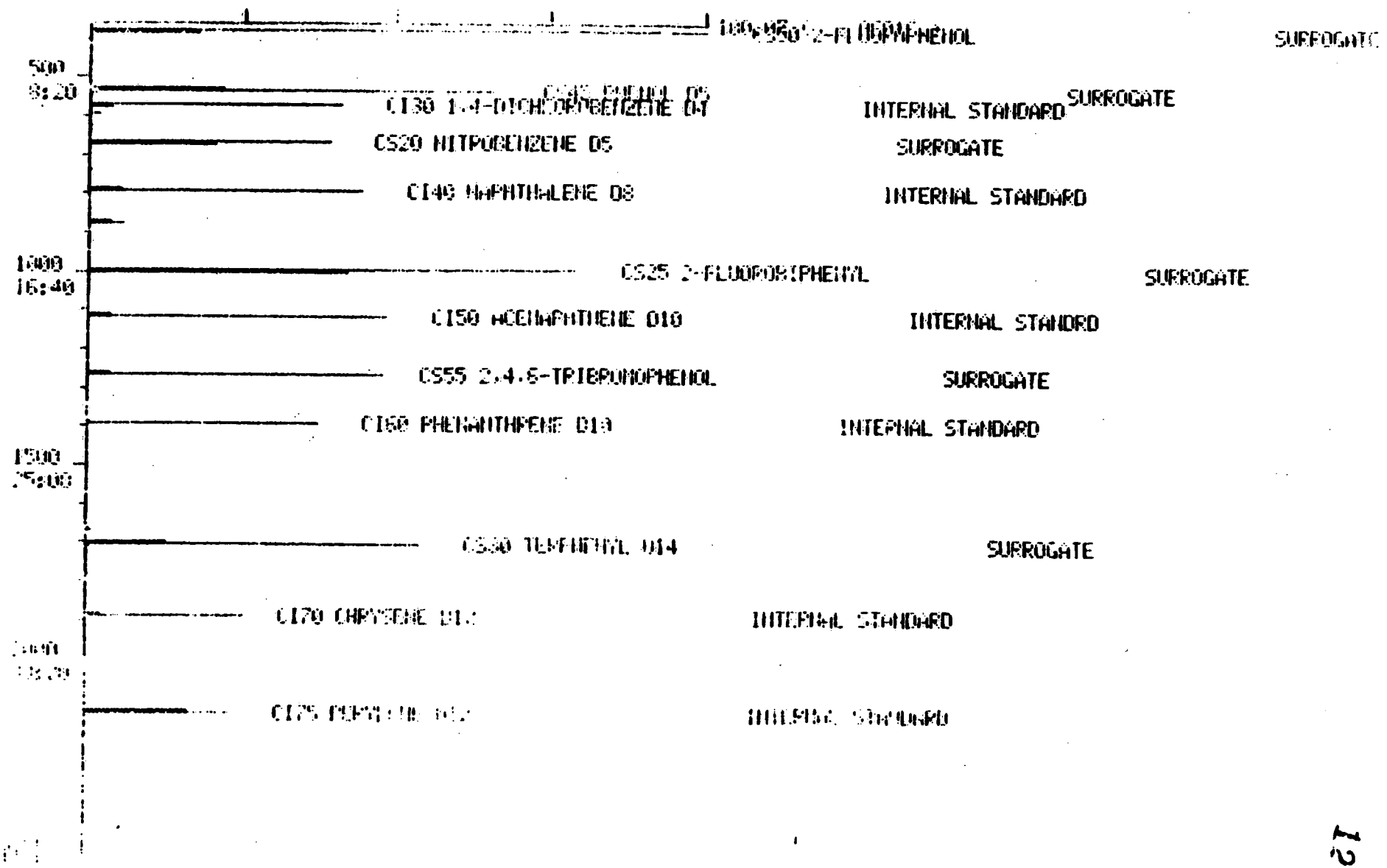
SAMPLE NO. MW-7

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/01/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	113	
Naphthalene-D8	111	
Acenaphthene-D10	123	
Phenanthrene-D10	117	
Chrysene-D12	86	
Perylene-D12	98	
Surrogates		
(%Recovery)		
2-Fluorophenol	61	
Phenol-D5	41	
2,4,6-Tribromophenol	84	
Nitrobenzene-D5	72	
2-Fluorobiphenyl	72	
Terphenyl-D14	84	

DATA FROM FILE: 7167W SCANS 350 TO 2520 ACQUIRED: 12/01/91 0:45:00
CALI: 7167W #3

SAMPLE: MW7 JOB 3386 AP14450 S1
COMMS.: AUTOSAMPLE 150W



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-7

JOB#:91-3386.28
FILE:7167W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)
872	OXYGENATED COMPOUND	6.4

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-8

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/02/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	12	U
Acenaphthylene	12	U
Anthracene	12	U
Benzo(a)anthracene	12	U
Benzo(b)fluoranthene	12	U
Benzo(k)fluoranthene	12	U
Benzo(a)pyrene	12	U
Benzo(g,h,i)perylene	12	U
Benzidine	100	U
Bis(2-chloroethyl)ether	12	U
Bis(2-chlorethoxy)methane	12	U
Bis(2-chloroisopropyl)ether	12	U
Bis(2-ethylhexyl)phthalate	12	U
4-Bromophenylphenylether	12	U
Butyl benzyl phthalate	12	U
4-Chloro-3-methylphenol	12	U
2-Chloronaphthalene	12	U
2-Chlorophenol	12	U
4-Chlorophenylphenylether	12	U
Chrysene	12	U
Dibenzo(a,h)anthracene	12	U
Di-n-butyl phthalate	12	U
1,2-Dichlorobenzene	12	U
1,3-Dichlorobenzene	12	U
1,4-Dichlorobenzene	12	U
3,3'-Dichlorobenzidine	25	U
2,4-Dichlorophenol	12	U
Diethylphthalate	12	U
2,4-Dimethylphenol	12	U
Dimethylphthalate	12	U
2,4-Dinitrophenol	62	U
1,2-Diphenyl hydrazine	100	U
2,4-Dinitrotoluene	12	U
2,6-Dinitrotoluene	12	U
Di-n-octylphthalate	12	U
Fluoranthene	12	U
Fluorene	12	U
Hexachlorobenzene	12	U
Hexachlorobutadiene	12	U
Hexachlorocyclopentadiene	12	U
Hexachloroethane	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-8

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/02/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	12	U
Isophorone	12	U
2-Methyl-4,6-dinitrophenol	62	U
Naphthalene	12	U
Nitrobenzene	12	U
2-Nitrophenol	12	U
4-Nitrophenol	62	U
N-nitrosodi-n-propylamine	12	U
N-Nitrosodimethylamine	12	U
N-Nitrosodiphenylamine	12	U
Pentachlorophenol	62	U
Phenanthrene	12	U
Phenol	12	U
Pyrene	12	U
1,2,4-Trichlorobenzene	12	U
2,4,6-Trichlorophenol	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-8

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/02/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

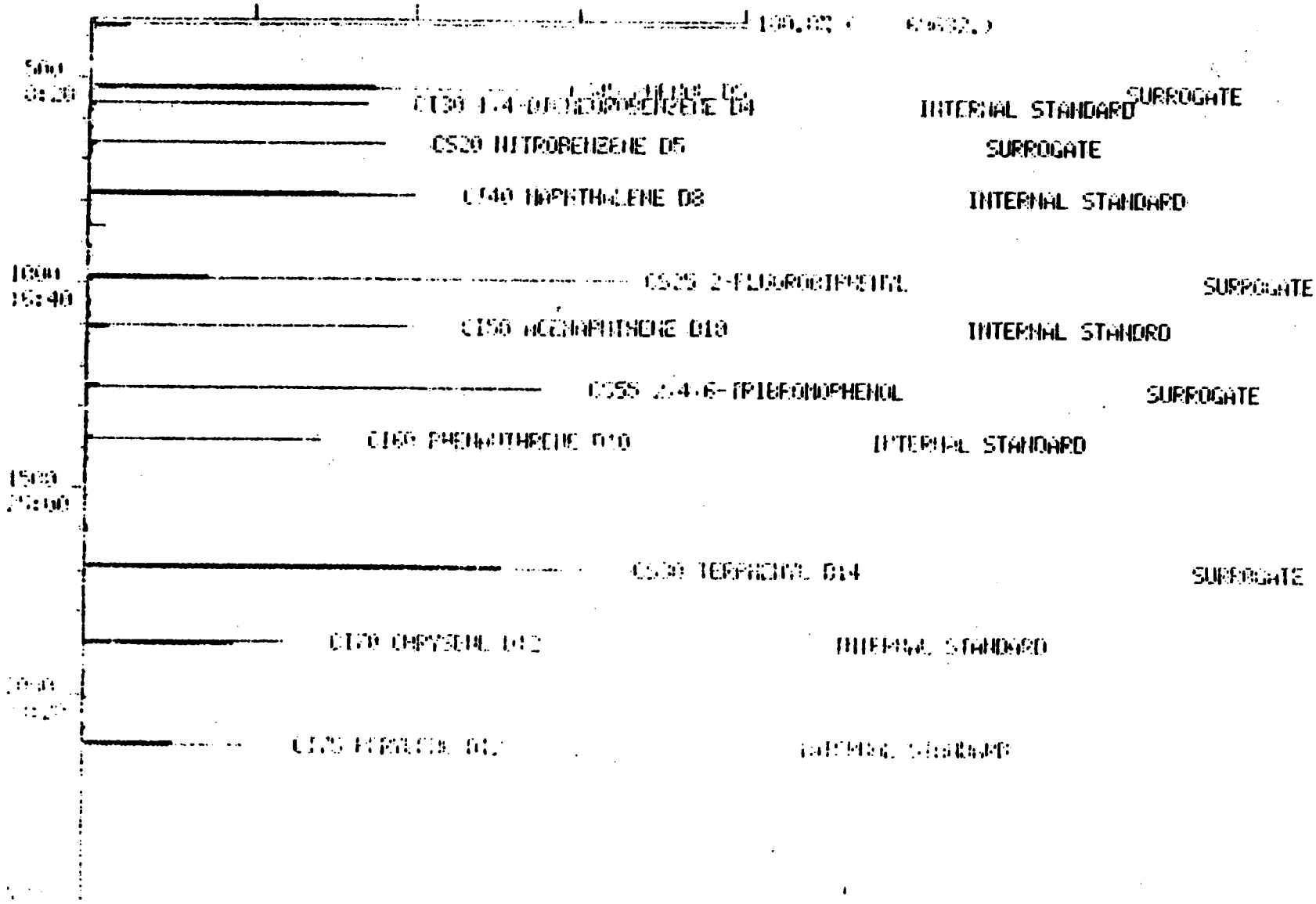
SAMPLE NO. MW-8

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/9
ANALYSIS DATE 12/02/9

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	88	
Naphthalene-D8	86	
Acenaphthene-D10	86	
Phenanthrene-D10	83	
Chrysene-D12	70	
Perylene-D12	74	
Surrogates		
(%Recovery)		
2-Fluorophenol	65	
Phenol-D5	45	
2,4,6-Tribromophenol	94	
Nitrobenzene-D5	88	
2-Fluorobiphenyl	89	
Terphenyl-D14	98	

DATA FROM FILE: 7186W SCANS 355 TO 2520 ACQUIRED: 12/02/91 21:14:00
FILE: 7186W #3

SAMPLE: MW8 JOB 3386 AP14452-53
CONDS.: AUTOSAMPLR I50W



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-8

JOB#:91-3386.16
FILE:7186W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-9

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/02/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	12	U
Acenaphthylene	12	U
Anthracene	12	U
Benzo(a)anthracene	12	U
Benzo(b)fluoranthene	12	U
Benzo(k)fluoranthene	12	U
Benzo(a)pyrene	12	U
Benzo(g,h,i)perylene	12	U
Benzidine	100	U
Bis(2-chloroethyl)ether	12	U
Bis(2-chlorethoxy)methane	12	U
Bis(2-chloroisopropyl)ether	12	U
Bis(2-ethylhexyl)phthalate	12	U
4-Bromophenylphenylether	12	U
Butyl benzyl phthalate	12	U
4-Chloro-3-methylphenol	12	U
2-Chloronaphthalene	12	U
2-Chlorophenol	12	U
4-Chlorophenylphenylether	12	U
Chrysene	12	U
Dibenzo(a,h)anthracene	12	U
Di-n-butyl phthalate	12	U
1,2-Dichlorobenzene	12	U
1,3-Dichlorobenzene	12	U
1,4-Dichlorobenzene	12	U
3,3'-Dichlorobenzidine	25	U
2,4-Dichlorophenol	12	U
Diethylphthalate	12	U
2,4-Dimethylphenol	12	U
Dimethylphthalate	12	U
2,4-Dinitrophenol	62	U
1,2-Diphenyl hydrazine	100	U
2,4-Dinitrotoluene	12	U
2,6-Dinitrotoluene	12	U
Di-n-octylphthalate	12	U
Fluoranthene	12	U
Fluorene	12	U
Hexachlorobenzene	12	U
Hexachlorobutadiene	12	U
Hexachlorocyclopentadiene	12	U
Hexachloroethane	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/9
ANALYSIS DATE 12/02/9

SAMPLE NO. MW-9

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	12	U
Isophorone	12	U
2-Methyl-4,6-dinitrophenol	62	U
Naphthalene	12	U
Nitrobenzene	12	U
2-Nitrophenol	12	U
4-Nitrophenol	62	U
N-nitrosodi-n-propylamine	12	U
N-Nitrosodimethylamine	12	U
N-Nitrosodiphenylamine	12	U
Pentachlorophenol	62	U
Phenanthrene	12	U
Phenol	12	U
Pyrene	12	U
1,2,4-Trichlorobenzene	12	U
2,4,6-Trichlorophenol	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-9

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/02/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

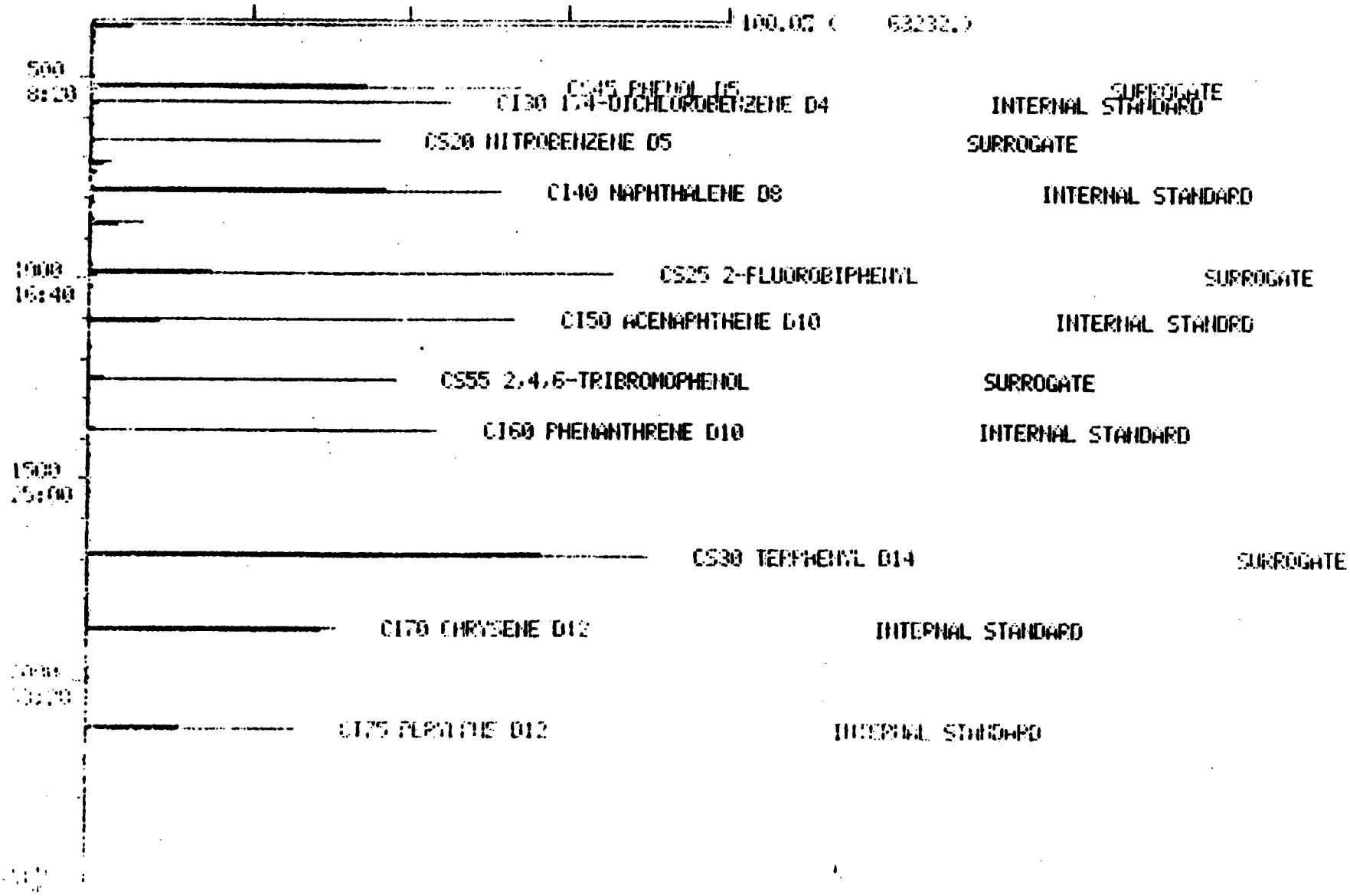
SAMPLE NO. MW-9

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/02/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	106	
Naphthalene-D8	103	
Acenaphthene-D10	105	
Phenanthrene-D10	110	
Chrysene-D12	89	
Perylene-D12	98	
Surrogates		
(%Recovery)		
2-Fluorophenol	46	
Phenol-D5	33	
2,4,6-Tribromophenol	46	
Nitrobenzene-D5	60	
2-Fluorobiphenyl	66	
Terphenyl-D14	79	

DATA FROM FILE: 7187W SCANS 355 TO 2520 ACQUIRED: 12/02/91 22:04:00
CALI: 7187W #3

SAMPLE: MW9 JOB 3396 AP14454 55
COMDS.: AUTOSAMPLR 150W



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ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-9

JOB#:91-3386.15
FILE:7187W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)
860	OXYGENATED COMPOUND	13

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-10

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/02/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	10	U
Acenaphthylene	10	U
Anthracene	10	U
Benzo(a)anthracene	10	U
Benzo(b)fluoranthene	10	U
Benzo(k)fluoranthene	10	U
Benzo(a)pyrene	10	U
Benzo(g,h,i)perylene	10	U
Benzidine	80	U
Bis(2-chloroethyl)ether	10	U
Bis(2-chlorethoxy)methane	10	U
Bis(2-chloroisopropyl)ether	10	U
Bis(2-ethylhexyl)phthalate	10	U
4-Bromophenylphenylether	10	U
Butyl benzyl phthalate	10	U
4-Chloro-3-methylphenol	10	U
2-Chloronaphthalene	10	U
2-Chlorophenol	10	U
4-Chlorophenylphenylether	10	U
Chrysene	10	U
Dibenzo(a,h)anthracene	10	U
Di-n-butyl phthalate	10	U
1,2-Dichlorobenzene	10	U
1,3-Dichlorobenzene	10	U
1,4-Dichlorobenzene	10	U
3,3'-Dichlorobenzidine	20	U
2,4-Dichlorophenol	10	U
Diethylphthalate	10	U
2,4-Dimethylphenol	10	U
Dimethylphthalate	10	U
2,4-Dinitrophenol	50	U
1,2-Diphenyl hydrazine	80	U
2,4-Dinitrotoluene	10	U
2,6-Dinitrotoluene	10	U
Di-n-octylphthalate	10	U
Fluoranthene	10	U
Fluorene	10	U
Hexachlorobenzene	10	U
Hexachlorobutadiene	10	U
Hexachlorocyclopentadiene	10	U
Hexachloroethane	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/9
ANALYSIS DATE 12/02/9

SAMPLE NO. MW-10

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	10	U
Isophorone	10	U
2-Methyl-4,6-dinitrophenol	50	U
Naphthalene	10	U
Nitrobenzene	10	U
2-Nitrophenol	10	U
4-Nitrophenol	50	U
N-nitrosodi-n-propylamine	10	U
N-Nitrosodimethylamine	10	U
N-Nitrosodiphenylamine	10	U
Pentachlorophenol	50	U
Phenanthrene	10	U
Phenol	10	U
Pyrene	10	U
1,2,4-Trichlorobenzene	10	U
2,4,6-Trichlorophenol	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

1-10

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-10

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/02/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

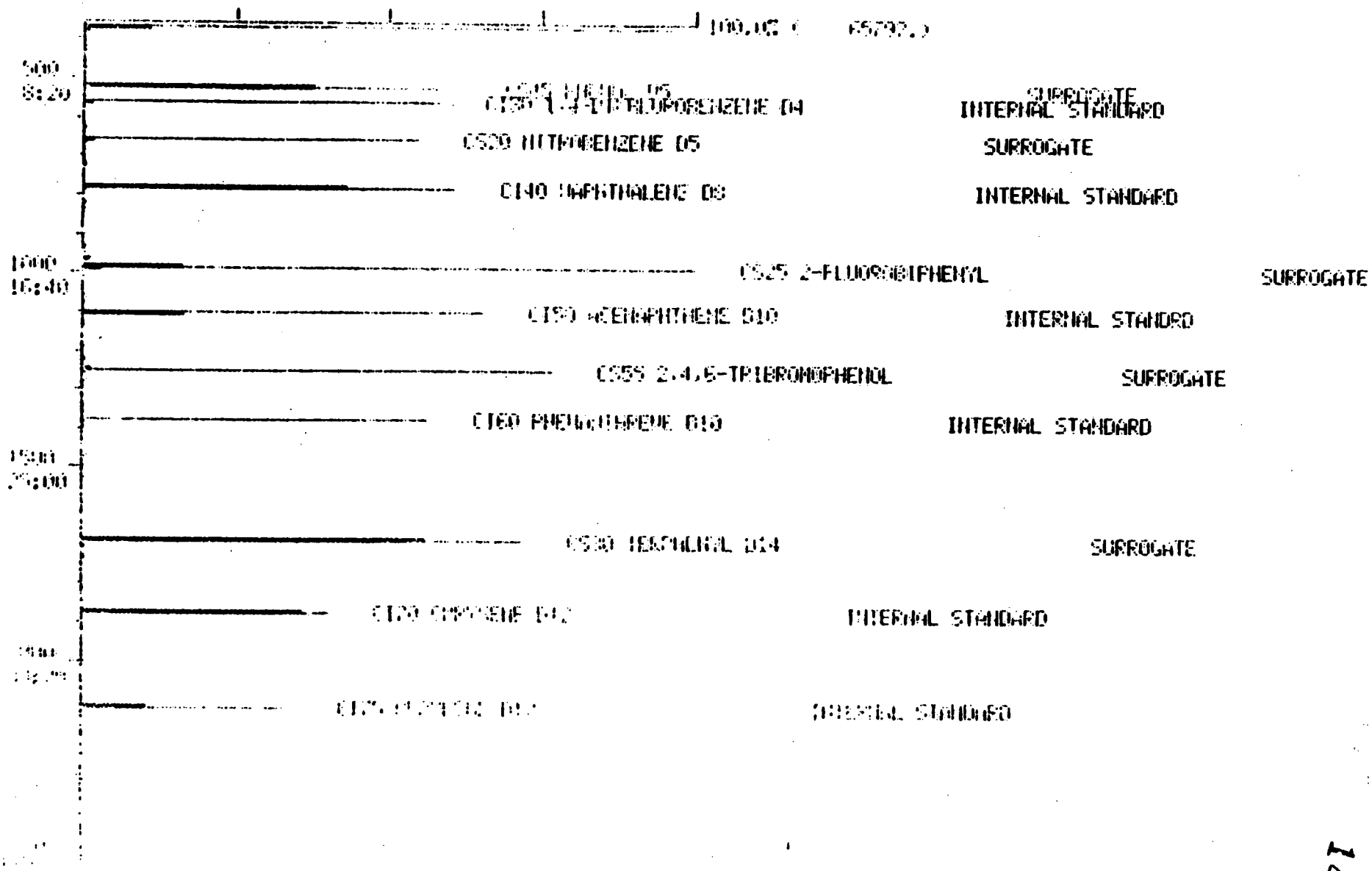
LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-10

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/02/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	114	
Naphthalene-D8	110	
Acenaphthene-D10	112	
Phenanthrene-D10	108	
Chrysene-D12	89	
Perylene-D12	98	
Surrogates		
(%Recovery)		
2-Fluorophenol	48	
Phenol-D5	29	
2,4,6-Tribromophenol	76	
Nitrobenzene-D5	71	
2-Fluorobiphenyl	69	
Terphenyl-D14	78	

DATA FROM FILE: 7188W SCANS 355 TO 2520 ACQUIRED: 12/02/91 22:55:00
CALI: 7188W #3
SAMPLE: MW10 JOB 3396 AP14456 5%
COMDS.: AUTOSAMPLR 150W



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-10

JOB#:91-3386.17
FILE:7188W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. FIELD BLANK

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/02/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	10	U
Acenaphthylene	10	U
Anthracene	10	U
Benzo(a)anthracene	10	U
Benzo(b)fluoranthene	10	U
Benzo(k)fluoranthene	10	U
Benzo(a)pyrene	10	U
Benzo(g,h,i)perylene	10	U
Benzidine	10	U
Bis(2-chloroethyl)ether	80	U
Bis(2-chlorethoxy)methane	10	U
Bis(2-chloroisopropyl)ether	10	U
Bis(2-ethylhexyl)phthalate	10	U
4-Bromophenylphenylether	10	U
Butyl benzyl phthalate	10	U
4-Chloro-3-methylphenol	10	U
2-Chloronaphthalene	10	U
2-Chlorophenol	10	U
4-Chlorophenylphenylether	10	U
Chrysene	10	U
Dibenzo(a,h)anthracene	10	U
Di-n-butyl phthalate	10	U
1,2-Dichlorobenzene	10	U
1,3-Dichlorobenzene	10	U
1,4-Dichlorobenzene	10	U
3,3'-Dichlorobenzidine	10	U
2,4-Dichlorophenol	20	U
Diethylphthalate	10	U
2,4-Dimethylphenol	10	U
Dimethylphthalate	10	U
2,4-Dinitrophenol	10	U
1,2-Diphenyl hydrazine	50	U
2,4-Dinitrotoluene	80	U
2,6-Dinitrotoluene	10	U
Di-n-octylphthalate	10	U
Fluoranthene	10	U
Fluorene	10	U
Hexachlorobenzene	10	U
Hexachlorobutadiene	10	U
Hexachlorocyclopentadiene	10	U
Hexachloroethane	10	U
	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. FIELD BLANK

SAMPLE DATE 11/15/9
EXTRACTION DATE 11/22/9
ANALYSIS DATE 12/02/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	10	U
Isophorone	10	U
2-Methyl-4,6-dinitrophenol	50	U
Naphthalene	10	U
Nitrobenzene	10	U
2-Nitrophenol	10	U
4-Nitrophenol	50	U
N-nitrosodi-n-propylamine	10	U
N-Nitrosodimethylamine	10	U
N-Nitrosodiphenylamine	10	U
Pentachlorophenol	50	U
Phenanthrene	10	U
Phenol	10	U
Pyrene	10	U
1,2,4-Trichlorobenzene	10	U
2,4,6-Trichlorophenol	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. FIELD BLANK

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/02/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

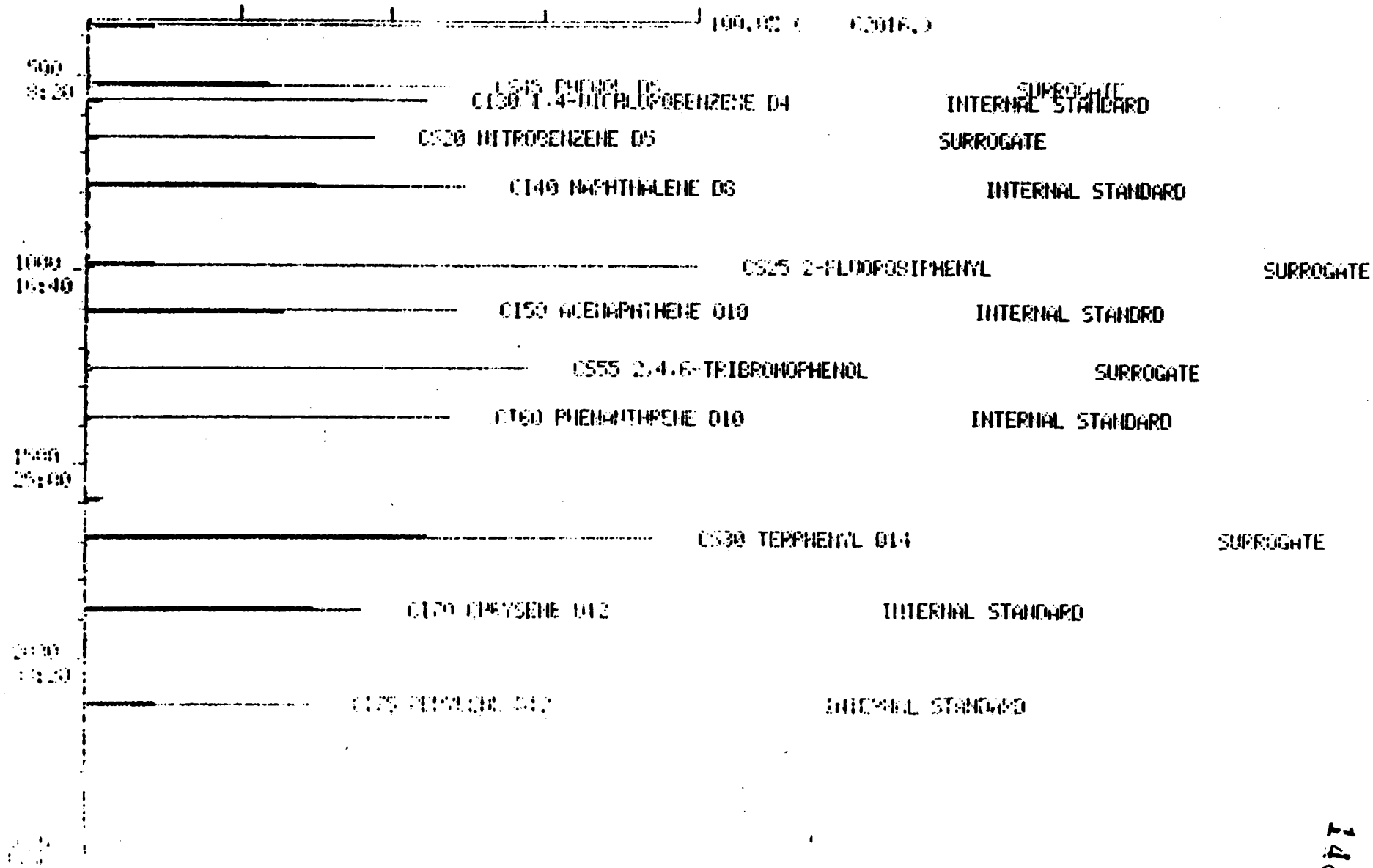
LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. FIELD BLANK

SAMPLE DATE 11/15/9
EXTRACTION DATE 11/22/9
ANALYSIS DATE 12/02/9

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	117	
Naphthalene-D8	115	
Acenaphthene-D10	117	
Phenanthrene-D10	113	
Chrysene-D12	93	
Perylene-D12	99	
Surrogates		
(%Recovery)		
2-Fluorophenol	44	
Phenol-D5	28	
2,4,6-Tribromophenol	70	
Nitrobenzene-D5	54	
2-Fluorobiphenyl	57	
Terphenyl-D14	81	

DATA FROM FILE: 7189W SCANS 355 TO 2520 ACQUIRED: 12/02/91 23:47:00
CALI: 7189W #3
SAMPLE: ~~FILED~~ Field BLANK JOB 3386 AP14458/59
CONDS.: AUTOSAMPLR I50W



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:FIELD BLANK

JOB#:91-3386.18
FILE:7189W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. TRIP BLANK

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/03/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	10	U
Acenaphthylene	10	U
Anthracene	10	U
Benzo(a)anthracene	10	U
Benzo(b)fluoranthene	10	U
Benzo(k)fluoranthene	10	U
Benzo(a)pyrene	10	U
Benzo(g,h,i)perylene	10	U
Benzidine	80	U
Bis(2-chloroethyl)ether	10	U
Bis(2-chlorethoxy)methane	10	U
Bis(2-chloroisopropyl)ether	10	U
Bis(2-ethylhexyl)phthalate	10	U
4-Bromophenylphenylether	10	U
Butyl benzyl phthalate	10	U
4-Chloro-3-methylphenol	10	U
2-Chloronaphthalene	10	U
2-Chlorophenol	10	U
4-Chlorophenylphenylether	10	U
Chrysene	10	U
Dibenzo(a,h)anthracene	10	U
Di-n-butyl phthalate	10	U
1,2-Dichlorobenzene	10	U
1,3-Dichlorobenzene	10	U
1,4-Dichlorobenzene	10	U
3,3'-Dichlorobenzidine	20	U
2,4-Dichlorophenol	10	U
Diethylphthalate	10	U
2,4-Dimethylphenol	10	U
Dimethylphthalate	10	U
2,4-Dinitrophenol	50	U
1,2-Diphenyl hydrazine	80	U
2,4-Dinitrotoluene	10	U
2,6-Dinitrotoluene	10	U
Di-n-octylphthalate	10	U
Fluoranthene	10	U
Fluorene	10	U
Hexachlorobenzene	10	U
Hexachlorobutadiene	10	U
Hexachlorocyclopentadiene	10	U
Hexachloroethane	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9
EXTRACTION DATE 11/22/9
ANALYSIS DATE 12/03/91

SAMPLE NO. TRIP BLANK

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	10	U
Isophorone	10	U
2-Methyl-4,6-dinitrophenol	50	U
Naphthalene	10	U
Nitrobenzene	10	U
2-Nitrophenol	10	U
4-Nitrophenol	50	U
N-nitrosodi-n-propylamine	10	U
N-Nitrosodimethylamine	10	U
N-Nitrosodiphenylamine	10	U
Pentachlorophenol	50	U
Phenanthrene	0.93	J
Phenol	10	U
Pyrene	10	U
1,2,4-Trichlorobenzene	10	U
2,4,6-Trichlorophenol	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. TRIP BLANK

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/03/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

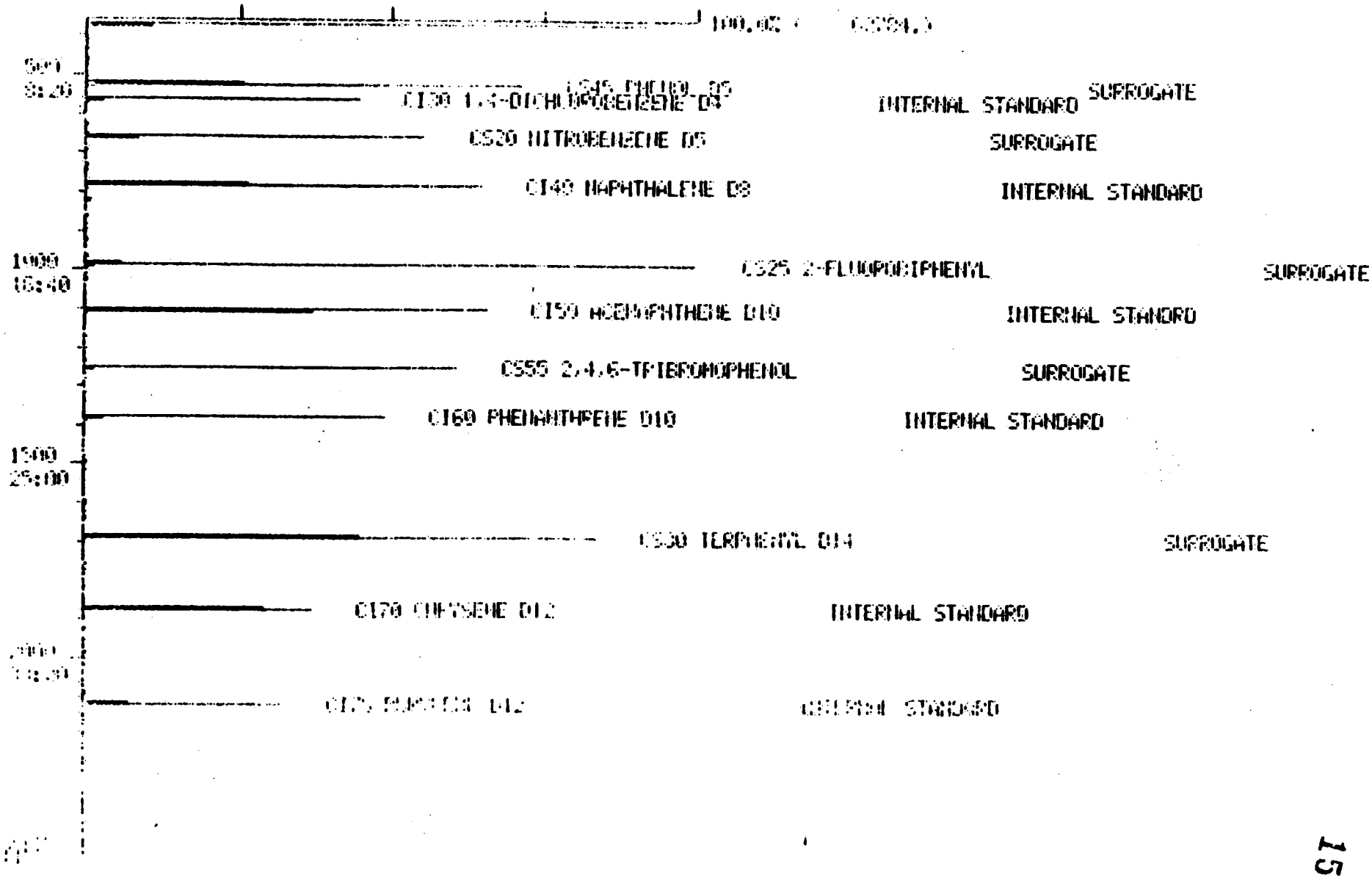
LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. TRIP BLANK

SAMPLE DATE 11/15/9
EXTRACTION DATE 11/22/9
ANALYSIS DATE 12/03/9

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	104	
Naphthalene-D8	103	
Acenaphthene-D10	105	
Phenanthrene-D10	105	
Chrysene-D12	83	
Perylene-D12	94	
Surrogates		
(%Recovery)		
2-Fluorophenol	50	
Phenol-D5	34	
2,4,6-Tribromophenol	63	
Nitrobenzene-D5	67	
2-Fluorobiphenyl	70	
Terphenyl-D14	79	

DATA FROM FILE: 7190W SCANS 355 TO 2520 ACQUIRED: 12/03/91 0:39:00
CALI: 7190W #3
SAMPLE: TRIPBLANK JOB 3386 [illegible]
CONDS.: AUTOSAMPLR I50W



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:TRIP BLANK

JOB#:91-3386.19
FILE:7190W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC SEMIVOLATILE METHOD BLANK
SAMPLE NO. SBLK87

EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	10	U
Acenaphthylene	10	U
Anthracene	10	U
Benzo(a)anthracene	10	U
Benzo(b)fluoranthene	10	U
Benzo(k)fluoranthene	10	U
Benzo(a)pyrene	10	U
Benzo(g,h,i)perylene	10	U
Benzidine	80	U
Bis(2-chloroethyl)ether	10	U
Bis(2-chlorethoxy)methane	10	U
Bis(2-chloroisopropyl)ether	10	U
Bis(2-ethylhexyl)phthalate	10	U
4-Bromophenylphenylether	10	U
Butyl benzyl phthalate	10	U
4-Chloro-3-methylphenol	10	U
2-Chloronaphthalene	10	U
2-Chlorophenol	10	U
4-Chlorophenylphenylether	10	U
Chrysene	10	U
Dibenzo(a,h)anthracene	10	U
Di-n-butyl phthalate	10	U
1,2-Dichlorobenzene	10	U
1,3-Dichlorobenzene	10	U
1,4-Dichlorobenzene	10	U
3,3'-Dichlorobenzidine	20	U
2,4-Dichlorophenol	10	U
Diethylphthalate	10	U
2,4-Dimethylphenol	10	U
Dimethylphthalate	10	U
2,4-Dinitrophenol	50	U
1,2-Diphenyl hydrazine	80	U
2,4-Dinitrotoluene	10	U
2,6-Dinitrotoluene	10	U
Di-n-octylphthalate	10	U
Fluoranthene	10	U
Fluorene	10	U
Hexachlorobenzene	10	U
Hexachlorobutadiene	10	U
Hexachlorocyclopentadiene	10	U
Hexachloroethane	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC SEMIVOLATILE METHOD BLANK
SAMPLE NO. SBLK87

EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	10	U
Isophorone	10	U
2-Methyl-4,6-dinitrophenol	50	U
Naphthalene	10	U
Nitrobenzene	10	U
2-Nitrophenol	10	U
4-Nitrophenol	50	U
N-nitrosodi-n-propylamine	10	U
N-Nitrosodimethylamine	10	U
N-Nitrosodiphenylamine	10	U
Pentachlorophenol	50	U
Phenanthrene	10	U
Phenol	10	U
Pyrene	10	U
1,2,4-Trichlorobenzene	10	U
2,4,6-Trichlorophenol	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC SEMIVOLATILE METHOD BLANK
SAMPLE NO. SBLK87

EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

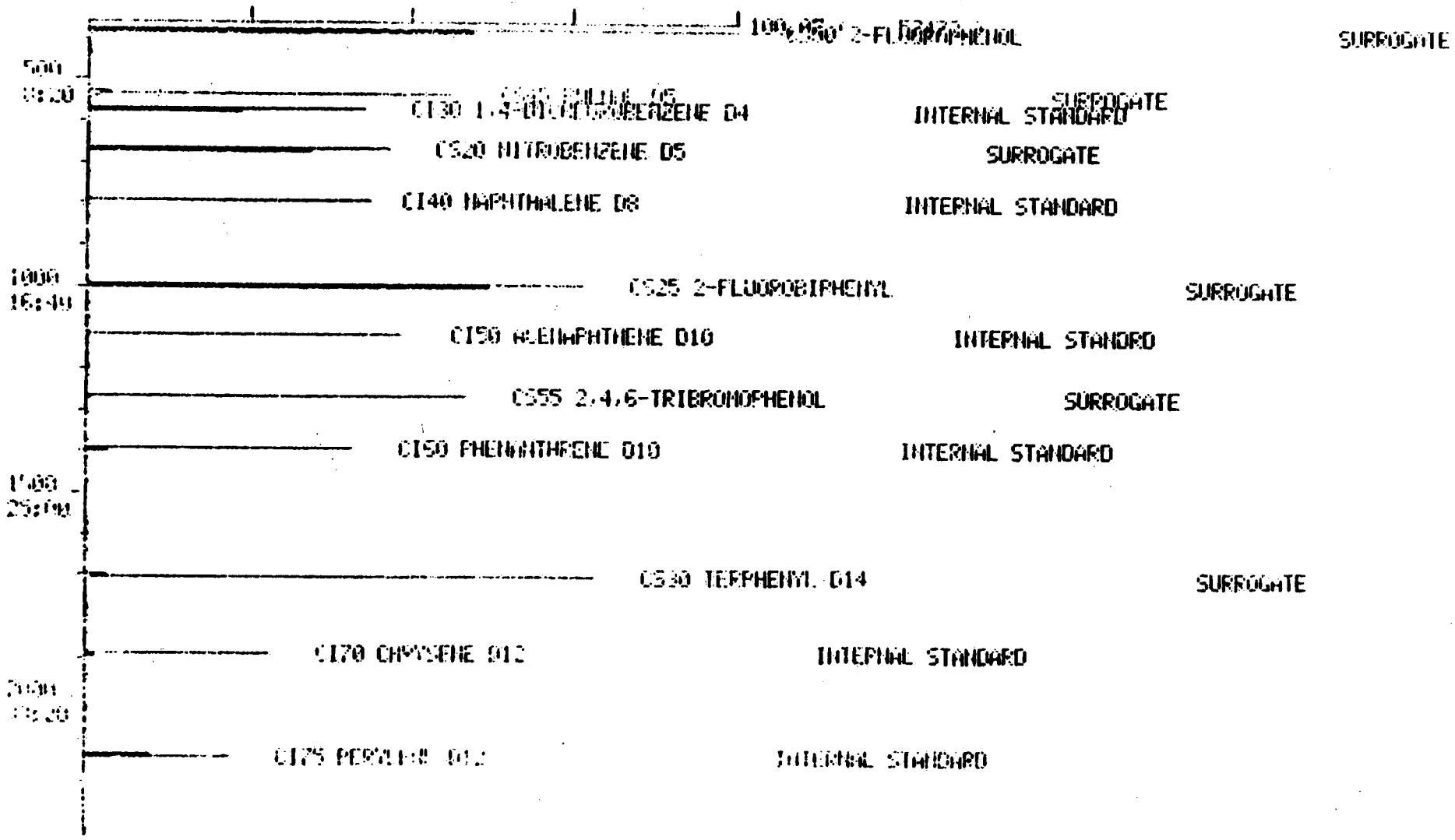
RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC SEMIVOLATILE METHOD BLANK
SAMPLE NO. SBLK87

EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/9

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	89	
Naphthalene-D8	84	
Acenaphthene-D10	86	
Phenanthrene-D10	87	
Chrysene-D12	63	
Perylene-D12	68	
Surrogates		
(%Recovery)		
2-Fluorophenol	57	
Phenol-D5	37	
2,4,6-Tribromophenol	85	
Nitrobenzene-D5	73	
2-Fluorobiphenyl	68	
Terphenyl-D14	115	

DATA FROM FILE: 7153W SCANS 350 TO 2520 ACQUIRED: 11/30/91 17:55:00
CALI: 7150W #3
SAMPLE: SBLK87 JOB 3386 AP14424.25
CONDS.: AUTOSAMPLR 150W



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:SBLK 87

JOB#:91-3386.20
FILE:7159W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

METALS DATA

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-1

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.01	U
Total Silver	MG/L	272.1	11/25/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC MW-1 FIELD DUP
SAMPLE NO. FIELD DUP

SAMPLE DATE 11/15/91

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.011	
Total Silver	MG/L	272.1	11/25/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-2

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.064	
Total Silver	MG/L	272.1	11/25/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-3

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.03	
Total Silver	MG/L	272.1	11/25/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-4

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.093	
Total Silver	MG/L	272.1	11/25/91	0.013	

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-5

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.02	
Total Silver	MG/L	272.1	11/25/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-6

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.13	
Total Silver	MG/L	272.1	11/25/91	0.01	

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-7

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.065	
Total Silver	MG/L	272.1	11/25/91	0.01	

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-8

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	C
Total Chromium	MG/L	218.1	11/25/91	0.01	U
Total Silver	MG/L	272.1	11/25/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

172

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-9

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.01	U
Total Silver	MG/L	272.1	11/25/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

173

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-10

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.01	U
Total Silver	MG/L	272.1	11/25/91	0.011	

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. FIELD BLANK

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.016	
Total Silver	MG/L	272.1	11/25/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. TRIP BLANK

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	C
Total Chromium	MG/L	218.1	11/25/91	0.01	U
Total Silver	MG/L	272.1	11/25/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. METHOD BLANK

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.01	U
Total Silver	MG/L	272.1	11/25/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-1

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC MW-1 FIELD DUP
SAMPLE NO. FIELD DUP

SAMPLE DATE 11/15/91

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

179

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9

SAMPLE NO. MW-2

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.016	

146

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-3

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

181

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-4

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-5

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-6

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-7

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.028	

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-8

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-9

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

187

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-10

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. FIELD BLANK

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. METHOD BLANK

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.01	U

WATER QUALITY DATA

RECRA
ENVIRONMENTAL
INC.

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-1

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.01	U
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	0.5	U
Formaldehyde	mg/l	*	11/22/91	0.1	

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC MW-1 FIELD DUP
SAMPLE NO. FIELD DUP

SAMPLE DATE 11/15/91

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.01	U
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	0.61	
Formaldehyde	mg/l	*	11/22/91	0.11	

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-2

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.01	U
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	12	
Formaldehyde	mg/l	*	11/22/91	0.084	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-3

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.11	
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	0.5	U
Formaldehyde	mg/l	*	11/22/91	0.26	

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-4

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.01	U
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	1.3	
Formaldehyde	mg/l	*	11/22/91	0.21	

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-5

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.01	U
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	0.5	U
Formaldehyde	mg/l	*	11/22/91	0.14	

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-6

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.027	
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	1.2	
Formaldehyde	mg/l	*	11/22/91	0.18	

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-7

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.24	
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	1.1	
Formaldehyde	mg/l	*	11/22/91	0.084	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-8

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.017	
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	5.2	
Formaldehyde	mg/l	*	11/22/91	0.084	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-9

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.01	U
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	1.5	
Formaldehyde	mg/l	*	11/22/91	0.084	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-10

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.01	U
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	0.5	U
Formaldehyde	mg/l	*	11/22/91	0.09	

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

2-12

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. FIELD BLANK

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.01	U
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	0.5	U
Formaldehyde	mg/l	*	11/22/91	0.084	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. TRIP BLANK

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.01	U
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	0.53	
Formaldehyde	mg/l	*	11/22/91	0.084	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. METHOD BLANK

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.01	U
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	0.5	U
Formaldehyde	mg/l	*	11/22/91	0.084	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

2-12

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. FIELD BLANK

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.01	U
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	0.5	U
Formaldehyde	mg/l	*	11/22/91	0.084	U

ORGANIC DATA COMMENT PAGE

Laboratory Name RECRA ENVIRONMENTAL, INC.

USEPA Defined Organic Data Qualifiers:

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

C - This flag applies to pesticide results where the identification has been confirmed by GC/MS.

B - This flag is used when the analyte is found in the associated blank as well as in the sample.

E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

G - The TCLP Matrix Spike recovery was greater than the upper limit of the analytical method.

L - The TCLP Matrix Spike recovery was lower than the lower limit of the analytical method.

T - This flag is used when the analyte is found in the associated TCLP extraction as well as in the sample.

INORGANIC DATA COMMENT PAGE

Laboratory Name RECRA ENVIRONMENTAL, INC.

USEPA Defined Inorganic Data Qualifiers:

B - Indicates a value greater than or equal to the instrument detection limit but less than the contract required detection limit.

U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., 100).

E - Indicates a value estimated or not reported due to the presence of interference.

S - Indicates value determined by Method of Standard Addition.

N - Indicates spike sample recovery is not within control limits.

* - Indicates duplicate analysis is not within control limits.

+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

M - Indicates duplicate injection results exceeded control limits.

W - Post digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

G - The TCLP Matrix Spike recovery was greater than the upper limit of the analytical method.

L - The TCLP Matrix Spike recovery was lower than the lower limit of the analytical method.

RECRA
ENVIRONMENTAL
INC.

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO:

SITE NAME: Kodalux – Fairlawn NJ

SAMPLERS (SIGNATURE): [signature]

STATION NO	DATE	TIME	COMP	GRAB	STATION LOCATION	NO OF CONTAINERS	8240 624	8270 625	TRPH	Total cyanide	Ag + Cr (total)	Formaldehyde	REMARKS
	11/15/91	0805		✓	MW-3	8	2	2	1	1	1	1	
		0740		✓	MW-10	8	2	2	1	1	1	1	
		0820		✓	MW-4	~~8~~ 8	2	2	1	1	1	1	
		0835		✓	MW-5	~~8~~ 8	2	2	1	1	1	1	
		0905		✓	MW-8	8	2	2	1	1	1	1	
		0855		✓	MW-6	7	2	1	1	1	1	1	
		0925		✓	MW-9	8	2	2	1	1	1	1	
		0950		✓	MW-7	7	2	1	1	1	1	1	
		1015		✓	MW-2	8	2	2	1	1	1	1	oil in water
		1050		✓	MW-1	8	2	2	1	1	1	1	oil in water
		1050		✓	MW-1 Dup	8	2	2	1	1	1	1	oil in water
		1015		✓	Field Blank (at MW-2)	8	2	2	1	1	1		
					*								

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
[signature]	11/15/91	1700					
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	REMARKS	
			[signature]	11/16/91	1030	* ALSO RECIEVED 1 WHOLE SET OF BOTTLES FOR TRIP BLANK	

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO

SITE NAME: Kodalux - Fairlawn NJ

SAMPLERS (SIGNATURE): [signature]

STATION NO	DATE	TIME	COMP	GRAB	STATION LOCATION	NO OF CONTAINERS	Cr6+						REMARKS
	11/15/91	1323		✓	MW-1		1						
		1318		✓	MW-2		1						
		1251		✓	MW-3		1						
		1254		✓	MW-4		1						
		1257 ~~1257~~	DAW	✓	MW-5		1						
		1301		✓	MW-6		1						
		1315		✓	MW-7		1						
		1306		✓	MW-8		1						
		1310		✓	MW9		1						
		1245		✓	MW-10		1						
		1323		✓	MW-1 Dup		1						
		~~1015~~ 1318	DAW	✓	Field Blank		1						

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
[signature]	11/15/91	1700					
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
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			[signature]	11/16/91	1030		

Distribution: Original accompanies shipment

20436.0

RECRA ENVIRONMENTAL, INC.

Chemical and Environmental Analysis Services

World University Games Buffalo '93
GRAND PATRON
HELPING TO BRING THE WORLD TO BUFFALO

November 22, 1991

Ms. Lynn M. Moody
Radian Corporation
155 Corporate Woods, Suite 100
Rochester, NY 14623

Re: Analytical Results

Dear Ms. Moody:

Please find enclosed results concerning the analyses of the samples recently submitted by your firm. The Pertinent Information regarding these analyses is listed below:

Quote #:	NY91-945R
Project Name:	Kodalux-Fairlawn, NJ
Matrix:	Solid Drill Cuttings, Aqueous
Samples Received:	10/29/91
Sample Dates:	10/24,25,28/91

If you have any questions concerning these data, please contact Ms. Donna Bateman, Project Manager, at (716) 691-2600 and refer to the I.D. number listed below. It has been our pleasure to provide Radian Corporation with Environmental Testing Services. We look forward to serving you in the future.

Sincerely,

RECRA ENVIRONMENTAL, INC.

Kenneth C. Malinowski /KPK

Kenneth C. Malinowski, PhD
Vice President

PJV/KCM/dms
Enclosure

I.D. #91-3161
#91-3161A
#2A3811

Audubon Business Centre • 10 Hazelwood Drive • Amherst, New York 14228-2298 • (716) 691-2600 • FAX (716) 691-3011

ANALYTICAL RESULTS

Prepared For

Radian Corporation
155 Corporate Woods, Suite 100
Rochester, New York 14623

Prepared By

Recra Environmental, Inc.
10 Hazelwood Drive, Suite 106
Amherst, New York 14228-2298

METHODOLOGIES

The specific methodologies employed in obtaining the enclosed analytical results are indicated on the specific data table. The method numbers presented refer to the following U.S. Environmental Protection Agency reference.

- U.S. Environmental Protection Agency "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods." Office of Solid Waste and Emergency Response. November 1986, SW-846, Third Edition.

COMMENTS

Comments pertain to data on one or all pages of this report.

The enclosed data has been reported utilizing USEPA data qualifiers (Q) as defined on the Organic and Inorganic Data Comment Pages.

Quality control analyses were performed on a batch basis. All results were within acceptable limits.

Results of the analysis of soils are corrected for moisture content and reported on a dry weight (103°C) basis.

Due to a laboratory oversite, sample Trip Blank was not analyzed for Total Recoverable Petroleum Hydrocarbons as requested on the Chain of Custody. Ms. Lynn Moody of Radian Corporation was notified on November 25, 1991 by Ms. Donna Bateman of Recra Environmental, Inc.

The chromatograms have been provided for the Volatile and Semivolatile analyses.

RECRA
ENVIRONMENTAL
INC.

RADIAN CORPORATION
SOIL MATRIX
METHOD 8240 - HAZARDOUS SUBSTANCE LIST
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC DRILL CUTTINGS
SAMPLE NO. CUTTINGS

SAMPLE DATE 10/25/91

ANALYSIS DATE 10/31/91

COMPOUND (Units of Measure = UG/KG)	RESULT	Q
Acetone	11	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	11	U
Carbon disulfide	5.0	U
Carbon tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	11	U
Chloroform	5.0	U
Chloromethane	11	U
1,1-Dichloroethane	5.0	U
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	5.0	U
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
trans-1,3-Dichloropropene	5.0	U
cis-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
2-Hexanone	11	U
Methyl ethyl ketone	11	U
4-Methyl-2-pentanone	11	U
Methylene chloride	5.0	U
Styrene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Tetrachloroethene	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	3.9	J
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl acetate	11	U
Vinyl chloride	11	U
Xylenes (Total)	5.0	U

DILUTION FACTOR = 1.0
% DRY = 93.5

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC DRILL CUTTINGS
SAMPLE NO. CUTTINGS

SAMPLE DATE 10/25/91
ANALYSIS DATE 10/31/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Trichlorofluoromethane	5.0	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	5.0	U

DILUTION FACTOR = 1.0
% DRY = 93.5

RADIAN CORPORATION
SOIL MATRIX
METHOD 8240 - HAZARDOUS SUBSTANCE LIST
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC DRILL CUTTINGS
SAMPLE NO. CUTTINGS

SAMPLE DATE 10/25/91

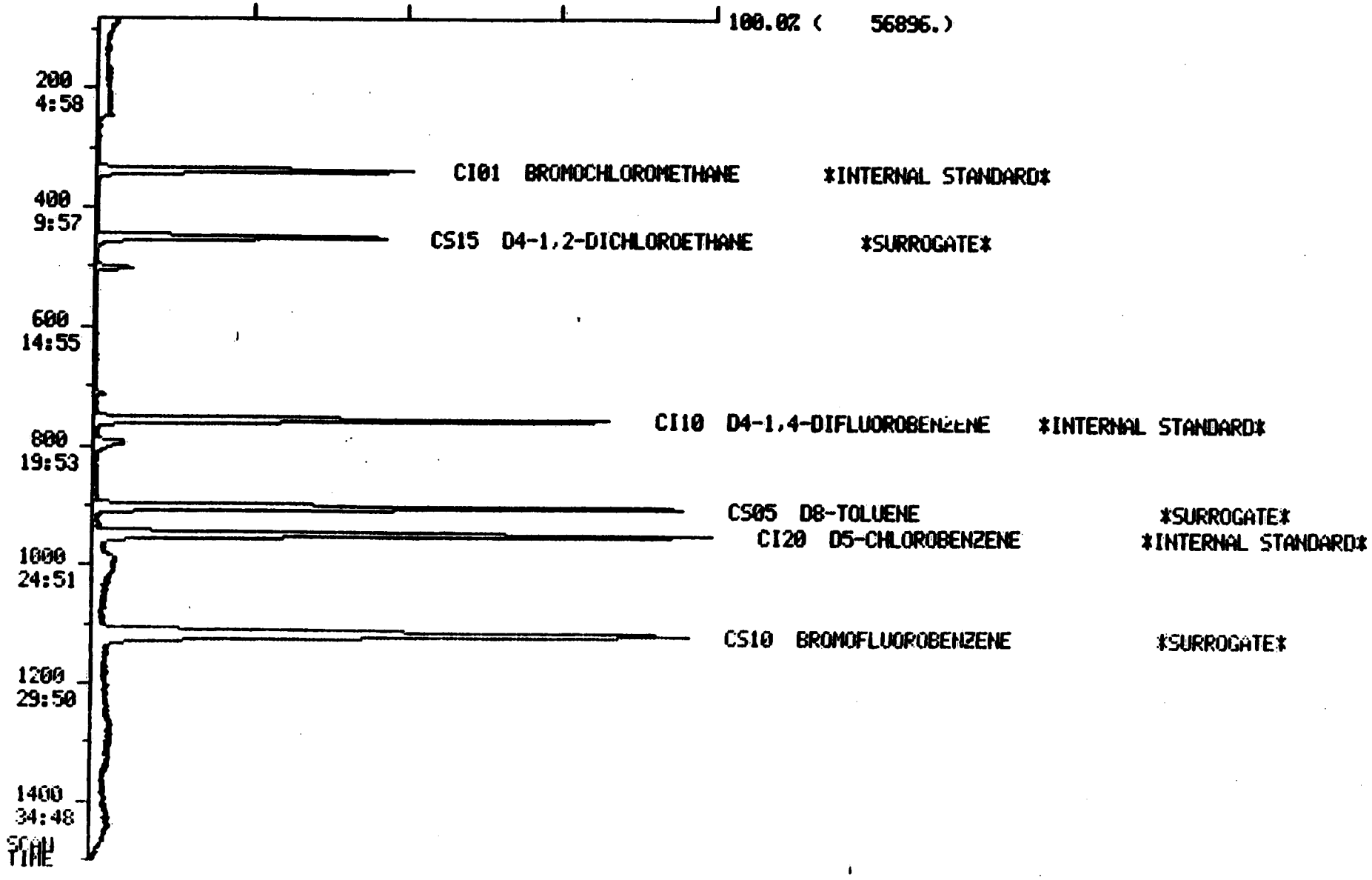
ANALYSIS DATE 10/31/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	106	
1,4-Difluorobenzene	98	
Chlorobenzene-D5	100	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	99	
1,2-Dichloroethane-D4	98	
Toluene-D8	98	

DATA FROM FILE: H6966

SCANS 80 TO 1500 ACQUIRED: 10/31/91 20:09:00
CALI: H6966 #3

SAMPLE: DRILL CUTTINGS
CONDS.: I50H



RADIAN CORPORATION
SOIL MATRIX
METHOD 8240 - HAZARDOUS SUBSTANCE LIST
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC VOLATILE METHOD BLANK
SAMPLE NO. VBLK 40

ANALYSIS DATE 10/31/91

COMPOUND (Units of Measure = UG/KG)	RESULT	Q
Acetone	10	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon disulfide	5.0	U
Carbon tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	10	U
Chloroform	5.0	U
Chloromethane	10	U
1,1-Dichloroethane	5.0	U
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	5.0	U
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
trans-1,3-Dichloropropene	5.0	U
cis-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
2-Hexanone	10	U
Methyl ethyl ketone	10	U
4-Methyl-2-pentanone	10	U
Methylene chloride	5.0	U
Styrene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Tetrachloroethene	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	5.0	U
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl acetate	10	U
Vinyl chloride	10	U
Xylenes (Total)	5.0	U

DILUTION FACTOR = 1.0
% DRY = 100

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC VOLATILE METHOD BLANK
SAMPLE NO. VBLK 40

ANALYSIS DATE 10/31/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Trichlorofluoromethane	5.0	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	5.0	U

DILUTION FACTOR = 1.0
% DRY = 100

RADIAN CORPORATION
SOIL MATRIX
METHOD 8240 - HAZARDOUS SUBSTANCE LIST
VOLATILE ORGANICS

8

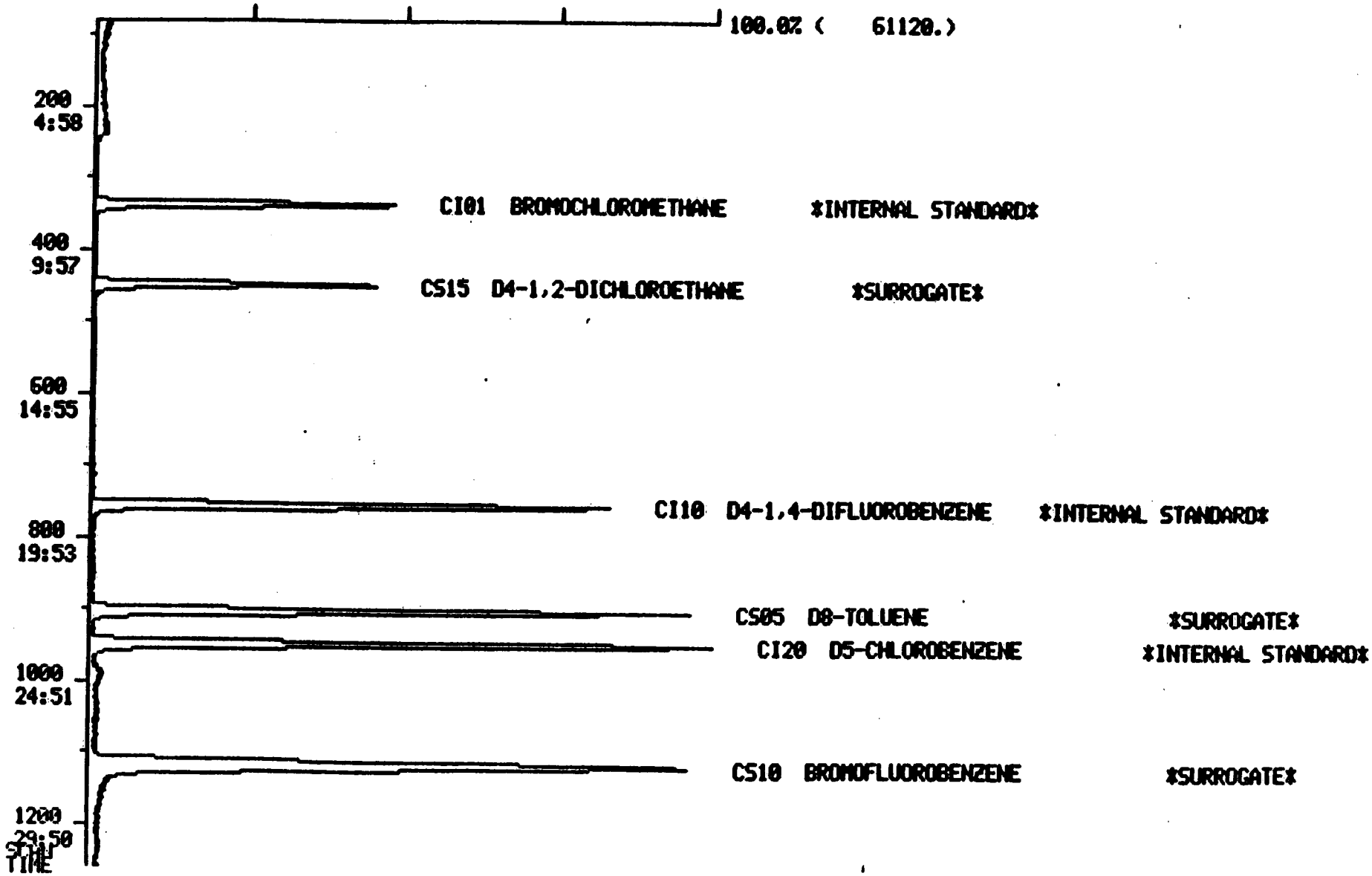
LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC VOLATILE METHOD BLANK
SAMPLE NO. VBLK 40

ANALYSIS DATE 10/31/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	110	
1,4-Difluorobenzene	108	
Chlorobenzene-D5	105	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	101	
1,2-Dichloroethane-D4	99	
Toluene-D8	99	

DATA FROM FILE: H6957 SCANS 80 TO 1259 ACQUIRED: 10/31/91 13:43:00
CALI: H6957 #3

SAMPLE: VBLK40
CONDS.: I50H



RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 8240 - HAZARDOUS SUBSTANCE LIST
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE NO. TRIP BLANK

ANALYSIS DATE 11/01/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acetone	10	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon disulfide	5.0	U
Carbon tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	10	U
Chloroform	5.0	U
Chloromethane	10	U
1,1-Dichloroethane	5.0	U
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	5.0	U
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
trans-1,3-Dichloropropene	5.0	U
cis-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
2-Hexanone	10	U
Methyl ethyl ketone	10	U
4-Methyl-2-pentanone	10	U
Methylene chloride	5.0	U
Styrene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Tetrachloroethene	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	5.0	U
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl acetate	10	U
Vinyl chloride	10	U
Xylenes (Total)	5.0	U

DILUTION FACTOR = 1.0

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE NO. TRIP BLANK

ANALYSIS DATE 11/01/ 1

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Trichlorofluoromethane	5.0	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	5.0	U

DILUTION FACTOR =

130

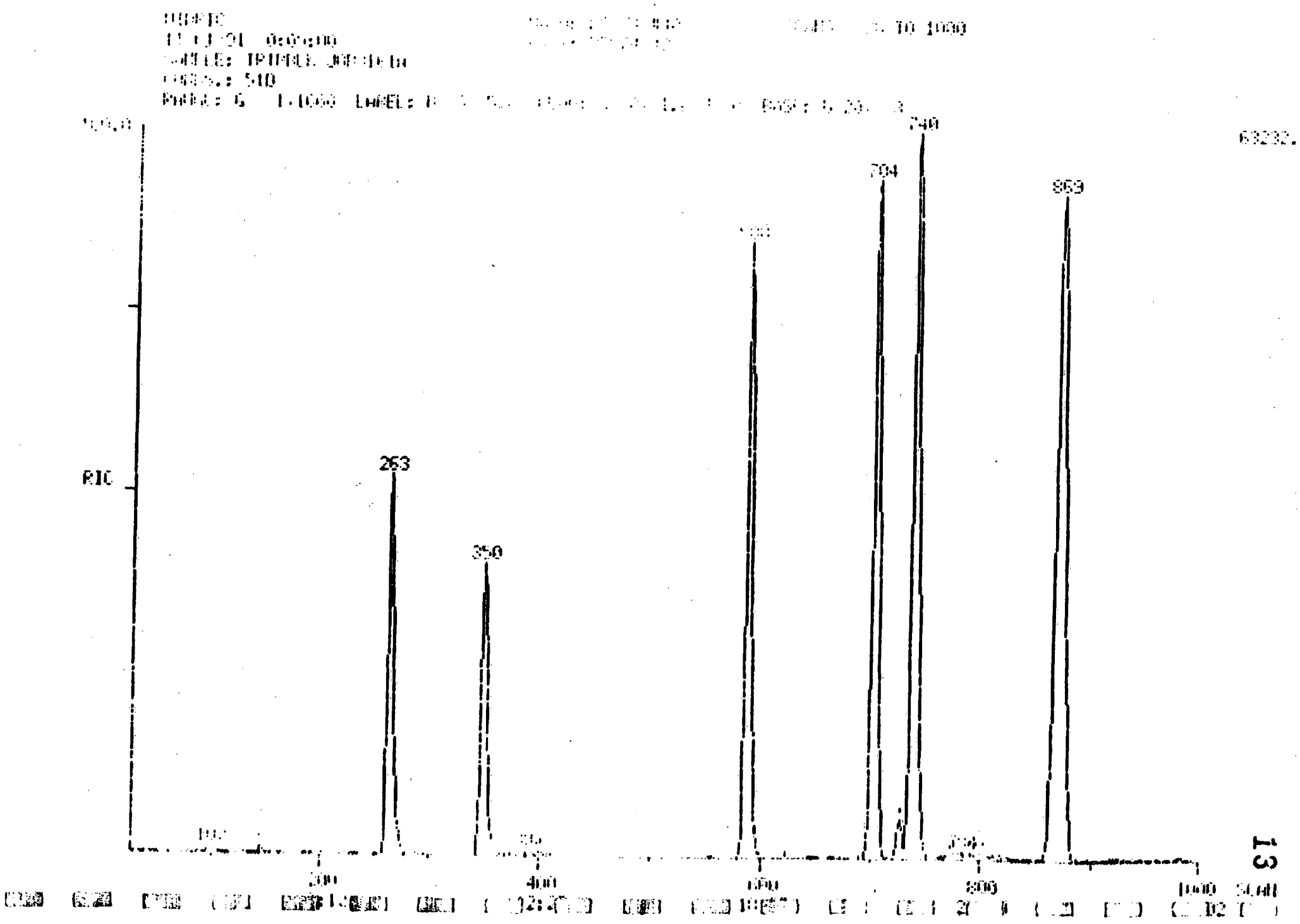
RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 8240 - HAZARDOUS SUBSTANCE LIST
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE NO. TRIP BLANK

ANALYSIS DATE 11/01/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	93	
1,4-Difluorobenzene	93	
Chlorobenzene-D5	93	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	106	
1,2-Dichloroethane-D4	100	
Toluene-D8	97	-



13

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 8240 - HAZARDOUS SUBSTANCE LIST
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC VOLATILE METHOD BLANK
SAMPLE NO. VBLK 79

ANALYSIS DATE 11/02/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acetone	10	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon disulfide	5.0	U
Carbon tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	10	U
Chloroform	5.0	U
Chloromethane	10	U
1,1-Dichloroethane	5.0	U
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	5.0	U
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
trans-1,3-Dichloropropene	5.0	U
cis-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
2-Hexanone	10	U
Methyl ethyl ketone	10	U
4-Methyl-2-pentanone	10	U
Methylene chloride	5.0	U
Styrene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Tetrachloroethene	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	5.0	U
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl acetate	10	U
Vinyl chloride	10	U
Xylenes (Total)	5.0	U

DILUTION FACTOR = 1.0

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 8240 - HAZARDOUS SUBSTANCE LIST
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC VOLATILE METHOD BLANK
SAMPLE NO. VBLK 79

ANALYSIS DATE 11/02/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	96	U
1,4-Difluorobenzene	95	U
Chlorobenzene-D5	94	U
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	103	U
1,2-Dichloroethane-D4	97	U
Toluene-D8	99	U-

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC VOLATILE METHOD BLANK
SAMPLE NO. VBLK 79

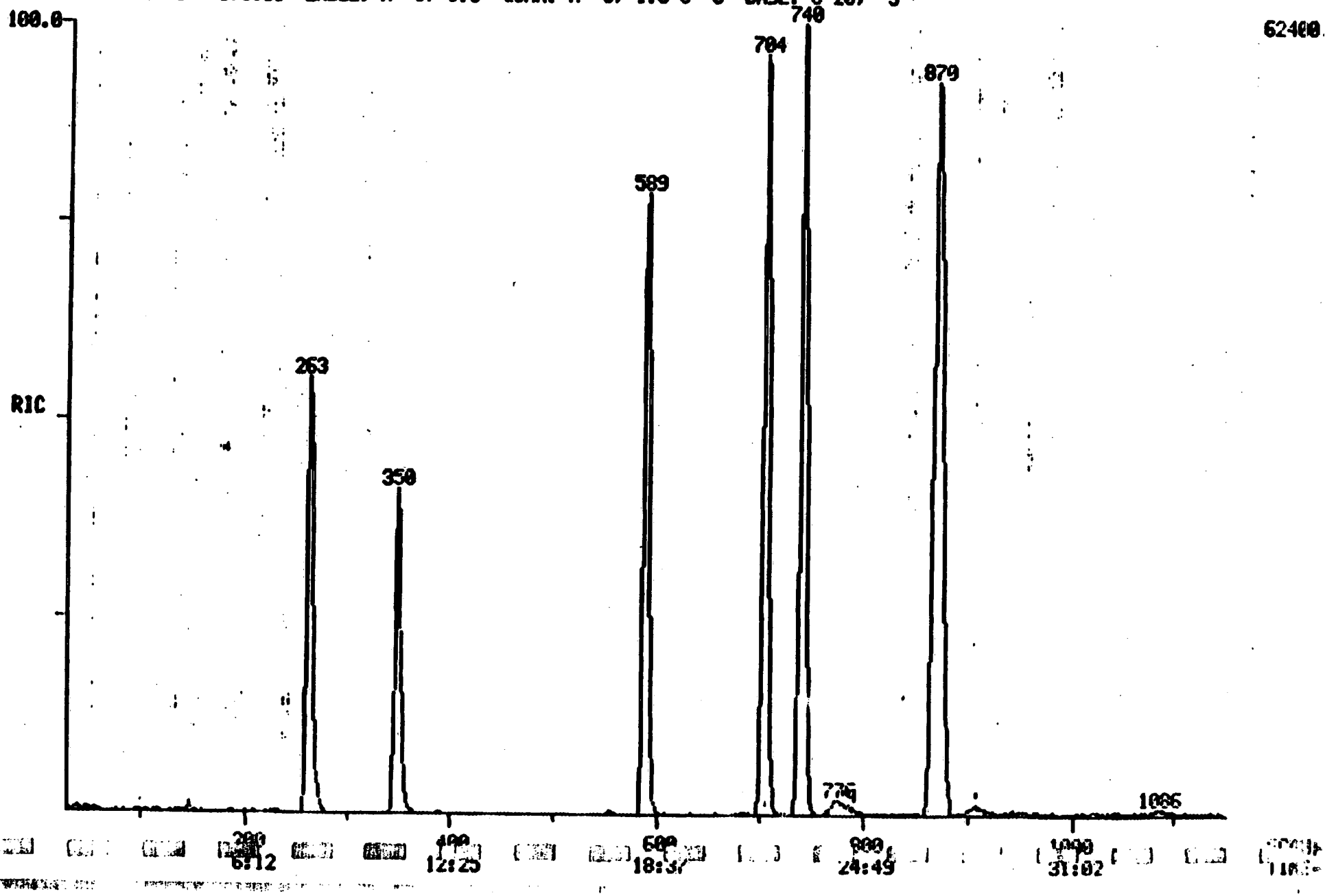
COMPOUND (Units of Measure = UG/L)	RESULT	Q
Trichlorofluoromethane	5.0	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	5.0	U

DILUTION FACTOR = 1.0

MIDRIC
10/31/91 16:01:00
SAMPLE: VBLK79
CONDS.: 51D
RANGE: G 1/1150 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: D5364 #46
CALI: D5364 #2

SCANS 28 TO 1150



RADIAN CORPORATION
SOIL MATRIX
METHOD 8270 - HAZARDOUS SUBSTANCE LIST
SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC DRILL CUTTINGS
SAMPLE NO. CUTTINGS

SAMPLE DATE 10/25/91
EXTRACTION DATE 11/08/91
ANALYSIS DATE 11/12/91

COMPOUND (Units of Measure = UG/KG)	RESULT	Q
Acenaphthylene	350	U
Acenaphthene	350	U
Anthracene	350	U
Benzo(a)anthracene	350	U
Benzo(b)fluoranthene	350	U
Benzo(k)fluoranthene	350	U
Benzo(ghi)perylene	350	U
Benzo(a)pyrene	350	U
Benzoic Acid	1,800	U
Benzyl Alcohol	350	U
Bis(2-chloroethoxy)methane	350	U
Bis(2-chloroethyl)ether	350	U
Bis(2-Chloroisopropyl) ether	350	U
Bis(2-ethylhexyl)phthalate	350	U
4-Bromophenyl phenyl ether	350	U
Butyl benzyl phthalate	350	U
4-Chloroaniline	350	U
p-Chloro-m-cresol	350	U
2-Chloronaphthalene	350	U
2-Chlorophenol	350	U
4-Chlorophenyl phenyl ether	350	U
Chrysene	350	U
Dibenzo(a,h)anthracene	350	U
Dibenzofuran	350	U
1,3-Dichlorobenzene	350	U
1,2-Dichlorobenzene	350	U
1,4-Dichlorobenzene	350	U
3,3'-Dichlorobenzidine	700	U
2,4-Dichlorophenol	350	U
Diethyl phthalate	350	U
2,4-Dimethylphenol	350	U
Dimethyl phthalate	350	U
4,6-Dinitro-o-cresol	1,800	U
2,4-Dinitrophenol	1,800	U
2,4-Dinitrotoluene	350	U
2,6-Dinitrotoluene	350	U
Di-n-butyl phthalate	350	U
Di-n-octyl phthalate	350	U
Fluoranthene	350	U
Fluorene	350	U
Hexachlorobenzene	350	U
Hexachlorobutadiene	350	U
Hexachlorocyclopentadiene	350	U
Hexachloroethane	350	U

DILUTION FACTOR = 1.0
% DRY = 93.5

RADIAN CORPORATION
SOIL MATRIX
METHOD 8270 - HAZARDOUS SUBSTANCE LIST
SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC DRILL CUTTINGS
SAMPLE NO. CUTTINGS

SAMPLE DATE 10/25/91
EXTRACTION DATE 11/08/91
ANALYSIS DATE 11/12/91

COMPOUND (Units of Measure = UG/KG)	RESULT	Q
Indeno(1,2,3-cd)pyrene	350	U
Isophorone	350	U
2-Methylnapthalene	350	U
2-Methylphenol	350	U
4-Methylphenol	350	U
Naphthalene	350	U
2-Nitroaniline	1,800	U
3-Nitroaniline	1,800	U
4-Nitroaniline	1,800	U
Nitrobenzene	350	U
2-Nitrophenol	350	U
4-Nitrophenol	1,800	U
N-nitroso-di-n-propylamine	350	U
N-nitrosodiphenylamine	350	U
Pentachlorophenol	1,800	U
Phenanthrene	350	U
Phenol	350	U
Pyrene	350	U
1,2,4-Trichlorobenzene	350	U
2,4,5-Trichlorophenol	1,800	U
2,4,6-Trichlorophenol	350	U

DILUTION FACTOR = 1.0
% DRY = 93.5

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC DRILL CUTTINGS
SAMPLE NO. CUTTINGS

