PHASE II REMEDIAL INVESTIGATION

Sunnyside Yard
Queens, New York

Volume III of V

February 15, 1995

Prepared for:

National Railroad Passenger Corporation
400 Capital Street, N.W.
Washington, D.C. 20001

Prepared by:

ROUX ASSOCIATES, INC.
1377 Motor Parkway
Islandia, New York 11788

APPENDIX F

Data Validation Reports

Data Validation Services

Cobble Creek Road P. O. Box 208
North Creek, N. Y. 12853
Phone 518-251-4429

TO: Roux Associates

FROM: Judy Harry, Data Validation Services J. Harry

DATE: 02-12-93

RE: Validation Report for Analyses of MW-25, MW-25A, and MW-47
Amtrak Project
IEA SDG Nos. 0053 and 0086

Review has been completed on data packages pertaining to PCB and metals analyses of aqueous samples collected at the Amtrak Site. A field blank, and matrix spike/duplicates were processed for both types of analyses. The samples were processed for PCBs according to the protocols/modifications as outlined in the IEA letter of 1-22-93, and the metals by 1991 NYSDEC ASP. In summary, the analyses were conducted in compliance with the described procedures, and laboratory reported results are supported by the raw data.

Recommended edits to the sample reported results are as follows:

1. The field blank contained zinc at a level of 55.9 ug/L. Because the sample (MW-25) result was less than five times the value in the field blank, the reported value for zinc in the sample is rejected.

2. The reported value for iron in the field blank, which is above the IDL and below the CRDL, is to be considered estimated, as the recovery in the associated standard run at CRDL is elevated (155%).

PCB ANALYSES

Holding times and surrogate recoveries (dibutylchorendate) were acceptable for both samples, the preparation blank, and the matrix spikes. Matrix spikes (on MW-25A), matrix spike blank, and QC check standards were performed using Aroclor mixes, and produced good recoveries.

The analyses were performed on a modification of 1989 NYSDEC protocol, and confirmation was performed only on samples which indicated target compounds on primary analysis. The sample, MW-25A, which produced a detectable level of Aroclor 1260, also showed an indication of the Aroclor on confirmation. The detected level is just above CRDL on primary analysis, and because the sensitivity of the confirmation analysis is slightly less than that of the primary, the relative peak proportions were less ideal on confirmation. Two confirmation analyses were provided, as the sample was reanalysed due to outlying standard response factors in the initial confirmation.

All instrumental criteria was met, and acceptable for sample analysis. The method blank and field blank contained no target compounds.

Because the Aroclor calibration standards are not run at CRDL with the utilized methodology, the lab was requested to provide chromatograms associated with the December 1992 IDL study. These standards are run at a level of 0.1 ng on column; sample reported detection limits are 0.067 ng on column (assuming 100% extraction efficiency). Inspection of the submitted chromatograms indicate sufficient sensitivity for the reported Aroclor detection limits; however, the Aroclor 1221 response is projected to be quite borderline at that level.

The analysis run date for the preparation blank should be denoted as 1/26/93 on the primary sequence summary form. The calibration factor recorded for Aroclor 1260 on the Form 9 for the primary analysis is incorrect; the sample calculations were performed correctly as compared to the standard raw data.

METALS ANALYSES

All protocol criteria were reviewed for compliance and found acceptable unless noted elsewhere in this text. Please see the above discussions for qualification of sample reported results.

Matrix spike/duplicate evaluations, performed on sample MW-25, produced all values within recommended criteria. The serial dilution for zinc indicated an elevated correlation of 10.8%, just above the limit of 10%. Sample reported results for zinc are already rejected due to the field blank level.

Sample reported results are substantiated by the raw data.

COMPLIANCY CHART

Project: Amtrak Site

SDG Nos: IEA SDG Nos. 0053 and 0086

Protocol: 1989 modification and 1991 NYSDEC ASP

RecDate	Sample ID	Matrix	PCB	Metals	Other	Noncompl
01-16-93	MW-25	Aqueous	NR	OK	OK	
01-16-93	Fld Blk	Aqueous	NR	OK	OK	
01-25-93	MW-25A	Aqueous	OK	NR	OK	
01-25-93	MW-47	Aqueous	OK	NR	OK	
01-25-93	Fld Blk	Aqueous	OK	NR	OK	

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346

MEMO

01/22/93

To: J. Duminuco, Roux Associates
J. Harry, Data Validation Services
C. Lin, Amtrak
J. Quinn, NYSDEC
B. Seeley, NYSDEC

From: J. Curran, IEA-CT JEFF

re: PCB Analyses for Sunnyside Yard Project.

After discussions with Ms. Seeley of the NYSDEC, Mr. Duminuco of Roux Associates IEA-CT, and Ms. Harry of DVS the following was agreed to concerning the Sunnyside Yard Project.

1. The project calls for a low level detection limit for PCB's in aqueous samples. In order to achieve this IEA-CT will be employing a modified procedure based upon method 89-3 from the NYSDEC ASP. The reporting limit for each aroclor will be 0.065 ug/L based upon one liter of sample extracted.

2. The modifications to the protocol are as follows:
   a) A final volume of 1.0 mL will be used in lieu of 10.0 mLs.
   b) A PCB spike (MS/MSD) will be employed (Aroclor-1260).
   c) DBC will be used as the surrogate at a reduced concentration to reflect the lower extract final volume.
   d) Category B deliverables will be supplied. Note that the QC check standard will also be an aroclor standard.

3. All field blanks associated with aqueous sampling will be analyzed by this low detection limit method. All field blanks associated with soil samples will be analyzed using ASP method 91-3 with the 91-3 detection limits. Field crews must note on the chain of custody forms which matrix the field blanks apply to.

All soil samples will be analyzed using the '91 ASP methods. Aqueous samples for other parameters (ie. volatiles, semi-volatiles, metals, etc.) will also be analyzed using the '91 ASP protocols. All deliverables are Category B. In order to facilitate data validation seperate data packages will be supplied for the aqueous PCB data.

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346 006

30930-0086
ROUX ASSOCIATES

Case Narrative

PCB's - The continuing standards in the initial confirmation run from 01/27/93 on the RTX-35 column did not meet QC criteria, therefore the samples were reanalyzed on 01/28/93. The first ending standard had alpha-BHC just outside of retention time windows. The reanalysis has been reported as the confirmation run; the first analysis has been included in the package.

The following standards did not meet NYSDEC '89 continuing standard criteria. After each listed standard the run was stopped and any affected samples were reanalyzed.

Date	Time	GC #	Standard	Comments
01/27/93	12:44	4B	Ind B	All compounds out of RT windows
01/27/93	13:37	4B	Ind A	All compounds out of RT windows
01/29/93	14:51	1B	Ind B	alpha-BHC out of RT window
01/28/93	08:59	1B	Ind B	Most compounds >20% difference
01/28/93	12:31	1B	Ind A	Most compounds >20% difference
01/28/93	13:25	1B	Ind B	Compounds out of RT windows
01/28/93	14:18	1B	AR1260	Out of RT window
01/28/93	15:12	1B	AR1242	Out of RT window
01/28/93	16:05	1B	AR1248	Out of RT window
01/28/93	16:58	1B	AR1254	Out of RT window

Percent RSD of 4,4'DDT was >10 percent on the 01/28/93 RTX-35 confirmation run. No calculations were done from this run.

I certify that this data package is in compliance with the terms of this contract, both technically and for completeness, for other than the conditions detailed above. Release of this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Jeffrey C. Curran
Laboratory Manager

Feb. 1, 1993
Date

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346 0012

30930-0053
ROUX ASSOCIATES

SDG Narrative

Metals - IEC's are electronically employed by the TJA ICAP-61. However the ICSA is utilized as a monitoring device to detect any additional adjustments that may be required. These modifications are calculated and applied manually. They are so noted in the raw data.

One "E" flag occurred from serial dilution of sample MW-25 for Zinc. There appears to be no obvious reason why this resulted. Further study would be required to determine the cause.

No other problems were encountered.

I certify that this data package is in compliance with the terms of this contract, both technically and for completeness, for other than the conditions detailed above. Release of this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Jeffrey C. Curran
Laboratory Manager

Feb. 4 1993
Date

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND
ANALYTICAL REQUIREMENT SUMMARY

JOB # : 3093-0086

CUSTOMER SAMPLE CODE	LABORATORY SAMPLE CODE	ANALYTICAL REQUIREMENTS*						
		*VOA GC/MS	*BNA GC/MS	*VOA GC	*PEST PCB	*METALS	*OTHER	*OTHER
MW-25A	0086001				X			
MW-47	0086002				X			
FIELD BLANK 1/22/93	0086003				X			

Check Appropriate Boxes

CLP, Non-CLP
HSL, Priority Pollutant

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PCB
ORGANIC ANALYSIS

JOB # : 3093-0086

SAMPLE ID	MATRIX	ANALYTICAL PROTOCOL	EXTRACTION METHOD	AUXILARY CLEAN UP	DIL/CONC FACTOR
MW-25A	Aqueous	NYSDEC 89	SEP FUNNEL	Alumina	1.0
MW-47	Aqueous	↓	↓	↓	↓
FIELD BLANK 1/22/93	Aqueous				

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PCB
ANALYSIS

JOB # : 3093-0086

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
MW-25A	Aqueous		01/25/93	1/25/93	1/26/93
MW-47	Aqueous		01/25/93	↓	1/25/93
FIELD BLANK 1/22/93	Aqueous		01/25/93	↓	1/26/93

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND
ANALYTICAL REQUIREMENT SUMMARY

JOB # : 30930~~0000~~ 0053

CUSTOMER SAMPLE CODE	LABORATORY SAMPLE CODE	ANALYTICAL REQUIREMENTS*						
		*VOA GC/MS	*BNA GC/MS	*VOA GC	*PEST PCB	*METALS	*OTHER	*OTHER
MW-25	0053001					X		
FIELD BLANK 01/15/93	0053002					X		

* Check Appropriate Boxes

* CLP, Non-CLP
* HSL, Priority Pollutant

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSIS

JOB # : 3093-0053

ICAP

SAMPLE ID	MATRIX	METALS REQUESTED	DATE RECEIVED	DATE DIGESTED	DATE ANALYZED
[illegible]	Aqueous	TAL METALS	01/16/93	1/18/93	1/22/93
[illegible] PLANT 01/15/93	Aqueous	TAL METALS	01/16/93	↓	↓

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE INFORMATION AND ANALYTICAL SUMP
INORGANIC ANALYSIS

JOB # : 3093-0053

Furnace

SAMPLE ID	MATRIX	METALS REQUESTED	DATE RECEIVED	DATE DIGESTED	DATE ANALYZED
[illegible]	Aqueous	TAL METALS	01/16/93	1/17/93	1/20,21/93
E.O FLDPS 01/15/93	Aqueous	TAL METALS	01/16/93	↓	↓

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSIS

JOB # : 3093-0053

Mercury

SAMPLE ID	MATRIX	METALS REQUESTED	DATE RECEIVED	DATE DIGESTED	DATE ANALYZED
	Aqueous	TAL METALS	01/16/93	1/18/93	1/19/93
[illegible] 01/15/93	Aqueous	TAL METALS	01/16/93	↓	↓

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
TAL METALS
ANALYTICAL

ICAP

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR
[illegible]	AQUEOUS	CLP	HNO3, HCl	N/A	1:1
ICB BLANK 01/15/93	AQUEOUS	↓	↓	↓	↓

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

CLP - PREPARATION AND ANALYSIS SUMMARY
TAL METALS
INORGANIC ANALYSIS

ASP # : 3093-0053

Furnace: As, Se

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR
	AQUEOUS	CLP	HNO_3, H_2O_2	Nickel Nitrate	1:1
[illegible] 01/15/93	AQUEOUS	↓	↓	↓	↓

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
TAL METALS
INORGANIC ANALYSIS

JOB # : 5093-0053

Furnace - Tl

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR
	AQUEOUS	CLP	HNO_3, H_2O_2,	H_2SO_4	1:1
FLANK 01/15/93	AQUEOUS	↓	↓	↓	↓

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
TAL METALS
INORGANIC ANALYSIS

JOB # : 5093-0051

Furnace . Pb

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR
	AQUEOUS	CLP	HNO_3, H_2O_2	Mg Nitrate, Amm Phos	1:1
BLANK 01/15/93	AQUEOUS	↓	↓	↓	↓

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

CLP - PREPARATION AND ANALYSIS SUMMARY
TAL METALS
INORGANIC ANALYSIS

Job # : 3093-0053

Mercury

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR
	AQUEOUS	CLP	Manual Cold Vapor	NA	1:1
P-ANA 01/15/93	AQUEOUS	↓	↓	↓	↓

Data Validation Services

Cobble Creek Road P. O. Box 208
North Creek, N. Y. 12853
Phone 518-251-4429

TO: Roux Associates

FROM: Judy Harry, Data Validation Services J. Harry

DATE: 03-01-93

RE: Validation of Amtrak-Sunnyside Yard data packages-Volatile samples
IEA SDG No. 30930-0099

Review has been performed on the data packages generated by IEA Labs pertaining to two volatile samples collected at the Amtrak Sunnyside Yard Project Site. The two samples were analysed for the CLP TCL volatiles, by 1991 NYSDEC ASP. Field and trip blanks were also processed.

In summmary, the samples were analysed in compliance with the protocol. The detected target compounds reported in the samples are rejected for consideration as sample components due to their presence in the associated blanks. The Tentatively Identified Compounds (TICs) for the samples are accurate as reported.

Recommended edits/qualification of samples reported results are as follows:

1. The methylene chloride, acetone, and toluene values reported for sample TW-2 are to be rejected due to their presence at similar levels in the field blank (acetone), trip blank (methylene chloride), and method blank (methylene chloride and toluene). The reported values for these compounds should be edited to reflect:
   "13 U ug/L" for acetone
   "10 U ug/L" for methylene chloride and toluene.

2. The reported detection limit for choroethane for TW-1, TW-2, Field Blank, and Trip Blank should be qualified as estimated, due to low response for this compound in the 10 ppb standard of the initial calibration. The %RSD for the linearity determination of chloroethane was 43%, and the response of the 10 ppb standard for that compound produced a response factor only about 25% of the mean response factor, suggesting poor sensitivity to the compound at the reported detection limit.

Samole surrogate recoveries were acceptable. The Matrix Spike Blank (MSB) and sample matrix spikes (performed on TW-1) produced outlying surrogate recoveries, but the variances in recovery were not observed in the spike compounds, and do not reflect on sample reported results.

Spike recoveries in the matrix spikes and MSB were all within recommended/required ranges, and duplicate precision correlation was good. Instrumental tune, method blank, system calibration, and internal standard areas/retention time requirements were met for sample processing. All reported results are substantiated by the raw data. See above recommended qualifications.

COMPLIANCY CHART

Project: Amtrak -Sunnyside Yard

SDG Nos: IEA SDG No. 30930-0099

Protocol: 1991 NYSDEC ASP

RecDate	Sample ID	Matrix	TCL VOA	Other	Noncompl
01-27-93	TW-1	Aqueous	OK	OK	
01-27-92	TW-2	Aqueous	OK	OK	
01-27-93	Fld Blk	Aqueous	OK	OK	
01-27-93	Trp Blk	Aqueous	OK	OK	

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND
ANALYTICAL REQUIREMENT SUMMARY

JOB # : 3093-0099

CUSTOMER SAMPLE CODE	LABORATORY SAMPLE CODE	ANALYTICAL REQUIREMENTS*						
		*VOA GC/MS	*BNA GC/MS	*VOA GC	*PEST PCB	*METALS	*OTHER	*OTHER
	0099001	X						
	0099002	X						
	0099003	X						
	0099004	X						

*.. Appropriate Boxes

1.. Non-CLP
2.. Priority Pollutant

		01/26/93	N/A	02/01/93
				02/02/93
				02/01/93
				02/02/93

IEA
An Alcarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346

05

30930-0099
ROUX ASSOCIATES

SDG Narrative

Volatile Organics - No problems were encountered.

I certify that this data package is in compliance with the terms of this contract, both technically and for completeness, for other than the conditions detailed above. Release of this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Jeffrey C. Curran
Laboratory Manager

Feb. 19, 1993
Date

Data Validation Services

Cobble Creek Road P. O. Box 208
North Creek, N. Y. 12853
Phone 518-251-4429

TO: Roux Associates

FROM: Judy Harry, Data Validation Services J. Harry

DATE: 5-3-93 Revised 5-11-93

RE: Validation of data for the Amtrak Sunnyside Yard Site
IEA SDG Nos. 30930-0060, -0060A, -0148, and -0148A

Review is complete for the data packages generated by IEA Labs, pertaining to samples collected at the Amtrak Sunnyside Yard Site. Sixteen soil, eighteen aqueous, and one oil sample were processed for CLP TCL/TAL (excluding pesticides) or PCB-only parameters. Methodologies utilized were those of the 12/91 NYSDEC ASP for all analyses except aqueous PCBs. In order to achieve the desired detection limits for the aqueous PCB analysis, a modified 1989 NYSDEC ASP PCB method was used. Matrix spikes/duplicates, two trip blanks, and six field blanks were also processed.

In summary, the analyses were conducted in compliance with the protocol, and package submissions were complete with deliverable requirements. In order to verify final reported dilutions, copies of the applicable laboratory instrument logbook pages were requested and submitted.

Certain qualifications of reported results, which are based upon indicated matrix effects or (compliant) analytical system response, are outlined below. Other concerns or comments regarding quality are noted in the subsequent sections. Attached to this report are a compliancy chart, and copies of the laboratory resubmissions, case narratives, and preparation/analysis summary forms.

Recommended edits or qualification of sample results are noted below:

1. Reported values of acetone, methylene chloride, 2-hexanone, 4-methyl-2-pentanone, and phthalates in the volatile and semivolatile results should not be considered as sample components, as indicated by their presence in associated blanks. The reported detection limits for these compounds in the samples with detected values should be raised to either the CRDL, or to the value initially reported, whichever is greater. Similarly, the reported values for toluene in S-99, S-100, and S-101 should be rejected for consideration as a sample component.

2. For the volatile and semivolatile analyses, the Tentatively Identified Compounds (TICs) which are flagged as "B", as well as the siloxane compounds, should be rejected for consideration as sample components, as indicated by their presence in associated blanks. In addition, the TICs reported for the semivolatile analysis of MW-48 and the FldBlk (Sewer 2/9/93) should also be rejected as sample components.

3. The semivolatile analyses of samples S-100, S-101, and S-102 produced consistently depressed response for internal standards, indicating a matrix effect which may also affect target compound response in these samples. Consequently, detected values for these samples should be considered estimated, and reported detection limits for these samples should be considered estimated, possibly biased low. This applies to the initial and reanalysis data.

4. 3-nitroaniline and 4-chloroaniline reported detection limits in sample S-99 should be considered estimated as indicated by the daily standard response (80% and 65% differences from the initial calibration curve).

5. Similarly, 2,2'-oxybis(1-chloropropane), 4-chloroaniline, and 2,4-dinitrophenol reported detection limits in the following samples should be considered estimated (51%, 70%, and 59% differences):
   MW-45, MHW-1, MW-43, MW-44, MW-46, and MW-47

6. A TIC for the volatile analysis of sample MW-41 should have been reported for retention time 23.37', with an identification of "Unknown C3alkylbenzene." Insufficient data is available in the package for an estimated concentration, but examination of the chromatogram indicates potential concentration greater than 150 ppb.

7. Due to detection of Aroclor 1260 at 0.20 ug/L in Field Blank 2/8/93, the following samples, which have reported values less than five times that of the field blank, are suspect for Aroclor content, and should have reported values rejected, with the detection limit raised to those values originally reported:

Sample ID	Aroclor to be edited
MHW-6	1254 and 1260
MHW-3	1254 and 1260
MHW-1	1254 and 1260

   Similarly, the reported values of Aroclors 1254 and 1260 in sample MHW-2 should be considered estimated.

8. The reported detection limit of Aroclor 1221 in sample MW-23 should be considered estimated due to matrix interference.

9. Due to possible matrix effect, as indicated by the instrumental output, the mercury reported value for MHW-1 should be considered estimated.

10. In cases where the PCB analyses were reported at two different dilutions, the reported values for the detected Aroclors are more accurate in those of greater dilution, with the following exceptions:

    S-102 -use the 1:10 reported results
    S-113 -use the 1:10 reported results, but qualify estimated due to matrix
    MHS-3 -use the 1:100 reported results
    MHS-2 -use the 1:100 reported results for Aroclors 1254 and 1260

11. The field blank associated with sewer samples collected 2/9/93 produced a value for mercury exceeding CRDL, at 1.7 ug/L. As a result, the reported values of mercury in samples MHW-1, MHW-2, MW-35, and MW-46, which were collected and/or prepared/analysed with the field blank, and are at levels less than five times that determined in the field blank, should be rejected, and the detection limit raised to those values initially reported.

12. Due to response outside the calibration range for the Aroclors 1254 and 1260 in MHW-8, the reported values should be considered estimated.

13. The 1:10 dilution for PCB analysis of sample MHS-8 should be used, but the Aroclor 1254 result should be considered estimated, possibly biased slightly high, due to interference in the isomer at 27.16'.

14. Due to matrix effect indicated by the spike recoveries of sample S-100, the following results for these elements should be considered estimated:

Element	Spike Recovery	Affected Samples
Copper	54%	S-99, S-100, S-101, and S-102
Selenium	45%	S-99, S-100, S-101, and S-102

VOLATILE ANALYSES

Holding times were met for all sample processing. Surrogate recoveries and matrix spike blank recoveries met protocol requirements. Sample matrix spikes and duplicates were performed on aqueous sample MW-45 and soil sample S-100. All recoveries and duplicate correlation values were within recommended limits.

Initial and continuing calibration standards, and standard area responses/retention times were within required limits. Method blanks and instrumental tunes were compliant with protocol requirements. As noted in the case narrative, a field and trip blank were processed under the soil curve of the samples for which they are associated. There is no effect on the reported results.

SEMIVOLATILE RESULTS

Holding times were met for all sample processing. Surrogate recoveries and matrix spike blank recoveries met protocol requirements. Sample matrix spikes and duplicates were performed on aqueous sample MW-45 and soil sample S-100. All recoveries and duplicate correlation values were within recommended limits, with the exception of the recovery of 4-nitrophenol in the matrix spike of MW-45 (whose recovery at 104%, is above the limit of 80%, but is in keeping with the methodology). No Form 3 was reported for the matrix spike blank in SDG 0148; review of the raw data indicates acceptable recoveries.

Initial and continuing calibration standards, and standard area responses/retention times were within required limits, with exceptions noted in item #3 above. Method blanks and instrumental tunes were compliant with protocol requirements, although numerous TICs were detected in the soil method blank.

Certain sample report forms in SDG 0148 incorrectly denote a receive data of 2-02-93; most, but not all, were manually corrected by the laboratory to reflect the actual date of 2-10-93.

The reported values for 3-nitroaniline in the QC check standards are not that determined by the raw data; recoveries would be elevated even above those reported. Sample reported results are not affected.

PCB ANALYSES

Holding times were met for all sample processing. Surrogate recoveries were outlying from the recommended ranges in numerous samples, some with depressed recovery for one of the two surrogates, others elevated due to interferences. No qualification of sample results was made based upon the surrogate recoveries; no recoveries were extremely low. Sample matrix spikes and duplicates were performed on aqueous sample MW-45 and soil samples S-100, S-107, and CS-43. All recoveries and duplicate correlation values were within recommended limits for the aqueous sample. Soil spike recoveries and duplicate correlation could not be evaluated due to matrix effect or high levels of target compounds. Matrix spike blank (Aroclor 1260) and QC check standard (Aroclors 1242 and 1260) recoveries were good, all falling above 60%, with most recovering above 80%.

Analytical system requirements were met for sample processing. In addition to the pesticide continuing calibration standards, Aroclor continuing calibration standards were also processed. Those associated with aqueous samples were summarized for correlation (percent difference from the initial values), and produced acceptable variance. Those associated with the soil analyses were not summarized for response correlation (not a protocol requirement). Review of the response of Aroclor 1260 continuing standards indicates acceptable correlation, with the exception of the standard run on RTX-35 on 2/19/93 at 21:25, which produced values 177% of the initial responses. Samples were processed at least three days prior to this outlying standard.

Many samples produced a variance in Aroclor quantitative values between the two columns used for analysis. This is related to matrix interferences in some samples, and also seems to be system related in other cases. When the variance exceeds 25% Difference, the value is flagged as "P" on the report Form I. As required by the 12/91 protocol, the lower of the two values determined in each PCB analysis is always reported. Many samples in this project, as well as some of the spiked blanks, produced a depressed isomer response on one column for Aroclor 1260. Although the lower value reflects this depressed value, (which may be system related, as indicated by spiked blank response), examination of the raw data and area integrations indicates that the reported (lower) values are a better representation of the PCB content than those of the alternate column. Reported values from each column are determined from an average three different isomers per column, which balances deviations resulting from weathering, etc.

GC/MS confirmation was performed on several samples, and PCB isomers were detected and documented.

METALS ANALYSES

All protocol requirements for sample processing and surrounding quality control were evaluated, and found to be compliant and acceptable, unless noted specifically in this text. Matrix spikes were performed on samples S-100 and MW-45. All spike recoveries, duplicate correlation, and serial dilution values were acceptable for MW-45 evaluation. In addition to those spike outliers noted earlier for S-100, arsenic recovered at 69%. Duplicate and serial dilution values were good for S-100.

Holding times were met for all sample processing. Sample reported results are substantiated by the raw data, and determined in compliance with protocol.

COMPLIANCY CHART

Project: Amtrak- Sunnyside Yard Site

SDG Nos: IEA SDG Nos 30930-0060, -0060A, -0148, and -0148A.

Protocol: 1991 NYSDEC ASP; modified 1989 NYSDEC ASP PCB

RecDate	Sample ID	Matrix	VOA	BNA	PCB	Metals	Other	Noncompl
01-19-93	S-99	Soil	OK	OK	OK	OK	OK	
01-19-93	S-100	Soil	OK	OK	OK	OK	OK	
01-19-93	S-101	Soil	OK	OK	OK	OK	OK	
01-19-93	S-102	Soil	OK	OK	OK	OK	OK	
01-21-93	S-103	Soil	NR	NR	OK	NR	OK	
01-21-93	S-115	Soil	NR	NR	OK	NR	OK	
01-21-93	S-113	Soil	NR	NR	OK	NR	OK	
01-21-93	S-111	Soil	NR	NR	OK	NR	OK	
01-21-93	S-114	Soil	NR	NR	OK	NR	OK	
01-21-93	S-112	Soil	NR	NR	OK	NR	OK	
01-27-93	S-104	Soil	NR	NR	OK	NR	OK	
01-27-93	S-107	Soil	NR	NR	OK	NR	OK	
01-27-93	S-108	Soil	NR	NR	OK	NR	OK	
01-27-93	S-105	Soil	NR	NR	OK	NR	OK	
01-27-93	S-106	Soil	NR	NR	OK	NR	OK	
02-09-93	MHW-5	Aqueous	NR	NR	OK	NR	OK	
02-09-93	MHW-3	Aqueous	NR	NR	OK	NR	OK	

RecDate	Sample ID	Matrix	VOA	BNA	PCB	Metals	Other	Noncompl
02-09-93	MHW-7	Aqueous	NR	NR	OK	NR	OK	
02-09-93	MHW-6	Aqueous	NR	NR	OK	NR	OK	
02-09-93	MHS-3	Soil	NR	NR	OK	NR	OK	
02-09-93	MW-36	Oil	NR	NR	OK	NR	OK	
02-09-93	MW-27	Aqueous	NR	NR	OK	NR	OK	
02-10-93	MW-45	Aqueous	OK	OK	OK	OK	OK	
02-10-93	MHW-1	Aqueous	OK	OK	OK	OK	OK	
02-10-93	MW-43	Aqueous	OK	OK	OK	OK	OK	
02-10-93	MW-44	Aqueous	OK	OK	OK	OK	OK	
02-10-93	MW-46	Aqueous	OK	OK	OK	OK	OK	
02-10-93	MW-35	Aqueous	OK	OK	OK	OK	OK	
02-10-93	MW-42	Aqueous	OK	OK	NR	NR	OK	
02-10-93	MHW-2	Aqueous	OK	OK	OK	OK	OK	
02-10-93	REPLICATE	Aqueous	OK	OK	OK	OK	OK	
02-10-93	MW-23	Aqueous	OK	NR	OK	NR	OK	
02-10-93	MW-47	Aqueous	OK	OK	OK	OK	OK	
02-10-93	MW-48	Aqueous	OK	OK	OK	OK	OK	
02-10-93	MHW-8	Aqueous	NR	NR	OK	NR	OK	
02-10-93	MHS-8	Soil	NR	NR	OK	NR	OK	
02-10-93	MHS-2	Soil	NR	NR	OK	NR	OK	
02-10-93	MW-41	Aqueous	OK	NR	NR	NR	OK	

RecDate	Sample ID	Matrix	VOA	BNA	PCB	Metals	Other	Noncompl
01-19-93	TRPBLK	Aqueous	NO	NR	NR	NR	OK	1
01-19-93	FLDBLK	Aqueous	NO	OK	OK	OK	OK	1
01-21-93	FLDBLK	Aqueous	NR	NR	OK	NR	OK	
01-27-93	FLDBLK	Aqueous	NR	NR	OK	NR	OK	
02-09-93	FB 2/08/93	Aqueous	NR	NR	OK	NR	OK	
02-10-93	TB 2/9/93	Aqueous	OK	NR	NR	NR	OK	
02-10-93	FBS 2/9/93	Aqueous	OK	OK	OK	OK	OK	
02-10-93	FBW 2/9/93	Aqueous	OK	OK	OK	OK	OK	

1. Volatile analysis performed by soil methodology.

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203-261-4458
Fax 203-268-5346

30930-0060
ROUX ASSOCIATES

SDG Narrative

Volatile Organics - In order to meet the 7-day from receipt holding time, the field blanks and the trip blank were analyzed along with the soil sample on a soil calibration curve.

Extractions - Sample S-100 for PCB's was inadvertently spiked with the incorrect concentration of the standard solution. The sample was re-extracted on 02/01/93 using the correct solution.

Semi-Volatile Organics - Samples S-101, S-100, S-100 MS, S-100 MSD and S-102 exhibited internal standard area suppression. Samples S-101 and S-102 were reanalyzed with similar results, therefore proving matrix interference. Samples S-100 MS and S-100MSD confirmed the matrix interference for sample S-100. Both analyses have been reported with the reanalysis designated with the suffix "RE".

PCB's - Samples S-100, S-100 MS, S-00 MSD, S-101, CS-75, S-103, CS-51, CS-50, S115, S-113, S-111, CS-49, S-114 and S-112 required dilutions because of the high concentration of aroclor 1260.

The third peak used for calculation of aroclor 1260 in sample S-112 was outside of RT windows due to matrix interference.

Samples S-102 and CS-43 required dilutions due to the sample matrix. The third peak used for calculation or aroclor 1260 in sample CS-43 was outside of RT windows.

After sample CS-43 was diluted, the aroclor present was indistinguishable on the RTX-35 column, therefore the results reported are from column DB-1701. The third peak of aroclor 1260 was outside of RT windows.

Samples CS-75 and CS-49 were confirmed by GC/MS for aroclor 1260.

There was no aroclor 1242 injected within 72 hours of the QC check standard on column 2, however the aroclors run every 72 hours are not used for quantitation, only for pattern recognition. Since this is a spike sample, aroclor 1242 is a known compound.

Because of the very high concentration of aroclor 1260 in sample S-100 and the dilution required, the spike percent recovery could not be calculated.

All samples with dilution factors of 100 and higher had surrogates diluted out.

In sample CS-50 and CS-50 DL, DCB was lost in matrix and is not reported.

DCB was below advisory QC limits on column 1 in samples FB 011893 and FB 012093 and method blank PBLK40.

DCB was below advisory QC limits on column 2 in sample FB 011893 and method blanks PBLK53, PBLk40 and PBLK51 and on column 1 in sample S-111 DL.

TCX was below advisory QC limits on column 2 in sample S-99 and method blanks PBLK44 and PBLK51.

DCB had high recovery because of interference with aroclors on column 1 in samples CS-43, S-100 MSD, CS-5-1 DL, CS-51, S-115 DL, S-113 and on column 2 in samples S-102, S-100 MS, S-100 MSD, CS-51 DL, CS-51, S-115 DL, S-111 DL, CS-49 and S-112 DL.

Many results have "P" flags due to the large percent RPD between column concentrations. This is believed to be due to the sample matrix.

Metals - IEC's are electronically employed by the TJA ICAP-61. However, the ICSA is utilized as a monitoring device to detect any additional adjustments that may be required. These modifications are calculated and applied manually. They are so noted in the raw data.

Copper, arsenic and selenium failed the control limits for spike recovery analysis of sample S-100, resulting in three "N" flags. It was noted during sample digestion that the sample contained numerous rocks. A problem with sample homogeneity appears to be the cause for the resultant flags.

No other problems were noted.

I certify that this data package is in compliance with the terms of this contract, both technically and for completeness, for other than the conditions detailed above. Release of this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Jeffrey C. Curran
Laboratory Manager

March 5, 1993
Date

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346

March 10, 1993

Mr. Harry Gregory
[illegible] ux Associates
[illegible] 5 Park Avenue, Suite 255
Huntington, NY 11743

[illegible]ar Mr. Gregory:

Please find enclosed the analytical results of 1 aqueous, 2 oil and 10 soil [illegible]mples received at our laboratory on January 27, 1993. This report contains [illegible]ections addressing the following information at a minimum:

- sample summary
- analytical methodology
- state certifications
- definitions of data qualifiers and terminology
- analytical results
- chain-of-custody

IEA Report #30930-0060A	Purchase Order #05526.Y
Project ID: Amtrak Sunnyside	

Copies of this analytical report and supporting data are maintained in our files for a minimum of five years unless special arrangements have been made. Unless specifically indicated, all analytical testing was performed at this laboratory location and no portion of the testing was subcontracted.