SAMPLE DATE 10/25/91
EXTRACTION DATE 11/08/91
ANALYSIS DATE 11/12/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
3-Methylphenol	350	U
Pyridine	350	U

DILUTION FACTOR = 1.0
% DRY = 93.5

RADIAN CORPORATION
SOIL MATRIX
METHOD 8270 - HAZARDOUS SUBSTANCE LIST
SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC DRILL CUTTINGS
SAMPLE NO. CUTTINGS

SAMPLE DATE 10/25/91
EXTRACTION DATE 11/08/91
ANALYSIS DATE 11/12/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	91	
Naphthalene-D8	81	
Acenaphthene-D10	92	
Phenanthrene-D10	100	
Chrysene-D12	106	
Perylene-D12	102	
Surrogates		
(%Recovery)		
2-Fluorophenol	105	
Phenol-D5	101	
2,4,6-Tribromophenol	108	
Nitrobenzene-D5	104	
2-Fluorobiphenyl	102	
Terphenyl-D14	82	

101

DATA FROM FILE: 9225X SCANS 115 TO 2310 ACQUIRED: 11/12/91 18:41:00
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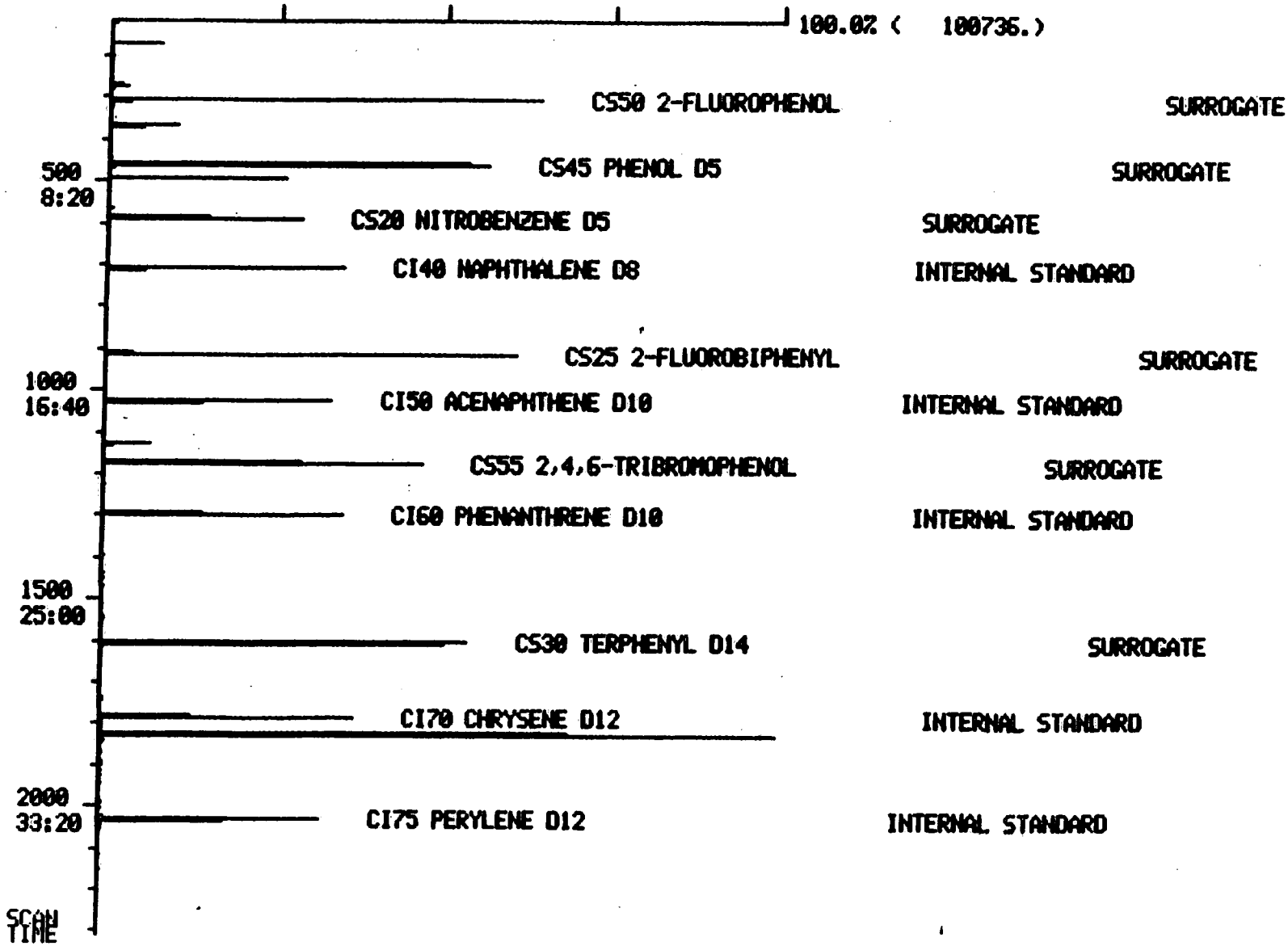
SAMPLE: DRILLCUTTING JOB 3161 BP3874A
CONDS.: AUTOSAMPLR I50X



RADIAN CORPORATION
SOIL MATRIX
METHOD 8270 - HAZARDOUS SUBSTANCE LIST
SEMIVOLATILE ORGANICS

23

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC SEMIVOLATILE METHOD BLANK
SAMPLE NO. SBLK 86

EXTRACTION DATE 11/08/9
ANALYSIS DATE 11/12/9

COMPOUND (Units of Measure = UG/KG)	RESULT	Q
Acenaphthylene	330	U
Acenaphthene	330	U
Anthracene	330	U
Benzo(a)anthracene	330	U
Benzo(b)fluoranthene	330	U
Benzo(k)fluoranthene	330	U
Benzo(ghi)perylene	330	U
Benzo(a)pyrene	330	U
Benzoic Acid	1,600	U
Benzyl Alcohol	330	U
Bis(2-chloroethoxy)methane	330	U
Bis(2-chloroethyl)ether	330	U
Bis(2-Chloroisopropyl) ether	330	U
Bis(2-ethylhexyl)phthalate	330	U
4-Bromophenyl phenyl ether	330	U
Butyl benzyl phthalate	330	U
4-Chloroaniline	330	U
p-Chloro-m-cresol	330	U
2-Chloronaphthalene	330	U
2-Chlorophenol	330	U
4-Chlorophenyl phenyl ether	330	U
Chrysene	330	U
Dibenzo(a,h)anthracene	330	U
Dibenzofuran	330	U
1,3-Dichlorobenzene	330	U
1,2-Dichlorobenzene	330	U
1,4-Dichlorobenzene	330	U
3,3'-Dichlorobenzidine	330	U
2,4-Dichlorophenol	660	U
Diethyl phthalate	330	U
2,4-Dimethylphenol	330	U
Dimethyl phthalate	330	U
4,6-Dinitro-o-cresol	330	U
2,4-Dinitrophenol	1,600	U
2,4-Dinitrotoluene	1,600	U
2,6-Dinitrotoluene	330	U
Di-n-butyl phthalate	330	U
Di-n-octyl phthalate	330	U
Fluoranthene	330	U
Fluorene	330	U
Hexachlorobenzene	330	U
Hexachlorobutadiene	330	U
Hexachlorocyclopentadiene	330	U
Hexachloroethane	330	U

DILUTION FACTOR = 1.0
% DRY = 100

RADIAN CORPORATION
SOIL MATRIX
METHOD 8270 - HAZARDOUS SUBSTANCE LIST
SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC SEMIVOLATILE METHOD BLANK
SAMPLE NO. SBLK 86

EXTRACTION DATE 11/08/91
ANALYSIS DATE 11/12/91

COMPOUND (Units of Measure = UG/KG)	RESULT	Q
Indeno(1,2,3-cd)pyrene	330	U
Isophorone	330	U
2-Methylnapthalene	330	U
2-Methylphenol	330	U
4-Methylphenol	330	U
Naphthalene	330	U
2-Nitroaniline	1,600	U
3-Nitroaniline	1,600	U
4-Nitroaniline	1,600	U
Nitrobenzene	330	U
2-Nitrophenol	330	U
4-Nitrophenol	1,600	U
N-nitroso-di-n-propylamine	330	U
N-nitrosodiphenylamine	330	U
Pentachlorophenol	1,600	U
Phenanthrene	330	U
Phenol	330	U
Pyrene	330	U
1,2,4-Trichlorobenzene	330	U
2,4,5-Trichlorophenol	1,600	U
2,4,6-Trichlorophenol	330	U

DILUTION FACTOR = 1.0
% DRY = 100

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC SEMIVOLATILE METHOD BLANK
SAMPLE NO. SBLK 86

EXTRACTION DATE 11/08/91
ANALYSIS DATE 11/12/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
3-Methylphenol	350	U
Pyridine	350	U

RADIAN CORPORATION
SOIL MATRIX
METHOD 8270 - HAZARDOUS SUBSTANCE LIST
SEMIVOLATILE ORGANICS

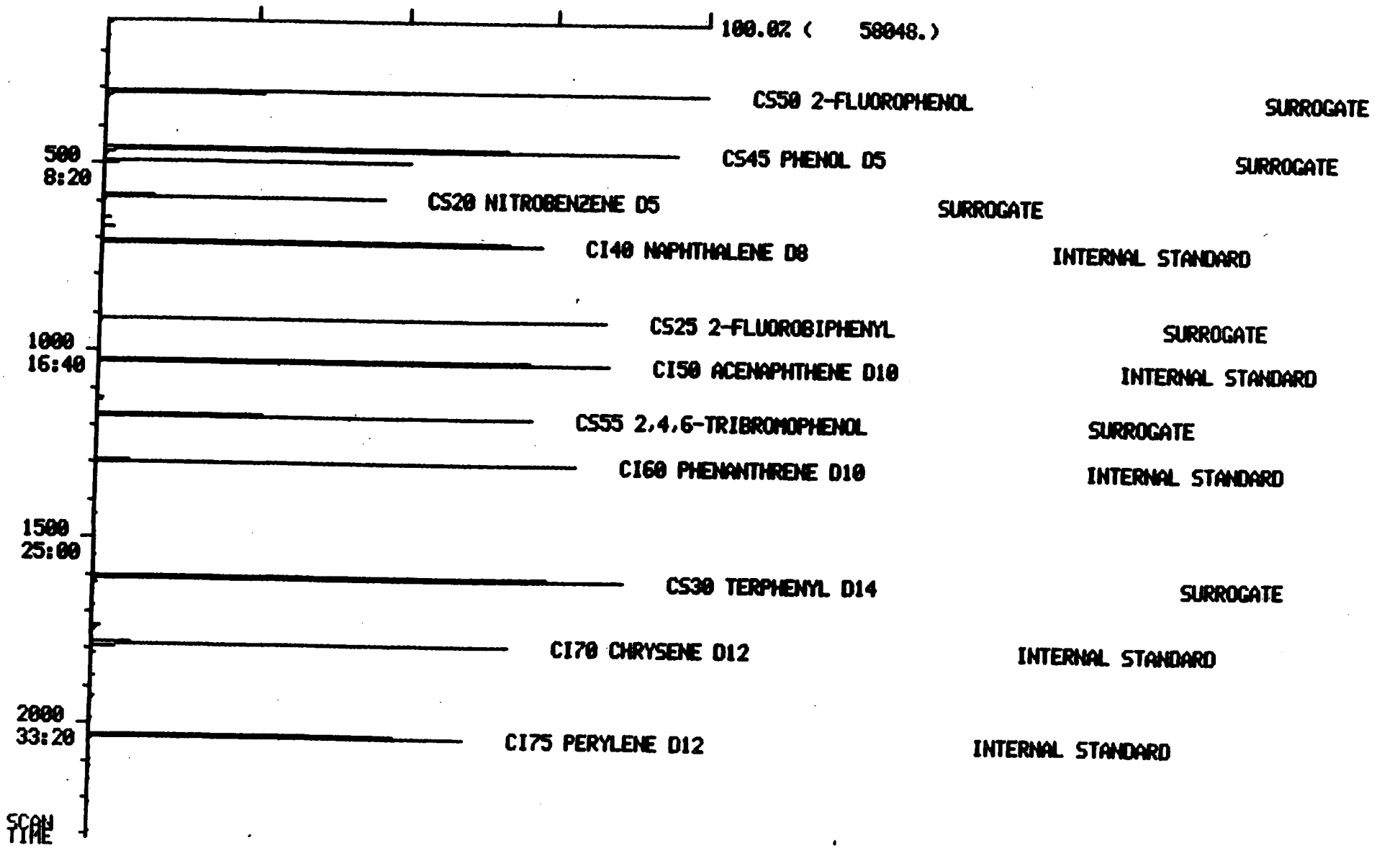
LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC SEMIVOLATILE METHOD BLANK
SAMPLE NO. SBLK 86

EXTRACTION DATE 11/08/91
ANALYSIS DATE 11/12/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	126	
Naphthalene-D8	118	
Acenaphthene-D10	123	
Phenanthrene-D10	130	
Chrysene-D12	134	
Perylene-D12	127	
Surrogates		
(%Recovery)		
2-Fluorophenol	64	
Phenol-D5	65	
2,4,6-Tribromophenol	73	
Nitrobenzene-D5	66	
2-Fluorobiphenyl	69	
Terphenyl-D14	53	

DATA FROM FILE: 9226X SCANS 115 TO 2310 ACQUIRED: 11/12/91 19:27:00
CALI: 9226X #3

SAMPLE: SBLK86 JOB 3161 BP3875A
CONDS.: AUTOSAMPLR I50X



RADIAN CORPORATION
SOIL MATRIX
METHOD 8015 - NON-HALOGENATED VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC DRILL CUTTINGS
SAMPLE NO. CUTTINGS

SAMPLE DATE 10/25/91
ANALYSIS DATE 11/07/91

COMPOUND (Units of Measure = UG/KG)	RESULT	Q
Isobutanol	490	U

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC DRILL CUTTINGS
SAMPLE NO. CUTTINGS

SAMPLE DATE 10/25/91
ANALYSIS DATE 11/07/91

COMPOUND	RESULT	Q
Surrogates		
(%Recovery)		
2-Hexanone	76	

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 8015 - NON-HALOGENATED VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE NO. TRIP BLANK

ANALYSIS DATE 11/02/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Isobutanol	1,000	U

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE NO. TRIP BLANK

ANALYSIS DATE 11/02/91

COMPOUND	RESULT	Q
Surrogates		
(%Recovery) 2-Hexanone	70	

292

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 8015 - NON-HALOGENATED VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC METHOD BLANK
SAMPLE NO. MB-1

ANALYSIS DATE 11/02/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Isobutanol	1,000	U

RADIAN CORPORATION

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC METHOD BLANK
SAMPLE NO. MB-1

ANALYSIS DATE 11/02/91

COMPOUND	RESULT	Q
Surrogates		
(%Recovery) 2-Hexanone	68	

RADIAN CORPORATION
SOIL MATRIX
METHOD 8015 - NON-HALOGENATED VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC METHOD BLANK
SAMPLE NO. MB-2

ANALYSIS DATE 11/07/91

COMPOUND (Units of Measure = UG/KG)	RESULT	Q
Isobutanol	400	U

RADIAN CORPORATION

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC METHOD BLANK
SAMPLE NO. MB-2

ANALYSIS DATE 11/07/91

COMPOUND	RESULT	Q
Surrogates		
(%Recovery) 2-Hexanone	92	

292

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

3C

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE DATE 10/25/91

SAMPLE NO. PB-1

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/04/91	0.5	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE DATE 10/24/91

SAMPLE NO. PB-2

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/04/91	0.5	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE DATE 10/28/91

SAMPLE NO. PB-3

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/04/91	0.5	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE DATE 10/25/91

SAMPLE NO. PB-4

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/04/91	0.5	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE DATE 10/28/91

SAMPLE NO. PB-5

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/04/91	0.5	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE DATE 10/25/91

SAMPLE NO. PB-6

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/04/91	0.68	

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC EQUIPMENT BLANK
SAMPLE NO. E.B.

SAMPLE DATE 10/25/91

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/04/91	0.5	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC METHOD BLANK
SAMPLE NO. MB-1

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/04/91	0.5	U

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC DRILL CUTTINGS
SAMPLE NO. CUTTINGS

SAMPLE DATE 10/25/91

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Corrosivity	STD uni	1110	11/15/91	7.9	
Flash Point	°F	1010	11/05/91	200	*
Total Available Cyanide	MG/KG	7.3.2	11/14/91	10	U
Total Available Sulfide	MG/KG	7.3.4.1	11/14/91	10	U

* THE VALUE IS GREATER THAN 200 DEGREES FAHRENHEIT

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE NO. METHOD BLANK

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Available Cyanide	MG/KG	7.3.2	11/14/91	10	U
Total Available Sulfide	MG/KG	7.3.4.1	11/14/91	10	U

QNY91-945

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO.: 246-080-01-50

SITE NAME: KODALUX

SAMPLERS (SIGNATURE): Linda R McNeese

STATION NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	418.1 TRPH	8240 Trichloroethene, TCL 1,1,2-trichloroethene, 1,2-trichloroethene, TCL Pyridene	8270 1,2-Dichloroethene, TCL Pyridene	8015 (Isobutanol)	Ignitability, Corrosivity, Reactivity		REMARKS
PB-2	10/24	0915		X	Pilot Borehole 2	1	1						1 L Amber Glass H_2SO_4 pH<2 4°C cool
Trip Blank	—	—	—	—	Trip Blank from RECRA	6	✓	✓		✓			40 mL VOA
PB-1	10/25	1245		X	Pilot Borehole 1 (MW-7)	1	1						1 L Amber Glass H_2SO_4 pH<2 4°C cool
PB-6	10/25	1440		X	Pilot Borehole 6	1	1						1 L Amber Glass H_2SO_4 pH<2 4°C cool
PB-4	10/25	1515		X	Pilot Borehole 4	1	1						" "
PB-4 Dup	10/25	1520		X	Pilot Borehole 4 Duplicate	1	1						" "
EB-1	10/25	1430		X	Equipment Blank 1	1	1						"
PB-5	10/28	1000		X	Pilot Borehole 5	1	1						" "
Drill Cutting	10/25	1000	X		Drill Cuttings 10/25/91	3		✓	✓	✓	✓		1 L Wide Mouth 2 4oz glass
PB-3	10/28	1030		X	Pilot Borehole 3	1	1						1 L Amber Glass H_2SO_4 pH<2 4°C cool

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
L McNeese	10/28/91	1300					
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE/TIME			REMARKS
			Donald S Breau	10/29/91 0930			28 Day holding time. PO# 136191; Shipped Ex, Overnight

Distribution: Original accompanies shipment; copy to coordinator field files

20436.0

RECRA ENVIRONMENTAL, INC.

Chemical and Environmental Analysis Services

World University Games Buffalo '93
GRAND PATRON
HELPING TO BRING THE WORLD TO BUFFALO

December 10, 1991

Ms. Lynn M. Moody
Radian Corporation
155 Corporate Woods, Suite 100
Rochester, NY 14623

Re: Analytical Results

Dear Ms. Moody:

Please find enclosed revised results concerning the TRPH results of sample PB-4 DUP recently submitted by your firm. The Pertinent Information regarding these analyses is listed below:

Quote #:	NY91-945R
Project Name:	Kodalux-Fairlawn, NJ
Matrix:	Solid Drill Cuttings, Aqueous
Samples Received:	10/29/91
Sample Dates:	10/24,25,28/91

If you have any questions concerning these data, please contact Ms. Donna Bateman, Project Manager, at (716) 691-2600 and refer to the I.D. number listed below. It has been our pleasure to provide Radian Corporation with Environmental Testing Services. We apologize for any inconvenience this may have caused you and we look forward to serving you in the future.

Sincerely,

RECRA ENVIRONMENTAL, INC.

Kenneth C. Malinowski /KPK

Kenneth C. Malinowski, PhD
Vice President

PJV/KCM/dms
Enclosure

I.D. #91-3161
#91-3161A Revised
#2A3811

Audubon Business Centre • 10 Hazelwood Drive • Amherst, New York 14228-2298 • (716) 691-2600 • FAX (716) 691-3011

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE DATE 10/25/91

SAMPLE NO. PB-4DUP

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/04/91	0.5	U

20618.0

RECRA ENVIRONMENTAL, INC.

Chemical and Environmental Analysis Services

World University Games Buffalo 1993
GRAND PATRON
HELPING TO BRING THE WORLD TO BUFFALO

December 30, 1991

Ms. Lynn M. Moody
Radian Corporation
155 Corporate Woods, Suite 100
Rochester, NY 14623

Re: Analytical Results

Dear Ms. Moody:

Please find enclosed results concerning the analyses of the sample recently submitted by your firm. The Pertinent Information regarding these analyses is listed below:

Quote #:	NY91-945R
P.O. #:	136191
Project Name:	Kodalux-Fairlawn, NJ
Matrix:	TCLP Extract
Sample Received:	10/29/91
Sample Date:	10/25/91

If you have any questions concerning these data, please contact Ms. Donna Bateman, Project Manager, at (716) 691-2600 and refer to the I.D. number listed below. It has been our pleasure to provide Radian Corporation with Environmental Testing Services. We look forward to serving you in the future.

Sincerely,

RECRA ENVIRONMENTAL, INC.

Kenneth C. Malinowski, PhD
Vice President

MAT/KCM/dms
Enclosure

I.D. #91-3651
#NY2A3811

ANALYTICAL RESULTS

Prepared For

Radian Corporation
155 Corporate Woods, Suite 100
Rochester, New York 14623

Prepared By

Recra Environmental, Inc.
10 Hazelwood Drive, Suite 106
Amherst, New York 14228-2298

METHODOLOGIES

The specific methodologies employed in obtaining the enclosed analytical results are indicated on the specific data table. The method numbers presented refer to the following U.S. Environmental Protection Agency reference.

- U.S. Environmental Protection Agency "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods." Office of Solid Waste and Emergency Response. November 1986, SW-846, Third Edition.

  The Toxicity Characteristic Leaching Procedure was performed in accordance with modified method 1311, 40 CFR, Appendix II to Part 261, June 1990.

COMMENTS

Comments pertain to data on one or all pages of this report.

The enclosed results are reported utilizing data qualifiers (Q) as defined on the attached Inorganic Data Comment Page.

TCLP matrix spike quality control analysis was not performed at the request of Radian Corporation. Therefore, the measured values for sample DRILL CUTTINGS on the enclosed TCLP data have not been corrected for analytical bias as required by the referenced TCLP protocol.

RECRA
ENVIRONMENTAL
INC.

INORGANIC DATA COMMENT PAGE

Laboratory Name RECRA ENVIRONMENTAL, INC.

USEPA Defined Inorganic Data Qualifiers:

B - Indicates a value greater than or equal to the instrument detection limit but less than the contract required detection limit.

U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., 100).

E - Indicates a value estimated or not reported due to the presence of interference.

S - Indicates value determined by Method of Standard Addition.

N - Indicates spike sample recovery is not within control limits.

* - Indicates duplicate analysis is not within control limits.

+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

M - Indicates duplicate injection results exceeded control limits.

W - Post digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

G - The TCLP Matrix Spike recovery was greater than the upper limit of the analytical method.

L - The TCLP Matrix Spike recovery was lower than the lower limit of the analytical method.

RADIAN CORPORATION
TOXICITY CHARACTERISTIC LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3651
DESC DRILL CUTTINGS
SAMPLE NO. CUTTINGS

SAMPLE DATE 10/25/91

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	12/23/91	5.0	0.005	0.0	U
Total Barium	6010	12/20/91	100.0	1.0	0.0	
Total Cadmium	6010	12/20/91	1.0	0.005	0.0	U
Total Chromium	7190	12/23/91	5.0	0.015	0.0	
Total Lead	7420	12/23/91	5.0	0.06	0.0	U
Total Mercury	7470	12/20/91	0.2	0.0004	0.0	U
Total Selenium	7740	12/23/91	1.0	0.005	0.0	U
Total Silver	7760	12/23/91	5.0	0.01	0.0	U

MEASURED VALUES HAVE NOT BEEN CORRECTED FOR ANALYTICAL BIAS.

RADIAN CORPORATION
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3651

SAMPLE NO. TCLP-BLANK

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	12/23/91	5.0	0.005	0.0	U
Total Barium	6010	12/20/91	100.0	0.03	0.0	U
Total Cadmium	6010	12/20/91	1.0	0.005	0.0	U
Total Chromium	7190	12/23/91	5.0	0.017	0.0	
Total Lead	7420	12/23/91	5.0	0.06	0.0	U
Total Mercury	7470	12/20/91	0.2	0.0004	0.0	U
Total Selenium	7740	12/23/91	1.0	0.005	0.0	U
Total Silver	7760	12/23/91	5.0	0.01	0.0	U

RADIAN CORPORATION
TOXICITY CHARACTERISTIC LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3651

SAMPLE NO. METHOD BLANK

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	12/23/91	5.0	0.005	0.0	U
Total Barium	6010	12/20/91	100.0	0.03	0.0	U
Total Cadmium	6010	12/20/91	1.0	0.005	0.0	U
Total Chromium	7190	12/23/91	5.0	0.01	0.0	U
Total Lead	7420	12/23/91	5.0	0.06	0.0	U
Total Mercury	7470	12/20/91	0.2	0.0002	0.0	U
Total Selenium	7740	12/23/91	1.0	0.005	0.0	U
Total Silver	7760	12/23/91	5.0	0.01	0.0	U

QNY91-945

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO: 246-080-01-50

SITE NAME: KODALUX

SAMPLERS (SIGNATURE): Linda R McNeese

STATION NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	418.1 TRPH	8240 Trichloroethene, 1,1,2-trichloroethane, TCL	8270 1,2-trichloroethane, 1,2-trichloroethane, TCL	8015 (Solvent)	Ignitability, Corrosivity, Reactivity		REMARKS
PB-2	10/24	0915		X	Pilot Borehole 2	1	1						1 L Amber Glass H_2SO_4 pH<2 4°C cool
Trip Blank	—	—	—	—	Trip Blank from RECRA	6	✓	✓		✓			40 mL VOA
PB-1	10/25	1245		X	Pilot Borehole 1 (MW-7)	1	1						1 L Amber Glass H_2SO_4 pH<2 4°C cool
PB-6	10/25	1440		X	Pilot Borehole 6	1	1						1 L Amber Glass H_2SO_4 pH<2 4°C cool
PB-4	10/25	1515		X	Pilot Borehole 4	1	1						" "
PB-4 Dup	10/25	1520		X	Pilot Borehole 4 Duplicate	1	1						" "
EB-1	10/25	1430		X	Equipment Blank 1	1	1						"
PB 5	10/28	1000		X	Pilot Borehole 5	1	1						" "
Drill Cutt. Imp	10/25	1600	X	·	Drill Cuttings 10/25/91	3		✓	✓	✓	✓		1 L Wide Mouth 2 4oz. glass
PB-3	10/28	1030		X	Pilot Borehole 3	1	1						1 L Amber Glass H_2SO_4 pH<2 4°C cool

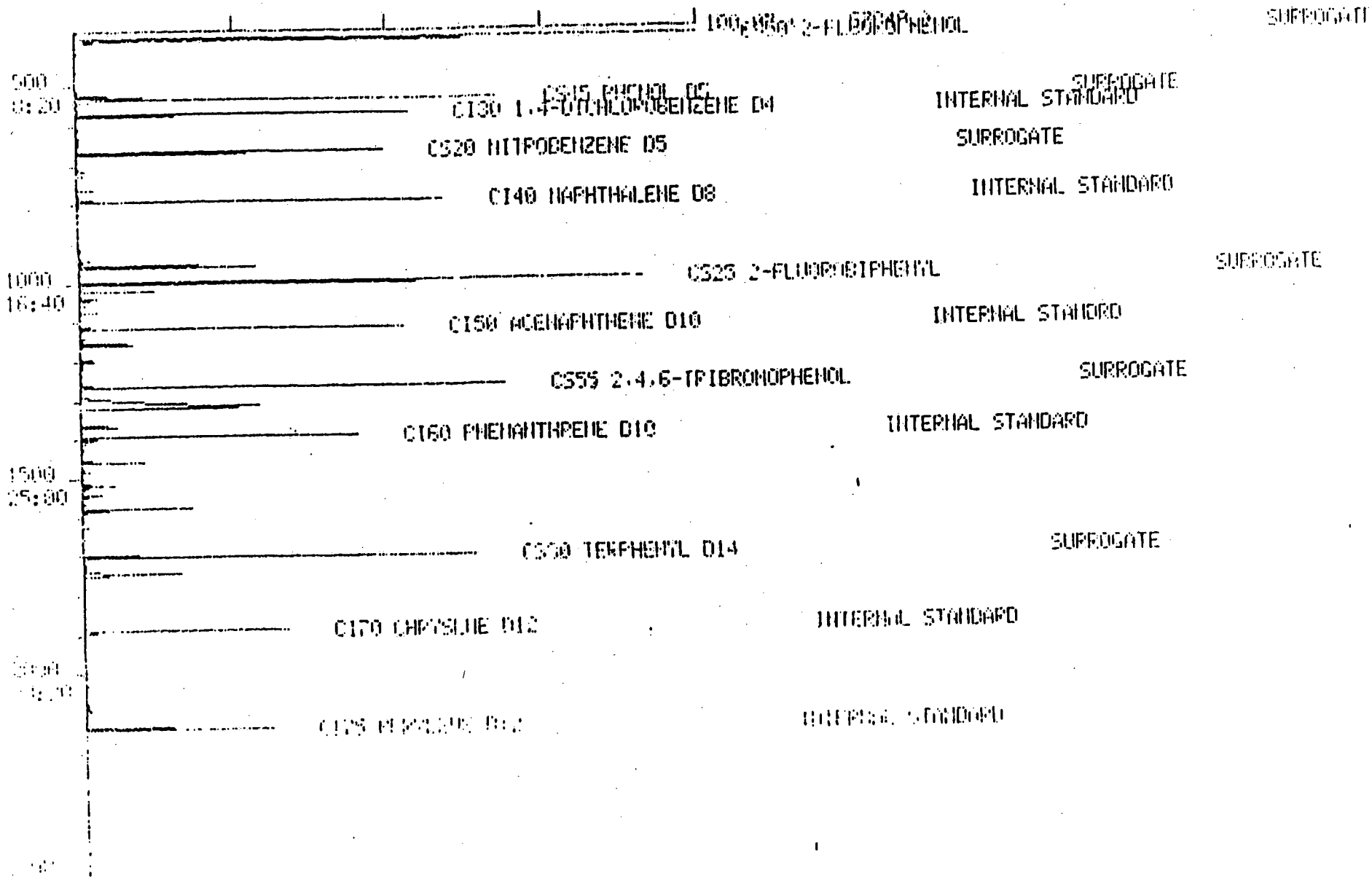
RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)
L McNeese	10/28/91 1300				
RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE/TIME	REMARKS	
		Donald A Breau	10/29/91 0930	28 Day holding time PO# 136191; Ship Fed Ex, Overnight	

Distribution: Original accompanies shipment; copy to coordinator field files

NOTE: TCLP METALS ANALYSIS ON SAMPLE ID "DRILL CUTTINGS" REQUESTED

DATA FROM FILE: 7163W SCANS 350 TO 2520 ACQUIRED: 11/30/91 21:20:00
CALI: 7163W #3

SAMPLE: MW3 JOB 3386 AP1442-43
COMDS.: AUTOSAMPLR 150W



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-3

JOB#:91-3386.24
FILE:7163W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)
525	1,3-DITHIOLANE (4829-04-3)	7.1
955	DICHLOROBENZENAMINE ISOMER	26
1017	CHLORO DIMETHYL PHENOL ISOMER	10
1153	UNKNOWN	8.0
1312	UNKNOWN	130
1363	UNKNOWN	6.0
1456	ALKYL SUBSTITUTED HYDROCARBON	12
1577	UNKNOWN	21
1745	UNKNOWN	34

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

SAMPLE NO. MW-4

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	12	U
Acenaphthylene	12	U
Anthracene	12	U
Benzo(a)anthracene	12	U
Benzo(b)fluoranthene	12	U
Benzo(k)fluoranthene	12	U
Benzo(a)pyrene	12	U
Benzo(g,h,i)perylene	12	U
Benzidine	100	U
Bis(2-chloroethyl)ether	12	U
Bis(2-chlorethoxy)methane	12	U
Bis(2-chloroisopropyl)ether	12	U
Bis(2-ethylhexyl)phthalate	12	U
4-Bromophenylphenylether	12	U
Butyl benzyl phthalate	12	U
4-Chloro-3-methylphenol	12	U
2-Chloronaphthalene	12	U
2-Chlorophenol	12	U
4-Chlorophenylphenylether	12	U
Chrysene	12	U
Dibenzo(a,h)anthracene	12	U
Di-n-butyl phthalate	12	U
1,2-Dichlorobenzene	12	U
1,3-Dichlorobenzene	3.5	J
1,4-Dichlorobenzene	12	U
3,3'-Dichlorobenzidine	25	U
2,4-Dichlorophenol	12	U
Diethylphthalate	12	U
2,4-Dimethylphenol	12	U
Dimethylphthalate	12	U
2,4-Dinitrophenol	62	U
1,2-Diphenyl hydrazine	100	U
2,4-Dinitrotoluene	12	U
2,6-Dinitrotoluene	12	U
Di-n-octylphthalate	12	U
Fluoranthene	12	U
Fluorene	12	U
Hexachlorobenzene	12	U
Hexachlorobutadiene	12	U
Hexachlorocyclopentadiene	12	U
Hexachloroethane	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/9

SAMPLE NO. MW-4

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	12	U
Isophorone	12	U
2-Methyl-4,6-dinitrophenol	62	U
Naphthalene	12	U
Nitrobenzene	12	U
2-Nitrophenol	12	U
4-Nitrophenol	62	U
N-nitrosodi-n-propylamine	12	U
N-Nitrosodimethylamine	12	U
N-Nitrosodiphenylamine	12	U
Pentachlorophenol	62	U
Phenanthrene	12	U
Phenol	12	U
Pyrene	12	U
1,2,4-Trichlorobenzene	12	U
2,4,6-Trichlorophenol	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. MW-4

SAMPLE DATE 11/15/9
EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/9

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

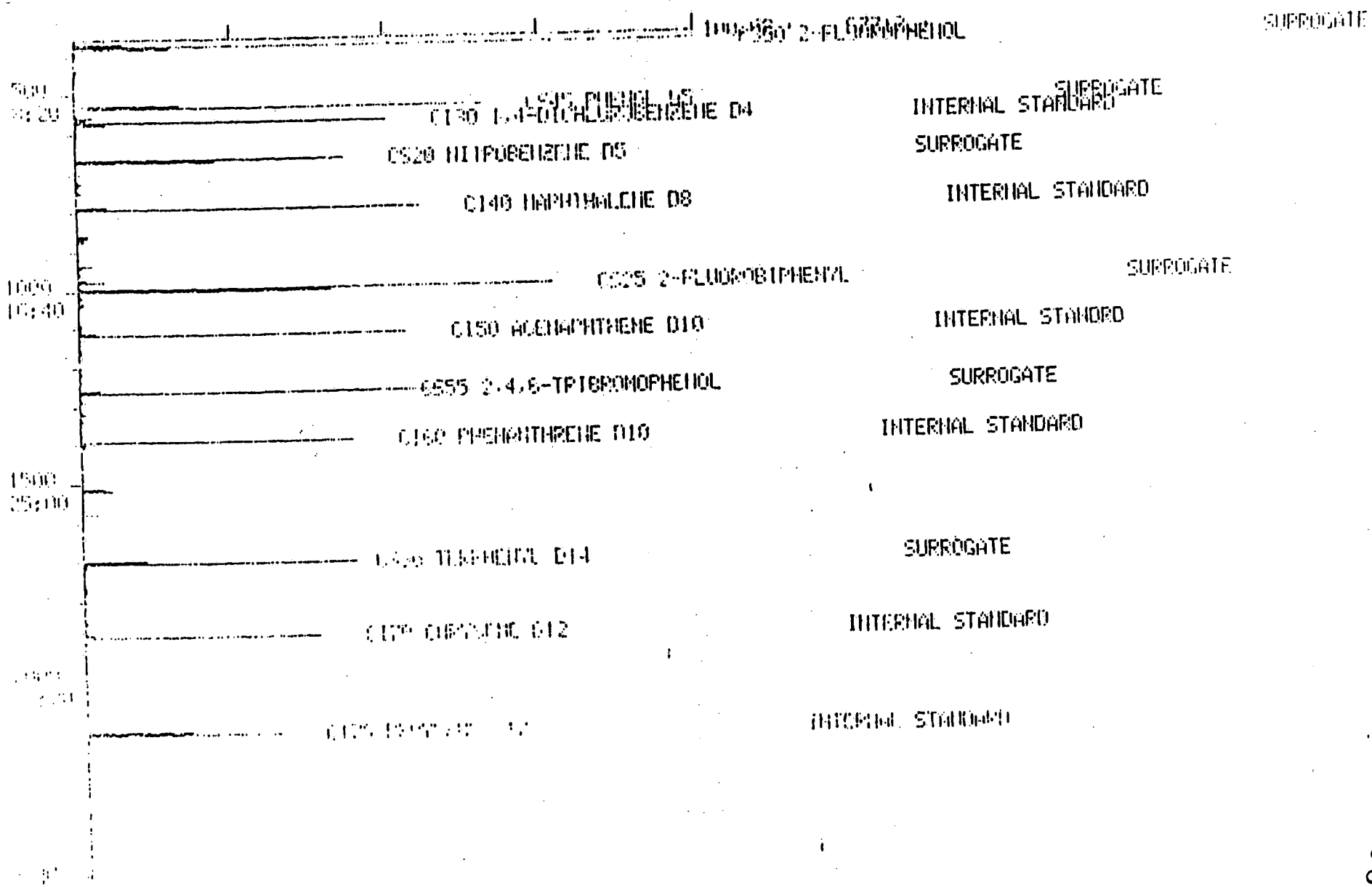
SAMPLE DATE 11/15/9
EXTRACTION DATE 11/22/
ANALYSIS DATE 11/30/

SAMPLE NO. MW-4

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	108	
Naphthalene-D8	105	
Acenaphthene-D10	112	
Phenanthrene-D10	111	
Chrysene-D12	88	
Perylene-D12	97	
Surrogates		
(%Recovery)		
2-Fluorophenol	51	
Phenol-D5	34	
2,4,6-Tribromophenol	78	
Nitrobenzene-D5	71	
2-Fluorobiphenyl	61	
Terphenyl-D14	57	

DATA FROM FILE: 7164H SCANS 360 TO 2520 ACQUIRED: 11/30/91 22:11:00
CALI: 7164H #3

SAMPLE: MW4 JOB: 3086 AP14445-45
CONDS.: AUTOSAMPLR I50H



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-4

JOB#:91-3386.25
FILE:7164W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9
EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/9

SAMPLE NO. MW-5

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	12	U
Acenaphthylene	12	U
Anthracene	12	U
Benzo(a)anthracene	12	U
Benzo(b)fluoranthene	12	U
Benzo(k)fluoranthene	12	U
Benzo(a)pyrene	12	U
Benzo(g,h,i)perylene	12	U
Benzidine	100	U
Bis(2-chloroethyl)ether	12	U
Bis(2-chlorethoxy)methane	12	U
Bis(2-chloroisopropyl)ether	12	U
Bis(2-ethylhexyl)phthalate	12	U
4-Bromophenylphenylether	12	U
Butyl benzyl phthalate	12	U
4-Chloro-3-methylphenol	12	U
2-Chloronaphthalene	12	U
2-Chlorophenol	12	U
4-Chlorophenylphenylether	12	U
Chrysene	12	U
Dibenzo(a,h)anthracene	12	U
Di-n-butyl phthalate	12	U
1,2-Dichlorobenzene	12	U
1,3-Dichlorobenzene	12	U
1,4-Dichlorobenzene	12	U
3,3'-Dichlorobenzidine	25	U
2,4-Dichlorophenol	12	U
Diethylphthalate	12	U
2,4-Dimethylphenol	12	U
Dimethylphthalate	12	U
2,4-Dinitrophenol	62	U
1,2-Diphenyl hydrazine	100	U
2,4-Dinitrotoluene	12	U
2,6-Dinitrotoluene	12	U
Di-n-octylphthalate	12	U
Fluoranthene	12	U
Fluorene	12	U
Hexachlorobenzene	12	U
Hexachlorobutadiene	12	U
Hexachlorocyclopentadiene	12	U
Hexachloroethane	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9
EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/9

SAMPLE NO. MW-5

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	12	U
Isophorone	12	U
2-Methyl-4,6-dinitrophenol	62	U
Naphthalene	12	U
Nitrobenzene	12	U
2-Nitrophenol	12	U
4-Nitrophenol	62	U
N-nitrosodi-n-propylamine	12	U
N-Nitrosodimethylamine	12	U
N-Nitrosodiphenylamine	12	U
Pentachlorophenol	62	U
Phenanthrene	12	U
Phenol	12	U
Pyrene	12	U
1,2,4-Trichlorobenzene	12	U
2,4,6-Trichlorophenol	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

SAMPLE NO. MW-5

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

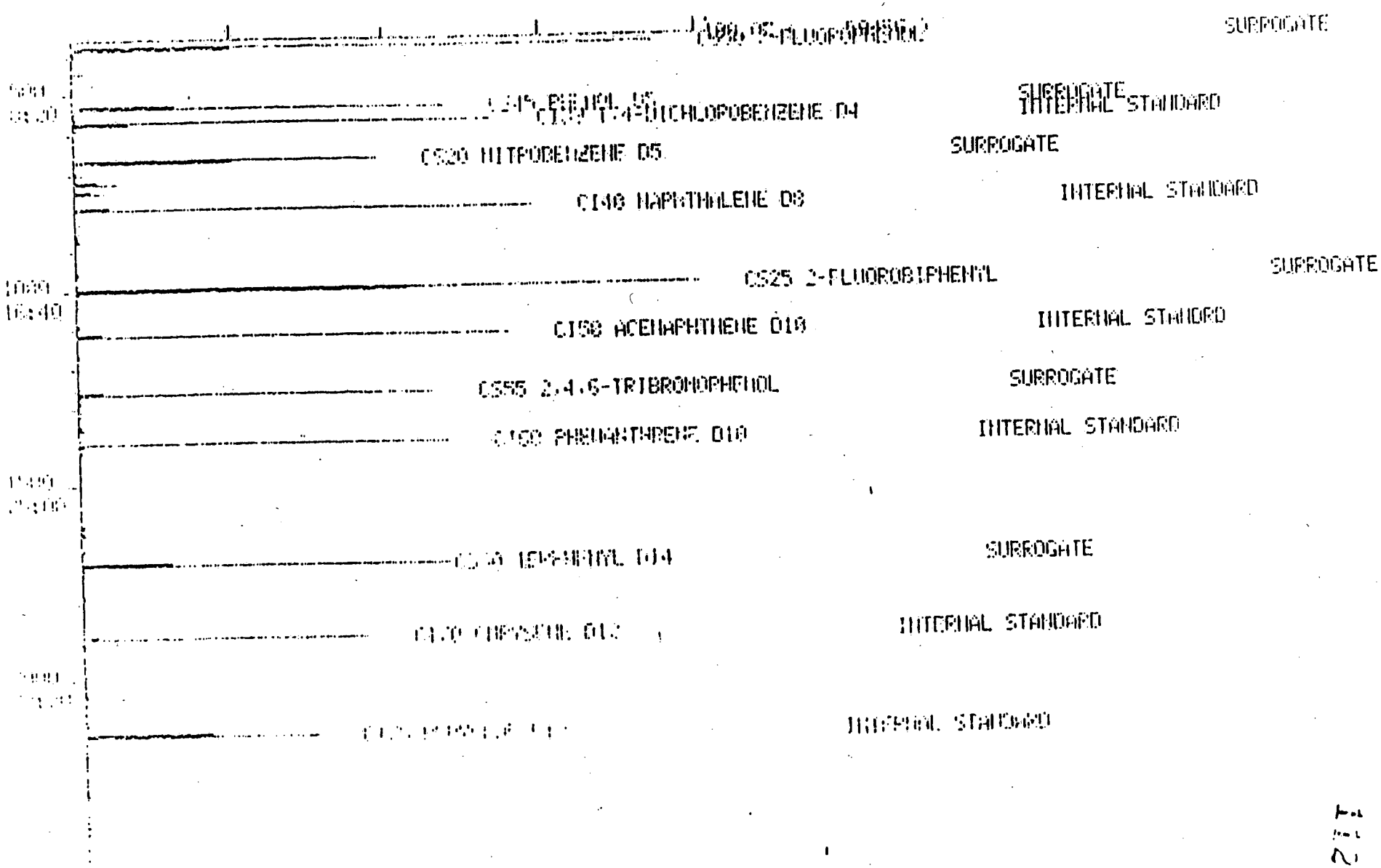
SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

SAMPLE NO. MW-5

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	121	
Naphthalene-D8	119	
Acenaphthene-D10	131	
Phenanthrene-D10	132	
Chrysene-D12	96	
Perylene-D12	108	
Surrogates		
(%Recovery)		
2-Fluorophenol	38	
Phenol-D5	24	
2,4,6-Tribromophenol	53	
Nitrobenzene-D5	63	
2-Fluorobiphenyl	59	
Terphenyl-D14	61	

DATA FROM FILE: 7165H SCANS 360 TO 2520 ACQUIRED: 11/30/91 23:02:00
CALI: 7165H #3

SAMPLE: MW5 JOB 3386 AP14446 47
CONDS.: AUTOSAMPLR 150W



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-5

JOB#:91-3386.26
FILE:7165W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9
EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/9

SAMPLE NO. MW-6

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	12	U
Acenaphthylene	12	U
Anthracene	12	U
Benzo(a)anthracene	12	U
Benzo(b)fluoranthene	12	U
Benzo(k)fluoranthene	12	U
Benzo(a)pyrene	12	U
Benzo(g,h,i)perylene	12	U
Benzidine	100	U
Bis(2-chloroethyl)ether	12	U
Bis(2-chlorethoxy)methane	12	U
Bis(2-chloroisopropyl)ether	12	U-
Bis(2-ethylhexyl)phthalate	12	U
4-Bromophenylphenylether	12	U
Butyl benzyl phthalate	12	U
4-Chloro-3-methylphenol	12	U
2-Chloronaphthalene	12	U
2-Chlorophenol	12	U
4-Chlorophenylphenylether	12	U
Chrysene	12	U
Dibenzo(a,h)anthracene	12	U
Di-n-butyl phthalate	12	U
1,2-Dichlorobenzene	12	U
1,3-Dichlorobenzene	12	U
1,4-Dichlorobenzene	12	U
3,3'-Dichlorobenzidine	25	U
2,4-Dichlorophenol	12	U
Diethylphthalate	12	U
2,4-Dimethylphenol	12	U
Dimethylphthalate	12	U
2,4-Dinitrophenol	62	U
1,2-Diphenyl hydrazine	100	U
2,4-Dinitrotoluene	12	U
2,6-Dinitrotoluene	12	U
Di-n-octylphthalate	12	U
Fluoranthene	12	U
Fluorene	12	U
Hexachlorobenzene	12	U
Hexachlorobutadiene	12	U
Hexachlorocyclopentadiene	12	U
Hexachloroethane	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/9

SAMPLE NO. MW-6

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	12	U
Isophorone	12	U
2-Methyl-4,6-dinitrophenol	62	U
Naphthalene	12	U
Nitrobenzene	12	U
2-Nitrophenol	12	U
4-Nitrophenol	62	U
N-nitrosodi-n-propylamine	12	U
N-Nitrosodimethylamine	12	U
N-Nitrosodiphenylamine	12	U
Pentachlorophenol	62	U
Phenanthrene	12	U
Phenol	12	U
Pyrene	12	U
1,2,4-Trichlorobenzene	12	U
2,4,6-Trichlorophenol	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 11/30/91

SAMPLE NO. MW-6

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

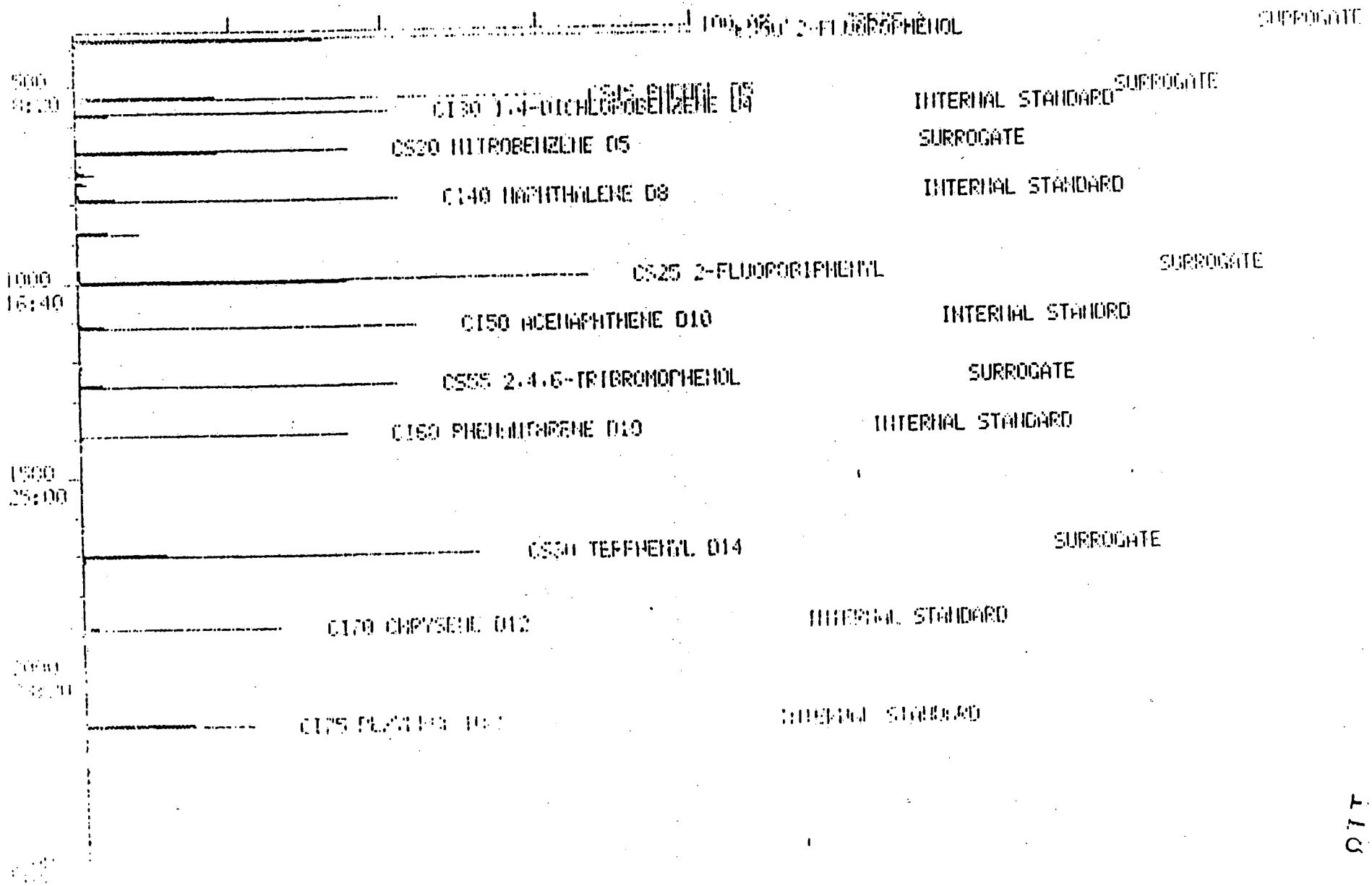
SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/
ANALYSIS DATE 11/30/

SAMPLE NO. MW-6

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	114	
Naphthalene-D8	110	
Acenaphthene-D10	119	
Phenanthrene-D10	115	
Chrysene-D12	86	
Perylene-D12	94	
Surrogates		
(%Recovery)		
2-Fluorophenol	58	
Phenol-D5	40	
2,4,6-Tribromophenol	76	
Nitrobenzene-D5	75	
2-Fluorobiphenyl	69	
Terphenyl-D14	83	

DATA FROM FILE: 7166N SCANS 360 TO 2520 ACQUIRED: 11/20/91 23:54:00
CALI: 7166N #3

SAMPLE: MW6 JOB 3385 AP14448/49
COMDS.: AUTOSAMPLR 150N



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-6

JOB#:91-3386.27
FILE:7166W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)
874	OXYGENATED COMPOUND	9.9

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9
EXTRACTION DATE 11/22/9
ANALYSIS DATE 12/02/9

SAMPLE NO. MW-10

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	10	U
Isophorone	10	U
2-Methyl-4,6-dinitrophenol	50	U
Naphthalene	10	U
Nitrobenzene	10	U
2-Nitrophenol	10	U
4-Nitrophenol	50	U
N-nitrosodi-n-propylamine	10	U
N-Nitrosodimethylamine	10	U
N-Nitrosodiphenylamine	10	U
Pentachlorophenol	50	U
Phenanthrene	10	U
Phenol	10	U
Pyrene	10	U
1,2,4-Trichlorobenzene	10	U
2,4,6-Trichlorophenol	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/02/91

SAMPLE NO. MW-10

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	10	U
Acenaphthylene	10	U
Anthracene	10	U
Benzo(a)anthracene	10	U
Benzo(b)fluoranthene	10	U
Benzo(k)fluoranthene	10	U
Benzo(a)pyrene	10	U
Benzo(g,h,i)perylene	10	U
Benzidine	80	U
Bis(2-chloroethyl)ether	10	U
Bis(2-chlorethoxy)methane	10	U
Bis(2-chloroisopropyl)ether	10	U
Bis(2-ethylhexyl)phthalate	10	U
4-Bromophenylphenylether	10	U
Butyl benzyl phthalate	10	U
4-Chloro-3-methylphenol	10	U
2-Chloronaphthalene	10	U
2-Chlorophenol	10	U
4-Chlorophenylphenylether	10	U
Chrysene	10	U
Dibenzo(a,h)anthracene	10	U
Di-n-butyl phthalate	10	U
1,2-Dichlorobenzene	10	U
1,3-Dichlorobenzene	10	U
1,4-Dichlorobenzene	10	U
3,3'-Dichlorobenzidine	20	U
2,4-Dichlorophenol	10	U
Diethylphthalate	10	U
2,4-Dimethylphenol	10	U
Dimethylphthalate	10	U
2,4-Dinitrophenol	50	U
1,2-Diphenyl hydrazine	80	U
2,4-Dinitrotoluene	10	U
2,6-Dinitrotoluene	10	U
Di-n-octylphthalate	10	U
Fluoranthene	10	U
Fluorene	10	U
Hexachlorobenzene	10	U
Hexachlorobutadiene	10	U
Hexachlorocyclopentadiene	10	U
Hexachloroethane	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

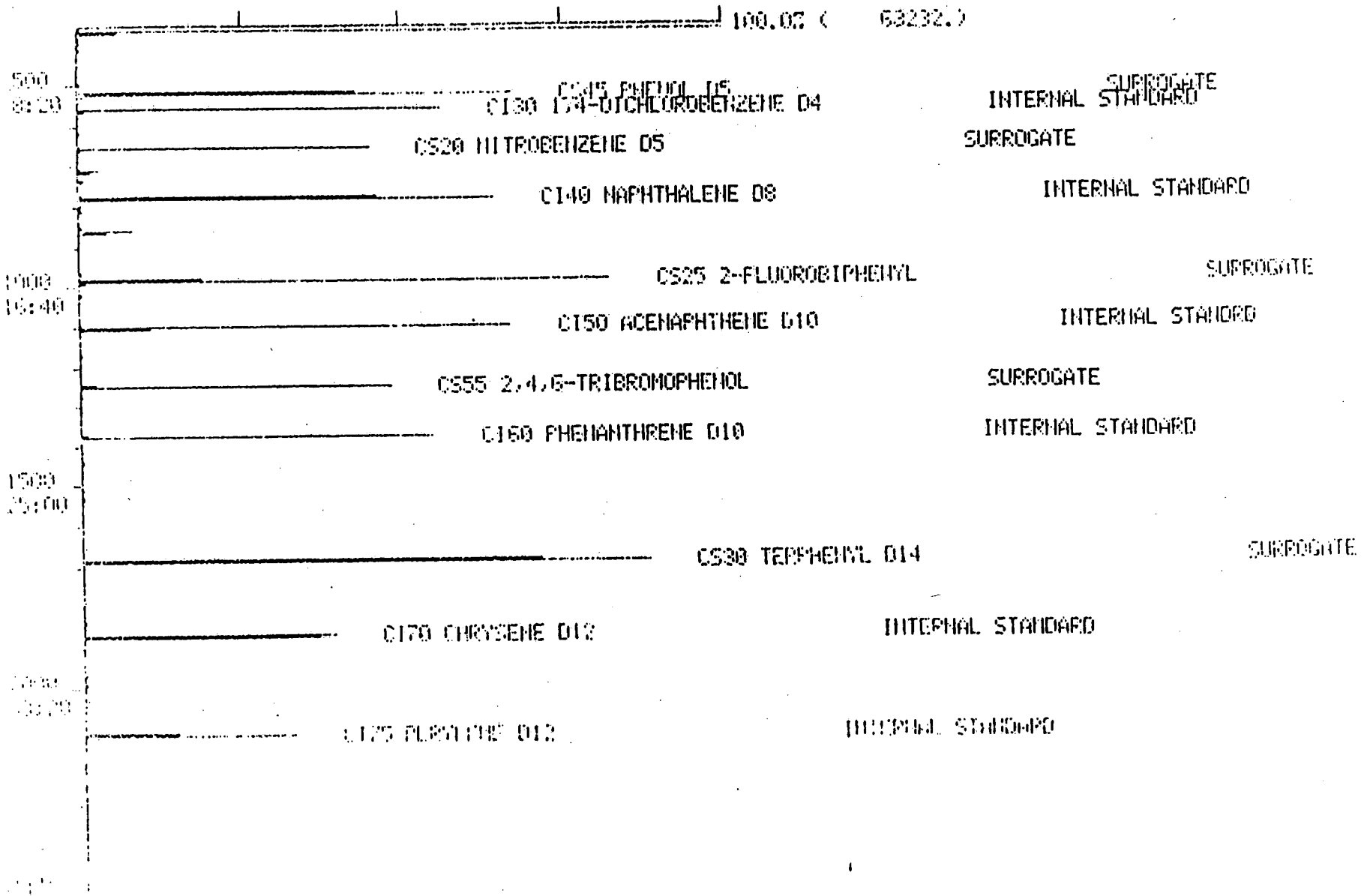
SAMPLE I.D.:MW-9

JOB#:91-3386.15
FILE:7187W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)
860	OXYGENATED COMPOUND	13

DATA FROM FILE: 7187W SCANS 355 TO 2520 ACQUIRED: 12/02/91 22:04:00
CALI: 7187W #3

SAMPLE: MW9 JOB 3396 AP14454 55
COMDS.: AUTOSAMPLR 150W



RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9
EXTRACTION DATE 11/22/
ANALYSIS DATE 12/02/

SAMPLE NO. MW-9

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	106	
Naphthalene-D8	103	
Acenaphthene-D10	105	
Phenanthrene-D10	110	
Chrysene-D12	89	
Perylene-D12	98	
Surrogates		
(%Recovery)		
2-Fluorophenol	46	
Phenol-D5	33	
2,4,6-Tribromophenol	46	
Nitrobenzene-D5	60	
2-Fluorobiphenyl	66	
Terphenyl-D14	79	

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/02/91

SAMPLE NO. MW-9

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/9
ANALYSIS DATE 12/02/9

SAMPLE NO. MW-9

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	12	U
Isophorone	12	U
2-Methyl-4,6-dinitrophenol	62	U
Naphthalene	12	U
Nitrobenzene	12	U
2-Nitrophenol	12	U
4-Nitrophenol	62	U
N-nitrosodi-n-propylamine	12	U
N-Nitrosodimethylamine	12	U
N-Nitrosodiphenylamine	12	U
Pentachlorophenol	62	U
Phenanthrene	12	U
Phenol	12	U
Pyrene	12	U
1,2,4-Trichlorobenzene	12	U
2,4,6-Trichlorophenol	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9
EXTRACTION DATE 11/22/9
ANALYSIS DATE 12/02/9

SAMPLE NO. MW-9

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	12	U
Acenaphthylene	12	U
Anthracene	12	U
Benzo(a)anthracene	12	U
Benzo(b)fluoranthene	12	U
Benzo(k)fluoranthene	12	U
Benzo(a)pyrene	12	U
Benzo(g,h,i)perylene	12	U
Benzidine	100	U
Bis(2-chloroethyl)ether	12	U
Bis(2-chlorethoxy)methane	12	U
Bis(2-chloroisopropyl)ether	12	U
Bis(2-ethylhexyl)phthalate	12	U
4-Bromophenylphenylether	12	U
Butyl benzyl phthalate	12	U
4-Chloro-3-methylphenol	12	U
2-Chloronaphthalene	12	U
2-Chlorophenol	12	U
4-Chlorophenylphenylether	12	U
Chrysene	12	U
Dibenzo(a,h)anthracene	12	U
Di-n-butyl phthalate	12	U
1,2-Dichlorobenzene	12	U
1,3-Dichlorobenzene	12	U
1,4-Dichlorobenzene	12	U
3,3'-Dichlorobenzidine	25	U
2,4-Dichlorophenol	12	U
Diethylphthalate	12	U
2,4-Dimethylphenol	12	U
Dimethylphthalate	12	U
2,4-Dinitrophenol	62	U
1,2-Diphenyl hydrazine	100	U
2,4-Dinitrotoluene	12	U
2,6-Dinitrotoluene	12	U
Di-n-octylphthalate	12	U
Fluoranthene	12	U
Fluorene	12	U
Hexachlorobenzene	12	U
Hexachlorobutadiene	12	U
Hexachlorocyclopentadiene	12	U
Hexachloroethane	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

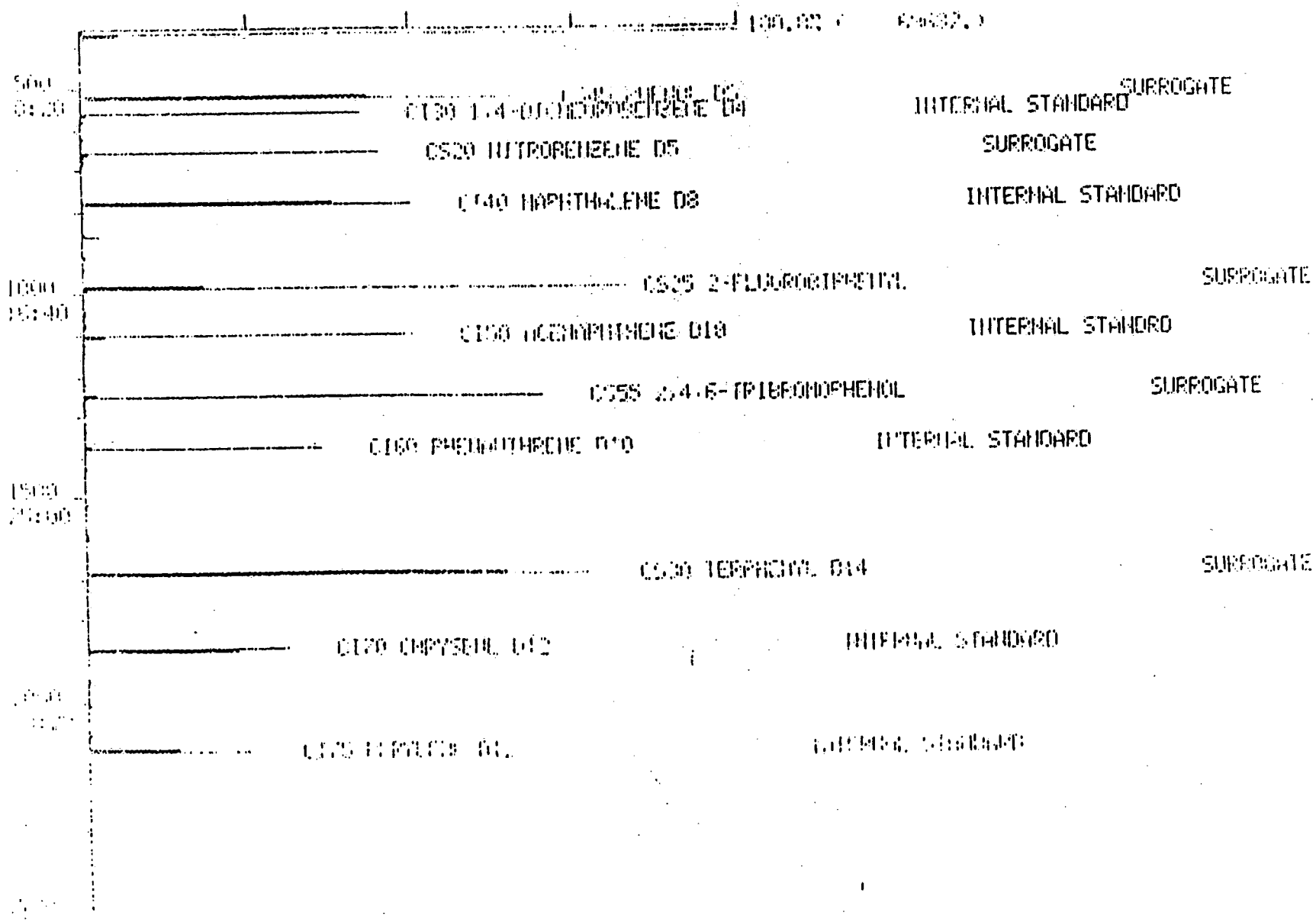
SAMPLE I.D.:MW-8

JOB#:91-3386.16
FILE:7186W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

DATA FROM FILE: 7186W SCANS 355 TO 2520 ACQUIRED: 12/02/91 21:14:00
CALI: 7186W #3

SAMPLE: MWO JOB 3386 AP14452 53
CONDS.: AUTOSAMPLR I50W



RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/9
ANALYSIS DATE 12/02/9

SAMPLE NO. MW-8

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	88	
Naphthalene-D8	86	
Acenaphthene-D10	86	
Phenanthrene-D10	83	
Chrysene-D12	70	
Perylene-D12	74	
Surrogates		
(%Recovery)		-
2-Fluorophenol	65	
Phenol-D5	45	
2,4,6-Tribromophenol	94	
Nitrobenzene-D5	88	
2-Fluorobiphenyl	89	
Terphenyl-D14	98	

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/02/91

SAMPLE NO. MW-8

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9
EXTRACTION DATE 11/22/
ANALYSIS DATE 12/02/

SAMPLE NO. MW-8

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	12	U
Isophorone	12	U
2-Methyl-4,6-dinitrophenol	62	U
Naphthalene	12	U
Nitrobenzene	12	U
2-Nitrophenol	12	U
4-Nitrophenol	62	U
N-nitrosodi-n-propylamine	12	U
N-Nitrosodimethylamine	12	U
N-Nitrosodiphenylamine	12	U
Pentachlorophenol	62	U
Phenanthrene	12	U
Phenol	12	U
Pyrene	12	U
1,2,4-Trichlorobenzene	12	U
2,4,6-Trichlorophenol	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/02/91

SAMPLE NO. MW-8

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	12	U
Acenaphthylene	12	U
Anthracene	12	U
Benzo(a)anthracene	12	U
Benzo(b)fluoranthene	12	U
Benzo(k)fluoranthene	12	U
Benzo(a)pyrene	12	U
Benzo(g,h,i)perylene	12	U
Benzidine	100	U
Bis(2-chloroethyl)ether	12	U
Bis(2-chlorethoxy)methane	12	U
Bis(2-chloroisopropyl)ether	12	U
Bis(2-ethylhexyl)phthalate	12	U
4-Bromophenylphenylether	12	U
Butyl benzyl phthalate	12	U
4-Chloro-3-methylphenol	12	U
2-Chloronaphthalene	12	U
2-Chlorophenol	12	U
4-Chlorophenylphenylether	12	U
Chrysene	12	U
Dibenzo(a,h)anthracene	12	U
Di-n-butyl phthalate	12	U
1,2-Dichlorobenzene	12	U
1,3-Dichlorobenzene	12	U
1,4-Dichlorobenzene	12	U
3,3'-Dichlorobenzidine	25	U
2,4-Dichlorophenol	12	U
Diethylphthalate	12	U
2,4-Dimethylphenol	12	U
Dimethylphthalate	12	U
2,4-Dinitrophenol	62	U
1,2-Diphenyl hydrazine	100	U
2,4-Dinitrotoluene	12	U
2,6-Dinitrotoluene	12	U
Di-n-octylphthalate	12	U
Fluoranthene	12	U
Fluorene	12	U
Hexachlorobenzene	12	U
Hexachlorobutadiene	12	U
Hexachlorocyclopentadiene	12	U
Hexachloroethane	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

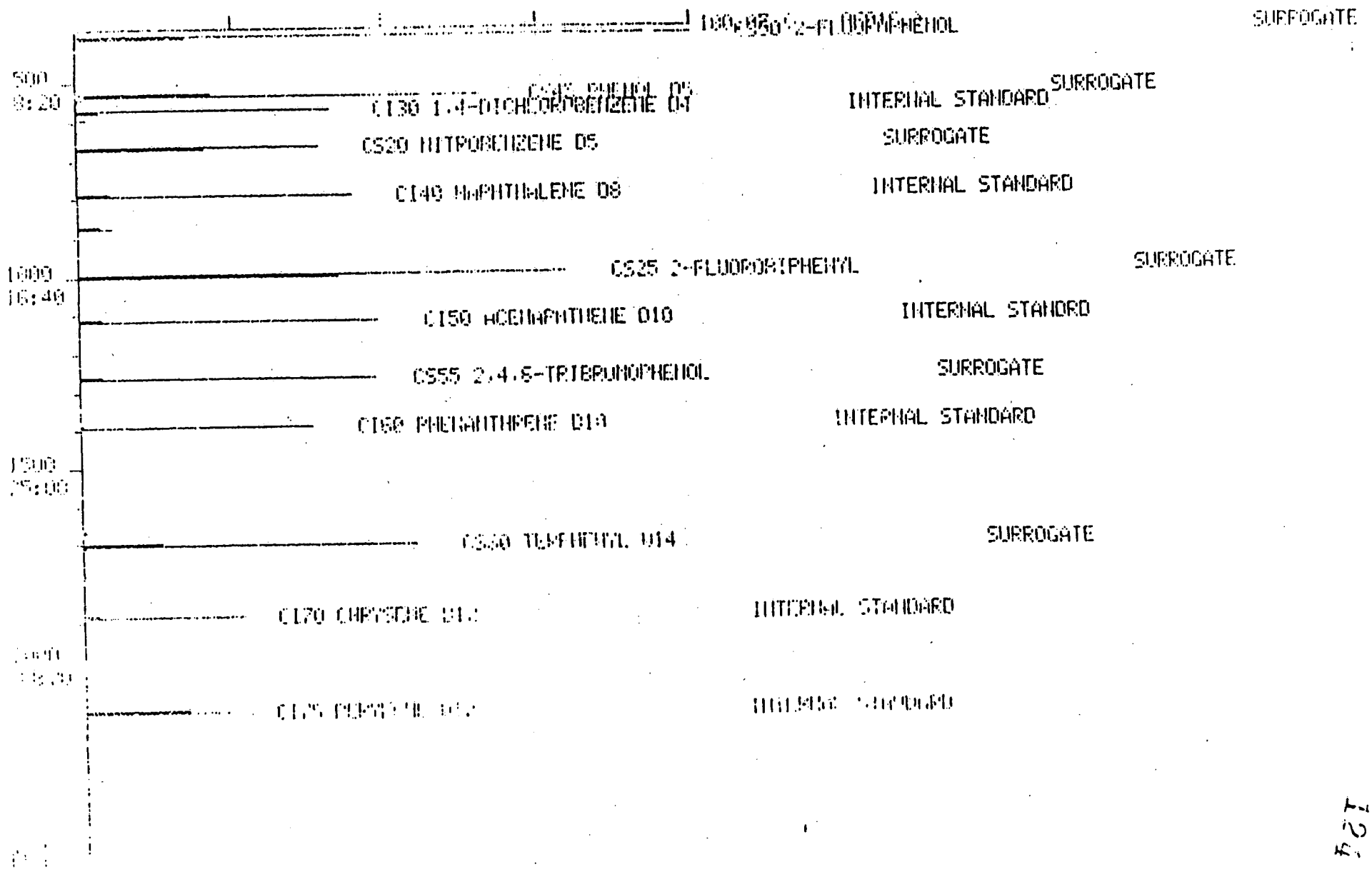
SAMPLE I.D.:MW-7

JOB#:91-3386.28
FILE:7167W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)
872	OXYGENATED COMPOUND	6.4

DATA FROM FILE: 7167W SCANS 360 TO 2520 ACQUIRED: 12/01/91 0:45:00
CALI: 7167W #3

SAMPLE: MW7 JOB 3386 AP14450/51
CONDS.: AUTOSAMPLR I50W



RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/9
ANALYSIS DATE 12/01/9

SAMPLE NO. MW-7

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	113	
Naphthalene-D8	111	
Acenaphthene-D10	123	
Phenanthrene-D10	117	
Chrysene-D12	86	
Perylene-D12	98	
Surrogates		
(%Recovery)		
2-Fluorophenol	61	
Phenol-D5	41	
2,4,6-Tribromophenol	84	
Nitrobenzene-D5	72	
2-Fluorobiphenyl	72	
Terphenyl-D14	84	

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9:
EXTRACTION DATE 11/22/9:
ANALYSIS DATE 12/01/9:

SAMPLE NO. MW-7

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/9
ANALYSIS DATE 12/01/9

SAMPLE NO. MW-7

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	12	U
Isophorone	12	U
2-Methyl-4,6-dinitrophenol	62	U
Naphthalene	12	U
Nitrobenzene	12	U
2-Nitrophenol	12	U
4-Nitrophenol	62	U
N-nitrosodi-n-propylamine	12	U
N-Nitrosodimethylamine	12	U
N-Nitrosodiphenylamine	12	U
Pentachlorophenol	62	U
Phenanthrene	12	U
Phenol	12	U
Pyrene	12	U
1,2,4-Trichlorobenzene	12	U
2,4,6-Trichlorophenol	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/01/91

SAMPLE NO. MW-7

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	12	U
Acenaphthylene	12	U
Anthracene	12	U
Benzo(a)anthracene	12	U
Benzo(b)fluoranthene	12	U
Benzo(k)fluoranthene	12	U
Benzo(a)pyrene	12	U
Benzo(g,h,i)perylene	12	U
Benzidine	100	U
Bis(2-chloroethyl)ether	12	U
Bis(2-chlorethoxy)methane	12	U
Bis(2-chloroisopropyl)ether	12	U
Bis(2-ethylhexyl)phthalate	12	U
4-Bromophenylphenylether	12	U
Butyl benzyl phthalate	12	U
4-Chloro-3-methylphenol	12	U
2-Chloronaphthalene	12	U
2-Chlorophenol	12	U
4-Chlorophenylphenylether	12	U
Chrysene	12	U
Dibenzo(a,h)anthracene	12	U
Di-n-butyl phthalate	12	U
1,2-Dichlorobenzene	12	U
1,3-Dichlorobenzene	12	U
1,4-Dichlorobenzene	12	U
3,3'-Dichlorobenzidine	25	U
2,4-Dichlorophenol	12	U
Diethylphthalate	12	U
2,4-Dimethylphenol	12	U
Dimethylphthalate	12	U
2,4-Dinitrophenol	62	U
1,2-Diphenyl hydrazine	100	U
2,4-Dinitrotoluene	12	U
2,6-Dinitrotoluene	12	U
Di-n-octylphthalate	12	U
Fluoranthene	12	U
Fluorene	12	U
Hexachlorobenzene	12	U
Hexachlorobutadiene	12	U
Hexachlorocyclopentadiene	12	U
Hexachloroethane	12	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 800 ML

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9
EXTRACTION DATE 11/22/9
ANALYSIS DATE 12/02/9

SAMPLE NO. MW-10

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

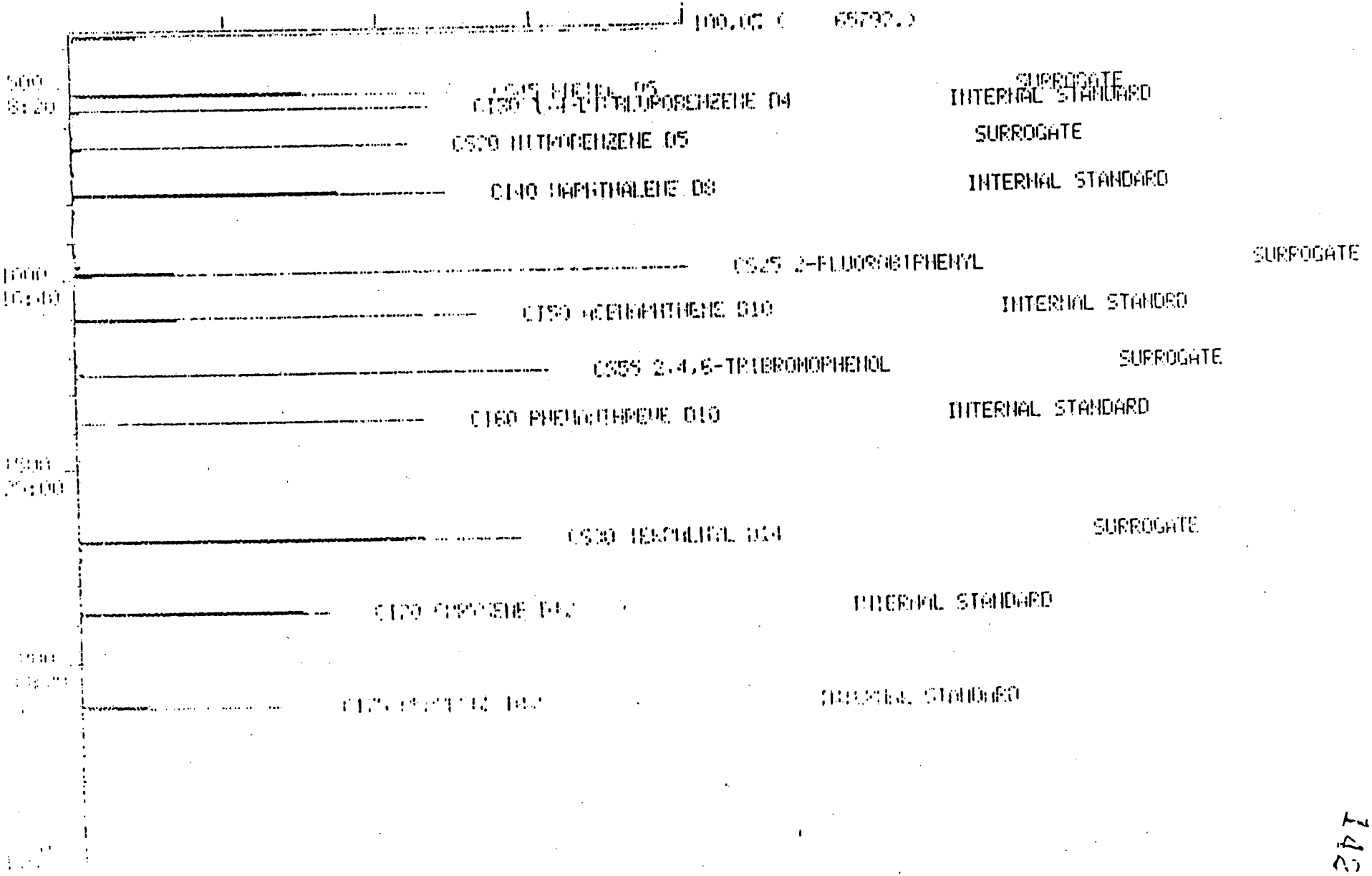
SAMPLE DATE 11/15/9
EXTRACTION DATE 11/22/9
ANALYSIS DATE 12/02/9

SAMPLE NO. MW-10

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	114	
Naphthalene-D8	110	
Acenaphthene-D10	112	
Phenanthrene-D10	108	
Chrysene-D12	89	
Perylene-D12	98	
Surrogates		
(%Recovery)		
2-Fluorophenol	48	
Phenol-D5	29	
2,4,6-Tribromophenol	76	
Nitrobenzene-D5	71	
2-Fluorobiphenyl	69	
Terphenyl-D14	78	

DATA FROM FILE: 7188M SCANS 3/5 TO 3520 ACQUIRED: 12/02/91 22:55:00
CAL I: 7188M #2

SAMPLE: MW10 JOB 3386 AP14456-57
COMDS.: AUTOSAMPLE 150M



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ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:MW-10

JOB#:91-3386.17
FILE:7188W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9
EXTRACTION DATE 11/22/9
ANALYSIS DATE 12/02/9