We appreciate your selection of our services and welcome any questions or suggestions you may have relative to this report. Please contact your customer service representative at (203) 261-4458 for any additional information. Thank you for utilizing our services; we hope you will consider us for your future analytical needs.

I have reviewed and approved the enclosed data for final release.

Very truly yours,

Jeffrey C. Curran
Laboratory Manager

JCC/mt

cc: J. Harry

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346 016

30930-0148
ROUX ASSOCIATES

SDG Narrative

Volatile Organics - No problems were encountered.

Semi-Volatile Organics - No problems were encountered.

PCB's - Sample MW-27 required sulfur cleanup; samples MHW-1, MW-35, MHW-2 and method blank PBLK06 required acid and sulfur cleanup.

Sample MHW-7 was diluted 1:5.

DBC recovery was out of advisory QC limits for samples MHW-7, MW-47, MW-45 STD and method blank PBLK00.

Aroclor-1248 was out of RT windows on the confirmation run (column RTX-35) in sample MHW-7, but in the analyst's opinion, it is present.

Aroclor-1260 was out of RT windows on the confirmation run (column RTX-35) in sample MW-1, but in the analyst's opinion, it is present.

DDT linearity on confirmation runs 0308GC1B and D309GC1B was greater than 10 percent, however no calculations were done from this run.

The following standard did not meet NYSDEC '89 criteria:

Date	Time	GC #	Standard	Comments
03/09/93	06:04	GC1B	Ind B	Endrin ketone out of required criteria, C_f >20% difference

The client's samples, before this affected standard, were run for PCB's only. Since the samples had been run primary twice, some samples required previous reruns due to cleanups or continuing standards out of criteria. Only enough extract remained to run the samples once on the confirmation run. The ending PCB's following the ending pesticide mixes were within continuing standard criteria.

Due to high levels of Aroclors, samples MW-36 and MHS-3 required a dilution.

The surrogates were diluted out for all samples with a dilution factor of 100 or higher.

Due to the sample matrix, TCX percent recovery could not be determined in samples MW-36, MW-36 MS and MW-36 MSD.

DCB was below advisory QC limits in method blank PBLK05 on column 2 and in sample MW-36 MS on column 1.

Due to matrix interference, TCX was above advisory QC limits in sample MW-36 DL on both columns.

DCB was above advisory QC limits in sample MW-36 DL on column 1 and in samples MW-36 MS and MW-36 MSD on column 2.

Due to the matrix interference in samples MW-36, MW-36 MS and MW-36 MSD, two different sets of peaks were chosen for column RTX-35 for the calculation of Aroclor-1260. Two separate Form 6F's have been submitted. The second peak was out of RT windows on column RTX-35 for Aroclor-1260 in samples MW-36 and MW-36 MSD.

Metals - IEC's are electronically employed by the TJA ICAP-61. However, the ICSA is utilized as a monitoring device to detect any additional adjustments that may be required. These modifications are calculated and applied manually. They are so noted in the raw data.

No problems were encountered.

I certify that this data package is in compliance with the terms of this contract, both technically and for completeness, for other than the conditions detailed above. Release of this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Jeffrey C. Curran
Laboratory Manager

March 17, 1993
Date

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346

015
~~016~~

30930-0148A
ROUX ASSOCIATES

SDG Narrative

Volatile Organics - No problems were encountered.

Extractions - No problems were encountered.

Semi-Volatile Organics - No problems were encountered.

PCB's - IDL's for both columns and forms indicating mass injected are enclosed in the package.

Sample MHW-8 was diluted 1:5 and required acid and sulfur cleanup. Method blank PBLK06 required acid and sulfur cleanup.

Percent RSD of DDT on the confirmation run (RTX-35 column) from 03/08/93 and 03/09/93 was >10 percent; no calculations were done from this run.

The following standard did not meet NYSDEC '89 criteria.

Date	Time	GC #	Standard	Comments
03/09/93	06:04	GC1B	Ind B	Endrin ketone >20 percent difference

Sample MHW-8 was the only sample affected by the above standard. Since this sample was run primary prior to acid cleanup and primary after acid cleanup, only enough extract remained to run the confirmation run once. This sample was for PCB's only and the Aroclors which followed the above standard were within criteria.

Due to the matrix of the sample, DBC was out of advisory criteria for sample MHW-8.

Decachlorobiphenyl was outside the advisory QC limits on both columns for samples FBS 020993 and MHS-8 and method blank PBLK04.

Tetrachloro-m-xylene was diluted out of sample MHS-2.

To accommodate software specifications, the sample ID's were truncated as follows in the data package.

Sample ID	Truncated ID
FBS 020993	FBS2/9/93
MHS-2	MHS2
MHS-8	MHS8

015 A
~~016A~~

It was necessary to use an alternate peak in calculation of Aroclor 1254 on the DB-1701 column for sample MHS-2 DL. This additional peak was also added to Form 6F.

Metals - IEC's are electronically employed by the TJA ICAP-61. However the ICSA is utilized as a monitoring device to detect any additional adjustments that may be required. These modifications are calculated and applied manually. They are so noted in the raw data.

No problems were encountered.

I certify that this data package is in compliance with the terms of this contract, both technically and for completeness, for other than the conditions detailed above. Release of this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Jeffrey C. Curran
Laboratory Manager

March 18, 1993
Date

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND
ANALYTICAL REQUIREMENT SUMMARY

JOB # : 3093-0060

CUSTOMER SAMPLE CODE	LABORATORY SAMPLE CODE	ANALYTICAL REQUIREMENTS*						
		*VOA GC/MS	*BNA GC/MS	*VOA GC	*PEST PCB	*METALS	*OTHER **	*OTHER
S-99	0060001	X	X		X	X		
S-100	0060002	X	X		X	X		
S-101	0060003	X	X		X	X		
S-102	0060004	X	X		X	X		
CS-43	0060005		X		X	X		
FIELD BLANK	0060006	X	X					
TRIP BLANK 1/18/93	0060007	X						
CS-75	0060008		X		X			
S-103	0060009				X			
CS-51	0060010		X		X			
CS-50	0060011		X		X			
S-115	0060012				X			
S-113	0060013				X			
S-111	0060014							
CS-49	0060015		X		X			
FIELD BLANK 1/20/93	0060016				X			
S-114	0060017				X			
S-112	0060018							

* Check Appropriate Boxes

= CLP, Non-CLP
= HSL, Priority Pollutant

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOA - TCL + TIC's
ANALYSIS

JOB # : 3093-0060

0003

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
S-99	Soil	01/18/93	01/19/93	N/A	01/26/93
S-100	Soil		01/19/93		
S-101	Soil		01/19/93		
S-102	Soil		01/19/93		
FIELD BLANK	Aqueous		01/19/93		
TRIP BLANK 1/18/93	Aqueous		01/19/93		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
B/N-A - TCL + TIC's
ANALYSIS

JOB # : 3093-0060

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
S-99	Soil	01/18/93	01/19/93	01/20/93	02/02/93
S-100	Soil		01/19/93		02/01/93
S-101	Soil		01/19/93		02/01/93
S-102	Soil		01/19/93		01/29/93
FIELD BLANK	Aqueous	01/18/93	01/19/93	01/21/93	02/01/93
S-100MS	SOIL	01/18/93	01/19/93	01/20/93	02/02/93
S-100MSD					
S-101RE					02/02/93
S-102RE					02/01/93
S-100MSB		NA			02/01/93
&QC CHECK		NA			02/01/93

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
B/N-A - TCL + TIC's
ORGANIC ANALYSIS

JOB # : 3093-0060

SAMPLE ID	MATRIX	ANALYTICAL PROTOCOL	EXTRACTION METHOD	AUXILARY CLEAN UP	DIL/CONC FACTOR
S-99	Soil	NYSDEC'91	SONC.	GPC	1.0
S-100	Soil				1.0
S-101	Soil				8.0
S-102	Soil				1.0
FIELD BLANK	Aqueous		CONT SONC	NONE GPC	
S-100MS	SOIL				8.0
S-100MSD					1.0
S-101RE					
S-102RE					
S-100MSB					
& QC CHECK					

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

0006

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PESTICIDE/PCB
ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed
S-99	SOIL	01/18/93	01/19/93	01/21/93	02/~~13~~/93
S-100					02/10/93
S-100DL					〃
S-100MS					02/12/93
S-100MSD					02/13/93
S-100MSK					02/10/93
QC CHECKSTD					02/12/93
S-101					02/10/93
S-101DL					
S-102					
S-102DL					
CS-43					
CS-43DL		〃	〃	〃	〃
CS-75		01/19/93	01/21/93	01/22/93	02/11/93
CS-75DL					
S-103					
S-103DL		〃			02/16/93
CS-51		01/20/93			02/13/93
CS-51DL					
CS-50					
CS-50DL	〃	〃	〃	〃	〃

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION 0007

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PESTICIDE/PCB
ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed
S-115	SOIL	01/20/93	01/21/93	01/22/93	02/13/93
S-115DL	↓	↓	↓	↓	↓
S-113					
S-113 DL					02/20/93
S-111					02/14/93
S-111 DL					↓
CS-49					02/20/93
CS-49DL					02/16/93
S-114					↓
S-114 DL					↓
S-112					↓
S-112 DL	↓	↓	↓	↓	02/11/93
FIELD BL 1/18	WATER	01/18/93	01/19/93	01/19/93	02/11/93
FIELD BL. 1/20	↓	01/20/93	01/21/93	01/22/93	

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSIS

0008

JOB # : 3093-0060

ICAP

SAMPLE ID	MATRIX	METALS REQUESTED	DATE RECEIVED	DATE DIGESTED	DATE ANALYZED
S-99	Soil	TAL METALS	01/19/93	1/28/93	2/19/93
-100	Soil	TAL METALS	01/19/93		
S-101	Soil	TAL METALS	01/19/93		
-102	Soil	TAL METALS	01/19/93		
FIELD BLANK	Aqueous	TAL METALS	01/19/93	1/26/93	2/22/93

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSIS

JOB # : 3093-0060

Furnace

SAMPLE ID	MATRIX	METALS REQUESTED	DATE RECEIVED	DATE DIGESTED	DATE ANALYZED
S-99	Soil	TAL METALS	01/19/93	1/26/93	2/1-3, 5-6/93
S-100	Soil	TAL METALS	01/19/93		
S-101	Soil	TAL METALS	01/19/93		
S-102	Soil	TAL METALS	01/19/93		
FIELD BLANK	Aqueous	TAL METALS	01/19/93	1/26/93	2/1-2, 5-6/93

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSIS

JOB # : 3093-0060

Mercury

SAMPLE ID	MATRIX	METALS REQUESTED	DATE RECEIVED	DATE DIGESTED	DATE ANALYZED
S-99	Soil	TAL METALS	01/19/93	1/27/93	1/27/93
S-100	Soil	TAL METALS	01/19/93		
S-101	Soil	TAL METALS	01/19/93		
S-102	Soil	TAL METALS	01/19/93		
FIELD BLANK	Aqueous	TAL METALS	01/19/93	2/2/93	2/3/93

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
TAL METALS
INORGANIC ANALYSIS

JOB # : 3093-0060

ICAP

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR
S-99	Soil	CLP	HNO3, HCl	N/A	1:1
S-100	Soil	↓	↓	↓	↓
S-101	Soil				
S-102	Soil				
FIELD BLANK	Aqueous				

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
TAL METALS
INORGANIC ANALYSIS

JOB # : 3093-0060

Furnace: As, Se

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR
S-99	Soil	CLP	HNO3, HCl	Nickel Nitrate	1:1
S-100	Soil				1:1
S-101	Soil				As 1:4 Se 1:1
S-102	Soil				As 1:4 Se 1:1
FIELD BLANK	Aqueous				1:1

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
TAL METALS
INORGANIC ANALYSIS

JOB # : 3093-0060

Fuchau - TI

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR
S-99	Soil	CLP	HNO_3, $HClO_4$	H_2O	1:1
S-100	Soil	↓	↓	↓	↓
S-101	Soil				
S-102	Soil				
FIELD BLANK	Aqueous				

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
TAL METALS
INORGANIC ANALYSIS

JOB # : 3093-0060

Furnace: Pb

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR
S-99	Soil	CLP	HNO3, H2O2	Mg(NO3)2, Another	1:50
S-100	Soil	↓	↓	↓	1:50
S-101	Soil				1:100
S-102	Soil				1:100
FIELD BLANK	Aqueous				1:1

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
TAL METALS
INORGANIC ANALYSIS

JOB # : 3093-0060

Mercury

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR
S-99	Soil	CLP	Manual Cold Vapor	N/A	1:1
S-100	Soil	↓	↓	↓	↓
S-101	Soil				
S-102	Soil				
FIELD BLANK	Aqueous				

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

0 02

SAMPLE IDENTIFICATION AND
ANALYTICAL REQUIREMENT SUMMARY

JOB # : 3093-0060A

CUSTOMER SAMPLE CODE	LABORATORY SAMPLE CODE	ANALYTICAL REQUIREMENTS*						
		*VOA GC/MS	*BNA GC/MS	*VOA GC	*PEST PCB	*METALS	*OTHER	*OTHER
S-104	0060019				X			
CS-6	0060020		X		X			
S-107	0060021				X			
S-108	0060022				X			
S-105	0060023				X			
S-106	0060024				X			
CS-83	0060025		X		X			
CS-76	0060026		X		X			
CS-1	0060027		X		X			
CS-64	0060028							
FIELD BLANK	0060029				X			
MW-7	0060030				X			
FILL CAP	0060031				X			

* Check Appropriate Boxes

* CLP, Non-CLP
* HSL, Priority Pollutant

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PESTICIDE/PCB
ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed
CS-1	SOIL	01/26/93	01/27/93	01/28/93	02/26/93 (a93/9)
CS-1DL	"	"	"	"	"
CS-6	"	01/25/93	"	"	"
CS-6DL	"	"	"	"	02/18/93
~~CS-64~~	"	"	"	"	~~02/19/93~~
~~CS-64DL~~	"	"	"	"	~~02/17/93~~ (a93/9)
CS-76	"	01/26/93	"	"	"
CS-76DL	"	"	"	"	"
CS-83	"	01/25/93	"	"	"
CS-83DL	"	"	"	"	"
S-104	"	"	"	"	"
S-104DL	"	"	"	"	02/16/93
S-105	"	"	"	"	02/17/93
S-105DL	"	"	"	"	02/20/93
S-106	"	"	"	"	02/18/93
S-106DL	"	"	"	"	02/20/93
S-107	"	"	"	"	02/17/93
S-107DL	"	"	"	"	"
S-108	"	"	"	"	"
S-108DL	"	"	"	"	"
S-107MS	"	"	"	02/01/93	02/18/93

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION 0 04

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PESTICIDE/PCB
ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed
S-107MS3	SOIL	—	~~01/27/93~~	02/01/93	02/18/93
S-107MSD	"	01/25/93	01/27/93	"	"
S-107STD	"	—	—	"	"
FIELD Blank	WATER	01/26/93	01/27/93	"	02/11/93
MW-7DL	OIL	"	"	02/12/93	02/26/93
FILL CAP	"	"	"	"	"
FILL CAPDL	"	"	"	"	02/20/93

02/9

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND
ANALYTICAL REQUIREMENT SUMMARY

JOB # : 3093-0148

CUSTOMER SAMPLE CODE	LABORATORY SAMPLE CODE	ANALYTICAL REQUIREMENTS*						
		*VOA GC/MS	*BNA GC/MS	*VOA GC	*PEST PCB	*METALS	*OTHER	*OTHER
MHW-5	0148001				X			
MHW-3	0148002				X			
MHW-7	0148003				X			
MHW-6	0148004				X			
MHS-3	0148005				X			
FIELD BLANK 02/08/93	0148006				X			
MW-36	0148007				X			
MW-27	0148008				X			
MW-45	0148009	X	X		X	X		
MHW-1	0148010	X	X		X	X		
MW-43	0148011	X	X		X	X		
MW-44	0148012	X	X		X	X		
MW-46	0148013	X	X		X	X		
MW-35	0148014	X	X		X	X		
MW-42	0148015	X	X					
MHW-2	0148016	X	X		X	X		
REPLICATE	0148017	X	X		X	X		
MW-1	0148018				X	X		
MW-23	0148019	X	X		X			
MW-47	0148020	X	X		X	X		

* Check Appropriate Boxes

* CLP, Non-CLP
* HSL, Priority Pollutant

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

0003

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOA - TCL + TIC's
ANALYSIS

JOB # : 3093-0148

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
MW-45	Aqueous	02/09/93	02/10/93	NA	02/12/93
MW-1	Aqueous		02/10/93		
MW-43	Aqueous		02/10/93		02/13/93
MW-44	Aqueous		02/10/93		
MW-46	Aqueous		02/10/93		
MW-35	Aqueous		02/10/93		
MW-42	Aqueous		02/10/93		
MW-2	Aqueous		02/10/93		
REPLICATE	Aqueous		02/10/93		
MW-23	Aqueous		02/10/93		
MW-47	Aqueous		02/10/93		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
B/N-A - TCL + TIC's
ANALYSIS

JOB # : 3093-014A

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
MW-45	Aqueous	02/09/93	02/10/93	02/11/93	02/16/93
MHW-1	Aqueous		02/10/93		
MW-43	Aqueous		02/10/93		
MW-44	Aqueous		02/10/93		
MW-46	Aqueous		02/10/93		
MW-35	Aqueous		02/10/93		02/19/93
MW-42	Aqueous		02/10/93		
MHW-2	Aqueous		02/10/93		
REPLICATE	Aqueous		02/10/93		
MW-23	Aqueous		02/10/93		
MW-47	Aqueous		02/10/93		
mw-45ms					02/16/93
mw-45msd					
mw-45msb		NA			
QC CHECK STD					

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

0005

SAMPLE PREPARATION AND ANALYSIS SUMMARY
B/N-A - TCL + TIC's
ORGANIC ANALYSIS

JOB # : 3093-0148

SAMPLE ID	MATRIX	ANALYTICAL PROTOCOL	EXTRACTION METHOD	AUXILARY CLEAN UP	DIL/CONC FACTOR
MW-45	Aqueous	NYSDEC/91	CONT	NONE	1.0
MMW-1	Aqueous				
MW-43	Aqueous				
MW-44	Aqueous				
MW-46	Aqueous				
MW-35	Aqueous				
MW-42	Aqueous				
MMW-2	Aqueous				
REPLICATE	Aqueous				
MW-23	Aqueous				
MW-47	Aqueous				
mw-45MS					
mw-45MSD					
mw-45MSB					
QC CHECK STD					

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PCB
ORGANIC ANALYSIS

JOB # : 3093-0148

SAMPLE ID	MATRIX	ANALYTICAL PROTOCOL	EXTRACTION METHOD	AUXILARY CLEAN UP	DIL/CONC FACTOR
MHW-5	Aqueous	NYS89	SEPF	N	1.0
MHW-3	Aqueous	↓	↓	↓	↓
MHW-7	Aqueous				5
MHW-6	Aqueous				1.0
MHS-3	Soil	NYS91	SONIC	GAC & Florisil	
FIELD BLANK 02/08/93	Aqueous	NYS89	SEPF	N	
MW-36	OIL	NYS91	Weighed out	N	
MW-27	Aqueous	NYS89	SEPF	SULFUR C/U	
MW-45	Aqueous			N	
MHW-1	Aqueous			ACID + SULFUR C/U	
MW-43	Aqueous			N	
MW-44	Aqueous				
MW-46	Aqueous			ACID + SUL C/U	
MW-35	Aqueous			ACID + SUL C/U	
MHW-2	Aqueous			N	
REPLICATE	Aqueous				
MW-1	Aqueous				
MW-23	Aqueous				
MW-47	Aqueous	↓	↓	↓	↓

0064

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PCB
ANALYSIS

JOB # : 3093-0148

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
MHW-5	Aqueous		02/09/93	02-10-93	03-02-93
MHW-3	Aqueous		02/09/93		03-02-93
MHW-7	Aqueous		02/09/93		03-02-93
MHW-6	Aqueous		02/09/93		03-02-93
MHS-3	Soil		02/09/93	2/11/93 ~~CLP 3/90~~	3/9/93
FIELD BLANK 02/08/93	Aqueous		02/09/93	02-10-93	03-02-93
MW-36	OIL		02/09/93	2/11/93 ~~3/90~~	3/10/93
MW-27	Aqueous		02/09/93	02-10-93	03-03-93
MW-45	Aqueous		02/10/93	02-11-93	03-02-93
MHW-1	Aqueous		02/10/93		03-03-93
MW-43	Aqueous		02/10/93		03-02-93
MW-44	Aqueous		02/10/93		03-02-93
MW-46	Aqueous		02/10/93		03-02-93
MW-35	Aqueous		02/10/93		03-09-93
MHW-2	Aqueous		02/10/93		03-09-93
REPLICATE	Aqueous		02/10/93		03-03-93
MW-1	Aqueous		02/10/93		03-09-93
MW-23	Aqueous		02/10/93		03-03-93
MW-47	Aqueous		02/10/93		03-03-93
~~REPLICATE~~	V		2/10/93	~~02-11-93~~	

3/16/93

03/11/93

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSIS

ICAP

SAMPLE ID	MATRIX	METALS REQUESTED	DATE RECEIVED	DATE DIGESTED	DATE ANALYZED
MW-45	Aqueous	TAL METALS	02/10/93	2/17/93	3/2/93
MW-1	Aqueous	TAL METALS	02/10/93		
MW-43	Aqueous	TAL METALS	02/10/93		
MW-44	Aqueous	TAL METALS	02/10/93		
MW-46	Aqueous	TAL METALS	02/10/93		
MW-35	Aqueous	TAL METALS	02/10/93		
MW-2	Aqueous	TAL METALS	02/10/93		
REPLICATE	Aqueous	TAL METALS	02/10/93		
MW-1	Aqueous	TAL METALS	02/10/93		
MW-47	Aqueous	TAL METALS	02/10/93		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSIS

JOB # : 3093-0148

Furnace

SAMPLE ID	MATRIX	METALS REQUESTED	DATE RECEIVED	DATE DIGESTED	DATE ANALYZED
MW-45	Aqueous	TAL METALS	02/10/93	2/17/93	2/19,20,22/93
MHW-1	Aqueous	TAL METALS	02/10/93		
MW-43	Aqueous	TAL METALS	02/10/93		
MW-44	Aqueous	TAL METALS	02/10/93		
MW-46	Aqueous	TAL METALS	02/10/93		
MW-35	Aqueous	TAL METALS	02/10/93		
MHW-2	Aqueous	TAL METALS	02/10/93		
REPLICATE	Aqueous	TAL METALS	02/10/93		
1	Aqueous	TAL METALS	02/10/93		
MW-47	Aqueous	TAL METALS	02/10/93		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSIS

JOB # : 3093-0148

Mercury

SAMPLE ID	MATRIX	METALS REQUESTED	DATE RECEIVED	DATE DIGESTED	DATE ANALYZED
MW-45	Aqueous	TAL METALS	02/10/93	2/25/93	2/26/93
MHW-1	Aqueous	TAL METALS	02/10/93		
MW-43	Aqueous	TAL METALS	02/10/93		
MW-44	Aqueous	TAL METALS	02/10/93		
MW-46	Aqueous	TAL METALS	02/10/93		
MW-35	Aqueous	TAL METALS	02/10/93		
MHW-2	Aqueous	TAL METALS	02/10/93		
REPLICATE 1	Aqueous	TAL METALS	02/10/93		
MW-47	Aqueous	TAL METALS	02/10/93		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY

TAL METALS

INORGANIC ANALYSES

SDG # 1990-0149

I CAP

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR
MW-45	Aqueous	CLP	HNO_3, HCl	N/A	1:1
MHW-1	Aqueous				
MW-13	Aqueous				
MW-44	Aqueous				
MW-46	Aqueous				
MW-35	Aqueous				
MHW-2	Aqueous				
REPLICATE	Aqueous				
MW-1	Aqueous				
MW-47	Aqueous				

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

0011

SAMPLE PREPARATION AND ANALYSIS SUMMARY
TAL METALS
INORGANIC ANALYSIS

JOB # : 3093-0143

Furnace: As, Se

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR
MW-45	Aqueous	CLP	HNO_3, H_2O_2	Nickel Nitrate	1:1
MHW-1	Aqueous				
MW-43	Aqueous				1:1
MW-44	Aqueous				1:2
MW-46	Aqueous				1:1
MW-35	Aqueous				
MHW-2	Aqueous				1:1
REPLICATE	Aqueous				
MW-1	Aqueous				
MW-47	Aqueous				

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

0012

SAMPLE PREPARATION AND ANALYSIS SUMMARY
TAL METALS
INORGANIC ANALYSIS

JOB # : 3093-0148

Furnace - I

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR
MW-45	Aqueous	CLP	HNO_3, H_2O_2	H_2SO_4	1:1
MHW-1	Aqueous				
MW-43	Aqueous				
MW-44	Aqueous				
MW-46	Aqueous				
MW-35	Aqueous				
MHW-2	Aqueous				
REPLICATE	Aqueous				
MW-1	Aqueous				
MW-47	Aqueous				

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
TAL METALS
INORGANIC ANALYSIS

Job # : 3093-0148

Mercury

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR
MW-45	Aqueous	CLP	Manual Cold Vapor	N/A	1:1
MHW-3	Aqueous				
MW-43	Aqueous				
MW-44	Aqueous				
MW-46	Aqueous				
MW-39	Aqueous				
MHW-2	Aqueous				
REPLICATE	Aqueous				
MW-1	Aqueous				
MW-47	Aqueous				

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

0013

SAMPLE PREPARATION AND ANALYSIS SUMMARY
TAL METALS
INORGANIC ANALYSIS

JOB # : 3093-0148

Furnace Pb

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR
MW-45	Aqueous	CLP	HNO3 H2O2	Mg Nitrate, Ammonium	1:1
MHW-1	Aqueous				↓
MW-43	Aqueous				1:1
MW-44	Aqueous				1:10
MW-46	Aqueous				1:10
MW-35	Aqueous				1:2
MHW-2	Aqueous				1:1
REPLICATE	Aqueous				↓
MW-1	Aqueous				1:1
MW-47	Aqueous				

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

0002

SAMPLE IDENTIFICATION AND
ANALYTICAL REQUIREMENT SUMMARY

JOB # : 3093-0148A

CUSTOMER SAMPLE CODE	LABORATORY SAMPLE CODE	ANALYTICAL REQUIREMENTS*						
		*VOA GC/MS	*BNA GC/MS	*VOA GC	*PEST PCB	*METALS	*OTHER	*OTHER
MW-48	0148021	X	X		X	X		
FBS 2/9/93	0148022	X	X		X	X		
FBW 2/9/93	0148023	X	X		X	X		
MHW-8	0148024				X			
MHS-8	0148025				X			
MHS-2	0148026				X			
MW-29	0148027					X		
MW-41	0148028	X						
TRIP BLANK 2/9/93	0148029	X						

* Check Appropriate Boxes

* CLP, Non-CLP
* BSL, Priority Pollutant

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

0003

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOA - TCL + TIC's
ANALYSIS

JOB # : 3093-0148A

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
MW-48	Aqueous	02/09/93	02/10/93	N/A	02/12/93
FBS 2/9/93	Aqueous	↓	02/10/93	↓	02/13/93
FBW 2/9/93	Aqueous		02/10/93		↓
MW-41	Aqueous		02/10/93		
TRIP BLANK 2/9/93	Aqueous		02/10/93		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

0004

SAMPLE PREPARATION AND ANALYSIS SUMMARY
B/N-A - TCL + TIC's
ANALYSIS

JOB # : 3093-0148A

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
MW-48	Aqueous	02/09/93	02/10/93	02/11/93	02/19/93
FBS 2/9/93	Aqueous	↓	02/10/93	↓	↓
FBW 2/9/93	Aqueous		02/10/93		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

0005

SAMPLE PREPARATION AND ANALYSIS SUMMARY
B/N-A - TCL + TIC's
ORGANIC ANALYSIS

JOB # : 3093-0148A

SAMPLE ID	MATRIX	ANALYTICAL PROTOCOL	EXTRACTION METHOD	AUXILARY CLEAN UP	DIL/CONC FACTOR
MW-48	Aqueous	NYSDEC '91	CONT.	NONE	1.0
FBS 2/9/93	Aqueous	↓	↓	↓	↓
FBW 2/9/93	Aqueous				

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PCB
ORGANIC ANALYSIS

JOB # : 3093-0148A

SAMPLE ID	MATRIX	ANALYTICAL PROTOCOL	EXTRACTION METHOD	AUXILARY CLEAN UP	DIL/CONC FACTOR
MW-4B	Aqueous	NYS89	SEPF	ACID C/U	5 1.0 BH 2/19/93
FBS 2/9/93	Aqueous	NYS91	SEPF ~~3/99~~		1.0
FBW 2/9/93	Aqueous	NYS89	~~SEPF~~	N	1.0
MHW-6	Aqueous	↓	↓	N	5.0
MHS-8	Soil	NYS91	SONC } ~~3/99~~ ~~SEPF~~	~~3/1/93 SWC~~ } GPC & Florisil	10.0
MHS-2	Soil	~~NYS89~~ NYS91	SONC } ↓	}	1000.0

KAM 3/1/93

5B

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PCB
ANALYSIS

JOB # : 3093-0148A

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
MW-46	Aqueous		02/10/93	02-11-93	03-03-93
FBS 2/9/93	Aqueous	02/09/93	02/10/93	~~3190~~	03-10-93
FBW 2/9/93	Aqueous		02/10/93	02-11-93	03-03-93
MHW-6	Aqueous		02/10/93	02-11-93	03-09-93
MHS-6	Soil	02/09/93 ↓	02/10/93	02-11-93 ~~3190~~	03-10-93
MHS-2	Soil		02/10/93	02-11-93	03-11-93

VM 3/16/93

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSIS

JOB # : 3093-0148A

ICAP

SAMPLE ID	MATRIX	METALS REQUESTED	DATE RECEIVED	DATE DIGESTED	DATE ANALYZED
MW-48	Aqueous	TAL METALS	02/10/93	2/17/93	3/2,4/93
FBS 2/9/93	Aqueous	TAL METALS	02/10/93		
FBW 2/9/93	Aqueous	TAL METALS	02/10/93		
MW-29	Aqueous	TAL METALS	02/10/93		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSIS

JOB # : 3093-0146A

Furnace

SAMPLE ID	MATRIX	METALS REQUESTED	DATE RECEIVED	DATE DIGESTED	DATE ANALYZED
MW-48	Aqueous	TAL METALS	02/10/93	2/17/93	2/19,20/93
F&S 2/9/93	Aqueous	TAL METALS	02/10/93		
F&W 2/9/93	Aqueous	TAL METALS	02/10/93		
MW-29	Aqueous	TAL METALS	02/10/93		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSIS

JOB # : 3093-0146A

Mercury

SAMPLE ID	MATRIX	METALS REQUESTED	DATE RECEIVED	DATE DIGESTED	DATE ANALYZED
MW-46	Aqueous	TAL METALS	02/10/93	2/25/93	2/26/93
FBS 2/9/93	Aqueous	TAL METALS	02/10/93		
FBW 2/9/93	Aqueous	TAL METALS	02/10/93		
MW-29	Aqueous	TAL METALS	02/10/93		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
TAL METALS
INORGANIC ANALYSIS

JOB # : 3093-0148A

ICAP

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR
MW-48	Aqueous	CLP	HNO_3 / HCl	N/A	1:1
FBS 2/9/93	Aqueous	↓	↓	↓	↓
FBW 2/9/93	Aqueous				
MW-29	Aqueous				

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
TAL METALS
INORGANIC ANALYSIS

JOB # 3093-014SA

Furnace: As, Se

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR
MW-4B	Aqueous	CLP	HNO_3, H_2O_2	Nickel Nitrate	1:1
FBS 2/9/93	Aqueous	↓	↓	↓	↓
TW 2/9/93	Aqueous				
6-29	Aqueous				

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
TAL METALS
INORGANIC ANALYSIS

JOB # : 3093-0148A

Furnace - Tl

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR
MW-28	Aqueous	CLP	HNO_3, H_2O_2	H_2SO_4	1:1
FBS 2/9/93	Aqueous	↓	↓	↓	↓
FBW 2/9/93	Aqueous	↓	↓	↓	↓
MW-29	Aqueous	↓	↓	↓	↓

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
TAL METALS
INORGANIC ANALYSIS

JOB # : 3093-0143A

Furnace Pb

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR
MW-46	Aqueous	CLP	HNO3, HCl	Mg Nitrate, Nam Phos	1:1
FBS 2/9/93	Aqueous	↓	↓	↓	↓
FBW 2/9/93	Aqueous				
MW-29	Aqueous				

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
TAL METALS
INORGANIC ANALYSIS

JOB # : 3093-0149A

Mercury

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR
MW-48	Aqueous	CLP	Manual Cold Vapor	N/A	1:1
FBS 2/9/93	Aqueous	↓	↓	↓	↓
FBW 2/9/93	Aqueous				
MW-29	Aqueous				

Data Validation Services

Cobble Creek Road P. O. Box 208
North Creek, N. Y. 12853
Phone 518-251-4429

TO: Roux Associates

FROM: Judy Harry, Data Validation Services J. Harry

DATE: 5-4-93 Revised 5-11-93

RE: Validation of data for the Amtrak Sunnyside Yard Site
IEA SDG Nos. 30930-0060, -0060A, -0060B, -0148, and -0148A

Review is complete for the data packages generated by IEA Labs, pertaining to samples collected at the Amtrak Sunnyside Yard Site. Fourteen soil samples were processed for CLP PCBs, and one of them also analysed for mercury. Methodologies utilized were those of the 12/91 NYSDEC ASP. Three field blanks were also processed.

In summary, the analyses were conducted in compliance with the protocol, and package submissions were complete with deliverable requirements. In order to verify final reported dilutions, copies of the applicable laboratory instrument logbook pages were requested and submitted.