SAMPLE NO. FIELD BLANK

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	10	U
Acenaphthylene	10	U
Anthracene	10	U
Benzo(a)anthracene	10	U
Benzo(b)fluoranthene	10	U
Benzo(k)fluoranthene	10	U
Benzo(a)pyrene	10	U
Benzo(g,h,i)perylene	10	U
Benzidine	80	U
Bis(2-chloroethyl)ether	10	U
Bis(2-chlorethoxy)methane	10	U
Bis(2-chloroisopropyl)ether	10	U
Bis(2-ethylhexyl)phthalate	10	U
4-Bromophenylphenylether	10	U
Butyl benzyl phthalate	10	U
4-Chloro-3-methylphenol	10	U
2-Chloronaphthalene	10	U
2-Chlorophenol	10	U
4-Chlorophenylphenylether	10	U
Chrysene	10	U
Dibenzo(a,h)anthracene	10	U
Di-n-butyl phthalate	10	U
1,2-Dichlorobenzene	10	U
1,3-Dichlorobenzene	10	U
1,4-Dichlorobenzene	10	U
3,3'-Dichlorobenzidine	20	U
2,4-Dichlorophenol	10	U
Diethylphthalate	10	U
2,4-Dimethylphenol	10	U
Dimethylphthalate	10	U
2,4-Dinitrophenol	50	U
1,2-Diphenyl hydrazine	80	U
2,4-Dinitrotoluene	10	U
2,6-Dinitrotoluene	10	U
Di-n-octylphthalate	10	U
Fluoranthene	10	U
Fluorene	10	U
Hexachlorobenzene	10	U
Hexachlorobutadiene	10	U
Hexachlorocyclopentadiene	10	U
Hexachloroethane	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. FIELD BLANK

SAMPLE DATE 11/15/
EXTRACTION DATE 11/22/
ANALYSIS DATE 12/02/

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	10	U
Isophorone	10	U
2-Methyl-4,6-dinitrophenol	50	U
Naphthalene	10	U
Nitrobenzene	10	U
2-Nitrophenol	10	U
4-Nitrophenol	50	U
N-nitrosodi-n-propylamine	10	U
N-Nitrosodimethylamine	10	U
N-Nitrosodiphenylamine	10	U
Pentachlorophenol	50	U
Phenanthrene	10	U
Phenol	10	U
Pyrene	10	U
1,2,4-Trichlorobenzene	10	U
2,4,6-Trichlorophenol	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/02/91

SAMPLE NO. FIELD BLANK

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

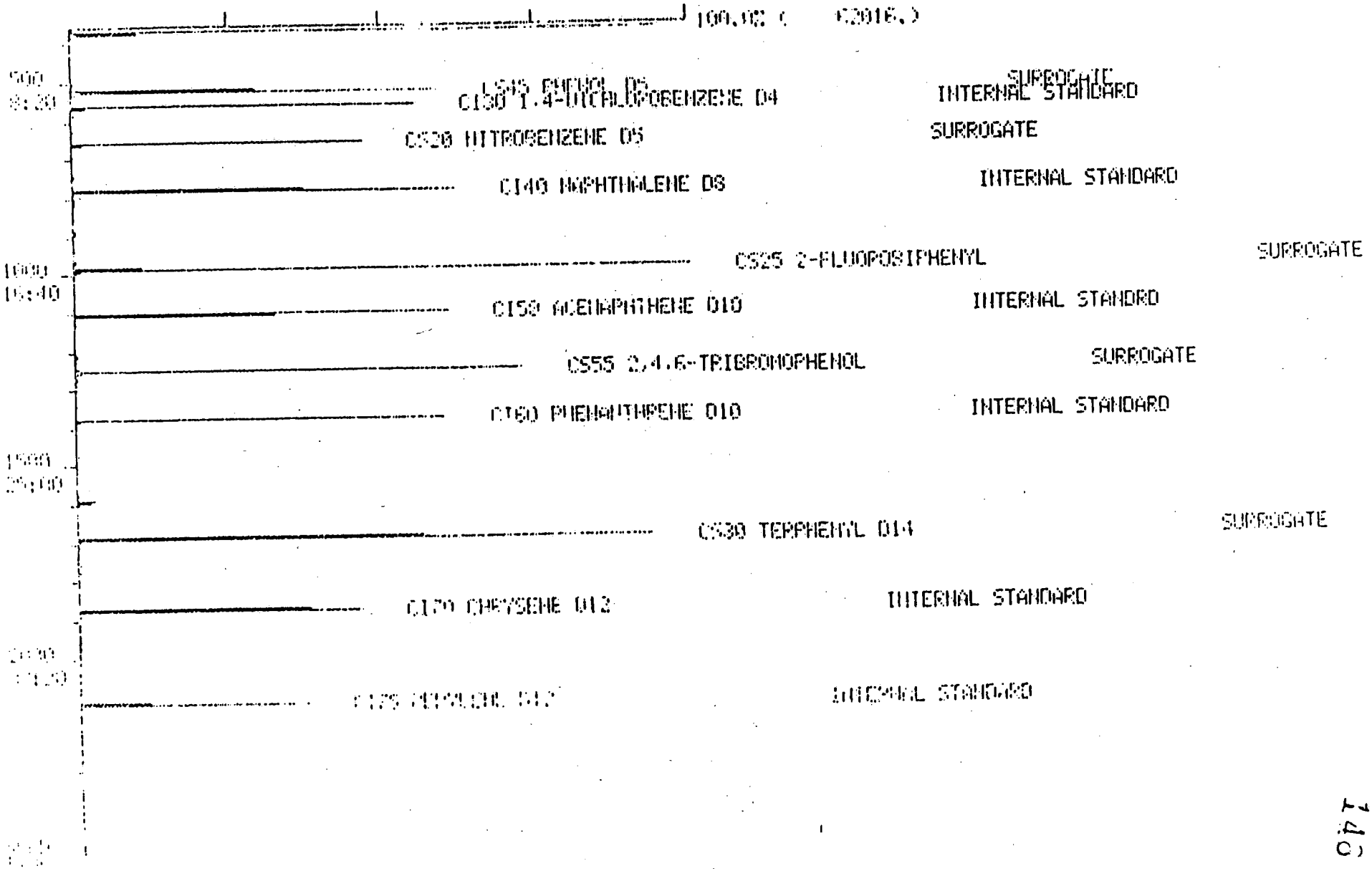
LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9
EXTRACTION DATE 11/22/9
ANALYSIS DATE 12/02/9

SAMPLE NO. FIELD BLANK

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	117	
Naphthalene-D8	115	
Acenaphthene-D10	117	
Phenanthrene-D10	113	
Chrysene-D12	93	
Perylene-D12	99	
Surrogates		
(%Recovery)		
2-Fluorophenol	44	
Phenol-D5	28	
2,4,6-Tribromophenol	70	
Nitrobenzene-D5	54	
2-Fluorobiphenyl	57	
Terphenyl-D14	81	

DATA FROM FILE: 7189W SCANS 355 TO 2520 ACQUIRED: 12/02/91 23:47:00
CALI: 7189W #3
SAMPLE: ~~FILED~~ Field BLANK JOB 3386 AP14458/59
CONDS.: AUTOSAMPLR I50W



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:FIELD BLANK

JOB#:91-3386.18
FILE:7189W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/91
ANALYSIS DATE 12/03/91

SAMPLE NO. TRIP BLANK

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	10	U
Acenaphthylene	10	U
Anthracene	10	U
Benzo(a)anthracene	10	U
Benzo(b)fluoranthene	10	U
Benzo(k)fluoranthene	10	U
Benzo(a)pyrene	10	U
Benzo(g,h,i)perylene	10	U
Benzidine	80	U
Bis(2-chloroethyl)ether	10	U
Bis(2-chlorethoxy)methane	10	U
Bis(2-chloroisopropyl)ether	10	U
Bis(2-ethylhexyl)phthalate	10	U
4-Bromophenylphenylether	10	U
Butyl benzyl phthalate	10	U
4-Chloro-3-methylphenol	10	U
2-Chloronaphthalene	10	U
2-Chlorophenol	10	U
4-Chlorophenylphenylether	10	U
Chrysene	10	U
Dibenzo(a,h)anthracene	10	U
Di-n-butyl phthalate	10	U
1,2-Dichlorobenzene	10	U
1,3-Dichlorobenzene	10	U
1,4-Dichlorobenzene	10	U
3,3'-Dichlorobenzidine	20	U
2,4-Dichlorophenol	10	U
Diethylphthalate	10	U
2,4-Dimethylphenol	10	U
Dimethylphthalate	10	U
2,4-Dinitrophenol	50	U
1,2-Diphenyl hydrazine	80	U
2,4-Dinitrotoluene	10	U
2,6-Dinitrotoluene	10	U
Di-n-octylphthalate	10	U
Fluoranthene	10	U
Fluorene	10	U
Hexachlorobenzene	10	U
Hexachlorobutadiene	10	U
Hexachlorocyclopentadiene	10	U
Hexachloroethane	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9
EXTRACTION DATE 11/22/9
ANALYSIS DATE 12/03/91

SAMPLE NO. TRIP BLANK

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	10	U
Isophorone	10	U
2-Methyl-4,6-dinitrophenol	50	U
Naphthalene	10	U
Nitrobenzene	10	U
2-Nitrophenol	10	U
4-Nitrophenol	50	U
N-nitrosodi-n-propylamine	10	U
N-Nitrosodimethylamine	10	U
N-Nitrosodiphenylamine	10	U
Pentachlorophenol	50	U
Phenanthrene	0.93	J
Phenol	10	U
Pyrene	10	U
1,2,4-Trichlorobenzene	10	U
2,4,6-Trichlorophenol	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9
EXTRACTION DATE 11/22/9
ANALYSIS DATE 12/03/9

SAMPLE NO. TRIP BLANK

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

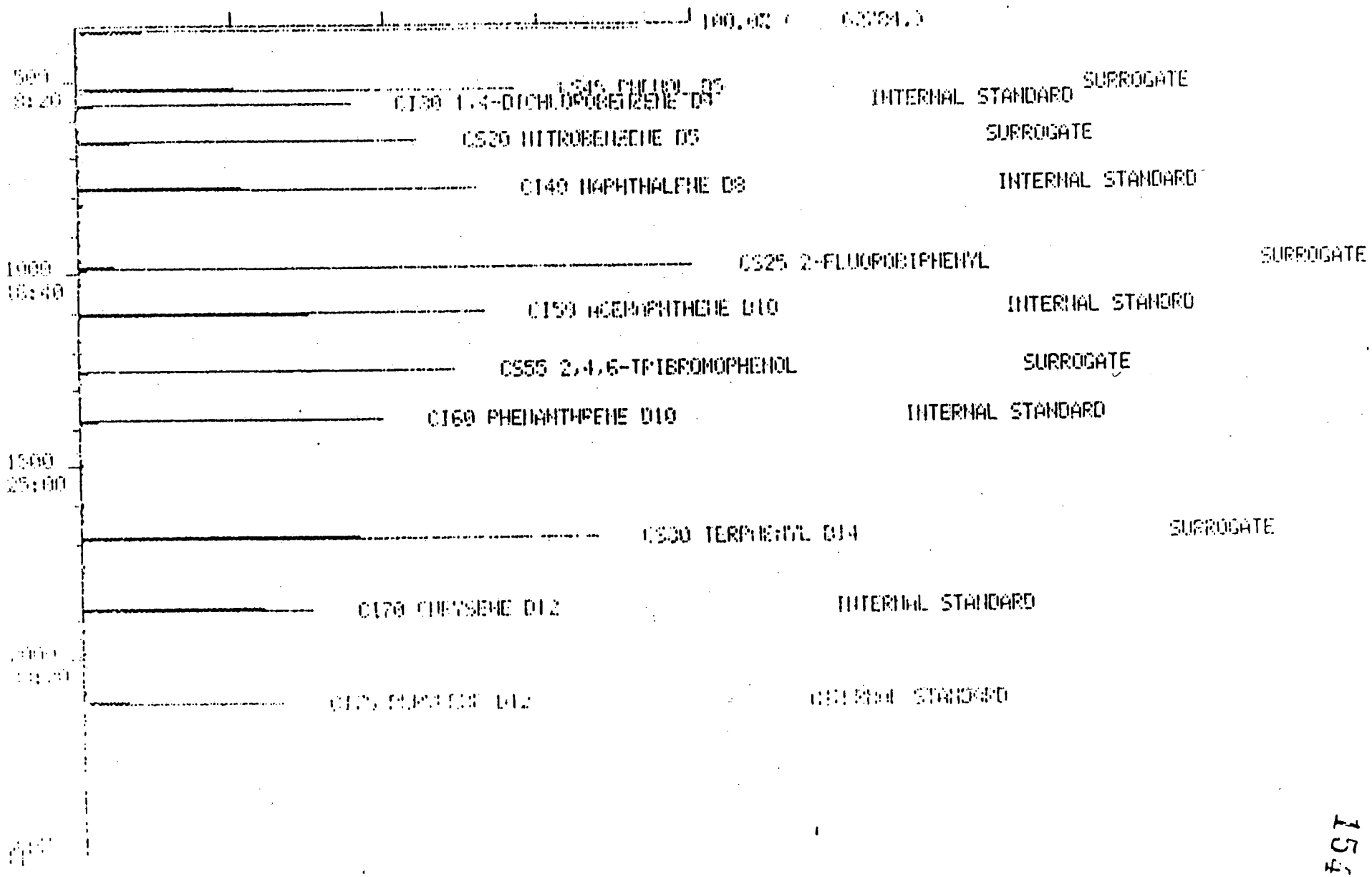
SAMPLE DATE 11/15/91
EXTRACTION DATE 11/22/9
ANALYSIS DATE 12/03/9

SAMPLE NO. TRIP BLANK

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	104	
Naphthalene-D8	103	
Acenaphthene-D10	105	
Phenanthrene-D10	105	
Chrysene-D12	83	
Perylene-D12	94	
Surrogates		
(%Recovery)		
2-Fluorophenol	50	
Phenol-D5	34	
2,4,6-Tribromophenol	63	
Nitrobenzene-D5	67	
2-Fluorobiphenyl	70	
Terphenyl-D14	79	

DATA FROM FILE: 7190W SCANS 355 TO 2520 ACQUIRED: 12/03/91 0:39:00
CALI: 7190W #3

SAMPLE: TRIPBLANK JOB 3386 OP1460A-61
COMDS.: AUTOSAMPLE 150W



ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:TRIP BLANK

JOB#:91-3386.19
FILE:7190W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC SEMIVOLATILE METHOD BLANK
SAMPLE NO. SBLK87

EXTRACTION DATE 11/22/9:
ANALYSIS DATE 11/30/9:

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acenaphthene	10	U
Acenaphthylene	10	U
Anthracene	10	U
Benzo(a)anthracene	10	U
Benzo(b)fluoranthene	10	U
Benzo(k)fluoranthene	10	U
Benzo(a)pyrene	10	U
Benzo(g,h,i)perylene	10	U
Benzidine	80	U
Bis(2-chloroethyl)ether	10	U
Bis(2-chlorethoxy)methane	10	U
Bis(2-chloroisopropyl)ether	10	U
Bis(2-ethylhexyl)phthalate	10	U
4-Bromophenylphenylether	10	U
Butyl benzyl phthalate	10	U
4-Chloro-3-methylphenol	10	U
2-Chloronaphthalene	10	U
2-Chlorophenol	10	U
4-Chlorophenylphenylether	10	U
Chrysene	10	U
Dibenzo(a,h)anthracene	10	U
Di-n-butyl phthalate	10	U
1,2-Dichlorobenzene	10	U
1,3-Dichlorobenzene	10	U
1,4-Dichlorobenzene	10	U
3,3'-Dichlorobenzidine	20	U
2,4-Dichlorophenol	10	U
Diethylphthalate	10	U
2,4-Dimethylphenol	10	U
Dimethylphthalate	10	U
2,4-Dinitrophenol	50	U
1,2-Diphenyl hydrazine	80	U
2,4-Dinitrotoluene	10	U
2,6-Dinitrotoluene	10	U
Di-n-octylphthalate	10	U
Fluoranthene	10	U
Fluorene	10	U
Hexachlorobenzene	10	U
Hexachlorobutadiene	10	U
Hexachlorocyclopentadiene	10	U
Hexachloroethane	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC SEMIVOLATILE METHOD BLANK
SAMPLE NO. SBLK87

EXTRACTION DATE 11/22/
ANALYSIS DATE 11/30/9

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Indeno(1,2,3-cd)pyrene	10	U
Isophorone	10	U
2-Methyl-4,6-dinitrophenol	50	U
Naphthalene	10	U
Nitrobenzene	10	U
2-Nitrophenol	10	U
4-Nitrophenol	50	U
N-nitrosodi-n-propylamine	10	U
N-Nitrosodimethylamine	10	U
N-Nitrosodiphenylamine	10	U
Pentachlorophenol	50	U
Phenanthrene	10	U
Phenol	10	U
Pyrene	10	U
1,2,4-Trichlorobenzene	10	U
2,4,6-Trichlorophenol	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC SEMIVOLATILE METHOD BLANK
SAMPLE NO. SBLK87

EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/9

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Hydroquinone	10	U

DILUTION FACTOR = 1.0
EXTRACTION VOLUME = 1000 ML

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 625
BASE/NEUTRAL/ACID EXTRACTABLES

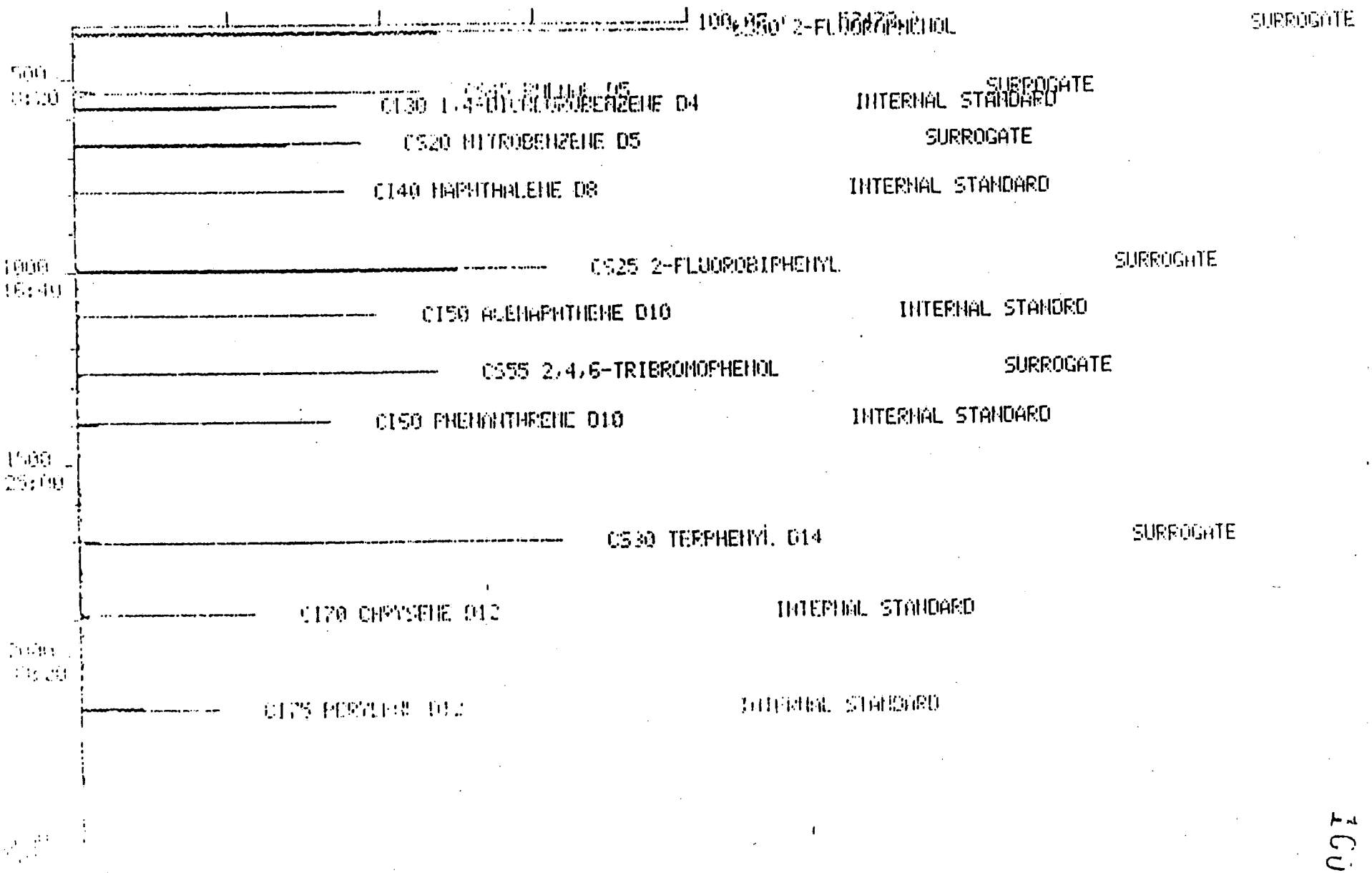
LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC SEMIVOLATILE METHOD BLANK
SAMPLE NO. SBLK87

EXTRACTION DATE 11/22/9
ANALYSIS DATE 11/30/9

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	89	
Naphthalene-D8	84	
Acenaphthene-D10	86	
Phenanthrene-D10	87	
Chrysene-D12	63	
Perylene-D12	68	
Surrogates		
(%Recovery)		
2-Fluorophenol	57	
Phenol-D5	37	
2,4,6-Tribromophenol	85	
Nitrobenzene-D5	73	
2-Fluorobiphenyl	68	
Terphenyl-D14	115	

DATA FROM FILE: 7153W SCANS 350 TO 2520 ACQUIRED: 11/30/91 17:55:00
CALI: 7150W #3

SAMPLE: SBLK87 JOB 3386 AP14424-25
COMMS.: AUTOSAMPLR 150W



FIGURE

ANALYTICAL RESULTS

GAS CHROMATOGRAPHY/MASS SPECTROMETRY
EXTRACTABLE LIBRARY COMPARISON SEARCH

SAMPLE I.D.:SBLK 87

JOB#:91-3386.20
FILE:7159W

SCAN #	COMPOUND NAME	ESTIMATED CONCENTRATION (UNITS= UG/L)

METALS DATA

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-1

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.01	U
Total Silver	MG/L	272.1	11/25/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC MW-1 FIELD DUP
SAMPLE NO. FIELD DUP

SAMPLE DATE 11/15/91

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.011	
Total Silver	MG/L	272.1	11/25/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-2

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.064	
Total Silver	MG/L	272.1	11/25/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-3

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.03	
Total Silver	MG/L	272.1	11/25/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-4

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.093	
Total Silver	MG/L	272.1	11/25/91	0.013	

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-5

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.02	
Total Silver	MG/L	272.1	11/25/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-6

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	C
Total Chromium	MG/L	218.1	11/25/91	0.13	
Total Silver	MG/L	272.1	11/25/91	0.01	

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-7

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.065	
Total Silver	MG/L	272.1	11/25/91	0.01	

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-8

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.01	U
Total Silver	MG/L	272.1	11/25/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

172

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-9

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.01	U
Total Silver	MG/L	272.1	11/25/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-10

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.01	U
Total Silver	MG/L	272.1	11/25/91	0.011	

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. FIELD BLANK

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.016	
Total Silver	MG/L	272.1	11/25/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. TRIP BLANK

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.01	U
Total Silver	MG/L	272.1	11/25/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. METHOD BLANK

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Chromium	MG/L	218.1	11/25/91	0.01	U
Total Silver	MG/L	272.1	11/25/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-1

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC MW-1 FIELD DUP
SAMPLE NO. FIELD DUP

SAMPLE DATE 11/15/91

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

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LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9:

SAMPLE NO. MW-2

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.016	

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9:

SAMPLE NO. MW-3

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

181

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-4

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9

SAMPLE NO. MW-5

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-6

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-7

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.028	

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9

SAMPLE NO. MW-8

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9:

SAMPLE NO. MW-9

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/9

SAMPLE NO. MW-10

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. FIELD BLANK

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.01	U

RADIAN CORPORATION
AQUEOUS MATRIX
SOLUBLE METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. METHOD BLANK

COMPOUND (Units of Measure = MG/L)	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Hexavalent Chromium	7195	11/16/91	0.01	U

WATER QUALITY DATA

RECRA
ENVIRONMENTAL
INC.

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-1

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.01	U
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	0.5	U
Formaldehyde	mg/l	*	11/22/91	0.1	

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386
DESC MW-1 FIELD DUP
SAMPLE NO. FIELD DUP

SAMPLE DATE 11/15/91

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.01	U
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	0.61	
Formaldehyde	mg/l	*	11/22/91	0.11	

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-2

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.01	U
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	12	
Formaldehyde	mg/l	*	11/22/91	0.084	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-3

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.11	
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	0.5	U
Formaldehyde	mg/l	*	11/22/91	0.26	

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-4

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.01	U
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	1.3	
Formaldehyde	mg/l	*	11/22/91	0.21	

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-5

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.01	U
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	0.5	U
Formaldehyde	mg/l	*	11/22/91	0.14	

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-6

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	C
Total Cyanide	mg/l	9010	11/25/91	0.027	
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	1.2	
Formaldehyde	mg/l	*	11/22/91	0.18	

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-7

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.24	
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	1.1	
Formaldehyde	mg/l	*	11/22/91	0.084	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-8

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.017	
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	5.2	
Formaldehyde	mg/l	*	11/22/91	0.084	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-9

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.01	U
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	1.5	
Formaldehyde	mg/l	*	11/22/91	0.084	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. MW-10

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.01	U
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	0.5	U
Formaldehyde	mg/l	*	11/22/91	0.09	

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. FIELD BLANK

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.01	U
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	0.5	U
Formaldehyde	mg/l	*	11/22/91	0.084	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE DATE 11/15/91

SAMPLE NO. TRIP BLANK

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.01	U
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	0.53	
Formaldehyde	mg/l	*	11/22/91	0.084	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

2.14

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3386

SAMPLE NO. METHOD BLANK

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Cyanide	mg/l	9010	11/25/91	0.01	U
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/18/91	0.5	U
Formaldehyde	mg/l	*	11/22/91	0.084	U

ORGANIC DATA COMMENT PAGE

Laboratory Name RECRA ENVIRONMENTAL, INC.

USEPA Defined Organic Data Qualifiers:

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

C - This flag applies to pesticide results where the identification has been confirmed by GC/MS.

B - This flag is used when the analyte is found in the associated blank as well as in the sample.

E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

G - The TCLP Matrix Spike recovery was greater than the upper limit of the analytical method.

L - The TCLP Matrix Spike recovery was lower than the lower limit of the analytical method.

T - This flag is used when the analyte is found in the associated TCLP extraction as well as in the sample.

INORGANIC DATA COMMENT PAGE

Laboratory Name RECRA ENVIRONMENTAL, INC.

USEPA Defined Inorganic Data Qualifiers:

B - Indicates a value greater than or equal to the instrument detection limit but less than the contract required detection limit.

U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., 100).

E - Indicates a value estimated or not reported due to the presence of interference.

S - Indicates value determined by Method of Standard Addition.

N - Indicates spike sample recovery is not within control limits.

* - Indicates duplicate analysis is not within control limits.

+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

M - Indicates duplicate injection results exceeded control limits.

W - Post digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

G - The TCLP Matrix Spike recovery was greater than the upper limit of the analytical method.

L - The TCLP Matrix Spike recovery was lower than the lower limit of the analytical method.

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO:

SITE NAME: Kodalux – Fairlawn NJ

SAMPLERS (SIGNATURE): [signature]

STATION NO	DATE	TIME	COMP	GRAB	STATION LOCATION	NO OF CONTAINERS	8240 624	8270 625	TRPH	Total cyanide	Ag + Cr (total)	Formaldehyde	REMARKS
	11/15/91	0805		✓	MW-3	8	2	2	1	1	1	1	
		0740		✓	MW-10	8	2	2	1	1	1	1	
		0820		✓	MW-4	~~8~~ 8	2	2	1	1	1	1	
		0835		✓	MW-5	~~8~~ 8	2	2	1	1	1	1	
		0905		✓	MW-8	8	2	2	1	1	1	1	
		0855		✓	MW-6	7	2	1	1	1	1	1	
		0925		✓	MW-9	8	2	2	1	1	1	1	
		0950		✓	MW-7	7	2	1	1	1	1	1	
		1015		✓	MW-2	8	2	2	1	1	1	1	oil in water
		1050		✓	MW-1	8	2	2	1	1	1	1	oil in water
		1050		✓	MW-1 Dup	8	2	2	1	1	1	1	oil in water
		1015		✓	Field Blank (at MW-2)	8	2	2	1	1	1	1	
					*								

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
[signature]	11/15/91 ~~1700~~	1700					
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	REMARKS	
			[signature]	11/16/91	1030	* ALSO RECIEVED 1 WHOLE SET OF BOTTLES FOR TRIP BLANK	

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO

SITE NAME: Kodalux - Fairlawn NJ

SAMPLERS (SIGNATURE): [signature]

STATION NO	DATE	TIME	COMP	GRAB	STATION LOCATION	NO OF CONTAINERS	Cr6+						REMARKS
	11/15/91	1323		✓	MW-1		1						
		1318		✓	MW-2		1						
		1251		✓	MW-3		1						
		1254		✓	MW-4		1						
		1257 ~~1257~~	DAW	✓	MW-5		1						
		1301		✓	MW-6		1						
		1315		✓	MW-7		1						
		1306		✓	MW-8		1						
		1310		✓	MW9		1						
		1245		✓	MW-10		1						
		1323		✓	MW-1 Dup		1						
		~~1015~~ 1318	DAW	✓	Field Blank		1						

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
[signature]	11/15/91	1700					
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY (SIGNATURE) [signature]	DATE 11/16/91	TIME 1030	REMARKS	

20436.0

RECRA ENVIRONMENTAL, INC.

Chemical and Environmental Analysis Services

World University Games Buffalo '93
HELPING TO BRING THE WORLD TO BUFFALO

November 22, 1991

Ms. Lynn M. Moody
Radian Corporation
155 Corporate Woods, Suite 100
Rochester, NY 14623

Re: Analytical Results

Dear Ms. Moody:

Please find enclosed results concerning the analyses of the samples recently submitted by your firm. The Pertinent Information regarding these analyses is listed below:

Quote #:	NY91-945R
Project Name:	Kodalux-Fairlawn, NJ
Matrix:	Solid Drill Cuttings, Aqueous
Samples Received:	10/29/91
Sample Dates:	10/24,25,28/91

If you have any questions concerning these data, please contact Ms. Donna Bateman, Project Manager, at (716) 691-2600 and refer to the I.D. number listed below. It has been our pleasure to provide Radian Corporation with Environmental Testing Services. We look forward to serving you in the future.

Sincerely,

RECRA ENVIRONMENTAL, INC.

Kenneth C. Malinowski /KPR

Kenneth C. Malinowski, PhD
Vice President

PJV/KCM/dms
Enclosure

I.D. #91-3161
#91-3161A
#2A3811

Audubon Business Centre • 10 Hazelwood Drive • Amherst, New York 14228-2298 • (716) 691-2600 • FAX (716) 691-3011

ANALYTICAL RESULTS

Prepared For

Radian Corporation
155 Corporate Woods, Suite 100
Rochester, New York 14623

Prepared By

Recra Environmental, Inc.
10 Hazelwood Drive, Suite 106
Amherst, New York 14228-2298

METHODOLOGIES

The specific methodologies employed in obtaining the enclosed analytical results are indicated on the specific data table. The method numbers presented refer to the following U.S. Environmental Protection Agency reference.

- U.S. Environmental Protection Agency "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods." Office of Solid Waste and Emergency Response. November 1986, SW-846, Third Edition.

COMMENTS

Comments pertain to data on one or all pages of this report.

The enclosed data has been reported utilizing USEPA data qualifiers (Q) as defined on the Organic and Inorganic Data Comment Pages.

Quality control analyses were performed on a batch basis. All results were within acceptable limits.

Results of the analysis of soils are corrected for moisture content and reported on a dry weight (103°C) basis.

Due to a laboratory oversite, sample Trip Blank was not analyzed for Total Recoverable Petroleum Hydrocarbons as requested on the Chain of Custody. Ms. Lynn Moody of Radian Corporation was notified on November 25, 1991 by Ms. Donna Bateman of Recra Environmental, Inc.

The chromatograms have been provided for the Volatile and Semivolatile analyses.

RECRA
ENVIRONMENTAL
INC.

RADIAN CORPORATION
SOIL MATRIX
METHOD 8240 - HAZARDOUS SUBSTANCE LIST
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC DRILL CUTTINGS
SAMPLE NO. CUTTINGS

SAMPLE DATE 10/25/91

ANALYSIS DATE 10/31/91

COMPOUND (Units of Measure = UG/KG)	RESULT	Q
Acetone	11	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	11	U
Carbon disulfide	5.0	U
Carbon tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	11	U
Chloroform	5.0	U
Chloromethane	11	U
1,1-Dichloroethane	5.0	U
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	5.0	U
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
trans-1,3-Dichloropropene	5.0	U
cis-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
2-Hexanone	11	U
Methyl ethyl ketone	11	U
4-Methyl-2-pentanone	11	U
Methylene chloride	5.0	U
Styrene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Tetrachloroethene	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	3.9	J
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl acetate	11	U
Vinyl chloride	11	U
Xylenes (Total)	5.0	U

DILUTION FACTOR = 1.0
% DRY = 93.5

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC DRILL CUTTINGS
SAMPLE NO. CUTTINGS

SAMPLE DATE 10/25/91

ANALYSIS DATE 10/31/9

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Trichlorofluoromethane	5.0	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	5.0	U

DILUTION FACTOR = 1.0
% DRY = 93.5

RADIAN CORPORATION
SOIL MATRIX
METHOD 8240 - HAZARDOUS SUBSTANCE LIST
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC DRILL CUTTINGS
SAMPLE NO. CUTTINGS

SAMPLE DATE 10/25/91

ANALYSIS DATE 10/31/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	106	
1,4-Difluorobenzene	98	
Chlorobenzene-D5	100	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	99	
1,2-Dichloroethane-D4	98	
Toluene-D8	98	-

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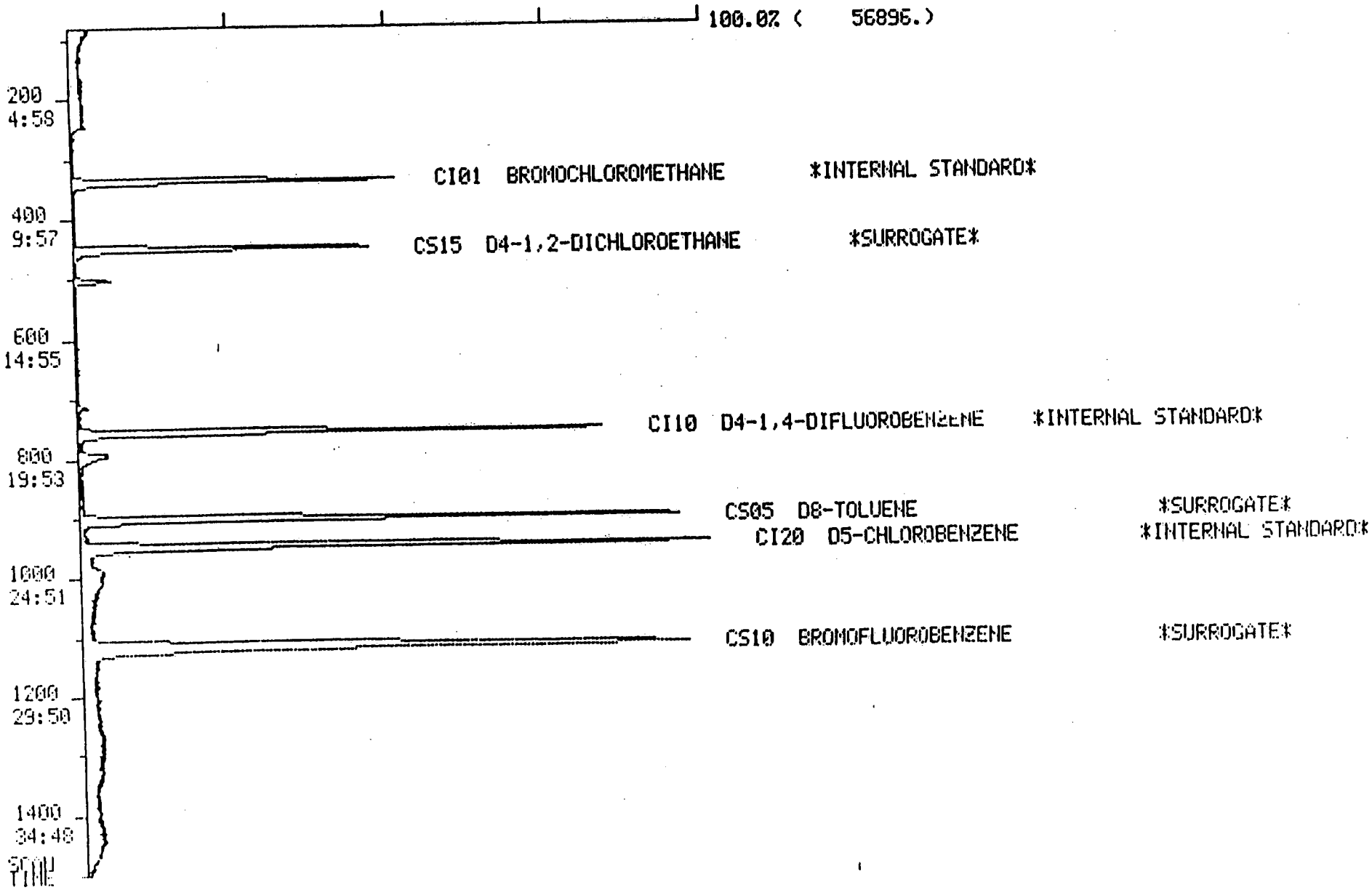
CALI: H6966 #3

SAMPLE: DRILL CUTTINGS
CONDS.: I50H



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RADIAN CORPORATION
SOIL MATRIX
METHOD 8240 - HAZARDOUS SUBSTANCE LIST
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC VOLATILE METHOD BLANK
SAMPLE NO. VBLK 40

ANALYSIS DATE 10/31/9:

COMPOUND (Units of Measure = UG/KG)	RESULT	Q
Acetone	10	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon disulfide	5.0	U
Carbon tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	10	U
Chloroform	5.0	U
Chloromethane	10	U
1,1-Dichloroethane	5.0	U
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	5.0	U
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
trans-1,3-Dichloropropene	5.0	U
cis-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
2-Hexanone	10	U
Methyl ethyl ketone	10	U
4-Methyl-2-pentanone	10	U
Methylene chloride	10	U
Styrene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Tetrachloroethene	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	5.0	U
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl acetate	10	U
Vinyl chloride	10	U
Xylenes (Total)	5.0	U

DILUTION FACTOR = 1.0
% DRY = 100

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC VOLATILE METHOD BLANK
SAMPLE NO. VBLK 40

ANALYSIS DATE 10/31/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Trichlorofluoromethane	5.0	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	5.0	U

DILUTION FACTOR = 1.0
% DRY = 100

RADIAN CORPORATION
SOIL MATRIX
METHOD 8240 - HAZARDOUS SUBSTANCE LIST
VOLATILE ORGANICS

8

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC VOLATILE METHOD BLANK
SAMPLE NO. VBLK 40

ANALYSIS DATE 10/31/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	110	
1,4-Difluorobenzene	108	
Chlorobenzene-D5	105	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	101	
1,2-Dichloroethane-D4	99	
Toluene-D8	99	-

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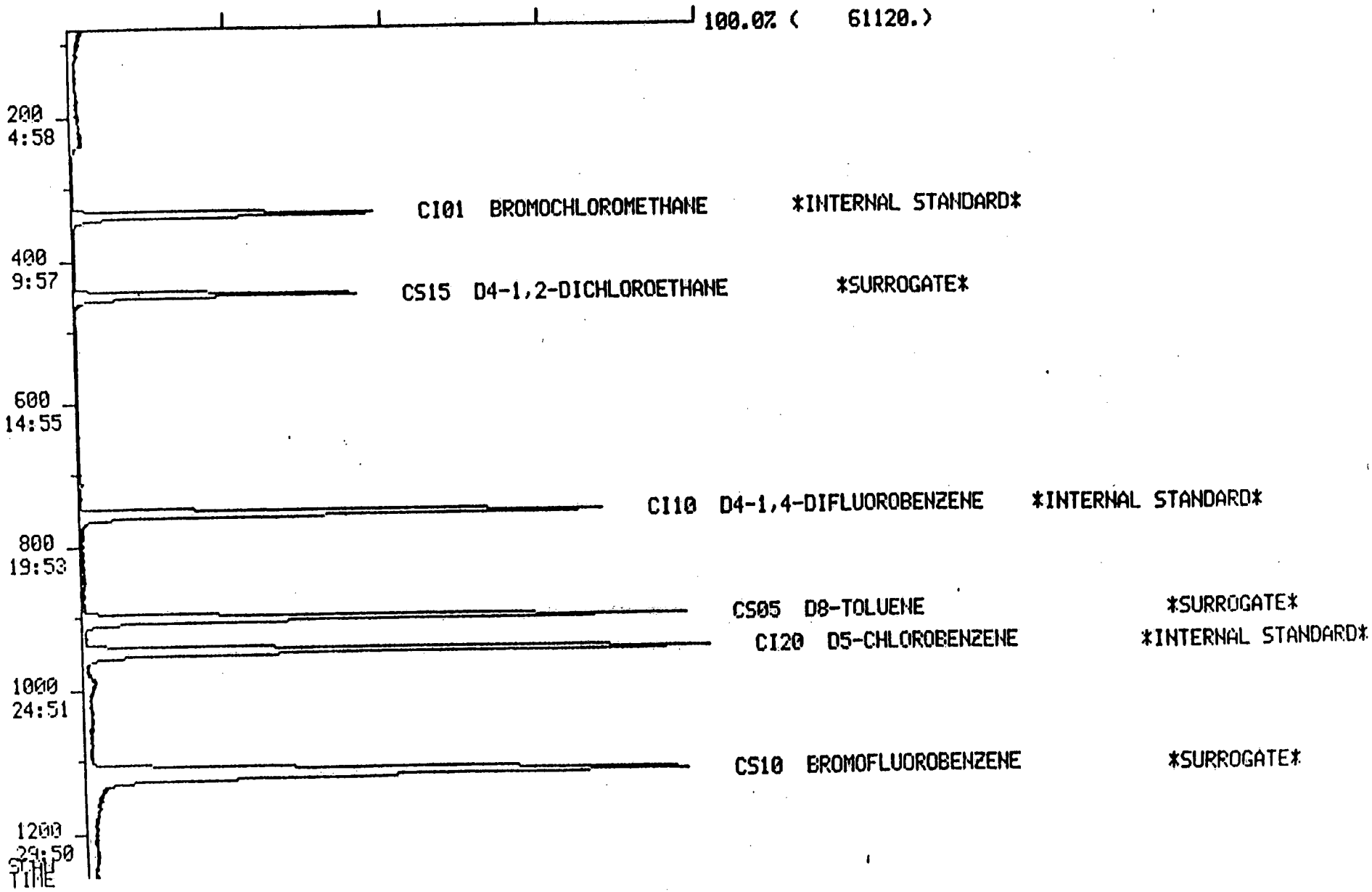
SCANS 80 TO 1259 ACQUIRED: 10/31/91 13:43:00
CALI: H6957 #3

SAMPLE: VBLK40
CONDS.: I50H



RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 8240 - HAZARDOUS SUBSTANCE LIST
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE NO. TRIP BLANK

ANALYSIS DATE 11/01/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acetone	10	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon disulfide	5.0	U
Carbon tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	10	U
Chloroform	5.0	U
Chloromethane	10	U
1,1-Dichloroethane	5.0	U
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	5.0	U
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
trans-1,3-Dichloropropene	5.0	U
cis-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
2-Hexanone	10	U
Methyl ethyl ketone	10	U
4-Methyl-2-pentanone	10	U
Methylene chloride	5.0	U
Styrene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Tetrachloroethene	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	5.0	U
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl acetate	10	U
Vinyl chloride	10	U
Xylenes (Total)	5.0	U

DILUTION FACTOR = 1.0

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE NO. TRIP BLANK

ANALYSIS DATE 11/01/9

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Trichlorofluoromethane	5.0	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	5.0	U

DILUTION FACTOR =

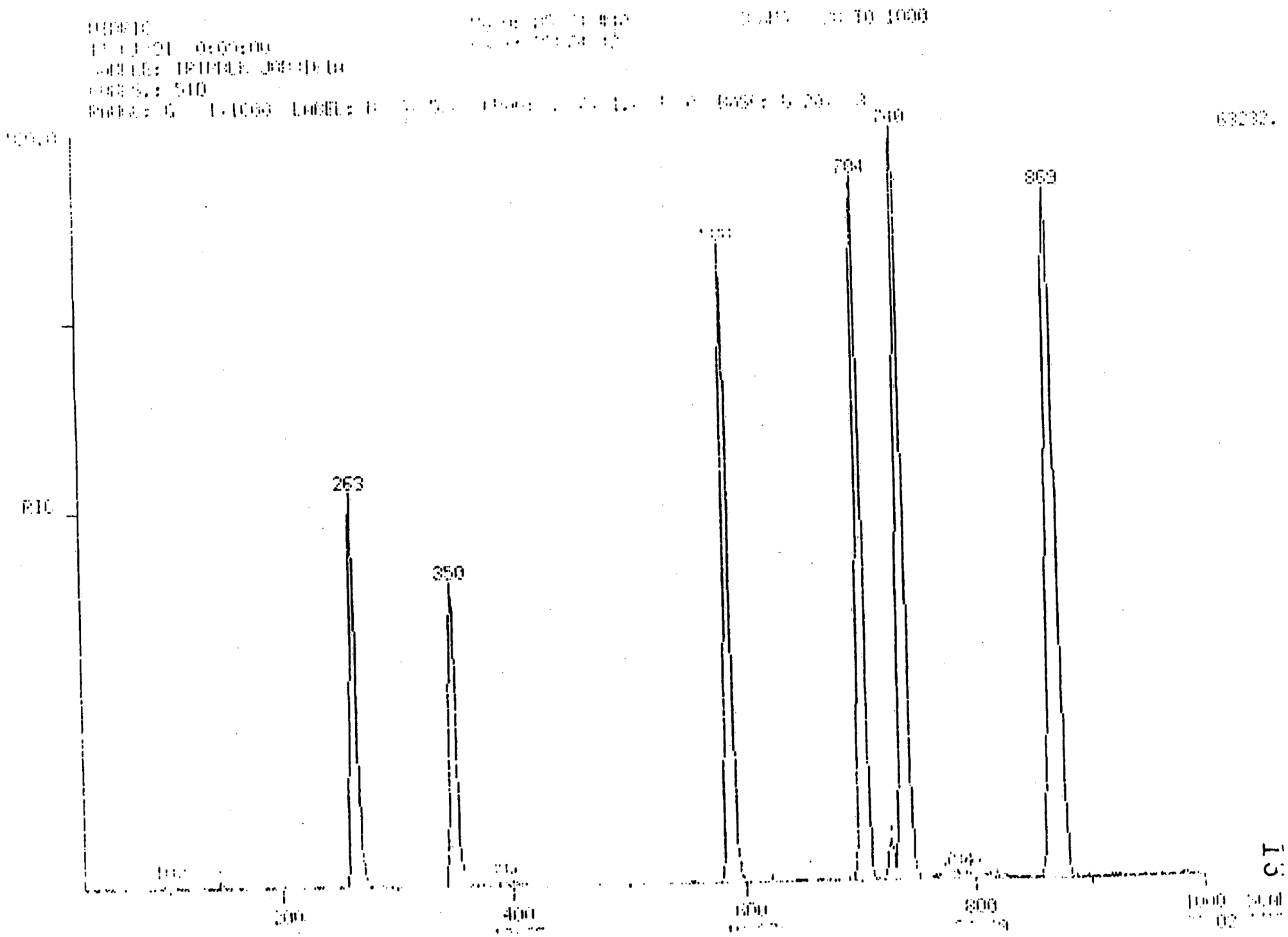
RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 8240 - HAZARDOUS SUBSTANCE LIST
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE NO. TRIP BLANK

ANALYSIS DATE 11/01/9

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	93	
1,4-Difluorobenzene	93	
Chlorobenzene-D5	93	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	106	
1,2-Dichloroethane-D4	100	
Toluene-D8	97	-



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RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 8240 - HAZARDOUS SUBSTANCE LIST
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC VOLATILE METHOD BLANK
SAMPLE NO. VBLK 79

ANALYSIS DATE 11/02/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Acetone	10	U
Benzene	5.0	U
Bromodichloromethane	5.0	U
Bromoform	5.0	U
Bromomethane	10	U
Carbon disulfide	5.0	U
Carbon tetrachloride	5.0	U
Chlorobenzene	5.0	U
Chlorodibromomethane	5.0	U
Chloroethane	10	U
Chloroform	5.0	U
Chloromethane	10	U
1,1-Dichloroethane	5.0	U
1,2-Dichloroethane	5.0	U
1,1-Dichloroethene	5.0	U
trans-1,2-Dichloroethene	5.0	U
1,2-Dichloropropane	5.0	U
trans-1,3-Dichloropropene	5.0	U
cis-1,3-Dichloropropene	5.0	U
Ethylbenzene	5.0	U
2-Hexanone	10	U
Methyl ethyl ketone	10	U
4-Methyl-2-pentanone	10	U
Methylene chloride	10	U
Styrene	5.0	U
1,1,2,2-Tetrachloroethane	5.0	U
Tetrachloroethene	5.0	U
Toluene	5.0	U
1,1,1-Trichloroethane	5.0	U
1,1,2-Trichloroethane	5.0	U
Trichloroethene	5.0	U
Vinyl acetate	5.0	U
Vinyl chloride	10	U
Xylenes (Total)	10	U
	5.0	U

DILUTION FACTOR = 1.0

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 8240 - HAZARDOUS SUBSTANCE LIST
VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC VOLATILE METHOD BLANK
SAMPLE NO. VBLK 79

ANALYSIS DATE 11/02/9

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	96	U
1,4-Difluorobenzene	95	U
Chlorobenzene-D5	94	U
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	103	U
1,2-Dichloroethane-D4	97	U
Toluene-D8	99	U-

RADIAN CORPORATION
ADDITIONAL VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC VOLATILE METHOD BLANK
SAMPLE NO. VBLK 79

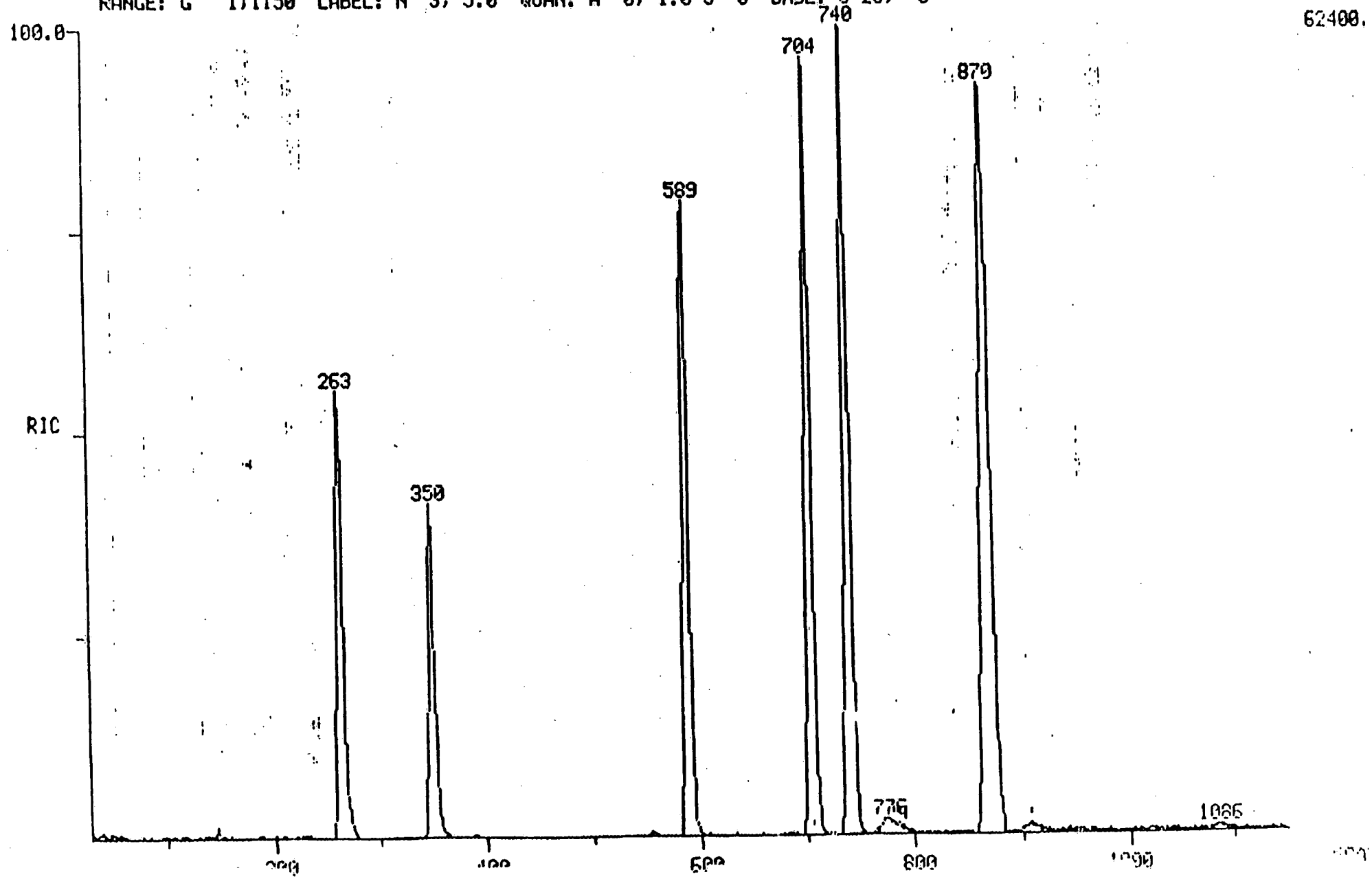
COMPOUND (Units of Measure = UG/L)	RESULT	Q
Trichlorofluoromethane	5.0	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	5.0	U

DILUTION FACTOR = 1.0

MIDRIC
10/31/91 16:01:00
SAMPLE: VBLK79
CONDS.: 51D
RANGE: G 1/1150 LABEL: N 3, 5.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: D5364 #46
CALI: D5364 #2

SCANS 28 TO 1150



RADIAN CORPORATION
SOIL MATRIX
METHOD 8270 - HAZARDOUS SUBSTANCE LIST
SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC DRILL CUTTINGS
SAMPLE NO. CUTTINGS

SAMPLE DATE 10/25/91
EXTRACTION DATE 11/08/91
ANALYSIS DATE 11/12/91

COMPOUND (Units of Measure = UG/KG)	RESULT	Q
Acenaphthylene	350	U
Acenaphthene	350	U
Anthracene	350	U
Benzo(a)anthracene	350	U
Benzo(b)fluoranthene	350	U
Benzo(k)fluoranthene	350	U
Benzo(ghi)perylene	350	U
Benzo(a)pyrene	350	U
Benzoic Acid	1,800	U
Benzyl Alcohol	350	U
Bis(2-chloroethoxy)methane	350	U
Bis(2-chloroethyl)ether	350	U
Bis(2-Chloroisopropyl) ether	350	U
Bis(2-ethylhexyl)phthalate	350	U
4-Bromophenyl phenyl ether	350	U
Butyl benzyl phthalate	350	U
4-Chloroaniline	350	U
p-Chloro-m-cresol	350	U
2-Chloronaphthalene	350	U
2-Chlorophenol	350	U
4-Chlorophenyl phenyl ether	350	U
Chrysene	350	U
Dibenzo(a,h)anthracene	350	U
Dibenzofuran	350	U
1,3-Dichlorobenzene	350	U
1,2-Dichlorobenzene	350	U
1,4-Dichlorobenzene	350	U
3,3'-Dichlorobenzidine	700	U
2,4-Dichlorophenol	350	U
Diethyl phthalate	350	U
2,4-Dimethylphenol	350	U
Dimethyl phthalate	350	U
4,6-Dinitro-o-cresol	1,800	U
2,4-Dinitrophenol	1,800	U
2,4-Dinitrotoluene	350	U
2,6-Dinitrotoluene	350	U
Di-n-butyl phthalate	350	U
Di-n-octyl phthalate	350	U
Fluoranthene	350	U
Fluorene	350	U
Hexachlorobenzene	350	U
Hexachlorobutadiene	350	U
Hexachlorocyclopentadiene	350	U
Hexachloroethane	350	U

DILUTION FACTOR = 1.0
% DRY = 93.5

RADIAN CORPORATION
SOIL MATRIX
METHOD 8270 - HAZARDOUS SUBSTANCE LIST
SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC DRILL CUTTINGS
SAMPLE NO. CUTTINGS

SAMPLE DATE 10/25/9
EXTRACTION DATE 11/08/
ANALYSIS DATE 11/12/-

COMPOUND (Units of Measure = UG/KG)	RESULT	Q
Indeno(1,2,3-cd)pyrene	350	U
Isophorone	350	U
2-Methylnapthalene	350	U
2-Methylphenol	350	U
4-Methylphenol	350	U
Naphthalene	1,800	U
2-Nitroaniline	1,800	U
3-Nitroaniline	1,800	U
4-Nitroaniline	350	U
Nitrobenzene	350	U
2-Nitrophenol	1,800	U
4-Nitrophenol	350	U
N-nitroso-di-n-propylamine	350	U
N-nitrosodiphenylamine	1,800	U
Pentachlorophenol	350	U
Phenanthrene	350	U
Phenol	350	U
Pyrene	350	U
1,2,4-Trichlorobenzene	1,800	U
2,4,5-Trichlorophenol	350	U
2,4,6-Trichlorophenol		

DILUTION FACTOR = 1.0
% DRY = 93.5

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC DRILL CUTTINGS
SAMPLE NO. CUTTINGS

SAMPLE DATE 10/25/9
EXTRACTION DATE 11/08/9
ANALYSIS DATE 11/12/9

COMPOUND (Units of Measure = UG/L)	RESULT	Q
3-Methylphenol	350	U
Pyridine	350	U

DILUTION FACTOR = 1.0
% DRY = 93.5

RADIAN CORPORATION
SOIL MATRIX
METHOD 8270 - HAZARDOUS SUBSTANCE LIST
SEMIVOLATILE ORGANICS

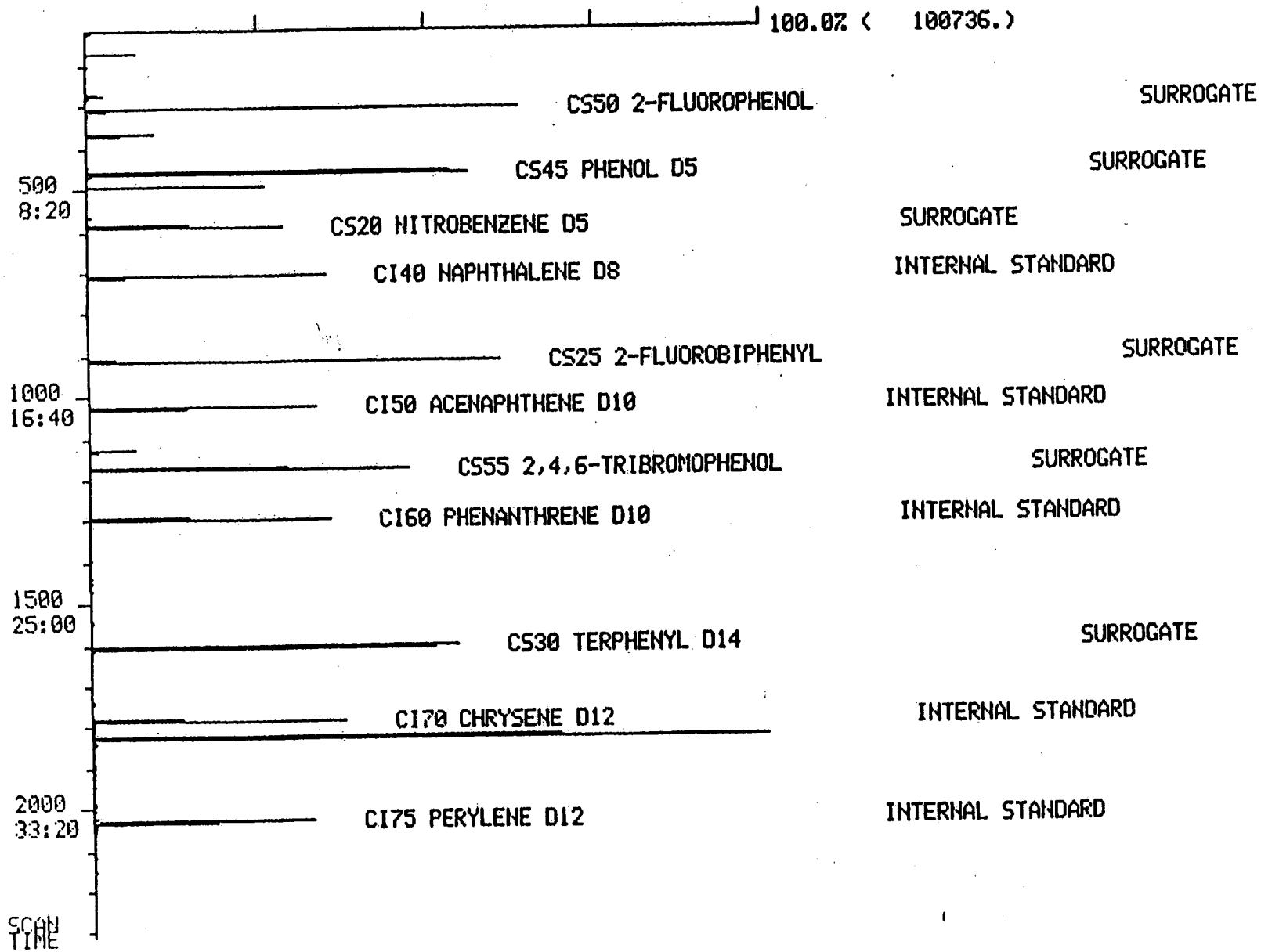
LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC DRILL CUTTINGS
SAMPLE NO. CUTTINGS

SAMPLE DATE 10/25/9
EXTRACTION DATE 11/08/
ANALYSIS DATE 11/12/

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	91	
Naphthalene-D8	81	
Acenaphthene-D10	92	
Phenanthrene-D10	100	
Chrysene-D12	106	
Perylene-D12	102	
Surrogates		
(%Recovery)		-
2-Fluorophenol	105	
Phenol-D5	101	
2,4,6-Tribromophenol	108	
Nitrobenzene-D5	104	
2-Fluorobiphenyl	102	
Terphenyl-D14	82	

DATA FROM FILE: 9225X SCANS 115 TO 2310 ACQUIRED: 11/12/91 18:41:00
CALI: 9225X #3

SAMPLE: DRILLCUTTING JOB 3161 BP3874A
CONDS.: AUTOSAMPLR I50X



RADIAN CORPORATION
SOIL MATRIX
METHOD 8270 - HAZARDOUS SUBSTANCE LIST
SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC SEMIVOLATILE METHOD BLANK
SAMPLE NO. SBLK 86

EXTRACTION DATE 11/08/9
ANALYSIS DATE 11/12/9

COMPOUND (Units of Measure = UG/KG)	RESULT	Q
Acenaphthylene	330	U
Acenaphthene	330	U
Anthracene	330	U
Benzo(a)anthracene	330	U
Benzo(b)fluoranthene	330	U
Benzo(k)fluoranthene	330	U
Benzo(ghi)perylene	330	U
Benzo(a)pyrene	330	U
Benzoic Acid	1,600	U
Benzyl Alcohol	330	U
Bis(2-chloroethoxy)methane	330	U
Bis(2-chloroethyl)ether	330	U
Bis(2-Chloroisopropyl) ether	330	U
Bis(2-ethylhexyl)phthalate	330	U
4-Bromophenyl phenyl ether	330	U
Butyl benzyl phthalate	330	U
4-Chloroaniline	330	U
p-Chloro-m-cresol	330	U
2-Chloronaphthalene	330	U
2-Chlorophenol	330	U
4-Chlorophenyl phenyl ether	330	U
Chrysene	330	U
Dibenzo(a,h)anthracene	330	U
Dibenzofuran	330	U
1,3-Dichlorobenzene	330	U
1,2-Dichlorobenzene	330	U
1,4-Dichlorobenzene	330	U
3,3'-Dichlorobenzidine	660	U
2,4-Dichlorophenol	330	U
Diethyl phthalate	330	U
2,4-Dimethylphenol	330	U
Dimethyl phthalate	330	U
4,6-Dinitro-o-cresol	1,600	U
2,4-Dinitrophenol	1,600	U
2,4-Dinitrotoluene	330	U
2,6-Dinitrotoluene	330	U
Di-n-butyl phthalate	330	U
Di-n-octyl phthalate	330	U
Fluoranthene	330	U
Fluorene	330	U
Hexachlorobenzene	330	U
Hexachlorobutadiene	330	U
Hexachlorocyclopentadiene	330	U
Hexachloroethane	330	U

DILUTION FACTOR = 1.0
% DRY = 100

RADIAN CORPORATION
SOIL MATRIX
METHOD 8270 - HAZARDOUS SUBSTANCE LIST
SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC SEMIVOLATILE METHOD BLANK
SAMPLE NO. SBLK 86

EXTRACTION DATE 11/08/9
ANALYSIS DATE 11/12/9

COMPOUND (Units of Measure = UG/KG)	RESULT	Q
Indeno(1,2,3-cd)pyrene	330	U
Isophorone	330	U
2-Methylnapthalene	330	U
2-Methylphenol	330	U
4-Methylphenol	330	U
Naphthalene	330	U
2-Nitroaniline	1,600	U
3-Nitroaniline	1,600	U
4-Nitroaniline	1,600	U
Nitrobenzene	330	U
2-Nitrophenol	330	U
4-Nitrophenol	1,600	U
N-nitroso-di-n-propylamine	330	U
N-nitrosodiphenylamine	330	U
Pentachlorophenol	1,600	U
Phenanthrene	330	U
Phenol	330	U
Pyrene	330	U
1,2,4-Trichlorobenzene	330	U
2,4,5-Trichlorophenol	1,600	U
2,4,6-Trichlorophenol	330	U

DILUTION FACTOR = 1.0
% DRY = 100

RADIAN CORPORATION
METHOD 8270 - SELECTED SEMIVOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC SEMIVOLATILE METHOD BLANK
SAMPLE NO. SBLK 86

EXTRACTION DATE 11/08/9
ANALYSIS DATE 11/12/9

COMPOUND (Units of Measure = UG/L)	RESULT	Q
3-Methylphenol	350	U
Pyridine	350	U

RADIAN CORPORATION
SOIL MATRIX
METHOD 8270 - HAZARDOUS SUBSTANCE LIST
SEMIVOLATILE ORGANICS

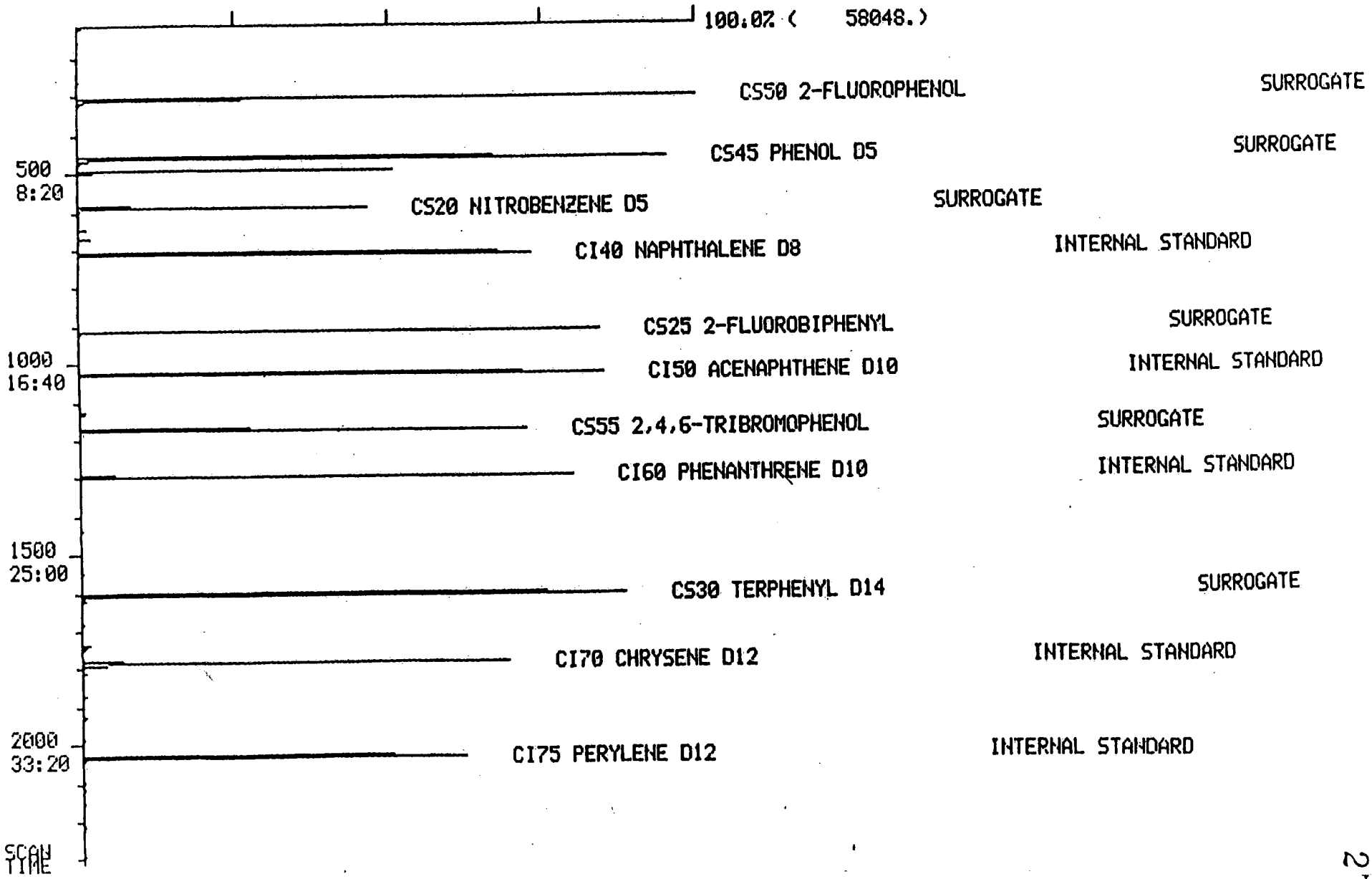
LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC SEMIVOLATILE METHOD BLANK
SAMPLE NO. SBLK 86

EXTRACTION DATE 11/08/91
ANALYSIS DATE 11/12/91

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	126	
Naphthalene-D8	118	
Acenaphthene-D10	123	
Phenanthrene-D10	130	
Chrysene-D12	134	
Perylene-D12	127	
Surrogates		
(%Recovery)		
2-Fluorophenol	64	
Phenol-D5	65	
2,4,6-Tribromophenol	73	
Nitrobenzene-D5	66	
2-Fluorobiphenyl	69	
Terphenyl-D14	53	

DATA FROM FILE: 9226X SCANS 115 TO 2310 ACQUIRED: 11/12/91 19:27:00
CALI: 9226X #3

SAMPLE: SBLK86 JOB 3161 BP3875A
CONDS.: AUTOSAMPLR I50X



RADIAN CORPORATION
SOIL MATRIX
METHOD 8015 - NON-HALOGENATED VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC DRILL CUTTINGS
SAMPLE NO. CUTTINGS

SAMPLE DATE 10/25/9
ANALYSIS DATE 11/07/9

COMPOUND (Units of Measure = UG/KG)	RESULT	Q
Isobutanol	490	U

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC DRILL CUTTINGS
SAMPLE NO. CUTTINGS

SAMPLE DATE 10/25/9
ANALYSIS DATE 11/07/9

COMPOUND	RESULT	Q
Surrogates		
(%Recovery) 2-Hexanone	76	

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 8015 - NON-HALOGENATED VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE NO. TRIP BLANK

ANALYSIS DATE 11/02/91

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Isobutanol	1,000	U

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

ANALYSIS DATE 11/02/9

SAMPLE NO. TRIP BLANK

COMPOUND	RESULT	Q
Surrogates		
(%Recovery) 2-Hexanone	70	

RADIAN CORPORATION
AQUEOUS MATRIX
METHOD 8015 - NON-HALOGENATED VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC METHOD BLANK
SAMPLE NO. MB-1

ANALYSIS DATE 11/02/9

COMPOUND (Units of Measure = UG/L)	RESULT	Q
Isobutanol	1,000	U

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC METHOD BLANK
SAMPLE NO. MB-1

ANALYSIS DATE 11/02/

COMPOUND	RESULT	Q
Surrogates		
(%Recovery) 2-Hexanone	68	

RADIAN CORPORATION
SOIL MATRIX
METHOD 8015 - NON-HALOGENATED VOLATILE ORGANICS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC METHOD BLANK
SAMPLE NO. MB-2

ANALYSIS DATE 11/07/91

COMPOUND (Units of Measure = UG/KG)	RESULT	Q
Isobutanol	400	U

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC METHOD BLANK
SAMPLE NO. MB-2

ANALYSIS DATE 11/07/91

COMPOUND	RESULT	Q
Surrogates		
(%Recovery) 2-Hexanone	92	

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE DATE 10/28/91

SAMPLE NO. PB-3

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/04/91	0.5	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE DATE 10/25/91

SAMPLE NO. PB-4

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/04/91	0.5	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE DATE 10/28/91

SAMPLE NO. PB-5

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/04/91	0.5	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE DATE 10/25/91

SAMPLE NO. PB-6

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/04/91	0.68	

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

36

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE DATE 10/25/91

SAMPLE NO. PB-1

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/04/91	0.5	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE DATE 10/24/91

SAMPLE NO. PB-2

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/04/91	0.5	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC EQUIPMENT BLANK
SAMPLE NO. E.B.

SAMPLE DATE 10/25/91

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/04/91	0.5	U

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC METHOD BLANK
SAMPLE NO. MB-1

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/04/91	0.5	U

RADIAN CORPORATION

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161
DESC DRILL CUTTINGS
SAMPLE NO. CUTTINGS

SAMPLE DATE 10/25/91

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Corrosivity	STD uni	1110	11/15/91	7.9	
Flash Point	°F	1010	11/05/91	200	*
Total Available Cyanide	MG/KG	7.3.2	11/14/91	10	U
Total Available Sulfide	MG/KG	7.3.4.1	11/14/91	10	U

* THE VALUE IS GREATER THAN 200 DEGREES FAHRENHEIT

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE NO. METHOD BLANK

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Available Cyanide	MG/KG	7.3.2	11/14/91	10	U
Total Available Sulfide	MG/KG	7.3.4.1	11/14/91	10	U

QNY91-945

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO.: 246-080-01-50

SITE NAME: KODALUX

SAMPLERS (SIGNATURE): Linda R McNeese

STATION NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	418.1 TRPH	Benzene, Toluene, Ethylbenzene, Xylenes TCL 1,1,2-trichloroethane, Trichloroethene, Tetrachloroethene	Ethylbenzene TCL	Benzene, Toluene, Xylenes	Ignitability, Reactivity, Corrosivity		REMARKS
PB-2	10/24	0915		X	Pilot Borehole 2	1	1						1 L Amber Glass H_2SO_4 pH < 2 4° C cool
Trip Blank					Trip Blank from RECRA	6	✓	✓		✓			40 mL VOA
PB-1	10/25	1245		X	Pilot Borehole 1 (MW-7)	1	1						1 L Amber Glass H_2SO_4 pH ≤ 2 4° C cool
PB-6	10/25	1440		X	Pilot Borehole 6	1	1						1 L Amber Glass H_2SO_4 pH ≤ 2 4° C cool
PB-4	10/25	1515		X	Pilot Borehole 4	1	1						" "
PB-4 Dup	10/25	1520		X	Pilot Borehole 4 (Duplicate	1	1						" "
EB-1	10/25	1430		X	Equipment Blank 1	1	1						"
PB-5	10/28	1000		X	Pilot Borehole 5	1	1						" "
Drill Cuttings	10/25	1000	X		Drill Cuttings 10/25/91	3		✓	✓	✓	✓		1 L Wide Mouth 2 4 oz glass
PB-3	10/28	1030		X	Pilot Borehole 3	1	1						1 L Amber Glass H_2SO_4 pH < 2 4° C cool

RELINQUISHED BY (SIGNATURE)	DATE · TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE · TIME	RECEIVED BY (SIGNATURE)
LM McNeese	10/28/91 1300				
RELINQUISHED BY (SIGNATURE)	DATE · TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE · TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE · TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE · TIME	REMARKS	
		Donald A Breau	10/29/91 0930	28 Day holding time. PO# 13691; Ship Fed Ex, Overnight	

Distribution: Original accompanies shipment; copy to coordinator field files

20436.0

RECRA ENVIRONMENTAL, INC.

Chemical and Environmental Analysis Services

World University Games Buffalo '93
GRAND PATRON
HELPING TO BRING THE WORLD TO BUFFALO

December 10, 1991

Ms. Lynn M. Moody
Radian Corporation
155 Corporate Woods, Suite 100
Rochester, NY 14623

Re: Analytical Results

Dear Ms. Moody:

Please find enclosed revised results concerning the TRPH results of sample PB-4 DUP recently submitted by your firm. The Pertinent Information regarding these analyses is listed below:

Quote #:	NY91-945R
Project Name:	Kodalux-Fairlawn, NJ
Matrix:	Solid Drill Cuttings, Aqueous
Samples Received:	10/29/91
Sample Dates:	10/24,25,28/91

If you have any questions concerning these data, please contact Ms. Donna Bateman, Project Manager, at (716) 691-2600 and refer to the I.D. number listed below. It has been our pleasure to provide Radian Corporation with Environmental Testing Services. We apologize for any inconvenience this may have caused you and we look forward to serving you in the future.

Sincerely,

RECRA ENVIRONMENTAL, INC.

Kenneth C. Malinowski /KPK

Kenneth C. Malinowski, PhD
Vice President

PJV/KCM/dms
Enclosure

I.D. #91-3161
#91-3161A Revised
#2A3811

Amherst, New York 14228-2298 • (716) 691-2600 • FAX (716) 691-3011

RADIAN CORPORATION
AQUEOUS MATRIX
WATER QUALITY TESTING

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3161

SAMPLE DATE 10/25/91

SAMPLE NO. PB-4DUP

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Rec. Petro. Hydrocarbons	mg/l	418.1	11/04/91	0.5	U

20618.0

RECRA ENVIRONMENTAL, INC.

Chemical and Environmental Analysis Services

World University Games Buffalo '93
GRAND PATRON
HELPING TO BRING THE WORLD TO BUFFALO

December 30, 1991

Ms. Lynn M. Moody
Radian Corporation
155 Corporate Woods, Suite 100
Rochester, NY 14623

Re: Analytical Results

Dear Ms. Moody:

Please find enclosed results concerning the analyses of the sample recently submitted by your firm. The Pertinent Information regarding these analyses is listed below:

Quote #:	NY91-945R
P.O. #:	136191
Project Name:	Kodalux-Fairlawn, NJ
Matrix:	TCLP Extract
Sample Received:	10/29/91
Sample Date:	10/25/91

If you have any questions concerning these data, please contact Ms. Donna Bateman, Project Manager, at (716) 691-2600 and refer to the I.D. number listed below. It has been our pleasure to provide Radian Corporation with Environmental Testing Services. We look forward to serving you in the future.

Sincerely,

RECRA ENVIRONMENTAL, INC.

Kenneth C. Malinowski /KPK

Kenneth C. Malinowski, PhD
Vice President

MAT/KCM/dms
Enclosure

I.D. #91-3651
#NY2A3811

20618.1

ANALYTICAL RESULTS

Prepared For

Radian Corporation
155 Corporate Woods, Suite 100
Rochester, New York 14623

Prepared By

Recra Environmental, Inc.
10 Hazelwood Drive, Suite 106
Amherst, New York 14228-2298

METHODOLOGIES

The specific methodologies employed in obtaining the enclosed analytical results are indicated on the specific data table. The method numbers presented refer to the following U.S. Environmental Protection Agency reference.

- U.S. Environmental Protection Agency "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods." Office of Solid Waste and Emergency Response. November 1986, SW-846, Third Edition.

  The Toxicity Characteristic Leaching Procedure was performed in accordance with modified method 1311, 40 CFR, Appendix II to Part 261, June 1990.

COMMENTS

Comments pertain to data on one or all pages of this report.

The enclosed results are reported utilizing data qualifiers (Q) as defined on the attached Inorganic Data Comment Page.

TCLP matrix spike quality control analysis was not performed at the request of Radian Corporation. Therefore, the measured values for sample DRILL CUTTINGS on the enclosed TCLP data have not been corrected for analytical bias as required by the referenced TCLP protocol.

INORGANIC DATA COMMENT PAGE

Laboratory Name RECRA ENVIRONMENTAL, INC.

USEPA Defined Inorganic Data Qualifiers:

B - Indicates a value greater than or equal to the instrument detection limit but less than the contract required detection limit.

U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., 100).

E - Indicates a value estimated or not reported due to the presence of interference.

S - Indicates value determined by Method of Standard Addition.

N - Indicates spike sample recovery is not within control limits.

* - Indicates duplicate analysis is not within control limits.

+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

M - Indicates duplicate injection results exceeded control limits.

W - Post digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

G - The TCLP Matrix Spike recovery was greater than the upper limit of the analytical method.

L - The TCLP Matrix Spike recovery was lower than the lower limit of the analytical method.

RADIAN CORPORATION
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3651
DESC DRILL CUTTINGS
SAMPLE NO. CUTTINGS

SAMPLE DATE 10/25/91

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	12/23/91	5.0	0.005	0.0	U
Total Barium	6010	12/20/91	100.0	1.0	0.0	
Total Cadmium	6010	12/20/91	1.0	0.005	0.0	U
Total Chromium	7190	12/23/91	5.0	0.015	0.0	
Total Lead	7420	12/23/91	5.0	0.06	0.0	U
Total Mercury	7470	12/20/91	0.2	0.0004	0.0	U
Total Selenium	7740	12/23/91	1.0	0.005	0.0	U
Total Silver	7760	12/23/91	5.0	0.01	0.0	U

MEASURED VALUES HAVE NOT BEEN CORRECTED FOR ANALYTICAL BIAS.

RADIAN CORPORATION
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3651

SAMPLE NO. TCLP-BLANK

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	12/23/91	5.0	0.005	0.0	U
Total Barium	6010	12/20/91	100.0	0.03	0.0	U
Total Cadmium	6010	12/20/91	1.0	0.005	0.0	U
Total Chromium	7190	12/23/91	5.0	0.017	0.0	
Total Lead	7420	12/23/91	5.0	0.06	0.0	U
Total Mercury	7470	12/20/91	0.2	0.0004	0.0	U
Total Selenium	7740	12/23/91	1.0	0.005	0.0	U
Total Silver	7760	12/23/91	5.0	0.01	0.0	U

RADIAN CORPORATION
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 91-3651

SAMPLE NO. METHOD BLANK

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	12/23/91	5.0	0.005	0.0	U
Total Barium	6010	12/20/91	100.0	0.03	0.0	U
Total Cadmium	6010	12/20/91	1.0	0.005	0.0	U
Total Chromium	7190	12/23/91	5.0	0.01	0.0	U
Total Lead	7420	12/23/91	5.0	0.06	0.0	U
Total Mercury	7470	12/20/91	0.2	0.0002	0.0	U
Total Selenium	7740	12/23/91	1.0	0.005	0.0	U
Total Silver	7760	12/23/91	5.0	0.01	0.0	U

QNY91-945

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO: 246-080-01-50

SITE NAME: KODALUX

SAMPLERS (SIGNATURE): Linda R McPhee

STATION NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	418.1 TRPH	8240 Trichloroethene, Methylene Chloride, 1,1,2-trichloroethane, 1,2-trichloroethane, Tetrachloroethene, Benzene, Toluene, Ethylbenzene, Xylenes	8270 Semivolatile Organics	8015 Volatiles	Ignitability, Reactivity, Corrosivity		REMARKS
PB-2	10/24	0915		X	Pilot Borehole 2	1	1						1 L Amber Glass H_2SO_4 pH<2 4°C cool
Trip Blank	—	—	—	—	Trip Blank from RECRA	6	✓	✓		✓			40 mL VOA
PB-1	10/25	1245		X	Pilot Borehole 1 (MW-7)	1	1						1 L Amber Glass H_2SO_4 pH<2 4°C cool
PB-6	10/25	1440		X	Pilot Borehole 6	1	1						1 L Amber Glass H_2SO_4 pH<2 4°C cool
PB-4	10/25	1515		X	Pilot Borehole 4	1	1						" "
PB-4 Dup	10/25	1520		X	Pilot Borehole 4 Duplicate	1	1						" "
EB-1	10/25	1430		X	Equipment Blank 1	1	1						"
PB-5	10/28	1000		X	Pilot Borehole 5	1	1						" "
Drill Cuttings	10/25	1600	X	·	Drill Cuttings 10/25/91	3		✓	✓	✓	✓		1 L Wide Mouth 2 4oz. glass
PB-3	10/28	1030		X	Pilot Borehole 3	1	1						1 L Amber Glass H_2SO_4 pH<2 4°C cool

RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)
LM McPhee	10/28/91 1300				
RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE/TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE/TIME	REMARKS: 28 Day holding time PO# 13691; Ship Fed Ex, Overnight	
		Edward A Breau	10/29/91 0930		

Distribution: Original accompanies shipment; copy to coordinating field files

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TAIWAN
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A company of The Hartford Steam Boiler
Inspection and Insurance Co.

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FAX 414-643-2699

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FAX (02) 775-5906

A company of The Hartford Steam Boiler
Inspection and Insurance Co.

Part 4

AIRBORNE EXPRESS

April 24, 1997

Ms. Mary Anne Rosa
Project Manager
Emergency and Remedial Response Division - Region II
U.S. Environmental Protection Agency
290 Broadway, 19th Floor
New York, New York 10007-1866

Re: Reply to Request for Information on Hazardous Substances at the Kodalux Processing Laboratory, Fair Lawn, New Jersey

Dear Ms. Rosa:

This is in response to your February 26, 1997 letter requesting information regarding the Kodalux Processing Laboratory (facility), located in Fair Lawn, New Jersey. Your request was mailed to the facility at Fair Lawn and thereafter forwarded to Eastman Kodak Company ("Kodak") corporate offices in Rochester, New York for my attention and handling. The status of the facility with respect to Kodak ownership is discussed in the accompanying response. The time to respond to this request was extended to April 26, 1997 by Ms. Amelia Wagner, Esq., of your staff.

As stated in Kodak's January 29, 1991 supplemental response to your office's previous request for information regarding handling of hazardous substances at the facility, four petroleum underground storage tanks and a dry well for the fire suppression system have been removed. These activities have been reported to New Jersey Department of Environmental Protection (NJDEP), case nos. 90 06 15 1528 and 90 05 22 1638.

Upon developing the attached response to your request for information, Kodak has concluded that the following reports inappropriately refer to the usage of trichloroethene (TCE) at the Kodalux Processing Laboratory:

Torger N. Dahl, Attorney, Environmental, Health & Safety Legal Staff
Eastman Kodak Company • 343 State Street • Rochester, New York 14650-0217
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FINAL GROUNDWATER INVESTIGATION REPORT
KODALUX PROCESSING LABORATORY
FAIR LAWN, NEW JERSEY

Prepared for:

Mr. Joseph Gabriel
Environmental Technical Services
Health and Environment Laboratories
Eastman Kodak Company
Rochester, New York

Prepared by:

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September 9, 1991

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EXECUTIVE SUMMARY

Radian Corporation was contracted by Eastman Kodak Company to install and sample four monitoring wells (MW-2 through MW-5 as shown in Figure 1) at the Kodalux Processing Laboratory in Fair Lawn, New Jersey. In addition, an existing well (MW-1) was sampled. The wells were completed as bedrock monitoring wells in accordance with New Jersey Department of Environmental Protection (NJDEP) requirements. Installation activities began on March 25 and were completed on March 29, 1991. Sampling activities occurred on April 24, 1991.

The following summarizes the activities and findings of this work to date:

- HNu screening of soils indicated a soil vapor concentration of 0.3 parts per million (ppm) above background in MW-4 from 2.0 to 4.0 feet below grade. No visual signs of contamination were observed in any of the soils.

- In MW-2 a saturated parting was noted in the bedrock from 29.0 to 29.5 feet below grade. Perched water and hydrocarbons believed to be No. 6 fuel oil were encountered in this zone. In addition, HNu readings of 0.8 ppm were measured from cuttings in this zone. The thickness of the fuel oil floating in MW-2 was estimated between 0.5 and 0.75 inches. Below this zone, the underlying aquifer (confined) was encountered at MW-2 at 34.0 to 35.0 feet below grade.

- With the exception of the parting containing fuel oil in the bedrock in MW-2 and the two-foot zone in MW-4 noted above, HNu readings did not exceed background levels during installation of the four monitoring wells.

- Review of data from MW-1 (installed previously) indicates that the perched zone and confined aquifer encountered in MW-2 also exist at this location. Data indicate that the parting containing the oil and water dips northward toward MW-2 from MW-1, and that the hydraulic head in the confined aquifer below is slightly lower at MW-2 than at MW-1.

- The uppermost aquifer in the area of MW-3, and MW-4, and MW-5 appears to be under unconfined conditions.

- Approximately 0.25 inches of fuel oil was observed in the purge water from MW-2 at the time of sampling. In addition, fuel oil droplets were observed in the purge water from MW-1.

- Of the five wells MW-2 showed higher concentrations of petroleum hydrocarbons. Hydrocarbons were also detected in MW-1.

- More extractable organics were detected in MW-2 than the other four wells, although generally at levels just above the method detection limit.

- 1,1,1-Trichloroethane was present in every well with the highest concentration present in MW-2. 1,1,-Dichloroethane was detected in four wells (MW-1, MW-2, MW-3, and MW-4) with the highest concentration occurring in MW-3. MW-3 also contained the highest level of 1,1-dichloroethene, which was found in three wells (MW-2, MW-3, and MW-4). Vinyl chloride also was detected in MW-3. Other volatiles detected in MW-3, MW-1, and/or MW-5, include benzene, toluene, cis-1,2-dichloroethane, and chloroform.

- Formaldehyde was detected in MW-3, MW-4 and MW-5 at levels from 140 μg/L to 2500 μg/L. The concentrations presented here may be low due to the matrix interferences discussed in Section 7.4. In addition cyanide was detected in MW-3 and total chromium in MW-4 and MW-5.

1.0 INTRODUCTION

1.1 Project Description

Radian Corporation has been contracted by Eastman Kodak Company to provide engineering and environmental services at the Kodalux Processing Laboratory (Kodalux) in Fair Lawn, New Jersey. This report discusses the environmental activities conducted at the facility in response to the installation of monitoring wells.

Boring, monitoring well installation, and well development activities for this project were conducted by Summit Drilling Corp., Inc., New Jersey-licensed well drillers. These activities were supervised by a qualified hydrogeologist from Radian Corporation.

1.2 Historical Environmental Activities

In May and June 1990, CA Rich Consultants, Inc., conducted an Underground Storage Tank (UST) closure program. A report detailing the closure program was submitted to the New Jersey Department of Environmental Protection (NJDEP) on August 1, 1990. USTs removed during closure activities included two 20,000-gallon No. 6 heating oil tanks, one 3,000-gallon unleaded gasoline tank, and one 2,000-gallon unleaded gasoline tank. Heating oil was detected in subsurface soil underlying both of the No. 6 heating oil tanks. The NJDEP Hotline was notified of the No. 6 heating oil discharge (May 22, 1990) and the site was assigned Case Number 90 05 22 1638.

In response to the above observations and a June 5, 1990, letter from Mr. Joseph Miller of NJDEP to Mr. Dick Spiegel of Eastman Kodak Company, CA Rich Consultants, Inc., installed one monitoring well (MW-1) adjacent to the former No. 6 heating oil tank locations, and excavated approximately 15 cubic yards of soil from below the former gasoline pump area. A Discharge Investigation and Corrective Action Report (DICAR) dated October 3, 1990, discusses the above activities, and addresses site characterization, soil remediation, and groundwater monitoring.

In September 1990, Radian Corporation conducted a subsurface vapor investigation in specific chemical use and processing areas at the facility. The objective of this investigation was to quantify subsurface vapor concentrations of chemical constituents, and provide information to be used for locating potential monitoring wells.

2.0 MONITORING WELL LOCATIONS

Per the February 21, 1991, meeting between Eastman Kodak Company, NJDEP, and Radian Corporation, it was determined that four additional monitoring wells (MW-2 through MW-5) would be installed at Kodalux to investigate groundwater conditions at the facility. Well locations for MW-2 through MW-5 were agreed upon by the above parties, and correspond with locations MW-7, MW-4, MW-5, and MW-6, respectively, as described in the January 2, 1991, letter from Mr. A. Marc Commandatore of the NJDEP to Mr. Joseph G. Gabriel of Eastman Kodak Company. The well locations were slightly modified in the field, prior to drilling due to the presence of underground utilities and overhead interferences. Final monitoring well locations are described below, and are shown on a site map, presented in Figure 1.

MW-2 Located along the eastern side of the building near the transformer pad (at soil gas probe location #1).

MW-3 Located along the western side of the building (in the vicinity of soil gas probe location #4).

MW-4 Off the western corner of the Phase II portion of the building in the vicinity of the basement sump.

MW-5 Approximately 30 feet north of the northern wall of the Phase II portion of the building, and 71 feet northeast of the western corner of the Phase II portion of the building (as measured along the northern wall).

Coordinates and elevations of the resultant wells were measured by Donald H. Stires Associates, New Jersey-licensed surveyors. Data were tied to New Jersey Geodetic Survey Control and are included on the site map (Figure 1).

3.0 MONITORING WELL INSTALLATION

3.1 Methodology

Four monitoring wells were installed during this investigation. During the drilling of MW-3, groundwater was encountered before the drill bit had advanced 5 feet into competent bedrock. Therefore, the boring (SB-3) was abandoned with a cement-bentonite grout. The new boring location was then off-set approximately 25 feet to the south and completed as MW-3. All borings were completed as bedrock monitoring wells in accordance with NJDEP specifications (Appendix A), and were designed to monitor the uppermost aquifer.

Continuous 2-foot split-spoon samples were collected at MW-2 and MW-4. Samples were collected at 5-foot intervals at MW-3 and MW-5. Borings, 10 inches in diameter, were advanced to each split spoon sample interval using air rotary methods. Spoons were driven and samples collected until refusal at the bedrock surface. Cuttings recovered were screened with an HNu prior to opening the spoons. Upon opening the spoons the soils were classified and inspected for signs of visible contamination.

After bedrock was encountered, the 10-inch diameter borings were advanced 5 feet into competent bedrock using air rotary methods, after which 6-inch diameter steel casings were set. A cement-bentonite grout was emplaced into the annular space from the bottom of the casing to the ground surface. The grout was pumped under pressure through a tremie pipe to ensure positive placement of the grout. Grout was allowed to set overnight. After allowing the grout to set, 6-inch diameter borings were then advanced below the steel casings to a minimum of 10 feet below water table but not greater than 25 feet below the bottom of the casing. Rock cuttings were periodically screened with the HNu and visually inspected. Bedrock stratigraphy was classified based on visual inspection of the cuttings, drilling time, and drilling method responses to lithologic variability.

To protect the wells against vandalism or vehicular traffic, flush-mount manholes were slipped over the casing and anchored 1 foot below grade with grout. The steel casings were fitted with sealed locking caps and locks. A 2-foot by 2-foot by 4-inch thick concrete pad was poured into a flush mount form fitted around the manhole cover.

Efforts were made to reduce the possibility of introducing or carrying-over contamination from one borehole to another via the well bore. Equipment was steam-cleaned prior to and after drilling activities, and at each borehole. Cleaning was performed at a temporary decontamination pad. Decontamination materials, the pad, and personal protective equipment were containerized in a 55-gallon drum upon project completion and the drum was labeled to identify the date filled and the source (i.e., Decon pad and Tyvek®). Soil and rock cuttings were placed in 55-gallon DOT drums upon generation, and the drums were labeled to identify the date filled and the source (i.e., MW-3 soil cuttings).

During all drilling activities, an HNu and Draeger tubes for formaldehyde were used to monitor air quality in the breathing zone of the worker closest to the borehole. Readings were collected at least every half hour.

3.2 Results

HNu screening of the soils indicated no zones of detectable soil vapor concentrations, with the exception of MW-4, where 0.3 parts per million by volume (ppmv) above background was detected from 2.0 to 4.0 feet below grade. No visual signs of contamination were observed in any of the soils.

Unconsolidated overburden encountered consisted of predominately fine-grained to medium-grained sand, containing variable concentrations of silt, clay, gravel, and rock fragments. As a general rule the sands were medium-grained and silty; gravel was fine and consisted of sandstone, granite, and aphanitic rock. Rock fragments were predominantly sandstone from the underlying bedrock, with some granite and aphanitic

rock. A boulder was encountered in MW-4 near the overburden bedrock interface. The only absolute sign of fill material was the observation of cinders from 2.0 to 2.1 feet below grade in MW-4. The majority of the overburden was glacially derived with the upper materials possibly being fill. HNu screening values and soil classifications were recorded with depth, and are presented in the Drilling Logs, Appendix B.

Bedrock was encountered from 9.0 feet (MW-2) to 16.5 feet (SB-3) below grade. Bedrock elevations ranged from 85.07 ft. MSL (MW-2) to 79.03 ft. MSL (SB-3). All bedrock encountered in MW-2, and the upper 7 to 10 feet of bedrock encountered in MW-3, MW-4, and MW-5 consisted of hard, red, medium-grained sandstone. All casings were set within this sandstone.

Bedrock encountered beneath the cased sections consisted predominantly of hard to very hard, red, medium-grained sandstone, with softer, water-bearing sandstone and shale zones noted periodically in MW-3, MW-4, and MW-5 (Appendix B). Bedrock beneath the cased section of MW-2 consisted entirely of hard, red, medium-grained sandstone; however, a 0.5 foot parting in this sandstone was noted from 29.0 to 29.5 feet below grade. Elevated HNu readings (0.8 ppmv) were measured from cuttings recovered from this zone. HNu readings measured from all other rock cuttings were non-detected. In addition, water and a substance believed to be No. 6 fuel oil were observed in cuttings from this zone.

Total depths for completed monitoring wells varied from 35.0 feet (MW-2) to 41.07 feet (MW-3). The base elevation of borings ranged from 59.07 ft. MSL (MW-2) to 54.66 ft. MSL (MW-3). Bedrock lithologies and observations were recorded with depth and are presented in the Drilling Logs, Appendix B. Monitoring well schematics are presented in Appendix C.

Following completion, the wells were surveyed by Donald H. Stires Associates, a professional land surveyor licensed in the State of New Jersey. A copy of each "Monitoring Well Certification Form - B" is included in Appendix D.

A total of 19 drums of material were containerized during well installation, of which 15 drums contain soil and rock cuttings, 3 drums contain grout and water , and 1 drum contains the decon pad and Tyvek® coveralls.

4.0 WELL DEVELOPMENT

4.1 Methodology

Completed wells were allowed to set overnight, after which initial groundwater depth and depth to bottom of well were measured. Approximately 0.5 to 0.75 inches of No. 6 fuel oil were noted on the water surface of MW-2. Due to this fuel oil, MW-2 was not developed. The other three wells (MW-3 - MW-5) were developed to a turbidity-free discharge.

Water was pumped from the wells on March 25, 1991 with a submersible pump at a rate of approximately 7 gallons per minute. A maximum of approximately 20 gallons of water could be drawn from the wells prior to dewatering. The wells were allowed to partially recharge, and pumping was repeated. Well development records are presented in Appendix E. The final depths to groundwater and to bottom of well were measured after the wells were given sufficient time to fully recover. Final measurements were recorded on April 1, 1991.

Development water was containerized in labeled 55-gallon DOT drums. The labels identify date filled and the source (i.e., MW-3 development water). Three drums contain development water.

4.2 Static Water Measurements

Depths to static water from top of well casing in MW-3, MW-4, and MW-5 were 27.35 feet, 25.0 feet, and 23.6 feet, respectively; elevations were 67.95 ft. MSL, 68.69 ft. MSL, and 71.06 ft. MSL. The uppermost aquifer in this area appears to be under unconfined conditions. The static water elevations in all monitoring wells are shown in Figure 1.

Depth to the No. 6 fuel oil surface in MW-2 was 22.7 feet from the top of well casing; elevation was 70.8 ft. MSL. The thickness of the fuel oil floating on the water surface was estimated at approximately 0.5 to 0.75 inches. Depth to static water in MW-1, which was installed earlier, was 20.7 feet; elevation was 73.95 ft. MSL. Further discussion of MW-2 is presented in Section 5.0.

4.3 Groundwater Flow

Based on this investigation, groundwater appears to exist under both confined and unconfined conditions under the facility. In the area of MW-1 and MW-2, the aquifer is under slightly artesian conditions due to a locally confining sandstone bed overlying the saturated zone. This is discussed in Section 5.0. In the vicinity of wells MW-3, MW-4, and MW-5, the aquifer exists under unconfined conditions.

For purposes of establishing flow directions, water level data from wells MW-1 and MW-2 cannot be used with data from the other wells (MW-3, MW-4, and MW-5) due to the apparent confined aquifer conditions. Static head in this vicinity is slightly less at MW-2 than at MW-1. Limited available information in the vicinity of monitoring wells MW-3, MW-4, and MW-5 indicates a west-southwesterly flow trend at an approximate hydraulic gradient of 0.03 ft/ft. Additional information is needed to further define hydrogeologic conditions and groundwater flow direction at the site.

5.0 MONITORING WELL 2 (MW-2)

Review of MW-2 data, field observations, the Drilling Log, and the Monitoring Well Construction Schematic, indicates that a perched zone, containing No. 6 fuel oil and water under unconfined conditions, and a confined aquifer, are penetrated by the well; both are exposed to the open rock borehole. Unsaturated, medium-grained, hard, red sandstone is confining and separating the perched zone above from the confined aquifer below.

Overburden (0 to 9.0 feet) consisted of fine-grained silty sand with varying amounts of clay and gravel. The uppermost 4 feet of bedrock was weathered, medium-grained, red sandstone, underlain by 2 feet of medium-grained, red silty sand. Underlying this weathered zone was medium-grained, hard red sandstone, persisting to the bottom of the boring (Appendix B). The casing was set at 20.4 feet below grade, within this sandstone.

Perched water was first encountered below the bottom of the casing in a rock parting from 29.0 to 29.5 feet below grade. No. 6 fuel oil was also noted in this zone. After this perched zone, No. 6 fuel oil and water were no longer detected as drilling continued 4.5 feet through unsaturated, medium-grained, hard red sandstone. Groundwater was again noted from 34.0 to 35.0 feet, and the boring terminated at 35.0 feet. As noted in Section 4.2, depth to the No. 6 fuel oil surface in MW-2 was 22.7 feet from top of the well casing; elevation was 70.8 feet. The thickness of the fuel oil floating on the water surface was estimated at approximately 0.5 to 0.75 inches.

Review of MW-1 data indicate that the perched zone and confined aquifer extend into this area. Static water level in this well was measured at 20.7 feet from the top of casing; elevation was 73.95 feet. Fuel oil was not noted floating on the water.

The perched zone noted at these wells is slightly deeper in MW-2 than MW-1, suggesting that the bedrock parting containing the oil and water dips toward MW-2 from MW-1. Data available regarding the confined aquifer indicates that static head is slightly less at MW-2 than at MW-1.

6.0 SAMPLING PROCEDURES

6.1 General

This section provides a description of aspects relating to the sampling of the five groundwater monitoringing wells (MW-1 through MW-5). Sampling and analysis were performed per NJDEP letter from A. Marc Commandatore to Joe Gabriel of Kodak, dated January 2, 1991. Monitoring well locations are shown in Figure 1. Groundwater samples were analyzed for volatile organics, base/neutral and acid-extractable compounds, total cyanide, formaldehyde, total petroleum hydrocarbons, silver, chromium, and hexavalent chromium. The following subsections discuss sampling procedures and analytical methods. Per Mr. Commandatore's request, sampling procedures discussed in RCRA Ground-Water Monitoring Technical Enforcement Guidance Document, USEPA, September 1986, were followed.

6.2 Sampling Equipment

The sampling effort required the use of dedicated, non-dedicated, and miscellaneous equipment and reagents. Dedicated equipment was used at only one well. Non-dedicated equipment was used in all wells and required that a strict decontamination regimen be followed between wells. Miscellaneous equipment was used at each well but did not require decontamination as there was no direct contact with the samples. Each type of equipment necessary to complete the sampling is discussed below.

Dedicated Equipment: Each monitoring well had a dedicated Teflon® bailer and Teflon®-coated stainless steel line to avoid potential cross-contamination of wells. The bailer capacity was approximately 900 ml. In addition, tubing associated with the purge pump was dedicated to each well.

Non-Dedicated Equipment: Non-dedicated equipment included a purge pump and an electronic water level indicator (e-line). The e-line is capable of measuring water levels to 1/20th of a foot.

Miscellaneous Equipment and Reagents: Other equipment and reagents used during the sampling are listed below:

- pH/conductivity/temperature meter, capable of measuring pH from 0.01 to 14.00, conductivity to 20,000 uS, and temperature from -30.0 to 105.0°C;
- 200 ml wide mouth glass bottle;
- Rinse bottles for Alconox®, water, and acetone rinses;
- 10 % Nitric Acid;
- Acetone;
- Sample labels;
- Clear tape (to protect sample labels);
- Ice for sample preservation;
- Chemicals for sample preservation;
- Distilled water;
- Teflon® tape (for wrapping the tops of filled sample vials);
- Calibration buffers for pH meter;
- Calibration solution for conductivity meter;
- Safety equipment (detailed in health and safety plan); and
- Sample containers.

6.3 Sampling Procedures

The sampling procedures presented below represent the minimum requirements to ensure the collection of acceptable groundwater samples. The following sampling procedures are listed in the order in which they were performed in the field.

Static water level measurement: An e-line was used to determine the static water level in each of the wells before purging and sampling was performed. Markings on the tape allowed for measurement to 1/20th of a foot. The tape was decontaminated before advancing to the next well.

Well Purging: Standing water from the well casing was removed before samples were collected. Purging was performed as follows: Teflon® tubing was placed into each well with the open end just above the well bottom. For wells with relatively rapid recharge rates, a minimum of three well volumes was removed. Wells with low recovery rates were purged once to near dryness. Evacuation rates were kept below 5 gallons per minute and the well was never pumped completely to dryness. In addition, the pump intake was never placed more than six feet below the static water level in the well.

Due to the presence of fuel oil in MW-1 and MW-2, it was necessary to purge these wells by bailing rather than pumping. Dedicated stainless steel bailers were used for this task. Separate bailers were later used for sampling of these two wells.

A total of 4 drums of water were containerized during well purging.

Temperature, pH, and conductivity: Before and after collection of samples, the temperature, pH, and conductivity probes were placed in a wide-mouthed glass bottle into which a representative sample of well water has been poured. The probes were allowed to equilibrate with the water sample before final readings were taken from the meters. The glass bottle was rinsed with distilled water and a portion of the groundwater sample before use at each well.

Sample Collection: A total of five groundwater samples were collected. The samples were collected at MW-1, MW-2, MW-3, MW-4, and MW-5. The water level within each well had completely recovered (within 2 feet of the pre-purge static water level) before samples were collected. The bailer specific to the well being sampled was unwrapped, tied to a new draw line, and slowly lowered into the well. Turbulence of the water column was avoided to prevent volatilization of organic compounds.

Once the bailer was filled, it was slowly withdrawn from the well. The sample was poured from the top of the bailer into each sample container as appropriate, and into a separate container for field measurements, as previously described.

Trip Blanks: For each analytical parameter, one sample container was filled with Type II reagent grade water in the laboratory, shipped to the site with the empty containers, handled like a sample, and returned to the laboratory for analysis.

Field Blanks: For each analytical parameter, one sample container was filled with Type II reagent grade water by running it through a decontaminated bailer prior to use. The containers were then sealed, handled like a sample, and sent to the laboratory for analysis.

6.4 Decontamination

Dedicated equipment does not require the strict decontamination regimen that is applied to non-dedicated equipment. At the conclusion of sampling activities, dedicated bailers were washed with low-phosphate soap and water, and then distilled water, before being wrapped in foil and stored.

All non-dedicated equipment was decontaminated immediately after sampling, and before moving on to the next sampling station. This was to prevent cross-contamination of well water samples.

Decontamination Procedures for Non-Dedicated Equipment: The decontamination regimen was performed in the order presented here:

- Non-phosphate soap and water rinse;
- Distilled/deionzed water rinse;
- 10% Nitric acid rinse;
- Distilled/deionized water rinse;
- Acetone rinse (to remove polar organic compounds);
- Total air dry; and
- Final distilled water rinse.

6.5 Analytical Parameters

This section discusses the analytical parameters and methods performed on the monitoring samples at Kodalux in accordance with Marc Commandatore's letter to Joe Gabriel at Kodak dated January 2, 1991, and a telephone discussion between Radian and NJDEP on March 6, 1991.

Radian Corporation (New Jersey Lab ID #82625) in Austin, Texas, performed the following analyses:

- Base neutral and acid extractable compounds, utilizing EPA Method 625, plus the identification and quantification of the 15 highest non-targeted compounds and the total number of peaks;
- Total cyanide, utilizing EPA Method 9012;
- Formaldehyde, utilizing a colorimetric method which is an adaptation of NIOSH Method P&CAM 125 (formaldehyde is determined following reaction with chromotropic acid); and,
- Hydroquinone, utilizing EPA Method 625.

General Testing Laboratories (New Jersey Lab ID #73331) in Rochester, New York, performed the following analyses:

- Volatile organics, utilizing EPA Method 624, including o-, m-, and p-xylenes, plus the identification and quantification of the 15 highest non-targeted compounds and the total number of peaks;
- Total petroleum hydrocarbons, utilizing EPA Method 418.1;
- Silver, utilizing atomic absorption, EPA Method 272.1;
- Chromium, utilizing atomic absorption, EPA Method 218.2; and
- Hexavalent chromium, utilizing atomic absorption, EPA Method 218.4 (24-hour holding time).

One field duplicate, one trip blank, and one field blank were collected for analysis of each of the parameters listed above.

7.0 ANALYTICAL RESULTS

The five monitoring wells shown in Figure 1 were sampled April 24, 1991, at the Kodalux Photoprocessing Laboratory site in Fair Lawn, New Jersey. Samples were sent to two laboratories for analysis. Radian Corporation's Austin, Texas, laboratory received samples for analysis of base/neutral and acid-extractable organic compounds, total cyanide, and formaldehyde. Analysis of volatile organics, total petroleum hydrocarbons, silver, and total and hexavalent chromium was performed by General Testing's laboratory in Rochester, New York. Two laboratories were used in order to meet NJDEP certificaton requirements for each analysis.

The field data collected with the samples are presented below. Also discussed below are the analytical results for these analyses, followed by a brief discussion of the blank and quality control results associated with these samples. Copies of the analytical results are found in Appendix F.

7.1 Field Data

Table 1 presents the field measurement data collected concurrently with the field samples. The field data includes the depth to water, purge start and stop times, total volume purged from the well, well water pH, temperature and conductivity, and a general assessment of the well recovery rate.

7.2 Analytical Results

Table 2 and Table 3 present the results of the organic and inorganic analyses, respectively. Table 2 presents results for only those organic compounds which were detected in any of the monitoring wells. Table 3 presents results for all the inorganic analytes, whether they were detected in the monitoring wells or not. Both tables list the analytical methods used and note which laboratory performed the analysis. Results are also shown in Figure 2.

Any results detected above the method detection limit (MDL) were reported in the Radian laboratory report. Quantitation just above the MDL tends to be less certain than quantitation of higher analyte concentrations. In Tables 2 and 3, results reported by Radian less than five times above the detection limit have been replaced with the symbol "Z," to indicate low levels of the analyte were detected but with less quantitative certainty. The reported values for these low-level results are contained in the individual Radian laboratory report in Appendix F. Results reported by General Testing are those above the Practical Quantitation limit (PQL), a limit chosen above the MDL which takes into account the uncertainty in values between the MDL and PQC. General Testing does not report values between the MDL and PQL. General Testing's Laboratory report is also provided in Appendix F.

Base/Neutral and Acid Extractables: As seen in Table 2, only one analyte on the Method 625 target compound list - bis(2-ethylhexyl)phthalate - was detected at a level above five times the detection limit, at 19 μg/L for MW-2. MW-2 also contained five other Method 625 analytes at levels at or just above the detection limit. These include anthracene, benzo(a)anthracene, naphthalene, phenanthrene, and pyrene. In addition, two other compounds - phenol and bis(2-ethylhexyl)phthalate - were detected in MW-3 and MW-4, respectively, at levels near the detection limit. The presence of bis(2ethylhexyl) phthalate appears to be due to the shipping and handling process, or to laboratory contamination (Section 7.3.).

Up to ten Tentatively Identified Compounds (TICs) were also reported for each sample. The TICs are not included in the calibration of the instrument; results should be considered estimates only. Similarly, since no external calibration is performed for TICs, specific detection limits are not available; the expected range of detection limits for most TICs is 10 to 100 μg/L, depending on the class of the compounds. Several unknown extractable organics were reported for each well, as was an unknown alkoxy alcohol. The concentrations of the unknown extractables were summed and reported as a total number for each well. Oxabicyclo-heptane was detected in MW-3, MW-4, and MW-5, dichlorobenzenamine in MW-3 and MW-4. An unknown form of naphthalene

was detected at 48 μg/L in MW-2. Dichloroidomethane was detected at 4 μg/L in MW-5.

The gas chromatography/mass spectrometry results for each well sample were examined for the presence of hydroquinone. Hydroquinone was not one of the compounds contained in the Method 625 target analyte list, and therefore was not in the external calibration standards; instead, concentrations would have been estimated against an internal standard. However, no hydroquinone was detected in any well sample above the estimated detection limit of 10 μg/L.

Volatiles: 1,1,1-Trichloroethane was present in every well ranging from 3.37 μg/L to 7500 μg/L, with the highest concentration present in MW-2. 1,1-Dichloroethane was detected in four wells, ranging from 6.16 μg/L to 59.5 μg/L, with the highest concentration occurring in MW-3. MW-3 also contained the highest level of 1,1-dichloroethene. This compound was found in MW-3, MW-2 and MW-4 at concentrations ranging from 2.30 μg/L to 136 μg/L. MW-3 contained 57.3 μg/L vinyl chloride. Other compounds detected in MW-3, MW-1, and/or MW-5, include benzene, toluene, cis-1,2-dichloroethene, and chloroform. These compounds were detected at concentrations below 6 μg/L. The presence of chloroform may be explained by laboratory contamination (Section 7.3)

Petroleum Hydrocarbons: Three wells (MW-3, MW-4, and MW-5) did not contain detectable levels of petroleum hydrocarbons, as analyzed by EPA Method 418.1. The amount reported for MW-1 was 470 μg/L. MW-2 contained the highest quantity of petroleum hydrocarbons, with 61,200 μg/L.

Formaldehyde: Formaldehyde was detected in MW-3 at 140 μg/L, in MW-4 at 2500 μg/L, and in MW-5 at 680 μg/L.

Inorganics: As listed in Table 3, the inorganic analytes tested in the monitoring wells included total cyanide, silver, and chromium (total and hexavalent). None of these inorganics were detected in MW-1 or MW-2. MW-3 contained 0.15 mg/L total cyanide. The amount reported for MW-4 was near the detection limit (0.01 mg/L) for total cyanide. Total chromium results reported for MW-4 and MW-5 were 0.0326 mg/L, and 0.0177 mg/L respectively. Neither silver nor hexavalent chromium was detected in any of the wells.

7.3 Blanks

One field blank and one trip blank were collected with the sample set. The field blank results were intended to indicate if contamination occurred during sampling, shipping, and/or handling. Trip blanks indicate whether contamination has occurred due to the shipping and handling phase itself. Method blanks also were analyzed concurrent with each method and indicate if contamination occurred during sample analysis or preparation.

As seen in Table 4, two TICs - an unknown base/neutral and acid-extractable compound (seen at scan 7.0 on the gas chromatograph/mass spectrometer), and an unknown alkoxy alcohol - were detected in all the blanks analyzed by Method 625. Unknown extractables were also found in MW-2 and MW-5 at scan 7.0, and the unknown alkoxy alcohol was detected in four of the five well samples. The fact that these compounds were seen in all the blanks indicates the source of these compounds was most likely related to the analytical method itself, rather than the well water.

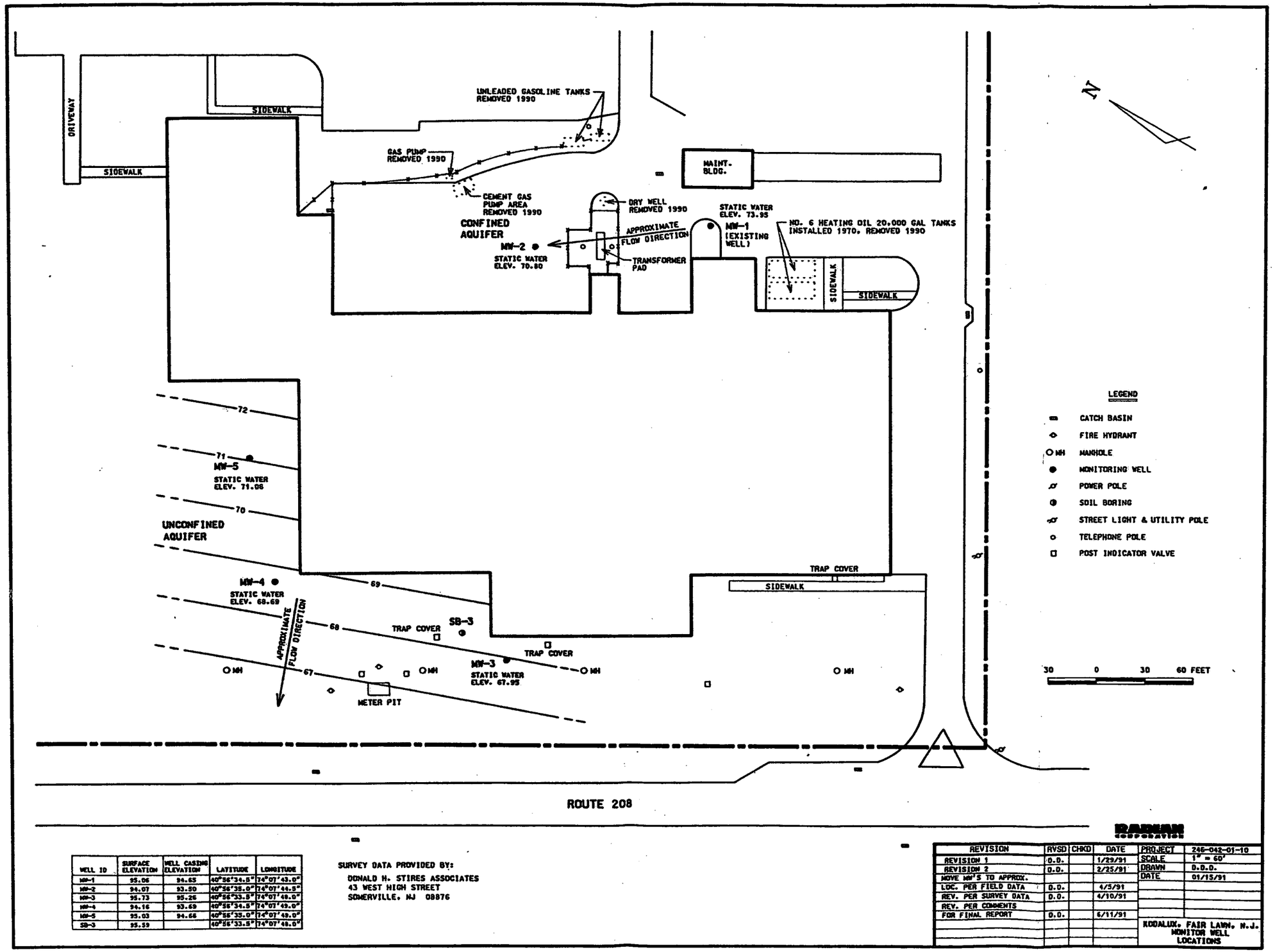
In addition, bis(2-ethylhexyl)phthalate and chloroform appeared once in the trip blank and field blank, respectively. Bis(2-ethylhexyl)phthalate was detected in the trip blank at 7.3 μg/L. This compound, a common laboratory contaminant, also was detected in two well samples. The quantity detected in MW-4 was comparable to the level found in the trip blank, and the amount found in MW-2 was less than three times that in the trip blank. The presence of this compound is likely due to the shipping and handling process, or to laboratory contamination, and not to well water contamination.

Chloroform was detected in the field blank at 4.24 μg/L. Chloroform was also detected in one field sample, MW-1, at 2.22 μg/L. Its presence in the field blank suggests laboratory contamination may be the cause of the one-time occurrence of chloroform in the well samples.

7.4 Quality Control

Surrogate recoveries for the volatile organic analyses all fell within acceptable limits. The majority of surrogate recoveries for the base/neutral and acid-extractables also were acceptable. Some of the extractable organics are footnoted in the laboratory report as having been out of control limits for the continuing calibration check; however, none of these compounds were detected in the well samples, so there is no impact on the data presented in Table 2. No problems were seen with the other quality control measurements for the organics analyses, including the Method 625 recovery check and the Method 624 matrix spike.

Additionally, no problems were seen with the quality control measurements associated with the analysis of silver, chromium, and cyanide. The matrix spike duplicates showed consistently low recovery for formaldehyde; the laboratory report noted the possibility of matrix interference or negative phenol interference from the sample composition. Since phenol was detected in only one well (MW-3), another source of matrix interference inherent in the sample is likely to be the cause of the low recoveries.



WELL ID	SURFACE ELEVATION	WELL CASING ELEVATION	LATITUDE	LONGITUDE
MW-1	95.06	94.65	40°56'34.5"	74°07'43.0"
MW-2	94.07	93.50	40°56'35.0"	74°07'44.5"
MW-3	95.73	95.26	40°56'33.5"	74°07'48.0"
MW-4	94.16	93.69	40°56'34.5"	74°07'49.0"
MW-5	95.03	94.66	40°56'35.0"	74°07'49.0"
SB-3	95.59		40°56'33.5"	74°07'48.0"

SURVEY DATA PROVIDED BY:
DONALD H. STIRES ASSOCIATES
43 WEST HIGH STREET
SOMERVILLE, NJ 08876

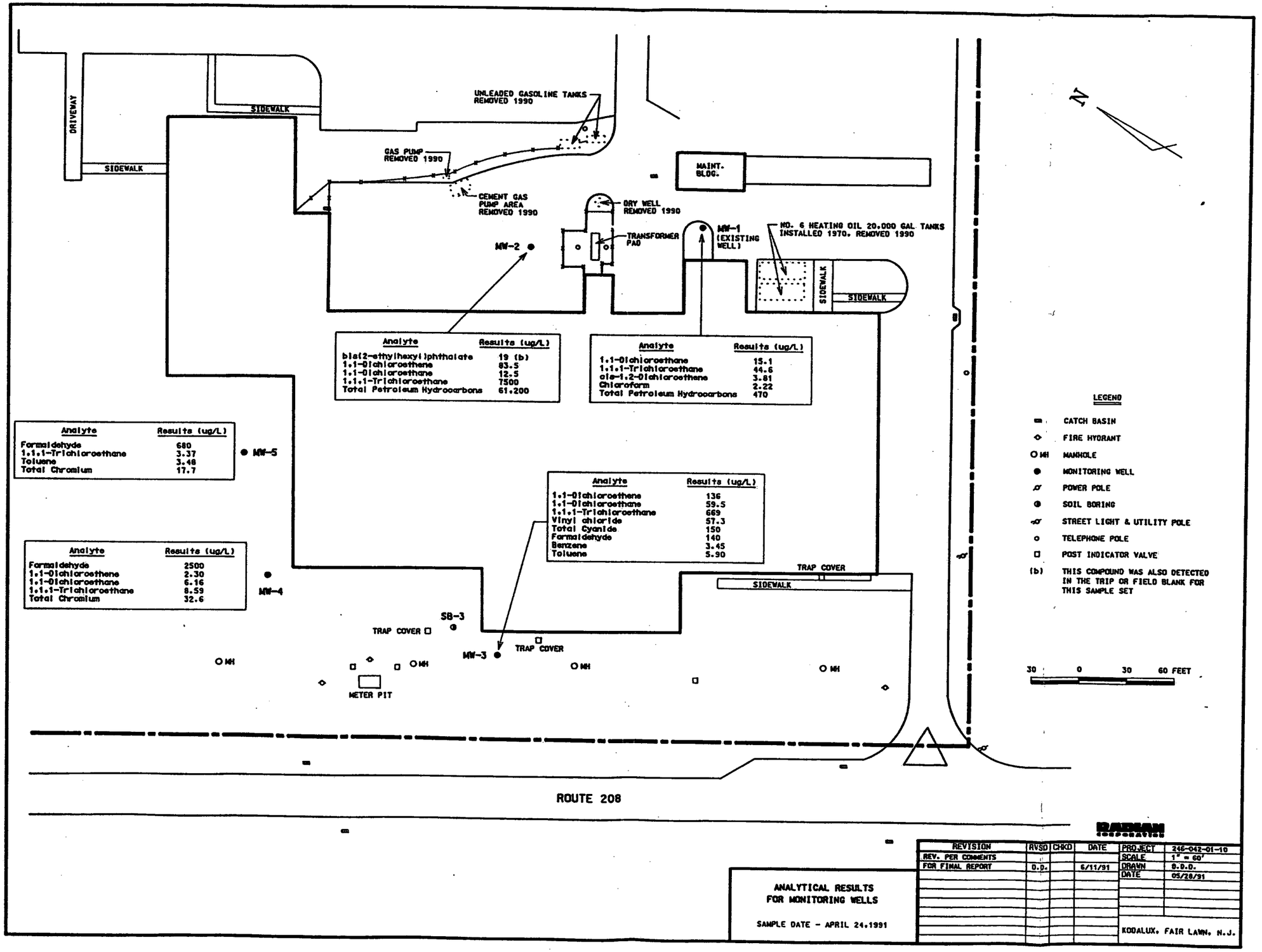
RADIAN CORPORATION

REVISION	RVSD	CHKD	DATE
REVISION 1	D.D.		1/29/91
REVISION 2	D.D.		2/25/91
MOVE MW'S TO APPROX.			
LOC. PER FIELD DATA	D.D.		4/5/91
REV. PER SURVEY DATA	D.D.		4/10/91
REV. PER COMMENTS			
FOR FINAL REPORT	D.D.		6/11/91

PROJECT	246-042-01-10
SCALE	1" = 60'
DRAWN	D.D.D.
DATE	01/15/91

KODALUX, FAIR LAWN, N.J.
MONITOR WELL LOCATIONS

Figure 1. Monitor Well Locations



Analyte	Results (ug/L)
bis(2-ethylhexyl)phthalate	19 (b)
1,1-Dichloroethene	83.5
1,1-Dichloroethane	12.5
1,1,1-Trichloroethane	7500
Total Petroleum Hydrocarbons	61,200

Analyte	Results (ug/L)
1,1-Dichloroethane	15.1
1,1,1-Trichloroethane	44.6
cis-1,2-Dichloroethene	3.81
Chloroform	2.22
Total Petroleum Hydrocarbons	470

Analyte	Results (ug/L)
Formaldehyde	680
1,1,1-Trichloroethane	3.37
Toluene	3.48
Total Chromium	17.7

Analyte	Results (ug/L)
1,1-Dichloroethene	136
1,1-Dichloroethane	59.5
1,1,1-Trichloroethane	669
Vinyl chloride	57.3
Total Cyanide	150
Formaldehyde	140
Benzene	3.45
Toluene	5.90

Analyte	Results (ug/L)
Formaldehyde	2500
1,1-Dichloroethene	2.30
1,1-Dichloroethane	6.16
1,1,1-Trichloroethane	8.59
Total Chromium	32.6

Figure 2. Analytical Results For Monitoring Wells

Table 1

Field Data for Kodalux Monitoring Wells

Well ID	Depth to Water	Purge Start Time	Purge Stop Time	Vol Purge	pH	Temp °C	Cond. (μS)	Recovery Rate
MW-1	20.10 ft	1435	1505	55 gal	6.50	13.2	31	fast
MW-2	23.5 ft	1355	1420	55 gal	6.30	13.5	60	fast
MW-3	28.95 ft	1045	1050	22 gal (dry)	7.73	25.0	112	slow
MW-4	25.30 ft	1125	1129	20 gal (dry)	8.46	13.5	367	slow
MW-5	23.00 ft	1325	1335	12 gal	7.65	13.5	179	slow

Field Notes:

MW-1 water had petroleum products on surface

MW-2 water had petroleum products on surface

MW-3 water appeared clear

MW-4 water appeared clear

MW-5 water appeared cloudy

(dry) purged to near dryness

Table 2

Organic Compounds Detected in Kodalux Monitoring Wells - April 1991

Analyte	Method	Labs	Detection Limit[a]	Results (µg/L)				
				MW-1	MW-2	MW-3	MW-4	MW-5
Base-Neutral and Acid Extractable Organics	EPA 625	R						
Anthracene			1.9	-	Z	-	-	-
Benzo(a)anthracene			1.9	-	Z	-	-	-
bis(2-ethylhexyl)phthalate			1.9	-	19[b]	-	Z[b]	-
Naphthalene			1.9	-	Z	-	-	-
Phenanthrene			1.9	-	Z	-	-	-
Phenol			9.6	-	-	Z	-	-
Pyrene			1.9	-	Z	-	-	-
Tentatively Identified Compounds								
Unknowns (total)			c	51	80	22	97	154
Unknown alkoxy alcohol			c	67[b]	100[b]	-	74[b]	91[b]
Unknown naphthalenes			c	-	48	-	-	-
Oxabicyclo-heptane			c	-	-	4	10	5
Dichloro-benzenamine			c	-	-	14	14	-
Dichloroidomethane			c	-	-	-	-	4
Volatile Organics	EPA 624	GT						
1,1-Dichloroethene			2	-	83.5	136	2.30	-
1,1-Dichloroethane			2	15.1	12.5	59.5	6.16	-
1,1,1-Trichloroethane			2	44.6	7500	669	8.59	3.37
Benzene			2	-	-	3.45	-	-
Toluene			2	-	-	5.90	-	3.48

Table 2

(Continued)

Analyte	Method	Labs	Detection Limit[a]	Results (µg/L)				
				MW-1	MW-2	MW-3	MW-4	MW-5
cis-1,2-Dichloroethene			2	3.81	-	-	-	-
Chloroform			2	2.22	-	-	-	-
Vinyl chloride			2	-	-	57.3	-	-
Formaldehyde	OCC Method	R	9	-	-	140	2500	680
Petroleum Hydrocarbons	EPA 418.1	GT	100	470	61,200	-	-	-

R analysis performed by Radian
GT analysis performed by General Testing
a Detection limits reported by Radian are Method Detection Limits. Those reported by General Testing are Practical Quantitation Limits.
b This compound was also detected in the trip or field blank for this sample set.
c Detection limits for tentatively identified compounds are estimated to range from 10-100 µg/L.
Z This result was less than 5 times the Radian detection limit for this compound; see the individual laboratory report.
- Not detected above the detection limit.

Table 3

Inorganics Results for Kodalux Wells - April 1991

Analyte	Method	Labs	Detection Limit[a]	Results (mg/L)				
				MW-1	MW-2	MW-3	MW-4	MW-5
Total Cyanide	EPA 9012	R	0.010	-	-	0.15	Z	-
Silver	EPA 272.1	GT	0.010	-	-	-	-	-
Total Chromium	EPA 218.2	GT	0.010	-	-	-	0.0326	0.0177
Hexavalent Chromium	EPA 218.4	GT	0.010	-	-	-	-	-

a Detection limits reported by Radian are Method Detection Limits. Those reported by General Testing are Practical Quantitation Limits.
R analysis performed by Radian
GT analysis performed by General Testing
Z This result was less than 5 times the Radian Method Detection Limit for this compound; see the individual laboratory report.
- Not detected above the detection limit

Table 4

Blank Sample Results
(Only analytes detected above detection limits are reported here)

Field Blank	4.24 μg/L Chloroform (GT) 7 μg/L unknown extractable organic (R) 69 μg/L unknown alkoxy alcohol (R)
Trip Blank	7.3 μg/L Bis (2-ethylhexyl) phthalate@ (R) 24 μg/L unknown extractable organic (R) 79 μg/L unknown alkoxy alcohol (R)
Method Blanks	27 μg/L unknown extractable organic (R) 110 μg/L unknown alkoxy alcohol (R)

@ Result is less than 5 times the Radian Method Detection Limit

GT analysis performed by General Testing

R analysis performed by Radian

APPENDIX A

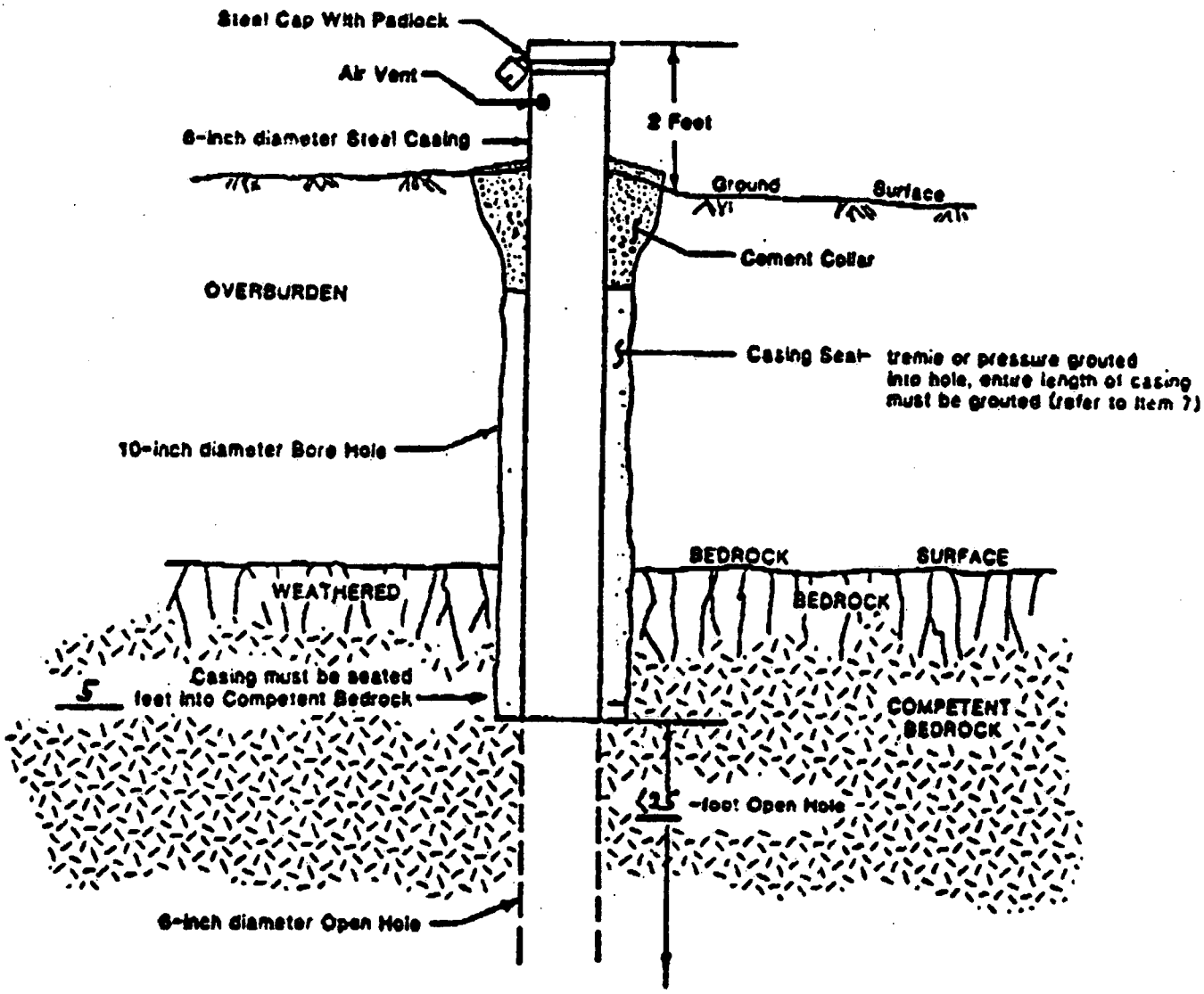
NJDEP BEDROCK MONITORING WELL SPECIFICATIONS

MONITOR WELL SPECIFICATIONS FOR BEDROCK FORMATIONS

SITE NAME : KODALUX PROCESSING LAB

LOCATION : N.J. ROUTE 208, FAIRLAWN, BERGEN COUNTY

DATE : 12/6/90



NOT TO SCALE

NJGS Revised 9-87

BEDROCK MONITORING WELL REQUIREMENTS
Revised 9/87

1. Notification to the NJDEP is required two weeks prior to drilling.

2. State well permits are required for each monitoring well constructed by the driller. The well permit tag must be permanently affixed to each monitoring well.

3. Copies of the site specific well specifications must be maintained at the drilling site by the driller.

4. The monitoring well must be installed by a New Jersey licensed well driller.

5. Monitoring well design must conform with NJAC 7:9-7, 8, and 9.

6. Drill an oversize borehole a minimum of 4 inches greater than the casing diameter through the overburden and bedrock so that the casing can be sealed into competent rock as indicated in the diagram.

7. Acceptable grouting materials are:

   Neat Cement - 6 gallons of water per 94 pound bag of cement.

   Granular Bentonite - 1 gallon of water per 1.5 pounds of bentonite.

   Cement-Bentonite - 8 gallons of water to 5 pounds of bentonite dry mixed per 94 pound bag of cement.

   Cement-Bentonite - 10 gallons of water per 8 pounds of bentonite water-mixed with a 94 pound bag of cement.

   Non-expandable cement - 7.5 gallons of water per 1/2 teaspoon of aluminum hydroxide mixed with 4 pounds of bentonite and 94 pounds of cement.

   Non-expandable cement - 7 gallons of water per 1/2 teaspoon of aluminum hydroxide mixed with 94 pounds of cement (Type I or Type II).

8. Potable water must be used for mixing grouting materials and drilling fluids.

9. Only threaded or welded joints are acceptable as couplings.

10. The driller must maintain an accurate written log of all materials encountered, record construction details for each well, and record the depth of water bearing zones. This information must be submitted to the Bureau of Water Allocation as required by N.J.S.A. 58:4A.

11. Flush mount monitoring wells are acceptable provided they have manholes, locking caps, and seals to prevent leakage of surface water down the well.
(seals)

12. Top of each well casing (excluding cap) must be surveyed to the nearest 0.01 foot by a New Jersey licensed surveyor. The survey point must be marked on each well.

13. Wells must be developed to a turbidity-free discharge.

14. Modifications to designs are allowed only with NJDEP approval.

Additional Requirements (if checked):

Rock Core Samples ( ) _____

Split Spoon Samples (X) EVERY TWO FEET AT WELLS MW-3, MW-5 AND MW-7

Borehole Geophysical Logs ( ) _____

Dedicated Bailer (Sampler) in Well ( ) _____

Other ( ) _____

Notice is Hereby Given of the Following:

Review by the Department of well locations and depths is limited solely to review for compliance with the law and Department rules.

The Department does not review well locations or depths to ascertain the presence of, nor the potential for, damage to any pipeline, cable, or other structures.

The permittee (applicant) is solely responsible for the safety and adequacy of the design and construction of monitoring well(s) required by the Department.

The permittee (applicant) is solely responsible for any harm or damage to person or property which results from the construction or maintenance of any well; this provision is not intended to relieve third parties of any liabilities or responsibilities which are legally theirs.

APPENDIX B

DRILLING LOGS

DRILLING LOG

HOLE NO.	MW-2
SHEET	1 OF 1 SHEETS

1. COMPANY NAME	Kodalux
2. DRILLING SUBCONTRACTOR	Summit Drilling Co., Inc.
3.	Fair Lawn, NJ
4. LOCATION	Bridgewater, NJ
5. NAME OF DRILLER	Steve Yotcoski
6. MANUFACTURER'S DESIGNATION OF DRILL	Mobile 80
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Mobile 80 10" OD drill bit 2" OD 24" split spoon sampler 6" OD drill bit
8. HOLE LOCATION	NJ GEODETIC SURVEY CONTROL LAT. 40°56'35.0"; LONG. 74° 07'44.5"
9. SURFACE ELEVATION	NJ GEODETIC SURVEY CONTROL 94.07
10. DATE STARTED	3/25/91
11. DATE COMPLETED	3/28/91
12. OVERBURDEN THICKNESS	9.0'
15. DEPTH GROUNDWATER ENCOUNTERED	Possible perched zone at 29 - 29.5' Water at 34 - 35'
13. DEPTH DRILLED INTO ROCK	26.0'
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	Static water level at 22.7' below top of casing (4/1/91)
14. TOTAL DEPTH OF HOLE	35.0'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	—

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		✓		

ELEV.	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
94.07 Top		Black top and stone			
		Fine grain, red, silty sand with clay	HNu = ND	6, 6, 12, 25	Medium dense
	5	No recovery		30-50/1" Air Rotary	
		Fine grain, red, silty sand with fine gravel	HNu = ND	21, 15, 27, 27	Dense
85.07 Bedrock	10		HNu = ND	30-50/2" Air Rotary	
		Weathered, medium grain, red sandstone	HNu = ND	50/2" Air Rotary	Refusal at 9'2"
	15	Medium grain, red, silty sand	HNu = ND	5, 9, 14, 50/0"	Refusal at 14.5'
		Medium grain, hard, red sandstone		Air Rotary	Dry
	20				20'4" casing set
	25				
	30		HNu = 0.8 ppm		29-29.5' rock parting with no. 6 fuel oil and water Dry
59.07 Bottom	35				34-35' water
		Bottom of hole at 35.0'			
	40				

DRILLING LOG

HOLE NO.	SB-3
SHEET	1 OF 1 SHEETS

1. COMPANY NAME	Kodalux
2. DRILLING SUBCONTRACTOR	Summit Drilling Co., Inc.
3.	Fair Lawn, NJ
4. LOCATION	Bridgewater, NJ
5. NAME OF DRILLER	DJ
6. MANUFACTURER'S DESIGNATION OF DRILL	Mobile 80
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Mobile 80 10" OD drill bit 2" OD 24" split spoon sampler 6" OD drill bit
8. HOLE LOCATION	NJ GEODETIC SURVEY CONTROL LAT. 40°56'33.5"; LONG. 74° 07'48.0"
9. SURFACE ELEVATION	NJ GEODETIC SURVEY CONTROL 95.59
10. DATE STARTED	3/25/91
11. DATE COMPLETED	3/26/91
12. OVERBURDEN THICKNESS	16.5'
13. DEPTH DRILLED INTO ROCK	11.0'
14. TOTAL DEPTH OF HOLE	27.5'
15. DEPTH GROUNDWATER ENCOUNTERED	27' below grade
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	———
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	———

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
	cement-bentonite grout			

ELEV.	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
95.59 Top		Top soil Fine grain, red silty sand, with clay and fine gravel	HNu = ND	4, 7, 7, 12	Medium dense
	5	Fine grain, red brn. silty sand, with fine gravel and medium grain, thinly laminated, very soft red sandstone fragments		Air Rotary	
			HNu = ND	2, 12, 25, 35	Dense
	10	Medium grain, red brn. silty sand, with fine to medium grain gravel		Air Rotary	
			HNu = ND	No record	
	15	Medium grain, red silty sand, with medium grain, hard, red sandstone fragments		Air Rotary	
			HNu = ND	9, 17, 31, 50/0"	Dense, refusal at 16.5'
79.09 Bedrock	20	Medium grain, hard, red sandstone			
		Extremely soft, weathered sandstone 20.5' - 22.5'			
	25	Medium grain, hard, red sandstone			27' water
68.09 Bottom	30	Bottom of hole at 27.5' below grade			
	35				
	40				

DRILLING LOG

HOLE NO.	MW-3
SHEET	1 OF 1 SHEETS
1. COMPANY NAME	Kodalux
2. DRILLING SUBCONTRACTOR	Summit Drilling Co., Inc.
3.	Fair Lawn, NJ
4. LOCATION	Bridgewater, NJ
5. NAME OF DRILLER	DJ
6. MANUFACTURER'S DESIGNATION OF DRILL	Mobile 80
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Mobile 80; 10" OD drill bit; 2" OD 24" split spoon sampler; 6" OD drill bit
8. HOLE LOCATION	NJ GEODETIC SURVEY CONTROL LAT 40°56'33.5"; LONG. 74°07'48.0"
9. SURFACE ELEVATION	NJ GEODETIC SURVEY CONTROL 95.73
10. DATE STARTED	3/26/91
11. DATE COMPLETED	3/27/91
12. OVERBURDEN THICKNESS	16.0'
13. DEPTH DRILLED INTO ROCK	25.07'
14. TOTAL DEPTH OF HOLE	41.07'
15. DEPTH GROUNDWATER ENCOUNTERED	27' below grade (possible water), 40' below grade
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	26.05' below top of casing 22 hours after completion, before development
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	Static water level at 27.35' below top of casing (4/1/91)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		✓		

ELEV.	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
95.73 Top		Top soil Fine grain, red silty sand, with clay and fine gravel	HNu = ND	4, 7, 7, 12	Medium dense
	5	Fine grain, red brn. silty sand, with fine gravel and medium grain, thinly laminated, very soft red sandstone fragments		Air Rotary	
			HNu = ND	2, 12, 25, 35	Dense
	10	Medium grain, red brn. silty sand, with fine to medium grain gravel		Air Rotary	
			HNu = ND	No record	
79.73 Bedrock	15	Medium grain, red silty sand, with medium grain, hard, red sandstone fragments		Air Rotary	
			HNu = ND	9, 17, 31, 50/0"	Dense, refusal at 16.0'
	20	Medium grain, hard, red sandstone			22.0' casing set
	25	Medium grain, very hard, red sandstone			
		Friable red shale			27' possible water
	30	Medium grain, hard, red sandstone with soft 1" sandstone lenses at 32'			
	35				
		Medium grain, soft, red sandstone			
	40				40' water
54.66 Bottom		Bottom of hole at 41.07'			

DRILLING LOG

HOLE NO.	MW-4
SHEET	1 OF 1 SHEETS

1. COMPANY NAME	Kodalux
2. DRILLING SUBCONTRACTOR	Summit Drilling Co., Inc.
3.	Fair Lawn, NJ
4. LOCATION	Bridgewater, NJ
5. NAME OF DRILLER	Steve Yotcoski
6. MANUFACTURER'S DESIGNATION OF DRILL	Mobile 80
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Mobile 80 10" OD drill bit 2" OD 24" split spoon sampler 6" OD drill bit
8. HOLE LOCATION	NJ GEODETIC SURVEY CONTROL LAT 40°56'34.5"; LONG. 74°07'49.0"
9. SURFACE ELEVATION	NJ GEODETIC SURVEY CONTROL 94.16
10. DATE STARTED	3/27/91
11. DATE COMPLETED	3/28/91
12. OVERBURDEN THICKNESS	13.0'
13. DEPTH DRILLED INTO ROCK	24.27'
14. TOTAL DEPTH OF HOLE	37.27'
15. DEPTH GROUNDWATER ENCOUNTERED	23' below grade (possible water), 26.5' below grade
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	24.75' below top of casing 24 hrs. after completion, before development
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	Static water level 25.0' below top of casing (4/1/91)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		✓		

ELEV.	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
94.16 Top		Top soil Medium grain, red, silty sand	HNu = ND	2, 12, 14, 11	Medium dense
		Cinders (1") Fine grain, red, silty sand with clay	HNu = 0.3 ppm	5, 5, 7, 8	Medium dense
	5	Fine to medium grain sand with silt; medium grain, thinly laminated, very soft, red sandstone fragments	HNu = ND	5, 7, 9, 19	Medium dense
			HNu = ND	20, 22, 33, 35	Very dense
			HNu = ND	25, 27, 20, 28	Dense
	10	Medium grain red sand 10.3' -12.0' extremely hard, aphanitic boulder	HNu = ND	22, 50/2" Air Rotary	
81.16 Bedrock		Fine grain, red sand with silt and granite, aphanitic and sandstone rock fragments	HNu = ND	9, 50, 50/0"	
	15	Medium grain, hard, red sandstone		Air Rotary	
	20				21' casing set
		Medium grain, soft, red sandstone 23.0' - 23.5'			23' possible water
	25	Medium grain, hard, red sandstone			
		Medium grain, soft, red sandstone 26.5' - 27.0'			26.5' water
	30	Medium grain, very hard, red sandstone			
	35				
56.89 Bottom		Bottom of hole at 37.27'			
	40				

DRILLING LOG

HOLE NO.	MW-5
SHEET	1 OF 1 SHEETS

1. COMPANY NAME	Kodalux
2. DRILLING SUBCONTRACTOR	Summit Drilling Co., Inc.
3.	Fair Lawn, NJ
4. LOCATION	Bridgewater, NJ
5. NAME OF DRILLER	DJ
6. MANUFACTURER'S DESIGNATION OF DRILL	Mobile 80
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	Mobile 80 10" OD drill bit 2" OD 24" split spoon sampler 6" OD drill bit
8. HOLE LOCATION	NJ GEODETIC SURVEY CONTROL LAT. 46°53'35.0"; LONG. 74°07"49.0"
9. SURFACE ELEVATION	NJ GEODETIC SURVEY CONTROL 95.03
10. DATE STARTED	3/27/91
11. DATE COMPLETED	3/28/91
12. OVERBURDEN THICKNESS	16.0'
13. DEPTH DRILLED INTO ROCK	20.97'
14. TOTAL DEPTH OF HOLE	36.97'
15. DEPTH GROUNDWATER ENCOUNTERED	25.5' below grade (possible water), 32' below grade
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	23.55' below top of casing 25 hours after completion, before development
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	23.6' below top of casing (4/1/91)

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
None	NA	NA	None

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
None	NA	NA	NA	NA	NA	NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		✓		

ELEV.	DEPTH	DESCRIPTION OF MATERIALS	SOIL SCREENING RESULTS	BLOW COUNTS	REMARKS
95.03 Top		Fine to medium grain, red sand with silt and fine gravel, and with aphanitic and sandstone fragments	HNu = ND	No record	
				Air Rotary	
	5	Fine to medium grain, red sand with silt and fine gravel, and with quartz and sandstone fragments	HNu = ND	20, 50/3" Air Rotary	
				Air Rotary	
	10	Fine to medium grain, red sand with silt and fine gravel, and with quartz, sandstone and aphanitic fragments	HNu = ND	12, 14, 16, 20	Medium dense
				Air Rotary	
	15	Fine to medium grain, red sand with silt and fine gravel, and with quartz, sandstone and aphanitic fragments	HNu = ND	10, 22, 50/0"	
79.03 Bedrock		Medium grain, hard, red sandstone			
	20				21' casing set
		Soft shale 23.0' - 23.5'			
	25	Medium grain, hard, red sandstone			25.5' possible water
		Soft shale 25.5' - 26.0'			
		Medium grain, very hard, red sandstone			
	30				32' water
		Medium grain, soft, red sandstone			
	35	Medium grain, hard, red sandstone			
58.06 Bottom		Bottom of hole at 36.97'			
	40				

APPENDIX C

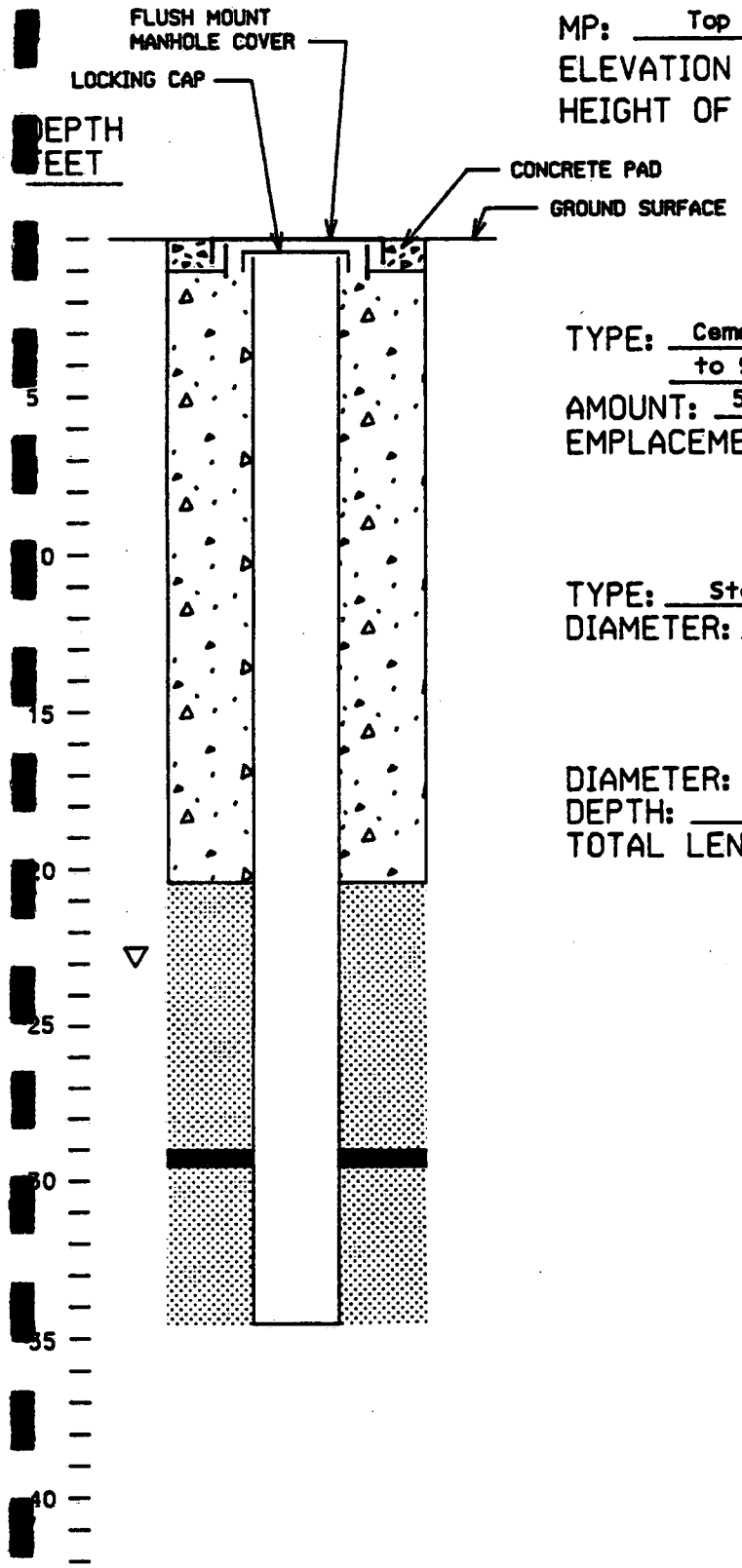
MONITORING WELL SCHEMATICS

RADIAN CORPORATION

MONITOR WELL CONSTRUCTION SCHEMATIC

PROJECT: Kodalux, Fair Lawn, NJ
DRILLING CO.: Summit Drilling Co., Inc.
SUPERVISED BY: LMM, Radian Corporation
DRILLING METHOD: Air Rotary
DATE COMPLETED: 3/28/91

WELL ID: MW-2
COORDINATES: LAT. 40°56'35.0"; LONG 74°07'44.5"
AQUIFER: Uppermost
DEPTH TO WATER FROM MEASURING POINT (MP): 22.7' (4/1/91)



MP: Top of casing
ELEVATION OF MP: 93.50
HEIGHT OF MP RELATIVE TO GROUND LEVEL: -0.57'

GROUT

TYPE: Cement-bentonite (8 gal. water to 5 lb. bentonite to 94 lb. Portland cement)
AMOUNT: 5 - 94 lb. bags
EMPLACEMENT METHOD: Tremie pipe

RISER PIPE

TYPE: Steel (20' pipe)
DIAMETER: 6-inch

BOREHOLE

DIAMETER: 10" cased; 6" open rock
DEPTH: 34.43' below MP
TOTAL LENGTH OPEN ROCK: 14.43'

LEGEND

- PARTING WITH #6 FUEL OIL
- SANDSTONE
- SHALE
- STATIC WATER LEVEL

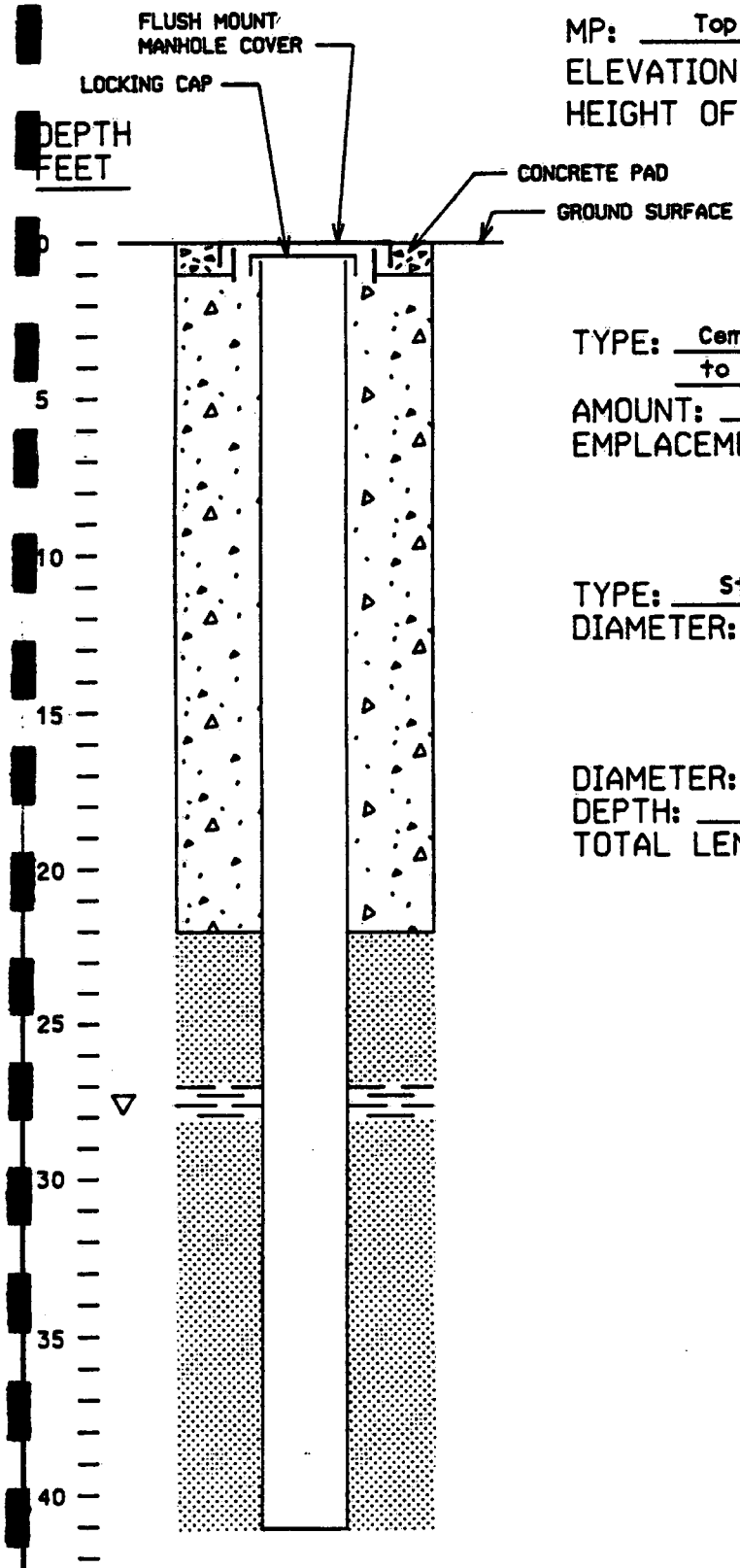
RADIAN CORPORATION

MONITOR WELL CONSTRUCTION SCHEMATIC

PROJECT: Kodalux, Fair Lawn, NJ
DRILLING CO.: Summit Drilling Co., Inc.
SUPERVISED BY: LMM, Radian Corporation
DRILLING METHOD: Air Rotary
DATE COMPLETED: 3/27/91

WELL ID: MW-3
COORDINATES: LAT. 40°56'33.5"; LONG 74°07'48.0"
AQUIFER: Uppermost
DEPTH TO WATER FROM MEASURING POINT (MP): 27.35' (4/1/91)

MP: Top of casing
ELEVATION OF MP: 95.26
HEIGHT OF MP RELATIVE TO GROUND LEVEL: -0.47'



GROUT

TYPE: Cement-bentonite (8 gal. water to 5 lb. bentonite to 94 lb. Portland cement)
AMOUNT: 6 - 94 lb. bags
EMPLACEMENT METHOD: Tremie pipe

RISER PIPE

TYPE: Steel (21.5' PIPE)
DIAMETER: 6-inch

BOREHOLE

DIAMETER: 10" cased; 6" open rock
DEPTH: 40.60' below MP
TOTAL LENGTH OPEN ROCK: 19.07'