Certain qualifications of reported results, which are based upon indicated matrix effects or (compliant) analytical system response, are outlined below. Other concerns or comments regarding quality are noted in the subsequent sections. Attached to this report are a compliancy chart, and copies of the laboratory case narratives, and preparation/ analysis summary forms.

Recommended edits or qualification of sample results are noted below:

1. Reported values of acetone, methylene chloride, 2-hexanone, 4-methyl-2-pentanone, and phthalates in the volatile and semivolatile results should not be considered as sample components, as indicated by their presence in associated blanks. The reported detection limits for these compounds in the samples with detected values should be raised to either the CRDL, or to the value initially reported, whichever is greater.

2. For the volatile and semivolatile analyses, the Tentatively Identified Compounds (TICs) which are flagged as "B", as well as the siloxane compounds, should be rejected for consideration as sample components, as indicated by their presence in asssociated blanks. In addition, the TICs reported for the semivolatile analysis of MW-48 and the FldBlk 2/9/93 should also be rejected as sample components.

3. The reported detection limit of Aroclor 1221 in sample MW-23 should be considered estimated due to matrix interference.

4. In cases where the PCB analyses were reported at two different dilutions, the reported values for the detected Aroclors are more accurate in those of greater dilution, with the following exceptions:

CS-43 - use the 1:10 reported results for Aroclor 1260
CS-76 - use the 1:100 results for Aroclor 1248, and the 1:1000 results for Aroclor 1260.
CS-1 - use the 1:10 results for Aroclor 1248, and the 1:100 results for Aroclor 1260.
CS-64 - use the 1:10 results, but qualify as estimated

VOLATILE ANALYSES

Holding times were met for all sample processing. Surrogate recoveries and matrix spike blank recoveries met protocol requirements. Sample matrix spikes and duplicates were performed on aqueous sample MW-45. All recoveries and duplicate correlation values were within recommended limits.

Initial and continuing calibration standards, and standard area responses/retention times were within required limits. Method blanks and instrumental tunes were compliant with protocol requirements. As noted in the case narrative, a field and trip blank were processed under the soil curve of the samples for which they are associated. There is no effect on the reported results.

SEMIVOLATILE RESULTS

Holding times were met for all sample processing. Surrogate recoveries and matrix spike blank recoveries met protocol requirements. Sample matrix spikes and duplicates were performed on aqueous sample MW-45. All recoveries and duplicate correlation values were within recommended limits, with the exception of the recovery of 4-nitrophenol in the matrix spike of MW-45 (whose recovery at 104%, is above the limit of 80%, but is in keeping with the methodology). No Form 3 was reported for the matrix spike blank in SDG 0148; review of the raw data indicates acceptable recoveries.

Initial and continuing calibration standards, and standard area responses/retention times were within required limits. Method blanks and instrumental tunes were compliant with protocol requirements.

The reported values for 3-nitroaniline in the QC check standards are not that determined by the raw data; recoveries would be elevated even above those reported. Sample reported results are not affected.

PCB ANALYSES

Holding times were met for all sample processing. Surrogate recoveries were outlying from the recommended ranges in numerous samples, some with depressed recovery for one of the two surrogates, others elevated due to interferences. No qualification of sample results was made based upon the surrogate recoveries; no recoveries were extremely low. Sample matrix spikes and duplicates were performed on soil samples S-100, S-107, CS-64, and CS-43, and aqueous sample MW-45. Aqueous spike recovery and duplicate correlation values were within recommended limits. Soil spike recoveries and duplicate correlation could not be evaluated due to matrix effect or high levels of target compounds. Matrix spike blank (Aroclor 1260) and QC check standard (Aroclors 1242 and 1260) recoveries were good, all falling above 60%, with most recovering above 80%.

Analytical system requirements were met for sample processing. In addition to the pesticide continuing calibration standards, Aroclor continuing calibration standards were also processed, but were not summarized for response correlation (not a protocol requirement). Review of the response of Aroclor 1260 continuing standards indicates acceptable correlation, with the exception of the standard run on RTX-35 on 2/19/93 at 21:25, which produced values 177% of the initial responses. Samples were processed at least three days prior to this outlying standard.

Many samples produced a variance in Aroclor quantitative values between the two columns used for analysis. This is related to matrix interferences in some samples, and also seems to be system related in other cases. When the variance exceeds 25% Difference, the value is flagged as "P" on the report Form I. As required by the 12/91 protocol, the lower of the two values determined in each PCB analysis is always reported. Many samples in this project, as well as some of the spiked blanks, produced a depressed isomer response on one column for Aroclor 1260. Although the lower value reflects this depressed value, (which may be system related, as indicated by spiked blank response), examination of the raw data and area integrations indicates that the reported (lower) values are a better representation of the PCB content than those of the alternate column. Reported values from each column are determined from an average three different isomers per column, which balances deviations resulting from weathering, etc.

GC/MS confirmation was performed on several samples. Although indicated as being confirmed ("C" flag), GC/MS confirmation data were not submitted for CS-83.

METALS ANALYSES

All protocol requirements for sample processing and surrounding quality control were evaluated, and found to be compliant and acceptable, unless noted specifically in this text. Matrix spikes were performed on samples S-100 and MW-45. All spike recoveries, duplicate correlation, and serial dilution values were acceptable for MW-45 evaluation. In addition to those spike outliers noted earlier for S-100, arsenic recovered at 69%. Duplicate and serial dilution values were good for S-100.

Holding times were met for all sample processing. Sample reported results are substantiated by the raw data, and determined in compliance with protocol.

COMPLIANCY CHART

Project: Amtrak- Sunnyside Yard Site

SDG Nos: IEA SDG Nos. 30930-0060, -0060A, -0060B, -0148 and -0148A

Protocol: 1991 NYSDEC ASP

RecDate	Sample ID	Matrix	VOA	PCB	Metals	Other	Noncompl
01-19-93	CS-43	Soil	NR	OK	OK	OK	
01-21-93	CS-75	Soil	NR	OK	NR	OK	
01-21-93	CS-51	Soil	NR	OK	NR	OK	
01-21-93	CS-50	Soil	NR	OK	NR	OK	
01-27-93	CS-6	Soil	NR	OK	NR	OK	
01-27-93	CS-83	Soil	NR	OK	NR	OK	
01-27-93	CS-76	Soil	NR	OK	NR	OK	
01-27-93	CS-1	Soil	NR	OK	NR	OK	
01-27-93	CS-64	Soil	NR	OK	NR	OK	
02-02-93	CMW-31	Soil	NR	OK	NR	OK	
02-02-93	CS-49	Soil	NR	OK	NR	OK	
02-02-93	CS-53	Soil	NR	OK	NR	OK	
02-02-93	CS-64	Soil	NR	OK	NR	OK	
02-09-93	MW-27	Aqueous	NR	OK	NR	OK	
02-10-93	MW-1	Aqueous	NR	OK	OK	OK	
02-10-93	MW-29	Aqueous	NR	NR	OK	OK	
02-10-93	MW-28	Aqueous	OK	OK	NR	OK-BNA	
01-19-93	FLDBLK	Aqueous	NO	OK	OK	OK	1
01-27-93	FLDBLK	Aqueous	NR	OK	NR	OK	
01-21-93	FLDBLK	Aqueous	NR	OK	NR	OK	
02-02-93	FB 2/1/93	Aqueous	NR	OK	NR	OK	
02-09-93	FB 2/8/93	Aqueous	NR	OK	NR	OK	
02-10-93	FB 2/9/93	Aqueous	NR	OK	NR	OK	

1. Volatile analysis performed by soil methodology.

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203-261-4458
Fax 203-268-5346

19

30930-0060
ROUX ASSOCIATES

SDG Narrative

Volatile Organics - In order to meet the 7-day from receipt holding time, the field blanks and the trip blank were analyzed along with the soil sample on a soil calibration curve.

Extractions - Sample S-100 for PCB's was inadvertently spiked with the incorrect concentration of the standard solution. The sample was re-extracted on 02/01/93 using the correct solution.

Semi-Volatile Organics - Samples S-101, S-100, S-100 MS, S-100 MSD and S-102 exhibited internal standard area suppression. Samples S-101 and S-102 were reanalyzed with similar results, therefore proving matrix interference. Samples S-100 MS and S-100MSD confirmed the matrix interference for sample S-100. Both analyses have been reported with the reanalysis designated with the suffix "RE".

PCB's - Samples S-100, S-100 MS, S-00 MSD, S-101, CS-75, S-103, CS-51, CS-50, S115, S-113, S-111, CS-49, S-114 and S-112 required dilutions because of the high concentration of aroclor 1260.

The third peak used for calculation of aroclor 1260 in sample S-112 was outside of RT windows due to matrix interference.

Samples S-102 and CS-43 required dilutions due to the sample matrix. The third peak used for calculation or aroclor 1260 in sample CS-43 was outside of RT windows.

After sample CS-43 was diluted, the aroclor present was indistinguishable on the RTX-35 column, therefore the results reported are from column DB-1701. The third peak of aroclor 1260 was outside of RT windows.

Samples CS-75 and CS-49 were confirmed by GC/MS for aroclor 1260.

There was no aroclor 1242 injected within 72 hours of the QC check standard on column 2, however the aroclors run every 72 hours are not used for quantitation, only for pattern recognition. Since this is a spike sample, aroclor 1242 is a known compound.

Because of the very high concentration of aroclor 1260 in sample S-100 and the dilution required, the spike percent recovery could not be calculated.

All samples with dilution factors of 100 and higher had surrogates diluted out.

In sample CS-50 and CS-50 DL, DCB was lost in matrix and is not reported.

DCB was below advisory QC limits on column 1 in samples FB 011893 and FB 012093 and method blank PBLK40.

Data Validation Services

Cobble Creek Road P. O. Box 208
North Creek, N. Y. 12853
Phone 518-251-4429

TO: Roux Associates

FROM: Judy Harry, Data Validation Services

DATE: 7-6-94

RE: Validation of Amtrak data packages
IEA Labs SDG Nos. Z0375, A0375, and B0375

Review is complete for data packages generated by IEA Labs, pertaining to samples collected at the Amtrak Site. Nineteen aqueous and nineteen soil samples were processed for PCB analysis. Field blanks and sample matrix spikes were also analysed. The soils were to have been processed according to the 1991 NYSDEC 91-3 method, but were analysed with the modified EPA-8080/NYSDEC 89-3 procedure also used for the aqueous samples. The aqueous samples were to have been processed at a low level (1 mL final volume), but were initially extracted and analysed at 10 mL. The samples were then later concentrated by an additional factor of 10 and reanalysed.

In summary, the soil reported values were substantiated by the raw data. The aqueous concentrated analyses resulted in matrix effects for some samples which make detection at the reported detection limits questionable. Below are outlined the recommended edits and qualifications to the values. Attached to this narrative is a compliancy chart, copies of resubmission communications, and copies of laboratory case narratives and tracking forms.

1. The following aqueous samples produced matrix/chromatographic interferences in the low level analyses which warrent consideration of the reported detection limits and values as estimated:

   MHWF-2, MHW-2(N), CBW-28, MW-43X, Field Duplicate

   Due to the matrix interferences in the above samples, the initial analyses of these samples were reviewed for correlation of PCB detection. In all cases except one (MHW-39(18)E) where PCBs were detected and reported in the low level analysis, presence of PCB was also indicated (at levels much less than 1/2 CRDL) in the diluter analysis.

   Sample MHW-39(18)E was reported with detection of PCB in the concentrated reanalysis, but PCBs were not evident in the initial analysis. The detection limits for the undetected Aroclors in the reanalysis of this sample should be considered estimated due to matrix interference. The detected PCB in the reanalysis should be qualified as tentative in identification ("N"), and estimated.

2. Upon low level reanalysis, sample MHWF-52(42) produced low surrogate recovery (about 25%) relative to the other samples which was not evident in the initial analysis. The reported detection limit of the low level analysis of this sample should be considered estimated.

3. The sample MHS-69(36) produced poor correlation in PCB content between the sample and its matrix spikes (levels of 9900 ug/kg and 9500 ug/kg for matrix spikes, and 29,500 ug/kg for sample). This may be a function of sample nonhomogeneity or varying moisture content. Although individual containers were used for the sample and spikes, individual moisture determinations for the containers were not performed. Reported values for the sample should be considered estimated.

4. Sample MHS-45 was miscalculated for Aroclor 1248 result. The correct value (when using four peaks in the sample and standard) is 53 ppb, not 33 ppb.

5. Samples with combinations of Aroclor mixtures have quantitative values derived from responses with cross-contribution, and therefore reported values should be considered estimated.

6. Sample MHS-55 has a moisture content of 92%. Sample nonhomogeneity in collection and extraction is likely in cases of very low solids, and reported values should be considered estimated.

Sample holding times were met. Surrogate recoveries of DBC and method blank processing was acceptable for soil and initial aqueous analyses. Recoveries for the aqueous reanalyses were not determined. Upon validation, area responses were monitored for variances (see item #2 above).

Matrix spikes were performed on samples MHS-69(36) and MHW-43. Recoveries for the soil spikes were not evaluable due to the relative concentration of spike level to sample level. The soil MSB recovery of 1260 (which was spiked at a level below CRDL) was good, at 87%. Matrix spike recoveries of 1260 in the aqueous matrix spikes were 97% and 71%, 31% RPD. The aqueous MSB recovery was 89%. The Form 3 for the aqueous matrix spikes should show an MSD recovery of 80%, not "0.8".

Sample MHW-40(48)E was not processed for confirmation due to limited sample volume.

The field blanks were not processed by low level method. Comparison of the initial and concentrated sample analyses for correlation of PCB detection (discussed earlier) indicates no effect on sample reported results.

Retention times outliers were observed in some of the sample and standard processing. Pattern recognition was used to qualify/quantify results. PCB continuing standards were processed, and produced generally good percent difference values. Certain outlying responses for pesticide components were observed in the RTX-35 reanalyses of the aqueous samples. PCB reported results are not affected.

The confirmation raw data for sample MHW-39(18)E has the suffix letter of "S", rather than "E". The lab ID number is correct.

COMPLIANCY CHART

Project: Roux Associates- Amtrak

SDG Nos: IEA SDG Nos. Z0375, A0375, and B0375

Protocol: 1991 NYSDEC ASP and modified EPA-8080

RecDate	Sample ID	Matrix	PCB	Noncomp1
04-27-94	MHW-52(18)SE	Aqueous	NO	1
04-27-94	MHW-52(42)SW	Aqueous	NO	1
04-27-94	MHW-52(10)N	Aqueous	NO	1
04-27-94	MHWF-2	Aqueous	NO	1
04-27-94	MHWF-52(42)	Aqueous	NO	1
04-27-94	MHW-40(48)E	Aqueous	NO	1,3
04-27-94	MHW-40(4X8)S	Aqueous	NO	1
04-27-94	MHWF-40(48)	Aqueous	NO	1
04-27-94	MHW-2(N)	Aqueous	NO	1
04-27-94	MHW-39(18)E	Aqueous	NO	1
04-27-94	MHW-39(24)S	Aqueous	NO	1
04-27-94	FLDBLK#1	Aqueous	NO	1
04-27-94	FLDBLK#2	Aqueous	NO	1
04-29-94	FLDBLK#4	Aqueous	NO	1
04-27-94	MHS-55	Soil	NO	2
04-27-94	MHS-52BOTTOM	Soil	NO	2
04-27-94	MHS-42	Soil	NO	2
04-27-94	MHS-40(48)	Soil	NO	2
04-27-94	MHS-40(4X8)	Soil	NO	2
04-27-94	MHS-2	Soil	NO	2
04-29-94	MHS-(69)	Soil	NO	2,4

RecDate	Sample ID	Matrix	PCB	Noncompl
04-29-94	MHW-(69)	Aqueous	NO	1
04-29-94	MHS-45	Soil	NO	2,4
04-29-94	MHS-1	Soil	NO	2,4
04-29-94	MHS-65	Soil	NO	2,4
04-29-94	CBS-28	Soil	NO	2,4
04-29-94	MHS-59	Soil	NO	2
04-29-94	MHS-21	Soil	NO	2,4
04-29-94	MHS-38	Soil	NO	2
04-29-94	MHS-37	Soil	NO	2,4
04-29-94	MHS-35	Soil	NO	2,4
04-29-94	MHS-72	Soil	NO	2
04-29-94	MHS-69(18)	Soil	NO	2,4
04-29-94	MHS-69(36)	Soil	NO	2
04-29-94	MHW-1	Aqueous	NO	1
04-29-94	MHWF-1	Aqueous	NO	1
04-29-94	CBW-28	Aqueous	NO	1
04-29-94	MHW-59	Aqueous	NO	1
04-29-94	MHW-43	Aqueous	NO	1
04-29-94	MHW-69	Aqueous	NO	1
04-29-94	MHW-29	Aqueous	NO	1
04-29-94	MHS-29	Soil	NO	2
04-29-94	FLDDUP	Aqueous	NO	1
04-29-94	FLDBLK	Aqueous	NO	1

1. Aqueous samples not processed by low level methodology.
2. Soil samples not processed by NYSDEC ASP 91-3
3. No confirmation analysis was performed on the low level reanalysis due to lack of sample volume.
4. Retention times for PCB isomers outside allowable range.

DCB was below advisory QC limits on column 2 in sample FB 011893 and method blanks PBLK53, PBLk40 and PBLK51 and on column 1 in sample S-111 DL.

TCX was below advisory QC limits on column 2 in sample S-99 and method blanks PBLK44 and PBLK51.

DCB had high recovery because of interference with aroclors on column 1 in samples CS-43, S-100 MSD, CS-5-1 DL, CS-51, S-115 DL, S-113 and on column 2 in samples S-102, S-100 MS, S-100 MSD, CS-51 DL, CS-51, S-115 DL, S-111 DL, CS-49 and S-112 DL.

Many results have "P" flags due to the large percent RPD between column concentrations. This is believed to be due to the sample matrix.

Metals - IEC's are electronically employed by the TJA ICAP-61. However, the ICSA is utilized as a monitoring device to detect any additional adjustments that may be required. These modifications are calculated and applied manually. They are so noted in the raw data.

Copper, arsenic and selenium failed the control limits for spike recovery analysis of sample S-100, resulting in three "N" flags. It was noted during sample digestion that the sample contained numerous rocks. A problem with sample homogeneity appears to be the cause for the resultant flags.

No other problems were noted.

I certify that this data package is in compliance with the terms of this contract, both technically and for completeness, for other than the conditions detailed above. Release of this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Jeffrey C. Curran
Laboratory Manager

March 5, 1993
Date

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346

March 10, 1993

Mr. Harry Gregory
Roux Associates
775 Park Avenue, Suite 255
Huntington, NY 11743

Dear Mr. Gregory:

Please find enclosed the analytical results of 1 aqueous, 2 oil and 10 soil samples received at our laboratory on January 27, 1993. This report contains sections addressing the following information at a minimum:

- sample summary
- analytical methodology
- state certifications
- definitions of data qualifiers and terminology
- analytical results
- chain-of-custody

IEA Report #30930-0060A	Purchase Order #05526.Y
Project ID: Amtrak Sunnyside	

Copies of this analytical report and supporting data are maintained in our files for a minimum of five years unless special arrangements have been made. Unless specifically indicated, all analytical testing was performed at this laboratory location and no portion of the testing was subcontracted.

We appreciate your selection of our services and welcome any questions or suggestions you may have relative to this report. Please contact your customer service representative at (203) 261-4458 for any additional information. Thank you for utilizing our services; we hope you will consider us for your future analytical needs.

I have reviewed and approved the enclosed data for final release.

Very truly yours,

Jeffrey C. Curran
Laboratory Manager

JCC/mt

cc: J. Harry

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346

00

30930-0060B
ROUX ASSOCIATES

SDG Narrative

Extractions - Sample FB 020193 was extracted at half volume, surrogate was injected at 0.5 mLs and final volume was 5.0 mLs; the CRQL was not elevated.

PCB's - Samples CMW-31, CS-49, CS-53 and CS-64 were confirmed by GC/MS for Aroclor 1260.

Due to high levels of Aroclor 1260, all soil samples required a dilution and sample CS-64 MSD had zero percent recovery.

Due to matrix interference, the first peak for Aroclor 1260 was outside the RT window in samples CMW-31 and CMW-31 DL on column DB-1701.

Method blank PBLK85 was contaminated with Aroclors 1248 and 1260, but below the CRQL limits.

Due to a large discrepancy between the results on the RTX-35 and DB-1701 columns, the result for sample CS-53 was taken from the RTX-35 column. Sample CS-53 DL which was within the calibration limits has a much lower percent RPD.

DCB was below advisory QC limits on column 1 in samples FB 020193 and MSB CS-64, the QC check standard, and method blanks PBLK82 and PBLK85. DCB was below advisory QC limits on column 2 in sample FB 020193 and the QC check standard.

TCX was below advisory QC limits on column 1 in sample MSB CS-64, the QC check standard and method blank PBLK85.

Surrogates were diluted out in all samples with a dilution factor of 100 or higher.

Due to the sample matrix, DCB was lost in samples CS-64 MS, CS-64 MSD, CS-64 and CS-49.

DCB was above advisory QC limits on both columns in sample CMW-31; DCB was above advisory QC limits on column 1 in sample CS-49.

I certify that this data package is in compliance with the terms of this contract, both technically and for completeness, for other than the conditions detailed above. Release of this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Jeffrey C. Curran
Laboratory Manager

March 16, 1993
Date

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

0002

SAMPLE IDENTIFICATION AND
ANALYTICAL REQUIREMENT SUMMARY

JOB # : 4093-0060

CUSTOMER SAMPLE CODE	LABORATORY SAMPLE CODE	ANALYTICAL REQUIREMENTS*						
		*VOA GC/MS	*BNA GC/MS	*VOA GC	*PEST PCB	*METALS	*OTHER	*OTHER
S-99	0060001	X	X		X	X		
S-100	0060002	X	X		X	X		
S-101	0060003	X	X		X	X		
S-102	0060004	X	X		X	X		
CS-43	0060005		X		X	X		
FIELD BLANK	0060006	X	X		X	X		
TRIP BLANK 1/18/93	0060007	X						
CS-75	0060008		X		X			
S-103	0060009				X			
CS-51	0060010		X		X			
CS-50	0060011		X		X			
S-115	0060012				X			
S-113	0060013				X			
S-111	0060014				X			
CS-49	0060015		X					
FIELD BLANK 1/20/93	0060016				X			
S-114	0060017				X			
S-112	0060018				X			

* Check Appropriate Boxes

= CLP, Non-CLP
= HSL, Priority Pollutant

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

0006

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PESTICIDE/PCB
ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed
S-99	SOIL	01 18 93	01 19 93	01 21 93	02 ~~09~~ 23 93
S-100					02 10 93
S-100DL					
S-100MS					02 12 93
S-100MSD					02 13 93
S-100MSK					02 10 93
QC CHECKSTD					02 12 93
S-101					02 10 93
S-101DL					
S-102					
S-102DL					
CS-43					
CS-43DL					
CS-75		01 19 93	01 21 93	01 22 93	02 11 93
CS-75DL					
S-103					
S-103DL					02 16 93
CS-51		01 20 93			02 13 93
CS-51DL					
CS-50					
CS-50DL					

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

0007

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PESTICIDE/PCB
ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed
S-115	SOIL	01/20/93	01/21/93	01/22/93	02/13/93
S-115DL	↓	↓	↓	↓	↓
S-113					
S-113DL					
S-111					02/20/93
S-111DL					02/14/93
CS-49					↓
CS-49DL					
S-114					02/20/93
S-114DL					02/16/93
S-112					↓
S-112DL	↓	↓	↓	↓	↓
FIELD BLK 1/18	WATER	01/18/93	01/19/93	01/19/93	02/11/93
FIELD BLK. 1/20	↓	01/20/93	01/21/93	01/22/93	02/11/93

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND
ANALYTICAL REQUIREMENT SUMMARY

JOB # : 3093-00606

CUSTOMER SAMPLE CODE	LABORATORY SAMPLE CODE	ANALYTICAL REQUIREMENTS*						
		*VOA GC/MS	*BNA GC/MS	*VOA GC	*PEST PCB	*METALS	*OTHER	*OTHER
CMW-31	0060032		X		X			
CS-49	0060033		X		X			
CS-53	0060034		X		X			
CS-64	0060035		X		X			
FB 2/1/93	0060036				X			

* Check Appropriate Boxes

* CLP, Non-CLP
* HSL, Priority Pollutant

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PESTICIDE/PCB
ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed
FB020193	WATER	02/01/93	02/02/93	02/02/93	02/11/93
CMW-31	SOIL			02/03/93	02/18/93
CMW-31DL					"
CS-49					02/20/93
CS-49DL					02/18/93
CS-53					02/20/93
CS-53DL					
CS-64					"
CS-64DL					02/27/93
CS-64MS					"
CS-64MSD					"
QC CHECK STD	"	"	"	"	02/20/93

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
MERCURY
INORGANIC ANALYSIS

JOB # : 3093-0060

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR
CS-43	Soil	CLP	Manual cold vapor	N/A	1:10

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

0 02

SAMPLE IDENTIFICATION AND
ANALYTICAL REQUIREMENT SUMMARY

JOB # : 3093-0060A

CUSTOMER SAMPLE CODE	LABORATORY SAMPLE CODE	ANALYTICAL REQUIREMENTS*						
		*VOA GC/MS	*BNA GC/MS	*VOA GC	*PEST PCB	*METALS	*OTHER	*OTHER
S-104	0060019				X			
CS-6	0060020		X		X			
S-107	0060021				X			
S-108	0060022				X			
S-105	0060023				X			
S-106	0060024				X			
CS-83	0060025		X		X			
CS-76	0060026		X		X			
CS-1	0060027		X		X			
CS-64	0060028							
FIELD BLANK	0060029				X			
MW-7	0060030				X			
FILL CAP	0060031				X			

* Check Appropriate Boxes

* CLP, Non-CLP
* HSL, Priority Pollutant

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PESTICIDE/PCB
ANALYSES

Laboratory Sample ID	Matrix	Date Collected	Date Rec'd at Lab	Date Extracted	Date Analyzed
CS-1	SOIL	01/26/93	01/27/93	01/28/93	02/26/93 (a93/9)
CS-1DL		↓			↓
CS-6		01/25/93			↓
CS-6DL		↓			02/18/93
~~CS-64~~					~~02/19/93~~
~~CS-64DL~~		↓			~~02/17/93~~ (a93/9)
CS-76		01/26/93			↓
CS-76DL		↓			
CS-83		01/25/93			
CS-83DL		↓			↓
S-104					↓
S-104DL					02/16/93
S-105					02/17/93
S-105DL					02/20/93
S-106					02/18/93
S-106DL					02/20/93
S-107					02/17/93
S-107DL					↓
S-108					↓
S-108DL				↓	↓
S-107MS	↓	↓	↓	02/01/93	02/18/93

Data Validation Services

Cobble Creek Road P. O. Box 208
North Creek, N. Y. 12853
Phone 518-251-4429

TO: Roux Associates

FROM: Judy Harry, Data Validation Services J. Harry

DATE: 03-17-94

RE: Validation of Amtrak Confirmatory PCB data packages
IEA SDG Nos. 30930-1277 and 30930-1403

Review has been performed on the data packages generated by IEA Labs pertaining to samples collected at the Amtrak site. A total of sixteen soil samples and a field blank were processed for PCBs according to the 1989 NYSDEC ASP procecure 89-3. Sample matrix spikes of Aroclor 1260 were processed.

In summary, certain noncompliancies with the protocol were observed, but in most cases do not impact negatively on the reported results. These are discussed in detail below, and noted on the attached compliancy chart. No laboratory resubmission request were necessary prior to completion of data validation.

With the exception of the following item, reported sample values do not require edit or qualification:

Sample CS-41(3.5-5.5) produced a low response (42 ug/kg, below detection limit of 340 ug/kg), for Aroclor 1260. This sample followed the analysis of an undiluted sample containing about 50,000 ug/kg total PCBs. It is possible that the response observed for sample CS-41(3.5-5.5) is actually an analysis artifact from the previous sample. The reported detection should be viewed with caution.

Sample surrogate recoveries were within recommended ranges, and all fell within 35% to 97%. Recoveries of the matrix spike blank associated with the sample processing were good. Sample matrix spikes of Aroclor 1260 were performed on samples in other delivery groups which were coextracted with these project samples. All resultant accuracy and precision values were good, at 87% to 101% recovery, and 1%RPD and 6%RPD.

Linearity requirements were met, with the exception of that of the compound aldrin in the sequence associated with sample CS-16(0-2), which produced a value above 10%RSD, at 17%RSD. Sample reported results are unaffected.

Breakdown criteria were met, with the exception of that of endrin in a sequence associated only with a method blank. The breakdown of 26%, exceeding the limit of 20%, does not affect reported values for PCBs in the samples.

Standard processing was not in compliance with protocol requirements as relates to pesticide responses. Some of the analysis sequences involved primary column standard responses which exceed the limit of 15% Difference (up to 29%D), and/or confirmation column standards which exceeded the limit of 20%D (up to 29%D). In most cases, pesticide responses were elevated, so adequate sensitivity of the analytical system was not compromised. It is observed that although certain sequences produced outlying responses for one or more pesticides, the responses of Aroclor mixtures which were also run as intermittant standards provided goood correlation (%D values). Consequently, the reported PCB values for the samples processed in these noncompliant sequences have not been recommended for qualification.

As discussed in the case narrative, the standards run at the end of the primary column analysis associated with samples FB1215, CS-41(3.5-4) and CMW-30(0-2) provided offscale response prohibiting evaluation. However, these standards were run four days after the rest of the sequence, and are not applicable to the sample processing. Although these three project samples were not followed by both required "INDA" and INDB" standards (and should have been reanalysed in a compliant sequence), they were followed by an "INDB" which showed acceptable responses, and the PCB values reported for the samples are not negatively impacted by the omitted standard.

Sample surrogate standard retention times were within required limits, but certain of the PCB isomer retentions were just outside the defined retention time windows, possibly due to matrix weathering effects.

Sample CMW-34(0-2) reported a value (3.5 ug/kg) onehundreth of the sample detection limit for Aroclor 1254. Sample CS-22(0-2) also reported low values for Aroclors 1254 and 1260. Although no confirmation runs were provided, the relative isomer responses and retention pattern on the primary column match well with those of the standard. However, it is again noted that such low values can be procedural artifacts.

All sample reported values were verified for qualitative identification and quantitative calculation and transcription. Reported results are substantiated by the raw data.

COMPLIANCY CHART

Project: Amtrak

SDG Nos: IEA Labs SDG Nos. 30930-1277 and 30930-1403

Protocol: 1989 NYSDEC ASP

RecDate	Sample ID	Matrix	PCB	Other	Noncompl
11-10-93	CS-67(0-2)	Soil	OK	OK	
11-10-93	CMW-22(0-2)	Soil	OK	OK	
11-10-93	CS-3(3-5)	Soil	OK	OK	
11-10-93	CS-5(0-2)	Soil	OK	OK	
11-10-93	CMW-20(0-2)	Soil	OK	OK	
11-10-93	CS-10(0-2)	Soil	OK	OK	
11-10-93	CS-61(5-7)	Soil	OK	OK	
11-10-93	CS-82(0-2)	Soil	NO	OK	1
11-10-93	CS-77(0-2)	Soil	OK	OK	
11-10-93	CS-59(0-2)	Soil	NO	OK	5
12-17-93	CS-47(2-4)	Soil	NO	OK	1
12-17-93	CS-41(3.5-5.5)	Soil	NO	OK	1
12-17-93	CMW-30(0-2)	Soil	NO	OK	1
12-17-93	CMW-34(0-2)	Soil	NO	OK	1,3
12-17-93	CS-22(0-2)	Soil	NO	OK	1,3
12-17-93	CS-16(0-2)	Soil	NO	OK	1,2
12-17-93	FB 1215	Aqueous	NO	OK	1,4

1. Associated calibration verification standards with outlying %D values for primary and/or confirmation (1989 ASP pg. D-IV-45).
2. Linearity criteria exceeded for one component (D-IV-43).
3. No confirmation analysis provided (pg. D-IV-49).
4. No final Individual Mix A processed after samples (pg. D-IV-44).
5. Wrong pattern of standard processing (no EVALB between IND analyses) (pg. D-IV-46).

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346

006

30930-1277
ROUX ASSOCIATES

SDG Narrative

PCB's - Sample CS-82, 0-21 was diluted 1:5.

All samples required GPC, acid and sulfur cleanup.

Arocolor-1254 was just out of RT windows on the RTX-35 confirmation run for samples CS-77, 0-2'; CS-82, 0-2' and CMW-20, 0-2'.

Aroclor-1660 was out of RT windows in sample CS-6, 5-7' on the RTX-35 confirmation run. Aroclor-1254 and Aroclor-1660 was out of RT windows on the RTX-35 confirmation run for samples CS-61, 5-7'; CS-5, 0-2' and CS-59 0-2'; however, in the analyst's opinion, these Aroclors are present.

4,4'-DDT linearity was greater than 10 percent on all of the DB-1701 primary runs. Aldrin, 4,4'-DDT and DCB linearities were greater than 10 percent on the RTX-35 confirmation runs.

I certify that this data package is in compliance with the terms of this contract, both technically and for completeness, for other than the conditions detailed above. Release of this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Jeffrey C. Curran
Laboratory Manager

Dec. 6, 1993
Date

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346

005

30930-1403
ROUX ASSOCIATES

SDG Narrative

Extractions - The soil samples were inadvertently exchanged to hexane prior to GPC cleanup; therefore they were re-extracted (within holding times).

PCB's - All samples required GPC, acid and sulfur cleanup prior to analysis due to the sample matrix.

Sample CS-47, 2-4' was analyzed at a 1:50 dilution because of high concentrations of Aroclors.

Method blank PBLK27 was run on 2 primary columns on 2 different instruments. Surrogate recovery was reported from the first primary analysis.