LEGEND

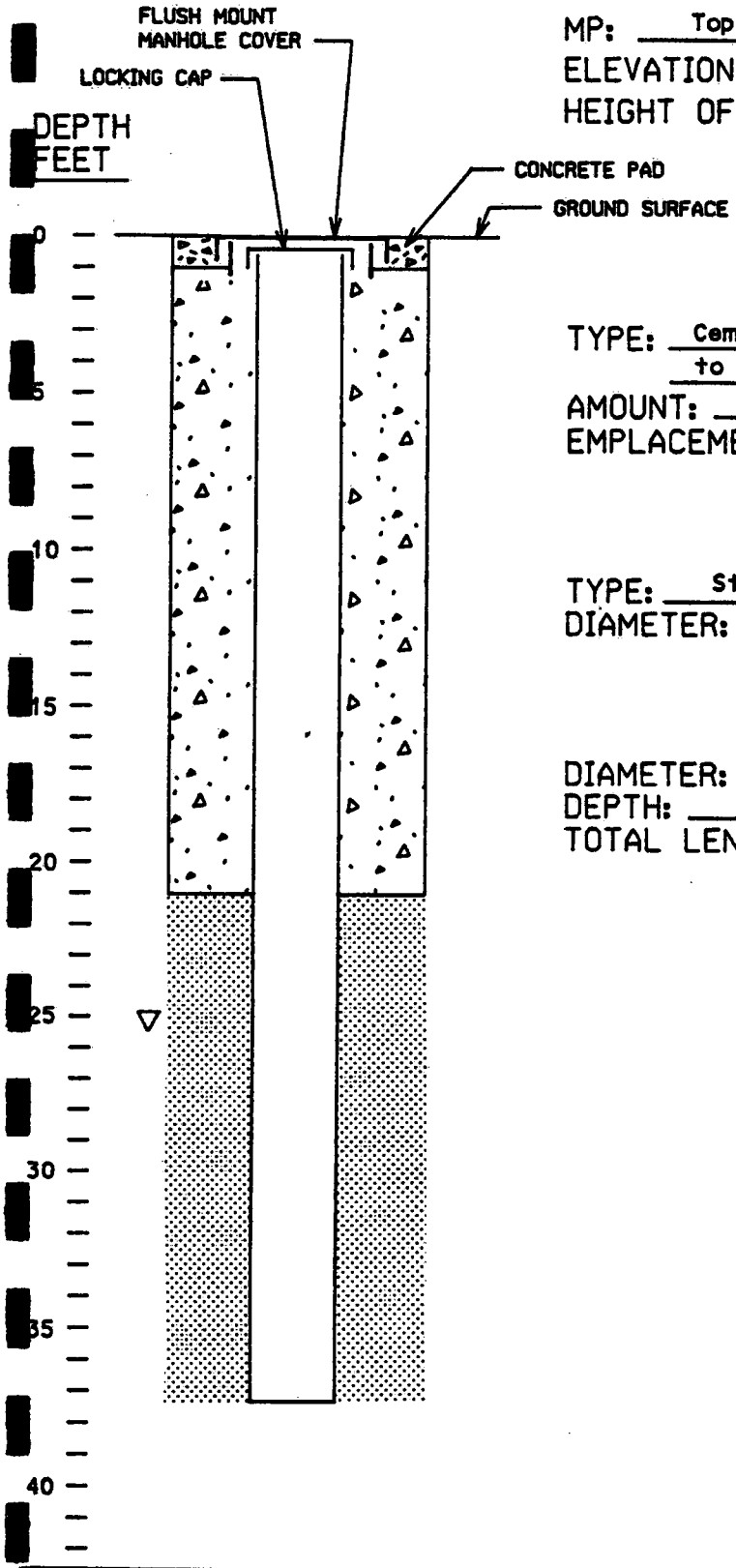
- PARTING WITH #6 FUEL OIL
- SANDSTONE
- SHALE
- STATIC WATER LEVEL

RADIAN CORPORATION

MONITOR WELL CONSTRUCTION SCHEMATIC

PROJECT: Kodalux, Fair Lawn, NJ
DRILLING CO.: Summit Drilling Co., Inc.
SUPERVISED BY: LMM, Radian Corporation
DRILLING METHOD: Air Rotary
DATE COMPLETED: 3/28/91

WELL ID: MW-4
COORDINATES: LAT. 40°56'34.5"; LONG 74°07'49.0"
AQUIFER: Uppermost
DEPTH TO WATER FROM MEASURING POINT (MP): 25.0' (4/1/91)



MP: Top of casing
ELEVATION OF MP: 93.69
HEIGHT OF MP RELATIVE TO GROUND LEVEL: -0.47'

GROUT

TYPE: Cement-bentonite (8 gal. water to 5 lb. bentonite to 94 lb. Portland cement)
AMOUNT: 6 - 94 lb. bags
EMPLACEMENT METHOD: Tremie pipe

RISER PIPE

TYPE: Steel (20.5' pipe)
DIAMETER: 6-inch

BOREHOLE

DIAMETER: 10" cased; 6" open rock
DEPTH: 36.80' below MP
TOTAL LENGTH OPEN ROCK: 16.27'

LEGEND

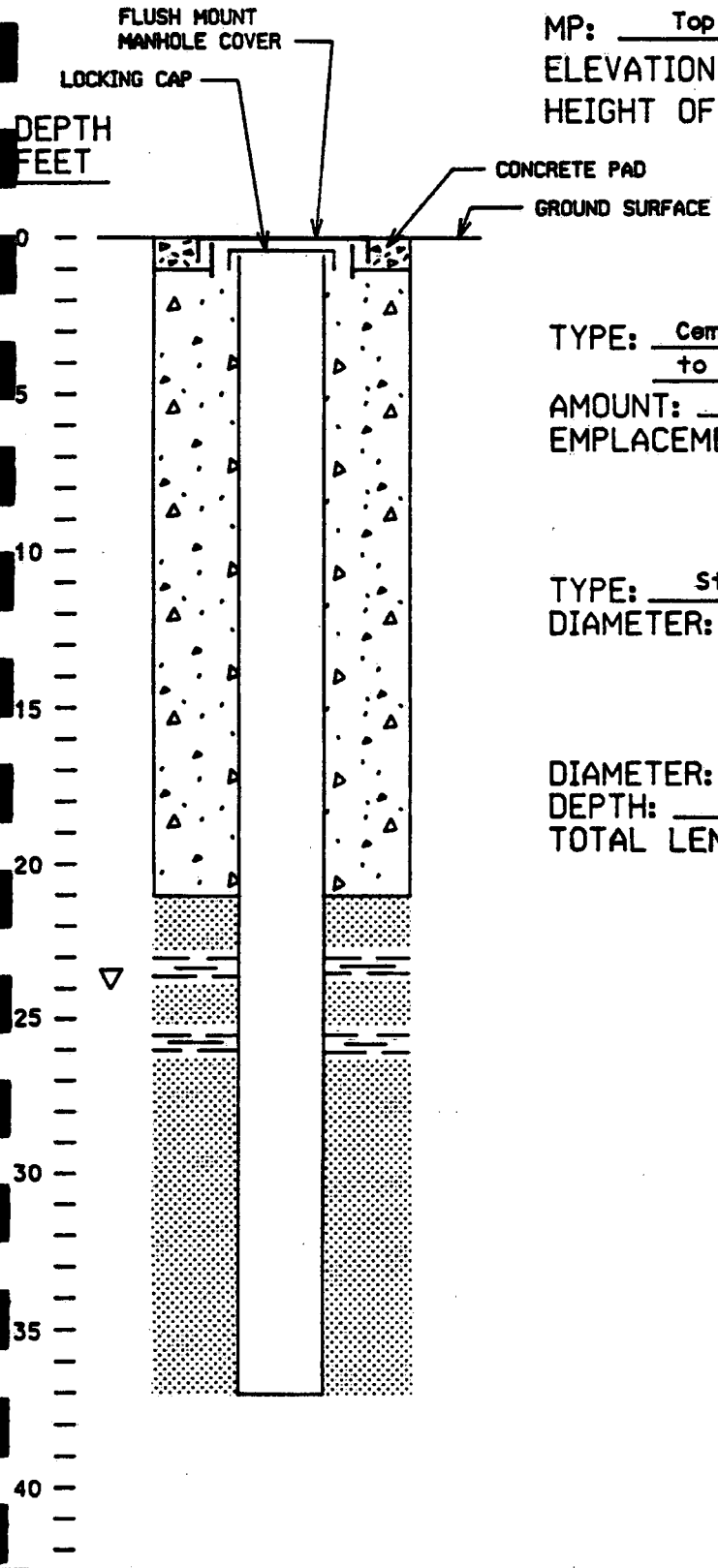
- PARTING WITH #6 FUEL OIL
- SANDSTONE
- SHALE
- STATIC WATER LEVEL

RADIAN CORPORATION

MONITOR WELL CONSTRUCTION SCHEMATIC

PROJECT: Kodalux, Fair Lawn, NJ
DRILLING CO.: Summit Drilling Co., Inc.
SUPERVISED BY: LMM, Radian Corporation
DRILLING METHOD: Air Rotary
DATE COMPLETED: 3/28/91

WELL ID: MW-5
COORDINATES: LAT. 46°53'35.0"; LONG 74°07'49.0"
AQUIFER: Uppermost
DEPTH TO WATER FROM MEASURING POINT (MP): 23.6' (4/1/91)



MP: Top of casing
ELEVATION OF MP: 94.66
HEIGHT OF MP RELATIVE TO GROUND LEVEL: -0.37'

GROUT

TYPE: Cement-bentonite (8 gal. water to 5 lb. bentonite to 94 lb. Portland cement)
AMOUNT: 6 - 94 lb. bags
EMPLACEMENT METHOD: Tremie pipe

RISER PIPE

TYPE: Steel (20.6' pipe)
DIAMETER: 6-inch

BOREHOLE

DIAMETER: 10" cased; 6" open rock
DEPTH: 36.60' below MP
TOTAL LENGTH OPEN ROCK: 15.97'

LEGEND

- PARTING WITH #6 FUEL OIL
- SANDSTONE
- SHALE
- STATIC WATER LEVEL

APPENDIX D

MONITORING WELL CERTIFICATION FORMS

THIS FORM MUST BE COMPLETED BY THE PERMITTEE OR HIS/HER AGENT
MONITORING WELL CERTIFICATION-FORM B-LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. — — - — — — — - —

Longitude (one-half of a second): West 74 07 47.5
Latitude (one-half of a second): North 40 56 33.5
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): 95.59
Source of elevation datum (benchmark, etc.) Route 208 Control Mon. Sta. 109+0
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation:

Owners Well Number (As shown on application or plan): Boring "B"

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

Richard C. Mathews

PROFESSIONAL LAND SURVEYOR'S SIGNATURE

Richard C. Mathews

PROFESSIONAL LAND SURVEYOR'S NAME
(Please print or type)

SEAL

New Jersey License #29353

PROFESSIONAL LAND SURVEYOR'S LICENSE #

THIS FORM MUST BE COMPLETED BY THE PERMITTEE OR HIS/HER AGENT
MONITORING WELL CERTIFICATION-FORM B-LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. — — — — — — — — —

Longitude (one-half of a second): West 74 07 43.0
Latitude (one-half of a second): North 40 56 34.5
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): RIM 95.06 PVC 94.65
Source of elevation datum (benchmark, etc.) Route 208 Control Mon. Sta. 109+0
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation: 99.58

Owners Well Number (As shown on application or plan): MW-1

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

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Richard C. Mathews
PROFESSIONAL LAND SURVEYOR'S NAME
(Please print or type)

SEAL

New Jersey License #29353
PROFESSIONAL LAND SURVEYOR'S LICENSE #

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MONITORING WELL CERTIFICATION-FORM B-LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. — — - — — — — - —

Longitude (one-half of a second): West 74 07 44.5
Latitude (one-half of a second): North 40 56 35.0
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): RIM 94.07 PVC 93.50
Source of elevation datum (benchmark, etc.) Route 208 Control Mon. Sta. 109+0
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation: 99.58

Owners Well Number (As shown on application or plan): MW-2

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

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MONITORING WELL CERTIFICATION-FORM B-LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. — — - — — — — — - —

Longitude (one-half of a second): West 74 07 48.0
Latitude (one-half of a second): North 40 56 34.5
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): RIM 95.73 PVC 95.26
Source of elevation datum (benchmark, etc.) Route 208 Control Mon. Sta. 109+0
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation: 99.58

Owners Well Number (As shown on application or plan): MW-3

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

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(Please print or type)

SEAL

New Jersey License #29353

PROFESSIONAL LAND SURVEYOR'S LICENSE #

THIS FORM MUST BE COMPLETED BY THE PERMITTEE OR HIS/HER AGENT
MONITORING WELL CERTIFICATION-FORM B-LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. — — - — — — — — - —

Longitude (one-half of a second): West 74 07 49.0
Latitude (one-half of a second): North 40 56 34.5
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): RIM 94.16 PVC 93.69
Source of elevation datum (benchmark, etc.) Route 208 Control Mon. Sta. 109+0
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation: 99.58

Owners Well Number (As shown on application or plan): MW-4

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

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MONITORING WELL CERTIFICATION-FORM B-LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. — — - — — — — - —

Longitude (one-half of a second): West 74 07 49.0
Latitude (one-half of a second): North 40 56 35.0
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): RIM 95.03 PVC 94.66
Source of elevation datum (benchmark, etc.) Route 208 Control Mon. Sta. 109+0
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation: 99.58

Owners Well Number (As shown on application or plan): MW-5

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

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SEAL

New Jersey License #29353
PROFESSIONAL LAND SURVEYOR'S LICENSE #

THIS FORM MUST BE COMPLETED BY THE PERMITTEE OR HIS/HER AGENT
MONITORING WELL CERTIFICATION-FORM B-LOCATION CERTIFICATION

Name of Permittee: Kodalux
Name of Facility: Kodalux
Location: Fairlawn, Bergen County
NJPDES Number:

LAND SURVEYOR'S CERTIFICATION

Well Permit Number (as assigned by NJDEP's Bureau of Water Allocation: This number must be permanently affixed to the well casing. — — - — — — — - —

Longitude (one-half of a second): West 74 07 45.0
Latitude (one-half of a second): North 40 56 37.5
Elevation of Top of Inner Casing (cap off) (one-hundredth of a foot): 89.78
Source of elevation datum (benchmark, etc.) Route 208 Control Mon. Sta. 109+0
If an alternate datum has been approved by the Department, identify here and give approximated elevation:

Approximate Elevation:

Owners Well Number (As shown on application or plan): Boring "A"

AUTHENTICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the submitted information is true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment.

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Richard C. Mathews
PROFESSIONAL LAND SURVEYOR'S NAME
(Please print or type)

SEAL

New Jersey License #29353
PROFESSIONAL LAND SURVEYOR'S LICENSE #

APPENDIX E

GROUNDWATER DEVELOPMENT RECORDS

Groundwater Development Record

Well ID MW-3
Time/Date Start Development 1050/3-29-91
Installation ID 6"
Project Kodalux, Fairlawn, NJ
Initial/Final Groundwater Depth 26.05 / 27.35 (FT) Below Measuring Point
Initial/Final Depth to Bottom of Well 40.50 / 40.60 (FT) Below Measuring Point
Time/Date Finish Development 1136/3-29-91
Logger Code Lynn
Type, Size/Capacity of Pump or Bailer Submersible pump/7 gal/minute
Total Volume to Purge for 3/5 (circle one) Well Volumes 58.39 Gallons
Actual Purged Volume 35 Gallons

Time	Cummulative Volume (Gallons)	Clarity/Color	pH	Specific Conductivity (µmhos)	Temp °C	Comments
1050 1055	20	silty/brn cleared @ 10 gal	-	-	-	pumped dry
1135 1136	35	clear/clear	-	-	-	pumped dry

Groundwater Development Record

Well ID MW-4
Time/Date Start Development 0850/3-29-91
Installation ID 6"
Project Kodalux Fairlawn, NJ
Initial/Final Groundwater Depth 24.751 / 25.00 (FT) Below Measuring Point
Initial/Final Depth to Bottom of Well 36.70 / 36.80 (FT) Below Measuring Point
Time/Date Finish Development 1155/3-29-91
Logger Code Lynn
Type, Size/Capacity of Pump or Bailer 7 gal/min 4" submersible
Total Volume to Purge for 3/5 (circle one) Well Volumes 52.00 Gallons
Actual Purged Volume 35 Gallons

Time	Cummulative Volume (Gallons)	Clarity/Color	pH	Specific Conductivity (µmhos)	Temp °C	Comments
0850 0855	20 gal	silty/brn	-	-	-	pumped dry
1155	35 gal	clear/clear	-	-	-	pumped dry

Groundwater Development Record

Well ID MW-5
Time/Date Start Development 0950/3-29-91
Installation ID 6"
Project Kodalux, Fairlawn, NJ
Initial/Final Groundwater Depth 25.55 / 23.6 (FT) Below Measuring Point
Initial/Final Depth to Bottom of Well 36.60 / 36.60 (FT) Below Measuring Point
Time/Date Finish Development 1245/3-29-91
Logger Code Lynn
Type, Size/Capacity of Pump or Bailer Submersible pump/7 gal/minute
Total Volume to Purge for 3/5 (circle one) Well Volumes 57.29 Gallons
Actual Purged Volume 45 Gallons

Time	Cummulative Volume (Gallons)	Clarity/Color	pH	Specific Conductivity (µmhos)	Temp °C	Comments
0950 0955	20 gal	silty/brn cleared @ 10 gal	-	-	-	pumped dry
1205	35 gal	silty/brn	-	-	-	pumped dry
1245	45 gal	clear/clear	-	-	-	pumped dry

APPENDIX F

ANALYTICAL RESULTS

RADIAN CORPORATION

Radian Work Order 91-04-273

Analytical Report
05/21/91

Kodalux

Radian
155 Corporate Woods, Ste 100
Rochester, NY 14623

Ron Melkis

Customer Work Identification Fairlawn
Purchase Order Number 246-042-01-40

Contents:

1 Analytical Data Summary
2 Sample History
3 Comments Summary
4 Notes and Definitions

Radian Analytical Services
8501 Mo-Pac Boulevard
P. O. Box 201088
Austin, TX 78720-1088

512/454-4797

Client Services Coordinator: JSGIBSON

Certified by: [signature]

Kodalux
Radian Work Order: 91-04-273

Method:Semi-vol. by GC/MS EPA625 (1)
List:625

Sample ID:	MW-1	MW-2	MW-3	MW-4
Factor:	0.96	0.94	0.97	0.94
Results in:	ug/L	ug/L	ug/L	ug/L
	01C	02C	03C	04C
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthene	ND	1.9	ND	1.9	ND	1.9	ND	1.9
Acenaphthylene	ND	1.9	ND	1.9	ND	1.9	ND	1.9
Anthracene	ND	1.9	1.9 a	1.9	ND	1.9	ND	1.9
Benzidine	ND	1.9	ND	1.9	ND	1.9	ND	1.9
Benzo(a)anthracene	ND	1.9	3.0 a	1.9	ND	1.9	ND	1.9
Benzo(a)pyrene	ND	1.9	ND	1.9	ND	1.9	ND	1.9
Benzo(b)fluoranthene	ND	1.9	ND	1.9	ND	1.9	ND	1.9
Benzo(g,h,i)perylene	ND	1.9	ND	1.9	ND	1.9	ND	1.9
Benzo(k)fluoranthene	ND	1.9	ND	1.9	ND	1.9	ND	1.9
4-Bromophenyl phenyl ether	ND	1.9	ND	1.9	ND	1.9	ND	1.9
Butylbenzylphthalate	ND	1.9	ND	1.9	ND	1.9	ND	1.9
4-Chloro-3-methylphenol	ND	9.6	ND	9.4	ND	9.7	ND	9.4
bis(2-Chloroethoxy)methane	ND	1.9	ND	1.9	ND	1.9	ND	1.9
bis(2-Chloroethyl)ether	ND	1.9	ND	1.9	ND	1.9	ND	1.9
bis(2-Chloroisopropyl)ether	ND	1.9	ND	1.9	ND	1.9	ND	1.9
2-Chloronaphthalene	ND	1.9	ND	1.9	ND	1.9	ND	1.9
2-Chlorophenol	ND	1.9	ND	1.9	ND	1.9	ND	1.9
4-Chlorophenyl phenyl ether	ND	1.9	ND	1.9	ND	1.9	ND	1.9
Chrysene	ND	1.9	ND	1.9	ND	1.9	ND	1.9
Di-n-octylphthalate	ND	1.9	ND	1.9	ND	1.9	ND	1.9
Dibenz(a,h)anthracene	ND	1.9	ND	1.9	ND	1.9	ND	1.9
Dibutylphthalate	ND	1.9	ND	1.9	ND	1.9	ND	1.9
1,2-Dichlorobenzene	ND	1.9	ND	1.9	ND	1.9	ND	1.9
1,3-Dichlorobenzene	ND	1.9	ND	1.9	ND	1.9	ND	1.9
1,4-Dichlorobenzene	ND	1.9	ND	1.9	ND	1.9	ND	1.9
3,3'-Dichlorobenzidine	ND	1.9	ND	1.9	ND	1.9	ND	1.9
2,4-Dichlorophenol	ND	9.6	ND	9.4	ND	9.7	ND	9.4
Diethylphthalate	ND	1.9	ND	1.9	ND	1.9	ND	1.9
2,4-Dimethylphenol	ND	9.6	ND	9.4	ND	9.7	ND	9.4
Dimethylphthalate	ND	1.9	ND	1.9	ND	1.9	ND	1.9

ND Not detected at specified detection limit

a Est. result less that 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

Kodalux
Radian Work Order: 91-04-273

Method:Semi-vol. by GC/MS EPA625 (1)
List:625

Sample ID:	MW-1	MW-2	MW-3	MW-4
Factor:	0.96	0.94	0.97	0.94
Results in:	ug/L	ug/L	ug/L	ug/L
	01C	02C	03C	04C
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
2,4-Dinitrophenol	ND	9.6	ND	9.4	ND	9.7	ND	9.4
2,4-Dinitrotoluene	ND	1.9	ND	1.9	ND	1.9	ND	1.9
2,6-Dinitrotoluene	ND	1.9	ND	1.9	ND	1.9	ND	1.9
1,2-Diphenylhydrazine	ND	1.9	ND	1.9	ND	1.9	ND	1.9
bis(2-Ethylhexyl)phthalate	ND	1.9	19	1.9	ND	1.9	9.3 @	1.9
Fluoranthene	ND	1.9	ND	1.9	ND	1.9	ND	1.9
Fluorene	ND	1.9	ND	1.9	ND	1.9	ND	1.9
Hexachlorobenzene	ND	1.9	ND	1.9	ND	1.9	ND	1.9
Hexachlorobutadiene	ND	1.9	ND	1.9	ND	1.9	ND	1.9
Hexachlorocyclopentadiene	ND	1.9	ND	1.9	ND	1.9	ND	1.9
Hexachloroethane	ND	1.9	ND	1.9	ND	1.9	ND	1.9
Indeno(1,2,3-cd)pyrene	ND	1.9	ND	1.9	ND	1.9	ND	1.9
Isophorone	ND	1.9	ND	1.9	ND	1.9	ND	1.9
N-Nitrosodimethylamine	ND	1.9	ND	1.9	ND	1.9	ND	1.9
N-Nitrosodiphenylamine	ND	1.9	ND	1.9	ND	1.9	ND	1.9
N-Nitrosodipropylamine	ND	1.9	ND	1.9	ND	1.9	ND	1.9
Naphthalene	ND	1.9	2.1 @	1.9	ND	1.9	ND	1.9
Nitrobenzene	ND	1.9	ND	1.9	ND	1.9	ND	1.9
2-Nitrophenol	ND	9.6	ND	9.4	ND	9.7	ND	9.4
4-Nitrophenol	ND	9.6	ND	9.4	ND	9.7	ND	9.4
Pentachlorophenol	ND	9.6	ND	9.4	ND	9.7	ND	9.4
Phenanthrene	ND	1.9	4.7 @	1.9	ND	1.9	ND	1.9
Phenol	ND	9.6	ND	9.4	42 @	9.7	ND	9.4
Pyrene	ND	1.9	8.5 @	1.9	ND	1.9	ND	1.9
1,2,4-Trichlorobenzene	ND	1.9	ND	1.9	ND	1.9	ND	1.9
2,4,6-Trichlorophenol	ND	9.6	ND	9.4	ND	9.7	ND	9.4
2-Methyl-4,6-dinitrophenol	ND	9.6	ND	9.4	ND	9.7	ND	9.4

ND Not detected at specified detection limit

@ Est. result less that 5 times detection limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

Kodalux
Radian Work Order: 91-04-273

Method:Semi-vol. by GC/MS EPA625 (1)
List:625

Sample ID:	MW-1	MW-2	MW-3	MW-4
Factor:	0.96	0.94	0.97	0.94
Results in:	ug/L	ug/L	ug/L	ug/L
	01C	02C	03C	04C
Matrix:	water	water	water	water

	Result Det. Limit	Result Det. Limit	Result Det. Limit	Result Det. Limit
Surrogate Recovery(%)				
2-Fluorobiphenyl	23 Q	45	53	42 Q
Control Limits: 43 to 116				
2-Fluorophenol	8 Q	4 Q	70	34
Control Limits: 21 to 100				
Nitrobenzene-d5	74	82	78	79
Control Limits: 35 to 114				
Phenol-d5	17 X	10 X	89 X	46 X
Control Limits: 10 to 94				
Terphenyl-d14	83	81	83	82
Control Limits: 33 to 141				
2,4,6-Tribromophenol	32	8 Q	70	59
Control Limits: 10 to 123				

Q Outside control limits

X See definition in report narrative

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

Kodalux
Radian Work Order: 91-04-273

Method:Semi-vol. by GC/MS EPA625 (1)
List:625

Sample ID:	MW-5	TRIP BLANK	FIELD BLANK	625 RECOVERY CHECK
Factor:	0.99	0.99	0.94	0
Results in:	ug/L	ug/L	ug/L	%recvry
	05C	08C	09C	10A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Acenaphthene	ND	2.0	ND	2.0	ND	1.9	96	
Acenaphthylene	ND	2.0	ND	2.0	ND	1.9	93	
Anthracene	ND	2.0	ND	2.0	ND	1.9	102	
Benzidine	ND	2.0	ND	2.0	ND	1.9	NS	
Benzo(a)anthracene	ND	2.0	ND	2.0	ND	1.9	103	
Benzo(a)pyrene	ND	2.0	ND	2.0	ND	1.9	101	
Benzo(b)fluoranthene	ND	2.0	ND	2.0	ND	1.9	101	
Benzo(g,h,i)perylene	ND	2.0	ND	2.0	ND	1.9	101	
Benzo(k)fluoranthene	ND	2.0	ND	2.0	ND	1.9	99	
4-Bromophenyl phenyl ether	ND	2.0	ND	2.0	ND	1.9	101	
Butylbenzylphthalate	ND	2.0	ND	2.0	ND	1.9	111	
4-Chloro-3-methylphenol	ND	9.9	ND	9.9	ND	9.4	114	
bis(2-Chloroethoxy)methane	ND	2.0	ND	2.0	ND	1.9	104	
bis(2-Chloroethyl)ether	ND	2.0	ND	2.0	ND	1.9	99	
bis(2-Chloroisopropyl)ether	ND	2.0	ND	2.0	ND	1.9	102	
2-Chloronaphthalene	ND	2.0	ND	2.0	ND	1.9	NS	
2-Chlorophenol	ND	2.0	ND	2.0	ND	1.9	105	
4-Chlorophenyl phenyl ether	ND	2.0	ND	2.0	ND	1.9	107	
Chrysene	ND	2.0	ND	2.0	ND	1.9	104	
Di-n-octylphthalate	ND	2.0	ND	2.0	ND	1.9	109	
Dibenz(a,h)anthracene	ND	2.0	ND	2.0	ND	1.9	100	
Dibutylphthalate	ND	2.0	ND	2.0	ND	1.9	102	
1,2-Dichlorobenzene	ND	2.0	ND	2.0	ND	1.9	80	
1,3-Dichlorobenzene	ND	2.0	ND	2.0	ND	1.9	73	
1,4-Dichlorobenzene	ND	2.0	ND	2.0	ND	1.9	74	
3,3'-Dichlorobenzidine	ND	2.0	ND	2.0	ND	1.9	110 Y	
2,4-Dichlorophenol	ND	9.9	ND	9.9	ND	9.4	103	
Diethylphthalate	ND	2.0	ND	2.0	ND	1.9	96	
2,4-Dimethylphenol	ND	9.9	ND	9.9	ND	9.4	103	
Dimethylphthalate	ND	2.0	ND	2.0	ND	1.9	75	

ND Not detected at specified detection limit
NS Not spiked
Y See definition in report narrative

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

Kodalux
Radian Work Order: 91-04-273

Method:Semi-vol. by GC/MS EPA625 (1)
List:625

Sample ID:	MW-5	TRIP BLANK	FIELD BLANK	625 RECOVERY CHECK
Factor:	0.99	0.99	0.94	0
Results in:	ug/L	ug/L	ug/L	%recvry
	05C	08C	09C	10A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
2,4-Dinitrophenol	ND	9.9	ND	9.9	ND	9.4	105	
2,4-Dinitrotoluene	ND	2.0	ND	2.0	ND	1.9	114	
2,6-Dinitrotoluene	ND	2.0	ND	2.0	ND	1.9	109	
1,2-Diphenylhydrazine	ND	2.0	ND	2.0	ND	1.9	NS	
bis(2-Ethylhexyl)phthalate	ND	2.0	7.3 a	2.0	ND	1.9	114	
Fluoranthene	ND	2.0	ND	2.0	ND	1.9	97	
Fluorene	ND	2.0	ND	2.0	ND	1.9	102	
Hexachlorobenzene	ND	2.0	ND	2.0	ND	1.9	105	
Hexachlorobutadiene	ND	2.0	ND	2.0	ND	1.9	85	
Hexachlorocyclopentadiene	ND	2.0	ND	2.0	ND	1.9	49	
Hexachloroethane	ND	2.0	ND	2.0	ND	1.9	76	
Indeno(1,2,3-cd)pyrene	ND	2.0	ND	2.0	ND	1.9	100	
Isophorone	ND	2.0	ND	2.0	ND	1.9	102	
N-Nitrosodimethylamine	ND	2.0	ND	2.0	ND	1.9	111	
N-Nitrosodiphenylamine	ND	2.0	ND	2.0	ND	1.9	104 Y	
N-Nitrosodipropylamine	ND	2.0	ND	2.0	ND	1.9	111	
Naphthalene	ND	2.0	ND	2.0	ND	1.9	86	
Nitrobenzene	ND	2.0	ND	2.0	ND	1.9	101	
2-Nitrophenol	ND	9.9	ND	9.9	ND	9.4	105	
4-Nitrophenol	ND	9.9	ND	9.9	ND	9.4	111	
Pentachlorophenol	ND	9.9	ND	9.9	ND	9.4	109	
Phenanthrene	ND	2.0	ND	2.0	ND	1.9	102	
Phenol	ND	9.9	ND	9.9	ND	9.4	102	
Pyrene	ND	2.0	ND	2.0	ND	1.9	106	
1,2,4-Trichlorobenzene	ND	2.0	ND	2.0	ND	1.9	88	
2,4,6-Trichlorophenol	ND	9.9	ND	9.9	ND	9.4	109	
2-Methyl-4,6-dinitrophenol	ND	9.9	ND	9.9	ND	9.4	NS	

ND Not detected at specified detection limit
NS Not spiked
a Est. result less that 5 times detection limit
Y See definition in report narrative

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

Kodalux
Radian Work Order: 91-04-273

Method:Semi-vol. by GC/MS EPA625 (1)
List:625

Sample ID:	MW-5	TRIP BLANK	FIELD BLANK	625 RECOVERY CHECK
Factor:	0.99	0.99	0.94	0
Results in:	ug/L	ug/L	ug/L	%recvry
	05C	08C	09C	10A
Matrix:	water	water	water	water

	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit	Result	Det. Limit
Surrogate Recovery(%)								
2-Fluorobiphenyl	17 Q		51		46		49	
Control Limits: 43 to 116								
2-Fluorophenol	19 Q		61		81		80	
Control Limits: 21 to 100								
Nitrobenzene-d5	38		86		89		83	
Control Limits: 35 to 114								
Phenol-d5	29		76		106 Q		99 Q	
Control Limits: 10 to 94								
Terphenyl-d14	76		92		91		98	
Control Limits: 33 to 141								
2,4,6-Tribromophenol	28 Y		74 Y		74 Y		86 Y	
Control Limits: 10 to 123								

Q Outside control limits

Y See definition in report narrative

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

Kodalux
Radian Work Order: 91-04-273

Method:Semi-vol. by GC/MS EPA625 (1)
List:625

Sample ID:	625 RECOVERY CHECK DUP	REAGENT BLANK
Factor:	0	1.0
Results in:	%recvry	ug/L
	11A	13A
Matrix:	water	water

	Result	Det. Limit	Result	Det. Limit				
Acenaphthene	97		ND	2.0				
Acenaphthylene	95		ND	2.0				
Anthracene	99		ND	2.0				
Benzidine	NS		ND	2.0				
Benzo(a)anthracene	101		ND	2.0				
Benzo(a)pyrene	96		ND	2.0				
Benzo(b)fluoranthene	95		ND	2.0				
Benzo(g,h,i)perylene	97		ND	2.0				
Benzo(k)fluoranthene	90		ND	2.0				
4-Bromophenyl phenyl ether	108		ND	2.0				
Butylbenzylphthalate	110		ND	2.0				
4-Chloro-3-methylphenol	107		ND	10				
bis(2-Chloroethoxy)methane	99		ND	2.0				
bis(2-Chloroethyl)ether	96		ND	2.0				
bis(2-Chloroisopropyl)ether	83		ND	2.0				
2-Chloronaphthalene	98		ND	2.0				
2-Chlorophenol	103		ND	2.0				
4-Chlorophenyl phenyl ether	107		ND	2.0				
Chrysene	101		ND	2.0				
Di-n-octylphthalate	107		ND	2.0				
Dibenz(a,h)anthracene	97		ND	2.0				
Dibutylphthalate	107		ND	2.0				
1,2-Dichlorobenzene	78		ND	2.0				
1,3-Dichlorobenzene	74		ND	2.0				
1,4-Dichlorobenzene	74		ND	2.0				
3,3'-Dichlorobenzidine	101 Y		ND	2.0				
2,4-Dichlorophenol	105		ND	10				
Diethylphthalate	93		ND	2.0				
2,4-Dimethylphenol	99		ND	10				
Dimethylphthalate	75		ND	2.0				

NS Not spiked
ND Not detected at specified detection limit
Y See definition in report narrative

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

Kodalux
Radian Work Order: 91-04-273

Method:Semi-vol. by GC/MS EPA625 (1)
List:625

Sample ID:	625 RECOVERY CHECK DUP	REAGENT BLANK
Factor:	0	1.0
Results in:	%recvry 11A	ug/L 13A
Matrix:	water	water

	Result	Det. Limit	Result	Det. Limit				
2,4-Dinitrophenol	109		ND	10				
2,4-Dinitrotoluene	114		ND	2.0				
2,6-Dinitrotoluene	108		ND	2.0				
1,2-Diphenylhydrazine	NS		ND	2.0				
bis(2-Ethylhexyl)phthalate	109		ND	2.0				
Fluoranthene	100		ND	2.0				
Fluorene	102		ND	2.0				
Hexachlorobenzene	111		ND	2.0				
Hexachlorobutadiene	81		ND	2.0				
Hexachlorocyclopentadiene	38		ND	2.0				
Hexachloroethane	74		ND	2.0				
Indeno(1,2,3-cd)pyrene	97		ND	2.0				
Isophorone	96		ND	2.0				
N-Nitrosodimethylamine	99		ND	2.0				
N-Nitrosodiphenylamine	112 Y		ND	2.0				
N-Nitrosodipropylamine	101		ND	2.0				
Naphthalene	86		ND	2.0				
Nitrobenzene	96		ND	2.0				
2-Nitrophenol	105		ND	10				
4-Nitrophenol	109		ND	10				
Pentachlorophenol	110		ND	10				
Phenanthrene	101		ND	2.0				
Phenol	99		ND	10				
Pyrene	101		ND	2.0				
1,2,4-Trichlorobenzene	85		ND	2.0				
2,4,6-Trichlorophenol	108		ND	10				
2-Methyl-4,6-dinitrophenol	NS		ND	10				

NS Not spiked
ND Not detected at specified detection limit
Y See definition in report narrative

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

Kodalux
Radian Work Order: 91-04-273

Method:Semi-vol. by GC/MS EPA625 (1)
List:625

Sample ID:	625 RECOVERY CHECK DUP	REAGENT BLANK
Factor:	0	1.0
Results in:	%recvry	ug/L
	11A	13A
Matrix:	water	water

	Result Det. Limit	Result Det. Limit		
Surrogate Recovery(%)				
2-Fluorobiphenyl	61	49		
Control Limits: 43 to 116				
2-Fluorophenol	83	84		
Control Limits: 21 to 100				
Nitrobenzene-d5	83	91		
Control Limits: 35 to 114				
Phenol-d5	100 Q	106 QX		
Control Limits: 10 to 94				
Terphenyl-d14	97	83		
Control Limits: 33 to 141				
2,4,6-Tribromophenol	88 Y	85		
Control Limits: 10 to 123				

Q Outside control limits
Y See definition in report narrative
X See definition in report narrative

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) 4-Methylphenol co-elutes with 3-methylphenol. The value reported is the combined total of the 2 compounds.

Kodalux
Radian Work Order: 91-04-273

Method:SEMIVOLATILE TIC LIST (1)				
List:				
Sample ID:	MW-1	MW-2	MW-3	MW-4
Factor:	0.96	0.94	0.97	0.94
Results in:	ug/L	ug/L	ug/L	ug/L
	01C	02C	03C	04C
Matrix:	water	water	water	water

	Result Det. Limit	Result Det. Limit	Result Det. Limit	Result Det. Limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) Compounds are tentatively identified.
(3) Quantitated values are approximate - based upon an assumed response factor of one.
(4) The detection limit for this analysis is ten ug/L.

Kodalux
Radian Work Order: 91-04-273

Method:SEMIVOLATILE TIC LIST (1)				
List:				
Sample ID:	MW-5	TRIP BLANK	FIELD BLANK	REAGENT BLANK
Factor:	0.99	0.99	0.94	1.0
Results in:	ug/L	ug/L	ug/L	ug/L
	05C	08C	09C	13A
Matrix:	water	water	water	water

	Result Det. Limit	Result Det. Limit	Result Det. Limit	Result Det. Limit

(1) For a detailed description of flags and technical terms in this report refer to Appendix A in this report.
(2) Compounds are tentatively identified.
(3) Quantitated values are approximate - based upon an assumed response factor of one.
(4) The detection limit for this analysis is ten ug/L.

Kodalux
Radian Work Order: 91-04-273

Tentatively Identified Compounds
Method: SEMIVOLATILE TIC LIST (1)
List:

Sample ID	Analyte	Result	Units	Scan
MW-1				
	Unknown	8	ug/L	4.63
	Unknown	6	ug/L	5.11
	Unknown	4	ug/L	5.56
	Unknown	12	ug/L	6.14
	Unknown alkoxy alcohol	67	ug/L	7.04
	Unknown	7	ug/L	9.28
	Unknown	8	ug/L	9.49
	Unknown	6	ug/L	9.56
MW-2				
	Unknown	20	ug/L	7.00
	Unknown alkoxy alcohol	100	ug/L	7.06
	Unknown	11	ug/L	9.28
	Unknown	6	ug/L	9.57
	C2-Napthalene	6	ug/L	13.5
	C2-Napthalene	9	ug/L	13.7
	C3-Napthalene	7	ug/L	47.8
	Unknown	8	ug/L	15.0
	C3-Napthalene	9	ug/L	15.1
	C3-Napthalene	7	ug/L	15.2

Note: TIC detection limits are estimated from internal standards; the estimated detection limit range for TICs is 10 to 100 µg/L, depending on the class of compounds.

Kodalux
Radian Work Order: 91-04-273

Tentatively Identified Compounds
Method: SEMIVOLATILE TIC LIST (1)
List:

Sample ID	Analyte	Result	Units	Scan
	C3-Napthalene	10	ug/L	15.4
	Unknown	8	ug/L	15.6
	Unknown	8	ug/L	17.4
	Unknown	9	ug/L	19.2
	Unknown C15-PNA	10	ug/L	19.7
MW-3				
	Oxabicyclo-heptane	4	ug/L	4.63
	Unknown	6	ug/L	6.14
	Unknown	6	ug/L	7.11
	Dichloro-bezenamine	14	ug/L	12.3
	Unknown	10	ug/L	16.8
MW-4				
	Oxabicyclo-heptane	10	ug/L	4.64
	Unknown	4	ug/L	4.82
	Unknown	11	ug/L	5.56
	Unknown alkoxy alcohol	74	ug/L	7.05
	Unknown	22	ug/L	8.88
	Unknown	16	ug/L	9.28
	Unknown	10	ug/L	9.56
	Unknown	10	ug/L	12.3

Note: TIC detection limits are estimated from internal standards; the estimated detection limit range for TICs is 10 to 100 µg/L, depending on the class of compounds.

Kodalux
Radian Work Order: 91-04-273

Tentatively Identified Compounds
Method: SEMIVOLATILE TIC LIST (1)
List:

Sample ID	Analyte	Result	Units	Scan
	Dichloro-benzenamine	14	ug/L	12.3
	Unknown	14	ug/L	15.0
	Unknown	10	ug/L	19.8
MW-5				
	Dichloroidomethane	4	ug/L	4.08
	Oxabicyclo-heptane	5	ug/L	4.63
	Unknown	18	ug/L	4.81
	Unknown	11	ug/L	5.56
	Unknown	15	ug/L	7.00
	Unknown alkoxy alcohol	91	ug/L	7.05
	Unknown	63	ug/L	8.88
	Unknown	9	ug/L	9.28
	Unknown	6	ug/L	9.56
	Unknown	12	ug/L	10.5
	Unknown	6	ug/L	12.3
	Unknown	4	ug/L	14.1
	Unknown	6	ug/L	15.0
	Unknown phthalate	4	ug/L	25.4
TRIP BLANK				
	Unknown	24	ug/L	7.00

Note: TIC detection limits are estimated from internal standards; the estimated detection limit range for TICs is 10 to 100 µg/L, depending on the class of compounds.

Kodalux
Radian Work Order: 91-04-273

Tentatively Identified Compounds
Method: SEMIVOLATILE TIC LIST (1)
List:

Sample ID	Analyte	Result	Units	Scan
	Unknown alkoxy alcohol	79	ug/L	7.06
FIELD BLANK				
	Unknown	7	ug/L	7.00
	Unknown alkoxy alcohol	69	ug/L	7.04
REAGENT BLANK				
	Unknown	27	ug/L	7.01
	Unknown alkoxy alcohol	110	ug/L	7.07

Note: TIC detection limits are estimated from internal standards; the estimated detection limit range for TICs is 10 to 100 µg/L, depending on the class of compounds.

Kodalux
Radian Work Order: 91-04-273

Method/Analyte	Sample Identifications								
	MW-1			MW-2			MW-3		
	01			02			03		
Matrix	water			water			water		
	Result		Det. Limit	Result		Det. Limit	Result		Det. Limit
Total cyanide by SW9012									
Cyanide	ND	mg/L	0.010	ND	mg/L	0.010	0.15	mg/L	0.010
Formaldehyde, OCC Method									
Formaldehyde	ND	mg/L	0.0090	ND	mg/L	0.0090	0.14	mg/L	0.0090

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

Kodalux
Radian Work Order: 91-04-273

Method/Analyte	Sample Identifications							
	MW-4			MW-5			MW-5 MS	
	04			05			06	
Matrix	water			water			water	
	Result		Det. Limit	Result		Det. Limit	Result	Det. Limit
Total cyanide by SW9012								
Cyanide	0.022 @	mg/L	0.010	ND	mg/L	0.010	100	%recvry
Formaldehyde, OCC Method								
Formaldehyde	2.5	mg/L	0.0090	0.68	mg/L	0.0090	62 Q	%recvry

@ Est. result less that 5 times detection limit
ND Not detected at specified detection limit
Q Outside control limits

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

Kodalux
Radian Work Order: 91-04-273

Method/Analyte	Sample Identifications								
	MW-5 MSD			TRIP BLANK			FIELD BLANK		
	07			08			09		
Matrix	water			water			water		
	Result		Det. Limit	Result		Det. Limit	Result		Det. Limit
Total cyanide by SW9012									
Cyanide	105	%recvry		ND	mg/L	0.010	ND	mg/L	0.010
Formaldehyde, OCC Method									
Formaldehyde	55 Q	%recvry		ND	mg/L	0.0090	ND	mg/L	0.0090

Q Outside control limits

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

Kodalux
Radian Work Order: 91-04-273

Method/Analyte	METHOD BLANK			Sample Identifications	
	12				
Matrix	water				
	Result		Det. Limit		
Total cyanide by SW9012					
Cyanide	ND	mg/L	0.010		
Formaldehyde, OCC Method					
Formaldehyde	ND	mg/L	0.0090		

ND Not detected at specified detection limit

(1) For a detailed description of flags and technical terms in this report refer to the glossary.

Kodalux
Radian Work Order: 91-04-273

Sample Identifications and Dates

Sample ID	MW-1	MW-2	MW-3	MW-4	MW-5	MW-5 MS
Date Sampled	04/24/91	04/24/91	04/24/91	04/24/91	04/24/91	04/24/91
Date Received	04/25/91	04/25/91	04/25/91	04/25/91	04/25/91	04/25/91
Matrix	water	water	water	water	water	water
	01	02	03	04	05	06
Semi-vol. by GC/MS EPA625						
Prepared	04/26/91	04/26/91	04/26/91	04/26/91	04/26/91	
Analyzed	05/09/91	05/09/91	05/09/91	05/09/91	05/10/91	
Analyst	RBW	RBW	RBW	RBW	RBW	
File ID	24104	24105	24106	24107	24111	
Blank ID	24103	24103	24103	24103	24103	
Instrument	HP5988	HP5988	HP5988	HP5988	HP5988	
Report as	received	received	received	received	received	
Total cyanide by SW9012						
Prepared	05/06/91	05/06/91	05/06/91	05/06/91	05/06/91	05/06/91
Analyzed	05/08/91	05/08/91	05/08/91	05/08/91	05/08/91	05/08/91
Analyst	MJS	MJS	MJS	MJS	MJS	MJS
File ID	AAII0508-	AAII0508-	AAII0508-	AAII0508-	AAII0508-	AAII0508-
Blank ID						
Instrument	AAII	AAII	AAII	AAII	AAII	AAII
Report as	received	received	received	received	received	received
Formaldehyde, OCC Method						
Prepared	05/17/91	05/17/91	05/17/91	05/17/91	05/17/91	05/17/91
Analyzed	05/17/91	05/17/91	05/17/91	05/17/91	05/17/91	05/17/91
Analyst	RDO	RDO	RDO	RDO	RDO	RDO
File ID						
Blank ID						
Instrument	SPEC 21	SPEC 21	SPEC 21	SPEC 21	SPEC 21	SPEC 21
Report as	received	received	received	received	received	received
SEMIVOLATILE TIC LIST						
Prepared	04/26/91	04/26/91	04/26/91	04/26/91	04/26/91	
Analyzed	05/09/91	05/09/91	05/09/91	05/09/91	05/10/91	
Analyst	RBW	RBW	RBW	RBW	RBW	
File ID	24104	24105	24106	24107	24111	
Blank ID	24103	24103	24103	24103	24103	
Instrument	HP5988	HP5988	HP5988	HP5988	HP5988	
Report as	received	received	received	received	received	

Kodalux
Radian Work Order: 91-04-273

Sample Identifications and Dates

Sample ID	MW-5 MSD	TRIP BLANK	FIELD BLANK	625 RECOVERY CHECK	625 RECOVERY CHECK DUP	METHOD BLANK
Date Sampled	04/24/91	04/24/91	04/24/91			
Date Received	04/25/91	04/25/91	04/25/91	04/25/91	04/25/91	04/25/91
Matrix	water	water	water	water	water	water
	07	08	09	10	11	12
Semi-vol. by GC/MS EPA625						
Prepared		04/26/91	04/26/91	04/26/91	04/26/91	
Analyzed		05/10/91	05/10/91	05/10/91	05/10/91	
Analyst		RBW	RBW	RBW	RBW	
File ID		24112	24113	24114	24115	
Blank ID		24103	24103	24103	24103	
Instrument		HP5988	HP5988	HP5988	HP5988	
Report as		received	received	received	received	
Total cyanide by SW9012						
Prepared	05/06/91	05/06/91	05/06/91			05/06/91
Analyzed	05/08/91	05/08/91	05/08/91			05/08/91
Analyst	MJS	MJS	MJS			MJS
File ID	AAII0508-	AAII0508-	AAII0508-			AAII0508-
Blank ID						
Instrument	AAII	AAII	AAII			AAII
Report as	received	received	received			received
Formaldehyde, OCC Method						
Prepared	05/17/91	05/17/91	05/17/91			05/17/91
Analyzed	05/17/91	05/17/91	05/17/91			05/17/91
Analyst	RDO	RDO	RDO			RDO
File ID						
Blank ID						
Instrument	SPEC 21	SPEC 21	SPEC 21			SPEC 21
Report as	received	received	received			received
SEMIVOLATILE TIC LIST						
Prepared		04/26/91	04/26/91			
Analyzed		05/10/91	05/10/91			
Analyst		RBW	RBW			
File ID		24112	24113			
Blank ID		24103	24103			
Instrument		HP5988	HP5988			
Report as		received	received			

Kodalux
Radian Work Order: 91-04-273

Sample Identifications and Dates

Sample ID	REAGENT BLANK
Date Sampled	
Date Received	04/25/91
Matrix	water
	13

Semi-vol. by GC/MS EPA625						
Prepared	04/26/91					
Analyzed	05/09/91					
Analyst	RBW					
File ID	24103					
Blank ID	24103					
Instrument	HP5988					
Report as	received					
SEMIVOLATILE TIC LIST						
Prepared	04/26/91					
Analyzed	05/09/91					
Analyst	RBW					
File ID	24103					
Blank ID	24103					
Instrument	HP5988					
Report as	received					

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Appendix A

Comments, Notes and Definitions

Kodalux
Radian Work Order: 91-04-273

General Comments
Low % spike recoveries for fractions 06B & 07B may indicate negative phenol interference or other matrix interference for formaldehyde test. Blank spike recovery was 91%. Initial & final QC recovery was 90 & 92% respectively.

General Testing Corporation

GTC REPORT # R91/1695

REPORT INDEX

SECTION A: Analytical Data

SECTION B: Quality Control Data

SECTION C: Analytical Chronology

SECTION D: Field Documentation

General Testing Corporation

GTC REPORT # R91/1695

SECTION A

ANALYTICAL DATA

Presented in this section is analytical data for the parameters requested. The following references concerning units and analytical methodology apply to the data herein.

Units: MG/L INORGANICS UG/L ORGANICS

Analytical Methodology Obtained From:

(X) Federal Register, 40 CFR Part 136, Guidelines Establishing Test Procedures for the analyses of Pollutants under the Clean Water Act, 10/26/84.

(X) SW-846, Test Methods for Evaluating Solid Waste, 3rd Edition, 9/86.

( ) Other:

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X = Continuing Calibration Check out of control limits (+/- 20%) 05/09/91:

N-Nitrosodimethylamine
Phenol-d5
2,2'-Oxybis (1-Chloropropanol)
N-Nitroso-di-n-propylamine
N-Nitrosodiphenylamine

Y = Continuing Calibration Check out of control limits (+/- 20%) 05/10/91:

2,4,6-Tribromophenol
N-Nitrosodiphenylamine
3,3'-Dimethylbenzidine

Kodalux
Radian Work Order: 91-04-273

@ ALL METHODS EXCEPT CLP
The results which are less than five times the method specified detection limit.
EXPLANATION
Uncertainty of the analysis will increase as the method detection limit is approached. These results should be considered approximate.

ND ALL METHODS EXCEPT CLP
This flag is used to denote analytes which are not detected at or above the specified detection limit.
EXPLANATION
The value to the right of the < symbol is the method specified detection limit for the analyte.

NS ALL METHODS EXCEPT CLP
This analyte or surrogate was not spiked into the sample for this analysis.

Q ALL METHODS EXCEPT CLP
This quality control standard is outside method or laboratory specified control limits.
EXPLANATION
This flag is applied to matrix spike, analytical QC spike, and surrogate recoveries; and to RPD(relative percent difference) values for duplicate analyses and matrix spike/matrix spike duplicate result.

X ALL METHODS EXCEPT INORGANIC CLP
This is a general purpose flag for those situations not covered by the standard flags. The specific definition of this flag is described in the Comments Summary and/or in the case narrative.

Y ALL METHODS EXCEPT INORGANIC CLP
This is a general purpose flag to be used after the X flag.

Kodalux
Radian Work Order: 91-04-273

TERMS USED IN THIS REPORT:

Analyte - A chemical for which a sample is to be analyzed. The analysis will meet EPA method and QC specifications.

Compound - See Analyte.

Detection Limit - The method specified detection limit, which is the lower limit of quantitation specified by EPA for a method. Radian staff regularly assess their laboratories' method detection limits to verify that they meet or are lower than those specified by EPA. Detection limits which are higher than method limits are based on experimental values at the 99% confidence level. The detection limits for EPA CLP (Contract Laboratory Program) methods are CRQLs (contract required quantitation limits) for organics and CRDLs (contract required detection limits) for inorganics. Note, the detection limit may vary from that specified by EPA based on sample size, dilution or cleanup. (Refer to Factor, below)

EPA Method - The EPA specified method used to perform an analysis. EPA has specified standard methods for analysis of environmental samples. Radian will perform its analyses and accompanying QC tests in conformance with EPA methods unless otherwise specified.

Factor - Default method detection limits are based on analysis of clean water samples. A factor is required to calculate sample specific detection limits based on alternate matrices (soil or water), reporting units, use of cleanup procedures, or dilution of extracts/digestates. For example, extraction or digestion of 10 grams of soil in contrast to 1 liter of water will result in a factor of 100.

Matrix - The sample material. Generally, it will be soil, water, air, oil, or solid waste.

Radian Work Order - The unique Radian identification code assigned to the samples reported in the analytical summary.

Units -	ug/L	micrograms per liter (parts per billion);liquids/water
	ug/kg	micrograms per kilogram (parts per billion); soils/solids
	ug/M3	micrograms per cubic meter; air samples
	mg/L	milligrams per liter (parts per million);liquids/water
	mg/kg	milligrams per kilogram (parts per million);soils/solids
	%	percent; usually used for percent recovery of QC standards
	uS/cm	conductance unit; microSiemans/centimeter
	mL/hr	milliliters per hour; rate of settlement of matter in water
	NTU	turbidity unit; nephelometric turbidity unit
	CU	color unit; equal to 1 mg/L of chloroplatinate salt

Kodalux
Radian Work Order: 91-04-273

For Semi-vol. by GC/MS EPA625 625 the following should be noted:

This analyte was found at less than the detection limit but the value is not reported in this report.

MW-2	Benzo(a)pyrene	with a value of 1.4	ug/L
MW-2	Benzo(g,h,i)perylene	with a value of 1.6	ug/L
MW-4	Phenol	with a value of 7.0	ug/L

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Chain of Custody Record

Page 1 of 1

PROJECT: Kodalux

SITE: Fairlawn

COLLECTED BY (Signature): D Winter

FIELD SAMPLE I.D.	SAMPLE MATRIX	DATE/TIME	NO. OF CONTAINERS	method 625	Formaldehyde	Cyanide							REMARKS	SAM ID NO. (for lab use only)
MW-1	Aq	4/24/91	3	X	X	X								
MW-2			3	X	X	X								
MW-3			3	X	X	X								
MW-4			3	X	X	X								
MW-5			3	X	X	X								
~~MW6~~ TB			3	X	X	X							Trip Blank	
Field Blank			3	X	X	X							Field Blank	

REMARKS

RELINQUISHED BY:	DATE	TIME
[signature]	4/24	1400

RECEIVED BY:	DATE	TIME	RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	DATE	TIME	RELINQUISHED BY:	DATE	TIME
[signature]											

LAB USE ONLY

RECEIVED FOR LABORATORY BY:	DATE	TIME	AIRBILL NO.	OPENED BY:	DATE	TIME	TEMP°C	SEAL #	CONDITION
							6°		

REMARKS:

4-88-30337

General Testing Corporation

A Full Service Environmental Laboratory

May 21, 1991

Mr. Ron Melkis
Radian Corporation
155 Corporate Woods, Suite 100
Rochester, New York 14623

Re: Kodalux Processing Services

Dear Mr. Melkis:

A total of five wells, one field blank and one trip blank were received at our laboratory on April 24 through April 25, 1991 from the above referenced site. All Chromium Hexavalent aliquots were received on the evening of April 24, 1991 to allow completion within holding time.

The analysis requested was obtained from a quotation dated March 25, 1991 by Mr. Barry Fry, quote # 91-004BF. Quality contol data was provided as requested by D. Winter on April 24, 1991. Library search data can be provided if needed at your request.

Analytical data can be found in Section A, additional sections include: quality contol data, an analytical chronology, and field documentation. These can be found in Section B-D respectively.

Please review this data package, if any questions arise contact me at (716)-454-3760. Thank you for allowing us to provide these services.

Sincerely,
GENERAL TESTING CORPORATION

Sue Lochner

Sue Lochner
Client Representative Manager

sal.
Enc.
A:Radian

710 Exchange Street • Rochester, New York 14608 • (716) 454-3760 • Fax (716) 454-1245
85 Trinity Place • Hackensack, NJ 07601 • (201) 488-5242 • Fax (201) 488-6386
435 Lawrence Bell Drive • Amherst, NY 14221 • (716) 634-0454 • Fax (716) 634-9019

General Testing Corporation

DATA AND QUALITY CONTROL QUALIFIERS

U - Indicates compound was analyzed but was not observed at a quantifiable concentration.

J - Indicates an estimated value

J Qualifiers (used in conjunction with J and/or QC page or chronology)

S - Surrogate recoveries outside of control limits

St - Surrogate recoveries outside of control limits, analysis repeated, same results obtained, matrix interference suspected

r - Laboratory replicates outside of laboratory advisory limits

t - Matrix interference suspected

h - Holding time exceeded for analysis

p - EPA-approved protocol has been amended upon client request

M - Matrix spike and/or matrix spike duplicate outside control limits

Mt - same as M
ORGANIC PARAMETERS: Matrix interference suspected, Organic reference standard was acceptable.

INORGANIC PARAMETERS: Matrix interference suspected, Repeat analysis still unacceptable

Mr - INORGANICS PARAMETERS: Matrix interference suspected, repeat analysis not conducted due to holding time limitations

B - Indicates that the analyte was found in the associated laboratory or field blank

B Qualifiers (used in conjunction with B)

l - Contamination in lab or method blank

t - Contamination in trip blank

x - Contamination in two or more types of blanks (i.e. Lab or Method, Trip, Equipment,or Field Filtration Blank)

e - Contamination in equipment blank

f - Contamination in field filtration blank

d - Results multiplied by dilution factor

MISCELLANEOUS QC AND DATA QUALIFIERS

ND - Not Detectable

*+ - No limits currently established

D - Surrogate standard diluted out

V - Spiked recovery cannot be determined, sample value >4 times spike concentration

NC - Not Calculable

t - Surrogate Matrix Interference

NS - No Sample

** - See Attached Data

R - Sample re-analyzed outside of holding time

++ - Outside Laboratory acceptance limits (Blank Spikes, Ref. Spikes)

LE - Lab Error: No data available

NA - Not Analyzed

I - Insufficient sample to re-analyze

UP - Unable to perform analysis due to sample matrix

RC - Results confirmed via repeat analysis

General Testing Corporation

A Full Service Environmental Laboratory

LABORATORY REPORT

Job No: R91/01695 Date: MAY 10 1991

Client:
Mr. Ron Melkis
Radian Corp.
155 Corporate Woods,Suite 100
Rochester, NY 14623

Sample(s) Reference:
Kodalux Processing Services

Received : 04/24-25/91 P.O. #:

ANALYTICAL RESULTS - mg/l

Sample:	-001	-002	-003	-004	-005	-006	-007
Location:	Field Blank	MW-2	MW-3	MW-4	MW-5	MW-1	Trip Blank
Date Collected:	04/24/91	04/24/91	04/24/91	04/24/91	04/24/91	04/24/91	04/24/91
Time Collected:	11:30	10:00	08:30	09:00	09:30	11:00	--
Pet. Hydrocarbons, IR	0.10 U	61.2	0.10 U	0.10 U	0.10 U	0.47	0.10 U
Chromium, Total	0.010 U	0.010 U	0.010 U	0.0326	0.0177	0.010 U	0.010 U
Chromium, Hex	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
Silver, Total	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U	0.010 U
624 Scan	**	**	**	**	**	**	**

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.

NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

** See attached data

Michael K. Perry
Laboratory Director

General Testing Corporation

A Full Service Environmental Laboratory

LABORATORY REPORT

Job No: R91/01695 Date: MAY 16 1991

Client:
Mr. Ron Melkis
Radian Corp.
155 Corporate Woods,Suite 100
Rochester, NY 14623

Sample(s) Reference

Kodalux Processing Services

Received : 04/24-25/91 P.O. #:

ANALYSIS * BY EPA METHOD 624 ANALYTICAL RESULTS - ug/l

Sample:	-001	-002	-003	-004	-005	-006	-007	-008
Location:	Field Blank	MW-2	MW-3	MW-4	MW-5	MW-1	Trip Blank	Lab Meth. Blank
Date Collected:	04/24/91	04/24/91	04/24/91	04/24/91	04/24/91	04/24/91	04/24/91	--
Time Collected:	11:30	10:00	08:30	09:00	09:30	11:00	--	--
Date Analyzed:	05/01/91	05/01/91	05/01/91	05/01/91	05/01/91	05/01/91	05/02/91	05/01/91
Chloromethane	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Bromomethane	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Vinyl Chloride	2 U	2 U	57.3	2 U	2 U	2 U	2 U	2 U
Chloroethane	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Methylene Chloride	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Trichlorofluoromethane	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,1-Dichloroethene	2 U	83.5	136	2.30	2 U	2 U	2 U	2 U
1,1-Dichloroethane	2 U	12.5	59.5	6.16	2 U	15.1	2 U	2 U
trans-1,2-Dichloroethene	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
cis-1,2-Dichloroethene	2 U	2 U	2 U	2 U	2 U	3.81	2 U	2 U
Chloroform	4.24	2 U	2 U	2 U	2 U	2.22	2 U	2 U
1,2-Dichloroethane	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,1,1-Trichloroethane	2 U	7500	669	8.59	3.37	44.6	2 U	2 U
Carbon Tetrachloride	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Bromodichloromethane	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,2-Dichloropropane	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Trans-1,3-Dichloropropene	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Trichloroethene	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Dibromochloromethane	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,1,2-Trichloroethane	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Benzene	2 U	2 U	3.45	2 U	2 U	2 U	2 U	2 U
1,3-Dichloropropene(Cis)	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
2-Chloroethylvinyl Ether	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromoform	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Tetrachloroethene	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
1,1,2,2-Tetrachloroethane	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Toluene	2 U	2 U	5.90	2 U	3.48	2 U	2 U	2 U
Chlorobenzene	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Ethylbenzene	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Total Xylene (o,m,p)	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U

General Testing Corporation

A Full Service Environmental Laboratory

LABORATORY REPORT

Job No: R91/01695 Date: MAY 13 1991

Client:
Mr. Ron Melkis
Radian Corp.
155 Corporate Woods,Suite 100
Rochester, NY 14623

Sample(s) Reference

Kodalux Processing Services

Received : 04/24-25/91 P.O. #:

SURROGATE RECOVERIES / EPA METHOD 624* ANALYTICAL RESULTS - %

Sample:	-001	-002	-003	-004	-005	-006	-007	-008
Location:	Field Blank	MW-2	MW-3	MW-4	MW-5	MW-1	Trip Blank	Lab Meth. Blank
Date Collected:	04/24/91	04/24/91	04/24/91	04/24/91	04/24/91	04/24/91	04/24/91	--
Time Collected:	11:30	10:00	08:30	09:00	09:30	11:00	--	--
Date Analyzed:	05/01/91	05/01/91	05/01/91	05/01/91	05/01/91	05/01/91	05/02/91	05/01/91
Surrogate Standard Recoveries								
1,2-Dichloroethane-d4 (Acceptance Limits: 75-119%)	94%	99%	94%	90%	93%	92%	100%	98%
Toluene d8 (Acceptance Limits: 85-110%)	95%	98%	91%	87%	85%	86%	97%	96%
Bromofluorobenzene (Acceptance Limits: 84-116%)	93%	94%	87%	86%	84%	84%	94%	95%

Unless otherwise noted, analytical methodology has been obtained from references as cited in 40 CFR, parts #136 & #261.
NY ID# in Rochester: 10145
NJ ID# in Rochester: 73331
NJ ID# in Hackensack: 02317
NY ID# in Hackensack: 10801

Michael K. Perry

Laboratory Director

NYSDEC Sample No.:

1E - VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: General Testing Corp.
Lab Code: 10145 Case No.: --
Matrix: (soil/water) WATER
Sample wt/vol: 5 (g/mL)ML
Level (low/med): LOW
% Moisture: not dec. 100
Column (pack/cap): CAP

Contract: RADIAN
SAS No.: -- SDG No.:
Lab Sample ID: 1695-BLK1
Lab File ID: >A2937
Date Received: --
Date Analyzed: 05/01/91
Dilution Factor: 1.0

Number TIC's found: 0

Concentration Units:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.				
2.				
3.				
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30.				

NYSDEC Sample No.:

1E - VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: General Testing Corp.
Lab Code: 10145 Case No.: --
Matrix: (soil/water) WATER
Sample wt/vol: 5 (g/mL)ML
Level (low/med): LOW
% Moisture: not dec. 100
Column (pack/cap): CAP

Contract: RADIAN
SAS No.: -- SDG No.:
Lab Sample ID: 1695-1
Lab File ID: >A2937
Date Received:
Date Analyzed: 05/01/91
Dilution Factor: 1.0

Number TIC's found: 0

Concentration Units:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.				
2.				
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NYSDEC Sample No.:

1E - VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: General Testing Corp.
Lab Code: 10145 Case No.: --
Matrix: (soil/water) WATER
Sample wt/vol: 5 (g/mL)ML
Level (low/med): LOW
% Moisture: not dec. 100
Column (pack/cap): CAP

Number TIC's found: 0

Contract: RADIAN
SAS No.: -- SDG No.:
Lab Sample ID: 1695-2
Lab File ID: >A2963
Date Received:
Date Analyzed: 05/02/91
Dilution Factor: 1.0

Concentration Units:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.				
2.				
3.				
4.				
5.				
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7.				
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27.				
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30.				

NYSDEC Sample No.:

1E - VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: General Testing Corp.
Lab Code: 10145 Case No.: --
Matrix: (soil/water) WATER
Sample wt/vol: 5 (g/mL)ML
Level (low/med): LOW
% Moisture: not dec. 100
Column (pack/cap): CAP

Number TIC's found: 2

Contract: RADIAN
SAS No.: -- SDG No.:
Lab Sample ID: 1695-3
Lab File ID: >A2942
Date Received:
Date Analyzed: 05/01/91
Dilution Factor: 1.0

Concentration Units:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1. 67641	2-Propanone	5.88	23	J
2.	Unknown	25.73	13	J
3.				
4.				
5.				
6.				
7.				
8.				
9.				
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29.				
30.				

NYSDEC Sample No.:

1E - VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: General Testing Corp.
Lab Code: 10145 Case No.: --
Matrix: (soil/water) WATER
Sample wt/vol: 5 (g/mL)ML
Level (low/med): LOW
% Moisture: not dec. 100
Column (pack/cap): CAP

Contract: RADIAN
SAS No.: -- SDG No.:
Lab Sample ID: 1695-4
Lab File ID: >A2943
Date Received:
Date Analyzed: 05/01/91
Dilution Factor: 1.0

Number TIC's found: 2

Concentration Units:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1. 67641	2-Propanone	5.89	70	J
2.	Unknown	25.71	11	J
3.				
4.				
5.				
6.				
7.				
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NYSDEC Sample No.:

1E - VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: General Testing Corp.
Lab Code: 10145 Case No.: --
Matrix: (soil/water) WATER
Sample wt/vol: 5 (g/mL)ML
Level (low/med): LOW
% Moisture: not dec. 100
Column (pack/cap): CAP

Contract: RADIAN
SAS No.: -- SDG No.:
Lab Sample ID: 1695-5
Lab File ID: >A2944
Date Received:
Date Analyzed: 05/01/91
Dilution Factor: 1.0

Number TIC's found: 2

Concentration Units:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1. 67641	2-Propanone	5.88	67	J
2.	Unknown	25.70	8.0	J
3.				
4.				
5.				
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7.				
8.				
9.				
10.				
11.				
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NYSDEC Sample No.:

1E - VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: General Testing Corp.
Lab Code: 10145 Case No.: --
Matrix: (soil/water) WATER
Sample wt/vol: 5 (g/mL)ML
Level (low/med): LOW
% Moisture: not dec. 100
Column (pack/cap): CAP

Contract: RADIAN
SAS No.: -- SDG No.:
Lab Sample ID: 1695-6
Lab File ID: >A2945
Date Received:
Date Analyzed: 05/01/91
Dilution Factor: 1.0

Number TIC's found: 3

Concentration Units:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1. 67641	2-Propanone	5.82	64	J
2.	Unknown	21.35	8.0	J
3.	Unknown	25.69	17	J
4.				
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NYSDEC Sample No.:

1E - VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: General Testing Corp.
Lab Code: 10145 Case No.: --
Matrix: (soil/water) WATER
Sample wt/vol: 5 (g/mL)ML
Level (low/med): LOW
% Moisture: not dec. 100
Column (pack/cap): CAP

Contract: RADIAN
SAS No.: -- SDG No.:
Lab Sample ID: 1695-7
Lab File ID: >A2955
Date Received:
Date Analyzed: 05/02/91
Dilution Factor: 1.0

Number TIC's found: 0

Concentration Units:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST.CONC.	Q
1.				
2.				
3.				
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General Testing Corporation

GTC REPORT # R91/1695

SECTION B

LABORATORY QUALITY CONTROL

Presented in this section is Quality Control Associated with the data provided in Section A of this report.

Quality Control Explanations:

(1) RUN QUALITY CONTROL - Selected QC data from the analytical run in which your sample(s) were involved.

(2) JOB SPECIFIC QUALITY CONTROL - QC data specific to your set of samples.

(3) DUPLICATES - Replicate analyses of a given sample used to monitor precision. Relative Percent Difference is calculated as the difference divided by the average x 100.

(4) MATRIX SPIKES - Addition of a known amount of analyte to a sample. Recovery is calculated by subtracting original value attributable to the sample from the combined value. The difference is then divided by the amount added to calculate % recovery. Poor recoveries may indicate analytical interference due to the matrix of the sample. Any other samples of this matrix may also have been affected, high or low as indicated by the % recovery.

(5) LABORATORY CONTAMINANTS - Laboratory De-ionized water used to monitor for contamination during analysis.

(6) BLANK SPIKES - Same as item #4 but analyte is added to laboratory de-ionized water. This indicates the accuracy of analysis.

(7) REFERENCE CHECK SAMPLES - Samples from an outside source having a known concentration of analyte. Used as a measure of analytical accuracy.

When possible, all components of the above listed QC protocol are performed during an analytical run. The resulting data is compared to historical records when evaluating the quality of analytical runs. The data provided in your report has passed our Quality Assurance review.

Quality Control Notes:

GTC LABORATORY QUALITY CONTROL REPORT

CUSTOMER: Radian Corp. JOB # : R91/01695 UNITS: mg/l REPORT TYPE: Job Specific

PARAMETER	SAMPLE	ORIGINAL RESULT	DUPLICATE RESULT	% REL. ERROR	ACCEPT. LIMIT %	AVERAGE RESULT	SPIKE ADDED	PERCENT RECOVERY	ACCEPT. LIMIT %	METHOD BLANK	SPIKE ADDED	PERCENT RECOVERY	ACCEPT. LIMITS %	REFERENCE #	KNOWN PMVAL	PERCENT RECOVERY	ACCEPT. LIMITS %
		* PRECISION				* MATRIX SPIKING				BLANK SPIKES				REFERENCE STANDARD			
Pet. Hydro	-001	0.10 U	0.10 U	NC	*+	NA	1.926	67.0	*+	0.10 U	1.926	67.0	59-107	REF STD	6.83	104	*+
Chromium	-001	0.010 U	0.010 U	NC	30	0.010 U	0.250	85%	80-120	0.010 U	0.250	83%	80-120	REF STD	5.00	98%	90-110
Chrom. Hex	-001	0.010 U	0.010 U	NC	20	0.010 U	0.100	87%	60-128	0.010 U	0.100	101%	73-122	REF STD	0.100	100%	75-120
Silver	-001	0.010 U	0.010 U	NC		0.010 U	0.0500	80%	80-120	0.010 U	0.050	90%	80-120	REF STD	5.00	99%	90-110

** Reference Check samples are not available for all analyses. ++ Outside of Quality Control Limits.

+* No limits currently established.

General Testing Corporation

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VOLATILE ORGANICS - AQUEOUS SAMPLE

WATER VOLATILE MATRIX SPIKE RECOVERY

Lab Name: General Testing Corp.

Matrix Spike - Sample No. : R91/01695 -001

COMPOUND	SPIKE ADDED (ug/l)	SAMPLE CONCENTRATION (ug/l)	MS % REC #	QC LIMITS REC.
Chloromethane	50	0	106%	D - 273
Bromomethane	50	0	103%	D - 242
Vinyl Chloride	50	0	114%	D - 251
Chloroethane	50	0	111%	14 - 230
Methylene Chloride	50	0	113%	D - 221
Trichlorofluoromethane	50	0	106%	17 - 181
1,1-Dichloroethene	50	0	102%	D - 234
1,1-Dichloroethane	50	0	102%	59 - 155
trans-1,2-Dichloroethene	50	0	100%	54 - 156
cis-1,2-Dichloroethene	--	--	--	54 - 156
Chloroform	50	4.24	112%	51 - 138
1,2-Dichloroethane	50	0	101%	49 - 155
1,1,1-Trichloroethane	50	0	99%	52 - 162
Carbon Tetrachloride	50	0	101%	70 - 140
Bromodichloromethane	50	0	106%	35 - 155
1,2-Dichloropropane	50	0	108%	D - 210
Trans-1,3-Dichloropropene	50	0	81%	17 - 183
Trichloroethene	50	0	103%	71 - 157
Cis-1,3-Dichloropropene	50	0	95%	D - 227
Dibromochloromethane	50	0	97%	53 - 149
1,1,2-Trichloroethane	50	0	101%	52 - 150
2-Chloroethylvinyl Ether	--	--	--	D - 305
Bromoform	50	0	88%	45 - 169
1,1,2,2-Tetrachloroethane	50	0	94%	46 - 157

Columns to be used to flag recovery and RPD values with ++.
++ = Values outside of QC limits
MS QC Limits = EPA Acceptance Criteria
RPD Limits = Internal Acceptance Criteria

Spike Recovery: 0 out of 23 outside limits

COMMENTS: _____

General Testing Corporation

A Full Service Environmental Laboratory

VOLATILE ORGANICS - AQUEOUS SAMPLE

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: General Testing Corp.

Matrix Spike - Sample No. : R91/01695 -001

COMPOUND	SPIKE ADDED (ug/l)	SAMPLE CONCENTRATION (ug/l)	MS % REC #	QC LIMITS REC.
Tetrachloroethene	50	0	95%	64 - 148
Chlorobenzene	50	0	105%	37 - 160
Benzene	50	0	107%	37 - 151
Toluene	50	0	103%	47 - 150
Ethylbenzene	50	0	103%	37 - 162
m-Xylene	--	--	--	
o + p-Xylene	50	0	101%	

Columns to be used to flag recovery and RPD values with ++.
++ = Values outside of QC limits
MS QC Limits = EPA Acceptance Criteria
RPD Limits = Internal Acceptance Criteria

Spike Recovery: 0 out of 4 outside limits

COMMENTS: _____

General Testing Corporation

A Full Service Environmental Laboratory

LABORATORY REPORT

Client:
Mr. Ron Melkis
Radian Corp.
155 Corporate Woods,Suite 100
Rochester, NY 14623

Job No: R91/01695

Date: 13 MAY , 1991

EPA METHOD 624	REFERENCE CHECK TRUE VALUE	REFERENCE CHECK % RECOVERY	ACCEPTANCE LIMITS (%)
Date Analyzed: 05/01/91			
Acrylonitrile			NA
Acrolein			NA
Chloromethane	20.0	122%	D - 273
Bromomethane	20.0	116%	D - 242
Vinyl Chloride	20.0	126%	D - 251
Chloroethane	20.0	49%	14 - 230
Methylene Chloride	20.0	119%	D - 221
Trichlorofluoromethane	20.0	94%	17 - 181
1,1-Dichloroethene	20.0	108%	D - 234
1,1-Dichloroethane	20.0	109%	59 - 155
Total 1,2-Dichloroethene	20.0	101%	54 - 156
Chloroform	20.0	111%	51 - 138
1,2-Dichloroethane	20.0	106%	49 - 155
1,1,1-Trichloroethane	20.0	99%	52 - 162
Carbon Tetrachloride	20.0	91%	70 - 140
Bromodichloromethane	20.0	105%	35 - 155
1,2-Dichloropropane	20.0	107%	D - 210
1,3-Dichloropropene-TRN	20.0	106%	17 - 183
Trichloroethene	20.0	107%	71 - 157
1,3-Dichloropropene(Cis)	20.0	92%	D - 227
Dibromochloromethane	20.0	103%	53 - 149
1,1,2-Trichloroethane	20.0	108%	52 - 150
2-Chloroethylvinyl Ether	--	--	D - 305
Bromoform	20.0	98%	45 - 169
1,1,2,2-Tetrachloroethane	20.0	105%	46 - 157
Tetrachloroethene	20.0	105%	64 - 148
Chlorobenzene	40.0	112%	37 - 160
Benzene	20.0	105%	37 - 151
Toluene	20.0	106%	47 - 150
Ethylbenzene	20.0	104%	37 - 162

General Testing Corporation

GTC REPORT # R91/1695

SECTION C

ANALYTICAL CHRONOLOGY

Presented in this section is a Laboratory Chronology listing the dates of all preparations and analyses performed on the samples covered in this report. Holding times, (maximum times in which to analyze a sample) are derived from the referenced methodology.

Chronology Notes:

General Testing Corporation

A Full Service Environmental Laboratory

LABORATORY REPORT

Job No. R91/01695 Date MAY 10 1991

Client:

Radian Corp.

Sample(s) Reference

Kodalux Processing Services

Date Received: 04/24-25/91

Date Sample Taken: 04/24/91

LABORATORY CHRONICLE
DATE ANALYZED

Sample: Location:	-001 Field Blank	-002 MW-2	-003 MW-3	-004 MW-4	-005 MW-5	-006 MW-1	-007 Trip Blank		
Pet. Hydrocarbons, IR	05/03/91	05/03/91	05/03/91	05/03/91	05/03/91	05/03/91	05/03/91		
Chromium, Total	04/29/91	04/29/91	04/29/91	04/29/91	04/29/91	04/29/91	04/29/91		
Chromium, Hex	04/25/91	04/25/91	04/25/91	04/25/91	04/25/91	04/25/91	04/25/91		
Silver, Total	04/29/91	04/29/91	04/29/91	04/29/91	04/29/91	04/29/91	04/29/91		
624 Scan	05/01/91	05/01/91	05/01/91	05/01/91	05/01/91	05/01/91	05/01/91		

General Testing Corporation

GTC REPORT # R91/1695

SECTION D

FIELD DOCUMENTATION

Presented in this section is all support documentation requested.

Documentation Provided:

(X) Chain of Custody Forms

( ) Analytical Request Forms

( ) Shipping Receipts

( ) Laboratory Receipt Log

( ) Other:

GENERAL TESTING CORPORATION/CHAIN-OF-CUSTODY RECORD

710 Exchange Street, Rochester, NY 14608 | 85 Trinity Place, Hackensack, NJ 07601 | 435 Lawrence Bell Drive, Amherst, NY 14221-7077

GTC Job No. R91/1695
Client Project No. _____

Sample Origination & Shipping Information

Collection Site: Kodalux Fairlawn NJ
Address: Fairlawn (Street / City) NJ (State) (Zip)
Collector: David Winter (Print) [signature] (Signature)

Bottles Prepared by: GTC-mc
Bottles Shipped to Client via: UPS.
Samples Shipped via: Fedex
Rec'd by: Client
Seal/Shipping #: _____
Seal/Shipping #: _____

Sample(s) Relinquished by:	Received by:	Date/Time
1. Sign [signature]	1. Sign	/ /
for	for	:
2. Sign	2. Sign	/ /
for	for	:
3. Sign	3. Sign	/ /
for	for	:

Sample(s) Received in Laboratory by: DS | VGardner 4/25/91 @ 09:30

~~Client I.D.#~~	Sample Location / Date/Time	*	Analyte or Analyte Group(s) Required (see below for additional)	Sample Prep Preserved Y	Preserved N	Filtered Y	Filtered N	Bottle Set(s) (see below)
1 (QC) 001 Field Blank	Kodalux 4/24/91 11:30	W	~~method 624~~ See Analytical Request					1,6,7,10
2 002 MW-2	Kodalux 4/24/10:00	W						1,5,6,10
3 003 MW-3	Kodalux 4/24/08:30	W						
4 004 MW-4	Kodalux 4/24/09:00	W						
5 005 MW-5	Kodalux 4/24/09:30	W						

Use Bottle No. for indicating type bottles used in each bottle set and fill in box with # of bottles used for each type.

Bottle No.	1	2	3	4	5	6	7	8	9	10	11
Bottle Type	40 ml Vial	Pint Glass	Qt. Glass	4 oz. Plastic	8 oz. Plastic	16 oz. Plastic	Qt. Pl.	Gal. Pl.	Steril. Pl.	1L Glass	
# of each	2				1	1	1			2	

Additional Analytes: Perform: EPA Method 624 (BA + Xyl), Cr⁶, Ag, Cr
NOTE - Cr⁺⁶'s rec'd 4/24 @ 1845 but no accompanying paperwork.

Shaded area for Lab use only; bottom copy for client; maximum of 5 samples per page.

* Source Codes: Monitoring Well (W), Soil (S), Treatment Plant (T), Drinking Water (D), Leachate (L), Hazardous Waste (H), River or Stream (R), Pond (P), Industrial Discharge (I), _____ (X), _____ (Y).

GENERAL TESTING CORPORATION/CHAIN-OF-CUSTODY RECORD

710 Exchange Street, Rochester, NY 14608 | 85 Trinity Place, Hackensack, NJ 07601 | 435 Lawrence Bell Drive, Amherst, NY 14221-7077

GTC Job No. R91/1695
Client Project No. _____

Sample Origination & Shipping Information

Collection Site: Kodalux Fairlawn
Address: Fairlawn (Street / City) NJ (State) (Zip)
Collector: David Winter (Print) [signature] (Signature)

Bottles Prepared by: GTC-MC
Bottles Shipped to Client via: UPS
Samples Shipped via: Fedex
Rec'd by: Client
Seal/Shipping #: _____
Seal/Shipping #: _____

Sample(s) Relinquished by:	Received by:	Date/Time
1. Sign [signature]	1. Sign	/ /
for	for	:
2. Sign	2. Sign	/ /
for	for	:
3. Sign	3. Sign	/ /
for	for	:

Sample(s) Received in Laboratory by: _____ 4/25/91 @09:30

	Client I.D.# / Lab#	Sample Location / Date/Time	*	Analyte or Analyte Group(s) Required (see below for additional)	Sample Prep Preserved Y	Preserved N	Filtered Y	Filtered N	Bottle Set(s) (see below)
1	mw-1 / 006	4 1241 11:00	W	See Analytical Request					1,5,6,10
2	Trip Blank / 007	4 1241 :	—	↓					↓
3		4 1241 :							
4		/ / :							
5		/ / :							

Use Bottle No. for indicating type bottles used in each bottle set and fill in box with # of bottles used for each type.

Bottle No.	1	2	3	4	5	6	7	8	9	10	11
Bottle Type	40 ml Vial	Pint Glass	Qt. Glass	4 oz. Plastic	8 oz. Plastic	16 oz. Plastic	Qt. Pl.	Gal. Pl.	Steril. Pl.	LG GLASS	
# of each	2				1	1				2	

Additional Analytes: Note- Cntr's rec'd 4/24 @ 1845 but no accompanying paperwork -lg

Shaded area for Lab use only; bottom copy for client; maximum of 5 samples per page.

* Source Codes: Monitoring Well (W), Soil (S), Treatment Plant (T), Drinking Water (D), Leachate (L), Hazardous Waste (H), River or Stream (R), Pond (P), Industrial Discharge (I), _____(X), _____(Y).

02-9104-01-PA
REV. NO. 0

FINAL DRAFT
PRELIMINARY ASSESSMENT REPORT
EASTMAN KODAK PROCESSING LAB
FAIR LAWN, NEW JERSEY

PREPARED UNDER

TECHNICAL DIRECTIVE DOCUMENT NO. 02-9104-01
CONTRACT NO. 68-01-7346

FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

JULY 19, 1991

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY:

PATRICIA D. HASTINGS
PROJECT MANAGER

BRIAN J. MITCHELL
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REVIEWED/APPROVED BY:

RONALD M. NAMAN
FIT OFFICE MANAGER

K0003

SITE SUMMARY AND RECOMMENDATION (CONTD)

Additional field activities at the Kodalux facility have included the installation of one monitoring well adjacent to the location of the oil tanks and the removal of approximately 15 yards of gasoline-tainted soil from below the former gasoline pump (Ref. No. 33). Accordingly, Kodak reportedly submitted an initial Discharge and Corrective Action Report (DICAR) for Case No. 90-05-22-1638 to the NJDEP Bureau of Underground Storage Tanks (BUST) on August 1, 1990, which apparently included analytical data from monitoring and irrigation well sampling. Neither the report nor cited soil analyses were located in site files (Ref. No. 33). However, Kodak summarized results reported in the DICAR in correspondence to the NJDEP BUST dated October 26, 1990 (Ref. No. 33). Specifically, Kodak indicated that results of a second monitoring and irrigation well sampling did not show the presence in groundwater of semivolatile or volatile compounds associated with No. 6 heating oil and confirmed the initial analysis submitted with the DICAR. However, subsequent analyses of samples collected from on-site monitoring wells on April 23 and 24, 1991 do not confirm this assertion. Specifically, analyses show the presence of petroleum hydrocarbons in monitoring wells downgradient of the former location of the fuel oil tanks, with a maximum reported concentration of 61,200 parts per billion (ppb) (Ref. No. 43). Although a discharge of petroleum products was reported with corresponding elevated concentrations detected in nearby groundwater monitoring wells, petroleum products are not eligible for consideration as hazardous substances under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (Ref. No. 48). It is assumed that the four tanks were not contaminated with CERCLA-eligible substances, as the contents were reported to be heating oil and unleaded gasoline. NJDEP BUST Case No. 90-05-22-1638 for the release of petroleum products from USTs previously used at the Kodalux facility is pending.

Excavation of the dry well was completed in June 1990; soil contamination was discovered beneath it. Accordingly, the excavation contractor filed a Communications Center Notification Report with the NJDEP on June 15, 1990 regarding a release of an unknown amount of liquid organics (Ref. No. 41). This case was assigned to the NJDEP Division of Hazardous Waste Management - Metro Enforcement with a corresponding case number of 90-06-15-1528. Subsequent analyses of five soil samples collected from below the concrete vault indicate the presence of 1,1,1-trichloroethane (TCA) and xylene, with a maximum reported concentration of 5,000,000 ppb TCA and 21,000 ppb total xylenes (Ref. No. 42). In correspondence to the Environmental Protection Agency (U.S. EPA) dated January 29, 1991, Kodak reported that vapor analyses indicated detectable levels of TCA, trichloroethylene, toluene, and xylene; groundwater samples collected from an on-site monitoring well and irrigation well showed detectable concentrations of volatile organics and formaldehyde (Ref. No. 4). Kodak did not provide the date(s) and location(s) of analyses and samples. Subsequent to the installation of

four additional monitoring wells in March 1991, groundwater sampling was conducted on site on April 23 and 24, 1991 (Ref. Nos. 43, 47). Target chemicals specific to photoprocessing operations were analyzed for, including TCA, silver, cyanide, formaldehyde, hexavalent chromium, and chromium (Ref. Nos. 29, 36, 37). Analyses of groundwater samples from the monitoring wells indicated the presence of TCA, 1,1-dichloroethene, 1,1-dichlorethane, vinyl chloride, benzene, toluene, cis-1,2-dichloroethane, formaldehyde, and chloroform (Ref. No. 43). The NJDEP's Kodalux facility cases are pending resolution.

In addition to the releases reported to the NJDEP, Fair Lawn Health Department Complaint and Inspection Record No. 910107 for Qualex Labs indicated that an anonymous report was made to the State (assumed to be the NJDEP) regarding the dumping of hazardous materials or chemicals. No other information was available; the identity, quantity, and location of materials dumped, if any, are unknown (Ref. No. 27).

Groundwater contamination with CERCLA hazardous substances is known to have occurred in the area of the Eastman Kodak Site in Fair Lawn. Specifically, public supply well No. 24 located on the Kodalux facility property has been closed as a result of a release from two sources upgradient of the site (Ref. Nos. 10, 17, 33, 34). However, it is probable that a prior release of CERCLA-eligible substances from the Eastman Kodak Processing Lab Site dry well has further contributed to groundwater contamination in the area The dry well has been variously described as a dry well used for fire suppression (Ref. No. 4) or a cement vault with a clay floor used for washwater (Ref. No. 34). Analyses of soils beneath the excavated dry well and groundwater downgradient of the dry well support a conclusion that a prior release from the unit had occurred. Specifically, TCA was detected in soil beneath the dry well as well as in groundwater downgradient of the dry well in greater concentration than that upgradient of the dry well.

Although groundwater contamination at the Eastman Kodak Photoprocessing Laboratory Site is a concern, it is improbable that release of hazardous substances to soil, surface water, or air has occurred, as the probable source of contamination is subsurface. A SITE INSPECTION for the Eastman Kodak Processing Lab Site is recommended, as groundwater contamination potentially affecting the potable water supplies of more than 109,911 persons within 4 miles is attributable to the site.

PART II: WASTE SOURCE INFORMATION

For each of the waste units identified in Part I, complete the following items.

Waste Unit 2 - Dry Well/Cement Vault

Source Type

____	Landfill	____	Land Treatment
X	Surface Impoundment	____	Chemical Waste Pile
____	Drums	____	Scrap Metal or Junk Pile
____	Tanks/Containers	____	Tailings Pile
____	Contaminated Soil	____	Trash Pile
____	Pile	____	Other

Description:

The dry well on site at the Eastman Kodak Processing Lab Site has been variously described as a dry well used for fire suppression and a cement vault with a clay floor. Although there is no record of direct deposition of hazardous substances into the dry well, the Fair Lawn Department of Health reported that the dry well was previously used for washwaters. The composition and amount of washwaters deposited are unknown. The dry well was excavated in June 1990, and soil contamination was discovered beneath it. Accordingly, Kodak's excavation contractor reported the incident to the NJDEP via a Communication Center Notification Report. The Corresponding Case Number was 90-05-22-1638. As hazardous substances were involved, the NJDEP assigned the case to the Division of Hazardous Waste - Management Metro Enforcement. Subsequently, soil samples were collected from below the dry well, and groundwater samples were collected from an on-site monitoring well and an irrigation well. Additional monitoring wells were installed in March 1991 and sampled in April 1991. Sampling results are summarized below.

Hazardous Waste Quantity

The quantity of contaminated soil associated with the dry well and the source and extent of contamination are currently unknown.

Hazardous Substances/Physical State.

Analyses of the soil under the excavated dry well indicate the presence of 1,1, 1-trichloroethane (TCA) and total xylenes. Soil vapor analyses showed the presence of TCA, trichloroethylene, toluene, and xylene. It is assumed that the hazardous substances, as originally deposited, were liquids.

Ref. Nos. 4, 28, 33

PART III: EXISTING ANALYTICAL DATA

Soil sampling at the Eastman Kodak Processing Lab Site related to the release of petroleum products from four underground storage tanks was conducted subsequent to the excavation of the units.

Soil samples were collected from under the fuel oil tanks on May 22, 1990. The results or a summary of these results were not located in site files. However, a June 1990 report by a consultant to Kodak reportedly summarizes findings related to soil contamination under the two gasoline tanks. The presence of elevated levels of Total Petroleum Hydrocarbons (TPHC) in the soil was noted (Ref. No. 33).

Additionally, results of an August 1990 DICAR were summarized in correspondence from Kodak to the NJDEP dated October 26, 1990. Specifically, Kodak indicated that the results of a second monitoring and irrigation well sampling did not show the presence in groundwater of semivolatile or volatile compounds associated with No. 6 heating oil and confirm the initial analyses submitted with the DICAR (Ref. No. 33). The reports or cited analyses were not located in site files.

Soil sampling was also conducted related to the release of CERCLA hazardous substances from an on-site dry well. Subsequent analyses of five soil samples collected from below the concrete vault indicate the presence of 1,1,1-trichloroethane (TCA) and xylene with a maximum reported concentration of 5,000,000 parts per billion (ppb) TCA and 21,000 ppb total xylenes. Refer to Reference Number 42 for specifics. In correspondence to the U.S. EPA dated January 29, 1991, Kodak reported that vapor analyses indicated detectable levels of TCA, trichloroethylene, toluene, and xylene; groundwater samples collected from an on-site monitoring well and irrigation well showed detectable concentrations of volatile organics and formaldehyde (Ref. No. 4). Kodak did not provide the date(s) and location(s) of analyses and samples. Subsequent to the installation of four additional monitoring wells in March 1991, groundwater sampling was conducted on site on April 23 and 24, 1991 (Ref. Nos. 43, 47). Target chemicals specific to photoprocessing operations were analyzed for, including TCA, silver, cyanide, formaldehyde, hexavalent chromium, and chromium (Ref. Nos. 36, 37). Analyses of groundwater samples from the monitoring wells indicated the presence of TCA, 1,1-dichloroethene, 1,1-dichlorethane, vinyl chloride, benzene, toluene, cis-1,2-dichlorethane, formaldehyde, and chloroform (Ref. No. 43).

No monitoring or sampling has been conducted at the Eastman Kodak Processing Lab Site by NUS Corporation Region 2 FIT.

3. **What is the depth from the lowest point of waste disposal/storage to the highest seasonal level of the saturated zone of the aquifer of concern?**

The seasonal high of the saturated zone of the aquifer of concern is 15 feet below ground. The former dry well is the lowest point of waste disposal/storage of CERCLA hazardous substances. The depth below ground of this surface impoundment is unknown; the depth is assumed under a worst-case scenario to be 6 feet. However, a release to groundwater has already been documented; the estimated depth from the dry well to the aquifer of concern is 0 feet.

Ref. Nos. 4, 10, 30, 34, 43

4. **Identify and determine the distance to and depth of the nearest well that is currently used for drinking purposes?**

The site is approximately 1,500 feet east of a Fair Lawn public supply well located on 11th Street, which is the nearest well used for drinking purposes. The well depth is 300 feet. There is a well on site (Well No. 24), but it is closed due to contamination upgradient of the Eastman Kodak Photoprocessing Laboratory Site.

Ref. Nos. 10, 11, 13, 14, 17, 23, 34

5. **If a release to groundwater is observed or suspected, determine the number of people that obtain drinking water from wells that are documented or suspected to be located within the contamination boundary of the release.**

Two of the 12 public supply wells serving 16,000 persons in Fair Lawn are located within the contamination boundary of release, which is considered to cover the area within a 0.50-mile radius of the site; an apportioned population of 2,667 persons estimated to obtain drinking water from these wells.

Ref. Nos. 4, 11, 13, 19, 30

6. **Identify the population served by wells that are not expected to be contaminated located within 4 miles of the site that draw from the aquifer of concern.**

Distance	Population
0 - ¼ mi	0
>¼ - ½ mi	0
>½ - 1 mi	8,005
>1 - 2 mi	26,030
>2 - 3 mi	38,822
>3 - 4 mi	34,387

State whether groundwater is blended with surface water, groundwater, or both before distribution.

There are four water companies utilizing groundwater within 4 miles of the site: Ridgewood, Hawthorne, Garfield, and Fair Lawn. Forty-one of the 56 Ridgewood public supply wells are

10. **What is the distance in feet to the nearest downslope surface water? Measure the distance along a course that runoff can be expected to follow.**

The distance from the site to Henderson Brook following the probable course of runoff is approximately 1,000 feet.

Ref. Nos. 11, 18, 20

11. **Determine the type of floodplain that the site is located within.**

The site is not located within a flood plain.

Ref. No. 20

12. **Identify drinking water intakes in surface waters within 15 miles downstream of the site. For each intake identify: the name of the surface water body in which the intake is located, the distance in miles from the point of surface water entry, population served, and stream flow at the intake location.**

There are no drinking water intakes in surface waters downstream from the site.

Ref. Nos. 13, 21, 22, 23

13. **Identify fisheries that exist within 15 miles downstream of the point of surface water entry. For each fishery specify the following information:**

Fishery Name	Water Body Type	Flow (cfs)	Saline/ Fresh/ Brackish
Passaic River (including Dundee Lake)	Moderate to Large Stream	850	Fresh
Newark Bay	Coastal Tidal Water	N/A	Brackish

The Passaic River above the Dundee Lake is stocked with muskie and trout, which are reportedly caught for purely recreational purposes and are not edible.

Ref. Nos. 20, 24, 25, 26

14. **Identify surface water sensitive environments that exist within 15 miles of the point of surface water entry. For each sensitive environment specify the following:**

Sensitive Environment	Water BodyType	Flow (cfs)	Wetland Frontage (miles)
Passaic River Wetlands	Moderate to Large Stream	850	4.5
Newark Bay Wetlands	Coastal Bay	N/A	0.5

Ref. Nos. 31, 38, 50

Drums were observed on site during the NUS Corp. Region 2 FIT off-site reconnaissance. A release to air of hazardous substances from the drums is not expected, as the containers appeared to be intact and site files did not include any record of a release or information identifying the contents as hazardous.

Ref. Nos. 4; 28; 33; 34; 44; 45; Attachment 1, Photographs

20. Determine populations that reside within 4 miles of the site.

Distance	Population
0 - ¼ mi	499
>¼ - ½ mi	2,432
>½ - 1 mi	13,513
>1 - 2 mi	67,237
>2 - 3 mi	116,773
>3 - 4 mi	109,386

Ref. Nos. 11, 15

21. Identify sensitive environments, including wetlands and associated wetlands acreage, within ½ mile of the site.

0-¼ Mile Sensitive Environments/Wetland Acreage	¼-½ Mile SensitiveEnvironments/Wetland Acreage

There are no sensitive environments within 0.5 mile of the site.

Ref. Nos. 11, 31, 38

22. If a release to air is observed or suspected, determine the number of people that reside or are suspected to reside within the area of air contamination from the release.

A release to air is not observed or suspected.

Ref. Nos. 4; 28; 33; 34; 35; Attachment 1, Photographs

23. If a release to air is observed or suspected, identify any sensitive environments, listed in question No. 21, that are or may be located within the area of air contamination from the release.

A release to air is not observed or suspected.

Ref. Nos. 4; 28; 33; 34; 45; Attachment 1, Photographs

12. **Site Status**

☒ Active ☐ Inactive ☐ Unknown

13. **Years of Operation** 1961* to Present

* Property has been owned by Kodak since 1961; operations are assumed to have been initiated concurrently.

14. **Identify the types of waste sources (e.g., landfill, surface impoundment, piles, stained soil, above- or below-ground tanks or containers, land treatment, etc.) on site. Initiate as many waste unit numbers as needed to identify all waste sources on site.**

(a) **Waste Sources**

Waste Unit No.	Waste Source Type	FacilityName for Unit
1	Underground Storage Tanks	No. 6 fuel oil and unleaded gasoline tanks
2	Surface Impoundment	Dry well or cement vault
3	Drums	

(b) **Other Areas of Concern**

Identify any miscellaneous spills, dumping, etc. on site; describe the materials and identify their locations on site.

On May 22, 1990, two No. 6 heating oil underground storage tanks were removed; oil was detected in the subsurface soils. The release was reported to the NJDEP and assigned Case No. 90-05-22-1638.

On June 15, 1990, Kodak's excavation contractor determined the presence of soil contamination underneath a dry well on site and notified the NJDEP of the incident. This second incident was assigned Case Number 90-06-15-1528 by the NJDEP (Ref. No. 41). Currently, neither case has been closed by the NJDEP.

There was an anonymous report of hazardous materials being dumped into drains. The incident allegedly occurred on December 4, 1990. The identity, quantity, or location of material(s) spilled, if any, are unknown (Ref. No. 27).

Ref Nos. 1, 2, 3, 4, 11, 27, 28, 32, 41

15. **Information available from**

Contact Amy Brochu Agency U.S. EPA Region 2 Tel. No. (908) 906-6802

Preparer Brian J. Mitchell Agency NUS Corp. Region 2 FIT Date July 19, 1991

CA RICH CONSULTANTS, INC.

Certified Ground-Water and Environmental Specialists

October 29, 1990

N.J. Dept. of Environmental Protection
Div. of Hazardous Waste Management
2 Babcock Place
West Orange, New Jersey 07052

OCT 30

Attention: Mark Commandatore

Re: Revisions to Report
Kodalux Processing Laboratory, Fair Lawn, NJ

Dear Mr. Commandatore:

Attached is a revised copy of our report originally dated July 1990 entitled, "Solvent Storage Room Floor Resurfacing and Dry Well Removal for Kodalux Processing Laboratory, Fair Lawn, NJ." Please note the following corrections:

- In Section 3.1 - Cinder Block Walls - 1,1,1-trichloroethane was detected in the sample at 101 ppm.

- Table 1 - Dry Well Confirmatory Soil Samples - has been revised and now is consistent with the laboratory data reports. 1,1,Dichloroethane has been changed to 1,1,dichloroethene and trichloroethane has been changed to trichloroethene.

If there are any questions regarding these corrections, please do not hesitate to call the undersigned.

Sincerely,

Eric Weinstock

Eric A. Weinstock
Project Manager

EAW:mg

cc: Dick Spiegel
Richard Wilson

KD013

404 Glen Cove Avenue, Sea Cliff, New York 11579 • Tel. 516 674-3889 • FAX 516 674-3901

30

Solvent Storage Room Floor Resurfacing & Dry Well Removal for Kodalux Processing Laboratory Fair Lawn, NJ

July 1990

Revised October 1990

Prepared for:

Eastman Kodak Company
Environmental Technical Services
Health and Environmental Laboratory
901 Elmgrove Road
Building 9 West
Rochester, New York 14653-5710

Prepared by:

CA Rich Consultants, Inc.
404 Glen Cove Avenue
Sea Cliff, New York 11579

SOLVENT STORAGE ROOM FLOOR RESURFACING & DRY WELL
REMOVAL FOR KODALUX PROCESSING LABORATORY
FAIR LAWN, NJ

1.0 INTRODUCTION

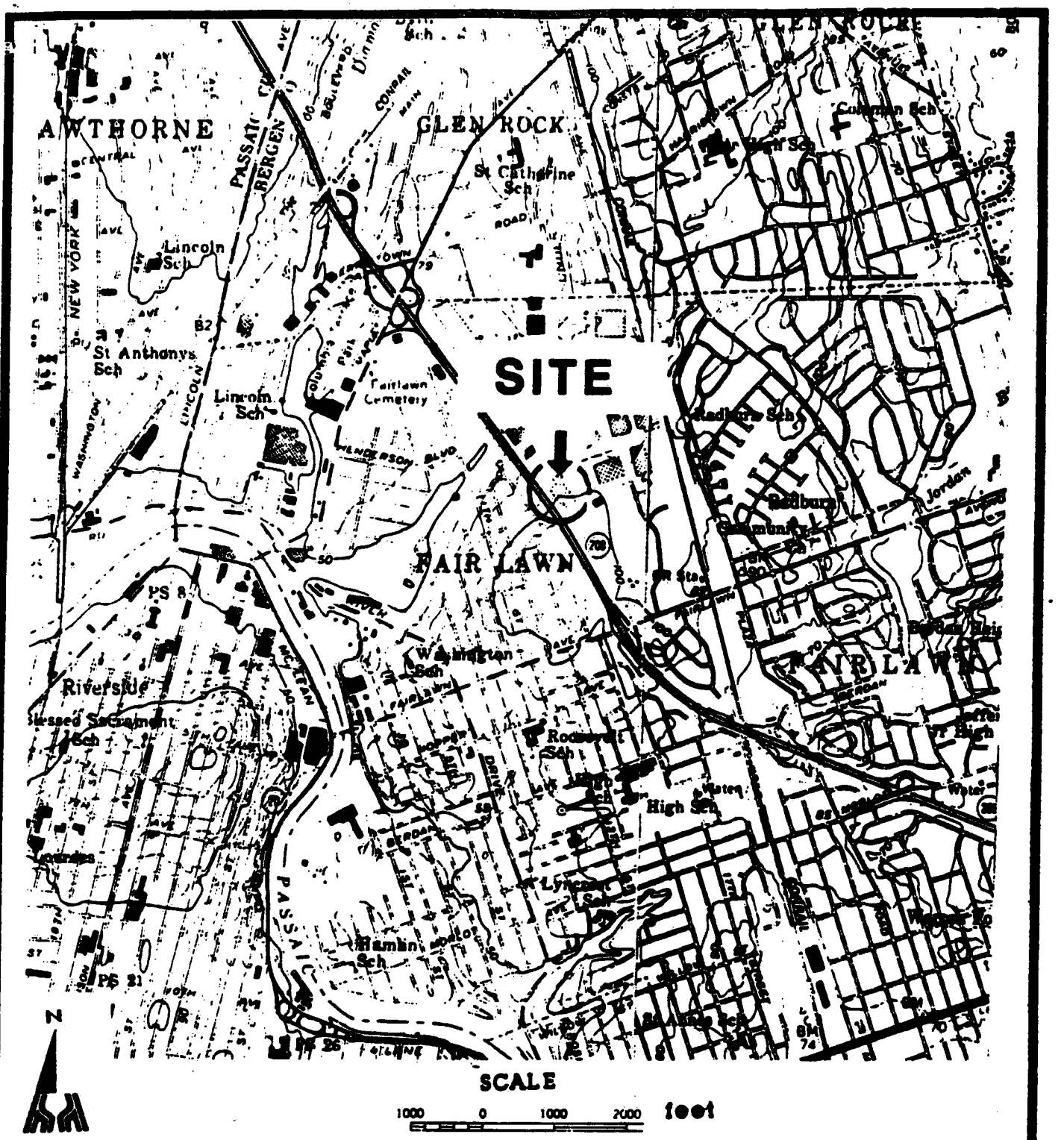
This summary report documents CA Rich Consultants, Inc. removal of a dry well installed in conjunction with a fire suppression system for the facility. The solvent storage room had a drain connected to the dry well to remove fluids incase fire activated the sprinklers. It also describes the subsequent resurfacing of the floor area within this same solvent storage room. A location map is included on Figure 1.

The removal work was performed in accordance with a written CA Rich Consultants, Inc. (CA RICH) Proposal dated March 19, 1990. Field operations commenced May 22 and were complete on June 4, 1990 and is authorized by Kodak's Purchase Order No.LR-KD7-32571W. CA RICH provided overall job management and field oversight of all removal activities, including the collection of confirming soil samples from within the dry well excavation. The physical removal of the dry well and resurfacing of the solvent storage room floor was performed by State-registered Direct Environmental who is subcontracted to CA RICH. Chemical analyses were performed by State-certified Nytest Environmental Laboratories, an independent Contractor. The interstate transportation of all hazardous materials was performed by HazMat Environmental Group, Inc.

2.0 FIELD ACTIVITIES

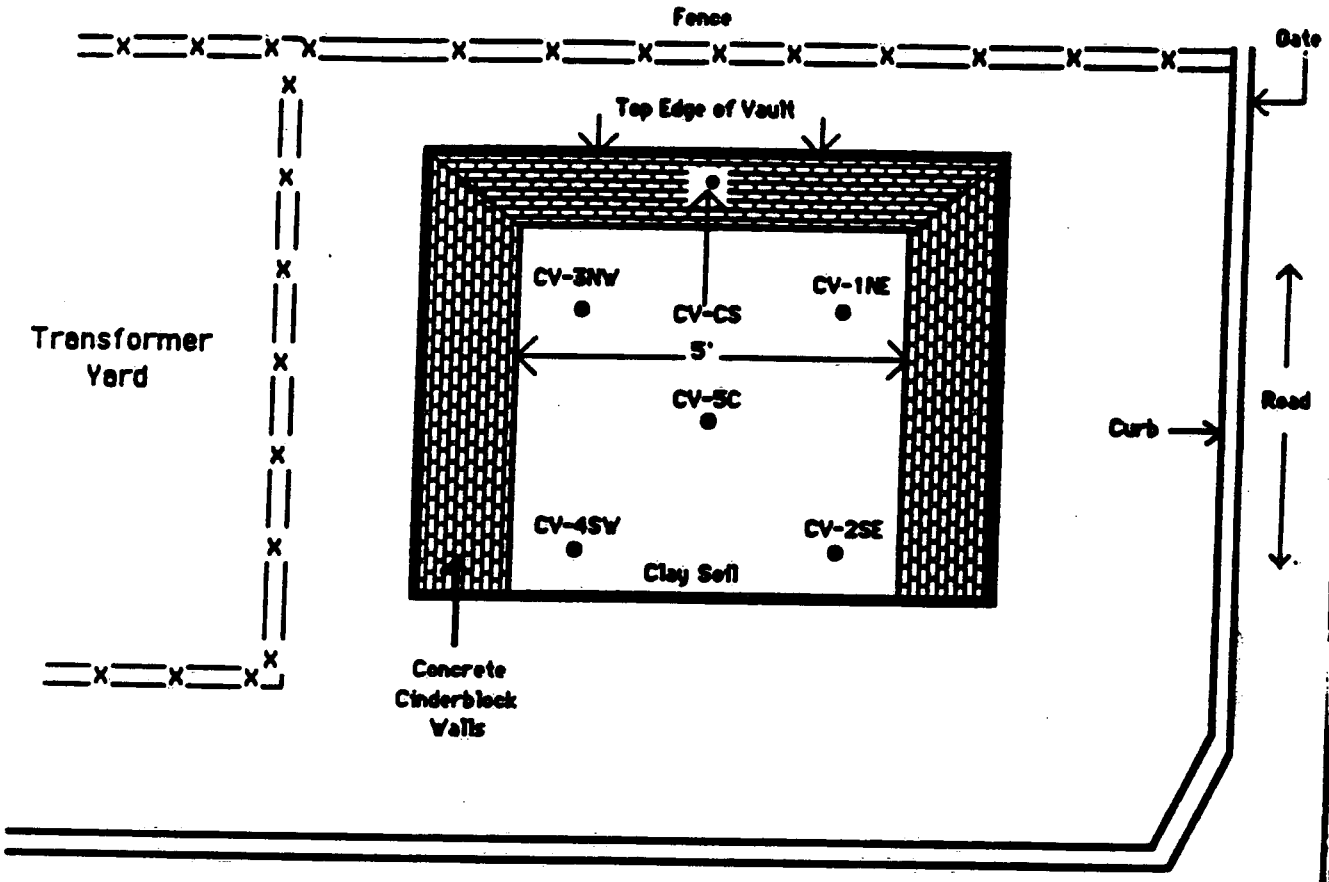
2.1 Site Preparation

Prior to beginning the dry well removal program, a utility clearance was conducted by the local utilities to locate any underground lines in or near the planned area of excavation. A decontamination pad, constructed of bermed plastic sheeting and graded with a contained sump at one end, was prepared for high-pressure cleaning of the excavation equipment. Bermed plastic sheeting was also used for the preparation of a temporary drum staging and storage area.



SITE LOCATION MAP

CA RICH CONSULTANTS, INC. Certified Ground-Water and Environmental Specialists	Kodalux Processing Laboratory Fair Lawn, New Jersey
	Prepared By: STS — Date: June 1990
404 Glen Cove Avenue, Sea Cliff, N.Y. 11579	Reviewed By: RAW — Figure: 1



EXPLANATION

Driveway

• Sample location

Not to Scale

MAP OF SOIL AND CONCRETE SAMPLE LOCATIONS

CA RICH CONSULTANTS, INC. Certified Ground-Water and Environmental Specialists	Kodalux Processing Laboratory Fair Lawn, New Jersey	
404 Glen Cove Avenue, Sea Cliff, N.Y. 11579	Prepared By: STS	Date: June 1990
	Reviewed By: EAW	Figure: 2

The cinder block chip sample was collected using a decontaminated steel chisel and hammer. Collection of each of the soil samples was done by using pre-decontaminated stainless steel sampling spoons. A field blank of the sampling device, as well as a trip blank, was taken and analyzed for volatile organics for quality control purposes.

2.4 Backfilling of Excavations

Following completion of the excavation work and materials testing, a plastic sheet was placed along the bottom and the excavation was then backfilled with the designated clean soil that had been previously removed from above the dry well (when it was in-place), and from adjacent areas.

2.5 Resurfacing of the Solvent Storage Room Floor

The surface of the existing solvent storage room floor was high-pressure, hot-water, washed and scraped to remove the previous floor coatings. The scrapings from the floor were containerized in DOT 21C fiber drums and placed upon the on-site drum staging area.

Prior to this Project, both floor drains for the solvent storage room had been sealed shut with a cement plug. To allow for complete containment of a potential leak from any of the 55-gallon drums stored in this room, new floor sumps were installed at each of the two doorways leading to the room. Each sump was lined with a high-density polyethylene plastic tank and subsequently covered with a heavy duty fiberglass grate.

The freshly-scraped floor surface was then covered with a coating of Concrete Protection Systems (TM), Overkote Plus solvent-resistant floor coating. Care was taken to fully overlap the floor coating along the lip of the plastic-lined sumps to create an impermeable seal.

3.0 SAMPLE ANALYTICAL RESULTS

3.1 Cinder Block Walls

One sample of the dry well's cinder block walls was collected and analyzed for volatile organics. This wall material contained 1,1,1-trichloroethane at a concentration of 101 ppm. Analytical results are illustrated on Figure 2 and included in Appendix B.

3.2 Dry Well Bottom

The five (5) subsoil samples collected from the bottom of the dry well (see Figure 1) contained several volatile organic compounds with 1,1,1-trichlorethane detected in the 1,000 to 5,000 ppm range. Sample analytical results are given on Table 1 with a copy of the original laboratory report attached as Appendix B.

4.0 DISPOSAL OF HAZARDOUS MATERIALS

4.1 Concrete Dry Well Disposal

The cinder blocks and adjacent soils that were removed during the dry well excavation activity are safely staged on bermed plastic sheeting at the Kodalux Facility. A cover of anchored and weighted plastic sheeting was placed over this material as well. Materials disposal will be incorporated into the next phase of removal work at this Facility.

4.2 Dry well Bottom Sludge and Fluid

All of the fluid contained within the dry well during this removal program, as well as the high-pressure, hot-water wash rinsate, was transferred into DOT 17H 55-gallon drums. The bottom sludges were transferred into plastic-lined DOT 21C fiber drums. Upon completion of the dry well removal, these drums were temporarily placed upon the drum staging area. All of these drums were then loaded onto a manifested HazMat, Inc. trailer on June 1, 1990, and shipped to a permitted Treatment Storage and Disposal (TSD) facility.

TABLE 1

DRY WELL
Confirmatory Soil Samples
Concentration in Parts Per Million (PPM)

COMPOUND	CV-NBKWL	CV-1NE	CV-2SE	CV-3NW	CV-4SW	CV-5C	TRIP BLANK	FIELD BLANK
Methylene Chloride	J	49.0 B	53.0 B	55.0 B	50.0 B	60.0 B	JB	ND
2-Propanone	ND	JB	JB	JB	ND	ND	J	ND
11-Dichloroethene	ND	ND	J	96	ND	ND	ND	ND
111-Trichloroethane	101	1600	3000	5000	2000	1200	ND	ND
Trichloroethene	ND	ND	ND	J	ND	ND	ND	ND
Toluene	ND	ND	ND	J	ND	ND	ND	ND
Xylene (total)	ND	J	ND	21	ND	ND	ND	ND

NOTE:
B - Indicates possible/probable blank contamination.
J - Indicates detected below Method Detection Limit (MDL).

4.3 Solvent Storage Room Floor Scrapings

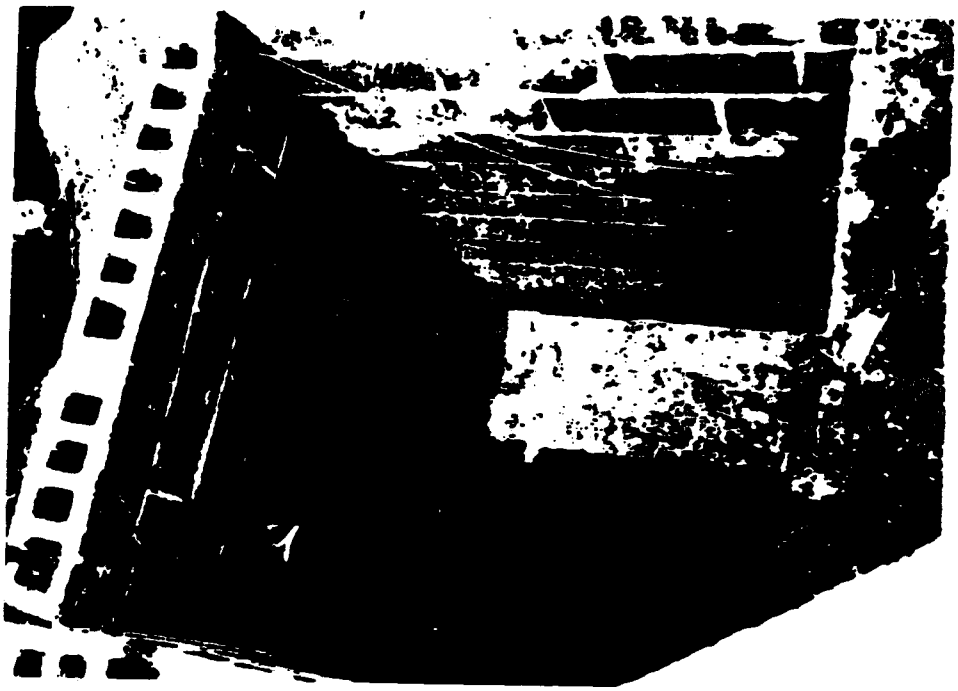
Prior to resurfacing the solvent storage room floor, the existing floor surface was high-pressure, hot-water washed and scraped to remove the previous coatings. The wash water rinsate was placed into 55-gallon drums and the floor scrapings consolidated into 21C fiber drums. These drums were temporarily placed on the drum staging area and shipped out on June 11, 1990 with the dry well sludge and fluid.

5.0 CONCLUSIONS

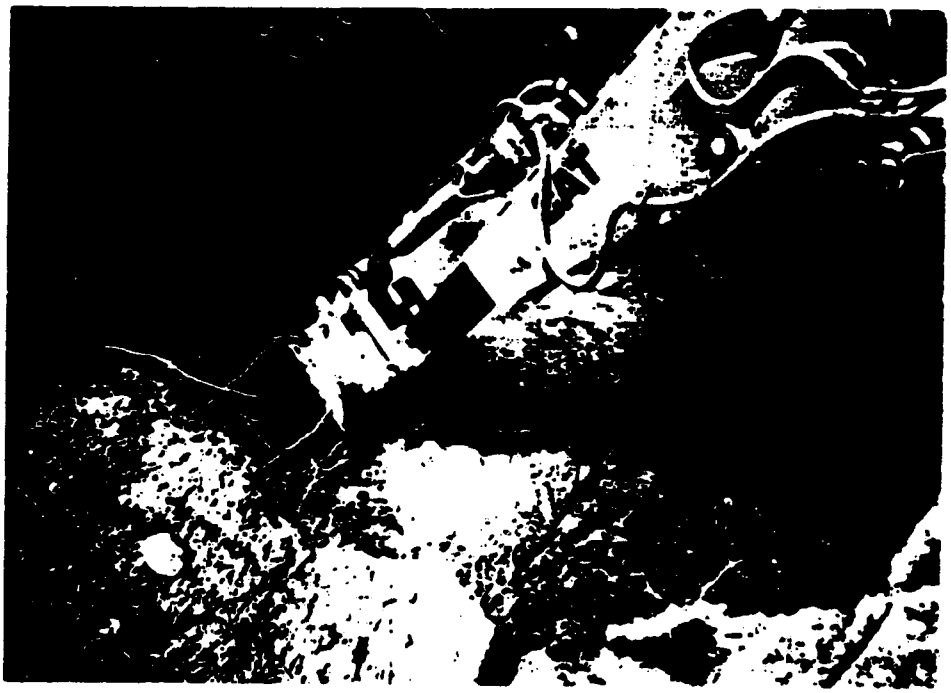
1. The soil samples collected from beneath the dry well contained concentrations of volatile organic compounds in excess of 5,000 ppm. The apparent source(s) of these solvent-related materials is accidental or incidental spillage and/or leakage of the drummed solvents that are stored in this room.

2. On June 15, 1990 (the first day CA RICH received the analytical results), CA RICH, as directed by KODAK, notified the State's Action Hot Line of this in-place 'release'. The Kodalux Facility was then assigned Case No. **90 06 15 1528** for this release.

APPENDIX A
PHOTOGRAPHIC LOG OF FIELD ACTIVITIES

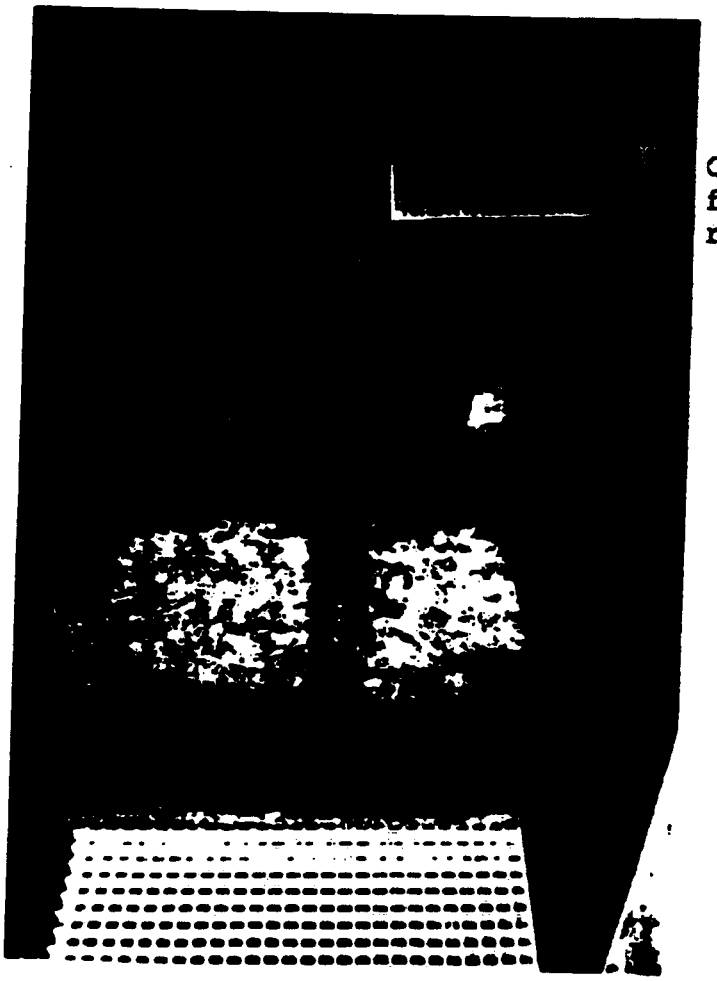


Concrete Vault before excavation



Concrete Vault during excavation

Chemical Storage Room floor before chemical resistant coating



Chemical Storage Room floor with new chemical resistant coating

APPENDIX B
ANALYTICAL DATA

TOTAL ANALYTICAL SERVICES FOR A SAFE ENVIRONMENT

nytest environmental inc

Project No.: 8016835

Log In No: 6796

P.O. No.: Pending

Date: May 31, 1990

ANALYTICAL DATA REPORT PACKAGE
FOR

C.A. Rich Consultants

404 Glen Cove Avenue

Sea Cliff, N.Y. 11579

Attn: Eric Weinstock
Ref: Kodalux-Fair Lawn, NJ

SAMPLE IDENTIFICATION	LABORATORY NUMBER	TYPE OF SAMPLE

SEE NEXT PAGE

REPORT PREPARED BY:
PARAG K. SHAH, Ph. D.
ORGANIC LAB. MANAGER

FRANK BUCZYNSKI
INORGANIC LAB. MANAGER

DOUGLAS SHEELEY
LABORATORY DIRECTOR

ck

WE CERTIFY THAT THIS REPORT IS A TRUE REPORT OF RESULTS OBTAINED FROM OUR TESTS OF THIS MATERIAL.

RESPECTFULLY SUBMITTED,
NYTEST ENVIRONMENTAL INC.

Remo Sgante

REMO SGANTE
EXECUTIVE V.P.

Report on sample(s) furnished by client applies to sample(s). Report on sample(s) obtained by us applies only to lot sampled. Information contained herein is not to be used for reproduction except by special permission. Sample(s) will be retained for thirty days maximum after date of report unless specifically requested otherwise by client. In the event that there are portions or parts of sample(s) remaining after Nytest has completed the required tests, Nytest shall have the option of returning such sample(s) to the client at the client's expense.

nytest environmental inc

Project No.: 9910035
Log In No: 4786

SAMPLE IDENTIFICATION	LABORATORY NUMBER	TYPE OF SAMPLE
CV-1NE	4786001	SOIL
CV-2SE	4786002	SOIL
CV-3NV	4786003	SOIL
CV-4SW	4786004	SOIL
CV-5C	4786005	SOIL
TB 5/24	4786006	SOIL

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Project No.: 8010835

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TOTAL ANALYTICAL SERVICES FOR A SAFE ENVIRONMENT

nytest environmental inc

CHAIN OF CUSTODY RECORD

Page 1 of ____

SHIP TO: Nytest Environmental Inc.
60 Seaview Blvd.
Port Washington, NY 11050
(516) 625-5500
Attn. ____

REPORT TO: Client Name CA RICH CONSULTANTS
Address 404 GLEN COVE AVE
SEA CLIFF, NY 11579
Phone 516-624-[illegible]
Attn. ERIC WEINSTOCK

Project No.	Project Name KODALUX - FAIR LAWN	Date Shipped 5/24/90	Carrier -
Sampler: (Signature) Richard X Young	Analytical Protocol NJ - TIER 2	Air Bill No.	Cooler No. 1

Sample I.D.	Date/Time Sampled		Sample Description	No. Of Containers	ANALYSIS REQUESTED
CV-1NE	5/24	NOON	SOIL	1	VOA
CV-2SE	"	"	"	1	VOA
CV-3NW	"	"	"	1	VOA
CV-4SW	"	"	"	1	VOA
CV-5C	"	"	"	1	VOA
PL-1	5/24	7pm	"	1	TPHC
PL-2	"	"	"	1	TPHC
PL-3	"	"	"	2	TPHC, BTEX
PL-4	"	"	"	1	TPHC
PL-5	"	"	"	1	TPHC
PL-6	"	"	"	1	TPHC
			TOTAL	12	

Relinquished by (Signature)	Date / Time	Rec'd By (Signature)	Date / Time
R. X Young	5/24/90		
Print Name R. H. YOUNG		Print Name	
Relinquished by (Signature)	Date / Time	Rec'd by (Signature)	Date / Time
Print Name		Print Name	
Relinquished by (Signature)	Date / Time	Received for Laboratory by (Signature) Christine Supple	Date / Time
Print Name		Print Name Christine Supple	5/26

Special Instructions/Comments ____

00001

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Laboratory Deliverable Check List

		Check if Complete
I.	Cover Page, Format, and Laboratory Certification (Include Cross Reference Table of Field I.D. # and Laboratory I.D. #)	✓
II.	Chain of Custody	✓
III.	Summary Sheets Listing Analytical Results Including QA Data Information	✓
IV.	Laboratory Chronicle and Methodology Summary including Sampling Holding Time Check	✓
V.	Initial Calibration and Continuing Calibration (Time & Date Summary)	✓
VI.	Tune Summary (MS)	✓
VII.	Blanks (Method, Field, Trip)	✓
VIII.	Surrogate Recovery Summary	✓
IX.	Non-Conformance Summary	✓

Reino Sigante

Laboratory Manager

5/31

Date

GC/MS ANALYSIS CONFORMANCE/NON-CONFORMANCE SUMMARY FORM

	No	Yes
1. GC/MS Tune Specifications		
a. BFB passed		✓
b. DFTPP passed		✓
2. GC/MS Tuning Frequency - Performed every 12 hours		✓
3. GC/MS Calibration - Initial Calibration performed within 30 days before sample analysis and continuing calibration performed within 24 hours before sample analysis		
4. GC/MS Calibration Requirements		
a. Calibration Check Compounds		✓
b. System Performance Check Compounds		✓
5. Blank Contamination - List compounds for each fraction		
a. VOA Fraction - $MeCl_2$ & Acetone		
b. B/N Fraction		
c. Acid Fraction		
6. Surrogate Recoveries Meet Criteria (If not met; list those compounds and their recoveries which fall outside the acceptable range)		✓
a. VOA Fraction		
b. B/N Fraction		
c. Acid Fraction		
7. Extraction Holding Time Met		✓
Comments:		
8. Analysis Holding Time Met		✓
Comments:		

Additional Comments:

Laboratory Manager Reno Fogante Date: 5/31

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Laboratory Chronicle

Project No: 8018835

Client Name: C.A. Rich Consultants

Date Received: 5/26/90
Sample ID: see chain of custody

Organics Extraction:

1. Acids _____
2. Base/Neutrals _____
3. Pesticides/PCBs _____
4. Dioxin _____

Analysis:

1. Volatiles 5/29/90, 5/30/90, 5/31/90
2. Acids _____
3. Base/Neutrals Reno Figante
4. Pesticides/PCBs _____
5. Dioxin _____

Section Supervisor
Review & Approval _____

Inorganics:

1. Metals _____
2. Cyanides _____
3. Phenols _____

Other Analysis:

Total Petroleum Hydrocarbons 6/2/90

_____

_____

_____

Section Supervisor
Review & Approval Reno Figante

Quality Control Supervisor
Review & Approval _____

00004

If fractions are re-extracted and re-analyzed include dates for both.

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NON-CONFORMANCE SUMMARY
(Case Narrative)

Project Number: 9016835
Log In No.: 4796

Samples were analyzed as per required protocols, no problems were encountered. Sample had to be ran medium level due to high concentration of target compounds.

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METHODOLOGY SUMMARY

AQUEOUS SAMPLE PREPARATION	REFERENCE 1	REFERENCE 2
BNA, Pesticides/PCB's Extraction		3510
AA/ICP Sample Preparation	200.7	
Furnace Sample Preparation	200.0	
Mercury Sample Preparation	245.1	
Hexavalent Chromium Sample Preparation	218.5	
NON-AQUEOUS EXTRACTIONS		
SOIL AND SEDIMENT SAMPLES:		
BNA, Pesticides/PCB's Extraction		3550
AA/ICP Sample Preparation	3050	
Furnace Sample Preparation	3050	
Mercury Sample Preparation	7471	
SLUDGE/PETROLEUM BASED SAMPLES:		
AA/ICP Sample Preparation		3050
Furnace Sample Preparation		3020/3030/3050
Mercury Sample Preparation		7471
ICP (INDUCTIVELY COUPLED PLASMA):		
Aluminum	200.7	6010
Antimony	200.7	6010
Barium	200.7	6010
Beryllium	200.7	6010
Cadmium	200.7	6010
Calcium	200.7	6010
Chromium	200.7	6010
Cobalt	200.7	6010
Copper	200.7	6010
Iron	200.7	6010
Lead	200.7	6010
Magnesium	200.7	6010
Manganese	200.7	6010
Molybdenum	200.7	6010
Nickel	200.7	6010
Potassium	200.7	6010
Silver	200.7	6010
Sodium	200.7	6010
Tin	200.7	6010
Titanium	200.7	6010
Vanadium	200.7	6010
Zinc	200.7	6010

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METHODOLOGY SUMMARY

FURNACE AA:	REFERENCE 1	REFERENCE 2	REFERENCE 3
Antimony	204.1	7041	
Arsenic	206.2	7060	
Lead	239.2	7421	
Selenium	270.2	7740	
Thallium	279.2	7841	
Tin	282.2		
Vanadium	286.2	7911	
Mercury	245.1	7470	
AQUEOUS METHODOLOGIES:			
Organochlorine Pesticides and PCB's by Gas Chromatography			608
Herbicides by Gas Chromatography			362
Purgeable Organics by GC/MS			624
Base/Neutral, Acids by GC/MS			625
2,3,7,8-TCDD by GC/MS			613/625
NON-AQUEOUS METHODOLOGIES:			
Gas Chromatography/Mass Spectrometry:			
Purgeable Organics		8240	
Base/Neutral and Acid Extractables		8270	
Organochlorine Pesticides and PCB's by Gas Chromatography		8080	
MISCELLANEOUS ANALYSIS:			
Extraction Procedure Toxicity		1310	
Ignitability		1010	
Corrosivity		1110	
Reactivity		Chapter 8.3	
Toxicity Characteristic Leaching Procedure (TCLP)		(Reference 5)	

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METHODOLOGY SUMMARY

ADDITIONAL INORGANIC PARAMETERS	REFERENCE 1	REFERENCE 2
Bromide	320.1	
Color	110.2	
Conductance	120.1	
Conductance		9050
Odor	140.1	
pH	150.1	
pH		9040
TDS	160.2	
TSS	160.2	
TS	160.3	
Hardness	130.1	
Temperature	170.1	
Turbidity	180.1	
Acidity	305.1	
Alkalinity	310.1	
Ammonia	350.2/350.3	
Chloride	325.3	
Chloride		9252
Residual Chlorine	330.2	
COD	410.3/405.1	
Cyanide	335.3	
Oil and Grease	413.1/413.2	
Oil and Grease		9070
Fluoride	340.2	
TKN	351.2	
NO2/NO3	353.2	
D.O.	360.2	
Petroleum Hydrocarbons (Reference 4)	418.1	
Phenol	420.2	
Phosphorous	365.1	
Silica	370.1	
Sulfate	375.2/375.4	
Sulfide	376.1	
Surfactants	425.1	
TOC	415.1	

REFERENCES:

(1) USEPA-600/4-79-002, Methods for Chemical Analysis of Water and Waste
(2) USEPA SW 846, Test Methods for Evaluating Solid Waste, Third Edition
(3) Federal Register 40 CFR Part 136, Vol. 49, No. 209 Test Parameters for the Analysis of Pollutants
(4) as modified by NJDEP-BISE (for non-aqueous samples)
(5) Federal Register Vol. 51, No. 216 Friday, 11/7/86, pp. 40643-40652

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DATA REPORTING QUALIFIERS

U Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U) based on necessary concentration dilution actions. (This is not necessarily the instrument detection limit.) The footnote should read U-Compound was analyzed for but not detected. The number is the minimum attainable detected limit for the sample.

J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero (e.g.: If limit of detection is 10 ug/l and a concentration of 3 ug/l is calculated, report as 3J.)

B This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.

T This flag indentifies all targeted compounds that were found above the method detection limits.

NA This flag indicates that the data is not applicable

Note: Data on soil samples expressed on a dry weight basis.

1 A-T

NYTEST ENVIRONMENTAL INC.

TCL VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: SOIL
CONC. LEVEL: MED
ANALYSIS DATE: 5/31/90

SAMPLE ID: CV-1NE
LAB ID: 4796001
DIL FACTOR: 20.00
% MOISTURE: 11

CMPD #	CAS Number	VOLATILE COMPOUNDS	UG/KG (DRY BASIS)
1	74-87-3	Chloromethane	28000.0 U.
2	74-83-9	Bromomethane	28000.0 U.
3	75-01-4	Vinyl Chloride	28000.0 U.
4	75-00-3	Chloroethane	28000.0 U.
5	75-09-2	Methylene Chloride	49000.0 TB
6	67-64-1	2-Propanone	21000.0 JB
7	75-15-0	Carbon disulfide	14000.0 U.
8	75-35-4	1,1-Dichloroethene	14000.0 U.
9	75-34-3	1,1-Dichloroethane	14000.0 U.
10	540-59-0	1,2-Dichloroethene (total)	14000.0 U.
11	67-66-3	Chloroform	14000.0 U.
12	107-06-2	1,2-Dichloroethane	14000.0 U.
13	78-93-3	2-Butanone	28000.0 U.
14	71-55-6	1,1,1-Trichloroethane	1600000.0 T.
15	56-23-5	Carbon Tetrachloride	14000.0 U.
16	108-05-4	Vinyl Acetate	28000.0 U.
17	75-27-4	Bromodichloromethane	14000.0 U.
18	78-87-5	1,2-Dichloropropane	14000.0 U.
19	10061-01-5	cis-1,3-Dichloropropene	14000.0 U.
20	79-01-6	Trichloroethene	14000.0 U.
21	124-48-1	Dibromochloromethane	14000.0 U.
22	79-00-5	1,1,2-Trichloroethane	14000.0 U.
23	71-43-2	Benzene	14000.0 U.
24	10061-02-6	Trans-1,3-Dichloropropene	14000.0 U.
25	75-25-2	Bromoform	14000.0 U.
26	108-10-1	4-Methyl-2-Pentanone	28000.0 U.
27	591-78-6	2-Hexanone	28000.0 U.
28	127-18-4	Tetrachloroethene	14000.0 U.
29	79-34-5	1,1,2,2-Tetrachloroethane	14000.0 U.
30	108-88-3	Toluene	14000.0 U.
31	108-90-7	Chlorobenzene	14000.0 U.
32	100-41-4	Ethylbenzene	14000.0 U.
33	100-42-5	Styrene	14000.0 U.
34	1330-20-7	Xylene (total)	11000.0 J.
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1C

NYTEST ENVIRONMENTAL INC.

TENTATIVELY IDENTIFIED ORGANICS COMPOUND

SAMPLE ID: CV-1NE

OF TIC FOUND: 9

LAB ID: 4796001

MATRIX: SOIL

FRACTION: VOA

CAS Number	Compound Name	RT	Estimated Concentration UG/KG (DRY WT)
1	UNKNOWN	29:46	29000 J
2	UNKNOWN	30:02	21000 J
3	UNKNOWN	31:20	28000 J
4	UNKNOWN	32:12	15000 J
5	UNKNOWN	36:34	67000 J
6	UNKNOWN	38:52	28000 J
7	UNKNOWN	41:16	100000 J
8	UNKNOWN	42:34	19000 J
9	UNKNOWN	42:52	19000 J
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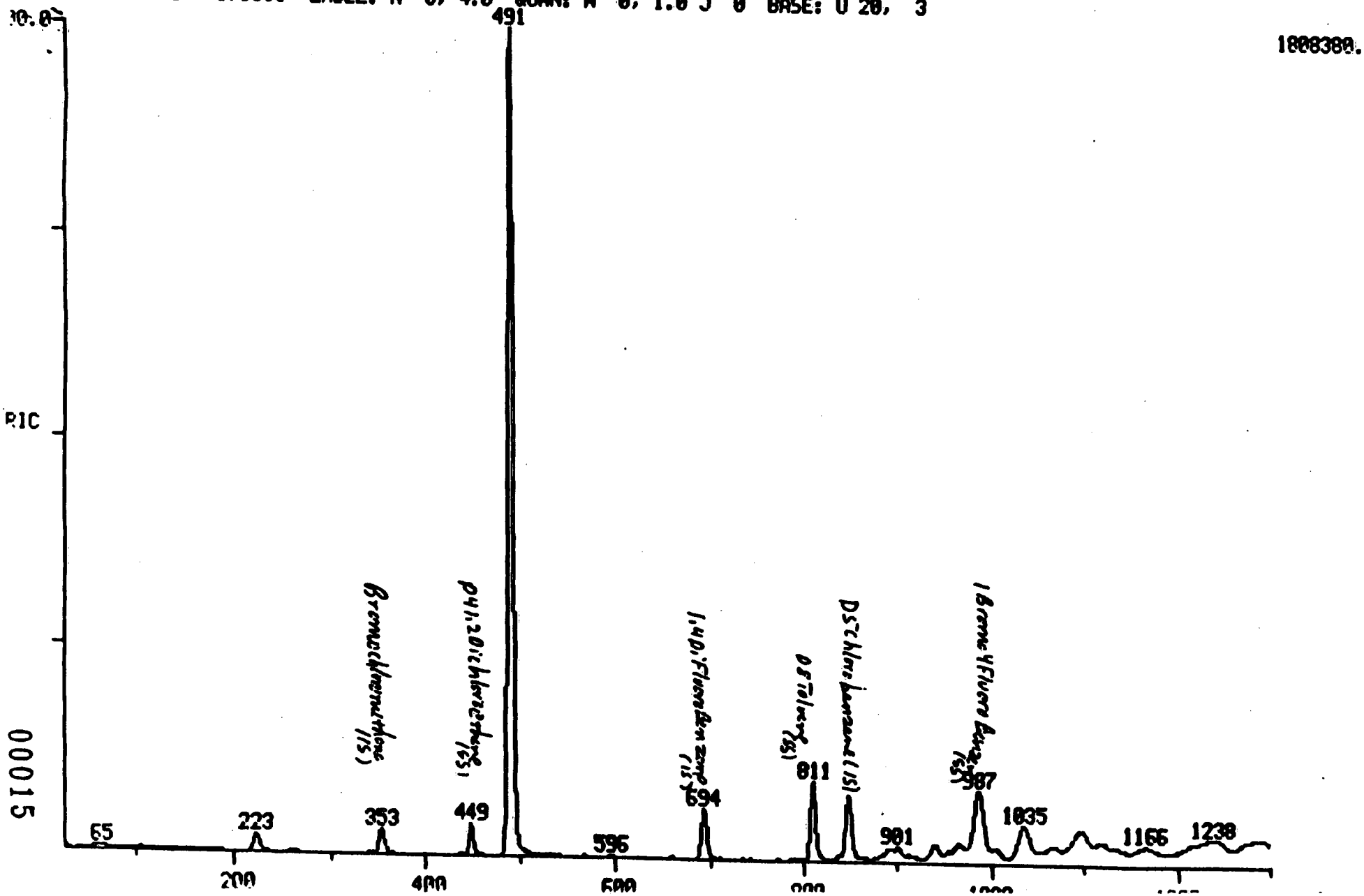
RIC
05/31/90 10:32:00
SAMPLE: C.A.RICH,CV-1NE/4796001,REC'D 5/26/90
CONDS.: 5UL(4G/10MLS)/5MLS,INST.D
RANGE: G 1,1300 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: D1877 #1071 SCANS 25 TO 1300
CALI: D1877 #2



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1 A-T

NYTEST ENVIRONMENTAL INC.

TCL VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: SOIL
CONC. LEVEL: MED
ANALYSIS DATE: 5/31/90

SAMPLE ID: CV-2SE
LAB ID: 4796002
DIL FACTOR: 20.00
% MOISTURE: 16

CRPO #	CAS Number	VOLATILE COMPOUNDS	UG/KG (DRY BASIS)
1	74-87-3	Chloromethane	30000.0 U.
2	74-83-9	Bromomethane	30000.0 U.
3	75-01-4	Vinyl Chloride	30000.0 U.
4	75-00-3	Chloroethane	30000.0 U.
5	75-09-2	Methylene Chloride	53000.0 TB
6	67-64-1	2-Propanone	22000.0 JB
7	75-15-0	Carbon disulfide	15000.0 U.
8	75-35-4	1,1-Dichloroethene	12000.0 J.
9	75-34-3	1,1-Dichloroethane	15000.0 U.
10	540-59-0	1,2-Dichloroethene (total)	15000.0 U.
11	67-66-3	Chloroform	15000.0 U.
12	107-06-2	1,2-Dichloroethane	15000.0 U.
13	78-93-3	2-Butanone	30000.0 U.
14	71-55-6	1,1,1-Trichloroethane	3000000.0 T.
15	56-23-5	Carbon Tetrachloride	15000.0 U.
16	108-05-4	Vinyl Acetate	30000.0 U.
17	75-27-4	Bromodichloromethane	15000.0 U.
18	78-87-5	1,2-Dichloropropane	15000.0 U.
19	10061-01-5	cis-1,3-Dichloropropene	15000.0 U.
20	79-01-6	Trichloroethene	15000.0 U.
21	124-48-1	Dibromochloromethane	15000.0 U.
22	79-00-5	1,1,2-Trichloroethane	15000.0 U.
23	71-43-2	Benzene	15000.0 U.
24	10061-02-6	Trans-1,3-Dichloropropene	15000.0 U.
25	75-25-2	Bromoform	15000.0 U.
26	108-10-1	4-Methyl-2-Pentanone	30000.0 U.
27	591-78-6	2-Hexanone	30000.0 U.
28	127-18-4	Tetrachloroethene	15000.0 U.
29	79-34-5	1,1,2,2-Tetrachloroethane	15000.0 U.
30	108-88-3	Toluene	15000.0 U.
31	108-90-7	Chlorobenzene	15000.0 U.
32	100-41-4	Ethylbenzene	15000.0 U.
33	100-42-5	Styrene	15000.0 U.
34	1330-20-7	Xylene (total)	15000.0 U.
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1C

NYTEST ENVIRONMENTAL INC.

TENTATIVELY IDENTIFIED ORGANICS COMPOUND

SAMPLE ID: CV-2SE

OF TIC FOUND: 13

LAB ID: 4796002

MATRIX: SOIL

FRACTION: VOA

CAS Number	Compound Name	RT	Estimated Concentration UG/KG (DRY WT)
1	UNKNOWN	29:46	44000 J
2	UNKNOWN	30:00	78000 J
3	UNKNOWN	31:18	26000 J
4	UNKNOWN	33:28	20000 J
5	UNKNOWN	34:26	74000 J
6	UNKNOWN	35:26	41000 J
7	UNKNOWN	36:28	59000 J
8	UNKNOWN	37:18	27000 J
9	UNKNOWN	38:52	46000 J
10	UNKNOWN	40:30	44000 J
11	UNKNOWN	40:42	50000 J
12	UNKNOWN	41:16	60000 J
13	UNKNOWN	12:90	60000 J
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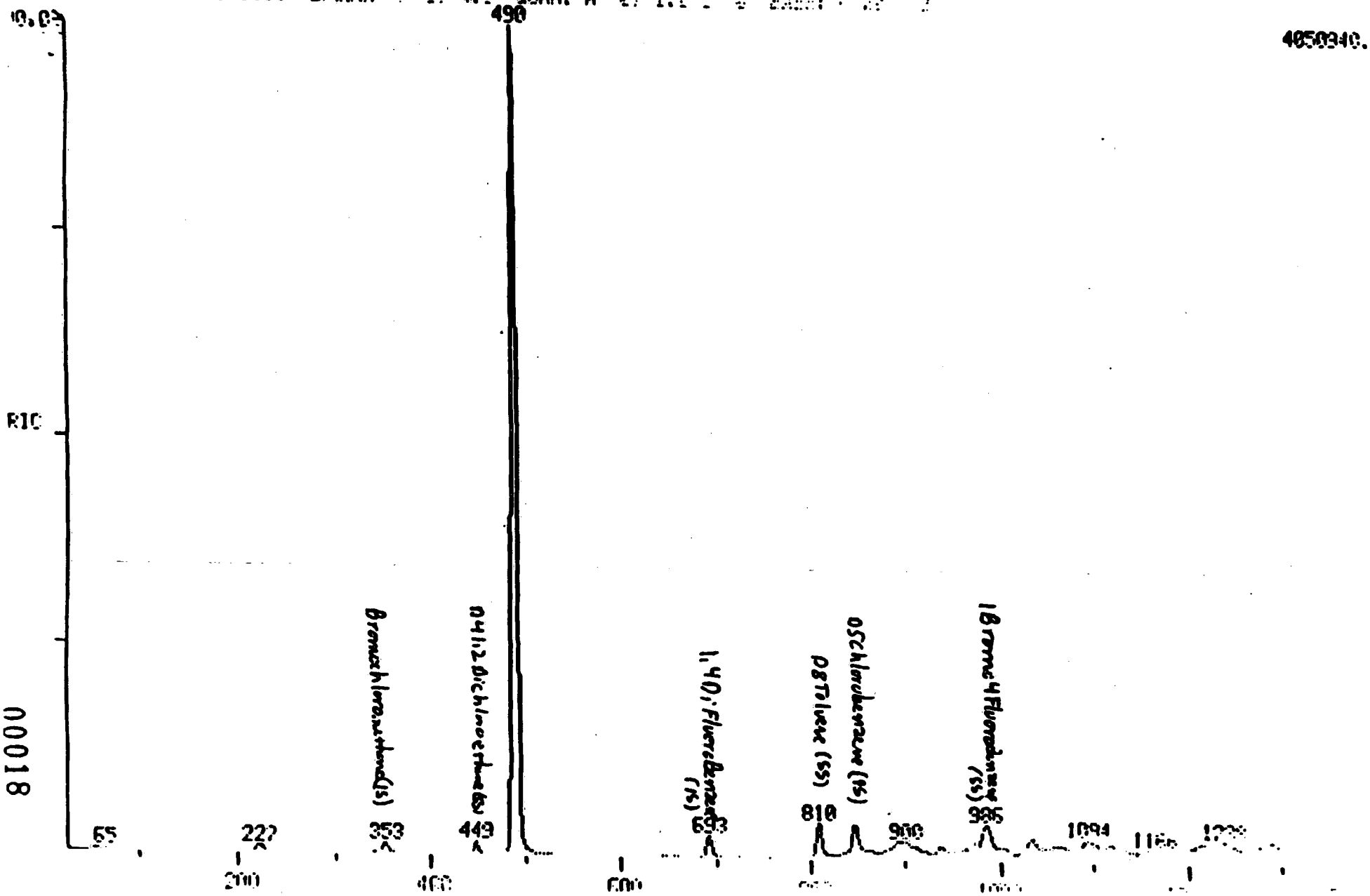
RIC
05/31/90 11:26:03
SAMPLE: C.A.RICH,CW-25E/479[illegible] 5-26-90
CONDS.: 5UL(4G/10ML[illegible]
RANGE: G 1,1300 LABEL: N 2, 4.0 QUAN: A 2, 1.0 [illegible]

DATA: D1878 #1[illegible]
CALI: D1878 #2



00018

1 A-T

NYTEST ENVIRONMENTAL INC.

TCL VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: SOIL
CONC. LEVEL: MED
ANALYSIS DATE: 5/31/90

SAMPLE ID: CV-3NM
LAB ID: 4796003
DIL FACTOR: 20.00
% MOISTURE: 16

CRPD #	CAS Number	VOLATILE COMPOUNDS	UG/KG (DRY BASIS)
1	74-87-3	Chloromethane	30000.0 U.
2	74-83-9	Bromomethane	30000.0 U.
3	75-01-4	Vinyl Chloride	30000.0 U.
4	75-00-3	Chloroethane	30000.0 U.
5	75-09-2	Methylene Chloride	55000.0 TB
6	67-64-1	2-Propanone	23000.0 JB
7	75-15-0	Carbon disulfide	15000.0 U.
8	75-35-4	1,1-Dichloroethene	96000.0 T.
9	75-34-3	1,1-Dichloroethane	15000.0 U.
10	540-59-0	1,2-Dichloroethene (total)	15000.0 U.
11	67-66-3	Chloroform	15000.0 U.
12	107-06-2	1,2-Dichloroethane	15000.0 U.
13	78-93-3	2-Butanone	30000.0 U.
14	71-55-6	1,1,1-Trichloroethane	5000000.0 T.
15	56-23-5	Carbon Tetrachloride	15000.0 U.
16	108-05-4	Vinyl Acetate	30000.0 U.
17	75-27-4	Bromodichloromethane	15000.0 U.
18	78-87-5	1,2-Dichloropropane	15000.0 U.
19	10061-01-5	cis-1,3-Dichloropropene	15000.0 U.
20	79-01-6	Trichloroethene	6300.0 J.
21	124-48-1	Dibromochloromethane	15000.0 U.
22	79-00-5	1,1,2-Trichloroethane	15000.0 U.
23	71-43-2	Benzene	15000.0 U.
24	10061-02-6	Trans-1,3-Dichloropropene	15000.0 U.
25	75-25-2	Bromoform	15000.0 U.
26	108-10-1	4-Methyl-2-Pentanone	30000.0 U.
27	591-78-6	2-Hexanone	30000.0 U.
28	127-18-4	Tetrachloroethene	15000.0 U.
29	79-34-5	1,1,2,2-Tetrachloroethane	15000.0 U.
30	108-88-3	Toluene	5800.0 J.
31	108-90-7	Chlorobenzene	15000.0 U.
32	100-41-4	Ethylbenzene	15000.0 U.
33	100-42-5	Styrene	15000.0 U.
34	1330-20-7	Xylene (total)	21000.0 T.
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1C

NYTEST ENVIRONMENTAL INC.

TENTATIVELY IDENTIFIED ORGANICS COMPOUND

SAMPLE ID: CV-2BN

OF TIC FOUND: 15

LAB ID: 4796003

MATRIX: SOIL

FRACTION: VOA

CAS Number	Compound Name	RT	Estimated Concentration UG/KG (DRY WT)
1	UNKNOWN	14:30	360000 J
2	UNKNOWN	29:46	54000 J
3	UNKNOWN	30:00	98000 J
4	UNKNOWN	31:16	36000 J
5	UNKNOWN	32:06	24000 J
6	UNKNOWN	33:24	38000 J
7	UNKNOWN	34:26	86000 J
8	UNKNOWN	35:24	65000 J
9	UNKNOWN	36:28	100000 J
10	UNKNOWN	37:08	87000 J
11	UNKNOWN	38:46	41000 J
12	UNKNOWN	40:34	88000 J
13	UNKNOWN	40:50	54000 J
14	UNKNOWN	41:02	88000 J
15	UNKNOWN	42:54	110000 J
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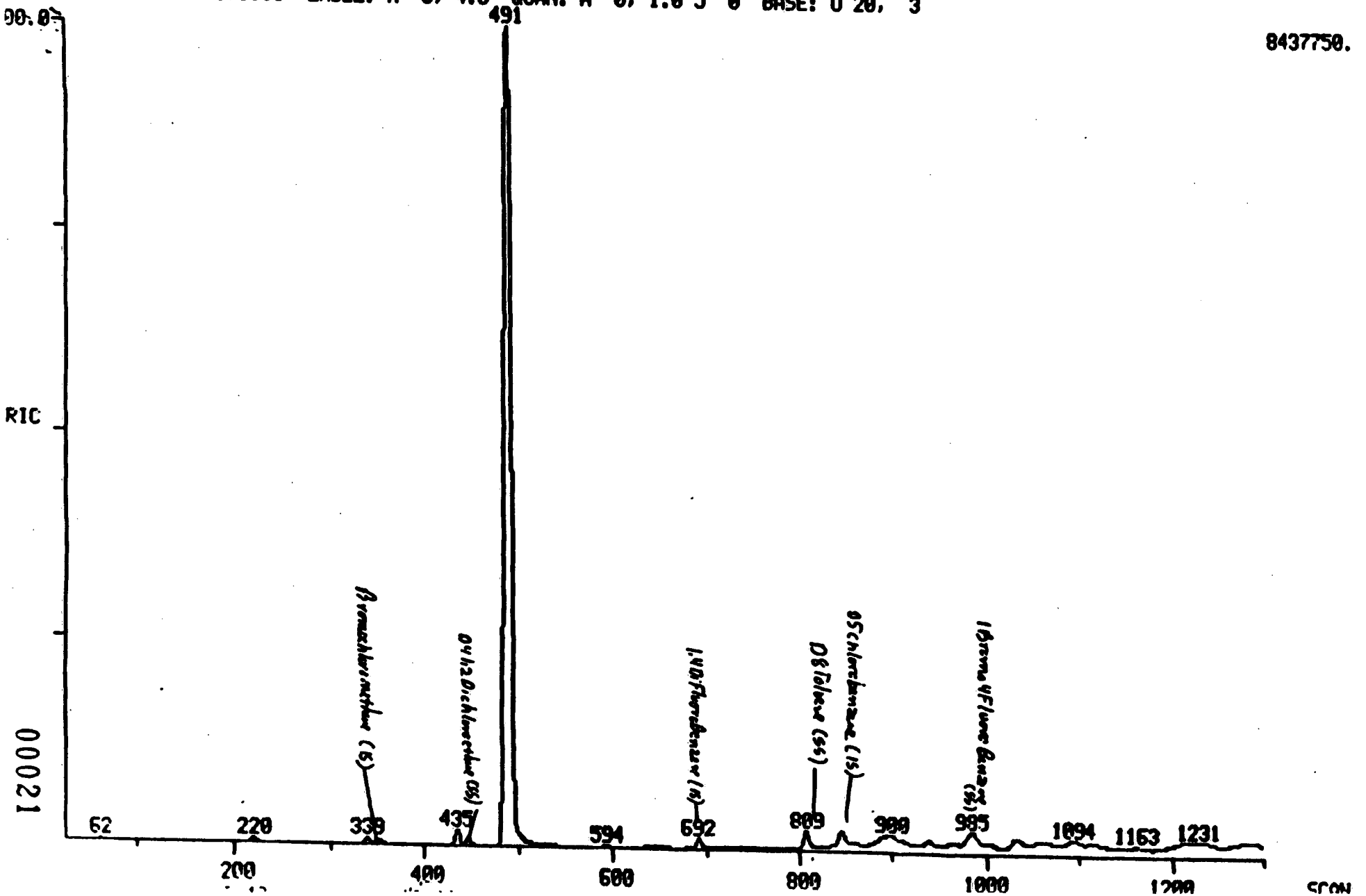
RIC
05/31/90 12:20:00
SAMPLE: C.A.RICH,CV-3NW/4796003,REC'D 5/26/90
CONDS.: 5UL(4G/10MLS)/5MLS,INST.D
RANGE: G 1,1300 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: D1879 #1068
CALI: D1879 #2

SCANS 25 TO 1300

8437750.



00021

1 A-T

NYTEST ENVIRONMENTAL INC.