The percent difference for the ending standards analyzed on the DB-1701 column on the HP58905A instrument could not be calculated due to an elevation in base-line which was originally believed to be caused by a preceding sample. The standards were reinjected when this was detected, however the chromatograms were only slightly better. The scans for the second injection of the standards have been included.

I certify that this data package is in compliance with the terms of this contract, both technically and for completeness, for other than the conditions detailed above. Release of this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Jeffrey C. Curran
Laboratory Manager

1-13-94
Date

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

002

SAMPLE IDENTIFICATION AND
ANALYTICAL REQUIREMENT SUMMARY

JOB # : 3093-1277

CUSTOMER SAMPLE CODE	LABORATORY SAMPLE CODE	ANALYTICAL REQUIREMENTS*						
		*VOA GC/MS	*BNA GC/MS	*VOA GC	*PEST PCB	*METALS	*OTHER	*OTHER
CS-67, 0-2'	1277001				X			
CMW-22, 0-2'	1277002				X			
CS-3, 3-5'	1277003				X			
CS-5, 0-2'	1277004				X			
CMW-20, 0-2'	1277005				X			
CS-10, 0-2'	1277006				X			
CS-61, 5-7'	1277007				X			
CS-82, 0-2'	1277008				X			
CS-77, 0-2'	1277009				X			
CS-59, 0-2'	1277011				X			

* Check Appropriate Boxes

* CLP, Non-CLP
* HSL, Priority Pollutant

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PCB
ORGANIC ANALYSIS

JOB # : 3093-1277

SAMPLE ID	MATRIX	ANALYTICAL PROTOCOL	EXTRACTION METHOD	AUXILARY CLEAN UP	DIL/CONC FACTOR
CS-67. 0-2'	Soil	SW846	SONC	GPC A+Scu	1.0
CMW-22. 0-2'	Soil	↓	↓	↓ ↓	↓
CS-3. 3-5'	Soil				5
CS-5. 0-2'	Soil				1.0
CMW-20. 0-2'	Soil				↓
CS-10. 0-2'	Soil				
CS-61. 5-7'	Soil				
CS-82. 0-2'	Soil				
CS-77. 0-2'	Soil				
CS-59. 0-2'	Soil				

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PCB
ANALYSIS

JOB # : 3093-1277

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
CS-67. 0-2'	Soil		11/10/93	11-15-93	11-19-93
CMW-22. 0-2'	Soil		11/10/93		
CS-3. 3-5'	Soil		11/10/93		
CS-5. 0-2'	Soil		11/10/93		
CMW-20. 0-2'	Soil		11/10/93		
CS-10. 0-2'	Soil		11/10/93		
CS-61. 5-7'	Soil		11/10/93		
CS-82. 0-2'	Soil		11/10/93		11-24-93
CS-77. 0-2'	Soil		11/10/93		~~11-24-93~~ 12/01/93 11-19-9
CS-59. 0-2'	Soil		11/10/93		11-19-93

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND
ANALYTICAL REQUIREMENT SUMMARY

JOB # : 3093-1403

CUSTOMER SAMPLE CODE	LABORATORY SAMPLE CODE	ANALYTICAL REQUIREMENTS*						
		*VOA GC/MS	*BNA GC/MS	*VOA GC	*PEST PCB	*METALS	*OTHER	*OTHER
FIELD BLANK 121593	1403001				X			
CS-47.2 TO 4 FEET	1403002				X			
CS-41.3.5 TO 5.5 FEE	1403003				X			
CMW-30.0 TO 2 FEET	1403004				X			
CMW-34.0 TO 2 FEET	1403005				X			
CS-22.0 TO 2 FEET	1403006				X			
CS-16.0 TO 2 FEET	1403007				X			

* Check Appropriate Boxes

* CLP, Non-CLP
* HSL, Priority Pollutant

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PCB
ANALYSIS

JOB # : 3095-1405

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
FIELD BLANK 121593	Aqueous	12/15/93	12/17/93	12/20/93	12/22/93
CS-47.2 TO 4 FEET	Soil		12/17/93	12/22/93	01/05/94
CS-41.5 TO 5.5 FEET	Soil		12/17/93		12/24/93
CMW-30.0 TO 2 FEET	Soil		12/17/93		↓
CMW-34.0 TO 2 FEET	Soil		12/17/93		01/05/94
CS-22.0 TO 2 FEET	Soil	↓	12/17/93		01/01/94
CS-16.0 TO 2 FEET	Soil	12/16/93	12/17/93	↓	01/07/94

Data Validation Services

Cobble Creek Road P. O. Box 208
North Creek, N. Y. 12853
Phone 518-251-4429

TO: Roux Associates

FROM: Judy Harry, Data Validation Services J. Harry

DATE: 03-18-94

RE: Validation of Amtrak Site data packages
IEA SDG Nos. 30930-1274 and 30930-1332

Review has been performed on the data packages generated by IEA Labs pertaining to samples collected at the Amtrak site. A total of six soil samples and two field blanks were processed for volatiles, semivolatiles, metals, and PCBs. An aqueous sample and field blank were processed for semivolatiles and PCBs. The methodologies utilized were EPA-8240 and EPA-8270 (both under the 1991 NYSDEC ASP), metals by ASP CLP-M, and PCBs by 1989 NYSDEC ASP. The aqueous sample and associated field blank were prepared at a reduced extract volume to achieve lower detection limits.

In summary, certain noncompliancies with the protocol were observed, but in most cases do not impact negatively on the reported results. These are discussed in detail below, and noted on the attached compliancy chart. Listed immediately below are the recommended edits and qualifications to reported results which are indicated by outlying quality control results. These outliers relate primarily to matrix effects. Results of other quality issues are addressed in the subsequent sections. No laboratory resubmission request were necessary prior to completion of data validation.

Recommended edits and/or qualifications to sample reported results are as follows:

1. The PCB reported values and detection limits for samples MW-54(3-5) and MW-129(3-5) should be considered estimated, possibly biased low, as indicated by the poor surrogate recoveries (10% for each). The method blank associated with these samples also produced depressed recovery, at 12%, indicating a procedural, rather than matrix effect. No corrective action resulting from outlying surrogate recovery is required of the laboratory. Reported values and detection limits may be as much as 10 fold below actual.

2. The matrix spike blank associated with the PCB analysis S-134(2-4) should show "-MSB" after the sample ID on the Form 1. As reported, it looks like a Form 1 for the sample itself. Care should be taken by the end-users of the data not to confuse the results of the two.

3. The reported values for Aroclors 1254 and 1260 in sample MW-58(2-3) should have been flagged "J", as they are below the adjusted CRDL of 360 ug/kg.

4. The reported detection limits for the nondetected PCB mixtures in sample TW-3 can be reduced by a factor of two, due to the extract volume adjustments. The values for the detected mixtures are accurate as reported.

5. The semivolatile analysis of sample S-134(2-4) produced consistent matrix effect (low recoveries of three of the six internal standards; as low as 6%), which indicates a low bias to the reported results and detection limits. Consequently, all reported values and detection limits should be considered estimated.

6. The semivolatile analysis of sample S-135(3-3.5) produced a low response for internal standard d12-perylene, at 34% (below the limit of 50%). The sample should have been reanalysed to confirm a possible matrix effect, but no reanalysis data was reported. The reported results/detection limits for the following compounds should be considered estimated: di-n-octylphthalate, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene, benzo(g,h,i)perylene

7. The semivolatile continuing calibration standards associated with samples S-135(3-3.5), S-139(3-3.1), MW-54 (3-5), and MW-58(2-3) produced low responses for 3-nitroaniline (57%D and 38%D) that warrent consideration of the reported detection limit of that compound in these samples as estimated.

8. The volatile initial and continuing calibration standards associated with SDG 30930-1332 showed manual area integrations were used consistently for evaluation of the four gases (chloromethane, chloroethane, vinyl chloride, and bromomethane). The necessity for manual review (showing inadequate automated software detection) for proper detection in all the standards indicates a need for specific manual review for the gases in all samples, prior to reporting nondetection at 10 ug/L based on software evaluation. The responses for the gases were not obvious to the eye in the 10 ppb calibration standard, and therefore would also not be obvious in the samples, nor evaluated as Tentatively Identified Compounds. Until the laboratory clarifies whether or not this manual review was performed for all samples, reported results for the gases in all samples in SDG 30930-1332 are inconclusive.

9. Due to low recovery of 1,1-dichloroethene in the matrix spike blank (and sample matrix spikes) associated with medium level soils, the reported detection limit of this compound in MW-54(3-5), MW-58(2-3), and S-129(3-5) should be considered estimated, possibly biased low.

10. Many of the volatile and semivolatile report Forms 1 show significant figures three places to the right of the decimal point (i.e. "330.000 ug/L"). The accuracy of the raw data do not support this number of significant figures. The results should be rounded to one unit to the left of the decimal point (or to one to the right, in the cases where results are less than 1.0).

11. Reported detections of methylene chloride, acetone, 2-butanone, toluene, and bis(2-ethylhexyl)phthalate should be rejected for consideration as sample components. These analytes were detected (at compliant levels) in the associated method, field, and/or trip blanks at concentrations similar to those found in the samples. The reported results for these compounds in the samples should be edited to reflect nondetection at either the CRDL, or at the originally reported value, whichever is greater.

12. Any volatile or semivolatile target analyte or Tentatively Identified Compounds (TIC) with a "B" or "A" flag should be rejected for consideration as a sample component.

13. The reported results for chromium and mercury in sample S-134(2-4) should be considered estimated due to low matrix spike recoveries (45% and 62%, respectively). The compounds antimony and selenium also produced slightly low spike recoveries in the sample, at 74% and 73% (below recommended limit of 75%), indicating a possible bias to reported results for these elements in the sample, as well.

14. The reported result for selenium and thallium should be considered estimated in the soil samples of SDG 30930-1332, due to slightly low matrix spike recoveries (62% and 70%) of the associated matrix spike (non-project sample in the same digestion/analysis batch). The matrix spike also showed poor recovery for lead (34%), but the sample being evaluated showed a matrix effect in its lead analysis which was not present in this project's samples. Therefore qualification of lead results is not recommended.

15. The serial dilution of barium in sample MW-54(3-5) produced an elevated correlation, at 19.9%D (above 10% recommended limit). Consequently, reported values for barium in the soil samples of SDG 30930-1332 should be considered estimated.

16. The reported detection of 2-butanone and vinyl acetate in the volatile method blank VBLKBW should be rejected, with edits to reflect nondetection at the CRDL. THe identification of these analytes was rejected by the analyst, and no spectra are submitted.

VOLATILE ANALYSES

Holding times, surrogate recoveries, method blank requirements, instrumental tunes, and internal standard areas/retention times were met for sample processing. Sample matrix spikes were performed on low level soil S-134(2-4); recoveries and duplicate correlation values were acceptable. Medium level matrix spikes were performed on a non-project batch sample. The recoveries an duplicate correlations of compounds other than 1,1-dichloroethene were acceptable.

Calibration standards met protocol requirements, with the exception of the response factors for 1,1,2,2-tetrachloroethane in standards of 11/12/93 and 11/13/93 on instrument HP5995B, which fell below 0.500 (at 0.471 and 0.475). Sample reported results are not affected.

Please see the discussion above regarding detection of the gases in certain of the calibration standards.

SEMIVOLATILE ANALYSES

Holding times and instrumental tune requirements were met for sample processing. Surrogate recoveries met the criteria, although elevated values were observed for sample S-134(2-4).

The matrix spikes of sample S-134(2-4) produced elevated recoveries for 4-nitrophenol (139% and 214%) and pyrene (194% and 144%), and elevated duplicate correlation values for 1,2,4-trichlorobenzene (26%RPD) and acenaphthene (25%RPD). As discussed earlier, this sample showed depressed internal standard responses, which may account for the elevated relative amounts. The associated matrix spike blank produced an elevated recovery for 4-nitrophenol, above the required limit of 80%, but reasonable for the methodology. The matrix spikes associated with SDG 30930-1332 were performed on a non-project sample of the

same extraction batch. The recoveries were within recommended limits, with the exceptions of that of pentachlorophenol in the MSD (112%, greater tha 109%). The associated matrix spike blank produced elevated recoveries for most compounds (three of them are above required limits). Comparison of the spike standard phenol and surrogate standard d5-phenol recoveries in the matrix spike blank, which should be similar) show a possible spiking error of the spike solution. The soil samples were reduced to a final volume (prior to GPC) that is one-half of the usual EPA-8270 volume, and therefore the instrument responses of many of the spike compounds exceed the calibration range of the instrument, and may not be accurate.

Soil method blanks contained excessive numbers of low level TICs (up to sixteen in a given blank), making evaluation of sample TICs difficult.

Calibration standards met protocol requirements for response and correlation. Please see the above qualification for 3-nitrophenol response, which did not required corrective action. Reported Instrument Detection Limits (IDLs) were slightly outdated

The reported recoveries of some compounds in the full matrix spike of SDG 30930-1332 are misreported as being undetected, but were indeed detected at acceptable levels.

PCB ANALYSES

Holding times and method blank criteria were met for sample processing. With the exception of those noted earlier in this text, sample surrogate recoveries were within recommended ranges.

Sample matrix spikes of Aroclor 1260 were performed on S-134(2-4) and on a non-project sample which was coextracted with these project samples. A full matrix spike was also performed with Aroclors 1242 and 1260. All resultant accuracy and precision values were good, at 87% to 105% recovery, and 1%RPD and 6%RPD. The matrix spikes of S-134(2-4) were processed through the acid and sulfur cleanups that certain of the samples underwent.

Linearity and breakdown requirements were met.

Standard processing was not in compliance with protocol requirements as relates to pesticide responses. Some of the analysis sequences involved primary column standard responses which exceed the limit of 15% Difference (up to 21%D), and/or confirmation column standards which exceeded the limit of 20%D (up to 64%D). In most cases, pesticide responses were elevated, so adequate sensitivity of the analytical system was not compromised. It is observed that although certain sequences produced outlying responses for one or more pesticides, the responses of Aroclor mixtures which were also run as intermittant standards provided good correlation (%D values). Consequently, the reported PCB values for the samples processed in these noncompliant sequences have not been recommended for qualification.

Sample surrogate standard retention times were within required limits, but certain of the PCB isomer retentions were just outside the defined retention time windows, possibly due to matrix weathering effects.

All sample reported values were verified for qualitative identification and quantitative calculation and transcription. Reported results are substantiated by the raw data.

METALS ANALYSES

Holding times were met. All protocol requirements for sample processing were reviewed for compliancy and were found to be acceptable unless noted specifically within this text.

Please see the above discussions regarding outlying matrix spike recoveries. The duplicate correlation values for S-134(2-4) produced several elements with precision values outside recommended limits, indicating possible sample nonhomogeneity:

Element	% Relative Percent Difference
Arsenic	39
Barium	45
Chromium	34
Copper	23
Iron	65
Lead	45
Manganese	33
Nickel	34

All duplicate correlation values were within recommended limits for the non-project batch QC of SDG 30930-1332.

Serial dilution values for S-134(2-4) were acceptable; and all except that of barium (noted earlier) in the serial dilution of MW-54(3-5) were acceptable.

TOTAL PETROLEUM HYDROCARBONS

As discussed in the case narratives, the characterization of the hydrocarbons in the samples was difficult due to weathering. The quantitative values were determined from a comparison to kerosene, which produced the best match of those evaluated.

Standard linearity was good. All reported values were verified for calculation and transcription. No report forms were present for SDG 30930-1332; values were verified to those reported in the separate project summary Table 6.0.

COMPLIANCY CHART

Project: Amtrak Site

SDG Nos: IEA SDG Nos. 30930-1274 and 30930-1332

Protocol: 1989/1991 NYSDEC ASP

RecDate	Sample ID	Matrix	VOA	BNA	PCB	Metals	Other	Noncompl
11-10-93	S-134,2-4'	Soil	OK	NO	NO	OK	OK	1,4,5
12-01-93	S-129(3-5')	Soil	NO	NO	NO	OK	OK	1,2,4,5
12-01-93	MW-54(3-5')	Soil	NO	NO	NO	OK	OK	1,2,4,5
12-08-93	S-135(3-3.5')	Soil	OK	NO	NO	OK	OK	1,3,4,5
12-08-93	S-139(3-3.1')	Soil	OK	NO	NO	OK	OK	1,4,5
12-08-93	MW-58(2-3')	Soil	NO	NO	NO	OK	OK	1,2,4,5
12-08-93	TW-3	Aqueous	NR	OK	NO	NR	OK	1
11 10-93	TB 1108	Aqueous	OK	NR	NR	NR	OK	
11-10-93	FB 1108	Aqueous	OK	OK	NO	OK	OK	1
12-01-93	TB 1129	Aqueous	OK	NR	NR	NR	OK	
12-01-93	FB 1129	Aqueous	OK	OK	NO	OK	OK	1
12-08-93	FB 1207	Aqueous	OK	OK	NO	OK	OK	1
12-08-93	TB 1207	Aqueous	OK	NR	NR	NR	OK	
12-08-93	FB 1206	Aqueous	NR	OK	NO	NR	OK	1

1. Pesticide/PCB calibration verification standards with outlying %D values for primary and/or confirmation analysis (1989 ASP pg. D-IV-45).
2. Volatile MSB with outlying recovery value (1991 NYSDEC pg. E-59).
3. Semivolatile reanalysis not performed in the event of outlying internal standard recovery (pg. E-78).
4. Semivolatile method blank with excessive TIC responses (pg. D-III-67).
5. Semivolatile MSB with outlying recovery value (1991 NYSDEC pg. E-85).

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346

19

30930-1274
ROUX ASSOCIATES

SDG Narrative

Volatile Organics - No problems were reported.

Extractions - The client requested SW846 protocols with GPC cleanup. The samples were brought to a final volume of 0.5 mL for BNA's and 5 mLs for PCB's, therefore the CRQL's were not elevated.

The client requested hydrocarbon scan analysis on sample S-134, 2-4' after the NYSDEC holding time had expired. The sample was extracted 15 days after collection.

Semi-Volatile Organics - Samples S-134, 2-4'; S-134, 2-4' MS and S-134, 2-4' MSD exhibited internal standard area suppression. The three analyses confirmed matrix interference.

Petroleum Hydrocarbons - Sample S-134, 2-4' was analyzed by capillary GC/FID. The sample exhibited an elution pattern similar to a weathered distillate fuel oil such as kerosene, #2 oil or diesel fuel. Due to the weathering product, the laboratory was unable to obtain an exact match of the material. The concentration of the material was quantitated against the standard which most likely resembled the sample (kerosene).

Sample ID	Characterization	Concentration
S-134, 2-4'	Weathered distillate fuel oil (diesel, kerosene or #2 oil)	170,000 ug/Kg as kerosene

PCB's - Acid and sulfur cleanup were performed on samples S-134, 2-4'; S-134, 2-4' MS and S-134, 2-4' MSD.

Linearity of 4,4'-DDT was greater than 10 percent on all of the DB-1701 runs.

Linearity of aldrin, 4,4'-DDT and DCB was greater than 10 percent on the RTX-35 confirmation runs.

Forms indicating mass injected for both evaluation and individual mixes have been submitted.

Metals - IEC's are electronically employed by the TJA ICAP-61. However, the ICSA is utilized as a monitoring device to detect any additional adjustments that may be required. These modifications are calculated and applied manually. They are so noted in the raw data.

An asterisk "*" resulted from duplicate analysis of sample S-134, 2-4' for arsenic, barium, chromium, copper, iron, lead, manganese and nickel. A problem with sample homogeneity appears to be the cause.

Antimony, chromium mercury and selenium failed the control limits for spike recovery analysis resulting in an "N" flag. Again, the previously mentioned homogeneity problem appears to be the cause for the resultant flags.

No other problems occurred.

I certify that this data package is in compliance with the terms of this contract, both technically and for completeness, for other than the conditions detailed above. Release of this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Jeffrey C. Curran
Laboratory Manager

Dec. 13, 1993
Date

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346

19

30930-1332
ROUX ASSOCIATES

SDG Narrative

Volatile Organics - Samples S-129(3-5), MW-54(3-5) and MW-58(2-3') were all run by NYSDEC '91 ASP as medium level soils due to elevated chromatography.

Extractions - The client requested sample TW-3 be analyzed at low levels for PCB's. The extract final volume for samples TW-3 and F/B 120693 was decreased by a factor of 10 and the amount of surrogate added was decreased by the same amount in order to accommodate the low level PCB's the client requested.

Semi-Volatile Organics - Due to matrix interference, sample S-135(3-3.5') exhibited internal standard area suppression.

Several matrix spike compounds exhibited high recoveries in the matrix spike blank.

PCB's - All soil samples required GPC cleanup.

Due to the sample matrix, samples S-129(3-5), MW-54(3-5), S-135(3-3.5'), S-139(3-3.1'), F/B 120793 and TW-3 required sulfur and acid cleanups.

Samples MW-54(3-5) and S-129(3-5) and method blank PBLK72 had surrogate recoveries out of advisory QC limits.

Aroclors in several samples were weathered and therefore some peaks are outside of retention time windows.

Petroleum Hydrocarbon Scan - The samples were extremely weathered making it very difficult to precisely identify any specific hydrocarbon; therefore they were calculated in comparison to the kerosene standard with integration from 9 min. to 22 min. and reported as kerosene.

Samples MW-54(3-5) and MW-58(2-3') required dilutions.

Metals - One "E" flag resulted from serial dilution of sample MW-54(3-5) for barium. There is no apparent reason why this resulted, further study would be required to determine the cause.

Lead, selenium and thallium failed the control limits for spike recovery analysis of batch QC sample 136904 resulting in "N" flags. A matrix effect appears to be the cause of the flags.

IEC's are electronically employed by the TJA ICAP-61. However, the ICSA is utilized as a monitoring device to detect any additional adjustments that may be required. These modifications are calculated and applied manually. They are so noted in the raw data.

No other problems were encountered.

I certify that this data package is in compliance with the terms of this contract, both technically and for completeness, for other than the conditions detailed above. Release of this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Jeffrey C. Curran
Laboratory Manager

Jan. 19, 1994
Date

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND
ANALYTICAL REQUIREMENT SUMMARY

002

JOB # : 3093-1274

CUSTOMER SAMPLE CODE	LABORATORY SAMPLE CODE	ANALYTICAL REQUIREMENTS*						
		*VOA GC/MS	*BNA GC/MS	*VOA GC	*PEST PCB	*METALS	*OTHER	*OTHER
TRIP BLANK 110993	1274001	X						
FIELD BLANK 110993	1274002	X	X		X	X		
S-134, 2-4'	1274003	X	X		X	X		

* Check Appropriate Boxes

* CLP, Non-CLP
* HSL, Priority Pollutant

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOA - TCL + TIC's
ANALYSIS

JOB # : 3093-1274

003

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
TRIP BLANK 110893	Aqueous		11/10/93	N/A	11/13/93
FIELD BLANK 110893	Aqueous	11/08/93	11/10/93	↓	↓
S-134. 2-4'	Soil	↓	11/10/93	↓	11/12/93

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
B/N-A - TCL + TIC's
ANALYSIS

JOB # : 3093-127 00 4

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
FIELD BLANK 110893	Aqueous	11/10/93	11/10/93	11/12/93	12/02/93
S-134. 2-4'	Soil	↓	11/10/93	11/13/93	12/02/93
S-134 2-4' MS	↓	↓	↓	↓	↓
S-134 2-4' MSD	↓	↓	↓	↓	↓
S-134 2-4' MSB	↓	↓	↓	↓	12/02/93

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

00 5

SAMPLE PREPARATION AND ANALYSIS SUMMARY
B/N-A - TCL + TIC's
ORGANIC ANALYSIS

JOB # : 3093-1274

amc 12/10/93

SAMPLE ID	MATRIX	ANALYTICAL PROTOCOL	EXTRACTION METHOD	AUXILARY CLEAN UP	DIL/CONC FACTOR
FIELD BLANK 110893	Aqueous	~~SW846~~	3SEPF	NONE	1.0
S-134, 2-4'	Soil	↓	SONC	GPC	↓
S-134 2-4' MS	↓		↓	↓	
S-134 2-4' MSD					
S-134 2-4' MSB					

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PCB
ORGANIC ANALYSIS

JOB # : 1093-127

SAMPLE ID	MATRIX	ANALYTICAL PROTOCOL	EXTRACTION METHOD	AUXILARY CLEAN UP	DIL/CONC FACTOR
FIELD BLANK 110993	SAMPLE		SEPF	N	1.0
S-13A 2-4'	SOIL		SONC	GPC CLEAN UP	✓

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

00 7

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PCB
ANALYSIS

JOB # : 3093-127A

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
FIELD BLANK 111993	AQUEOUS		11/10/93	11-12-93	11-17-93
S-134, 2-4'	SOIL		11/10/93	11-15-93	11-17-93

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

00 8

SAMPLE PREPARATION AND ANALYSIS SUMMARY
HYDROCARBON SCAN
ANALYSIS

SDG # : 2043-1274

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
B-124, 2-4'	S-I		11/10/93	11/23/93	12/02/93

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
HYDROCARBON SCAN
ORGANIC ANALYSIS

JOB # : 2093-1274

SAMPLE ID	MATRIX	ANALYTICAL PROTOCOL	EXTRACTION METHOD	AUXILARY CLEAN UP	DIL/CONC FACTOR
B-154, 2-4'	Soil	SW846	~~Sept~~ Sonic [illegible] 11-3-93	NONE	1.0

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

0010

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSIS

JOB # : 3093-1274

ICAP

SAMPLE ID	MATRIX	METALS REQUESTED	DATE RECEIVED	DATE DIGESTED	DATE ANALYZED
FIELD BLANK 110893	Aqueous	TAL METALS	11/10/93	12/1/93	12/7/93
S-134, 2-4'	Soil	TAL METALS	11/10/93	12/3/93	↓

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

0 02

SAMPLE IDENTIFICATION AND
ANALYTICAL REQUIREMENT SUMMARY

JOB # : 3093-1332

CUSTOMER SAMPLE CODE	LABORATORY SAMPLE CODE	ANALYTICAL REQUIREMENTS*						
		*VOA GC/MS	*BNA GC/MS	*VOA GC	*PEST PCB	*METALS	*OTHER	*OTHER
T/B 112993	1332001	X						
F/B 112993	1332002	X	X		X	X		
S-129 (3-5')	1332003	X	X		X	X		
MW-54 (3-5')	1332004	X	X		X	X		
S-135 (3-3.5')	1332005	X	X		X	X		
S-139 (3-3.1')	1332006	X	X		X	X		
MW-56 (2-4')	1332007	X	X		X	X		
F/B 120793	1332008	X	X		X	X		
T/B 120793	1332009	X						
IW-3	1332010		X		X			
F/B 120993	1332011		X		X			

* Check Appropriate Boxes

* CLP, Non-CLP
* HSL, Priority Pollutant

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOA - TCL + TIC's
ANALYSIS

JOB # : 3093-1302

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
T/B 112993	Aqueous		12/01/93	N/A	12/02/93
F/B 112993	Aqueous	11/29/93	12/01/93	N/A	
S-129 (3-5)	Soil		12/01/93	12/06/93	12/06/93
MW-54 (3-5)	Soil		12/01/93		12/06/93
S-135 (3-3.5')	Soil	12/07/93	12/09/93	N/A	12/10/93
S-139 (3-3.5')	Soil		12/09/93	N/A	12/10/93
MW-58 (2-3')	Soil		12/09/93	12/07/93	12/13/93
F/B 120793	Aqueous		12/09/93	N/A	12/10/93
T/B 120793	Aqueous		12/09/93		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
B/N-A - TCL + TIC's
ANALYSIS

JOB # : 3093-1332

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
F/B 112993	Aqueous	11/29/93	12/01/93	12/06/93	12/20/93
S-129 (3-5)	Soil	↓	12/01/93	12/03/93	12/21/93
MW-54 (3-5)	Soil	↓	12/01/93	↓	12/27/93
S-135 (3-3.5')	Soil	12/07/93	12/08/93	12/10/93	12/20/93
S-139 (3-3.1')	Soil	↓	12/06/93	↓	12/20/93
MW-58 (2-3')	Soil	↓	12/08/93	↓	12/27/93
F/B 120793	Aqueous	↓	12/06/93	12/09/93	12/20/93
TW-3	Aqueous	↓	12/08/93	↓	↓
F/B 120693	Aqueous	↓	12/06/93	↓	↓
SBLKDC_MSB	SOIL	NA	NA	12/03/93	12/20/93
SBLKDC_FBMS	↓	NA	NA	↓	12/20/93

cme 1/14/94

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
B/N-A - TCL + TIC's
ORGANIC ANALYSIS

JOB # : 3093-1332

GMC 1/14/94

SAMPLE ID	MATRIX	ANALYTICAL PROTOCOL	EXTRACTION METHOD	AUXILARY CLEAN UP	DIL/CONC FACTOR
F/B 112993	Aqueous	SW846	SEPF	NONE	1.0
S-129 (3-5)	Soil		SONC	GPC	1.0
MW-54 (3-5)	Soil				~~1.0~~ 20.0
S-135 (3-3.5')	Soil				1.0
S-139 (3-3.1')	Soil				1.0
MW-58 (2-3')	Soil				20.0
F/B 120793	Aqueous		SEPF	NONE	1.0
TM-3	Aqueous				1.0
F/B 120693	Aqueous		SONC	GPC	1.0
SBLKDCMSB	SOIL				1.0
SBLKDCFMS					

GMC 1/14/94

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY

PCB

ORGANIC ANALYSIS

JOB # . [illegible]

A. [illegible] 12-28-93

SAMPLE ID	MATRIX	ANALYTICAL PROTOCOL	EXTRACTION METHOD	AUXILARY CLEAN UP	DIL/CONC FACTOR
F/A 112993	Aqueous	N4848	Sep F	ø	1.0
S-129 (3-5)	Soil		SONC	GPC acid + S^{2-}	
MW-5A (3-5)	Soil				
S-125 ([illegible]')	Soil				
S-130 ([illegible]')	Soil				
MW-5A (2-3')	Soil				
F/B 120793	Aqueous		Sep F	acid + S^{2-}	
TW-3	Aqueous				
F/D 120893	Aqueous				

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PCB
ANALYSIS

JOB # : 2093-1332

SAMPLE I.	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
F/B 112993	Aqueous	11/29/93	12/01/93	12/03/93	12/07/93
S-129 (2-5)	Soil		12/01/93		
MW-58 (3-5)	Soil		12/01/93		
S-135 (3-4.5')	Soil	12/07/93	12/08/93	12/10/93	12/15/93
S-139 (2-3')	Soil		12/08/93		
MW-59 (2-3')	Soil		12/08/93		
F/B 120793	Aqueous		12/08/93	12/09/93	12/15/93
TW-3	Aqueous		12/08/93		
F/B 120893	Aqueous		12/08/93		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
HYDROCARBON SCAN
ORGANIC ANALYSIS

JOB # : 3092-1222

SAMPLE ID	MATRIX	ANALYTICAL PROTOCOL	EXTRACTION METHOD	AUXILARY CLEAN UP	DIL/CONC FACTOR
S-129 (3-5)	Soil	NY846	SONC	N/A	1.0
MW-54 (3-5)	Soil	↓	↓	↓	10.
S-135 (3-3.5')	Soil	↓	↓	↓	1.0
S-139 (3-3.1')	Soil	↓	↓	↓	1.0
MW-59 (2-3')	Soil	↓	↓	↓	20.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
HYDROCARBON SCAN
ANALYSIS

JOB # : [illegible]

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
S-129 (3-5)	Soil	11/29/93	12/01/93	12/03/93	12/18/93
MW-54 (3-5)	Soil	↓	12/01/93	↓	↓
S-135 (3-3.5')	Soil	12/07/93	12/08/93	12/13/93	12/17/93
S-139 (3-3.1')	Soil	↓	12/08/93	↓	↓
MW-50 (2-3')	Soil	↓	12/08/93	↓	↓

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSIS

JOB # : 3093-1332

ICAP

SAMPLE ID	MATRIX	METALS REQUESTED	DATE RECEIVED	DATE DIGESTED	DATE ANALYZED
F/B 112993	Aqueous	TAL METALS	12/01/93	12/21/93	1/18/94
S-129 (3-5)	Soil	TAL METALS	12/01/93	1/5/94	
MW-54 (3-5)	Soil	TAL METALS	12/01/93		
S-135 (3-3.5')	Soil	TAL METALS	12/08/93		
S-139 (3-3.1')	Soil	TAL METALS	12/08/93		
MW-56 (2-3')	Soil	TAL METALS	12/08/93		
F/B 120793	Aqueous	TAL METALS	12/08/93	12/29/93	

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346

September 6, 1994

Mr. Harry Gregory
Roux Associates
1377 Motor Parkway
Islandia, NY 11788

Dear Mr. Gregory,

As you requested IEA-CT has gone back over the petroleum hydrocarbon scan data from our report 30940-0121 as well as reports 30930-1274 and 30930-1332. In these reports we stated the hydrocarbon detected appeared to be a mixture of products in the same distillation range as kerosene and diesel fuel. In our recent telephone conversations Roux informed IEA-CT that a search of the site historical data indicated that #2 oil was the predominant product in use at the site. IEA-CT agreed the hydrocarbon product detected in the gas chromatography (GC) analysis could indeed be a weathered #2 oil as this material has the same distillation range as diesel fuel and kerosene.

IEA-CT also agreed to reintegrate and requantitate the samples using the #2 oil standard run along with the samples. The results of this were as follows:

Report 30940-0121

Sample ID	Result, mg/Kg as rec'vd
MW-53	961,000
MW-54	1,550,000
MW-60	920,000
MW-50	1,090,000

Report 30930-1274

Sample ID	Result, mg/Kg dry basis
S-134 (2'-4')	1,350

Report 30930-1332

Sample ID	Result, mg/Kg dry basis
S-129 (3'-5')	770
MW-54 (3'-5')	11,300
MW-58 (2'-3')	13,900

In some instances these values are quite different from the original values reported as kerosene. This is due to the differences in the chromatograms of the samples and the two standards. For example in report 30940-0121 the sample chromatogram showed the presence of a hydrocarbon envelope with a large rising of the baseline (see Figures 1.0 and 1.1). The chromatogram of the kerosene also shows a rising of the baseline (see Figure 2.0) while the chromatogram of the #2 oil standard shows only slight baseline rising (see Figure 3.0). In the case of #2 oil the integration of the samples will be biased high due to the larger baseline rise associated with the samples compared to the standard. (This would also explain the concentration found in sample MW-54 as being over 100%).

If you have further questions please call either myself or Kathy Rasbach at (203) 261-4458.

Sincerely yours,

Jeffrey C. Curran
Laboratory Manager

cc. K. Rasbach

Data Validation Services

Cobble Creek Road P. O. Box 208
North Creek, N. Y. 12853
Phone 518-251-4429

TO: Roux Associates

FROM: Judy Harry, Data Validation Services J. Harry

DATE: 04-08-94

RE: Validation of Amtrak Site data packages
IEA SDG Nos. Z0120 and Z0121

Review has been performed on the data packages generated by IEA Labs pertaining to samples collected at the Amtrak site. A total of eleven aqueous samples and a field blank were processed for volatiles, semivolatiles, and PCBs. Eight of these and the field blank were also analysed for TCL metals, and two additional aqueous samples were processed for PCBs. Four oil samples were analysed for PCBs and TPHs. A trip blank, and matrix spikes/duplicates were processed. The methodologies utilized were EPA-8240 and EPA-8270 (both under the 1991 NYSDEC ASP), metals by ASP CLP-M, and PCBs by 1989 NYSDEC ASP. The aqueous sample PCB extracts were reduced tenfold in volume to provide lower detection limits.

In summary, certain noncompliancies with the protocol were observed, but in most cases do not impact negatively on the reported results. These are discussed in detail below, and noted on the attached compliancy chart. Listed immediately below are the recommended edits and qualifications to reported results which are indicated by outlying quality control results. These outliers relate primarily to matrix effects. Results of other quality issues are addressed in the subsequent sections. A copy of the communication regarding clarification from the laboratory is attached to this report.

Recommended edits and/or qualifications to sample reported results are as follows:

1. Certain of the PCB analyses produced chromatographic background responses which effectively obscure response at retention times which correspond to some of the PCB isomers. Although the interferences may be matrix related, it is also noted that significant interference was also noted in the spiked blank associated with the sample matrix spikes. Specific review of each sample indicates a consideration of the detection limits of the following Aroclor mixtures as estimated:

Sample	Mixtures
MW-46 and MW-38D	Aroclor 1260
MW-35	All Aroclor mixtures
MW-40D	Aroclor 1254

2. The matrix spikes of MW-57 do not provide good recovery correlation for the Aroclor 1260 spike mixture. Recoveries of 60% and 110% (59%RPD) were observed. These were paralleled by the respective surrogate recoveries (71% and 122%). No matrix interferences are evident on the chromatograms, and the nature of the variance (extraction partitioning, cleanup recoveries, matrix effect, extract volumes, injection volumes, active sites, etc) is not readily obvious. Because this variance and subsequent uncertainty in values is present at the spike level of 0.2 ug/L, the reported detection limits of 0.065 ug/L of the Aroclor mixtures may also be subject to the same uncertainty. Sample surrogate recoveries range from 50% to 85% (although it is important to note that recoveries of surrogate DBC from the extraction and cleanup steps typically do not relate directly to those of the PCBs).

3. The reported value for Aroclor 1254 in sample MW-60 should have been flagged "J", as the value is below the adjusted CRDL of 4800 ug/kg.

4. Two of the oil samples reported mixes of Aroclor 1254 and Aroclor 1260. The resultant quantitative value of each Aroclor mixture is impacted by contribution from common isomers, and should be considered estimated. A consideration of results as estimated is typical in cases of multiple mixtures, due to co-contribution and weathering effects.

5. Due to outlying values (outside 85% to 115%) from post-digest spike determinations, the following element values and/or detection limits should be considered estimated:

Sample	Element	Post-Digest Spike
MW-37	Arsenic	60%
	Lead	60
FB021794	Lead	66
	Selenium	64
MW-59	Lead	68
	Selenium	62
MW-57	Selenium	74
MW-62D	Lead	68
	Selenium	70
MW-61	Lead	70
MW-49	Lead	78
	Selenium	81
MW-63	Lead	66
	Selenium	55
Replicate	Lead	76
	Selenium	70

6. There should be no "W" flag on the arsenic result for MW-59.
There should be a "W" flag on the selenium result of MW-62D.

7. Samples MW-63, MW-49, and MW-40D produced no recovery for two acid surrogates. This was confirmed as matrix effect upon reextraction. Therefore the results of the acidic compounds (benzoic acid and all --phenols are unusable. The reported results of the base/neutral compounds in the first analyses of both samples are acceptable as reported, unless noted otherwise in this text. Due to holding time considerations, the reanalysis data are not useful except to confirm matrix effect.

8. The semivolatile analyses of samples MW-57 and MW-49 produced low response for internal standard d12-perylene, at 35% and 37%, respectively (below the limit of 50%). The reported results/detection limits for the following compounds in the two samples should be considered estimated: di-n-octylphthalate, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene, and benzo(g,h,i)perylene

9. Due to erratic response for 4-chloroaniline (34%RSD) and 4,6-dinitro-2-methylphenol (94%RSD) in the calibration curve of 2/25/94, the reported detection limits for these compounds in all project samples except MW-59 and Replicate should be considered estimated. The standards showed responses which were of significant variance as to lend doubt to detection at the reported detection limits.

10. Due to nonlinear response (35%RSD) for chloromethane in the initial calibration, in which the lower concentration standards produced relatively depressed response, the reported detection limits for this compound in all volatile samples should be considered possibly biased low. No corrective action was required of the laboratory.

11. Many of the volatile and semivolatile report Forms 1 show significant figures three places to the right of the decimal point (i.e. "10.000 ug/L"). The accuracy of the raw data do not support this number of significant figures. The results should be rounded to one unit to the left of the decimal point (or to one to the right, in the cases where results are less than 1.0).

12. Reported detections of acetone, di-n-butylphthalate, and bis(2-ethylhexyl)phthalate should be rejected for consideration as sample components. These analytes were detected (at compliant levels) in the associated method, field, and/or trip blanks at concentrations similar to those found in the samples. The reported results for these compounds in the samples should be edited to reflect nondetection at either the CRDL, or at the originally reported value, whichever is greater. Although not reported in the associated blanks, other phthalates detected are also suspect as contaminants.

13. Any volatile or semivolatile target analyte or Tentatively Identified Compounds (TIC) with a "B" or "A" flag should be rejected for consideration as a sample component.

14. The volatile TIC reported for sample MW-57 is a phthalate. The ID is properly noted on the form, but the name is truncated.

VOLATILE ANALYSES

Holding times, surrogate recoveries, method blank requirements, instrumental tunes, and internal standard areas/retention times were met for sample processing. Sample matrix spikes were performed on MW-57; recoveries and duplicate correlation values were acceptable. Matrix spike blank and Laboratory Fortified Blank (LFB) recoveries were also acceptable.

Calibration standards met protocol requirements. Certain elevated responses were observed in daily standards, but as these compounds were not detected in the samples (exception of acetone), qualification is not recommended. Acetone values are rejected due to copresence in blanks. Please see the above discussion above regarding qualification of chloromethane detection limits.

SEMIVOLATILE ANALYSES

Holding times, method blanks, and instrumental tune requirements were met for sample processing. With the exceptions of those samples noted earlier, surrogate recoveries met the criteria.

The matrix spikes of sample MW-57 produced acceptable recoveries and duplicate correlation values. The associated matrix spike blank produced compliant recoveries.

Calibration standards met protocol requirements for response and correlation, although erratic lack of response was noted for several compounds in isolated standards (i.e. 4,6-dinitro-2-methylphenol in the 160 ppm standard of 3/9/9, 4-chlorophenylphenyl-ether in the 120 ppm standard of 3/15/94, and others). Numerous compounds produced elevated %RSD values for the curve and elevated %D values for the daily standards. In each case, specific review was performed during validation to determine if sample reported results are affected. Please see the above qualification for 4-chloroaniline and 4,6-dinitro-2-methylphenol responses, which did not required corrective action.

Please see the above discussion regarding depressed internal standard areas for certain samples. In addition, sample MW-39D produced a low recovery (45%; limit of 50%) for d12-perylene. Examination of the chromatogram does not show any apparent matrix effect contributing to this suppression of response. Due to sensitivity of system, and nondetection of associated compounds, no qualification is recommended.

PCB ANALYSES

Holding times, surrogate recoveries, and method blank criteria were met for sample processing.

Sample matrix spikes of Aroclor 1260 were performed on MW-57, with precision and duplicate correlation values as discussed earlier. The aqueous matrix spike blank produced recovery for Aroclor 1260 of 84% (not 110%, as reported). A full matrix spike was also performed with Aroclors 1242 and 1260, with recoveries of 77% and 74%, respectively. The matrix spikes of batch QC of oil dilution were produced 120% recovery for Aroclor 1260; the associated matrix spike blank had 140% recovery.

Linearity and breakdown requirements were met.

Standard processing was not in compliance with protocol requirements as relates to pesticide responses. Some of the analysis sequences involved primary column standard responses which exceed the limit of 15% Difference (up to 49%D), and/or confirmation column standards which exceeded the limit of 20%D (up to 37%D). In most cases, pesticide responses were elevated, so adequate sensitivity of the analytical system was not compromised. It is observed that although certain sequences produced outlying responses for one or more pesticides, the responses of Aroclor mixtures which were also run as intermittant standards provided good correlation (%D values). Consequently, the reported PCB values for the samples processed in these noncompliant sequences have not been recommended for qualification.

Please see the discussion in the qualification section regarding background interferences. These interferences were more prevalent in those samples of SDG Z0120, which were not noted on the raw data as having gone through the sulfur and acid cleanups. Most of those of SDG Z0121 were processed through the cleanups. All sample reported values were verified for qualitative identification and quantitative calculation and transcription.

METALS ANALYSES

Holding times were met. All protocol requirements for sample processing were reviewed for compliancy and were found to be acceptable unless noted specifically within this text.

The precision and accuracy determinations were performed on sample MW-57, and resulted in all values within recommended ranges. Serial dilution evaluations of MW-57 and MW-37 were also acceptable.

Please see the above discussions regarding outlying furnace post-matrix spike (PDS) recoveries. Although outlying recoveries are often matrix related, certain of the sequences in which samples produced low recoveries (i.e. arsenic and lead on 3/14/94) also had low recoveries for the prep blanks. The prep blanks were reanalysed in later sequences with acceptable recoveries. Although the samples were processed in compliance with the protocol, and it is acceptable to reanalyse a blank one time, it would have been preferable to also reanalyse the samples which were processed in the conditions which produced outlying recoveries for the blanks.

TOTAL PETROLEUM HYDROCARBONS

As discussed in the case narrative, the characterization of the hydrocarbons in the samples was difficult due to weathering. The quantitative values were determined from a comparison to kerosene, which produced the best match of those evaluated.

Standard linearity was good. All reported values were verified for calculation and transcription. Although dilution factors were not present on the submitted raw data, the laboratory verified that those used in the reported values are accurate. No report forms were present in the data packages; values were verified to those reported in the separate project summary Table GC-2.0.

COMPLIANCY CHART

Project: Roux Associates

SDG Nos: IEA SDG Nos. Z0120 and Z0121

Protocol: SW846 by 1991 and 1989 NYSDEC ASP

RecDate	Sample ID	Matrix	VOA	BNA	PCB	Metals	Other	Noncompl
02-18-94	MW-46	Aqueous	NR	NR	NO	NR	OK	1
02-18-94	MW-37	Aqueous	OK	OK	NO	OK	OK	1
02-18-94	MW-38D	Aqueous	OK	OK	NO	NR	OK	1
02-18-94	MW-39D	Aqueous	OK	OK	NO	NR	OK	1
02-18-94	MW-35	Aqueous	NR	NR	NO	NR	OK	1
02-18-94	MW-40D	Aqueous	OK	OK	NO	NR	OK	1
02-18-94	MW-62D	Aqueous	OK	OK	NO	OK	OK	1
02-18-94	MW-61	Aqueous	OK	OK	NO	OK	OK	1
02-18-94	MW-49	Aqueous	OK	OK	NO	OK	OK	1
02-18-94	MW-63	Aqueous	OK	OK	NO	OK	OK	1
02-18-94	MW-57	Aqueous	OK	OK	NO	OK	OK	1
02-18-94	MW-59	Aqueous	OK	OK	NO	OK	OK	1
02-18-94	REPLICATE	Aqueous	OK	OK	NO	OK	OK	1
02-18-94	MW-53	Oil	NR	NR	NO	NR	OK	1
02-18-94	MW-54	Oil	NR	NR	NO	NR	OK	1
02-18-94	MW-60	Oil	NR	NR	NO	NR	OK	1
02-18-94	MW-50	Oil	NR	NR	NO	NR	OK	1
02-18-94	FB-021794	Aqueous	OK	OK	NO	OK	OK	1
02-18-94	TB-021794	Aqueous	OK	NR	NR	NR	OK	

1. Pesticide/PCB calibration standards with outlying differences for primary and/or confirmation analyses.

Data Validation Services

Cobble Creek Road P. O. Box 208
North Creek, N. Y. 12853
Phone 518-251-4429

FACSIMILE TRANSMISSION

Date: 4-7-94

To: Marsha Culik

Company: IEA

From: Judy Harvey

Number of pages including cover: 1

Comments: Re: Roux Associates
SDG 30940-Z0121
The TPH results for the 4 oil samples are reported in the Project Summary Tables with dilution factors incorporated as 1:50. The raw chromatograms show only MW-53 with a dilution factor. No other documentation is present to indicate other than a 1:1 dilution for the other three samples. Can you please clarify?

Thanks,
Judy

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346

19

30940-0121
ROUX ASSOCIATES

SDG Narrative

Volatile Organics - The ratio of cis-1,3-dichloropropene versus trans-1,3-dichloropropene is 47 and 53 percent, respectively.

Extractions - The client requested low level PCB analysis on the aqueous samples. These extracts were concentrated to 1 mL rather than the usual final volume of 10 mLs. Therefore, the surrogate mass added was decreased to keep the surrogate concentration in the linear range.

The GC/MS group reported low surrogate recoveries on sample MW-49 and MW-63. The client requested re-extraction past holding time to confirm matrix interferences. The samples were re-extracted on 03/08/94.

Semi-Volatile Organics - Samples MW-49 and MW-63 exhibited poor acid surrogate recoveries. The samples were re-extracted on 03/08/94 and reanalyzed with similar results, therefore proving matrix interference. Both sets of data have been submitted with the reanalyses designated with the suffix "RE".

Samples MW-49 and MW-57 exhibited internal standard area suppression.

Metals - No problems occurred during analysis. All appropriate protocols were employed. All data appears to be consistent.

PCB's - Acid and sulfur cleanup was required on all samples. Surrogate recovery was high due to coelution of DBC with Aroclor-1260 in samples MW-50 and MW-57 MSB.

Petroleum Hydrocarbon Scan - The samples exhibited a series of peaks indicating a petroleum hydrocarbon material was present. The chromatograms were compared to a series of standards. The data indicated a probable mixture of products present in the same distillation range as kerosene and diesel fuel.

The samples were quantitated against kerosene and reported as such. All samples required a dilution due to the concentrations present.

I certify that this data package is in compliance with the terms of this contract, both technically and for completeness, for other than the conditions detailed above. Release of this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Jeffrey C. Curran
Laboratory Manager

3/18/94
Date

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346

017

30940-0120
ROUX ASSOCIATES

SDG Narrative

Volatile Organics - The ratio of cis-1,3-dichloropropene versus trans-1,3-dichloropropene is 47 and 53 percent respectively.

Extractions - The client requested low level PCB analysis on all samples. The extracts were concentrated to 1 mL rather than the usual final volume of 10 mLs. Therefore, the surrogate mass added was decreased to keep the surrogate concentration in the linear range.

The GC/MS group reported low surrogate recoveries on sample MW-40D. The client requested re-extraction past holding time to confirm matrix interferences. The sample was re-extracted on 03/08/94.

Semi-Volatile Organics - Sample MW-40D exhibited poor acid surrogate recoveries upon analysis of the original extract. The sample was re-extracted on 03/08/94 and reanalyzed with similar results, therefore proving matrix interference with the reanalysis designated with the suffix "RE".

PCB's - Forms indicating mass injected for both evaulation and Individual mixes have been submitted.

Metals - No problems occurred during analysis. All appropriate protocols were employed. All data appears to be consistent.

I certify that this data package is in compliance with the terms of this contract, both technically and for completeness, for other than the conditions detailed above. Release of this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Jeffrey C. Curran
Laboratory Manager

March 17, 1994
Date

Sunrise, Florida 305·846·1730
Schaumburg, Illinois 708·705·0740
N. Billerica, Massachusetts 617·272·5212
Whippany, New Jersey 201·428·8181
Research Triangle Park, North Carolina 919·677·0090

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

*0002

SAMPLE IDENTIFICATION AND
ANALYTICAL REQUIREMENT SUMMARY

JOB # : 3094-0121

CUSTOMER SAMPLE CODE	LABORATORY SAMPLE CODE	ANALYTICAL REQUIREMENTS*						
		*VOA GC/MS	*BNA GC/MS	*VOA GC	*PEST PCB	*METALS	*OTHER	*OTHER
MW-62D	0121001	X	X		X	X		
MW-61	0121002	X	X		X	X		
MW-49	0121003	X	X		X	X		
MW-63	0121004	X	X		X	X		
FB 021794	0121005	X	X		X	X		
MW-57	0121006	X	X		X	X		
MW-59	0121007	X	X		X	X		
REPLICATE	0121008	X	X		X	X		
MW-53	0121009				X			
MW-54	0121010				X			
MW-60	0121011				X			
MW-50	0121012				X			
TB 021794	0121013	X						

- Check Appropriate Boxes

* CLP, Non-CLP
* HSL, Priority Pollutant

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

0003

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOA - TCL + TIC's
ANALYSIS

JOB # : 3094-0121

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
MW-62D	Aqueous	02/17/94	02/18/94	N/A	02/21/94
MW-61	Aqueous		02/18/94		
MW-49	Aqueous		02/18/94		
MW-63	Aqueous		02/18/94		
FB 021794	Aqueous		02/18/94		02/22/94
MW-57	Aqueous		02/18/94		
MW-59	Aqueous		02/18/94		
REPLICATE	Aqueous		02/18/94		
TB 021794	Aqueous		02/18/94		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

0004

SAMPLE PREPARATION AND ANALYSIS SUMMARY
B/N-A - TCL + TIC's
ANALYSIS

JOB # : 3094-0121

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
MW-62D	Aqueous	02/17/94	02/18/94	02/22/94	03/01/94
MW-61	Aqueous		02/18/94		
MW-49	Aqueous		02/18/94		
MW-63	Aqueous		02/18/94		
FB 021794	Aqueous		02/18/94		
MW-57	Aqueous		02/18/94		
MW-59	Aqueous		02/18/94		03/16/94
REPLICATE	Aqueous		02/18/94		
MW-49RE				03/08/94	03/16/94
MW-63RE					
MW-57MS				02/22/94	03/15/94
MW-57MSD					
MW-57MSB		NA			03/16/94
0222-B01EMS		NA			03/15/94

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

0005

SAMPLE PREPARATION AND ANALYSIS SUMMARY
B/N-A - TCL + TIC's
ORGANIC ANALYSIS

JOB # : 3094-0121

SAMPLE ID	MATRIX	ANALYTICAL PROTOCOL	EXTRACTION METHOD	AUXILARY CLEAN UP	DIL/CONC FACTOR
MW-62D	Aqueous	SW846	SEPF	NONE	1.0
MW-61	Aqueous				
MW-49	Aqueous				
MW-63	Aqueous				
FB 021794	Aqueous				
MW-57	Aqueous				
MW-59	Aqueous				
REPLICATE	Aqueous				
MW-49RE					
MW-63RE					
MW-57MS					
MW-57MSD					
MW-57MSB					
0222-B01FMS					

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PCB
ORGANIC ANALYSIS

JOB # : 3094-0121

SAMPLE ID	MATRIX	ANALYTICAL PROTOCOL	EXTRACTION METHOD	AUXILARY CLEAN UP	DIL/CONC FACTOR
MW-620	Aqueous	NYSDEC-89	SEPF	ACID + SULFUR	1.0
MW-61	Aqueous	↓	↓	↓	↓
MW-49	Aqueous	↓	↓	↓	↓
MW-63	Aqueous	↓	↓	↓	↓
FB 021794	Aqueous	↓	↓	↓	↓
MW-57	Aqueous	↓	↓	↓	↓
MW-59	Aqueous	↓	↓	↓	↓
REPLICATE	Aqueous	↓	↓	↓	↓
MW-53	OIL	↓	BAL	↓	↓
MW-54	↓	↓	↓	↓	↓
MW-60	↓	↓	↓	↓	↓
MW-50	↓	↓	↓	↓	↓

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PCB
ANALYSIS

JOB # : 3094-0121

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
MW-62D	Aqueous		02/18/94	02-22-94	03-07-94
MW-61	Aqueous		02/18/94		
MW-49	Aqueous		02/18/94		
MW-63	Aqueous		02/18/94		03-08-94
FB 021794	Aqueous		02/18/94		
MW-57	Aqueous		02/18/94		
MW-59	Aqueous		02/18/94		
REPLICATE	Aqueous		02/18/94		
MW-53	OIL		02/18/94	02-22-94	03-04-94
MW-54			02/18/94		
MW-60			02/18/94		
MW-50			02/18/94		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
HYDROCARBON SCAN
ORGANIC ANALYSIS

JOB # : 3094-0121

SAMPLE ID	MATRIX	ANALYTICAL PROTOCOL	EXTRACTION METHOD	AUXILARY CLEAN UP	DIL/CONC FACTOR
MW-53	OIL	NYSDEC-89	BAL		50
MW-54					
MW-60					20
MW-50					

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
HYDROCARBON SCAN
ANALYSIS

JOB # : 3094-0121

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
MW-53	01		02/18/94	2/22/94	3/1/94
MW-54	↓		02/18/94	↓	↓
MW-60			02/18/94		
MW-50			02/18/94		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSIS

JOB # : 3094-0121

ICAP

SAMPLE ID	MATRIX	METALS REQUESTED	DATE RECEIVED	DATE DIGESTED	DATE ANALYZED
MW-62D	Aqueous	TAL METALS	02/18/94	3/10/94	3/14/94
MW-61	Aqueous	TAL METALS	02/18/94		
MW-49	Aqueous	TAL METALS	02/18/94		
MW-63	Aqueous	TAL METALS	02/18/94		
FB 021794	Aqueous	TAL METALS	02/18/94		
MW-57	Aqueous	TAL METALS	02/18/94		
MW-59	Aqueous	TAL METALS	02/18/94		
REPLICATE	Aqueous	TAL METALS	02/18/94		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE IDENTIFICATION AND
ANALYTICAL REQUIREMENT SUMMARY

JOB # : 3094-0120

CUSTOMER SAMPLE CODE	LABORATORY SAMPLE CODE	ANALYTICAL REQUIREMENTS*						
		*VOA GC/MS	*BNA GC/MS	*VOA GC	*PEST PCB	*METALS	*OTHER	*OTHER
MW-46	0120001				X			
MW-37	0120002	X	X		X	X		
MW-38D	0120003	X	X		X			
MW-39D	0120004	X	X		X			
MW-35	0120005				X			
MW-40D	0120006	X	X		X			

* Check Appropriate Boxes

* CLP, Non-CLP
* HSL, Priority Pollutant

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOA - TCL + TIC's
ANALYSIS

JOB # : 3094-0120

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
MW-37	Aqueous	02/17/94	02/18/94	N/A	02/21/94
MW-38D	Aqueous		02/18/94		
MW-39D	Aqueous		02/18/94		
MW-40D	Aqueous		02/18/94		

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
B/N-A - TCL + TIC's
ANALYSIS

JOB # : 3094-0120

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
MW-37	Aqueous	02/17/94	02/18/94	02/22/94	03/04/94
MW-380	Aqueous		02/18/94		
MW-390	Aqueous		02/18/94		
MW-400	Aqueous		02/18/94		
MW-40DRE	↓	↓	↓	03/08/94	03/10/94
0222-B01FMS	↓	NA	NA	02/22/94	03/15/94

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

005

SAMPLE PREPARATION AND ANALYSIS SUMMARY
B/N-A - TCL + TIC's
ORGANIC ANALYSIS

JOB # : 3094-0120

amc 3/16/94

SAMPLE ID	MATRIX	ANALYTICAL PROTOCOL	EXTRACTION METHOD	AUXILARY CLEAN UP	DIL/CONC FACTOR
MW-37	Aqueous	~~10/88~~ 91/96	SEPF	NONE	1.0
MW-380	Aqueous	↓	↓	↓	1.0
MW-390	Aqueous				1.0
MW-400	Aqueous				1.0
MW-40D RE 0222-BO1 EMS	↓				1.0

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PCB
ANALYSIS

JOB # : 3094-0120

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
MW-46	Aqueous	02/17/94	02/18/94	0222-94	03-04-94
MW-37	Aqueous	↓	02/18/94	02-22-94	03-09-94
MW-380	Aqueous		02/18/94	02-22-94	03-09-94
MW-390	Aqueous		02/18/94	02-22-94	03-09-94
MW-35	Aqueous		02/18/94	02-22-94	03-09-94
MW-400	Aqueous		02/18/94	02-22-94	03-09-94

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PCB
ORGANIC ANALYSIS

JOB # : 3094-0120

SAMPLE ID	MATRIX	ANALYTICAL PROTOCOL	EXTRACTION METHOD	AUXILARY CLEAN UP	DIL/CONC FACTOR
MW-46	Aqueous	NYSDEC 89	SEPF	N/A	1.0
MW-37	Aqueous	↓	↓	↓	↓
MW-380	Aqueous				
MW-390	Aqueous				
MW-35	Aqueous				
MW-400	Aqueous				

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSIS

JOB # : 3094-0120

ICAP

SAMPLE ID	MATRIX	METALS REQUESTED	DATE RECEIVED	DATE DIGESTED	DATE ANALYZED
MW-37	Aqueous	TAL METALS	02/18/94	03/10/94	03/14/94

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSIS

JOB # : 3094-0120

Furnace

SAMPLE ID	MATRIX	METALS REQUESTED	DATE RECEIVED	DATE DIGESTED	DATE ANALYZED
MW-37	Aqueous	TAL METALS	02/18/94	03/10/94	03/14-16/94

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSIS

JOB # : 3094-012G

mercury

SAMPLE ID	MATRIX	METALS REQUESTED	DATE RECEIVED	DATE DIGESTED	DATE ANALYZED
MW-37	Aqueous	TAL METALS	02/18/94	03/09/94	03/10/94

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
TAL METALS
INORGANIC ANALYSIS

JOB # : 3094-0120

ICAP

LABORATORY SAMPLE CODE	MATRIX	ANALYTICAL PROTOCOL	DIGESTION PROCEDURE	MATRIX MODIFIER	DIL/CONC FACTOR
MW-37	Aqueous	CLP	HNO3, HCL	NA	1.1

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346

April 14, 1994

Ms. Linda Wilson
Roux Associates, Inc.
1377 Motor Parkway
Islandia, New York 11798

Dear Ms. Wilson:

The laboratory received a data validation from Data Validation Services for the Amtrak Site data packages, IEA SDG Nos. 3093-1274 and 3093-1332. The following is a response to the issues raised in the validation report.

Issues:

1. The low surrogate recoveries for samples MW-54(3-5) and MW-129(3-5) and associated method blank may have been a result of the acid clean-up procedure employed on these samples.

2. The Form I for the MSB has been resubmitted.

3. The Form I for sample MW-58(2-3) has been resubmitted with the CRQL adjusted to account for the reduced final volume. The reported values are above the CRQL levels and do not require a "J" qualifier.

4. The Form I for sample TW-3 has been resubmitted with the CRQL adjusted to account for the reduced final volume.

5. No action required, a matrix interference is present.

6. Sample S-135(3-3.5) exhibited a matrix interference which resulted in a suppressed Perylene-d12 internal standard response. The low response was the result of a matrix interference which is indicated by the sample chromatography, therefore, no reanalysis is necessary as per Method 8270.

7. No action required, all Method 8270 calibration criteria was achieved.

8. The laboratory utilizes a manual integration procedure for the four volatile gases to accurately quantitate the peaks. The manual integration procedure is not used for qualitative purposes to identify the gases. The laboratory's IDfiles which are used to identify the presence of the gases is set up to favor false positives. The four gases will correctly be identified if they are in a sample, therefore, a manual review of each for each

sample is not necessary.

9. No action required.

10. The significant figures presented on the Form I's are the result of the software the laboratory utilizes. The protocol specifies the significant figures to be used and all data is report to these, however, the presentation on the Form I adds additional zeros to completely fill in the field. The data is correctly rounded to the proper number of significant figures prior to the Form I presentation.

11. No action required.

12. No action required.

13. No action required.

14. No action required.

15. No action required.

16. The Form I for VBLKBW has been resubmitted.

Volatile Analyses

All calibration standards met the Method 8240 protocol requirements, as well as, NYSDEC 91-1 requirements. The minimum response factor requirement for 1,1,2,2-tetrachloroethane in Method 8240 is 0.300, which was achieved in the referenced calibration standards on 11/12/93 and 11/13/93 (at 0.471 and 0.475).

Semivolatile Analyses

The laboratory does not believe there was a spiking error for matrix spike sample. The phenol spike recovery was 58% and the phenol-d5 surrogate recovery was 70%, both within reason for the protocol. The extraction protocols require spiking the acid matrix spike compounds at concentrations above the upper calibration range of Method 8270. The soil samples were reduced to a final volume that was one-half of the usual final volume due to the GPC clean-up procedure used and the desire to maintain normal detection limits. The laboratory compensated for this by only spiking one-half the usual amount of surrogate and matrix spike solution. This maintains the protocol required on-column spiking levels for the surrogates and matrix spike compounds.

The low level soil method blanks contained the usual number of TICs for the sonication procedure required.

The 11/25/93 IDL has been resubmitted to correctly reflect the sample analysis period covered.

The full matrix spike recovery form has been resubmitted.

PCB Analyses

Calibration standard responses were in compliance with protocol requirements as relates to the pesticide responses, even though the sample analyses were for PCB only. The analytical sequence was stopped immediately after any continuing calibration standard which did not meet criteria, as per protocol requirements. The PCB continuing calibration standards which were intermittantly analyzed all had good correlation.

Metals Analyses

No action required.

Total Petroleum Hydrocarbons

No action required.

Very truly yours,

Marsha K. Culik
Quality Assurance Manager

Enclosure

cc: Judy Harry (DV Services)
Jeff Curran (IEA)
Larry Lewis (IEA)

1D

PCB ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S-134, 2-4' MSB

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 1274 SAS No.: _____ SDG No.: Z1274

Matrix: (soil/water) SOIL Lab Sample ID: 1274003MSB

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 11/10/93

% Moisture: not dec. 0 dec. _____ Date Extracted: 11/15/93

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 11/17/93

GPC Cleanup: (Y/N) Y pH: Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	~~160.~~ 80	U
11104-28-2	Aroclor-1221	~~160.~~	U
11141-16-5	Aroclor-1232	~~160.~~	U
53469-21-9	Aroclor-1242	~~160.~~	U
12672-29-6	Aroclor-1248	~~160.~~	U
11097-69-1	Aroclor-1254	~~320.~~ 160	U
11096-82-5	Aroclor-1260	280.	X

FORM I PCB 1/87 Rev.

0578

1D

PCB ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

MW-58 (2-3')

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 1332 SAS No.: _____ SDG No.: Z1332

Matrix: (soil/water) SOIL Lab Sample ID: 1332007

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

Level: (low/med) LOW Date Received: 12/08/93

% Moisture: not dec. 9 dec. _____ Date Extracted: 12/10/93

Extraction: (SepF/Cont/Sonc) SONC Date Analyzed: 12/15/93

GPC Cleanup: (Y/N) Y pH: 6.2 Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor-1016	~~180.~~ 88	U
11104-28-2	Aroclor-1221	~~180.~~	U
11141-16-5	Aroclor-1232	~~180.~~	U
53469-21-9	Aroclor-1242	~~180.~~	U
12672-29-6	Aroclor-1248	100.	
11097-69-1	Aroclor-1254	340.	
11096-82-5	Aroclor-1260	290.	