TCL VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: SOIL
CONC. LEVEL: MED
ANALYSIS DATE: 5/31/90

SAMPLE ID: CV-4SN
LAB ID: 4796004
DIL FACTOR: 20.00
% MOISTURE: 13

CRPO #	CAS Number	VOLATILE COMPOUNDS	UG/KG (DRY BASIS)
1	74-87-3	Chloromethane	29000.0 U.
2	74-83-9	Bromomethane	29000.0 U.
3	75-01-4	Vinyl Chloride	29000.0 U.
4	75-00-3	Chloroethane	29000.0 U.
5	75-09-2	Methylene Chloride	50000.0 TB
6	67-64-1	2-Propanone	29000.0 U.
7	75-15-0	Carbon disulfide	14000.0 U.
8	75-35-4	1,1-Dichloroethene	14000.0 U.
9	75-34-3	1,1-Dichloroethane	14000.0 U.
10	540-59-0	1,2-Dichloroethene (total)	14000.0 U.
11	67-66-3	Chloroform	14000.0 U.
12	107-06-2	1,2-Dichloroethane	14000.0 U.
13	78-93-3	2-Butanone	29000.0 U.
14	71-55-6	1,1,1-Trichloroethane	2000000.0 T.
15	56-23-5	Carbon Tetrachloride	14000.0 U.
16	108-05-4	Vinyl Acetate	29000.0 U.
17	75-27-4	Bromodichloromethane	14000.0 U.
18	78-87-5	1,2-Dichloropropane	14000.0 U.
19	10061-01-5	cis-1,3-Dichloropropene	14000.0 U.
20	79-01-6	Trichloroethene	14000.0 U.
21	124-48-1	Dibromochloromethane	14000.0 U.
22	79-00-5	1,1,2-Trichloroethane	14000.0 U.
23	71-43-2	Benzene	14000.0 U.
24	10061-02-6	Trans-1,3-Dichloropropene	14000.0 U.
25	75-25-2	Bromoform	14000.0 U.
26	108-10-1	4-Methyl-2-Pentanone	29000.0 U.
27	591-78-6	2-Hexanone	29000.0 U.
28	127-18-4	Tetrachloroethene	14000.0 U.
29	79-34-5	1,1,2,2-Tetrachloroethane	14000.0 U.
30	108-88-3	Toluene	14000.0 U.
31	108-90-7	Chlorobenzene	14000.0 U.
32	100-41-4	Ethylbenzene	14000.0 U.
33	100-42-5	Styrene	14000.0 U.
34	1330-20-7	Xylene (total)	14000.0 U.
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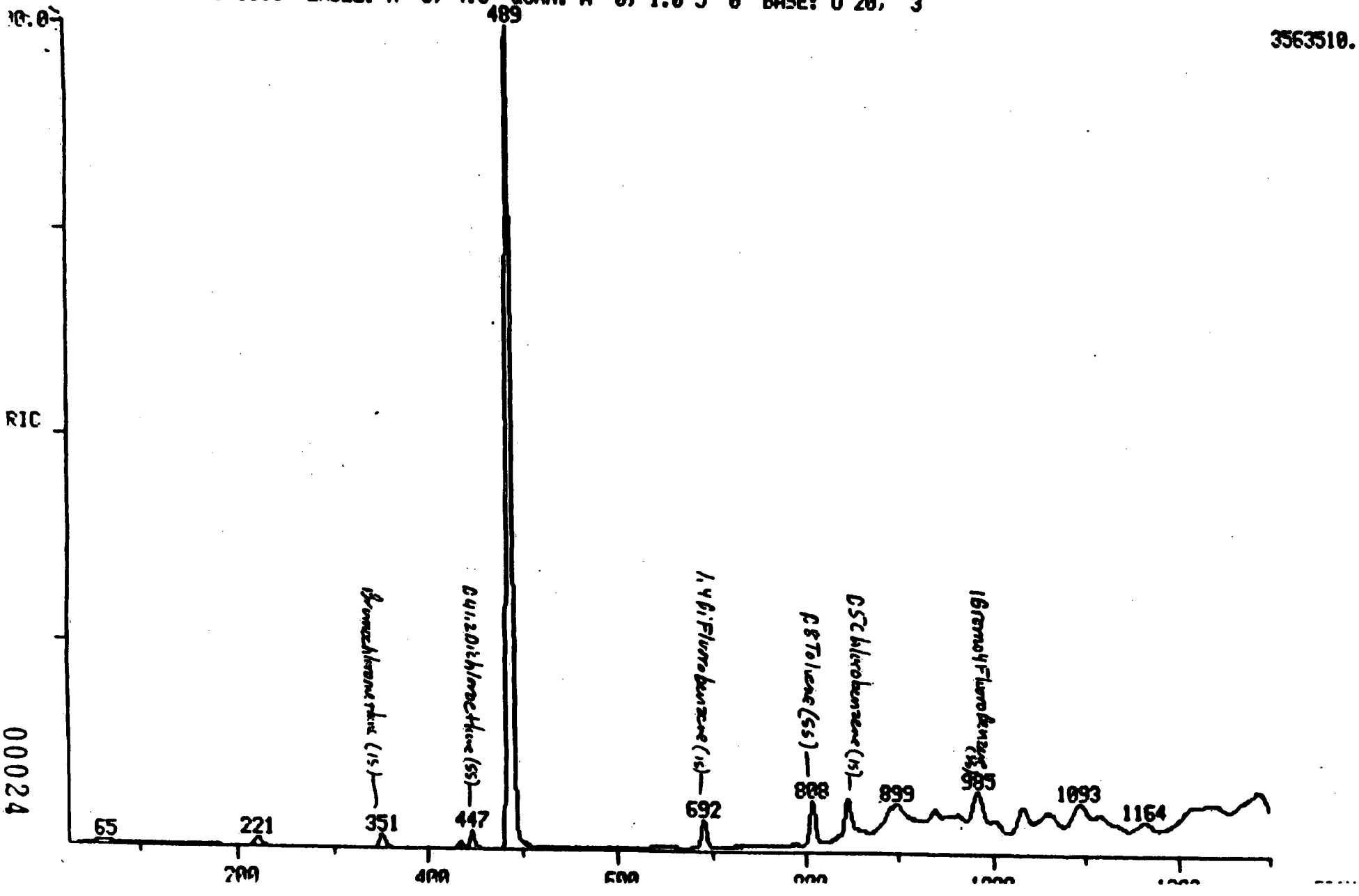
RIC
05/31/90 13:14:00
SAMPLE: C.A.RICH,CV-4SW/4796004,REC'D 5/26/90
CONDS.: 5UL(4G/10MLS)/5MLS,INST.D
RANGE: G 1,1300 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: D1880 #1069 SCANS 25 TO 1300
CALI: D1880 #2

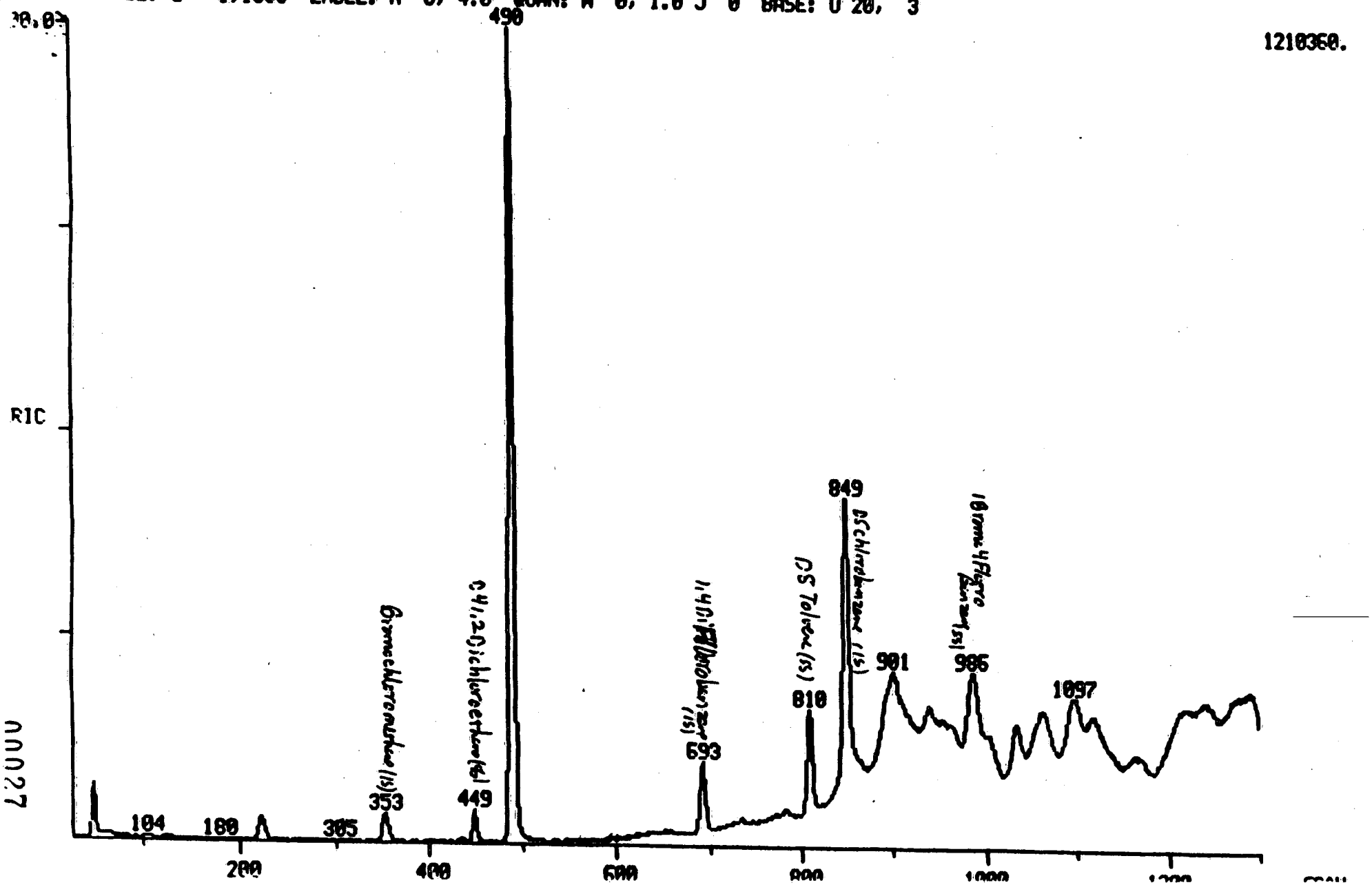


00024

RIC
05/31/90 14:09:00
SAMPLE: C.A.RICH,CV-5C/4796005,REC'D 5/26/90
CONDS.: 5UL(4G/10MLS)/5MLS,INST.D
RANGE: G 1,1300 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: D1881 #1069
CALI: D1881 #2

SCANS 25 TO 1300



00027

1 A-T

NYTEST ENVIRONMENTAL INC.

TCL VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: WATER
CONC. LEVEL: LOW
ANALYSIS DATE: 5/29/90

SAMPLE ID: TB5
LAB ID: 4796006
DIL FACTOR: 1.00
% MOISTURE: NA

CRPO #	CAS Number	VOLATILE COMPOUNDS	UG/L
1	74-87-3	Chloromethane	10.0 U.
2	74-83-9	Bromomethane	10.0 U.
3	75-01-4	Vinyl Chloride	10.0 U.
4	75-00-3	Chloroethane	10.0 U.
5	75-09-2	Methylene Chloride	2.0 JB
6	67-64-1	2-Propanone	5.0 J.
7	75-15-0	Carbon disulfide	5.0 U.
8	75-35-4	1,1-Dichloroethene	5.0 U.
9	75-34-3	1,1-Dichloroethane	5.0 U.
10	540-59-0	1,2-Dichloroethene (total)	5.0 U.
11	67-66-3	Chloroform	5.0 U.
12	107-06-2	1,2-Dichloroethane	5.0 U.
13	78-93-3	2-Butanone	10.0 U.
14	71-55-6	1,1,1-Trichloroethane	5.0 U.
15	56-23-5	Carbon Tetrachloride	5.0 U.
16	108-05-4	Vinyl Acetate	10.0 U.
17	75-27-4	Bromodichloromethane	5.0 U.
18	78-87-5	1,2-Dichloropropane	5.0 U.
19	10061-01-5	cis-1,3-Dichloropropene	5.0 U.
20	79-01-6	Trichloroethene	5.0 U.
21	124-48-1	Dibromochloromethane	5.0 U.
22	79-00-5	1,1,2-Trichloroethane	5.0 U.
23	71-43-2	Benzene	5.0 U.
24	10061-02-6	Trans-1,3-Dichloropropene	5.0 U.
25	75-25-2	Bromoform	5.0 U.
26	108-10-1	4-Methyl-2-Pentanone	10.0 U.
27	591-78-6	2-Hexanone	10.0 U.
28	127-18-4	Tetrachloroethene	5.0 U.
29	79-34-5	1,1,2,2-Tetrachloroethane	5.0 U.
30	108-88-3	Toluene	5.0 U.
31	108-90-7	Chlorobenzene	5.0 U.
32	100-41-4	Ethylbenzene	5.0 U.
33	100-42-5	Styrene	5.0 U.
34	1330-20-7	Xylene (total)	5.0 U.
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1C
NYTEST ENVIRONMENTAL INC.

TENTATIVELY IDENTIFIED ORGANICS COMPOUND

SAMPLE ID: TB5

OF TIC FOUND: 0

LAB ID: 4796006

MATRIX: WATER

FRACTION: VOA

	CAS Number	Compound Name	RT	Estimated Concentration UG/L
1		NO COMPOUNDS FOUND		
2				
3				
4				
5				
6				
7				
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10				
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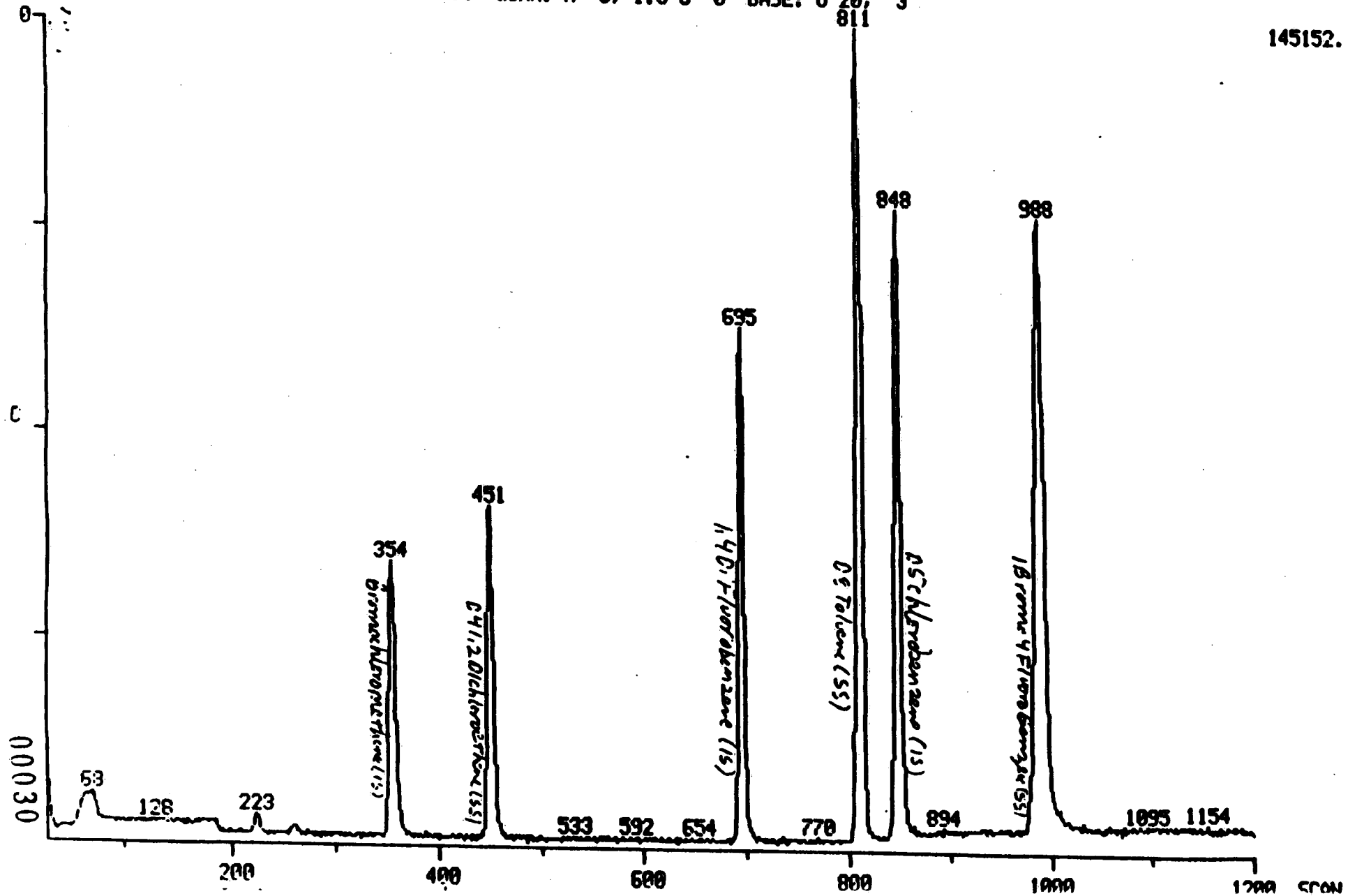
26				
27				
28				
29				
30				

RIC
05/29/90 14:53:00
SAMPLE: C.A.RICH,TRIP BLKS/4796006,REC'D 5/26/90
CONDS.: 5MLS,INST.D
RANGE: G 1,1200 LABEL: N 0, 4.0 QUAN: A 0, 1.0 J 0 BASE: U 20, 3

DATA: D1845 #988
CALI: D1845 #2

SCANS 25 TO 1200



1 A-T

NYTEST ENVIRONMENTAL INC.

TCL VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: WATER
CONC. LEVEL: LOW
ANALYSIS DATE: 5/29/90

SAMPLE ID: VBLK03
LAB ID: 01841
DIL FACTOR: 1.00
% MOISTURE: NA

CMPD #	CAS Number	VOLATILE COMPOUNDS	UG/L
1	74-87-3	Chloromethane	10.0 U.
2	74-83-9	Bromomethane	10.0 U.
3	75-01-4	Vinyl Chloride	10.0 U.
4	75-00-3	Chloroethane	10.0 U.
5	75-09-2	Methylene Chloride	5.0 U.
6	67-64-1	2-Propanone	10.0 U.
7	75-15-0	Carbon disulfide	5.0 U.
8	75-35-4	1,1-Dichloroethene	5.0 U.
9	75-34-3	1,1-Dichloroethane	5.0 U.
10	540-59-0	1,2-Dichloroethene (total)	5.0 U.
11	67-66-3	Chloroform	5.0 U.
12	107-06-2	1,2-Dichloroethane	5.0 U.
13	78-93-3	2-Butanone	10.0 U.
14	71-55-6	1,1,1-Trichloroethane	5.0 U.
15	56-23-5	Carbon Tetrachloride	5.0 U.
16	108-05-4	Vinyl Acetate	10.0 U.
17	75-27-4	Bromodichloromethane	5.0 U.
18	78-87-5	1,2-Dichloropropane	5.0 U.
19	10061-01-5	cis-1,3-Dichloropropene	5.0 U.
20	79-01-6	Trichloroethene	5.0 U.
21	124-48-1	Dibromochloromethane	5.0 U.
22	79-00-5	1,1,2-Trichloroethane	5.0 U.
23	71-43-2	Benzene	5.0 U.
24	10061-02-6	Trans-1,3-Dichloropropene	5.0 U.
25	75-25-2	Bromoform	5.0 U.
26	108-10-1	4-Methyl-2-Pentanone	10.0 U.
27	591-78-6	2-Hexanone	10.0 U.
28	127-18-4	Tetrachloroethene	5.0 U.
29	79-34-5	1,1,2,2-Tetrachloroethane	5.0 U.
30	108-88-3	Toluene	5.0 U.
31	108-90-7	Chlorobenzene	5.0 U.
32	100-41-4	Ethylbenzene	5.0 U.
33	100-42-5	Styrene	5.0 U.
34	1330-20-7	Xylene (total)	5.0 U.
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1C
INTEST ENVIRONMENTAL INC.

TENTATIVELY IDENTIFIED ORGANICS COMPOUND

SAMPLE ID: D1041

OF TIC FOUND: 0

LAB ID: VBLK03

MATRIX: WATER

FRACTION: VOA

CAS Number	Compound Name	RT	Estimated Concentration UG/L
1	NO COMPOUNDS FOUND		
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
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1 A-T

NYTEST ENVIRONMENTAL INC.

TCL VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: SOIL
CONC. LEVEL: MED
ANALYSIS DATE: 5/31/90

SAMPLE ID: VBLK07
LAB ID: D1876
DIL FACTOR: 1.00
% MOISTURE: NA

CRPD #	CAS Number	VOLATILE COMPOUNDS	UG/KG (DRY BASIS)
1	74-87-3	Chloromethane	1300.0 U.
2	74-83-9	Bromomethane	1300.0 U.
3	75-01-4	Vinyl Chloride	1300.0 U.
4	75-00-3	Chloroethane	1300.0 U.
5	75-09-2	Methylene Chloride	1500.0 T.
6	67-64-1	2-Propanone	2600.0 T.
7	75-15-0	Carbon disulfide	630.0 U.
8	75-35-4	1,1-Dichloroethene	630.0 U.
9	75-34-3	1,1-Dichloroethane	630.0 U.
10	540-59-0	1,2-Dichloroethene (total)	630.0 U.
11	67-66-3	Chloroform	630.0 U.
12	107-06-2	1,2-Dichloroethane	630.0 U.
13	78-93-3	2-Butanone	1300.0 U.
14	71-55-6	1,1,1-Trichloroethane	630.0 U.
15	56-23-5	Carbon Tetrachloride	630.0 U.
16	108-05-4	Vinyl Acetate	1300.0 U.
17	75-27-4	Bromodichloromethane	600.0 U.
18	78-87-5	1,2-Dichloropropane	630.0 U.
19	10061-01-5	cis-1,3-Dichloropropene	630.0 U.
20	79-01-6	Trichloroethene	630.0 U.
21	124-48-1	Dibromochloromethane	630.0 U.
22	79-00-5	1,1,2-Trichloroethane	630.0 U.
23	71-43-2	Benzene	630.0 U.
24	10061-02-6	Trans-1,3-Dichloropropene	630.0 U.
25	75-25-2	Bromoform	630.0 U.
26	108-10-1	4-Methyl-2-Pentanone	1300.0 U.
27	591-78-6	2-Hexanone	1300.0 U.
28	127-18-4	Tetrachloroethene	630.0 U.
29	79-34-5	1,1,2,2-Tetrachloroethane	630.0 U.
30	108-88-3	Toluene	630.0 U.
31	108-90-7	Chlorobenzene	630.0 U.
32	100-41-4	Ethylbenzene	630.0 U.
33	100-42-5	Styrene	630.0 U.
34	1330-20-7	Xylene (total)	630.0 U.
35			
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1C

NYTEST ENVIRONMENTAL INC.

TENTATIVELY IDENTIFIED ORGANICS COMPOUND

SAMPLE ID: VBLK07

OF TIC FOUND: 0

LAB ID: 01876

MATRIX: SOIL

FRACTION: VOA

CAS Number	Compound Name	RT	Estimated Concentration UG/KG (DRY WT)
1	NO COMPOUNDS FOUND		
2			
3			
4			
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2 A

MYTEST ENVIRONMENTAL INC.

VOLATILE SURROGATE RECOVERY

LOG IN #: 4796 PAGE #: 1

MATRIX: SOIL

|<<<<<<<<<<<<<< VOLATILE >>>>>>>>>>>>|

	SAMPLE #	1,2-DICHLORO ETHANE-D4	TOLUENE -D8	BFB	VOAS OUT
01	VBLK07	93 OK	103 OK	102 OK	0
02	CV-1NE	95 OK	105 OK	99 OK	0
03	CV-2SE	98 OK	110 OK	101 OK	0
04	CV-3NW	100 OK	105 OK	103 OK	0
05	CV-4SW	100 OK	108 OK	106 OK	0
06	CV-5C	96 OK	107 OK	95 OK	0
07					
08					
09					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

	LIMITS
1,2-DICHLOROETHANE-D4	53 -131
TOLUENE- D8	75 -123
BFB	69 -127

* SURROGATES OUTSIDE QC LIMITS

2 A

MYTEST ENVIRONMENTAL INC.

VOLATILE SURROGATE RECOVERY

LOG IN #: 4796 PAGE #: 1

MATRIX: WATER

|<<<<<<<<<<<<<< VOLATILE >>>>>>>>>>>>|

	SAMPLE #	1,2-DICHLORO ETHANE-D4	TOLUENE -D8	BFB	NONS OUT
01	VBLK03	92 OK	100 OK	102 OK	0
02	TB5	96 OK	102 OK	104 OK	0
03					
04					
05					
06					
07					
08					
09					
10					
11					
12					
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16					
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25					
26					
27					
28					
29					
30					

	LIMITS
1,2-DICHLOROETHANE-D4	55 -135
TOLUENE- D8	70 -125
BFB	70 -130

* SURROGATES OUTSIDE QC LIMITS

3 A

NYTEST ENVIRONMENTAL INC.

VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

LOGIN #: 4796 MATRIX: SOIL PAGE: 1

FRACTION	COMPOUND	CONC. SPIKE ADDED (ug)	SAMPLE RESULT	CONC. MS	% RECOVERY	CONC. MSD	% RECOVERY	RPD	QC LIMITS RPD	QC LIMITS RECOVERY
	1,1-DICHLOROETHENE	50	0.00	47.03	94.06 OK	47.24	94.47 OK	0.43 OK	16	15 -160
SAMPLE #	TRICHLOROETHENE	50	0.00	40.26	80.53 OK	41.36	82.71 OK	2.68 OK	40	50 -115
CV-5C	BENZENE	50	0.00	45.11	90.21 OK	47.35	94.71 OK	4.86 OK	18	60 -125
NYTEST #	TOLUENE	50	0.00	48.77	97.54 OK	50.19	100.38 OK	2.87 OK	17	25 -175
4796005	CHLOROBENZENE	50	0.00	45.68	91.35 OK	46.97	93.95 OK	2.80 OK	15	45 -135

OF % MS/MSD 0 OF 10
VOA OUT: —

OF RPD 0 OF 5
VOA OUT: —

3 A

NYTEST ENVIRONMENTAL INC.

VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

LOGIN #: 4796 MATRIX: SOIL PAGE: 1

FRACTION	COMPOUND	CONC. SPIKE ADDED (ug)	SAMPLE RESULT	CONC. MS	% RECOVERY	CONC. MSD	% RECOVERY	RPD	QC LIMITS RPD	QC LIMITS RECOVERY
	1,1-DICHLOROETHENE	50							16	15 -180
SAMPLE #	TRICHLOROETHENE	50							40	50 -115
TP-3	BENZENE	50	338.00	316.00	-44.00 *	321.00	-34.00 *	25.64 *	18	60 -125
NYTEST #	TOLUENE	50	973.00	817.00	-312.00 *	870.00	-206.00 *	40.93 *	17	25 -175
4781002	CHLOROBENZENE	50	0.00	417.00	834.00 *	43.00	86.00 OK	162.61 *	15	45 -135
	BFB	25	0.00	18.00	70.00	18.00	70	0.00		

OF % MS/MSD 5 OF 6
VOA OUT: —

OF RPD 3 OF 3
VOA OUT: —

GC/MS TUNING AND MASS CALIBRATION
BROMOFLUOROBENZENE (BFB)

Contractor: NYTEST ENVIRONMENTAL INC.
Instrument ID: D Date: 5/24/90 Time: 13:45:00
Lab ID: D1794 Data Release Authorized By:

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of the base peak	19.86
75	30.0 - 60.0% of the base peak	45.77
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of the base peak	7.43
173	Less than 2.0% of mass 174	0.00 (0.00) *
174	Greater than 50.0% of the base peak	71.36
175	5.0 - 9.0% of mass 174	5.13 (7.19) *
176	Greater than 95.0%, but less than 101.0% of mass 174	69.88 (97.92) *
177	5.0 - 9.0% of mass 176	4.85 (6.94) **

* Value in parenthesis is % mass 174.
** Value in parenthesis is % mass 176.

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS.

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS
PERFORMANCE STANDARD	D1794	5/24/90	13:45
VSTD050	D1795	5/24/90	14:11
VSTD020	D1796	5/24/90	15:09
VSTD100	D1797	5/24/90	15:52
VSTD150	D1798	5/24/90	16:50
VSTD200	D1799	5/24/90	17:36

GC/MS TUNING AND MASS CALIBRATION
BROMOFLUOROBENZENE (BFB)

Contractor: NYTEST ENVIRONMENTAL INC.
Instrument ID: D Date: 5/31/90 Time: 8:31:00
Lab ID: D1874 Data Release Authorized By:

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of the base peak	18.85
75	30.0 - 60.0% of the base peak	46.51
95	Base peak. 100% relative abundance	100.00
96	5.0 - 9.0% of the base peak	7.50
173	Less than 2.0% of mass 174	0.00 (0.00) *
174	Greater than 50.0% of the base peak	65.00
175	5.0 - 9.0% of mass 174	4.72 (7.26) *
176	Greater than 95.0%, but less than 101.0% of mass 174	65.00 (99.99) *
177	5.0 - 9.0% of mass 176	4.08 (6.28) **

* Value in parenthesis is % mass 174.
** Value in parenthesis is % mass 176.

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS.

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS
PERFORMANCE STANDARD	D1874	5/31/90	8:31
WORKING STANDARD	D1875	5/31/90	8:49
VBLK07	D1876	5/31/90	9:37
CV-1NE	4796001	5/31/90	10:32
CV-2SE	4796002	5/31/90	11:26
CV-3NW	4796003	5/31/90	12:20
CV-4SW	4796004	5/31/90	13:14
CV-5C	4796005	5/31/90	14:09

GC/MS TUNING AND MASS CALIBRATION
BROMOFLUOROBENZENE (BFB)

Contractor: NYTEST ENVIRONMENTAL INC.
Instrument ID: D Date: 5/29/90 Time: 10:38:00
Lab ID: D1839 Data Release Authorized By:

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15.0 - 40.0% of the base peak	18.83
75	30.0 - 60.0% of the base peak	43.19
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0% of the base peak	7.39
173	Less than 2.0% of mass 174	0.00 (0.00) *
174	Greater than 50.0% of the base peak	69.16
175	5.0 - 9.0% of mass 174	4.91 (7.10) *
176	Greater than 95.0%, but less than 101.0% of mass 174	69.43 (100.00) *
177	5.0 - 9.0% of mass 176	4.57 (6.59) **

* Value in parenthesis is % mass 174.
** Value in parenthesis is % mass 176.

THIS PERFORMANCE TUNE APPLIES TO THE FOLLOWING SAMPLES, BLANKS AND STANDARDS.

SAMPLE ID	LAB ID	DATE OF ANALYSIS	TIME OF ANALYSIS
PERFORMANCE STANDARD	D1839	5/29/90	10:38
WORKING STANDARD	D1840	5/29/90	10:56
VBLKD3	D1841	5/29/90	11:40
TB5	4796006	5/29/90	19:53

nytest environmental inc

QC / QA REPORT

Client: C.A. Rich Consultants

Project No.: 9016835

Date Received: 5/26/90

Log In No.: 4796

Parameter(s)	Sample Value ppm	Duplicate Sample Value ppm	Percent RPD	Spike Level ppm	Sample Value ppm	Spiked Sample Value ppm	Percent Recovery	Blank mg/l
Total Petroleum Hydrocarbons	3491	4025	14.2	20.5	-	19.9	97.0	<0.2

1 A-T

NYTEST ENVIRONMENTAL INC.

TCL VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: WATER
CONC. LEVEL: LOW
ANALYSIS DATE: 5/28/90

SAMPLE ID: FB 5-23
LAB ID: 4777029
DIL FACTOR: 1.00
% MOISTURE: NA

UG/L

CMPD #	CAS Number	VOLATILE COMPOUNDS	
1	74-87-3	Chloromethane	10.0 U.
2	74-83-9	Bromomethane	10.0 U.
3	75-01-4	Vinyl Chloride	10.0 U.
4	75-00-3	Chloroethane	10.0 U.
5	75-09-2	Methylene Chloride	5.0 U.
6	67-64-1	2-Propanone	10.0 U.
7	75-15-0	Carbon disulfide	5.0 U.
8	75-35-4	1,1-Dichloroethene	5.0 U.
9	75-34-3	1,1-Dichloroethane	5.0 U.
10	540-59-0	1,2-Dichloroethene (total)	5.0 U.
11	67-66-3	Chloroform	5.0 U.
12	107-06-2	1,2-Dichloroethane	5.0 U.
13	78-93-3	2-Butanone	10.0 U.
14	71-55-6	1,1,1-Trichloroethane	5.0 U.
15	56-23-5	Carbon Tetrachloride	5.0 U.
16	108-05-4	Vinyl Acetate	10.0 U.
17	75-27-4	Bromodichloromethane	5.0 U.
18	78-87-5	1,2-Dichloropropane	5.0 U.
19	10061-01-5	cis-1,3-Dichloropropene	5.0 U.
20	79-01-6	Trichloroethene	5.0 U.
21	124-48-1	Dibromochloromethane	5.0 U.
22	79-00-5	1,1,2-Trichloroethane	5.0 U.
23	71-43-2	Benzene	5.0 U.
24	10061-02-6	Trans-1,3-Dichloropropene	5.0 U.
25	75-25-2	Bromoform	5.0 U.
26	108-10-1	4-Methyl-2-Pentanone	10.0 U.
27	591-78-6	2-Hexanone	10.0 U.
28	127-18-4	Tetrachloroethene	5.0 U.
29	79-34-5	1,1,2,2-Tetrachloroethane	5.0 U.
30	108-88-3	Toluene	5.0 U.
31	108-90-7	Chlorobenzene	5.0 U.
32	100-41-4	Ethylbenzene	5.0 U.
33	100-42-5	Styrene	5.0 U.
34	1330-20-7	Xylene (total)	5.0 U.
35			
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NYTEST ENVIRONMENTAL INC.

TENTATIVELY IDENTIFIED ORGANICS COMPOUND

SAMPLE ID: FB 5-23

OF TIC FOUND: 0

LAB ID: 4777029

MATRIX: WATER

FRACTION: VOA

CAS Number	Compound Name	RT	Estimated Concentration UG/L
1	NO COMPOUNDS FOUND		
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
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28			
29			
30			

Laboratory Resources INC
A UNITED WATER RESOURCES COMPANY
363 Old Hook Road
Westwood, New Jersey 07675-3235
(201) 666-6644 • FAX: (201) 666-7978

Concrete chip sample

GA Rich Consultants, Inc.
404 Glen Cove Avenue
Sea Cliff, New York 11579

Attn: Mr. Eric Weinstock

Date of Report: 05/31/90
Work Order #: 90-05-390
Date Received: 05/24/90
Client #: 000211
P.O. #:

PARAMETER	CV-NBKWL Concre Chipping
TOTAL % SOLIDS	76.8

Laboratory Manager

LABORATORY RESOURCES, INC.
363 OLD HOOK ROAD
WESTWOOD, NJ 07675
LAB. CERTIFICATION: NJ 02046
NY 10588

DATE COLLECTED:
DATE RECEIVED :
DATE ANALYZED : 05/24/90
DILUTION FACT.: 1.0

CLIENT : CA RICH
LAB SAMPLE : METHOD BLANK
ANALYST : JF WJ
FILE NAME : >87180

GC/MS VOLATILE ORGANICS REPORT

COMPOUND	UG/L	MDL	COMPOUND	UG/L	MDL
CHLOROMETHANE	ND	10	1,2-DICHLOROPROPANE	ND	5
VINYL CHLORIDE	ND	10	BROMODICHLOROMETHANE	ND	5
BROMOMETHANE	ND	10	2-CHLOROETHYLVINYLETHER	ND	5
CHLOROETHANE	ND	10	TRANS-1,3-DICHLOROPROPENE	ND	5
ACROLEIN	ND	10	CIS-1,3-DICHLOROPROPENE	ND	5
TRICHLOROFLUOROMETHANE	ND	5	1,1,2-TRICHLOROETHANE	ND	5
1,1-DICHLOROETHENE	ND	5	DIBROMOCHLOROMETHANE	ND	5
CARBON DISULFIDE	ND	5	BROMOFORM	ND	5
ACETONE	ND	10	4-METHYL-2-PENTANONE	ND	10
ACRYLONITRILE	ND	10	TOLUENE	ND	5
METHYLENE CHLORIDE	ND	5	TETRACHLOROETHENE	ND	5
TRANS-1,2-DICHLOROETHENE	ND	5	2-HEXANONE	ND	10
1,1-DICHLOROETHANE	ND	5	CHLOROBENZENE	ND	5
CHLOROFORM	ND	5	ETHYLBENZENE	ND	5
1,2-DICHLOROETHANE	ND	5	M,P-XYLENE	ND	5
VINYL ACETATE	ND	10	O-XYLENE	ND	5
2-BUTANONE	ND	10	STYRENE	ND	5
1,1,1-TRICHLOROETHANE	ND	5	1,1,2,2-TETRACHLOROETHANE	ND	5
CARBON TETRACHLORIDE	ND	5	1,3-DICHLOROBENZENE	ND	5
BENZENE	ND	5	1,4-DICHLOROBENZENE	ND	5
TRICHLOROETHENE	ND	5	1,2-DICHLOROBENZENE	ND	5

SURROGATE COMPOUNDS	RECOVERY	LIMITS	STATUS
1,2-DICHLOROETHANE-D4	101 %	76 - 114	OK
TOLUENE-D8	108 %	88 - 110	OK
4-BROMOFLUOROBENZENE	99 %	86 - 115	OK

J Indicates detected below MDL
ND Indicates compound not detected
B Indicates compound also present in blank

Laboratory Resources

363 Old Hook Road Westwood, New Jersey 07675 201/666-6644

CHAIN OF CUSTODY RECORD

A. GENERAL INFORMATION

CUSTOMER CH Rich
ADDRESS 424 Glen Cove Ave
CITY/STATE/ZIP Sparkill NY 11579
PHONE 516-674-3834
CONTACT PERSON Eric Weinstock

COLLECTION SITE Bodaley STATE NY
COLLECTION DATE 5/24/90
COLLECTED BY Client Dick Young
REPORT NEEDED BY 3-5 days
CUSTOMER P.O. #

METHOD OF SHIPMENT (CIRCLE ONE) CARRIER LRI HAND DELIVERED

B. COMMENTS AND SPECIAL REQUESTS

DELIVERABLES (CIRCLE ONE) (REPORT FORMAT) STANDARD / ~~TIER II~~ / CLP
~~OTHER~~

REPORT RESULTS AS DRY WEIGHT / WET WEIGHT

C. ANALYTICAL REQUESTS

LRI ID NO. FOR LRI USE	SAMPLE ID	SEE NOTE M	C	P	TIME	ANALYSES REQUIRED
900534-01	CV-NBKWL Concrete chips		V	/	12:15	624 RUSH

NOTE

MATRIX (M) DW-DRINKING WATER WW-WASTE WATER SL-SLUDGE SO-SOIL
MW-MONITORING WELL O-OTHER
CONTAINER (C) P - PLASTIC G - GLASS
PRESERVATIVE (P) a) NaOH b) H_2SO_4 c) HNO_3 d) HCL e) ASCORBIC ACID

RELINQUISHED BY	DATE / TIME	RECEIVED BY
Dick Young 5/24/90	3:45	[illegible]
RELINQUISHED BY	DATE / TIME	RECEIVED BY

LABORATORY RESOURCES, INC.
363 OLD HOOK ROAD
WESTWOOD, NJ 07675
LAB. CERTIFICATION: NJ 02046
NY 10588

DATE COLLECTED: 05/24/90
DATE RECEIVED : 05/24/90
DATE ANALYZED : 05/25/90
DILUTION FACT.: 1000.0

CLIENT : CA RICH
LAB SAMPLE : 9005390-01
ANALYST : JF ~~J~~
FILE NAME : >B7192

GC/MS VOLATILE ORGANICS REPORT

COMPOUND	UG/KG	MDL	COMPOUND	UG/KG	MDL
CHLOROMETHANE	ND	13021	1,2-DICHLOROPROPANE	ND	6510
VINYL CHLORIDE	ND	13021	BROMODICHLOROMETHANE	ND	6510
BROMOMETHANE	ND	13021	2-CHLOROETHYLVINYLETHER	ND	6510
CHLOROETHANE	ND	13021	TRANS-1,3-DICHLOROPROPENE	ND	6510
ACROLEIN	ND	13021	CIS-1,3-DICHLOROPROPENE	ND	6510
TRICHLOROFLUOROMETHANE	ND	6510	1,1,2-TRICHLOROETHANE	ND	6510
1,1-DICHLOROETHENE	ND	6510	DIBROMOCHLOROMETHANE	ND	6510
CARBON DISULFIDE	ND	6510	BROMOFORM	ND	6510
ACETONE	ND	13021	4-METHYL-2-PENTANONE	ND	13021
ACRYLONITRILE	ND	13021	TOLUENE	ND	6510
METHYLENE CHLORIDE	5026 J	6510	TETRACHLOROETHENE	ND	6510
TRANS-1,2-DICHLOROETHENE	ND	6510	2-HEXANONE	ND	13021
1,1-DICHLOROETHANE	ND	6510	CHLOROBENZENE	ND	6510
CHLOROFORM	ND	6510	ETHYLBENZENE	ND	6510
1,2-DICHLOROETHANE	ND	6510	M,P-XYLENE	ND	6510
VINYL ACETATE	ND	13021	O-XYLENE	ND	6510
2-BUTANONE	ND	13021	STYRENE	ND	6510
1,1,1-TRICHLOROETHANE	101185	6510	1,1,2,2-TETRACHLOROETHANE	ND	6510
CARBON TETRACHLORIDE	ND	6510	1,3-DICHLOROBENZENE	ND	6510
BENZENE	ND	6510	1,4-DICHLOROBENZENE	ND	6510
TRICHLOROETHENE	ND	6510	1,2-DICHLOROBENZENE	ND	6510

SURROGATE COMPOUNDS	RECOVERY	LIMITS	STATUS
1,2-DICHLOROETHANE-D4	78 %	70 - 121	OK
TOLUENE-D8	107 %	81 - 117	OK
4-BROMOFLUOROBENZENE	90 %	74 - 121	OK

J Indicates detected below MDL
ND Indicates compound not detected
B Indicates compound also present in blank

Percent Solid of 76.8 is used for all Target compounds.

1 A-7

HYTEST ENVIRONMENTAL INC.

TCL VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: WATER
CONC. LEVEL: LOW
ANALYSIS DATE: 4/13/90

SAMPLE ID: V-1
LAB ID: 4373001
DIL FACTOR: 5.00
% MOISTURE: NA

CMPD #	CAS Number	VOLATILE COMPOUNDS	UG/L
1	74-87-3	Chloromethane	50.0 U.
2	74-83-9	Bromomethane	50.0 U.
3	75-01-4	Vinyl Chloride	10.0 U.
4	75-00-3	Chloroethane	50.0 U.
5	75-09-2	Methylene Chloride	25.0 U.
6	67-64-1	2-Propanone	50.0 U.
7	75-15-0	Carbon disulfide	25.0 U.
8	75-35-4	1,1-Dichloroethene	420.0 T.
9	75-34-3	1,1-Dichloroethane	43.0 T.
10	540-59-0	1,2-Dichloroethene (total)	25.0 U.
11	67-66-3	Chloroform	25.0 U.
12	107-06-2	1,2-Dichloroethane	26.0 T.
13	78-93-3	2-Butanone	50.0 U.
14	71-55-6	1,1,1-Trichloroethane	12000.0 T.
15	56-23-5	Carbon Tetrachloride	25.0 U.
16	108-05-4	Vinyl Acetate	50.0 U.
17	75-27-4	Bromodichloromethane	25.0 U.
18	78-87-5	1,2-Dichloropropane	25.0 U.
19	10061-01-5	cis-1,3-Dichloropropene	25.0 U.
20	79-01-6	Trichloroethene	25.0 U.
21	124-48-1	Dibromochloromethane	25.0 U.
22	79-00-5	1,1,2-Trichloroethane	25.0 U.
23	71-43-2	Benzene	25.0 U.
24	10061-02-6	Trans-1,3-Dichloropropene	25.0 U.
25	75-25-2	Bromoform	25.0 U.
26	108-10-1	4-Methyl-2-Pentanone	50.0 U.
27	591-78-6	2-Hexanone	50.0 U.
28	127-18-4	Tetrachloroethene	25.0 U.
29	79-34-5	1,1,2,2-Tetrachloroethane	25.0 U.
30	108-88-3	Toluene	25.0 U.
31	108-90-7	Chlorobenzene	25.0 U.
32	100-41-4	Ethylbenzene	25.0 U.
33	100-42-5	Styrene	25.0 U.
34	1330-20-7	Xylene (total)	25.0 U.
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1 D-1

NYTEST ENVIRONMENTAL INC.

TCL PESTICIDE/PCB ORGANICS ANALYSIS DATA SHEET

SAMPLE MATRIX: WATER
CONC. LEVEL: LOW
EXTRACTION DATE: 4/16/90
ANALYSIS DATE: 4/20/90

SAMPLE ID: V-1
LAB SAMPLE ID: 437300!
DIL FACTOR: 10.00
% MOISTURE:NA

CMPD #	CAS Number	PESTICIDE/PCB COMPOUND	UG/L
1	319-84-6	Alpha-BHC	0.500 U.
2	319-85-7	Beta-BHC	0.500 U.
3	319-86-8	Delta-BHC	0.500 U.
4	58-89-9	Gamma-BHC(Lindane)	0.500 U.
5	76-44-8	Heptachlor	0.500 U.
6	309-00-2	Aldrin	0.500 U.
7	1024-57-3	Heptachlor Epoxide	0.500 U.
8	959-98-8	Endosulfan I	0.500 U.
9	60-57-1	Dieldrin	1.000 U.
10	72-55-9	4,4'-DDE	1.000 U.
11	70-20-8	Endrin	1.000 U.
12	33213-65-9	Endosulfan II	1.000 U.
13	72-54-8	4,4-DDD	1.000 U.
14	1031-07-8	Endosulfan Sulfate	1.000 U.
15	50-29-3	4,4'-DDT	1.000 U.
16	53494-70-5	Endrin Ketone	1.000 U.
17	72-43-5	Methoxychlor	5.000 U.
18	57-74-9	Chlordane	5.000 U.
19	8001-35-2	Toxaphene	10.000 U.
20	12674-11-2	Aroclor-1016	5.000 U.
21	11104-28-2	Aroclor-1221	5.000 U.
22	11141-16-5	Aroclor-1232	5.000 U.
23	53469-21-9	Aroclor-1242	5.000 U.
24	12672-29-6	Aroclor-1248	5.000 U.
25	11097-69-1	Aroclor-1254	10.000 U.
26	11096-82-5	Aroclor-1260	10.000 U.

nytest environmental inc.

Project No: 8018835

Sample Identification and Results

Sample No: V-1
Lab Sample ID No.: 4373001

Results	Max. Allowable Levels	Found
pH @ 20 C	2 - 12.5	6.0
Ignitability, F PM	140	>212
Corrosivity, inches/year	0.250	<0.01
Reactivity to Cyanide, PPM	-	<1
Reactivity to Sulfide, PPM	-	<1
Total Solids, PPM	-	620
Petroleum Hydrocarbons, PPM	-	5.7
Total Cyanide, PPM	-	<0.02
Phenol, PPM	-	<0.002
Sulfide, PPM	-	0.65

E P Toxicity (PPM)

Arsenic	5.0	< .5
Barium	100.0	<10.0
Cadmium	1.0	< .1
Chromium	5.0	< .5
Lead	5.0	< .5
Mercury	0.2	< .02
Selenium	1.0	< .1
Silver	5.0	< .5
Cyanide	-	< .01
Fluoride	-	.27
Copper	-	< .5
Nickel	-	< .2
Zinc	-	< .5

ND = None Detected
< = Less than

Part 5

AIRBORNE EXPRESS

April 24, 1997

Ms. Mary Anne Rosa
Project Manager
Emergency and Remedial Response Division - Region II
U.S. Environmental Protection Agency
290 Broadway, 19th Floor
New York, New York 10007-1866

Re: Reply to Request for Information on Hazardous Substances at the Kodalux Processing Laboratory, Fair Lawn, New Jersey

Dear Ms. Rosa:

This is in response to your February 26, 1997 letter requesting information regarding the Kodalux Processing Laboratory (facility), located in Fair Lawn, New Jersey. Your request was mailed to the facility at Fair Lawn and thereafter forwarded to Eastman Kodak Company ("Kodak") corporate offices in Rochester, New York for my attention and handling. The status of the facility with respect to Kodak ownership is discussed in the accompanying response. The time to respond to this request was extended to April 26, 1997 by Ms. Amelia Wagner, Esq., of your staff.

As stated in Kodak's January 29, 1991 supplemental response to your office's previous request for information regarding handling of hazardous substances at the facility, four petroleum underground storage tanks and a dry well for the fire suppression system have been removed. These activities have been reported to New Jersey Department of Environmental Protection (NJDEP), case nos. 90 06 15 1528 and 90 05 22 1638.

Upon developing the attached response to your request for information, Kodak has concluded that the following reports inappropriately refer to the usage of trichloroethene (TCE) at the Kodalux Processing Laboratory:

Torger N. Dahl, Attorney, Environmental, Health & Safety Legal Staff
Eastman Kodak Company • 343 State Street • Rochester, New York 14650-0217
Telephone: (716) 724-4899 • Facsimile: (716) 724-5515

Kodak
Official Imaging Sponsor of the Olympic Games

APPENDIX III

PASSIAC VALLEY SEWERAGE COMMISSION
SEWER CONNECTION PERMIT
PERMIT NO. 08405930

PASSAIC VALLEY SEWERAGE COMMISSIONERS

SEWER CONNECTION PERMIT

PERMIT # 08405930

(Please use the Permit Number on any correspondence with PVSC)
In compliance with the provisions of the Federal Water Pollution Control Act, its amendments, the Clean Water Act and the Rules and Regulations of the Passaic Valley Sewerage Commissioners:

Qualex, Inc.

Kodalux Processing Services
(herein, after referred to as the Permittee)

is authorized to discharge from a facility located at

16-31 Route #208

Fairlawn, New Jersey 07410

to the Passaic Valley Sewerage Commissioners Treatment Works in accordance with discharge limitations, monitoring requirements and other conditions set forth herein.

EFFECTIVE DATE 11/14/93

EXPIRATION DATE 11/14/98

PASSAIC VALLEY SEWERAGE COMMISSIONERS

BY:

EXECUTIVE DIRECTOR

g. **EXCESSIVE DISCHARGE RATE**

Industrial wastes discharged in a slug of such volume or strength so as to cause a treatment process upset and subsequent loss of treatment efficiency.

h. **HEAT**

(1) any discharge in excess of 150^0 F (65^0C)

(2) Heat in amounts which would inhibit biological activity in the PVSC treatment works resulting in a treatment process upset and subsequent loss of treatment efficiency, but in no case shall heat be introduced into the PVSC treatment works in such quantities that the temperature of the influent waters at the treatment plant exceed 40^0C (104^0F).

i. **UNPOLLUTED WATERS**

Any unpolluted water including, but not limited to, cooling water or uncontaminated storm water, which will increase the hydraulic load on the treatment system, except as approved by PVSC.

j. **WATER**

Any water added for the purpose of diluting wastes which would otherwise exceed applicable maximum concentration limits.

2. No person shall discharge or convey, or permit to be discharged or conveyed, to the treatment works any wastes containing pollutants of such character or quantity that will:

a. Not be susceptible to treatment or interfere with the process or efficiency of the treatment system.

b. Violate pretreatment standards. As pretreatment standards for toxic or other hazardous pollutants are promulgated by USEPA for a given industrial category, all industrial users within that category must immediately conform to the USEPA timetable as well as any numeric limitations imposed by USEPA. In addition, an industrial user shall comply with any more stringent standards as determined by PVSC or other agency.

c. Cause the PVSC treatment plant to violate its NJPDES permit, applicable receiving water standards, permit regulating sludge which is produced during treatment or any other permit issued to PVSC.

C. EFFLUENT LIMITATIONS, MONITORING AND COMPLIANCE REQUIREMENTS

1. During the period beginning (11/14/93) and lasting through (11/14/98) the permittee is authorized to discharge from outlet(s) number(ed) (08405930-18055-0081). Such discharge shall be monitored by the permittee as specified below. Volume to be determined from Incoming Purchased Water Meter Readings less 5% credit for evaporation. Sample Point is Located in the Sampling Shed Over Manhole Designated #1 on the Front Lawn at the Northern End of the Property and Discharges to Route #208.

EFFLUENT CHARACTERISTIC	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS		
	DAILY MAX		MEASUREMENT FREQUENCY	SAMPLE TYPE	REPORTING PERIOD
BOD (0310)	XXXXXX	XXXXX	Monthly	24 hr. comp.	Monthly
TSS (0530)	XXXXXX	XXXXX	Monthly	24 hr. comp.	Monthly
pH (9000)	XXXXXX	5 to 10.5	Continuous	Recorder	*
Volume	XXXXXX	XXXXX	XXXXXX	XXXXXX	Monthly

* Permittee to store pH Recorder Charts and have available for review by PVSC personnel on demand.

08405930 Qualex, Inc.

2. In addition to the monitoring required in Section C.1 the Permittee is required to meet the following schedule of compliance:

   A. Analysis of wastewater parameters shall be performed by a laboratory that has been certified by the State of New Jersey.

   B. Permittee is required to submit as an attachment to the MR-2 Form Monthly, a water balance showing meter readings used to calculate the reported volume discharged.

   C. When final pretreatment standards are promulgated permittee shall submit Baseline Report to PVSC in accordance with 40 CFR 403.12 and any subsequent revisions. (copy attached).

D. **MONITORING AND REPORTING**

1. **USER CHARGE**

Monitoring results obtained during the previous month shall be reported on Discharge Monitoring Report Form MR-2. Reports are due at PVSC within twenty-one (21) days after the end date of each preceding month. The first report is due on (*). If and Industrial User fails to submit Form MR-2 on a timely basis, the Executive Director shall estimate the use for the period. The estimates may be made thirty (30) days after the due date of the report.

2. **PRETREATMENT**

Monitoring results shall be reported on Discharge Monitoring Report Form, MR-1 for monthly reporting. Reports are due at PVSC within twenty-one (21) days after the end date of each preceding month.

3. **REPORTS**

Properly signed reports required herein shall be submitted to PVSC at the following address:

PASSAIC VALLEY SEWERAGE COMMISSIONERS
INDUSTRIAL WASTE CONTROL DEPARTMENT
600 Wilson Avenue
Newark, NJ 07105

4. **TEST PROCEDURES**

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. Test procedures for the analysis of pollutants shall conform to regulations contained in the PVSC Rules and Regulations, Federal, State and local laws or regulations.

5. **RECORDING OF RESULTS**

For each measurement of a sample taken pursuant to the requirements of this permit, the permittee shall maintain a record of the following information:

a. The date, exact place and time of sampling;
b. The dates the analyses were performed;
c. The person (s) who performed the analysis;
d. The analytical techniques or methods used;
e. The results of all required analyses.

* Permittee has been required to submit Monitoring Reports MR-2 to PVSC since 01/21/89.

The volume of each sample shall be proportional to the discharge flow rate unless specifically modified by PVSC. For a 24 hour continuous discharge, a minimum of 24 individual samples shall be collected at equal intervals and at least once per hour. For continuous discharges of less than 12 hours, individual samples shall be taken at least once every 30 minutes. For discharges which are not continuous, individual samples shall be taken such that they will be representative of plant waste.

g. "Grab" - an individual sample collected in less than 15 minutes.

h. "Quarterly" - every three (3) months.

i. "N/A" - not applicable.

E. MANAGEMENT REQUIREMENTS

1. CHANGE IN DISCHARGES

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or modification which will result in new, different, or increased discharges of pollutants must be reported by submission of a new PVSC Sewer Connection Application or, if such changes will not violate the effluent limitations specified in this permit, by notices to PVSC of such changes. Following such notices, the permit may be modified to specify and limit any pollutants not previously limited.

2. NONCOMPLIANCE NOTIFICATION

If, for any reason, the permittee does not comply with, or will be unable to comply with any effluent limitation specified in this permit, the permittee shall notify PVSC within 24 hours of the occurrence

F. MANAGEMENT RESPONSIBILITIES

1. RIGHT OF ENTRY

The permittee shall allow the authorized representatives of PVSC, upon the presentation of credentials:

a. To enter upon the permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit; and

b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring methods required in this permit; and to sample any discharge of pollutants.

2. TRANSFER OF OWNERSHIP OR CONTROL

In the event of any change in control or ownership of facilities from which the authorized discharges emanate, the permittee shall, in writing, notify the succeeding owner or controller of the existence of this permit, and the need to apply for a new permit, a copy of which shall be forwarded to PVSC.

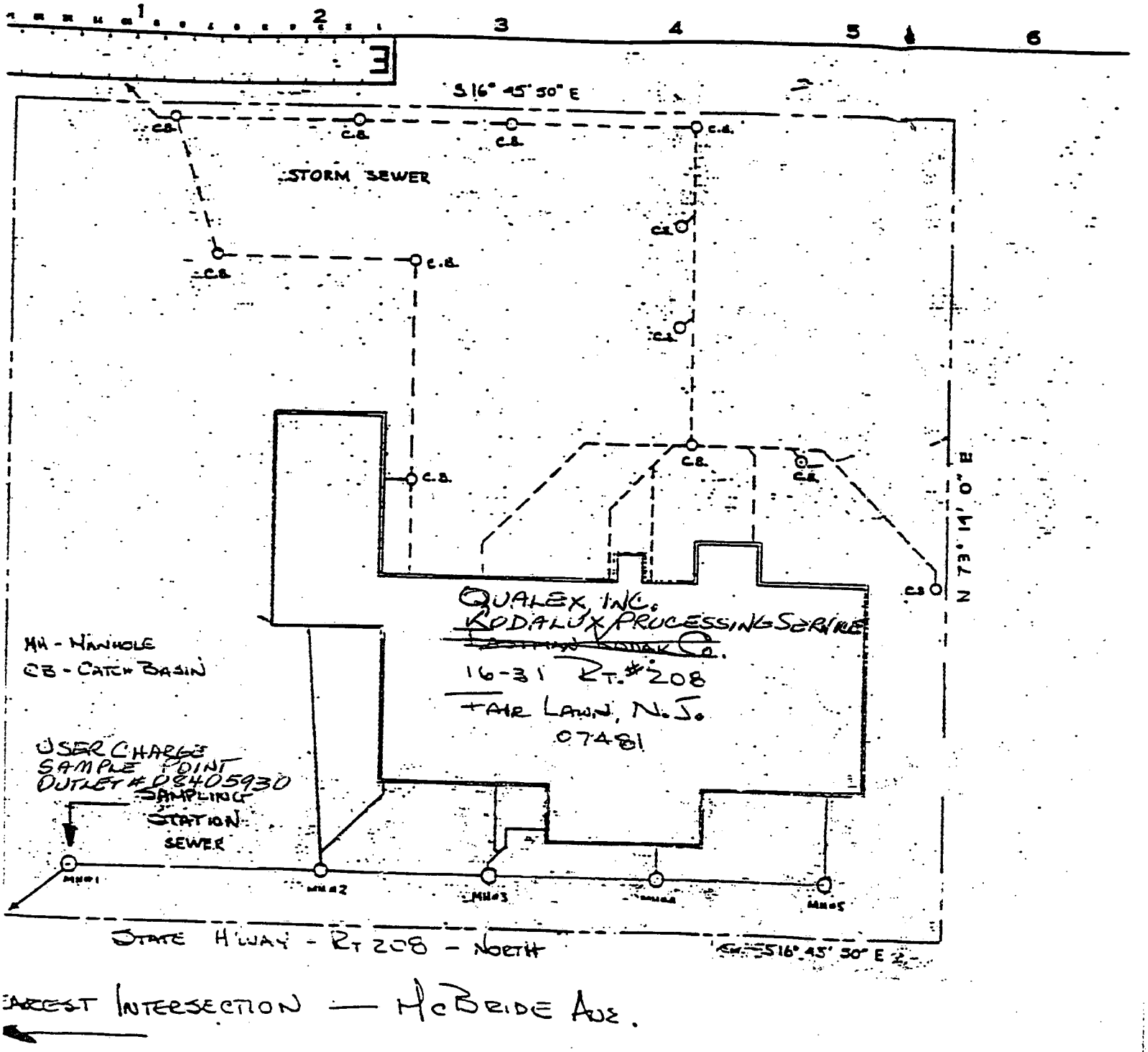
3. PERMIT MODIFICATION

After notice and opportunity for a hearing, this permit may be modified, or revoked in whole or in part during its terms for cause including, but not limited to, the following:

a. Violation of any terms or conditions of this permit;

b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or

c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.



NEAREST INTERSECTION — McBRIDE AVE.

APPENDIX IV

USER CHARGE SELF MONITORING REPORT
PVSC PERMITTED OUTLET NO.
08405930-18055-0081

USER CHARGE SELF MONITORING REPORT

NAME	QUALEX INC.
ADDRESS	16-31 ROUTE 208, FAIR LAWN, NJ 07410
FACILITY LOCATION	16-31 ROUTE 208, FAIR LAWN, NJ 07410
OUTLET DESIGNATION (17 DIGITS)	08405930-18055-0081

MONITORING PERIOD					
03	01	97	03	31	97
MO.	DAY	YR.	MO.	DAY	YR.
START			END		

VOL DISCHARGED THIS PERIOD	
4,195,601	GALS
CU. FT. X 7.48 = GALLONS	
EFFLUENT METER READING LAST DAY THIS PERIOD	

DATE	BOD 0310	TSS 0530	TOTAL SILVER	DATE	pH	TSS 0530	TOTAL SILVER
03/04	43 mg/l	16 mg/l	0.49 mg/l		7.6 SU		

SIGNATURE OF PRINCIPAL OR AUTHORIZED AGENT	TYPE NAME AND TITLE	TELEPHONE NO.
Michael Carten	MIKE CARTEN, H.S.E. MGR.	(201) 797-0600 ext. 394

PVSC FORM MR-2 REV. 2 1/86

Upstate Laboratories inc.

Shipping: 6034 Corporate Dr. • E. Syracuse, NY 13057-1017 • (315) 437-0255 • Fax (315) 437-1209
Mailing: Box 289 • Syracuse, NY 13206
Albany (518) 459-3134
Binghamton (607) 724-0478
Buffalo (716) 649-2533
Rochester (716) 436-9070
New Jersey (201) 703-1324

March 20, 1997

Mr. Mike Carten
HSE Mgr.
Qualex, Inc.
16-31 Route 208
Fair Lawn, NJ 07410

Re: Analysis Report #06497130 - Silver & pH Analysis

Dear Mr. Carten:

Please find enclosed the results for your samples which were picked up by ULI personnel on March 4, 1997.

We have included the Chain of Custody Record as part of your report. You may need to reference this form for a more detailed explanation of your sample. Samples will be disposed of approximately one month from final report date.

Should you have any questions, please feel free to give us a call.

Thank you for your patronage.

Sincerely,

UPSTATE LABORATORIES, INC.

Anthony J. Scala

Anthony J. Scala
Director

AJS/kk

Enclosures: report, invoice

cc/encs: N. Scala, ULI
file

Disclaimer: The test results and procedures utilized, and laboratory interpretations of data obtained by ULI as contained in this report are believed by ULI to be accurate and reliable for sample(s) tested. In accepting this report, the customer agrees that the full extent of any and all liability for actual and consequential damages of ULI for the services performed shall be equal to the fee charged to the customer for the services as liquidated damages.

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Binghamton (607) 724-0478
Buffalo (716) 649-2533
Rochester (716) 436-9070
New Jersey (201) 703-1324

DATE: 3/20/97

Analysis Results
Report Number: 06497130
Client I.D.: QUALEX, INC.-NJ
Sampled by: Client

Lab I.D.: 73750
SILVER & PH ANALYSIS
OUTSIDE SAMPLE PIT 0830H 03/04/97 C

ULI I.D.: 06497130

Matrix: Water

PARAMETERS	RESULTS	KEY	FILE#
Total Silver	0.49mg/l		MA7822

Approved: Anthony J. Scala II 3/20/97

Note: See disclaimer on cover letter.

Upstate Laboratories inc.

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Albany (518) 459-3134
Binghamton (607) 724-0478
Buffalo (716) 649-2533
Rochester (716) 436-9070
New Jersey (201) 703-1324

DATE: 3/20/97

Analysis Results
Report Number: 06497130
Client I.D.: QUALEX, INC.-NJ
Sampled by: Client

Lab I.D.: 73750
SILVER & PH ANALYSIS
OUTSIDE SAMPLE PIT 0830H 03/04/97 G

ULI I.D.: 06497131

Matrix: Water

PARAMETERS	RESULTS	KEY	FILE#
pH	7.6SU	17	WB6027

Approved: Anthony S. Scala 3/20/97

Note: See disclaimer on cover letter.

KEY PAGE

1 MATRIX INTERFERENCE PRECLUDES LOWER DETECTION LIMITS
2 MATRIX INTERFERENCE
3 PRESENT IN BLANK
4 ANALYSIS NOT PERFORMED BECAUSE OF INSUFFICIENT SAMPLE
5 THE PRESENCE OF OTHER TARGET ANALYTE(S) PRECLUDES LOWER DETECTION LIMITS
6 BLANK CORRECTED
7 HEAD SPACE PRESENT IN SAMPLE
8 QUANTITATION LIMIT IS GREATER THAN THE CALCULATED REGULATORY LEVEL. THE QUANTITATION LIMIT THEREFORE BECOMES THE REGULATORY LEVEL.
9 THE OIL WAS TREATED AS A SOLID AND LEACHED WITH EXTRACTION FLUID
10 ADL(AVERAGE DETECTION LIMITS)
11 PQL(PRACTICAL QUANTITATION LIMITS)
12 SAMPLE ANALYZED OVER HOLDING TIME
13 DISSOLVED VALUE MAY BE HIGHER THAN TOTAL DUE TO CONTAMINATION FROM THE FILTERING PROCEDURE
14 SAMPLED BY ULI
15 DISSOLVED VALUE MAY BE HIGHER THAN TOTAL; HOWEVER, THE VALUES ARE WITHIN EXPERIMENTAL ERROR
16 AN INHIBITORY FACTOR WAS OBSERVED IN THIS ANALYSIS
17 PARAMETER NOT ANALYZED WITHIN 15 MINUTES OF SAMPLING
18 DEPENDING UPON THE INTENDED USE OF THIS TEST RESULT, CONFIRMATION BY GC/MS OR DUAL COLUMN CHROMATOGRAPHY MAY BE REQUIRED
19 CALCULATION BASED ON DRY WEIGHT
20 INDICATES AN ESTIMATED VALUE, DETECTED BUT BELOW THE PRACTICAL QUANTITATION LIMITS
21 UG/KG AS REC.D / UG/KG DRY WT
22 MG/KG AS REC.D / MG/KG DRY WT
23 INSUFFICIENT SAMPLE PRECLUDES LOWER DETECTION LIMITS
24 SAMPLE DILUTED/BLANK CORRECTED
25 ND(NON-DETECTED)
26 MATRIX INTERFERENCE PRECLUDES LOWER DETECTION LIMITS/BLANK CORRECTED
27 SPIKE RECOVERY ABNORMALLY HIGH/LOW DUE TO MATRIX INTERFERENCE
28 POST-DIGESTION SPIKE FOR FURNACE AA ANALYSIS IS OUTSIDE OF THE CONTROL LIMITS (85-115%); HOWEVER, THE SAMPLE CONCENTRATION IS BELOW THE PQL
29 ANALYZED BY METHOD OF STANDARD ADDITIONS
30 METHOD PERFORMANCE STUDY HAS NOT BEEN COMPLETED/ND(NON-DETECTED)
31 FIELD MEASURED PARAMETER TAKEN BY CLIENT
32 TARGET ANALYTE IS BIODEGRADED AND/OR ENVIRONMENTALLY WEATHERED
33 NON-POTABLE WATER SOURCE
34 THE QUALITY CONTROL RESULTS FOR THIS ANALYSIS INDICATE A POSITIVE BIAS OF 1-5 MG/L. THE POSITIVE BIAS FALLS BELOW THE PUBLISHED EPA REGULATORY DETECTION LIMIT OF 5 MG/L BUT ABOVE 1 MG/L.
35 THE HYDROCARBONS DETECTED IN THE SAMPLE DID NOT CROSS-MATCH WITH COMMON PETROLEUM DISTILLATES
36 MATRIX INTERFERENCE CAUSING SPIKES TO RESULT IN LESS THAN 50.0% RECOVERY
37 MILLIGRAMS PER LITER (MG/L) / POUNDS (LBS) PER DAY
38 MILLIGRAMS PER LITER (MG/L) OF RESIDUAL CHLORINE (CL2) / POUNDS (LBS) PER DAY OF CL2
39 MICROGRAMS PER LITER (UG/L) / POUNDS (LBS) PER DAY
40 MILLIGRAMS PER LITER (MG/L) LINEAR ALKYL SULFONATE (LAS) / POUNDS (LBS) PER DAY LAS
41 RESULTS ARE REPORTED ON AN AS REC.D BASIS
42 THE SAMPLE WAS ANALYZED ON A TOTAL BASIS; THE TEST RESULT CAN BE COMPARED TO THE TCLP REGULATORY CRITERIA BY DIVIDING THE TEST RESULT BY 20, CREATING A THEORETICAL TCLP VALUE
43 METAL BY CONCENTRATION PROCEDURE
44 POSSIBLE CONTAMINATION FROM FIELD/LABORATORY

Upstate Laboratories, Inc.
6034 Corporate Drive • E. Syracuse, NY 13057-1017
(315) 437 0255 Fax 437 1209

Chain Of Custody Record

3/17 HDD

Client	Client Project # / Project Name
Qualex Inc.	Silver & pH Analysis

Client Contact	Phone #	Site Location (city/state)
Mike Carten	797-0600	Fair Lawn, NJ

Sample Location:	Date	Time	Matrix	Grab or Comp.	ULI Internal Use Only	No. of Containers	1)	2)	3)	4)	5)	6)	7)	8)	9)	10)	Remarks
Outside Sample Pit	3/3-4/97	8:30AM	Wastewater	Comp.	06497130	1	✓										9-977
" " "	3/4/97	8:30 AM	"	Grab	131	1		✓									9-978

Special Turnaround Time ____ (Lab Notification required)

parameter and method	sample bottle: type	size	pres.
1) Total Silver by ICP	Plastic	500ml	HNO3
2) pH	"	250 ml	None
3)			
4)			
5)			
6)			
7)			
8)			
9)			
10)			

Note: The numbered columns above cross-reference with the numbered columns in the upper right-hand corner.

Sampled by: (Please Print) IVAN JAMES

Company: Qualex Inc.

ULI Internal Use Only
Delivery (check one):
☐ ULI Sampled
☑ Pickup ☐ Dropoff
☑ CC Eastern Connecti

Relinquished by: (Signature)	Date	Time	Received by: (Signature)
[signature]	3/4/97	9:59 a.m.	Russell Ronto
Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Russell Ronto	3/4/97	5:46PM	Willy
Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Relinquished by: (Signature)	Date	Time	Rec'd for Lab by: (Signature)
	3/5/97	0750	C Kinney

Syracuse Rochester Buffalo Albany Binghamton Fair Lawn (NJ)

Upstate Laboratories inc.

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Buffalo (716) 649-2533
Rochester (716) 436-9070
New Jersey (201) 703-1324

March 17, 1997

Mr. Mike Carten
HSE Mgr.
Qualex, Inc.
16-31 Route 208
Fair Lawn, NJ 07410

Re: Analysis Report #06497129 - Monthly Analysis

Dear Mr. Carten:

Please find enclosed the results for your sample which was picked up by ULI personnel on March 4, 1997.

We have included the Chain of Custody Record as part of your report. You may need to reference this form for a more detailed explanation of your sample. Samples will be disposed of approximately one month from final report date.

Should you have any questions, please feel free to give us a call.

Thank you for your patronage.

Sincerely,

UPSTATE LABORATORIES, INC.

Anthony J. Scala

Anthony J. Scala
Director

AJS/kk

Enclosures: report, invoice

cc/encs: N. Scala, ULI
file

Disclaimer: The test results and procedures utilized, and laboratory interpretations of data obtained by ULI as contained in this report are believed by ULI to be accurate and reliable for sample(s) tested. In accepting this report, the customer agrees that the full extent of any and all liability for actual and consequential damages of ULI for the services performed shall be equal to the fee charged to the customer for the services as liquidated damages.

Upstate Laboratories inc.

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Mailing: Box 289 • Syracuse, NY 13206
Albany (518) 459-3134
Binghamton (607) 724-0478
Buffalo (716) 649-2533
Rochester (716) 436-9070
New Jersey (201) 703-1324

DATE: 3/17/97

Analysis Results
Report Number: 06497129
Client I.D.: QUALEX, INC.-NJ
Sampled by: Client

Lab I.D.: 73750
MONTHLY ANALYSIS
OUTSIDE SAMPLE PIT 0830H 03/04/97 C

ULI I.D.: 06497129

Matrix: Water

PARAMETERS	RESULTS	KEY	FILE#
BOD5	43mg/l		WB6472
Total Suspended Solids	16mg/l		WB6527

Approved: Anthony J. Scala 3/17/97

Note: See disclaimer on cover letter.

Upstate Laboratories, Inc.
6034 Corporate Drive • E. Syracuse, NY 13057-1017
(315) 437 0255 Fax 437 1209

Chain Of Custody Record

3/17 HDD

Client	Client Project # / Project Name
Qualex Inc.	Monthly Analysis
Client Contact: Mike Carten	Phone #: 797-0600
Site Location (city/state): Fair Lawn, NJ	

Special Turnaround Time _____ (Lab Notification required)

Sample Location:	Date	Time	Matrix	Grab or Comp.	ULI Internal Use Only	No. of Containers	1)	2)	3)	4)	5)	6)	7)	8)	9)	10)	Remarks
Outside Sample Pit	3/3-4/97	8:30AM	Wastewater	Comp.	06497129	1	✓										9-468

parameter and method	sample bottle: type	size	pres.
1) BOD, TSS	Glass	Liter	None
2)			
3)			
4)			
5)			
6)			
7)			
8)			
9)			
10)			

Note: The numbered columns above cross-reference with the numbered columns in the upper right-hand corner.

Sampled by: (Please Print): IVAN TAMES
Company: Qualex Inc.

ULI Internal Use Only
Delivery (check one):
☐ ULI Sampled
☑ Pickup ☐ Dropoff
☑ CC Eastern Connecti

Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Ivan Tames	3/4/97	9:59 a.m.	Russell Provato
Russell Provato	3/4/97	5:46PM	Willey
	3/5/97	0750	C Kinney

Syracuse Rochester Buffalo Albany Binghamton Fair Lawn (NJ)

APPENDIX V

CONSENT ORDER AND FINAL JUDGMENT

FILED

MAY 31 1995

HARRY A. MARGOLIS
P.J. Ch

GABRIEL M. AMBROSIO, ESQ.
464 Valley Brook Avenue
P.O. Box 911
Lyndhurst, New Jersey 07071
(201) 933-8844
Attorneys for Plaintiff

PASSAIC VALLEY SEWERAGE COMMISSIONERS, a body politic and corporate of the state of New Jersey,	SUPERIOR COURT OF NEW JERSEY CHANCERY DIVISION - ESSEX COUNTY DOCKET NO: C-87-95 Civil Action
Plaintiff,	
v.	**CONSENT ORDER AND FINAL JUDGMENT**
QUALEX, INC.,	
Defendant.	

This matter having been opened to the Court by Gabriel M. Ambrosio, Esq. (John T. Ambrosio, Esq., appearing) on behalf of the plaintiff, the PASSAIC VALLEY SEWERAGE COMMISSIONERS ("PVSC"), alleging that the defendant, Qualex, Inc. ("Qualex"), violated the provisions of N.J.S.A. 58:14-1 et seq. by discharging pollutants in excess of the pH discharge limitations of Permit No. 08405930 ("Permit") and the rules and regulations of the PVSC, and the defendant, through its attorneys Riker, Danzig, Scherer, Hyland & Perreti, having consented to the entry of the within Consent Order and Final Judgment, and for good cause thus shown;

IT IS on this 31st day of May 1995;

ORDERED that:

Civil Penalties

1. Within thirty (30) days of the date hereof, the defendant, Qualex, shall pay to the PVSC the sum of two-thousand-six-hundred dollars ($2,600.00) (the "Settlement Amount") in settlement of all civil penalties that could have potentially been assessed against the defendant for allegedly having violated the provisions of N.J.S.A. 58:14-1 et seq. by discharging pollutants in excess of the pH discharge limitations of the Permit and the rules and regulations of the PVSC up to the present, including, but not limited to, those alleged violations set forth in the Complaint filed by the plaintiff in this action. All settlement payments shall be made payable to the "Passaic Valley Sewerage Commissioners."

Compliance Schedule

2. Qualex shall comply with the following schedule for the purpose of controlling and eliminating discharges in excess of the pH discharge limitations of the Permit and the rules and regulations of the PVSC:

(a) On or before August 1, 1995, Qualex shall commence installation of a Continuous Dual Stage, stirred Reactor pH Neutralization System (hereinafter the "pH Neutralization System"), having a minimum capacity of 14,000 liters.

(b) On or before October 31, 1995, Qualex shall have completed the installation of the pH Neutralization System.

(c) On or before January 1, 1996, Qualex shall have completed the diversion of all process final overflows away from the new pH Neutralization System.

(d) On or before February 28, 1996, Qualex shall have completed connecting all existing floor drains in Old Chem Mix Room to the new pH Neutralization System.

(e) On or before March 1, 1996, Qualex shall be in compliance with the pH discharge limitations of the Permit and the rules and regulations of the PVSC.

Progress Reports

3. Qualex shall submit to the PVSC monthly progress reports concerning its compliance with the requirements and obligations of this Order.

Final Report

4. Within ninety (90) days of completing the corrective action described in paragraph #2, the defendant shall submit to the PVSC a final report concerning its compliance with all applicable pretreatment standards.

Force Majeure

5. The completion date for the corrective action described in paragraph #2 or for the submission of any report required by this Order, shall be extended for the period of time that the defendant or its agent is prevented by a Force Majeure event from proceeding with the corrective action or submitting the required report. As used in this Order, a Force Majeure event shall mean an event which is beyond the reasonable control of the defendant or

any entity controlled by defendant, including, but not limited to, its contractors and subcontractors, including, but not limited to, such events as fire, explosion, inclement weather conditions (that create unforeseen delays), labor disputes, inability to obtain or unavoidable delay in the delivery of materials, inability to obtain or unavoidable delay in securing municipal approvals and/or work permits, inability to obtain or unavoidable delay in securing State approvals and/or Treatment Works Approval and unforeseen subsurface conditions. If the occurrence of a Force Majeure event causes or may cause delay in meeting any completion or submission date set forth above, defendant shall notify the PVSC in writing within ten (10) days of acquiring knowledge of such event, the precise cause of the delay, the measures taken or to be taken by the defendant to prevent or minimize the delay, an estimate of the date by which such measures will be completed or such report will be submitted, and an estimate of the duration of the delay. The defendant shall promptly implement all reasonable measures to prevent or minimize any such delays, prevent or minimize any adverse impact on the PVSC system as a result of such delays, and to comply with all requirements of this Order as soon as possible.

6. If the PVSC finds that: (a) the defendant has complied with the notice requirements of the preceding paragraph and; (b) the delay or anticipated delay has been or will be caused by a Force Majeure event, the PVSC shall extend the time for performance under this Order no longer than the delay resulting from the Force Majeure event. If the PVSC determines that: (a) the defendant did

not comply with the notice requirements of the preceding paragraph or; (b) the event causing the delay does not constitute a Force Majeure event, failure to complete the corrective action under paragraph #2 or to submit any report required hereunder shall be a violation of the requirements of this Order and subject the defendant to sanctions under the applicable statutes and regulations. The burden of establishing that any delay is caused by a Force Majeure event rests with the defendant.

General Provisions

7. The corrective action undertaken by the defendant pursuant to this Order shall constitute the penalty for any potential additional violations of the pH discharge limitations of the Permit and the rules and regulations of the PVSC during the period covered by the compliance schedule. In the event that the defendant completes all corrective action on or before the completion dates set forth in the compliance schedule, and as modified by any Force Majeure event, any such exceedances experienced during this period shall not be subject to additional penalty.

8. The defendant further understands that any exceedance of the pH discharge limitations experienced after the final completion date set forth in the compliance schedule, shall be subject to further enforcement proceedings and civil penalties.

9. Nothing in this Order shall preclude the PVSC from taking enforcement action against the defendant for matters not set forth herein or in the Complaint.

10. All provisions of the Permit shall remain in full force and effect and are not modified by this Order. The defendant expressly understands that the compliance requirements contained in this Order do not modify any provisions of the Permit or any duties or liabilities of the defendant thereunder.

11. This Order shall be binding on the defendant, its assignees and any trustee in bankruptcy or receiver appointed pursuant to a proceeding in law or equity.

12. Defendant shall perform all work conducted pursuant to this Order in accordance with prevailing professional standards.

13. This Order shall not relieve the defendant from obtaining and complying with all applicable federal, state and local permits, as well as all applicable statutes and regulations while carrying out the obligations imposed by this Order.

14. The obligations and civil penalties of this Order are imposed pursuant to the police powers of the State for the enforcement of law and the protection of public health, safety, welfare and are not intended to constitute a debt or debts which may be limited or discharged in a bankruptcy proceeding.

15. In addition to the PVSC's statutory and regulatory rights to enter and inspect, the defendant shall allow the PVSC and its authorized representatives access to its facility at all times for the purpose of monitoring defendant's compliance with this Order. While at the defendant's facility, the PVSC and its personnel shall observe all applicable health and safety rules and regulations.

16. Upon request, the defendant shall make available to the PVSC all technical records and contractual documents maintained or created by the defendant or its contractors in connection with this Order.

17. The PVSC reserves the right to require the defendant to take additional actions as authorized by law should the PVSC determine that such actions are necessary to protect human health, the environment or the PVSC system. Nothing in this Order shall constitute a waiver of any statutory right of the PVSC to require the defendant to undertake such additional measures should the PVSC determine that such measures are necessary, subject to the defendant's rights under this Order, applicable statutes and regulations.

18. The defendant shall not construe any informal advice, guidance, suggestions or comments by the PVSC or by person(s) acting on behalf of the PVSC, as relieving the defendant of its obligation to obtain written approvals as may be required herein, unless such advice, guidance, suggestions or comments by the PVSC shall be submitted in writing to the defendant.

19. The defendant shall give written notice of this Order to any successor in interest prior to transfer of ownership of the facility which is the subject of this Order and shall simultaneously verify to the PVSC that such notice has been given.

20. No modification or waiver of this Order shall be valid except by written amendment duly executed by the defendant and the PVSC.

21. The Court shall retain jurisdiction over the parties to this action solely for the purpose of enforcing the provisions of this Order.

22. The PVSC reserves the right to reopen this case in the event the Commissioners of the PVSC, at their next available public meeting, do not accept the recommendations of the chief counsel to enter into this Consent Order and Final Judgment.

23. Any claim for damages (as opposed to claims for civil penalties) that the PVSC, or any municipality within its district, may have against the defendant whether known or unknown at time the parties consented to this Order, and whether or not related to any conduct directly or indirectly covered by this Order, has not been joined in this action. However, any such claims may be, and hereby are reserved and may be brought in a subsequent action. Defendant reserves the right to invoke all defenses available under the law (with the exception of the entire controversy doctrine).

24. By entering into this consent order, the defendant is not admitting to any liability for any of the excursions alleged in the complaint.

Hon. Harry A. Margolis, P.J.Ch.

The undersigned hereby consent to the entry of the foregoing order, both as to substance and form.

GABRIEL M. AMBROSIO, ESQ.

Dated: by: _____
John T. Ambrosio, Esq.
Attorneys for the PVSC

QUALEX, INC.

Dated: _____
Authorized Signature

DAVID I. CHIPKIN
Print Name

SR OPERATIONS MANAGER
Print Title & Position

JTA:ja
Qualex.con

The undersigned hereby consent to the entry of the foregoing order, both as to substance and form.

GABRIEL M. AMBROSIO, ESQ.

Dated: 5/26/95

by: _____
John T. Ambrosio, Esq.
Attorneys for the PVSC

QUALEX, INC.

Dated:

_____
Authorized Signature

_____
Print Name

_____
Print Title & Position

JTA:ja
Qualex.con

APPENDIX VI

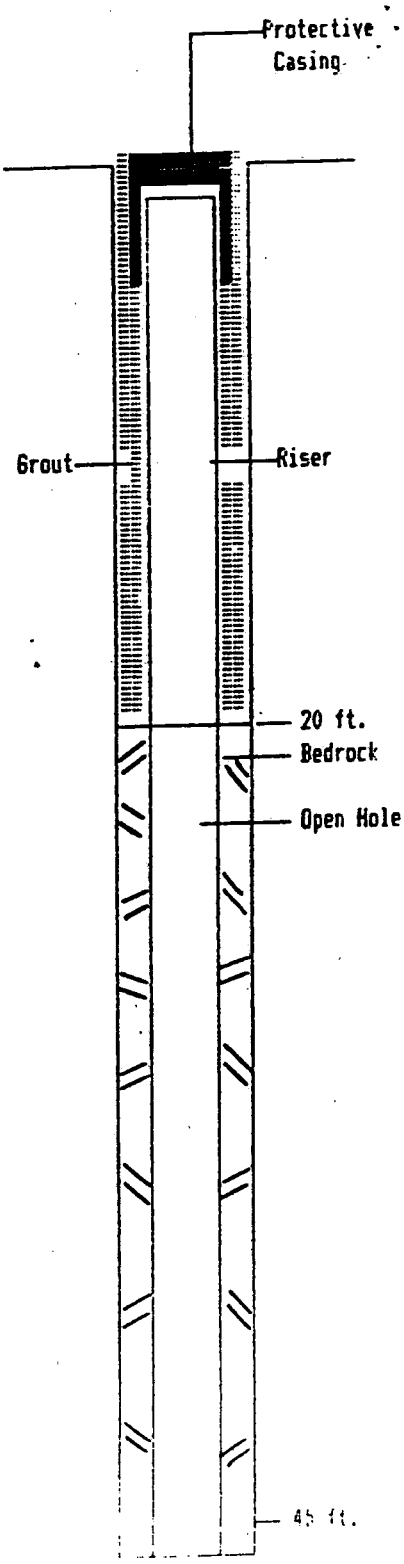
WELL CONSTRUCTION LOGS

WELL CONSTRUCTION SUMMARY

CA RICH CONSULTANTS, INC.

Project: Kodalux Facility Client: Kodalux Well No: MW-1

NO SCALE



DRILLING SUMMARY

Drilling Company: William Stothoff Company, Inc. Driller: Charles M.

Drill Rig Make/Model: Schramm Rotadrill

Borehole Diameter: 10 inches

Drilling Fluid: None

Total Depth: 45 feet below grade Depth to Water: 33 feet

Supervisory Geologists: Steven Sobstyl (CA Rich Consultants, Inc.)

WELL DESIGN

Casing Material: Stainless Steel Diameter: 4 inch Length: 20 FT.

Screen Material: None/Bedrock Well Diameter: ----- Length: ------

Slot Size: ----- Setting: ------

Filter Material: ----- Setting: ------

Seals Material: ----- Setting: -----

Grout ----- Setting: 20 feet to grade

Surface Casing Material: Iron Setting: Flush

TIME LOG

	Started	Completed
Drilling:	8-2-90	8-2-90
Installation:	8-2-90	8-2-90
Development:	8-2-90	8-2-90

WELL DEVELOPMENT

Method: Air Lift

Static Depth to Water: Approx. 33 feet Specific Capacity:

Pumping Depth to Water:

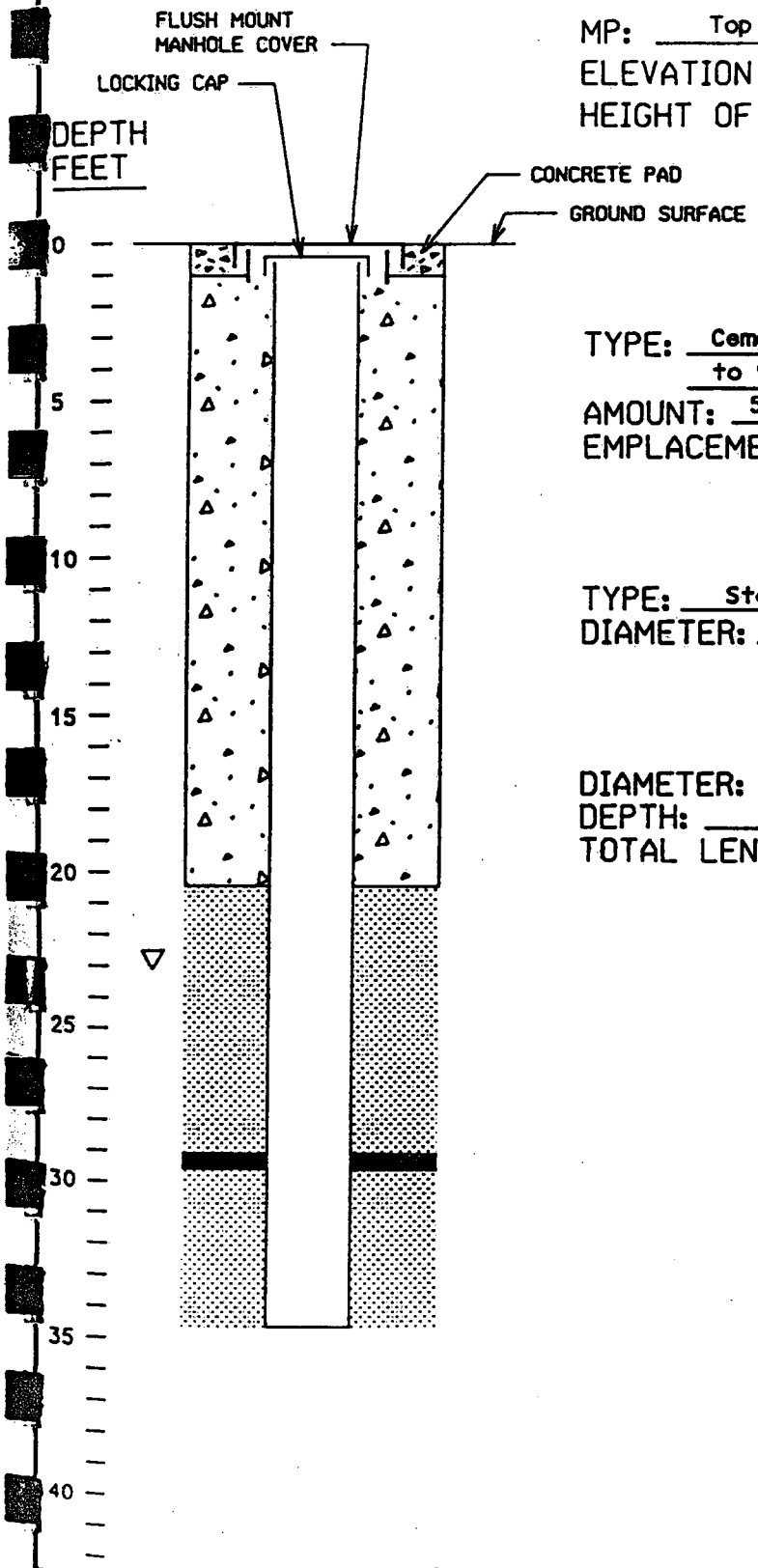
Pumping Rate: 1 Gallon per Minute Volume Pumped: 20 Gallons

RADIAN CORPORATION

MONITOR WELL CONSTRUCTION SCHEMATIC

PROJECT: Kodalux, Fair Lawn, NJ
DRILLING CO.: Summit Drilling Co., Inc.
SUPERVISED BY: LMM, Radian Corporation
DRILLING METHOD: Air Rotary
DATE COMPLETED: 3/28/91

WELL ID: MW-2
COORDINATES: LAT. 40°56'35.0"; LONG 74°07'44.5"
AQUIFER: Uppermost
DEPTH TO WATER FROM MEASURING POINT (MP): 22.7' (4/1/91)



MP: Top of casing
ELEVATION OF MP: 93.50
HEIGHT OF MP RELATIVE TO GROUND LEVEL: -0.57'

GROUT

TYPE: Cement-bentonite (8 gal. water to 5 lb. bentonite to 94 lb. Portland cement)
AMOUNT: 5 - 94 lb. bags
EMPLACEMENT METHOD: Tremie pipe

RISER PIPE

TYPE: Steel (20' pipe)
DIAMETER: 6-inch

BOREHOLE

DIAMETER: 10" cased; 6" open rock
DEPTH: 34.43' below MP
TOTAL LENGTH OPEN ROCK: 14.43'

LEGEND

- PARTING WITH #6 FUEL OIL
- SANDSTONE
- SHALE
- STATIC WATER LEVEL

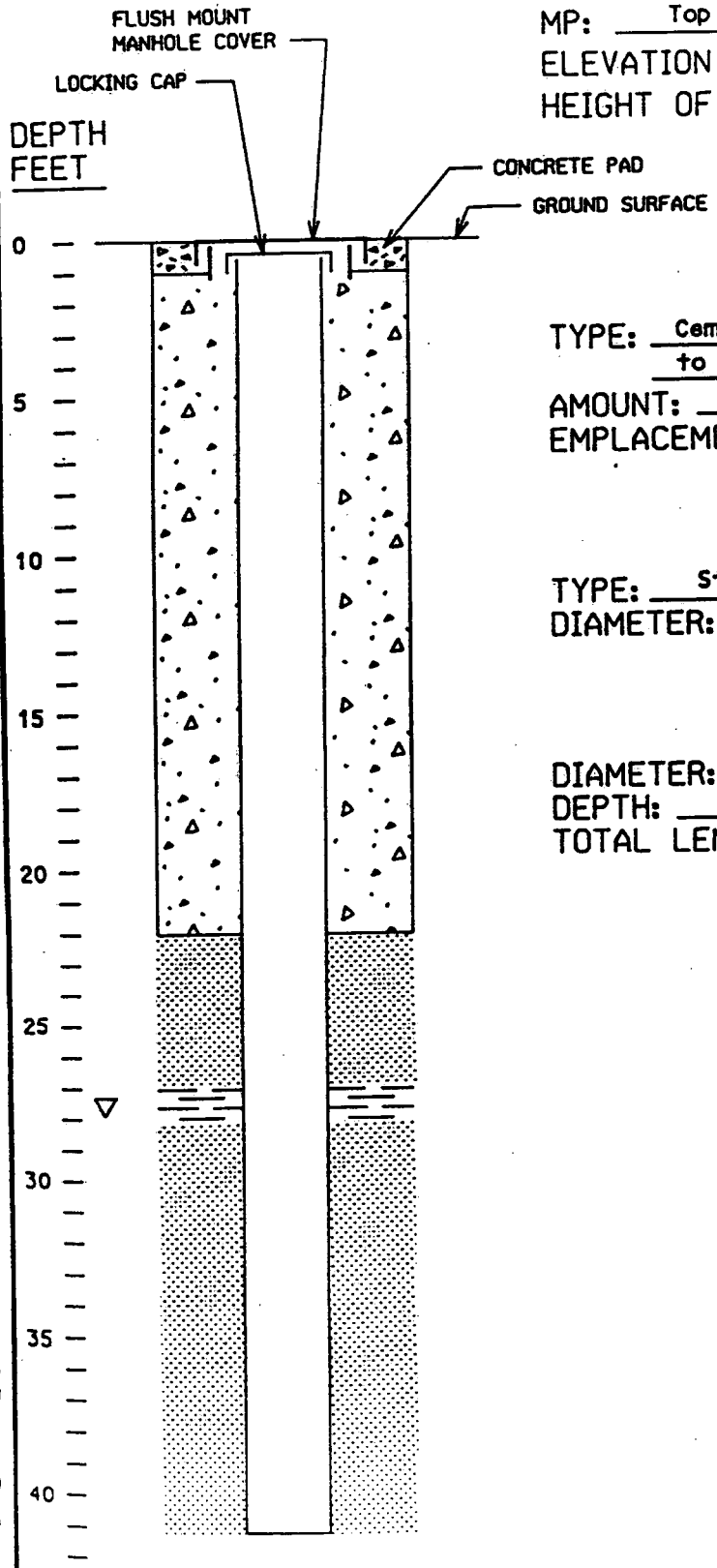
RADIAN CORPORATION

MONITOR WELL CONSTRUCTION SCHEMATIC

PROJECT: Kodalux, Fair Lawn, NJ
DRILLING CO.: Summit Drilling Co., Inc.
SUPERVISED BY: LMM, Radian Corporation
DRILLING METHOD: Air Rotary
DATE COMPLETED: 3/27/91

WELL ID: MW-3
COORDINATES: LAT. 40°56'33.5"; LONG 74°07'48.0"
AQUIFER: Uppermost
DEPTH TO WATER FROM MEASURING POINT (MP): 27.35' (4/1/91)

MP: Top of casing
ELEVATION OF MP: 95.26
HEIGHT OF MP RELATIVE TO GROUND LEVEL: -0.47'



GROUT

TYPE: Cement-bentonite (8 gal. water to 5 lb. bentonite to 94 lb. Portland cement)
AMOUNT: 6 - 94 lb. bags
EMPLACEMENT METHOD: Tremie pipe

RISER PIPE

TYPE: Steel (21.5' PIPE)
DIAMETER: 6-inch

BOREHOLE

DIAMETER: 10" cased; 6" open rock
DEPTH: 40.60' below MP
TOTAL LENGTH OPEN ROCK: 19.07'

LEGEND

- PARTING WITH #6 FUEL OIL
- SANDSTONE
- SHALE
- STATIC WATER LEVEL

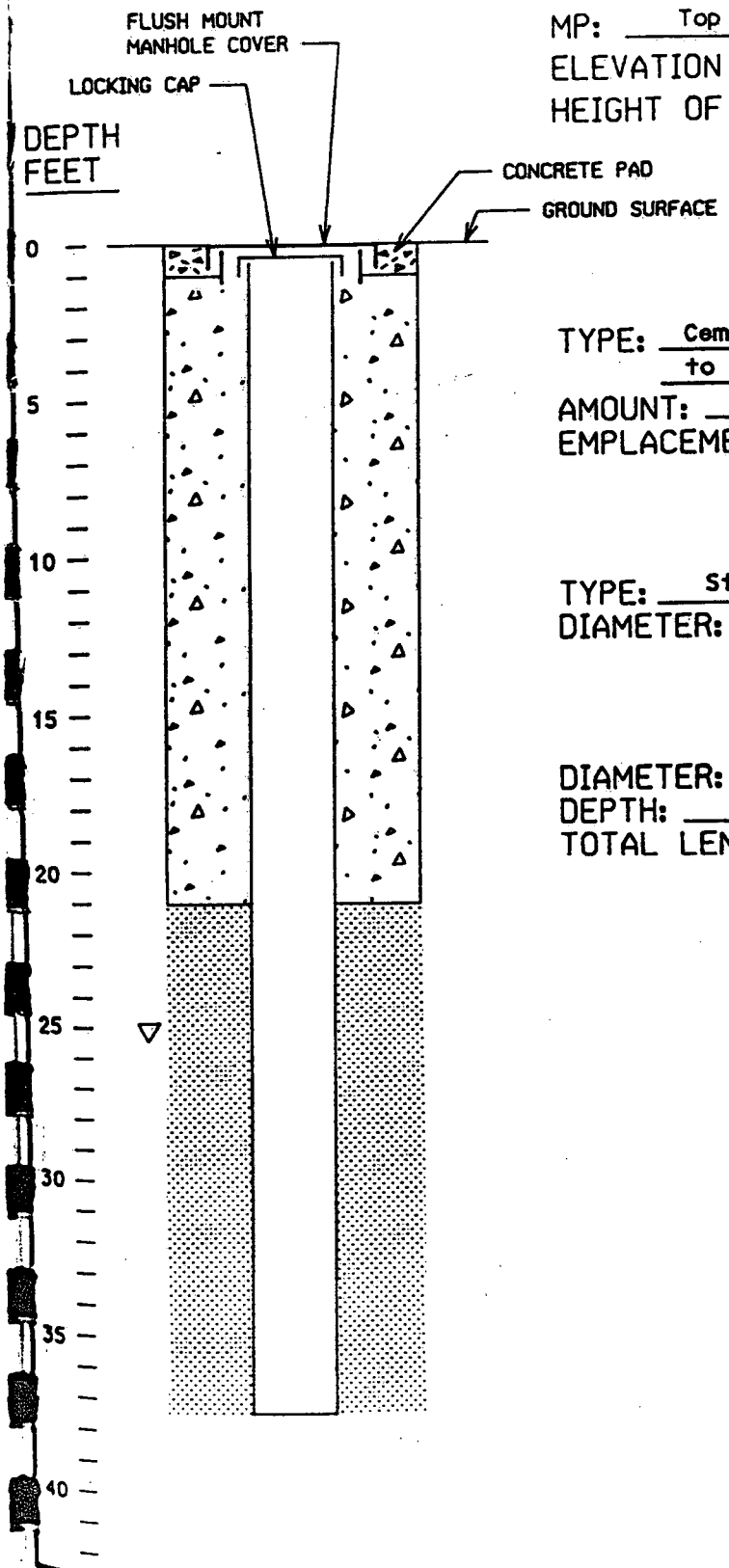
RADIAN CORPORATION

MONITOR WELL CONSTRUCTION SCHEMATIC

PROJECT: Kodalux, Fair Lawn, NJ
DRILLING CO.: Summit Drilling Co., Inc.
SUPERVISED BY: LMM, Radian Corporation
DRILLING METHOD: Air Rotary
DATE COMPLETED: 3/28/91

WELL ID: MW-4
COORDINATES: LAT. 40°56'34.5"; LONG 74°07'49.0"
AQUIFER: Uppermost
DEPTH TO WATER FROM MEASURING POINT (MP): 25.0' (4/1/91)

MP: Top of casing
ELEVATION OF MP: 93.69
HEIGHT OF MP RELATIVE TO GROUND LEVEL: -0.47'



GROUT

TYPE: Cement-bentonite (8 gal. water to 5 lb. bentonite to 94 lb. Portland cement)
AMOUNT: 6 - 94 lb. bags
EMPLACEMENT METHOD: Tremie pipe

RISER PIPE

TYPE: Steel (20.5' pipe)
DIAMETER: 6-inch

BOREHOLE

DIAMETER: 10" cased; 6" open rock
DEPTH: 36.80' below MP
TOTAL LENGTH OPEN ROCK: 16.27'

LEGEND

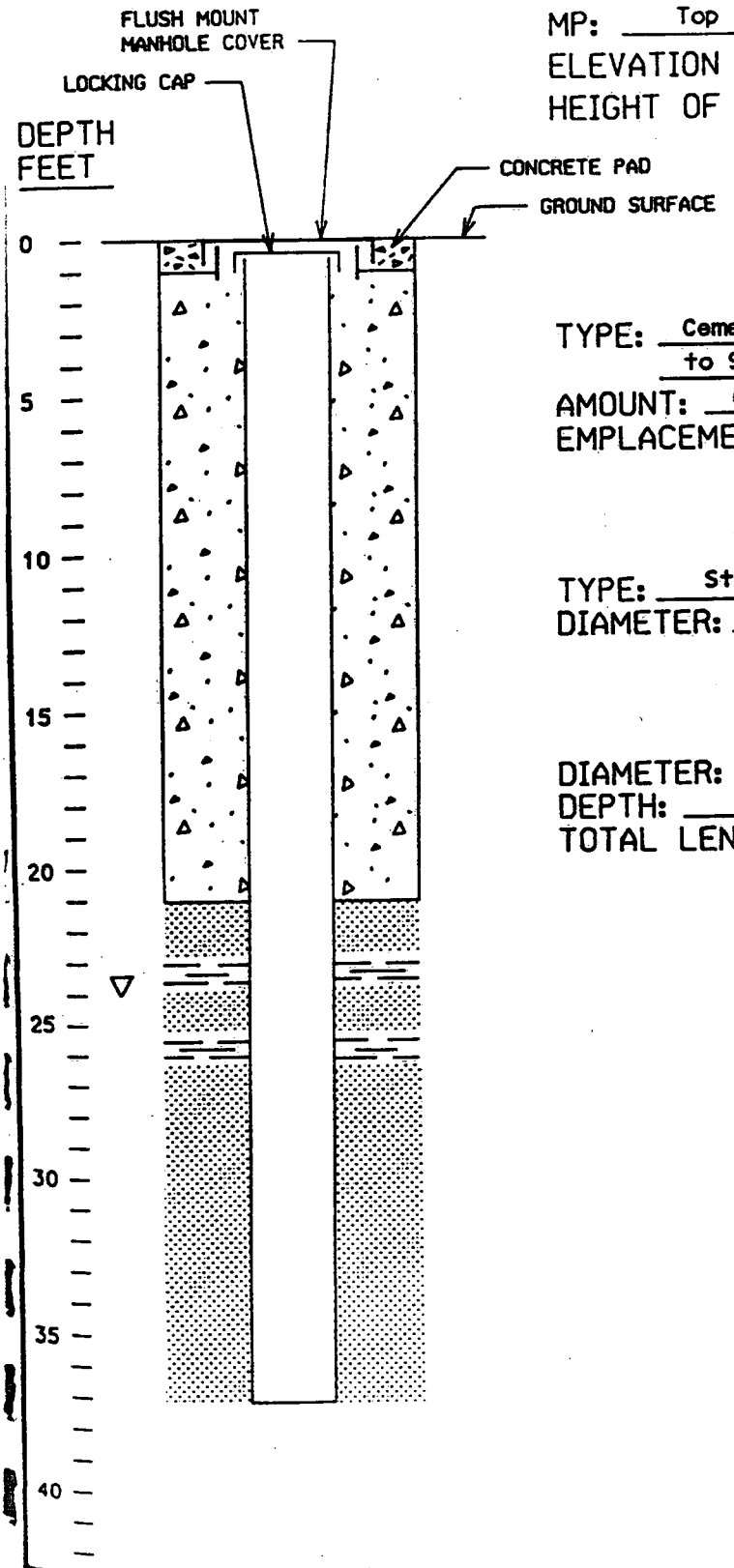
- PARTING WITH #6 FUEL OIL
- SANDSTONE
- SHALE
- STATIC WATER LEVEL

RADIAN CORPORATION

MONITOR WELL CONSTRUCTION SCHEMATIC

PROJECT: Kodalux, Fair Lawn, NJ
DRILLING CO.: Summit Drilling Co., Inc.
SUPERVISED BY: LMM, Radian Corporation
DRILLING METHOD: Air Rotary
DATE COMPLETED: 3/28/91

WELL ID: MW-5
COORDINATES: LAT. 46°53'35.0"; LONG 74°07'49.0"
AQUIFER: Uppermost
DEPTH TO WATER FROM MEASURING POINT (MP): 23.6' (4/1/91)



MP: Top of casing
ELEVATION OF MP: 94.66
HEIGHT OF MP RELATIVE TO GROUND LEVEL: -0.37'

GROUT

TYPE: Cement-bentonite (8 gal. water to 5 lb. bentonite to 94 lb. Portland cement)
AMOUNT: 6 - 94 lb. bags
EMPLACEMENT METHOD: Tremie pipe

RISER PIPE

TYPE: Steel (20.6' pipe)
DIAMETER: 6-inch

BOREHOLE

DIAMETER: 10" cased; 6" open rock
DEPTH: 36.60' below MP
TOTAL LENGTH OPEN ROCK: 15.97'

LEGEND

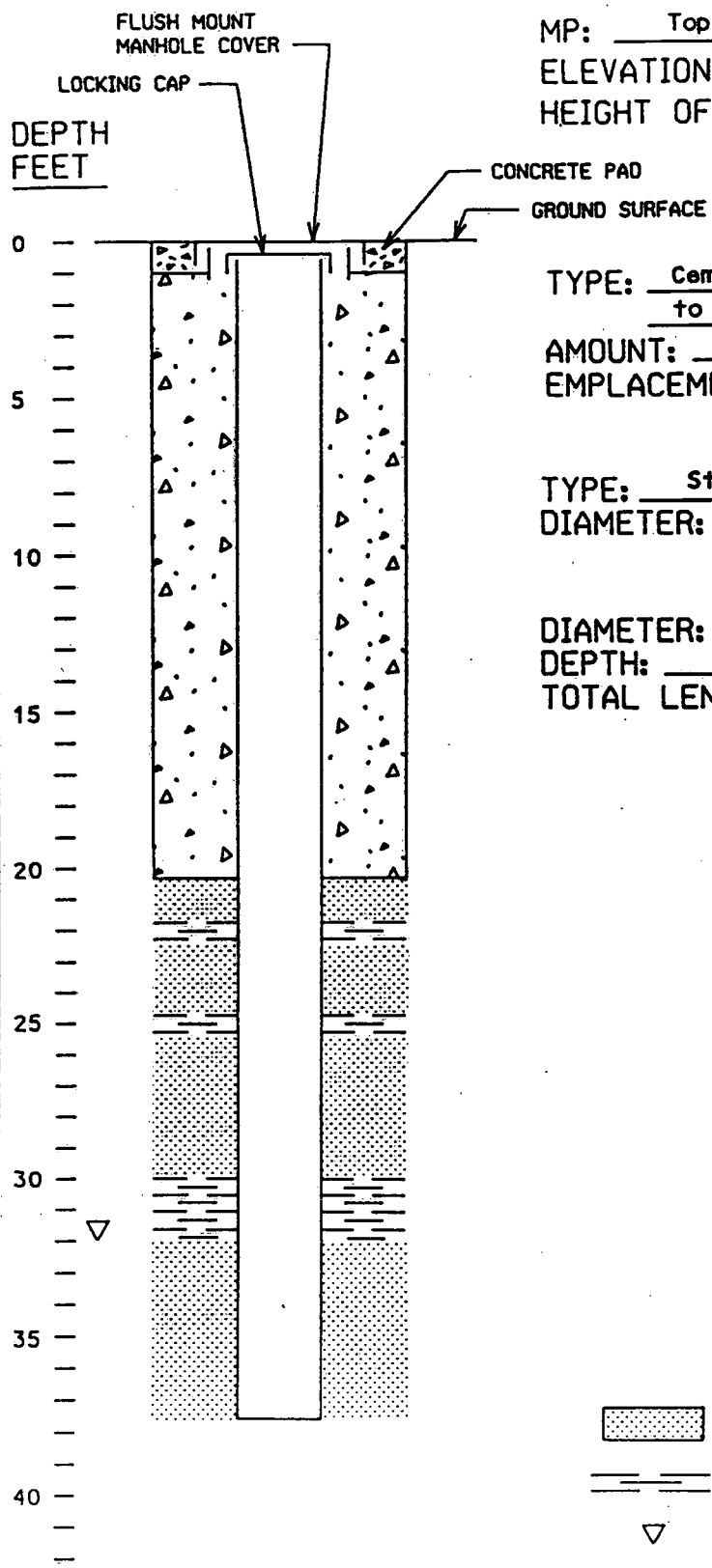
- PARTING WITH #6 FUEL OIL
- SANDSTONE
- SHALE
- STATIC WATER LEVEL

RADIAN CORPORATION

MONITOR WELL CONSTRUCTION SCHEMATIC

PROJECT: Kodalux, Fair Lawn, NJ
DRILLING CO.: Summit Drilling Co., Inc.
SUPERVISED BY: LRM, Radian Corporation
DRILLING METHOD: Air Rotary
DATE COMPLETED: 10/22/91

WELL ID: MW-6
COORDINATES: Lat 40°56'35.7"; Long 74°07'50.6"
AQUIFER: Uppermost
DEPTH TO WATER FROM MEASURING POINT (MP): 31.90' (11/14/91)



MP: Top of casing
ELEVATION OF MP: 88.15
HEIGHT OF MP RELATIVE TO GROUND LEVEL: -.30'

GROUT

TYPE: Cement-bentonite (8 gal. water to 5 lb. bentonite to 94 lb. Portland cement)
AMOUNT: 4.5 - 94 lb. bags
EMPLACEMENT METHOD: Tremie pipe

RISER PIPE

TYPE: Steel (20.0' pipe)
DIAMETER: 6-inch

BOREHOLE

DIAMETER: 10" cased; 6" open rock
DEPTH: 37.20' below MP
TOTAL LENGTH OPEN ROCK: 17.20'

LEGEND

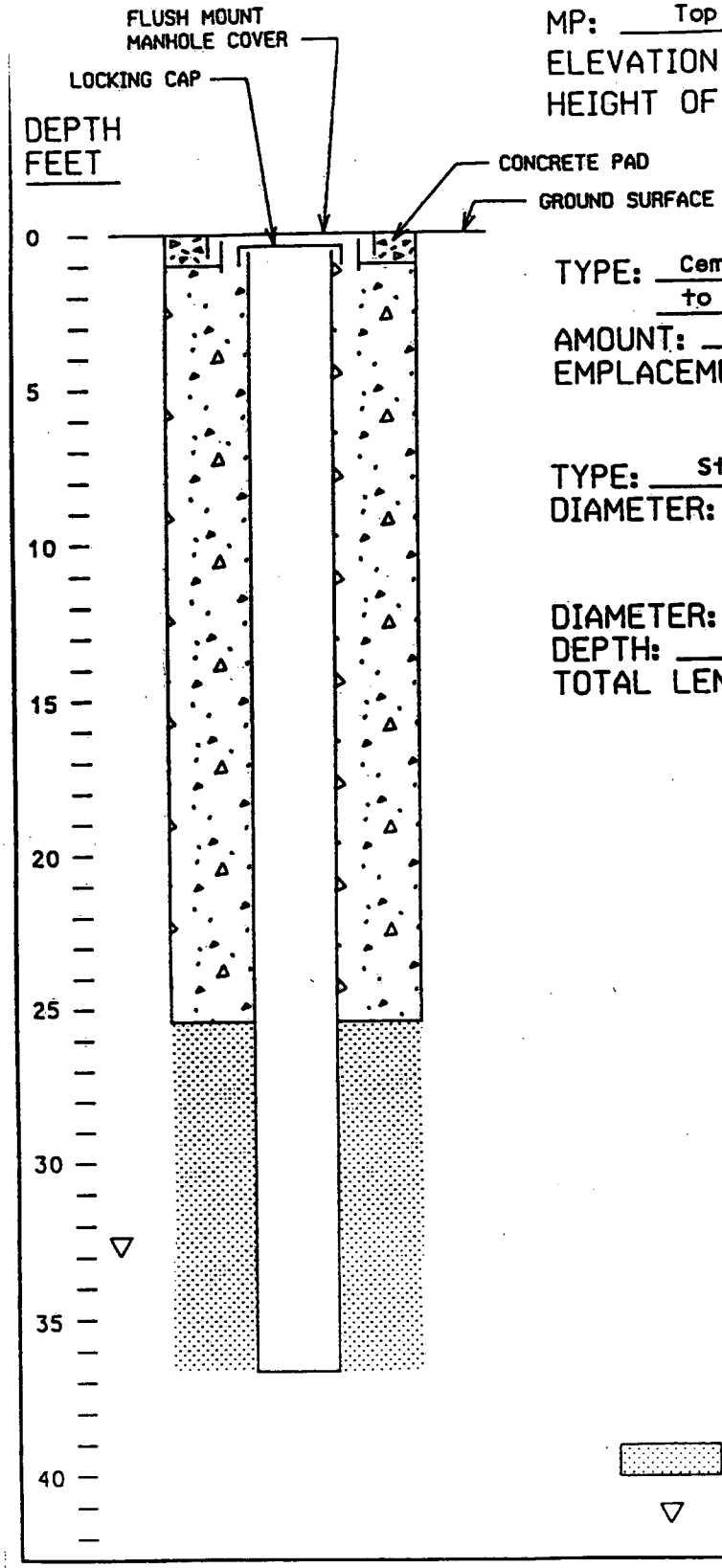
SANDSTONE
SHALE
STATIC WATER LEVEL (11/14/91)

RADIAN CORPORATION

MONITOR WELL CONSTRUCTION SCHEMATIC

PROJECT: Kodalux, Fair Lawn, NJ
DRILLING CO.: Summit Drilling Co., Inc.
SUPERVISED BY: LRM, Radian Corporation
DRILLING METHOD: Air Rotary
DATE COMPLETED: 10/24/91

WELL ID: MW-7/PB-1
COORDINATES: Lat 40°56'36.1"; Long 74°07'45.9"
AQUIFER: Uppermost
DEPTH TO WATER FROM MEASURING POINT (MP): 33.15' (10-29-91)



MP: Top of casing
ELEVATION OF MP: 93.31
HEIGHT OF MP RELATIVE TO GROUND LEVEL: -0.4'

GROUT

TYPE: Cement-bentonite (8 gal. water to 5 lb. bentonite to 94 lb. Portland cement)
AMOUNT: 9 - 94 lb. bags
EMPLACEMENT METHOD: Tremie pipe

RISER PIPE

TYPE: Steel (25.0' pipe)
DIAMETER: 6-inch

BOREHOLE

DIAMETER: 10" cased; 6" open rock
DEPTH: 36.25' below MP
TOTAL LENGTH OPEN ROCK: 11.25'

LEGEND

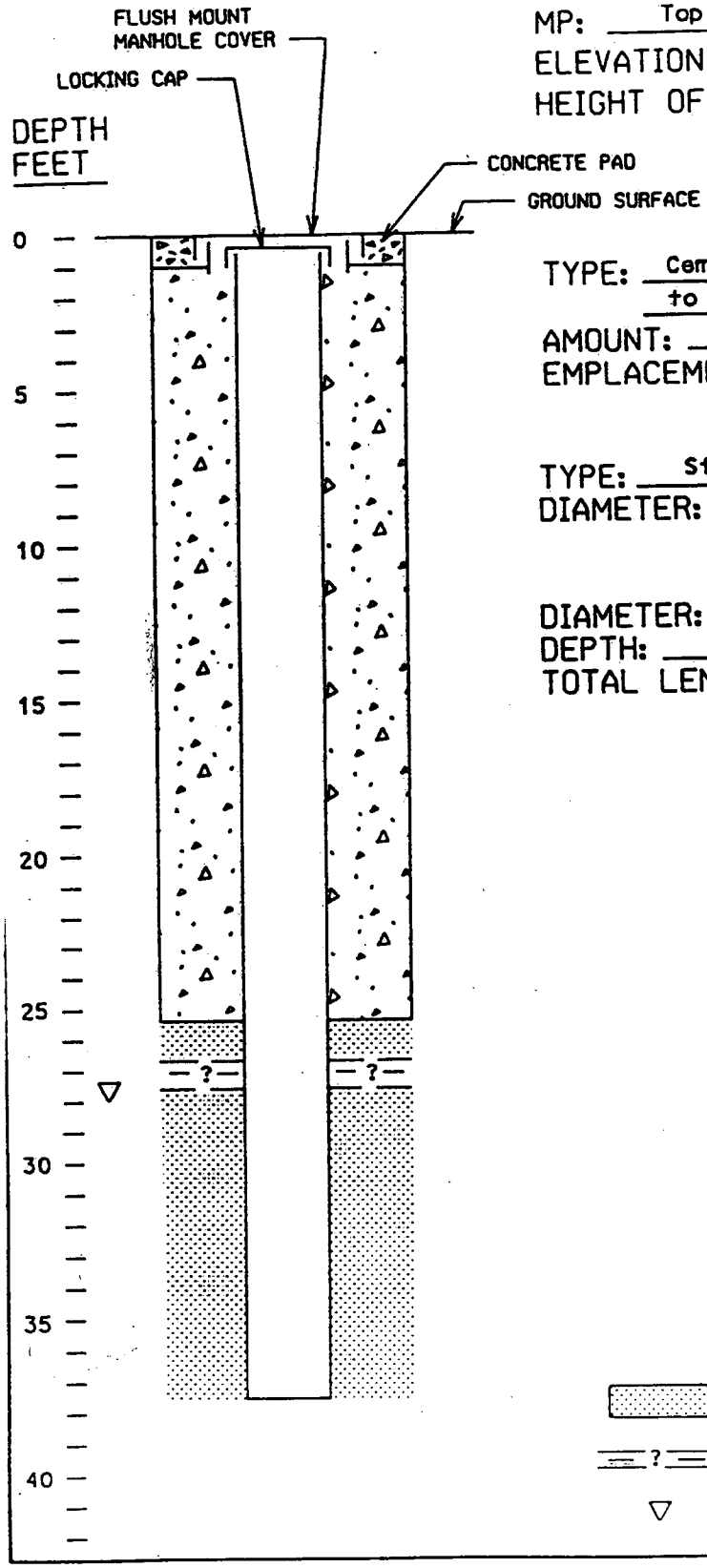
SANDSTONE
STATIC WATER LEVEL

RADIAN CORPORATION

MONITOR WELL CONSTRUCTION SCHEMATIC

PROJECT: Kodalux, Fair Lawn, NJ
DRILLING CO.: Summit Drilling Co., Inc.
SUPERVISED BY: LRM, Radian Corporation
DRILLING METHOD: Air Rotary
DATE COMPLETED: 10/22/91

WELL ID: MW-8
COORDINATES: Lat 40°56'38.3"; Long 74°07'47.6"
AQUIFER: Uppermost
DEPTH TO WATER FROM MEASURING POINT (MP): 27.32' (10-29-91)



MP: Top of casing
ELEVATION OF MP: 88.38
HEIGHT OF MP RELATIVE TO GROUND LEVEL: -0.34'

GROUT

TYPE: Cement-bentonite (8 gal. water to 5 lb. bentonite to 94 lb. Portland cement)
AMOUNT: 9 - 94 lb. bags
EMPLACEMENT METHOD: Tremie pipe

RISER PIPE

TYPE: Steel (25.0' pipe)
DIAMETER: 6-inch

BOREHOLE

DIAMETER: 10" cased; 6" open rock
DEPTH: 37.22' below MP
TOTAL LENGTH OPEN ROCK: 12.22'

LEGEND

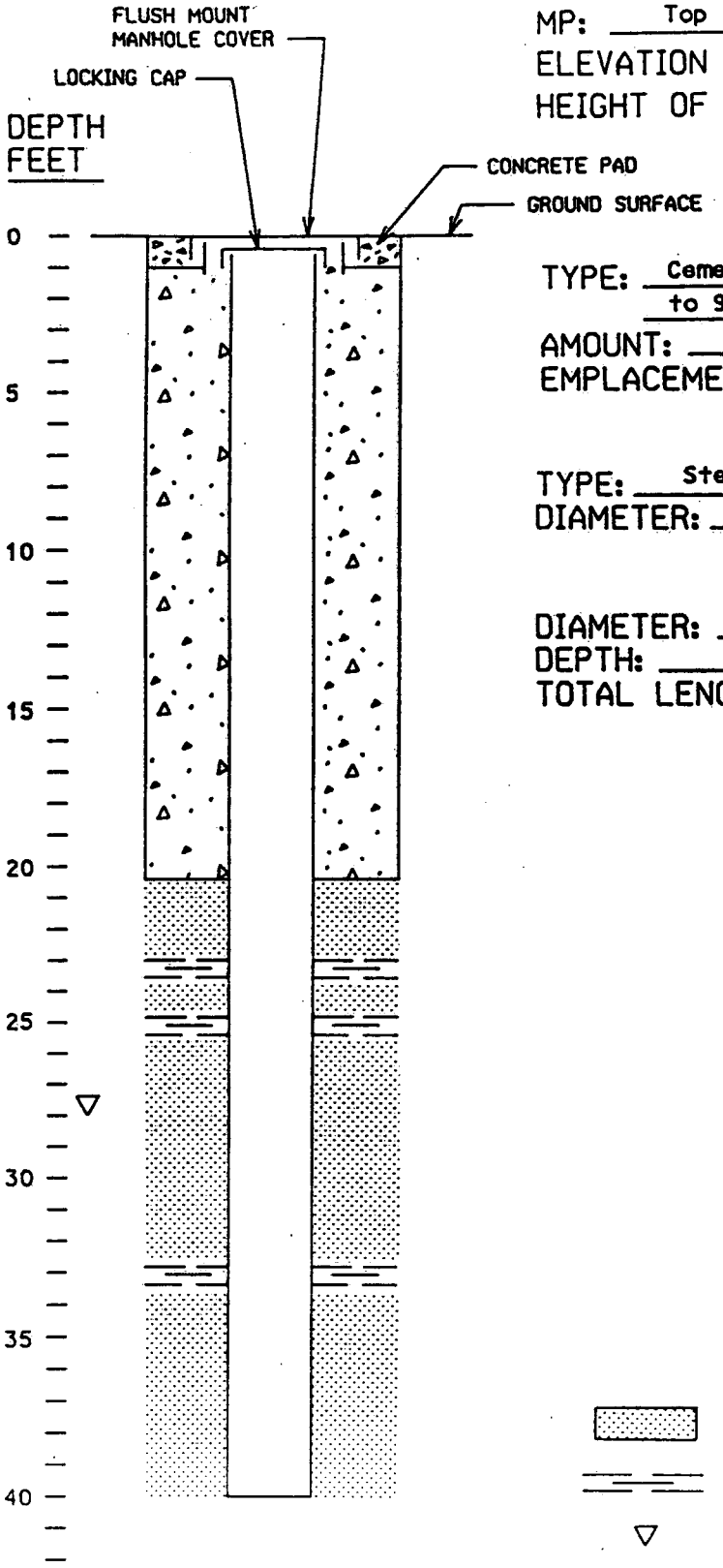
SANDSTONE
SOFT ZONE
STATIC WATER LEVEL (11/14/91)

RADIAN CORPORATION

MONITOR WELL CONSTRUCTION SCHEMATIC

PROJECT: Kodalux, Fair Lawn, NJ
DRILLING CO.: Summit Drilling Co., Inc.
SUPERVISED BY: LRM, Radian Corporation
DRILLING METHOD: Air Rotary
DATE COMPLETED: 10/24/91

WELL ID: MW-9
COORDINATES: Lat 40°56'36.9"; Long 74°07'42.9"
AQUIFER: Uppermost
DEPTH TO WATER FROM MEASURING POINT (MP): 27.50' (10-29-91)



MP: Top of casing
ELEVATION OF MP: 91.24
HEIGHT OF MP RELATIVE TO GROUND LEVEL: -0.42'

GROUT

TYPE: Cement-bentonite (8 gal. water to 5 lb. bentonite to 94 lb. Portland cement)
AMOUNT: 7 - 94 lb. bags
EMPLACEMENT METHOD: Tremie pipe

RISER PIPE

TYPE: Steel (20.0' pipe)
DIAMETER: 6-inch

BOREHOLE

DIAMETER: 10" cased; 6" open rock
DEPTH: 39.52' below MP
TOTAL LENGTH OPEN ROCK: 19.52'

LEGEND

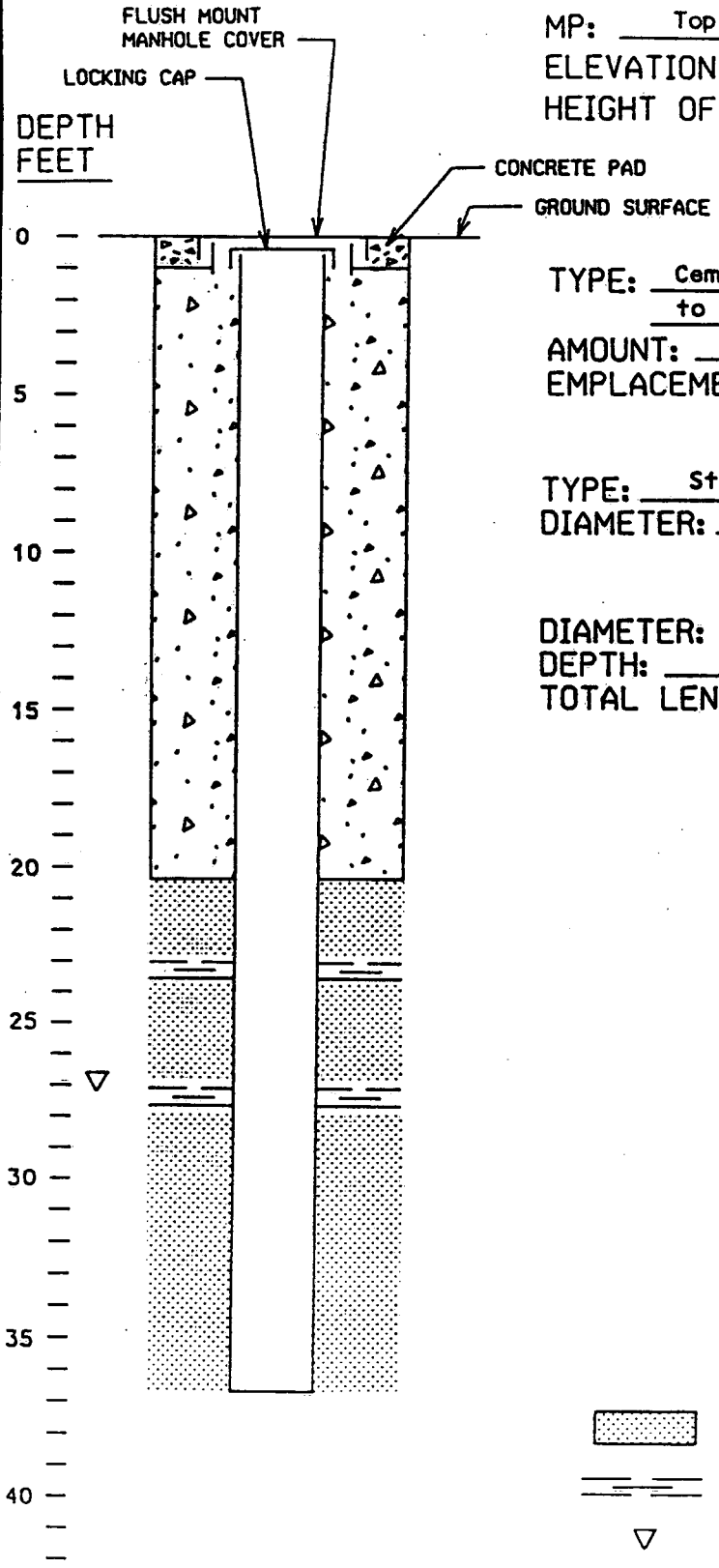
SANDSTONE
SHALE
STATIC WATER LEVEL (11/14/91)

RADIAN CORPORATION

MONITOR WELL CONSTRUCTION SCHEMATIC

PROJECT: Kodalux, Fair Lawn, NJ
DRILLING CO.: Summit Drilling Co., Inc.
SUPERVISED BY: LRM, Radian Corporation
DRILLING METHOD: Air Rotary
DATE COMPLETED: 10/24/91

WELL ID: MW-10
COORDINATES: Lat 40°56'31.9"; Long 74°07'45.3"
AQUIFER: Uppermost
DEPTH TO WATER FROM MEASURING POINT (MP): 25.33' (10-29-91)



MP: Top of casing
ELEVATION OF MP: 96.17
HEIGHT OF MP RELATIVE TO GROUND LEVEL: -0.39

GROUT

TYPE: Cement-bentonite (8 gal. water to 5 lb. bentonite to 94 lb. Portland cement)
AMOUNT: 7 - 94 lb. bags
EMPLACEMENT METHOD: Tremie pipe

RISER PIPE

TYPE: Steel (20.0' pipe)
DIAMETER: 6-inch

BOREHOLE

DIAMETER: 10" cased; 6" open rock
DEPTH: 36.32' below MP
TOTAL LENGTH OPEN ROCK: 16.32'

LEGEND

SANDSTONE
SHALE
STATIC WATER LEVEL (11/14/91)

APPENDIX VII

WELL ABANDONMENT LOGS

RADIAN
CORPORATION

155 Corporate Woods
Suite 100
Rochester, New York 14623
(716)292-1870
FAX: (716)292-1878

January 7, 1993

Mr. Gary Costanzo
Corporate Environment, Groundwater Quality Section
Eastman Kodak Company
1669 Lake Avenue
Building 326, Second Floor - Room 2770
Kodak Park
Rochester, New York 14652-3102

Subject: Well Abandonment
Kodalux Processing Facility, Fairlawn, New Jersey

Dear Gary:

Enclosed is a copy of the New Jersey Department of Environmental Protection and Energy Well Abandonment Report, the New York State Hazardous Waste Manifest, Eastman Kodak Company forms "Notice of Land Disposal Restriction of Waste" and "Building 218 Scheduling Request," and a HazMat Environmental Group, Incorporated, Shipping Order Form, completed for the Kodalux well abandonment project. Mr. Bruce Hudzik has retained an identical copy of the New York State Hazardous Waste Manifest and Kodak's Notice of Land Disposal Restriction of Waste.

The well abandonment contractor, Summit Drilling, abandoned the well by removing the well pump and drop pipe, and tremie grouting the borehole with a mixture of grout consisting of approximately thirteen 50-pound bags of Portland Type I cement and one 50-pound bag of Benseal Grouting Bentonite. Items removed from the well, including the well cover, surface pipes, and the steam cleaned pump and drop pipe, were staged on site for disposal by Eastman Kodak Company. HazMat Environmental Group, Incorporated, received approximately 100 gallons of fluid collected from the abandonment procedure and equipment decontamination for shipment to Eastman Kodak's facility in Rochester, New York.

Please call if you have any questions.

Sincerely,

Lynn M. Eshler

Lynn M. Eshler
Project Director

c: Mr. Dick Spiegel
ROC File

/R-020
/92

New Jersey Department of Environmental Protection and Energy
Water Supply Element — Bureau of Water Allocation

WELL ABANDONMENT REPORT

MAIL TO:

Bureau of Water Allocation
CN 426
Trenton, NJ 08625-0426

WELL PERMIT # 23-4147
of well sealed

DATE WELL SEALED 12-16-92

PROPERTY OWNER Eastman Kodak Company

ADDRESS 12-31 Route 208, Fairlawn, N.J. 07410

WELL LOCATION The Same, Fairlawn, Bergen Co.
Street & No., Township, County

Well #1 Lot: 1 Block: 4801 Map # 23
Well No., Lot & Block No., Longitude & Latitude (N.J. Grid # may be substituted for longitude & latitude)

TYPE OF WELL ABANDONED: Irrigation

REASON FOR ABANDONMENT: No Longer In Use

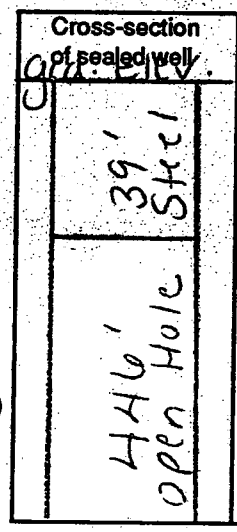
WAS A NEW WELL DRILLED? ☐ YES ☒ NO PERMIT # OF NEW WELL: _____

TOTAL DEPTH OF WELL 485'
DIAMETER 10"
CASING LENGTH 39'
SCREEN LENGTH Open hole
NUMBER OF CASINGS 1

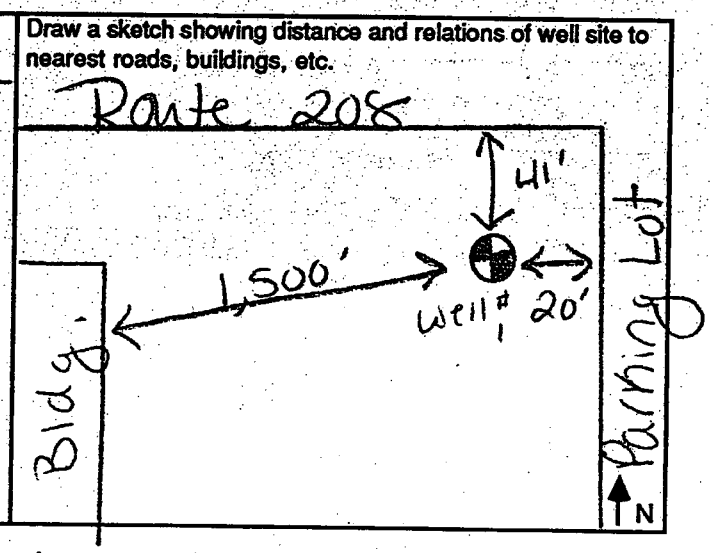
MATERIAL USED TO SEAL WELL:
6,300 Gallons of Water
17,820 Lbs. of Cement
900 Lbs. of Bentonite
0 Lbs. of Sand/Gravel
(none if well is contaminated)

FORMATION: ✓ Consolidated
_____ Unconsolidated

Cross-section of sealed well



Draw a sketch showing distance and relations of well site to nearest roads, buildings, etc.



To permit adequate grouting, the casing should remain in place, but ungrouted liner pipes or any other obstructions must be removed. Pressure grouting is the only accepted method.

WAS CASING LEFT IN PLACE? ☑ YES ☐ NO CASING MATERIAL: Steel

WERE OTHER OBSTRUCTIONS REMOVED? ☑ YES ☐ NO WHAT WERE THE OBSTRUCTIONS: Sub pump & wiring

I certify that this well was sealed in accordance with N.J.A.C. 7:9-9.1 et seq.

John Vogt
Name of Person Doing Sealing Work (Print or Type)

489 Union Ave. Bridgewater NJ
Address

12-31-92
Mailing Date

John Vogt
Signature of Person Doing Sealing Work

J1524
License #

COPIES: White - Water Allocation Yellow - Owner Pink - Health Dept. Goldenrod - Driller

Wm. T. Hellings & Son, Inc.

Builder • General Contractor • Commercial • Industrial

Quality Since 1946

3079 Bristol Road • Warrington, PA 18976 • Office: 215-343-1662 • Fax: 215-343-9626

September 7, 1993

RE: Qualex, Inc.
Fair Lawn, NJ

Darrell Bradfield
Eastman Kodak Co
901 Elm Grove Road
Rochester, NY 14653-5710

Dear Mr. Bradfield:

Enclosed please find the Well Abandonment Report for the Qualex facility at 16-31 Route 208, Fair Lawn, New Jersey.

Very truly yours,

WM. T. HELLINGS & SON, INC.

Robert J. Ciafrei, II

Robert J. Ciafrei, II
Vice President

RJC\sp

Enclosure

DWR-020
10/92

New Jersey Department of Environmental Protection and Energy
Water Supply Element — Bureau of Water Allocation

WELL ABANDONMENT REPORT

MAIL TO:

Bureau of Water Allocation
CN 426
Trenton, NJ 08625-0426

WELL PERMIT # 23-10825-8
of well sealed

DATE WELL SEALED 8/23/93

PROPERTY OWNER Eastman Kodak Co

ADDRESS 343 STATE ST. Rochester, N.Y.

WELL LOCATION 16-31 RT 208 Fairlawn, N.J 07410 Bergen Co.
Street & No., Township, County

MW 5 Lot 1 Block 4801 23:43:472
Well No., Lot & Block No., Longitude & Latitude (N.J. Grid # may be substituted for longitude & latitude)

TYPE OF WELL ABANDONED: Monitoring

REASON FOR ABANDONMENT: No longer in use

WAS A NEW WELL DRILLED? ☐ YES ☑ NO PERMIT # OF NEW WELL: _____

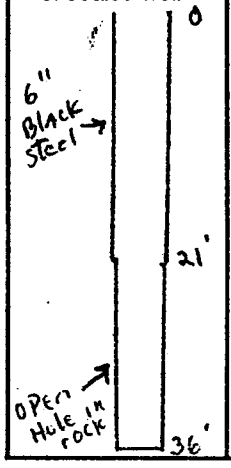
TOTAL DEPTH OF WELL 36'
DIAMETER 6"
CASING LENGTH 21
SCREEN LENGTH Open Rock well
NUMBER OF CASINGS 1

MATERIAL USED TO SEAL WELL:

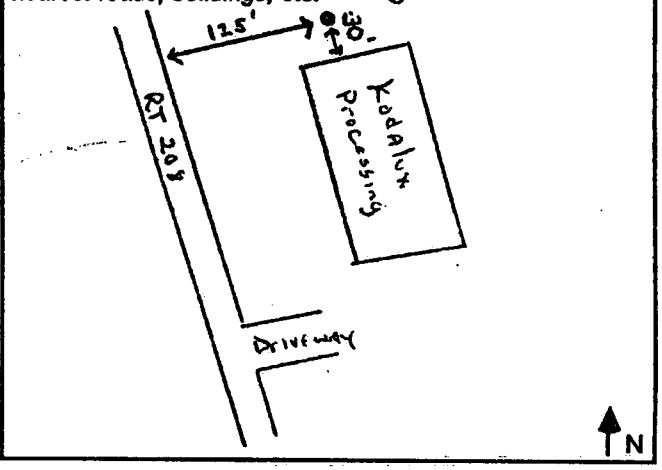
45 Gallons of Water
752 Lbs. of Cement
5 Lbs. of Bentonite
— Lbs. of Sand/Gravel
(none if well is contaminated)

FORMATION: ✓ Consolidated
_____ Unconsolidated

Cross-section of sealed well



Draw a sketch showing distance and relations of well site to nearest roads, buildings, etc. MW-5



To permit adequate grouting, the casing should remain in place, but ungrouted liner pipes or any other obstructions must be removed. Pressure grouting is the only accepted method.

WAS CASING LEFT IN PLACE? ☑ YES ☐ NO CASING MATERIAL: 6" Black Steel

WERE OTHER OBSTRUCTIONS REMOVED? ☐ YES ☑ NO WHAT WERE THE OBSTRUCTIONS: None

I certify that this well was sealed in accordance with N.J.A.C. 7:9-9.1 et seq.

Ronald J. Barber Jr
Name of Person Doing Sealing Work (Print or Type)

1600 Broadway P.O. 127 Westville N.J
Address

8/24/93
Mailing Date

Ronald J. Barber Jr
Signature of Person Doing Sealing Work

1135 M
License #

COPIES: White - Water Allocation Yellow - Owner Pink - Health Dept. Goldenrod - Driller

Let's protect our earth

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES
METRO BUREAU OF REGIONAL ENFORCEMENT
2 BABCOCK PLACE
WEST ORANGE, NEW JERSEY 07052

Eric J. Evenson
Acting Director

February 2, 1990

BUREAU OF
FEDERAL CASE MANAGEMENT
FEB 5 1990

Mr. Joseph Garger, Borough Manager
Borough of Fair Lawn
8-01 Fair Lawn Avenue
Fair Lawn, NJ 07410

Re: Compliance Evaluation Inspection
Fair Lawn Water Department
P.W. ID No.: 0217001
Fair Lawn/Bergen County

Dear Mr. Garger:

A Compliance Evaluation Inspection of your facility was conducted by a representative of this Division on December 12 - 13, 1989. A copy of the completed inspection report form is enclosed for your information.

Your facility received a rating of "UNACCEPTABLE" due to the following deficiencies:

Source Deficiencies

1) Well No. 28 does not possess a drawdown gauge pursuant to N.J.A.C. 7:10-11.4(q)3.

2) The casing vent screens at Wells No. 2, 5, 14, and 15 are in disrepair. Wells No. 10, 25, 26, and 28 do not possess casing vent screens pursuant to N.J.A.C. 7:10-11.4(L)5.

3) Wells No. 25, 26, and 28 do not possess access for direct measurement pursuant to N.J.A.C. 7:10-11.4(q)3.

4) Wells No. 25, 26, and 28 have not been equipped with treated water taps; samples are collected from nearby fire hydrant.

Treatment Deficiencies

1) The chlorination room doors at Wells No. 25, 28, and the Westmorland air stripper have not been equipped with panic type hardware (push bar for opening the door) on the inside of the door pursuant to N.J.A.C. 7:10-11.13(f)1.

2) The chlorination booth at Well No. 8 is not equipped with an exhaust fan pursuant to N.J.A.C.7:10-11.13(f)1.

Storage and/or Distribution Deficiencies

1) The water system does not possess an auxiliary power source pursuant to N.J.A.C. 7:10-11.6(g)2

2) The overflow outlets at the 11th Street finished water storage tank do not consist of a downpipe which terminates no less that six inches (6"), nor more than thirty-six inches (36") above the ground pursuant to N.J.A.C. 7:10-11.8(f)3.

3) The 11th Street storage tank is not fenced and protected against unauthorized access and vandalism pursuant to N.J.A.C. 7:10-11.8(b)1.

4. The ladder of the 11th Street water storage tank has not been equipped with a safety cage pursuant to N.J.A.C. 7:10-11.3(j).

5. The two water storage tanks at Cadmus Place have not been provided with ladders pursuant to N.J.A.C. 7:10-11.8(f)1. A portable ladder is presently utilized.

6. The Gordon Place elevated tank has not been equipped with a low level alarm pursuant to N.J.A.C. 7:10-11.8(a)7.

NOTE: Undersized mains exist within your system. All future replacement of these mains and all new mains must be at least 6 inches in diameter, unless justified by hydraulic analysis and approved by the Department.

Since the deficiencies cited are presently, or could in the future, adversely affect the quantity and/or quality of water you provide to your customers, you are DIRECTED to institute measures to correct the

deficiencies. A written report concerning specific details of the remedial measures to be instituted, as well as an implementation timetable, must be submitted to this Division within thirty (30) calendar days of the date of this correspondence.

The New Jersey Safe Drinking Water Act (N.J.S.A. 58:12A-1 et seq.) provides for substantial monetary penalties for violations of the Act.

Failure to comply with the above will result in the initiation of enforcement action by this Department. This shall in no way be construed, however, to indicate any exemption on your part from possible penalties for violations indicated by the Compliance Evaluation Inspection, as stated above.

Please direct all correspondence and inquiries to Howard S. Goldman, of my staff, who can be reached at (201) 669-3900 or by letter through this Division.

Very truly yours,

Gloria T. Grant

Gloria T. Grant
Acting Section Chief
Ground Water/Safe Drinking
Water Enforcement Section
Metro Bureau of
Regional Enforcement

E20:G25

c: Bureau of Safe Drinking Water
Robert Williams, USEPA
Mr. Frank Fuchs, L.O.
Mr. Frank X. Brady, H.O.

Enclosure

bc: Zaheer M. Hussain, MIS
James Lyko, Criminal Justice
✓Pam Lange, Bureau of Case Management

Form DWR 140
7/81

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES
ENFORCEMENT & REGULATORY SERVICES

COMPLIANCE EVALUATION INSPECTION
PUBLIC COMMUNITY WATER SUPPLY

DATE December 12 1989

GENERAL INFORMATION

PURVEYOR/ FACILITY: Fair Lawn Water Department

FILE LOCATION: Fair Lawn / Bergen County

PW-ID = 0217001

MAILING ADDRESS: 8-01 Fair Lawn Ave. Fair Lawn NJ 07410

ADMIN.: Mr. Joseph Garger, Borough Manager

REQUIRED LICENSES: T-2 W-4

BUSINESS TELEPHONE #: Water Dept. 794-5374 Admin.: (201) 794-1510

Licensed Operators: T-2 F. Fuchs W-4 F. Fuchs T-1 Ron Grant

FACILITY DESCRIPTION

SOURCES: descriptions, locations, capacities(mgd): 20 wells: 12 operational, 4 capped & used for monitoring, 3 in the process of being rehabilitated or repaired, and 1 out of service due to iron bacteria problems (see attached list). Bulk purchases: Hackensack Water Co. 12", P.V.W.C. 16"

Est Tot Eff Cap: 8.06 MGD

TREATMENT: source, type, capacities(mgd): Gas Chlorination at wells #8, #9, #28 and #25 + #26 (together). Gas Chlorination at the Westmorland air stripper (treating wells # 10, 11, 12, & 14). Gas Chlorination at the Cadmus air stripper (treating wells # 2, 5, 7, 15, 16, 17, 19.

Est Tot Eff Cap: —

FINISHED WATER STORAGE: descriptions, locations, capacities(mg): (2)(1.0 MG) ground tanks Cadmus Place; 11th Street (1.5 MG) ground tank
Gordon Place (1.0 MG) elevated tank

Est Tot Cap: 4.5 MG

EMERGENCY INTERCONNECTIONS: descriptions, available gallonage(mgd): None

Est Tot Avail: —

AUXILIARY POWER: location, type, capabilities: None

Booster Pumps: Cadmus Place; Donkerhook Rd. (Connection with Hackensack Water Co.); Wagaraw Road (Connection with P.V.W.C.); 11th Street.
(All pump stations located in Fair Lawn)

NJDEP - DIVISION OF WATER RESOURCE
PUBLIC COMMUNITY WATER SUPPLY INSPECTION

DELIVERY INFORMATION

PLANT DELIVERED WATER (mgd,month,year) Max 6.32 MGD 8/88 Min 3.48 MGD 2/88 Annual Average 4.406 MGD 1985

BULK PURCHASES (provider,mgd) P.V.W.C. 1.25 MGD, Hackensack Water Co. 0.57 MGD

BULK SALES (customer, mgd) None

NUMBER OF SERVICES 11,100 | % METERED 100

MUNICIPALITIES SERVED (est. services in each) Borough of Fair Lawn

TOTAL ESTIMATED POPULATION SERVICED 32,000

CURRENT/RECENT WATER RESTRICTIONS None

NEW CONSTRUCTION (Project Numbers) Ground tank - Cedar Place (1.0 mG) Completed Dec. 1985

DISTRIBUTION MAINS: Sizing 4" (1%) (min) to 20" (max)
Pressures 30 psi (min) to 110 psi (max)
Hydrants/Flushing Program 2x/year

MONITORING & REPORTING

PARAMETER(S)	FREQUENCY REQUIRED	FREQUENCY PERFORMED
Coliform	35 / month	70 / month
Inorganics	1 / 3 yrs.	5/31/88
Nitrate	—	—
Trihalomethanes	4 / year	9/26/89
Organics	—	5/31/88
Turbidity	—	—
Radionuclides	1 / 4 years, 4 cons. quarters	6/87
Secondary Regs.	1 / 3 years	5/31/88
A-2a5	2 / year	1/10/89

NAME OF LABORATORY CFM Labs Inc. CERTIFICATION # 14367

ADDRESS 3434 Rt. 22 West Somerville, NJ

COMPLIANCE EVALUATION

SOURCE DEFICIENCIES See letter

TREATMENT DEFICIENCIES See letter

NJDEP - DIVISION OF WATER RESOURCES
PUBLIC COMMUNITY WATER SUPPLY INSPECTION

COMPLIANCE EVALUATION (Continued)

STORAGE AND/OR DISTRIBUTION DEFICIENCIES See letter

LICENSING, MONITORING AND/OR REPORTING DEFICIENCIES None

COMPLIANCE SAMPLING VIOLATIONS: No samples taken

LOCATION	DATA SOURCE	PARAM	MAX CONTMNT LEVEL	RESULT	LOCATION	DATA SOURCE	PARAM	MAX CONTMNT LEVEL	RESULT

OVERALL COMPLIANCE RATING:

☐ ACCEPTABLE ☐ CONDITIONALLY ACCEPTABLE ☒ UNACCEPTABLE

NOTICE: *YOU ARE REQUIRED TO INFORM THE N.J.D.E.P. IN WRITING OF YOUR ACTUAL OR INTENDED ACTIONS TO COMPLY WITH N.J.S.A. 58:12A-1 ET SEQ. VIA IMPLEMENTATION OF REMEDIAL MEASURES TO CORRECT THE DEFICIENCIES LISTED IN THIS REPORT. FAILURE TO ADEQUATELY RESPOND IN A TIMELY FASHION WILL RENDER YOU LIABLE FOR PENALTIES OF UP TO $5,000.00 FOR EACH VIOLATION, PURSUANT TO N.J.A.C. 7:10-3.*

INSPECTOR: Howard Goldman
Signature

Howard Goldman
Name

Environmental Specialist
Title

Metro Bureau of Regional Enforcement
Region

PERSON INTERVIEWED: Mr. Frank Fuchs
Name

Water Superintendent
Title

Fair Lawn Water Department
Organization

FACT SHEET/ FAIR LAWN WATER DEPARTMENT

Well - Status	Capacity (MGD)
Cadmus Well Field	
No. 2 - operational	0.062
No. 4 - capped, used for observation	
No. 5 - o.o.s. due to iron bacteria	
No. 7 - operational	0.237
No. 8 - operational	0.316
No. 9 - operational	0.194
Westmorland Well Field	
No. 10 - operational	0.108
No. 11 - operational	0.108
No. 12 - being rehabilitated	
No. 14 - operational	0.144
Memorial Park Well Field	
No. 15 - operational	0.288
No. 16 - operational	0.252
No. 17 - operational	0.216
No. 18 - capped, used for observation	
No. 19 - operational	0.432
Kodak Memorial Park	
No. 23 - capped, used for observation	
No. 25 - operational **	0.324
No. 26 - operational **	0.144
No. 27 - capped, used for observation	
No. 28 - operational	0.317

NOTE: Wells No. 1,3,6,13,20,21,22, and 24 have been sealed, well housing and appurtenances removed.

** out of service due to mechanical problems

APPENDIX VIII

RESTATED CERTIFICATE OF INCORPORATION

EASTMAN KODAK COMPANY

A New Jersey Corporation

RESTATED CERTIFICATE OF INCORPORATION

May 12, 1988

Rochester, New York

RESTATED

CERTIFICATE

OF

INCORPORATION

OF

EASTMAN KODAK COMPANY

•

Pursuant to Section 14A:9-5 of the New Jersey Business Corporation Act, Eastman Kodak Company amends, restates, and integrates its Certificate of Incorporation, as heretofore amended and restated, to read as follows:

SECTION 1. The name of the corporation is "Eastman Kodak Company."

SECTION 2. The Company is organized for the purpose of engaging in any activity within the purposes for which corporations may be organized under the New Jersey Business Corporation Act, as amended from time to time.

SECTION 3. The Company has authority to issue 1,050,000,000 shares, consisting of 100,000,000 shares of preferred stock, par value $10.00 each, and 950,000,000 shares of common stock, par value $2.50 each.

The Board of Directors may cause the preferred stock to be issued from time to time in one or more series and may determine the designation and number of shares, and the relative rights, preferences, and limitations of the shares, of each such series. The Board of Directors may change the designation and number of shares, and the relative rights, preferences, and limitations of the shares, of each series no shares of which have been issued.

Such authority of the Board of Directors includes but is not limited to the authority to cause to be issued one or more series of preferred stock

(a) entitling the holders thereof to cumulative, noncumulative or partially cumulative dividends;

(b) entitling the holders thereof to receive dividends payable on a parity with or in preference to the dividends payable on the common stock or on any other series of preferred stock;

(c) entitling the holders thereof to preferential rights upon the liquidation of, or upon any distribution of the assets of, the Company;

(d) convertible, at the option of the Company or of the holders or of both, into shares of common stock or any other series of preferred stock;

(e) redeemable, in whole or in part, at the option of the Company, in cash, its bonds or other property, at such price or prices, within such period or periods, and under such conditions as the Board of Directors provides, including creation of a sinking fund for the redemption thereof;

majority of the votes cast by the holders of shares entitled to vote thereon at any annual or special meeting of the shareholders duly called for that purpose.

DATED this 12th day of May, 1988.

EASTMAN KODAK COMPANY
By
Cecil D. Quillen, Jr.
Senior Vice President

ATTEST:
A. P. Donovan
Secretary

Filed and Recorded May 12, 1988 Jane Burgio, Secretary of State.

SECTION 6. No director or officer of the Company shall be personally liable to the Company or its shareholders for damages for breach of any duty owed to the Company or its shareholders as a director or officer, except to the extent that such exemption from liability or limitation thereof is not permitted by the New Jersey Business Corporation Act now or hereafter. Neither the amendment nor repeal of this Section 6, nor the adoption of any provision of this Certificate of Incorporation inconsistent with this Section 6, shall eliminate or reduce the effect of this Section in respect of any matter occurring, or any cause of action, suit or claim that, but for this Section 6 would accrue or arise, prior to such amendment, repeal or adoption of an inconsistent provision.

SECTION 7. The sale, assignment, transfer or other disposition of all the rights, franchises and property of the Company as an entirety shall be made only after obtaining approval by the affirmative vote of the holders of two-thirds of the shares issued and outstanding at any annual or special meeting of shareholders duly called for that purpose.

SECTION 8. The Company may loan money to, or guarantee an obligation of, or otherwise assist any officer or other employee of the Company or of any subsidiary, including an officer or employee who is also a director of the Company, whenever, in the judgment of a majority of the entire Board of Directors, such loan, guarantee or assistance may reasonably be expected to benefit the Company.

SECTION 9. Except as otherwise required by law or by other provisions of this Certificate of Incorporation, this Certificate of Incorporation may be amended by the affirmative vote of a

(f) lacking voting rights or having limited voting rights or enjoying special or multiple voting rights.

No holder of shares of the Company shall be entitled, as such, as a matter of pre-emptive or preferential right, to subscribe for or purchase any part of any new or additional issue of shares, or any treasury shares, or of securities of the Company or of any subsidiary of the Company convertible into, or exchangeable for, or carrying rights or options to purchase or subscribe, or both, to shares of any class whatsoever, whether now or hereafter authorized, and whether issued for cash, property, services or otherwise.

SECTION 4. The address of the Company's current registered office in the State of New Jersey is 28 West State Street, Trenton, New Jersey 08608. The name of the Company's current registered agent is The Corporation Trust Company.

SECTION 5. The affairs of the Company shall be managed by a Board of Directors. Except as otherwise provided by this Section 5, the number of directors, not fewer than nine (9) nor more than eighteen (18), shall be fixed from time to time by resolution of the Board of Directors. Commencing with the annual election of directors by the shareholders in 1987, the directors shall be divided into three classes: Class I, Class II and Class III, each such class, as nearly as possible, to have the same number of directors. The directors may be removed by vote of the shareholders only for cause. The term of office of the initial Class I directors shall expire at the annual meeting of the shareholders in 1988, the term of office of the initial Class II directors shall expire at the annual meeting of the shareholders in 1989, and the term of office of the initial Class III directors shall expire at the annual meeting of the shareholders in 1990. At each annual meeting of the shareholders

held after 1987, the directors chosen to succeed those whose terms have then expired shall be identified as being of the same class as the directors they succeed and shall be elected by the shareholders for a term expiring at the third succeeding annual meeting of the shareholders.

In the event that the holders of any class or series of stock of the Company having a preference, as to dividends or upon liquidation of the Company, shall be entitled by a separate class vote to elect directors, as may be specified pursuant to Section 3, then the provisions of such class or series of stock with respect to their rights shall apply. The number of directors that may be elected by the holders of any such class or series of stock shall be in addition to the number fixed pursuant to the preceding paragraph of this Section 5 and shall not be limited by the maximum number of directors set forth above. Except as otherwise expressly provided pursuant to Section 3, the number of directors that may be so elected by the holders of any such class or series of stock shall be elected for terms expiring at the next annual meeting of shareholders and without regard to the classification of the remaining members of the Board of Directors, and vacancies among directors so elected by the separate class vote of any such class or series of stock shall be filled by the remaining directors elected by such class or series, or, if there are no such remaining directors, by the holders of such class or series in the same manner in which such class or series initially elected a director.

If at any meeting for the election of directors, more than one class of stock, voting separately as classes, shall be entitled to elect one or more directors and there shall be a quorum of only one such class of stock, that class of stock shall be entitled to elect its quota of directors notwithstanding the absence of a quorum of the other class or classes of stock.

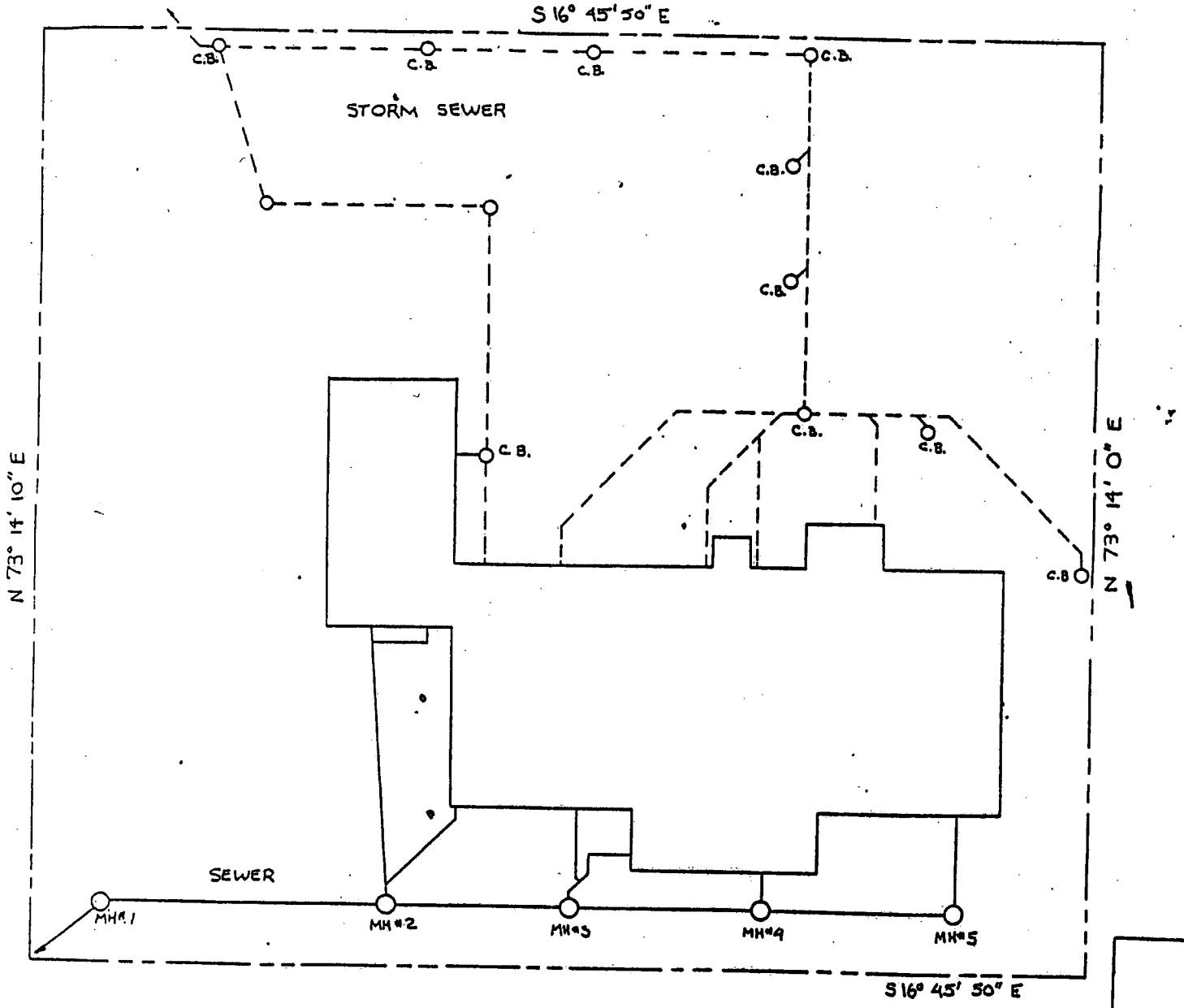
Vacancies and newly created directorships resulting from an increase in the number of directors, subject to the provisions of Section 3, shall be filled by a majority of the directors then in office, although less than a quorum, or by a sole remaining director, and such directors so chosen shall hold office until the next succeeding annual meeting of shareholders.

Notwithstanding any other provisions of this Certificate of Incorporation or the By-laws of the Company (and notwithstanding that a lesser percentage may be specified by law), the provisions of this Section 5 may not be amended or repealed unless such action is approved by the affirmative vote of the holders of not less than eighty percent (80%) of the voting power of all of the outstanding shares of capital stock of the Company entitled to vote generally in the election of the directors, considered for purposes of this Section 5 as a single class.

The number of directors constituting the Company's current Board of Directors is sixteen (16), the address of each director is 343 State Street, Rochester, New York 14650, and their names are as follows:

Roger E. Anderson	John J. Phelan, Jr.
Richard S. Braddock	Cecil D. Quillen, Jr
John F. Burlingame	Toy F. Reid
Colby H. Chandler	J. Phillip Samper
Martha Layne Collins	David S. Saxon
Charles T. Duncan	Paul L. Smith
Walter A. Fallon	William L. Sutton
Juanita M. Kreps	Kay R. Whitmore

FIGURES



NOTES: C.B. - CATCH BASIN
M.H. - MAN HOLE

FIGURE 1

KODAK PROCESSING LAB - FAIR LAWN
STORM AND SANITARY SEWER SCHEMATIC
1/23/84 R.L.M.