3/25/94

1D

PCB ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 0959

TW-3

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 1332 SAS No.: _____ SDG No.: Z1332

Matrix: (soil/water) WATER Lab Sample ID: 1332010

Sample wt/vol: 450. (g/mL) ML Lab File ID: _____

Level: (low/med) LOW Date Received: 12/08/93

% Moisture: not dec. _____ dec. _____ Date Extracted: 12/09/93

Extraction: (SepF/Cont/Sonc) SEPF Date Analyzed: 12/15/93

GPC Cleanup: (Y/N) N pH: Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
12674-11-2	Aroclor-1016	0.072 ~~0.14~~	U
11104-28-2	Aroclor-1221	~~0.14~~	U
11141-16-5	Aroclor-1232	~~0.14~~	U
53469-21-9	Aroclor-1242	~~0.14~~	U
12672-29-6	Aroclor-1248	~~0.14~~	U
11097-69-1	Aroclor-1254	2.4	
11096-82-5	Aroclor-1260	1.9	

3/4/94

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

VBLKBW

Lab Name: IEA Contract:

Lab Code: Case No.: 1332 SAS No.: SDG No.: Z1332

0368

Matrix: (soil/water) SOIL Lab Sample ID: VBLKBW

Sample wt/vol: 5 (g/mL) G Lab File ID: >B8048

Level: (low/med) LOW Date Received:

% Moisture: not dec. 0 Date Analyzed: 12/10/93

Column: (pack/cap) CAP Dilution Factor: 1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	10.000	U
74-83-9	Bromomethane	10.000	U
75-01-4	Vinyl Chloride	10.000	U
75-00-3	Chloroethane	10.000	U
75-09-2	Methylene Chloride	2.000	J
67-64-1	Acetone	10.000	U
75-15-0	Carbon Disulfide	5.000	U
75-35-4	1,1-Dichloroethene	5.000	U
75-34-3	1,1-Dichloroethane	5.000	U
540-59-0	1,2-Dichloroethene (total)	5.000	U
67-66-3	Chloroform	5.000	U
107-06-2	1,2-Dichloroethane	5.000	U
78-93-3	2-Butanone	10 ~~0.300~~	~~J~~ U
71-55-6	1,1,1-Trichloroethane	5.000	U
56-23-5	Carbon Tetrachloride	5.000	U
108-05-4	Vinyl Acetate	10 ~~0.300~~	~~J~~ U
75-27-4	Bromodichloromethane	5.000	U
78-87-5	1,2-Dichloropropane	5.000	U
10061-01-5	cis-1,3-Dichloropropene	5.000	U
79-01-6	Trichloroethene	5.000	U
124-48-1	Dibromochloromethane	5.000	U
79-00-5	1,1,2-Trichloroethane	5.000	U
71-43-2	Benzene	5.000	U
10061-02-6	trans-1,3-Dichloropropene	5.000	U
75-25-2	Bromoform	5.000	U
108-10-1	4-Methyl-2-Pentanone	10.000	U
591-78-6	2-Hexanone	10.000	U
127-18-4	Tetrachloroethene	5.000	U
79-34-5	1,1,2,2-Tetrachloroethane	5.000	U
108-88-3	Toluene	5.000	U
108-90-7	Chlorobenzene	5.000	U
100-41-4	Ethylbenzene	5.000	U
100-42-5	Styrene	5.000	U
1330-20-7	Xylene (total)	5.000	U

3/28/94

INSTRUMENT DETECTION LIMITS

Instrument C
Date: 11/25/93

UNITS: UG/L

	IDL
Phenol	2
bis(2-Chloroethyl)ether	1
2-Chlorophenol	1
1,3-Dichlorobenzene	2
1,4-Dichlorobenzene	1
Benzyl alcohol	1
1,2-Dichlorobenzene	1
2-Methylphenol	2
bis(2-Chloroisopropyl)ether	1
4-Methylphenol	3
N-Nitroso-Di-N-propylamine	1
Hexachloroethane	3
Nitrobenzene	4
Isophorone	3
2-Nitrophenol	2
2,4-Dimethylphenol	2
Benzoic acid	1
bis(2-Chloroethoxy)methane	3
2,4-Dichlorophenol	1
1,2,4-Trichlorobenzene	2
Naphthalene	3
4-Chloroaniline	2
Hexachlorobutadiene	1
4-Chloro-3-methylphenol	2
2-Methylnaphthalene	5
Hexachlorocyclopentadiene	9
2,4,6-Trichlorophenol	1
2,4,5-Trichlorophenol	2
2-Chloronaphthalene	5
2-Nitroaniline	2
Dimethylphthalate	2
Acenaphthylene	2
2,6-Dinitrotoluene	1
3-Nitroaniline	4
Acenaphthene	3
2,4-Dinitrophenol	2
4-Nitrophenol	2
Dibenzofuran	3
2,4-Dinitrotoluene	1
Diethylphthalate	3
4-Chlorophenyl-phenylether	3
Fluorene	3
4-Nitroaniline	3
4,6-Dinitro-2-methylphenol	3
N-Nitrosodiphenylamine(1)	1
4-Bromophenyl-phenylether	2
Hexachlorobenzene	2
Pentachlorophenol	5

INSTRUMENT DETECTION LIMITS

Instrument C
Date: 11/25/93

UNITS: UG/L

	IDL
Phenanthrene	1
Anthracene	3
Di-N-butylphthalate	1
Fluoranthene	3
Pyrene	5
Butylbenzylphthalate	2
3,3'-Dichlorobenzidine	1
Benzo(a)anthracene	2
Chrysene	2
bis(2-Ethylhexyl)phthalate	3
Di-N-octylphthalate	1
Benzo(b)fluoranthene	3
Benzo(k)fluoranthene	4
Benzo(a)pyrene	2
Indeno(1,2,3-cd)pyrene	1
Dibenzo(a,h)anthracene	1
Benzo(g,h,i)perylene	4
Nitrobenzene-d5	4
2-Fluorobiphenyl	1
Terphenyl-d14	4
Phenol-d5	1
2-Fluorophenol	2
2,4,6-Tribromophenol	4

3093-1332
FMS form 3
0387

I E A

BNA BLANK SPIKE RECOVERY REPORT

LAB NAME : I E A OF CT MATRIX : _
BATCH # : __ _____ INST. ID : MSC
LAB FILE ID :___>C0858_____ DATE ANALYZED:12/30/93
LAB SAMPLE ID:___1203-805FM___ TIME ANALYZED: 1858

Compound	% Recovery	Limits	Status
Acenaphthene	65.9	47.0 <-> 145.0	
Acenaphthylene	61.4	33.0 <-> 145.0	
Anthracene	75.0	27.0 <-> 133.0	
Benzo(a)anthracene	101.8	33.0 <-> 143.0	
Benzo(b)fluoranthene	89.0	24.0 <-> 159.0	
Benzo(k)fluoranthene	175.7	11.0 <-> 162.0	OUT
Benzo(a)pyrene	92.4	17.0 <-> 163.0	
Benzo(g,h,i)perylene	37.0 ~~3~~	.1 <-> 219.0	
Benzyl alcohol	74.3	0.0 <-> 999.9	
Butylbenzylphthalate	85.5	.1 <-> 152.0	
bis(2-Chloroethyl)ether	53.5	12.0 <-> 158.0	
bis(2-Chloroethoxy)methane	61.2	33.0 <-> 184.0	
bis(2-Chloroisopropyl)ether	67.7	36.0 <-> 166.0	
bis(2-Ethylhexyl)phthalate	83.8	8.0 <-> 158.0	
4-Bromophenyl-phenylether	81.2	53.0 <-> 127.0	
4-Chloroaniline	66.9	0.0 <-> 999.9	
2-Chloronaphthalene	67.6	60.0 <-> 118.0	
4-Chlorophenyl-phenylether	74.7	25.0 <-> 158.0	
Chrysene	71.4	17.0 <-> 168.0	
Dibenzo(a,h)anthracene	56.0 ~~4~~	.1 <-> 227.0	
Di-n-butylphthalate	95.7	1.0 <-> 118.0	
1,2-Dichlorobenzene	57.3	32.0 <-> 129.0	
1,3-Dichlorobenzene	55.3	.1 <-> 172.0	
1,4-Dichlorobenzene	59.1	20.0 <-> 124.0	
Diethylphthalate	83.4	.1 <-> 114.0	
Dimethylphthalate	90.2	.1 <-> 112.0	
2,4-Dinitrotoluene	89.4	39.0 <-> 139.0	
2,6-Dinitrotoluene	87.2	50.0 <-> 158.0	
Di-n-octylphthalate	114.8	4.0 <-> 146.0	
Fluoranthene	112.3	26.0 <-> 137.0	
Fluorene	74.8	59.0 <-> 121.0	
Hexachlorobenzene	89.5	.1 <-> 152.0	
Hexachlorobutadiene	62.2	24.0 <-> 166.0	
Hexachlorocyclopentadiene	21.7	0.0 <-> 999.9	
Hexachloroethane	53.7	40.0 <-> 113.0	
Indeno(1,2,3-cd)pyrene	42.4	.1 <-> 171.0	
Isophorone	75.4	21.0 <-> 196.0	
2-Methylphenol	70.4	0.0 <-> 999.9	
4-Methylphenol	73.9	0.0 <-> 999.9	
2-Methylnaphthalene	64.4	0.0 <-> 999.9	
Naphthalene	55.9	21.0 <-> 133.0	
Nitrobenzene	85.7	35.0 <-> 180.0	
N-Nitroso-di-n-propylamine	81.2	.1 <-> 230.0	
Phenanthrene	86.9	54.0 <-> 120.0	
Pyrene	83.4	52.0 <-> 115.0	
1,2,4-Trichlorobenzene	58.6	0.0 <-> 999.9	
2,4,6-Trichlorophenol	78.2	37.0 <-> 144.0	
2,4,5-Trichlorophenol	73.6	0.0 <-> 999.9	
4-Chloro-3-methylphenol	75.6	22.0 <-> 147.0	

3/28/94

2-Chlorophenol	63.1	23.0 <-> 134.0
2,4-Dichlorophenol	66.5	39.0 <-> 135.0
2,4-Dimethylphenol	70.4	32.0 <-> 119.0
2,4-Dinitrophenol	70.8	.1 <-> 191.0
2-Nitroaniline	78.7	0.0 <-> 999.9
N-Nitrosodiphenylamine (1)	55.9	0.0 <-> 999.9
4,6-Dinitro-2-methylphenol	69.4	.1 <-> 181.0
2-Nitrophenol	63.2	29.0 <-> 182.0
4-Nitrophenol	116.2	.1 <-> 132.0
Pentachlorophenol	104.8	14.0 <-> 176.0
Phenol	62.3	5.0 <-> 112.0

3093-1332
FMS form 3

>C8858 0388
1203-B05 FMS

12/20/93
18:56

Data Validation Services

Cobble Creek Road P. O. Box 208
North Creek, N. Y. 12853
Phone 518-251-4429

TO: Roux Associates

FROM: Judy Harry, Data Validation Services J. Harry

DATE: 5-17-94

RE: Validation of Amtrak Site data package
IEA SDG No. Z0298

Review is complete for the data package generated by IEA Labs pertaining to the sample collected at the Amtrak Site. A soil sample and a field blank were processed for TCL volatiles and semivolatiles, TAL metals, and TCL PCBs. A trip blank was also analysed. Matrix spikes/duplicate were performed on the soil sample S-122 (7.5'-8.5'). Methodologies utilized are EPA-8240, EPA-8270, CLP-M, and a modified EPA-8080.

In summary, the samples were processed in general compliance with protocol criteria, with any exceptions noted below and on the attached compliancy chart. Any qualifications indicated by review of the quality issues are noted in the numbered section immediately following. Other quality concerns are discussed in the subsequent analysis sections.

1. The acetone detected in the soil sample should be rejected for consideration as a sample component, as indicated by its presence in the associated method blank. The reported result should be edited to "29 U".

2. Due to low response in the associated daily calibration standard (45%D), the chloromethane detection limit for the sample should be considered estimated, possibly biased low. No corrective action was required of the laboratory.

3. Due to low response in the associated daily calibration standard (39%D; RRF of 0.08), the 2,4-dinitrophenol detection limit for the sample should be considered estimated, possibly biased low. No corrective action was required of the laboratory.

4. The bis(2-ethylhexyl)phthalate reported in the sample should be rejected for consideration as a sample component, as indicated by its presence in the associated method blank. The reported result should be edited to nondetection at the sample CRDL.

5. All Tentatively Identified Compounds (TICs) flagged as "B" should be rejected for consideration as sample components due to their copresence in the associated blank.

6. Cadmium reported results for the sample and field blank should be considered estimated due to a low recovery of the standard at CRDL (CRI) of 52%. No corrective action was required of the laboratory.

7. The reported result for sodium in sample S-122(7.5-8.5) should be flagged as "B" to indicate that the value is above the IDL, but below the CRDL.

8. The reported values/detection limits for the volatile and semivolatile target compounds contain an excessive number of significant figures.

9. The value for 1,2,4-trichlorobenzene in the matrix spike duplicate should be 2400 ug/kg, not 1900 ug/kg. The value on the summary Form 3 is correct.

VOLATILE ANALYSES

Holding times were met for sample processing, with the exception of the analysis of the matrix spike, which was performed one day beyond allowable holding time. Surrogate, matrix spike, and matrix spike blank recoveries were within required/recommended limits. Duplicate correlation values were good.

With the exception of the chloromethane response noted earlier, initial and continuing calibration standard data was acceptable. Internal standard areas and retention times were within required ranges. Sample reported results are supported by the raw data.

SEMIVOLATILE ANALYSES

Holding times were met for sample processing. Surrogate, matrix spike (on SBLKRH), and matrix spike blank recoveries were within required/recommended limits. Duplicate correlation values were good, although that for acenaphthene was 21%RPD, above the recommended limit of 19%RPD.

Please note the earlier discussion regarding 2,4-dinitrophenol response. Responses for several target compounds in the standard of 4/25/94, associated only with the method blank, were also depressed. Sample reported results are not affected. Protocol requirements for the standards were met. Internal standard areas and retention times were within required ranges. Sample reported results are substantiated by the raw data.

The reported detection of di-n-butylphthalate in the matrix spike of SBLKRH was rejected from the quant report by the lab technician. That compound in the matrix spike duplicate was not reported, but appeared on the quant report and was not rejected by the technician.

PCB ANALYSES

Holding times were met for sample processing. Surrogate recoveries were good. Batch QC Aroclor 1260 matrix spike accuracy and precision values were acceptable.

Linearity of the the EVAL mixes was good, and breakdown values were acceptable. Dieldrin responses in the continuing standards of the primary column were slightly depressed, at 24%D and 21%D. Sample PCB reported results are not affected. Responses of the continuing Aroclor standards showed good consistency.

Certain typos existed on the standard summary forms (i.e. Endo I response on RTX-35 on 4/19/94 is actually 0.2%D, not 301%D).

Sample reported results are supported by the raw data.

METALS ANALYSES

All data were reviewed for compliance with the protocol requirements, and for technical validity, and were found acceptable unless noted specifically within this text.

Matrix spike recoveries of the soil sample were good. That for lead was 71%, below the recommended limit of 75%, but the sample is just below the evaluation limit of greater than four times the spike added, and qualification is not recommended. Duplicate and serial dilution correlation values are also good.

Raw data support sample reported values. It should be noted that the recoveries of the copper standards were acceptable, at 96%, rather than being the values of about 185% reported on the Forms 2A. The method denoted for lead, arsenic, and selenium on some of the blank summary Forms 3 should indicate "F", rather than "P". This correction was made by the laboratory to certain of the Forms, but not all.

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346

30940-0298
ROUX ASSOCIATES

SDG Narrative

Volatile Organics - The ratio of cis-1,3-dichloropropene versus trans-1,3-dichloropropene is 47 and 53 percent respectively.

Semi-Volatile Organics - All samples were extracted and concentrated without any apparent problems.

Sample SBLKRH FMS exhibited internal standard area suppression. The extract was analyzed several times with similar results. The MS and MSD were also extracted with the same reagent water, however they did not exhibit suppression. The FMS has been reported as is.

PCB's - All samples were extracted and concentrated without any apparent problems.

All samples required GPC cleanup prior to analysis.

On the RTX-35 column analysis from 04/19/94-04/20/94 linearity was greater than 10 percent for aldrin, endrin and DBC. The only sample analyzed on this run was method blank PBLK45. Since the client samples were PCB's only, the method blank was not reanalyzed.

Petroleum Hydrocarbon Scan - No problems were encountered.

Since the samples did not contain any hydrocarbons, quantitation was not necessary.

Metals - No problems occurred during analysis. All appropriate protocols were employed. All data appears to be consistent.

I certify that this data package is in compliance with the terms of this contract, both technically and for completeness, for other than the conditions detailed above. Release of this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Jeffrey C. Curran
Laboratory Manager

May 4, 1994
Date

IEA
An Aquarion Company

200 Monroe Turnpike
Monroe, Connecticut 06468

Phone 203·261·4458
Fax 203·268·5346

30940-0298
ROUX ASSOCIATES

SDG Narrative

Volatile Organics - The ratio of cis-1,3-dichloropropene versus trans-1,3-dichloropropene is 47 and 53 percent respectively.

Semi-Volatile Organics - All samples were extracted and concentrated without any apparent problems.

Sample SBLKRH FMS exhibited internal standard area suppression. The extract was analyzed several times with similar results. The MS and MSD were also extracted with the same reagent water, however they did not exhibit suppression. The FMS has been reported as is.

PCB's - All samples were extracted and concentrated without any apparent problems.

All samples required GPC cleanup prior to analysis.

On the RTX-35 column analysis from 04/19/94-04/20/94 linearity was greater than 10 percent for aldrin, endrin and DBC. The only sample analyzed on this run was method blank PBLK45. Since the client samples were PCB's only, the method blank was not reanalyzed.

Petroleum Hydrocarbon Scan - No problems were encountered.

Since the samples did not contain any hydrocarbons, quantitation was not necessary.

Metals - No problems occurred during analysis. All appropriate protocols were employed. All data appears to be consistent.

I certify that this data package is in compliance with the terms of this contract, both technically and for completeness, for other than the conditions detailed above. Release of this hardcopy data package has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Jeffrey C. Curran
Laboratory Manager

May 4, 1994
Date

Sunrise, Florida 305 846·1730
Schaumburg, Illinois 708·705·0740
N. Billerica, Massachusetts 617·272·5212
Whippany, New Jersey 201·428·8181
Research Triangle Park, North Carolina 919·677·0090

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

02

SAMPLE IDENTIFICATION AND
ANALYTICAL REQUIREMENT SUMMARY

JOB # : 3094-0298

CUSTOMER SAMPLE CODE	LABORATORY SAMPLE CODE	ANALYTICAL REQUIREMENTS*						
		*VOA GC/MS	*BNA GC/MS	*VOA GC	*PEST PCB	*METALS	*OTHER	*OTHER
S-122.7.5-8.5 FEET	0298001	X	X		X	X		
FIELD BLANK 040994	0298002	X	X		X	X		
TRIP BLANK 040994	0298003	X						

Check Appropriate Boxes

CLP, Non-CLP
*SL, Priority Pollutant

COMPLIANCY CHART

Project: Roux Associates

SDG Nos: IEA SDG No. Z0298

Protocol: SW846

RecDate	Sample ID	Matrix	VOA	BNA	PCB	Metals	Other	Noncompl
04-11-94	S-122(7.5-8.5)	Soil	OK	OK	OK	OK	OK	
04-11-94	Field Blank	Aqueous	OK	OK	OK	OK	OK	
04-11-94	Trip Blank	Aqueous	OK	NR	NR	NR	OK	

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
B/N-A - TCL + TIC's
ANALYSIS

JOB # : 3094-0298

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
S-122.7.5-8.5 FEET	Soil	4/09/94	04/11/94	4/13/94	4/20/94
FIELD BLANK 040994	Aqueous		04/11/94		

LTD 04/29/94

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
VOA - TCL + TIC's
ANALYSIS

JOB # : 3094-029B

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
S-122.7.5-8.5 FEET	Soil	04/09/94	04/11/94	N/A	04/13/94
FIELD BLANK 040994	Aqueous	↓	04/11/94	↓	04/14/94
TRIP BLANK 040994	Aqueous		04/11/94		04/14/94

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
PCB
ANALYSIS

JOB # : 3094-0298

SAMPLE ID	MATRIX	DATE COLLECTED	DATE RECVD AT LAB	DATE EXTRACTED	DATE ANALYZED
S-122,7.5-8.5 FEET	Soil		04/11/94	04/13/94	04/22/94
FIELD BLANK 040994	Aqueous		04/11/94	04/12/94	04/21/94

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SAMPLE PREPARATION AND ANALYSIS SUMMARY
INORGANIC ANALYSIS

JOB # : 3094-0296

ICAP

SAMPLE ID	MATRIX	METALS REQUESTED	DATE RECEIVED	DATE DIGESTED	DATE ANALYZED
7.5-8.5 FEET	Soil	TAL METALS	04/11/94	4/21/94	4/25/94
BLANK 040994	Aqueous	TAL METALS	04/11/94	4/19/94	4/19/94

APPENDIX G

Phase II RI and Addendum Data Usability Report

The Phase II Remedial Investigation (RI) and Addendum to the Phase II RI for the Sunnyside Yard, Queens, New York Site (Yard) was conducted by Roux Associates, Inc. between August 1992 and August 1994. The methods of analysis used to determine chemical constituents detected in samples collected, and the protocols used to determine the validity of these data are described in the Phase II RI report, and are summarized below.

Chemical analyses for the investigations were performed by Industrial and Environmental Analysis, Inc. (IEA) of Monroe, Connecticut. Analytical protocols from the New York State Analytical Services Protocol (ASP) and Test Methods for Evaluating Solid Wastes (SW-846) were utilized for volatile organic compound (VOC) analyses by USEPA Method 8240, semivolatile organic compound (SVOC) analyses by USEPA Method 8270, polychlorinated biphenyls (PCBs) by modified USEPA Method 8080, ASP 89-3, and metals analysis by USEPA Methods 6010 and 7000 series.

Data validation for the chemical data generated by IEA was performed by Data Validation Services of Riparius, New York (DVS). DVS performed the data validation using the USEPA Region II CLP Organics Data Review and Preliminary Review (SOP No. HW-6, Revision #8) and the Evaluation of Metals Data for the Contract Laboratory Program (SOP No. HW-2, Revision #11).

Based on the analytical results obtained, and the review performed by DVS, an evaluation of the overall quality and usability of the data are addressed below. A summary of the usability of these data (each sampling point) for constituents of concern is provided in Table G-1.

Volatile Organic Compounds (VOCs)

Holding times were met for all sample processing (with few exceptions). Surrogate recoveries, matrix spike blank (MSB) recoveries, matrix spike (MS) and duplicate (MSD) correlation values, instrumental tunes, and internal standard areas/retention times met protocol requirements. The exceptions and their effects are included below.

- Low recovery of 1,1-Dichloroethene in the MSB and MS in soil samples MW-54, MW-58, and S-129. 1,1-Dichloroethene is considered estimated biased low in these samples.

- Nonlinear response for chloromethane in aqueous samples MW-37, MW-38D, MW-39D, MW-35, MW-40D, MW-61, MW-49, MW-63, MW-57, MW-59, results in reported detection limits biased low.

- Detections of acetone, methylene chloride, toluene, 2-butanone, and methyl ethyl ketone in method, field, and/or trip blanks are edited to reflect nondetection at either the Contract Required Quantitation Limit (CRQL), or originally reported value, whichever is greater.

Semivolatile Organic Compounds (SVOCs)

Holding times and instrument tune requirements were met for all sample processing. Surrogate and MSB recoveries, MS and MSD correlation values, and internal standards and retention times met protocol requirements with the exceptions stated below.

- Recoveries were elevated for 4-nitrophenol (139% and 214%) and pyrene (194% and 144%) and duplicate recoveries for 1,2,4-trichlorobenzene (26% Relative Percent Difference [RPD]) and acenaphthene (25% RPD) in Sample S-134 and a non project MS sample. Sample S-134 is estimated high for these constituents.

- Depressed internal standards for samples S-100, S-101, and S-102 results in detection limits and detected values as estimated low.

- Depressed internal standards for d-12 perylene in soil sample S-135, and aqueous samples MW-57 and MW-49 results in the detection limits and results being estimated low for di-n-octylphthalate, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene, and benzo(g,h,i)perylene.

- Three out of six internal standards for sample S-134 had depressed responses (as low as 6 percent) resulting in a low bias to reported results and detection limits.

- Aqueous sample MW-39D produced a low recovery (45% versus 50%) for d-12 perylene, however, due to the sensitivity of the system and no detects for associated compounds, no qualification is deemed necessary.

- No recovery for two acid surrogates in samples MW-63, MW-49, and MW-40D therefore all acid extractable compounds are considered unusable (demonstrated as matrix effect).

- Detections of di-n-butyl phthalate and bis(2-ethylhexyl)phthalate in method or field blanks are edited to reflect nondetection at either the CRQL, or the originally reported value, whichever is greater.

- Continuing calibration standards for 3-nitroaniline produced low responses in soil samples S-135, S-139, MW-54 and MW-58, therefore all reported detection limits for 3-nitroaniline are considered estimated low.

- 4,6-dinitro-2-methylphenol produced erratic responses in calibration curve, therefore the detection limits for these compounds in aqueous samples MW-46, MW-37, MW-38D, MW-35, MW-40D, MW-62D, MW-61, MW-49, MW-63 and MW-57 are estimated.

Polychlorinated Biphenyls (PCBs)

Holding times, linearity and breakdown requirements, and method blank criteria were met for all sample processing. Surrogate recoveries, MS and MSD correlation values, MSB and initial calibration verification (ICV) and continuing calibration verification (CCV) standards met protocol requirements, with the exceptions listed below.

- Poor surrogate recoveries in samples MW-54 and MW-59 result in sample results and detection limits estimated as much as 10 fold below actual. (Method blank also had depressed recovery.)

- Pesticide responses were not in compliance (elevated) but system is not compromised. The responses for Aroclor mixtures provided good correlation values, therefore PCB values are not qualified.

- Interferences in the spiked blank (aqueous) for Aroclor-1260 (MW-46, MW-38), Aroclor-1254 (MW-40D) and Aroclor species (MW-35) results in these results being estimated.

- Cross-contribution of Aroclor mixtures for sewer-sediment samples results in reported values considered as estimated.

- Poor surrogate recoveries in low-level reanalysis of sewer-water samples MHWF-2, MHW-2(N), CBW-28, MW-43, and MHWF-52 result in the detection level considered as estimated.

Metals

Holding times were met for all sample processing, spike recoveries, duplicate correlation, post digestion spike recoveries, serial dilutions and blank recoveries met protocol requirements with the exceptions listed below.

- Low spike recoveries in S-134 for chromium and mercury result in these compounds being estimated low.

- Post digestion spike recoveries were outside recommended limits, therefore the detection limits and reported values are estimated for arsenic, lead (MW-37), lead and selenium (MW-59, MW-62D, MW-49, MW-63) and selenium (MW-57).

- Serial dilution of barium in S-134 had elevated correlation (19.9%) therefore the barium result is estimated.

Total Petroleum Hydrocarbons

Quantitative values were determined from comparison to No. 2 fuel oil. The standard linearity was good.

Table G-1. Summary of Phase II RI and Addendum Data Usability, Sunnyside Yard, Queens, New York

Sampling Date	Sampling Location	Sample ID	Sample Depth	Matrix	VOC	SVOC	PCB Only	Metals	PHC
4/9/94	Area 1	S-122	7.5-8.5	Soil	A	A	A	A	A
11/29/93	Area 1	S-129	3-5	Soil	JL[1]	A	JL[2]	A	A
11/8/93	Area 1	S-134	2-4	Soil	A	JL[3]	A	JL[4]	A
12/7/93	Area 1	S-135	3-3.5	Soil	A	JL[5]	A	A	A
12/7/93	Area 1	S-139	3-3.1	Soil	A	A	A	A	A
11/29/93	Area 1	MW-54	3-5	Soil	JL[1]	A	JL[2]	A	A
12/7/93	Area 1	MW-58	2-3	Soil	JL[1]	A	A	A	A
1/26/93	Area 1	CS-1	0-2	Soil	NR	NR	A	NR	NR
11/2/93	Area 1	CS-3	3-5	Soil	NR	NR	A	NR	NR
11/8/93	Area 1	CS-5	0-2	Soil	NR	NR	A	NR	NR
11/8/93	Area 1	CS-10	0-2	Soil	NR	NR	A	NR	NR
1/26/93	Area 1	CS-76	0-0.5	Soil	NR	NR	A	NR	NR
11/8/93	Area 1	CMW-20	0-2	Soil	NR	NR	A	NR	NR
11/8/93	Area 1	CMW-22	0-2	Soil	NR	NR	A	NR	NR
12/15/93	Area 2	CS-41A	3.5-5.5	Soil	NR	NR	JH	NR	NR
1/18/93	Area 2	CS-43	0-2	Soil	NR	NR	A	A	NR
12/15/93	Area 4	CS-47	2-4	Soil	NR	NR	A	NR	NR
2/1/93	Area 4	CS-49	2-4	Soil	NR	NR	A	NR	NR
2/1/93	Area 4	CMW-31	0-2	Soil	NR	NR	A	NR	NR
1/20/93	Area 5	CS-50	0-2	Soil	NR	NR	A	NR	NR
1/20/93	Area 5	CS-51	0-2	Soil	NR	NR	A	NR	NR
11/8/93	Area 6	CS-61	5-7	Soil	NR	NR	A	NR	NR
2/1/93	Area 6	CS-64	2-3	Soil	NR	NR	A	NR	NR
1/18/93	Area 7	S-99	0-2	Soil	A	A	A	JL[4]	NR
11/8/93	Area 7	CS-67	0-2	Soil	NR	NR	A	NR	NR
1/20/93	Area 8A	S-111	0-2	Soil	NR	NR	A	NR	NR
1/20/93	Area 8A	S-112	0-2	Soil	NR	NR	A	NR	NR
1/20/93	Area 8A	S-113	0-2	Soil	NR	NR	JL[2]	NR	NR
1/20/93	Area 8A	S-114	0-2	Soil	NR	NR	A	NR	NR
1/20/93	Area 8A	S-115	0-2	Soil	NR	NR	A	NR	NR
1/25/93	Area 8C	S-104	0-2	Soil	NR	NR	A	NR	NR
1/25/93	Area 8C	S-105	0-2	Soil	NR	NR	A	NR	NR
1/25/93	Area 8C	S-106	0-2	Soil	NR	NR	A	NR	NR
1/25/93	Area 8C	S-107	0-2	Soil	NR	NR	A	NR	NR
1/25/93	Area 8C	S-108	0-2	Soil	NR	NR	A	NR	NR
2/1/93	Area 8C	CS-53	0-2	Soil	NR	NR	A	NR	NR

Table G-1. Summary of Phase II RI and Addendum Data Usability, Sunnyside Yard, Queens, New York

Sampling Date	Sampling Location	Sample ID	Sample Depth	Matrix	VOC	SVOC	PCB Only	Metals	PHC
1/25/93	Area 8C	CS-6	0-2	Soil	NR	NR	A	NR	NR
1/19/93	Area 9	S-103	0-2	Soil	NR	NR	A	N	NR
11/9/93	Area 9	CS-59	0-2	Soil	NR	NR	A	NR	NR
1/25/93	Area 10	CS-83	0-2	Soil	NR	NR	A	NR	NR
1/18/93	Area 13	S-100	0-2	Soil	A	JL[2]	A	J[5]	NR
1/19/93	Area 13	CS-75	0-2	Soil	NR	NR	A	NR	NR
11/9/93	Area 13	CS-77	0-2	Soil	NR	NR	A	NR	NR
11/9/93	Area 15	CS-82	0-2	Soil	NR	NR	A	NR	NR
1/18/93	Area 17	S-101	0-2	Soil	A	JL[2]	A	J[5]	NR
1/18/93	Area 17	S-102	0-2	Soil	A	JL[2]	A	J[5]	NR
12/16/93	Facility Wide	CS-16	0-2	Soil	NR	NR	A	NR	NR
12/15/93	Facility Wide	CS-22	0-2	Soil	NR	NR	A	NR	NR
12/15/93	Facility Wide	CMW-30	0-2	Soil	NR	NR	A	NR	NR
12/15/93	Facility Wide	CMW-34	0-2	Soil	NR	NR	A	NR	NR
2/9/93	Area 1	MW-23D	NA	Aqueous	A	A	A	NR	NR
2/17/94	2/9/93	MW-35	NA	Aqueous	A	A	JL[5]	A	NR
2/17/94	2/9/93	MW-37	NA	Aqueous	A	A	A	JL[8]	NR
2/17/94	2/9/93	MW-38D	NA	Aqueous	A	A	JL[5]	NR	NR
2/17/94	2/9/93	MW-39D	NA	Aqueous	A	A	A	NR	NR
2/17/94	2/9/93	MW-40D	NA	Aqueous	A	A/R	JL[5]	NR	NR
2/17/94	2/9/93	MW-49	NA	Aqueous	A	A/R	A	JL[7]	NR
2/17/94	2/9/93	MW-57	NA	Aqueous	A	JL[6]	A	JL[7]	NR
2/17/94	2/9/93	MW-59	NA	Aqueous	A	JL[6]	A	JL[7]	NR
2/17/94	2/9/93	MW-63	NA	Aqueous	A	A/R	A	JL[7]	NR
2/9/93	Area 2	MW-41	NA	Aqueous	A	NR	NR	NR	NR
1/26/93	Area 2	TW-1	NA	Aqueous	A	NR	NR	NR	NR
1/26/93	Area 2	TW-2	NA	Aqueous	A	NR	NR	NR	NR
2/9/93	Area 4	MW-42	NA	Aqueous	A	A	NR	NR	NR
2/9/93	Area 9	MW-45	NA	Aqueous	A	A	A	A	NR
2/9/93	Area 11	MW-46	NA	Aqueous	A	A	JL[5]	A	NR
2/17/93	Area 12	TW-3	NA	Aqueous	NR	A	A	NR	NR
1/15/93	Facility Wide	MW-25	NA	Aqueous	NR	NR	NR	A	NR
1/22/93	Facility Wide	MW-25A	NA	Aqueous	NR	NR	A	NR	NR

Table G-1. Summary of Phase II RI and Addendum Data Usability, Sunnyside Yard, Queens, New York

Sampling Date	Sampling Location	Sample ID	Sample Depth	Matrix	VOC	SVOC	PCB Only	Metals	PHC
2/9/93	Facility Wide	MW-29	NA	Aqueous	NR	NR	NR	A	NR
2/9/93	Facility Wide	MW-43	NA	Aqueous	A	A	A	A	NR
2/9/93	Facility Wide	MW-44	NA	Aqueous	A	A	A	A	NR
1/22/93	Facility Wide	MW-47	NA	Aqueous	A	A	A	NR	NR
2/9/93	Facility Wide	MW-48D	NA	Aqueous	A	A	A	A	NR
2/17/94	Facility Wide	MW-61	NA	Aqueous	A	A	A	JL[5]	NR
2/17/94	Facility Wide	MW-62D	NA	Aqueous	A	A	A	JL[5]	NR
2/9/93	Facility Wide	MHS-2	NA	Solid	NR	NR	A	NR	NR
2/8/93	Area 1	MHS-3	NA	Solid	NR	NR	A	NR	NR
2/9/93	Area 1	MHS-8	NA	Solid	NR	NR	A	NR	NR
2/17/93	Area 1	MW-36	NA	Aqueous	NR	NR	A	NR	NR
2/17/93	Area 1	MW-50	NA	Aqueous	NR	NR	A	NR	NR
2/17/93	Area 1	MW-53	NA	Aqueous	NR	NR	A	NR	NR
2/17/93	Area 1	MW-54	NA	Aqueous	NR	NR	A	NR	NR
2/17/93	Area 1	MW-60	NA	Aqueous	NR	NR	A	NR	NR
2/9/93	Area 1	MHW-1	NA	Aqueous	A	A	A	JL[5]	NR
2/9/93	Area 1	MHW-2	NA	Aqueous	A	A	JH	A	NR
2/8/93	Area 1	MHW-3	NA	Aqueous	NR	NR	A	NR	NR
2/8/93	Area 1	MHW-5	NA	Aqueous	NR	NR	A	NR	NR
2/8/93	Area 1	MHW-6	NA	Aqueous	NR	NR	A	NR	NR
2/8/93	Area 1	MHW-7	NA	Aqueous	NR	NR	A	NR	NR
2/9/93	Area 1	MHW-8	NA	Aqueous	NR	NR	JH	NR	NR
4/26/94	Facility Wide	MHW-52 (18) SE	NA	Aqueous	NR	NR	A	NR	NR
4/26/94	Facility Wide	MHW-52 (18) SW	NA	Aqueous	NR	NR	A	NR	NR
4/26/94	Facility Wide	MHW-52 (10) N	NA	Aqueous	NR	NR	A	NR	NR
4/26/94	Facility Wide	MHWF-2	NA	Aqueous	NR	NR	JL[2]	NR	NR
4/26/94	Facility Wide	MHWF-52 (42) SW	NA	Aqueous	NR	NR	A	NR	NR
4/25/94	Facility Wide	MHW-40 (48) E	NA	Aqueous	NR	NR	JL[2]	NR	NR

Table G-1. Summary of Phase II RI and Addendum Data Usability, Sunnyside Yard, Queens, New York

Sampling Date	Sampling Location	Sample ID	Sample Depth	Matrix	VOC	SVOC	PCB Only	Metals	PHC
4/25/94	Facility Wide	MHW-40 (4x8) S	NA	Aqueous	NR	NR	A	NR	NR
4/25/94	Facility Wide	MHWF-40 (48) E	NA	Aqueous	NR	NR	A	NR	NR
4/26/94	Facility Wide	MHW-2 (N)	NA	Aqueous	NR	NR	JL[2]	NR	NR
4/26/94	Facility Wide	MHW-39	NA	Aqueous	NR	NR	JL[2]	NR	NR
4/26/94	Facility Wide	MHW-39 (24) S	NA	Aqueous	NR	NR	A	NR	NR
4/26/94	Facility Wide	MHS-55	NA	Soil	NR	NR	J	NR	NR
4/26/94	Facility Wide	MHS-52	NA	Soil	NR	NR	J	NR	NR
4/26/94	Facility Wide	MHS-42	NA	Soil	NR	NR	J	NR	NR
4/25/94	Facility Wide	MHS-40 (48) E	NA	Soil	NR	NR	J	NR	NR
4/25/94	Facility Wide	MHS-40 (4x8) S	NA	Soil	NR	NR	J	NR	NR
4/26/94	Facility Wide	MHS-2	NA	Soil	NR	NR	J	NR	NR
4/28/94	Facility Wide	MHS-45	NA	Soil	NR	NR	J	NR	NR
4/28/94	Facility Wide	MHS-1	NA	Soil	NR	NR	J	NR	NR
4/28/94	Facility Wide	MHS-65	NA	Soil	NR	NR	J	NR	NR
4/28/94	Facility Wide	CBS-28	NA	Soil	NR	NR	J	NR	NR
4/28/94	Facility Wide	MHS-59	NA	Soil	NR	NR	-	NR	NR
4/28/94	Facility Wide	MHS-21	NA	Soil	NR	NR	J	NR	NR
4/27/94	Facility Wide	MHS-38	NA	Soil	NR	NR	-	NR	NR
4/28/94	Facility Wide	MHS-37	NA	Soil	NR	NR	-	NR	NR
4/28/94	Facility Wide	MHS-35	NA	Soil	NR	NR	J	NR	NR
4/27/94	Facility Wide	MHS-72	NA	Soil	NR	NR	-	NR	NR
4/28/94	Facility Wide	MHS-69 (18)	NA	Soil	NR	NR	J	NR	NR
4/28/94	Facility Wide	MHS-69 (36)	NA	Soil	NR	NR	A	NR	NR
4/27/94	Facility Wide	MHS-29	NA	Soil	NR	NR	A	NR	NR

Table G-1. Summary of Phase II RI and Addendum Data Usability, Sunnyside Yard, Queens, New York

Sampling Date	Sampling Location	Sample ID	Sample Depth	Matrix	VOC	SVOC	PCB Only	Metals	PHC
4/28/94	Facility Wide	MHW-1	NA	Aqueous	NR	NR	A	NR	NR
4/28/94	Facility Wide	MHWF-1	NA	Aqueous	NR	NR	A	NR	NR
4/28/94	Facility Wide	CBW-28	NA	Aqueous	NR	NR	JL[2]	NR	NR
4/28/94	Facility Wide	MHW-59	NA	Aqueous	NR	NR	A	NR	NR
4/28/94	Facility Wide	MHW-43	NA	Aqueous	NR	NR	JL[2]	NR	NR
4/28/94	Facility Wide	MHW-69	NA	Aqueous	NR	NR	A	NR	NR
4/27/94	Facility Wide	MHW-29	NA	Aqueous	NR	NR	A	NR	NR

J - estimated where Aroclor mixtures exist due to cross contribution
JL[1] - estimated biased low for 1,1-Dichloroethene
JL[2] - estimated biased low due to poor surrogate recoveries/matrix effect
JL[3] - estimated biased low due to depressed response of internal standards
JL[4] - estimated biased low for mercury, antimony, selenium and chromium
JL[5] - estimated biased low for copper and selenium
JL[6] - estimated biased low due to background interferences
JL[7] - estimated biased low for di-n-octyl phthalate, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-cd)pyrene, dibenzo(a,h)anthracene, benzo(g,h,i)perylene
JL[8] - estimated biased low for lead and/or selenium
JL[9] - estimated biased low for mercury
JH - estimated biased high

A/R - Base neutrals acceptable/Acid extractables unusable
NA - Not applicable
NR - Not requested
PHC - Petroleum Hydrocarbon Scan
— - sample saturated; insufficient volume

APPENDIX H

Summary of Well Search Results

Table H 1. Summary of Well Search Results, Vicinity of Sunnyside Yard, Queens, New York.

Well Number	Date Installed	Status	Formation Screened	Top of Well Elevation (ft amsl)	Total Depth (ft)	Pumping Capacity (gpm)	Location	Comments
Q-1098	1940	active - 1940	bedrock	NA	137	4	Queens Blvd & 39th St.	no pump installed
Q-117	1937	test boring	bedrock	2	55	NA	Arch St. & LIRR	test boring 50 to bedrock
Q-122	1936	active - 1936	bedrock	50	140	175	33rd & 48th Ave.	cooling & bottle washing
Q-1258	1941	active - 1941	bedrock	55	63	25	43-23 35th St.	no pump installed
Q-1349	1943	active - 1943	bedrock	10	84	69	39th & Queens Blvd.	water supply
Q-1375T	1944	test boring	bedrock	0	42	NA	28-31 Thomson Ave.	test boring
Q-1418	NG	NG	bedrock	NA	273	50	535 Fifth Ave.	rock at 127', see also Q-62,Q-1419
Q-1419	1932	active - 1946	bedrock	NA	189	50	535 Fifth Ave.	
Q-15	1933	abandoned 1935	bedrock	19	160	100	44th	poor water quality
Q-155	1924	dry well 1924	bedrock	NA	80	0	Maillard Choclate Co.	drilled to bedrock & quicksand
Q-158	1930	active - 1941	bedrock	NA	189	250	3619 35th St.	changed pump in 1937 - cooling
Q-16	1929	abandoned 1949	bedrock	20	100	200	44th & 21st	98' to bedrock
Q-166	1922	abandoned 1924	bedrock	46	180	NA	Queens Blvd. btwn 34th & 35th	abandoned, poor water supply
Q-17	1934	active - 1936	bedrock	17	168	200	44th btwn 11th & 12th	
Q-171	NG	dry	bedrock	46	650	NA	near end of Queens Blvd. Bridge	rock at 87', poor water supply
Q-173	1915	abandoned 1925	bedrock	12	290	100	2242 Jackson Ave.	water returned to sump
Q-1738	1950	active - 1950	bedrock	13	213	102	Court Sqr. & Thomson Ave.	146' to bedrock - cooling
Q-18	1931	active - 1936	bedrock	18	125	50	48th btwn Jackson & 21st	
Q-25	1937	test boring	bedrock	7	66	NA	Borden Ave. near 5th St.	test boring, 60' to bedrock
Q-2721	1966	active - 1966	bedrock	NA	300	20	25-11 47th Ave.	car washing
Q-28	1937	test boring	bedrock	9	39	NA	Borden Ave. near 11th St.	test boring, 35' to bedrock
Q-2822	1966	dry	bedrock	NA	41	NA	42-16 West St.	no pump installed
Q-297	1920	NG	bedrock	NA	NA	NA	3408 Northern Blvd.	
Q-387	1937	test boring	bedrock	64	176	NA	48th Ave. & 39th St.	test boring, 155' to bedrock
Q-425	1937	test boring	bedrock	75	159	NA	43rd Ave. & 39th St.	test boring, 150' to bedrock
Q-426	1937	test boring	bedrock	63	147	NA	Skillman & 48th St.	test boring, 140' to bedrock
Q-427	1937	test boring	bedrock	91	228	NA	Queens Blvd. & 48th St.	test boring, 220' to bedrock
Q-428	1937	test boring	bedrock	98	267	NA	50th Ave. & 48th St.	test boring, 152' to bedrock
Q-58	1920	dry - 1936	bedrock	15.73	200	100	10-29 44th btwn 10th & 11th	cooling well, pumping dry
Q-777	1937	test boring	bedrock	2	99	NA	53rd Ave. near east River	test boring, 50' to bedrock
Q-913	1937	test boring	bedrock	2	58	NA	Davis St. & LIRR	test boring, 55' to bedrock

ft - feet
ft amsl - feet above mean sea level
gpm - gallons per minute
NA - Not available

Table H-1. Summary of Well Search Results, Vicinity of Sunnyside Yard, Queens, New York.

Well Number	Date Installed	Status	Formation Screened	Top of Well Elevation (ft amsl)	Total Depth (ft)	Pumping Capacity (gpm)	Location	Comments
Q-915	1937	test boring	bedrock	1	41	NA	Hunters Point & Skillman Ave.	test boring, 38' to bedrock
Q-916	1937	test boring	bedrock	1	45	NA	51st St. & 21st St.	test boring, 40' to bedrock
Q-917	1937	test boring	bedrock	7	53	NA	21st St. & LIRR	test boring, 51' to bedrock
Q-918	1937	test boring	bedrock	6	51	NA	51st Ave. btwn 11th & 21st St.	test boring, 40' to bedrock
Q-924	1937	test boring	bedrock	1	30	NA	Hunters Point & Skillman Ave.	test boring, 27' to bedrock
Q-924	1937	test boring	bedrock	0	53	NA	Purves St. & 45th Ave.	test boring, 50' to bedrock
Q-925	1937	test boring	bedrock	4	58	NA	Purves St. & 45th Ave.	test boring, 55' to bedrock
Q-950	1944	active - 1944	bedrock	NA	80	69	31-02 Northern Blvd.	
Q-919	1937	test boring	Jameco	0	45	NA	Dutch Kills St. & Jackson Ave.	test boring
Q-920	1937	test boring	Jameco	0	47	NA	Dutch Kills St. & Jackson Ave.	test boring
Q-921	1937	test boring	Jameco	0	44	NA	Dutch Kills St. & Jackson Ave.	test boring
Q-922	1937	test boring	Jameco	0	49	NA	Dutch Kills St. & Jackson Ave.	test boring
Q-397	1937	test boring	Jameco	0	55	NA	Dutch Kills St. & Jackson Ave.	test boring
Q-13	1914	plugged 1925	NA	24	90	50	32-14 Northern Blvd.	3 wells abandoned & plugged
Q-263	1910	abandoned 1913	NA	NA	NA	NA	Dreyer Ave. btwn 43rd & 48th	public supply well
Q-296	1931	active - 1936	NA	NA	NA	100	39th Ave. & 50th St.	see Q-198 - used for irrigation
Q-386	NA	NA	NA	NA	NA	NA	39th St. & Skillman Ave.	possible test boring
Q-389	NA	NA	NA	NA	NA	NA	39th & Queens Blvd.	test boring?
Q-166	1922	abandoned 1924	upper glacial	46	68	100	Queens Blvd. btwn 34th & 35th	abandoned - poor water supply
Q-122	1936	active - 1936	upper glacial	50	60	160	33rd & 48th Ave.	diffusion well
Q-14	1909	abandoned 1925	upper glacial	NA	22	6,732	Sunnyside Yard at 35th St.	4 wells abandoned/oil contaminated
Q-1631	1950	active - 1950	upper glacial	NA	51	7	31st St. & Newton Ave.	car wash
Q-1653	1950	active - 1950	upper glacial	15	38	7	1205 Jackson Ave.	car wash
Q-1655	1950	active - 1950	upper glacial	NA	64	60	34-06 Skillman Ave.	cooling
Q-1661	1950	active - 1950	upper glacial	NA	40	8	11-19 49th Ave.	car wash
Q-1720	1950	active - 1950	upper glacial	NA	61	9	2210 Jackson Ave.	car washing
Q-1731	1950	active - 1950	upper glacial	NA	59	300	35-25 35th St.	
Q-1732	1950	active - 1950	upper glacial	NA	54	300	35-25 35th St.	diffusion well
Q-2044	1954	active - 1954	upper glacial	NA	45	75	36-40 37th St.	
Q-224	1920's	abandoned 1936	upper glacial	5	31	78	Skillman & School St.	4 wells
Q-2333	1960	active - 1960	upper glacial	16	31.5	150	3200 Skillman Ave.	bedrock at 32.5

ft - feet
ft amsl - feet above mean sea level
gpm - gallons per minute
NA - Not available

Table H-1. Summary of Well Search Results, Vicinity of Sunnyside Yard, Queens, New York.

Well Number	Date Installed	Status	Formation Screened	Top of Well Elevation (ft amsl)	Total Depth (ft)	Pumping Capacity (gpm)	Location	Comments
Q-2389D	1962	active - 1962	upper glacial	0	72.5	NA	3200 Skillman Ave.	bedrock at 72.5' diffusion well
Q-264	1910	abandoned 1915	upper glacial	NA	30	NA	Van Dam btwn 48th & Queens Blvd.	ran dry
Q-264	1910	abandoned 1915	upper glacial	NA	70	NA	Van Dam btwn 48th & Queens Blvd.	ran dry
Q-2679T	1936	capped 1936	upper glacial	0	72	15	30-30 Thomson Ave.	temporary well, 76' to bedrock
Q-2980D	1967	active - 1967	upper glacial	NA	77	NA	3200 Skillman Ave.	diffusion well
Q-611	NA	NA	upper glacial	5	30	15	Skillman Ave. & School St.	
Q-612	1944	active - 1944	upper glacial	40	30	NA	596 Jackson Ave.	
Q-613	1944	NA	upper glacial	35	53	NA	LIRR & Remsen St.	no screen information, test boring?
Q-667	1944	active - 1944	upper glacial	25	31	NA	Train Meadow Rd. near Jackson Ave.	
Q-923	1937	test boring	upper glacial	0	42	NA	Dutch Kills St. & Jackson Ave.	test boring
Q-926	1937	test boring	upper glacial	2	42	NA	Purves St. & 45th Ave.	test boring
Q-12	1939	active - 1939	upper glacial	31	46	350	36-01 37th Ave.	
Q-155	1913	active - 1924	upper glacial	NA	11	30	Maillard Choclate Co.	
Q-1959	1953	active - 1953	upper glacial	NA	52	65	4236 Northern Blvd.	car wash
Q-1962D	1952	active - 1952	upper glacial	NA	14	NA	B98 St. & Rockaway Beach Blvd.	diffusion well
Q-2175	1955	active - 1955	upper glacial	NA	60	NA	47th Ave. & Van Dam St.	W-1464, Q-57 (a), q-2175 (c)
Q-225	1918	active - 1936	upper glacial	35	62	60	40th Street	8 upper glacial/1 manhasset 51-97'
Q-8	1926	active - 1936	upper glacial	21	20	60	35-18 Steinway Ave.	Borden's Cooling
Q-8	1926	active - 1936	upper glacial	21	20	60	35-18 Steinway Ave.	
Q-8	1928	active - 1936	upper glacial	21	20	100	35-18 Steinway Ave.	one pump in two wells
Q-8	1932	active - 1936	upper glacial	21	70	75	35-18 Steinway Ave.	

ft - feet
ft amsl - feet above mean sea level
gpm - gallons per minute
NA - Not available

Q 58

4.C. VEATCH #8

STATE OF NEW YORK
CONSERVATION DEPARTMENT
WATER POWER AND CONTROL COMMISSION

Field Investigation

Service Well — NOV. 10, 1936

Well	Depth	Casings	Screen	Type Pump	Make Pump	Capacity New	Capacity 1936	Driller and Date Installed
	250'			DOUBLE ACTING PLG. LUITWEILER PLG. AT 92'		120 GPM 1915	38 G.P.M. 1932 TO MAY 15 1936 DRY NOW	GARVEY 1915

Diffusion Well NONE DISCHARGE TO SEWER

Use of Water (Estimated) M.G.

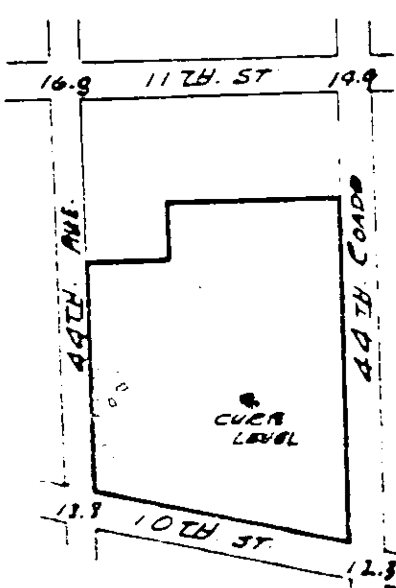
1903	1910	1915	1920	1925	1930	1933	1936
		18	15	12	2	3	1

Chlorine BRACKISH. 10/5/32 560 PPM.

Water Level 18' - SAME AS ALWAYS BUT PUMPS DRY IN 3 MIN. SINCE MAY 15, 1936.
-2.0 SEA LEVEL

Well Water is used for COOLING
Information furnished by MR. MURPHY SUPT.

Sketch or written Description (Location of Well, etc.)



DWS & WIGGIN 1924 1932
8"⌀ -150'
125 GPM - 6 HR EVERY DAY

D.W.S. REC. 1936
6"⌀ -100 GPM.
DRIVEN BY J. GARVEY 1915

1926 - 60 GPM 6 HR PER DAY 5 DAYS A WK. UP TO & INCL. 1929.
1930-34 - 12 HR A WEEK AT 45 GPM
1934 W.L. 17.35 BELOW SIDEWALK

(Owner) C.A. WILLEY
10-29 44TH ROAD.
(Mail Address)
SAME
(Location of Plant)

Water Power & Control Commission Record
Applic. No.
Date Filed
Hearing
Decision
Service Well
Diffusion Well
Remarks

Information from Well Driller
Well No.
Driller Sw + Grey
Outer Casing
Inner Casing 8"
Screen
Screen Setting 200' in Rock
Make of Pump
Capacity of Pump 100 G.P.M
Motor
Date Installed 1920
Remarks:

History & Remarks PAINTS & VARNISHES
OPERATED PUMP 9 HR A DAY
6 DAYS A WEEK
1915-32 @ 120 GPM.
1932 - 5/15/36 @ 38 GPM.
DRY 5/15/36
DRYING UP SAID TO BE CONCURRENT WITH HEAVY PUMPING OF HAROLD SIMON'S AC VEATCH #8 85' deep Rock 25'

Top of well below curb CURB
Elevation of Curb 15.63 M. S. L.
Elevation of Top of Well 15.73 M. S. L.

Investigator
Fred J Bechstein
FRED J BECHSTEIN

173

STATE OF NEW YORK
CONSERVATION DEPARTMENT
WATER POWER AND CONTROL COMMISSION

Map No. Q 173
W. S. Applic. No.

Field Investigation

Service Well — NOV. 10, 1936

(Owner) NEPTUNE METER Co.
2242 JACKSON AVE.
(Mail Address)
Same.
(Location of Plant)

Well	Depth	Casings	Screen	Type Pump	Make Pump	Capacity New 1936	Driller and Date Installed
OUT OF USE FOR 15 YR.							
	200'±			AIR LIFT		200 GPM.	

Diffusion Well ~~[illegible]~~ - RETURNED WATER TO SUMP EQUIVALENT TO DIF. WELL

Use of Water (Estimated)

1903	1910	1915	1920	1925	1930	1933	1936
				0	0	0	0

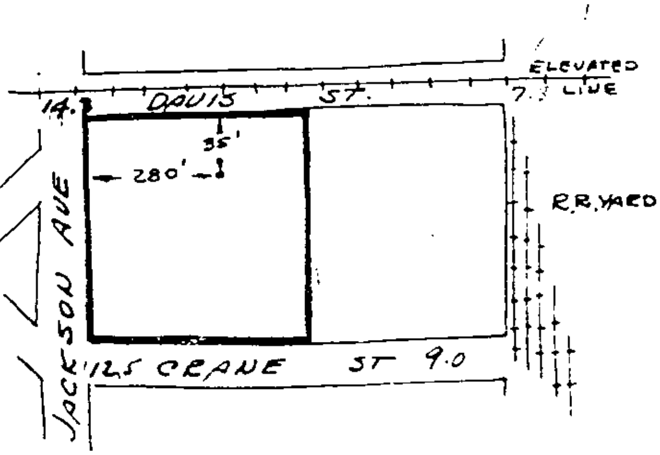
Chlorine BRACKISH AND CORROSIVE.

Water Level 1 FT. FROM SURFACE 15 YR AGO - HAD 30 FT. DRAWDOWN WHEN PUMPING.

Well Water is used for TESTING METERS

Information furnished by MR. BACHMAN.

Sketch or written Description (Location of Well, etc.)



Water Power & Control Commission Record

Applic. No.
Date Filed
Hearing
Decision
Service Well
Diffusion Well
Remarks

Information from Well Driller

Well No.
Driller Sw. Gray
Outer Casing
Inner Casing 8"
Screen
Screen Setting 290'
Make of Pump
Capacity of Pump 100 gpm
Motor
Date Installed 1915
Remarks:

History & Remarks FLUID METERS. PUMPED FOR ABOUT 10 YEARS. ALL WATER RETURNED TO GROUND.
JUST USED WELL WHEN TESTING LARGE METERS.

ROCK AT 30'

[illegible] well below [illegible]
[illegible] 12± M.S.L.
Elevation of Top of Well M.S.L.

Fred [illegible] — Investigator

224

STATE OF NEW YORK
CONSERVATION DEPARTMENT
WATER POWER AND CONTROL COMMISSION

Map No. Q224
W. S. Applic. No.
A.C. YEATCH #90

Field Investigation

Service Well ... Nov. 2 ... 1934

We...	...oth	Casings	Screen	Type Pump	Make Pump	Capacity New	Capacity 1936	Driller and Date Installed
OUT OF EXISTENCE								

Diffusion Well ...

Use of Water (Estimated)

1903	1910	1915	1920	1925	1930	1933	1936
				0	0	0	0

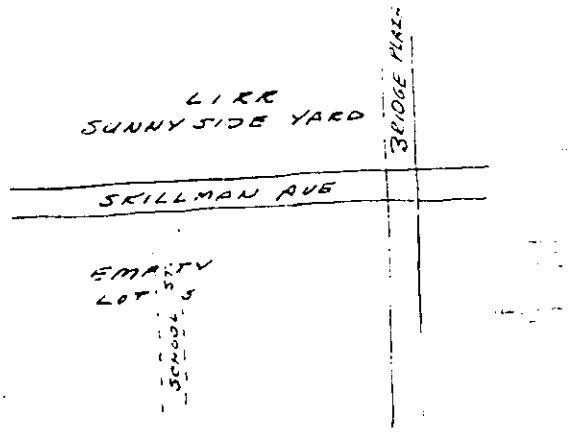
Chlorine ...

Water Level ...

Well Water is used for ...

Information furnished by ...

Sketch or written Description (Location of Well, etc.)



(Owner) MARY RYAN

(Mail Address) (31 PL.)
SKILLMAN AVE & SCHOOL ST.
(Location of Plant)

Water Power & Control Commission Record

Applic. No.
Date Filed
Hearing
Decision
Service Well
Diffusion Well
Remarks ...

Information from Well Driller

Well No.
Driller
Outer Casing
Inner Casing
Screen
Screen Setting
Make of Pump
Capacity of Pump
Motor
Date Installed
Remarks: ...

History & Remarks
A.C. YEATCH #90 - 4 WELLS
4" dia - 8' deep - 78 G.P.M.

Top of well below curb
Elevation of Curb M. S. L.
Elevation of Top of Well M. S. L.

Investigator
Fred J. Beckstein

Elevation 5 feet
Depth 5 1/2 feet
Spread 4 flowing wells - in Drift

STATE OF NEW YORK
CONSERVATION DEPARTMENT
WATER POWER AND CONTROL COMMISSION

Map No. Q 14
W. S. Applic. No.
A.C.Yeotch #93

Field Investigation

Nov. 13, 1936

........Service Well

Well	Depth	Casings	Screen	Type Pump	Make Pump	Capacity New	Capacity 1936	Driller and Date Installed
	4 OLD WELLS PLUGGED AT LEAST 10 YR.							
	30	FLOWS						

Diffusion Well

Use of Water (Estimated)

1903	1910	1915	1920	1925	1930	1933	1936
					0	0	0

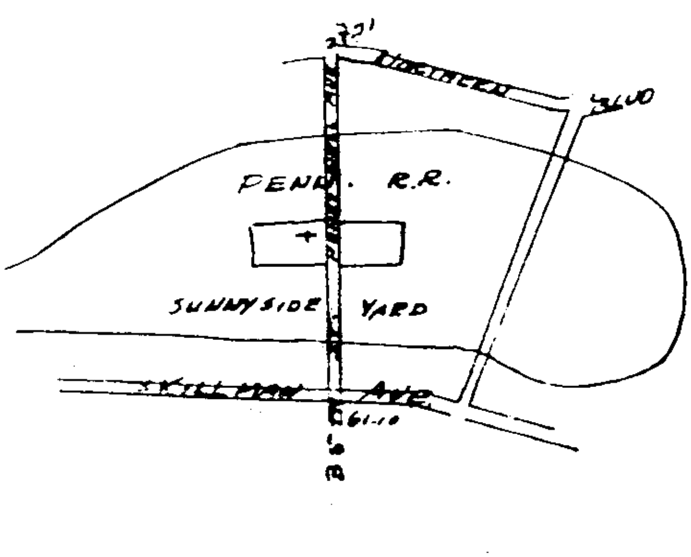
Chlorine PASSED BY CITY

Water Level

Well Water was used for BOILERS

Information furnished by T.P. GEARY CHIEF CLERK

Sketch or written Description (Location of Well, etc.)



(Owner) PENN. R.R. Co.
SUNNYSIDE YARD AT 35TH ST.
(Mail Address)
HONEYWELL AVE.
(Location of Plant)

Water Power & Control Commission Record

Applic. No.
Date Filed
Hearing
Decision
Service Well

Diffusion Well

Remarks

Information from Well Driller
Well No.
Driller
Outer Casing
Inner Casing
Screen
Screen Setting
Make of Pump
Capacity of Pump
Motor
Date Installed
Remarks

History & Remarks R.R.YARD
4 OLD WELLS ABANDONED
10 YR. AGO.
OIL FROM TRACK SWITCH
BOXES SAID TO HAVE CONTAMINATED
WELLS.
A.C.Yeotch #93

D.W.S. 60E.1934. 12" dia 22' deep dr. 1909, Abandoned 1925. Suction lift, 200 cu ft. min, Used 46,000 cu.ft. day

Top of well below curb
Elevation of Curb M. S. L.
Elevation of Top of Well M. S. L.

Investigator
Fred J. Bechstein

ELEVATION 35 FEET DEPTH 30 FEET

GROUP OF WELLS, PARTLY FLOWING.
WATER GOOD.
(CROSBY)

APPENDIX I

Horizontal and Vertical
Hydraulic Gradient Calculations

Table I-1. Summary of Horizontal Hydraulic Gradients and Horizontal Ground-Water Velocities, Sunnyside Yard, Queens, New York.

Flow Path (between wells or equipotential lines)	Horizontal Hydraulic Conductivity* (ft/d)	Ground-Water Elevations (ft rmsl) (H1)	(H2)	Difference in Ground-Water Elevations (ft)	Length of Flow Line (ft)	Horizontal Hydraulic Gradient (ft/ft)	Effective Porosity** (dimensionless)	Horizontal Ground-Water Velocity, (ft/d)
MW-32 to MW-42	410	22.07	10.78	11.29	2820	0.004	0.25	6.6
MW-25A to MW-20	410	17.24	16.06	1.18	1220	0.001	0.25	1.6
Contours 14 to 11 in SW Corner of Area 1	410	14.00	11.00	3.00	370	0.008	0.25	13.1
MW-48D to MW-44D	500	19.38	11.03	8.35	3240	0.003	0.35	4.3

NOTE: Ground-water velocity based upon modified form of Darcy's Law (i.e., Velocity = [Hydraulic Conductivity * Hydraulic Gradient]/Effective Porosity)

* = Based on results of pumping test on MW-40D in Area 1
** = Based on published values (Walton 1991)
ft/d = feet per day
ft rmsl = feet relative to mean sea level
ft/ft = feet per foot
H1 = maximum head along ground-water flow path
H2 = minimum head along ground-water flow path

ble I-2. Summary of Vertical Hydraulic Gradients In Monitoring Well Clusters, Sunnyside Yard, Queens, New York.

Vertical Hydraulic Gradients Between Water-Table and Upper Glacial Aquifer Wells February 8, 1993

Monitoring Well Cluster Designations	Ground-Water Elevation (ft RMSL)		Top of Screen Zone (ft RMSL)		Bottom of Screen Zone (ft RMSL)		Midpoint of Screen Zone (ft RMSL)		Midpoint of Water Column (ft RMSL)	Vertical Difference in Ground-Water Elevations (ft)	Vertical Distance Between Midpoints of Screen and Water Column (ft)	Vertical Hydraulic Gradient (ft/ft)
MW-47 & MW-48D	20.70	18.68	24.37	-2.69	14.37	-12.69	19.37	-7.69	17.535	2.02	25.225	0.0801
MW-43 & MW-44D	11.02	11.10	12.65	-14.64	2.65	-24.64	7.65	-19.64	6.835	-0.08	26.475	-0.0030

Vertical Hydraulic Gradients Between Water-Table and Upper Glacial Aquifer Wells June 14, 1994

Monitoring Well Cluster Designations	Ground-Water Elevation (ft RMSL)		Top of Screen Zone (ft RMSL)		Bottom of Screen Zone (ft RMSL)		Midpoint of Screen Zone (ft RMSL)		Midpoint of Water Column (ft RMSL)	Vertical Difference in Ground-Water Elevations (ft)	Vertical Distance Between Midpoints of Screen and Water Column (ft)	Vertical Hydraulic Gradient (ft/ft)
MW-47 & MW-48D	22.55	19.38	24.37	-2.69	14.37	-12.69	19.37	-7.69	18.46	3.17	26.15	0.1212
MW-61 & MW-62D	17.34	17.31	18.59	-8.24	8.59	-18.24	13.59	-13.24	12.97	0.03	26.21	0.0011
MW-19 & MW-39D	14.10	14.81	14.96	-11.35	4.96	-21.35	9.96	-16.35	9.53	-0.71	25.88	-0.0274
MW-49 & MW-38D	14.76	15.48	17.04	-10.80	7.04	-20.80	12.04	-15.80	10.90	-0.72	26.70	-0.0270
MW-57 & MW-40D	16.43	16.45	17.24	-8.75	7.24	-18.75	12.24	-13.75	11.84	-0.02	25.59	-0.0008
MW-43 & MW-44D	10.99	11.03	12.65	-14.64	2.65	-24.64	7.65	-19.64	6.82	-0.04	26.46	-0.0015

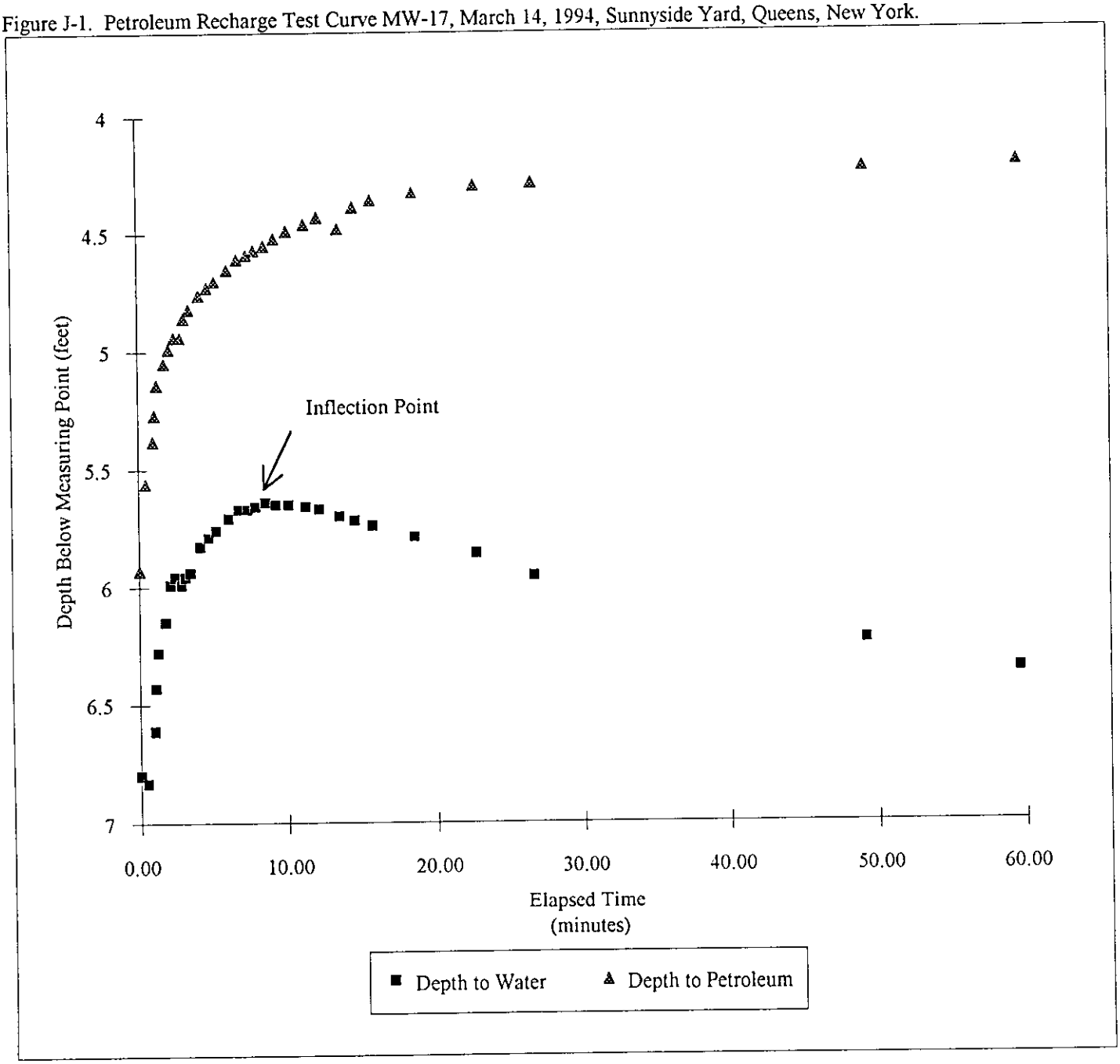
* = Midpoint of water column for wells whose screen zone straddles the water table
ft = feet
ft RMSL = feet relative to mean sea level
ft/ft = feet per foot

Note: A negative vertical hydraulic gradient indicates that the potential for ground water to flow upward (i.e., flow from the underlying to the overlying unit)
A positive vertical hydraulic gradient indicates that the potential for ground water to flow downward (i.e., flow from the overlying to the underlying unit)

APPENDIX J

Separate-Phase Petroleum
Bail-Down Test Results

Figure J-1. Petroleum Recharge Test Curve MW-17, March 14, 1994, Sunnyside Yard, Queens, New York.



MW-17	Elapsed Time (minutes)	Depth to Water (ft-bmp)	Depth to Petroleum (ft-bmp)
Static Water-Level	0.00	6.80	5.93
Inflection Point	8.55	5.64	4.55
Actual Petroleum Thickness 5.64 - 4.55 = 1.09			

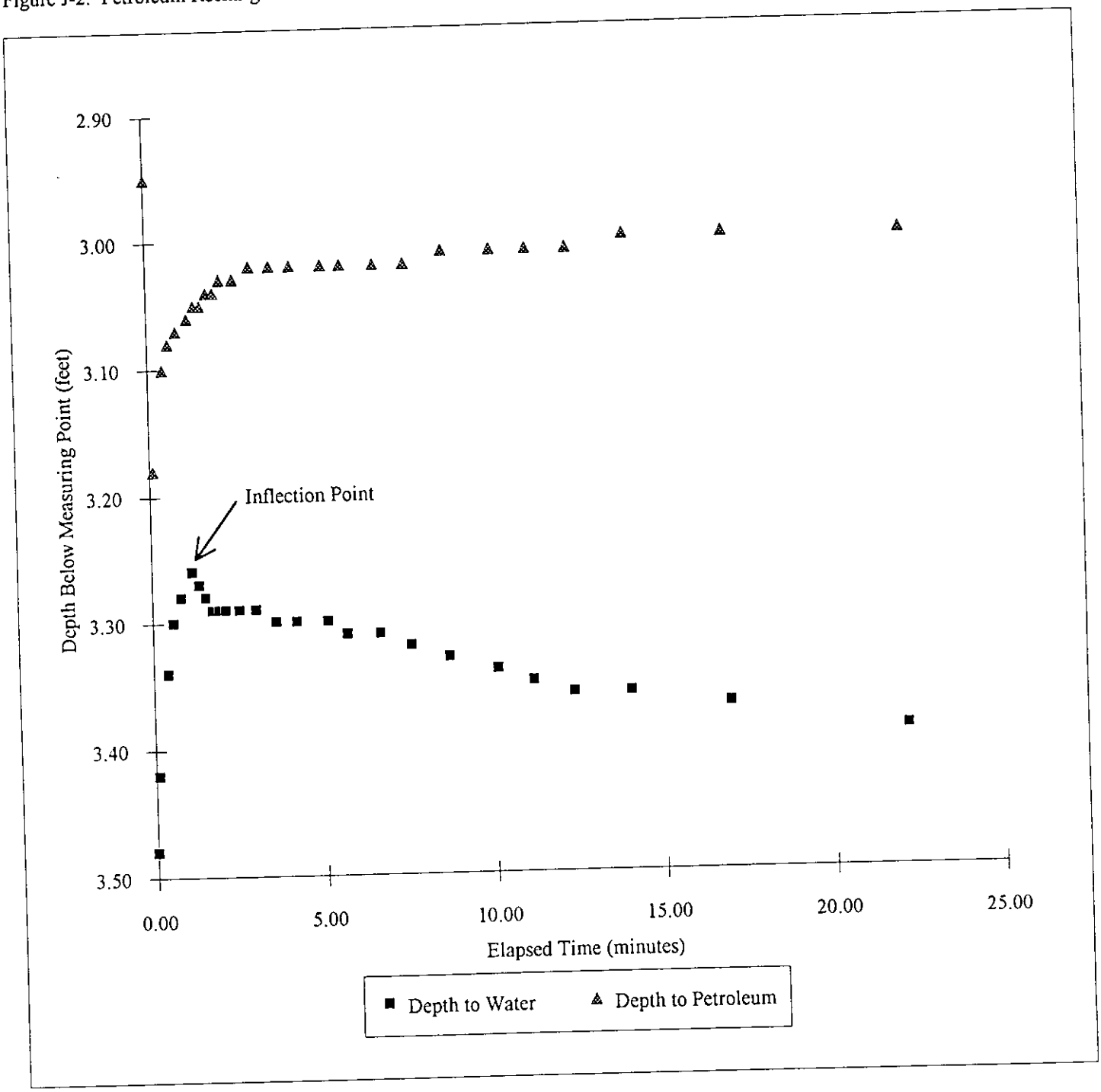
Figure J-1. Petroleum Recharge Test, MW-17, March 14, 1994, Sunnyside Yard, Queens, New York.

Elapsed Time (minutes)	Depth to Water (ft-bmp)	Depth to Petroleum (ft-bmp)
0.00	6.8	5.93
0.50	6.83	5.56
1.00	6.61	5.38
1.08	6.43	5.27
1.25	6.28	5.14
1.75	6.15	5.05
2.08	5.99	4.99
2.47	5.96	4.94
2.88	5.99	4.94
3.12	5.96	4.86
3.45	5.94	4.82
4.17	5.83	4.76
4.70	5.79	4.73
5.20	5.76	4.7
6.08	5.71	4.65
6.75	5.67	4.61
7.37	5.67	4.59
7.87	5.66	4.57
8.55	5.64	4.55
9.23	5.65	4.52
10.08	5.65	4.49
11.25	5.66	4.46
12.12	5.67	4.43
13.53	5.7	4.48
14.55	5.72	4.39
15.73	5.74	4.36
18.53	5.79	4.33
22.70	5.86	4.3
26.63	5.96	4.29
49.15	6.23	4.23
59.57	6.36	4.21

Note:

ft-bmp - feet below measuring point

Figure J-2. Petroleum Recharge Test Curve, MW-22, March 14, 1994, Sunnyside Yard, Queens, New York.



MW-22	Elapsed Time (minutes)	Depth to Water (ft-bmp)	Depth to Petroleum (ft-bmp)
Static Water Level	0.00	3.48	2.95
Inflection Point	1.17	3.26	3.06
Actual Petroleum Thickness 3.26 - 3.06 = 0.20			

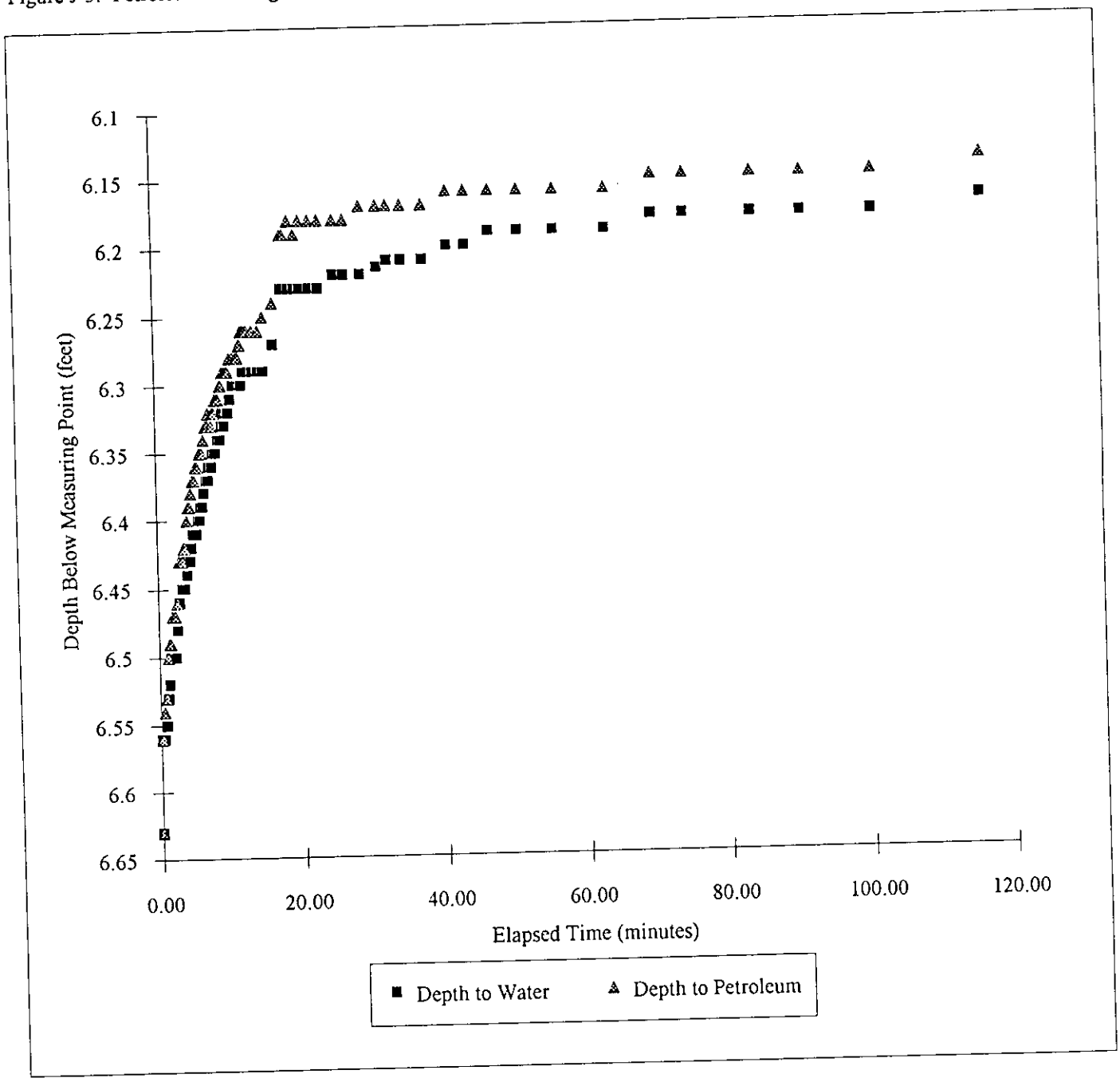
Figure J-2. Petroleum Recharge Test, MW-22, March 14, 1994, Sunnyside Yard, Queens, New York.

MW-22		
Elapsed Time (minutes)	Depth to Water (ft-bmp)	Depth to Petroleum (ft-bmp)
0.00	3.48	2.95
0.10	3.42	3.18
0.42	3.34	3.10
0.58	3.30	3.08
0.83	3.28	3.07
1.17	3.26	3.06
1.37	3.27	3.05
1.55	3.28	3.05
1.75	3.29	3.04
1.95	3.29	3.04
2.15	3.29	3.03
2.53	3.29	3.03
3.03	3.29	3.02
3.62	3.30	3.02
4.22	3.30	3.02
5.13	3.30	3.02
5.70	3.31	3.02
6.67	3.31	3.02
7.57	3.32	3.02
8.68	3.33	3.01
10.10	3.34	3.01
11.15	3.35	3.01
12.33	3.36	3.01
14.03	3.36	3.00
16.95	3.37	3.00
22.17	3.39	3.00

Note:

ft-bmp - feet below measuring point

Figure J-3. Petroleum Recharge Test Curve, MW-36, March 14, 1994, Sunnyside Yard, Queens, New York.



MW-36	Elapsed Time (minutes)	Depth to Water (ft-bmp)	Depth to Petroleum (ft-bmp)
Static Water Level	0.00	6.63	6.63
Inflection Point		Inconclusive	
Actual Petroleum Thickness			
Inconclusive			

Figure J-3. Petroleum Recharge Test, MW-36, March 14, 1994, Sunnyside Yard, Queens, New York.

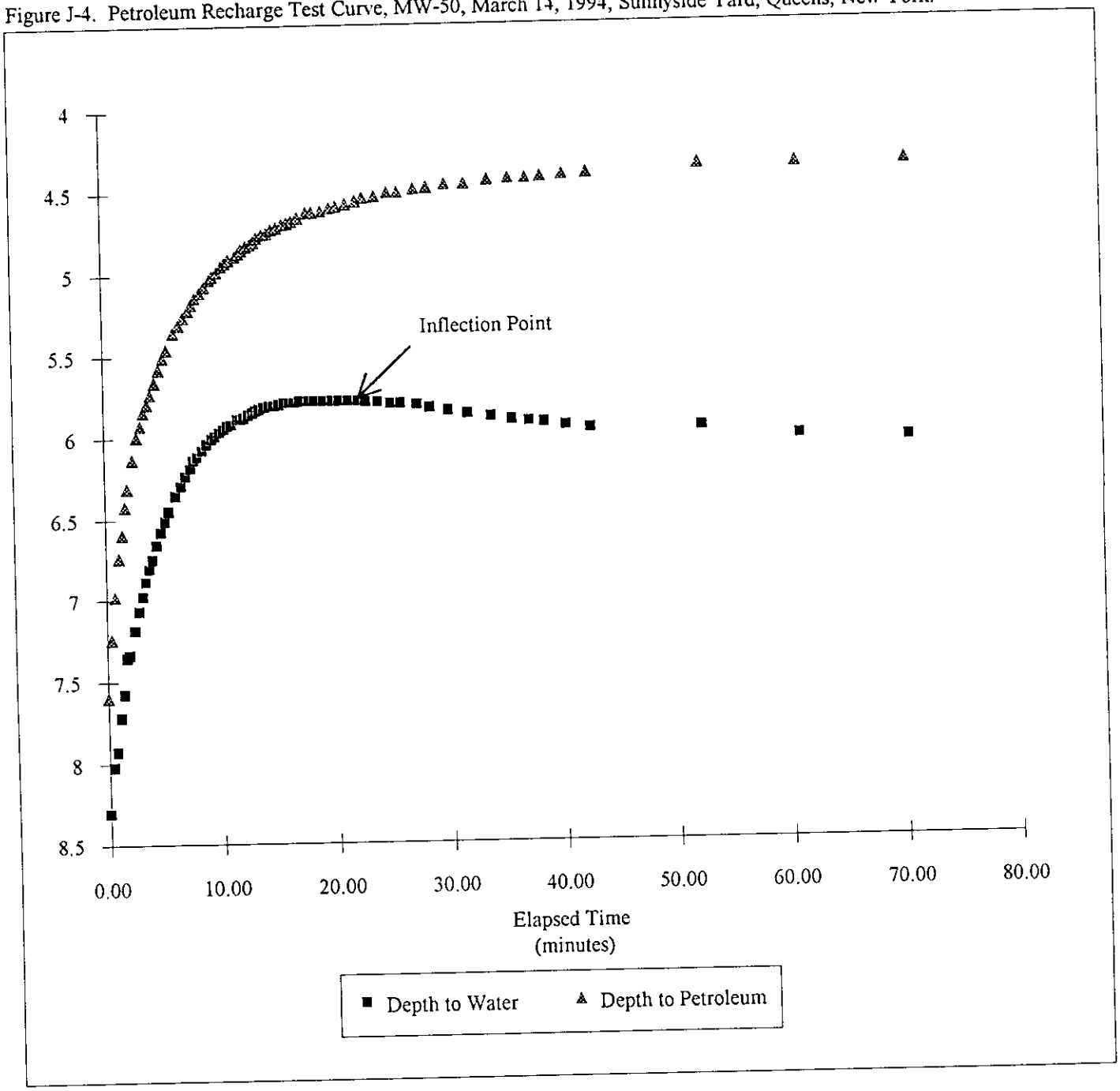
Elapsed Time (minutes)	Depth to Water (ft-bmp)	Depth to Petroleum (ft-bmp)
0.00	6.63	6.63
0.18	6.56	6.56
0.57	6.56	6.54
0.87	6.55	6.53
1.13	6.53	6.5
1.35	6.52	6.49
1.55	6.5	6.49
1.82	6.5	6.47
2.25	6.5	6.47
2.58	6.48	6.46
2.92	6.46	6.43
3.33	6.45	6.43
3.58	6.45	6.42
3.80	6.45	6.42
4.08	6.44	6.4
4.32	6.43	6.39
4.55	6.43	6.39
4.75	6.42	6.38
5.00	6.41	6.37
5.28	6.41	6.37
5.47	6.41	6.36
5.72	6.4	6.36
5.97	6.4	6.35
6.17	6.39	6.35
6.40	6.39	6.35
6.65	6.38	6.34
6.92	6.37	6.33
7.20	6.37	6.33
7.37	6.36	6.32
7.80	6.36	6.33
7.97	6.35	6.32
8.12	6.35	6.32
8.30	6.35	6.31
8.57	6.34	6.31
8.82	6.34	6.31
9.00	6.34	6.3
9.22	6.33	6.3
9.42	6.32	6.29
9.67	6.33	6.29
9.83	6.32	6.29
10.00	6.32	6.29
10.18	6.32	6.29
10.47	6.31	6.28
10.97	6.3	6.28
11.42	6.3	6.28
11.65	6.3	6.28

Figure J-3. Petroleum Recharge Test, MW-36, March 14, 1994, Sunnyside Yard, Queens, New York.

Elapsed Time (minutes)	Depth to Water (ft-bmp)	Depth to Petroleum (ft-bmp)
11.82	6.3	6.27
11.97	6.3	6.27
12.08	6.3	6.26
12.30	6.29	6.26
12.45	6.29	6.26
12.70	6.29	6.26
13.00	6.29	6.26
13.72	6.29	6.26
14.50	6.29	6.26
15.25	6.29	6.25
16.67	6.27	6.24
17.92	6.23	6.19
18.30	6.23	6.19
19.00	6.23	6.18
19.75	6.23	6.19
20.50	6.23	6.18
21.87	6.23	6.18
23.17	6.23	6.18
25.25	6.22	6.18
26.75	6.22	6.18
29.00	6.22	6.17
31.33	6.215	6.17
32.75	6.21	6.17
34.75	6.21	6.17
37.75	6.21	6.17
41.25	6.2	6.16
43.75	6.2	6.16
47.17	6.19	6.16
51.17	6.19	6.16
56.25	6.19	6.16
63.50	6.19	6.16
70.00	6.18	6.15
74.50	6.18	6.15
84.00	6.18	6.15
91.00	6.18	6.15
101.00	6.18	6.15
116.25	6.17	6.14

Note:
ft-bmp - feet below measuring point

Figure J-4. Petroleum Recharge Test Curve, MW-50, March 14, 1994, Sunnyside Yard, Queens, New York.



MW-50	Elapsed Time (minutes)	Depth to Water (ft-bmp)	Depth to Petroleum (ft-bmp)
Static Water Level	0.00	8.3	7.6
Inflection Point	22.15	5.78	4.56
Actual Petroleum Thickness 5.78 - 4.56 = 1.22			

Figure J-4. Petroleum Recharge Test, MW-50, March 14, 1994, Sunnyside Yard, Queens, New York.

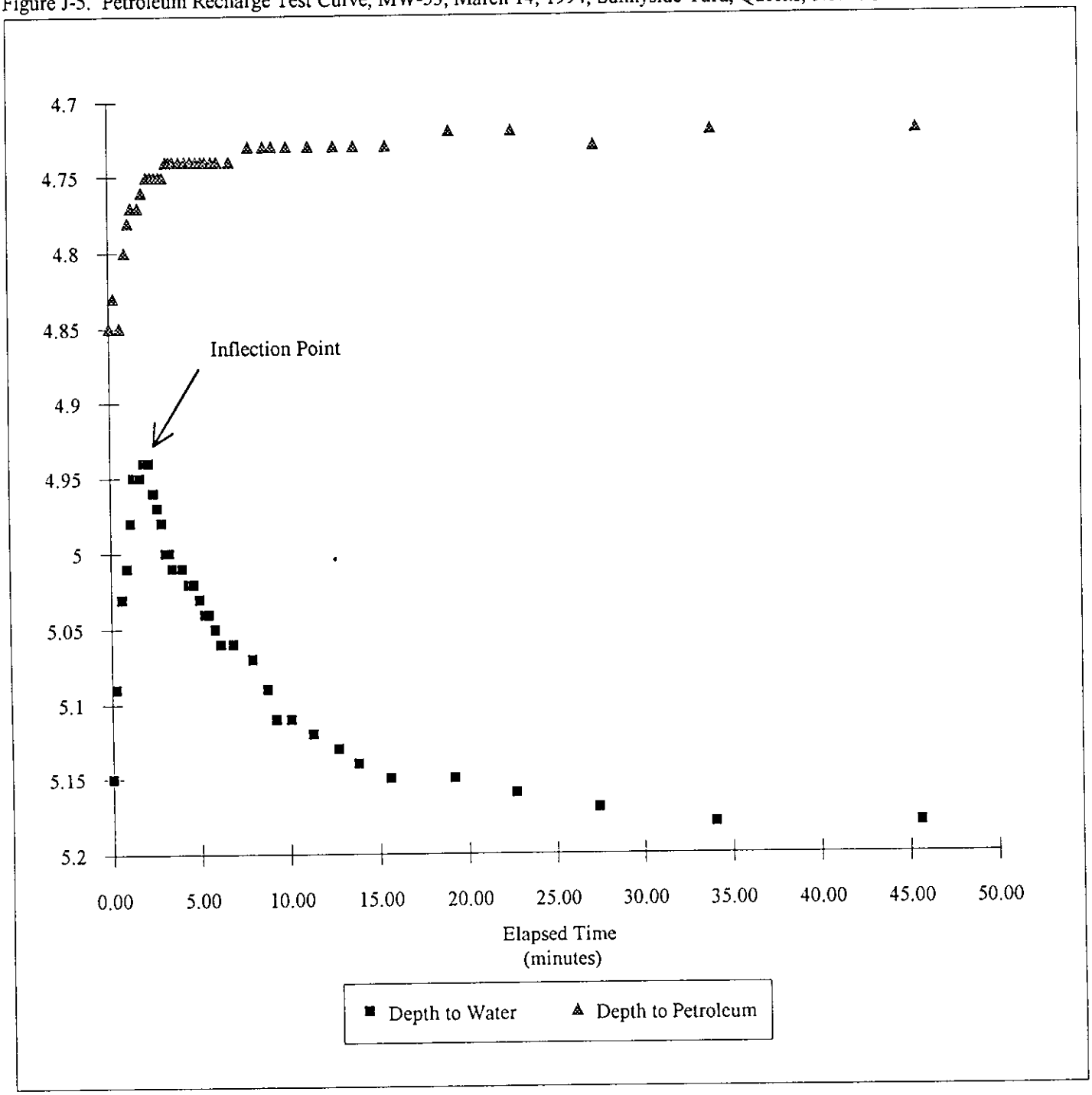
Elapsed Time (minutes)	Depth to Water (ft-bmp)	Depth to Petroleum (ft-bmp)
0.00	8.3	7.6
0.33	8.02	7.24
0.70	7.93	6.98
1.08	7.72	6.74
1.40	7.58	6.59
1.67	7.36	6.42
1.93	7.34	6.31
2.38	7.19	6.13
2.80	7.07	5.99
3.17	6.98	5.92
3.42	6.89	5.84
3.75	6.81	5.79
4.03	6.75	5.73
4.43	6.66	5.66
4.78	6.58	5.58
5.20	6.51	5.51
5.52	6.45	5.46
6.12	6.36	5.36
6.60	6.3	5.31
7.00	6.24	5.26
7.47	6.19	5.22
7.77	6.14	5.18
8.08	6.12	5.14
8.52	6.08	5.11
8.92	6.04	5.07
9.37	6.01	5.03
9.63	5.99	5.01
10.02	5.97	4.98
10.42	5.95	4.95
10.77	5.93	4.93
11.07	5.92	4.91
11.62	5.89	4.89
11.88	5.89	4.87
12.18	5.88	4.85
12.57	5.86	4.83
12.95	5.85	4.82
13.22	5.84	4.8
13.53	5.83	4.78
13.97	5.82	4.76
14.38	5.81	4.75
14.80	5.81	4.73
15.25	5.8	4.72
15.75	5.79	4.7
16.15	5.79	4.69
16.58	5.79	4.68
17.10	5.78	4.66
17.83	5.78	4.63

Figure J-4. Petroleum Recharge Test, MW-50, March 14, 1994, Sunnyside Yard, Queens, New York.

Elapsed Time (minutes)	Depth to Water (ft-bmp)	Depth to Petroleum (ft-bmp)
18.33	5.78	4.63
19.15	5.78	4.62
19.90	5.78	4.6
20.47	5.78	4.59
21.33	5.78	4.58
22.15	5.78	4.56
22.77	5.79	4.54
23.87	5.79	4.53
24.95	5.8	4.51
25.83	5.8	4.51
27.25	5.81	4.49
28.42	5.83	4.48
30.02	5.85	4.46
31.73	5.87	4.46
33.82	5.89	4.44
35.60	5.91	4.43
37.13	5.92	4.43
38.45	5.93	4.42
40.43	5.95	4.41
42.55	5.97	4.4
52.42	5.97	4.36
60.92	6.03	4.36
70.50	6.05	4.35

Note:
ft-bmp - feet below measuring point

Figure J-5. Petroleum Recharge Test Curve, MW-53, March 14, 1994, Sunnyside Yard, Queens, New York.



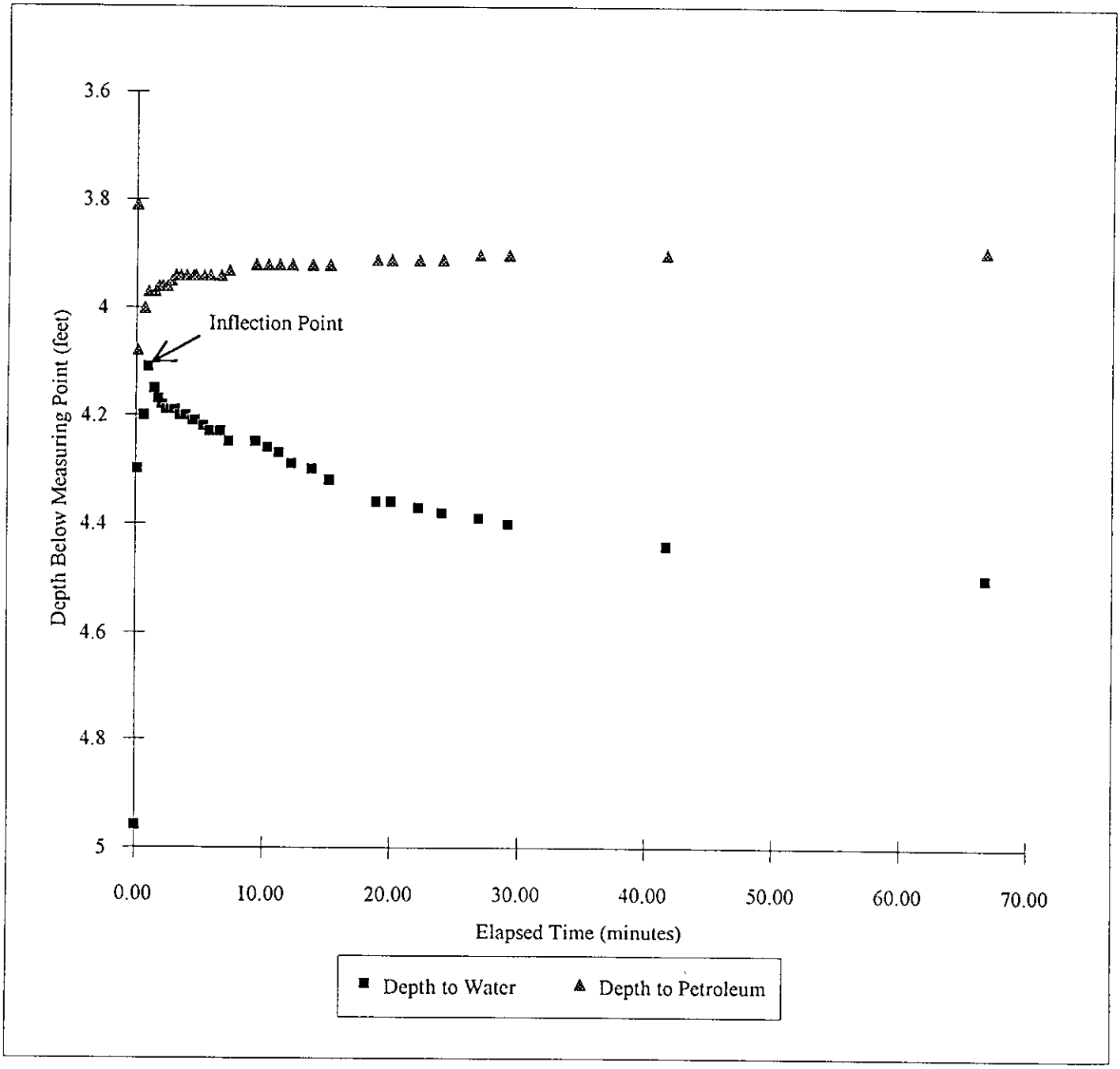
MW-53	Elapsed Time (minutes)	Depth to Water (ft-bmp)	Depth to Petroleum (ft-bmp)
Static Conditions	0.00	5.15	4.85
Inflection Point	2.17	4.94	4.75
Actual Petroleum Thickness 4.94 - 4.75 = 0.19			

Figure J-5. Petroleum Recharge Test Curve, MW-53, March 14, 1994, Sunnyside Yard, Queens, New York.

Elapsed Time (minutes)	Depth to Water (ft-bmp)	Depth to Petroleum (ft-bmp)
0.00	5.15	4.85
0.25	5.09	4.83
0.58	5.03	4.85
0.88	5.01	4.8
1.12	4.98	4.78
1.28	4.95	4.77
1.67	4.95	4.77
1.88	4.94	4.76
2.17	4.94	4.75
2.38	4.96	4.75
2.62	4.97	4.75
2.87	4.98	4.75
3.07	5	4.75
3.25	5	4.74
3.43	5.01	4.74
3.65	5.01	4.74
4.00	5.01	4.74
4.32	5.02	4.74
4.65	5.02	4.74
4.97	5.03	4.74
5.25	5.04	4.74
5.50	5.04	4.74
5.83	5.05	4.74
6.13	5.06	4.74
6.82	5.06	4.74
7.90	5.07	4.73
8.75	5.09	4.73
9.20	5.11	4.73
10.05	5.11	4.73
11.27	5.12	4.73
12.67	5.13	4.73
13.82	5.14	4.73
15.62	5.15	4.73
19.17	5.15	4.72
22.68	5.16	4.72
27.37	5.17	4.73
34.07	5.18	4.72
45.60	5.18	4.72

Note:
ft-bmp - feet below measuring point

Figure J-6. Petroleum Recharge Test Curve, MW-54, March 16, 1994, Sunnyside Yard, Queens, New York.



MW-54	Elapsed Time (minutes)	Depth to Water (ft-bmp)	Depth to Petroleum (ft-bmp)
Static Conditions	0.00	4.96	3.81
Inflection Point	0.93	4.11	3.97
Actual Petroleum Thickness 4.11 - 3.97 = 0.14			

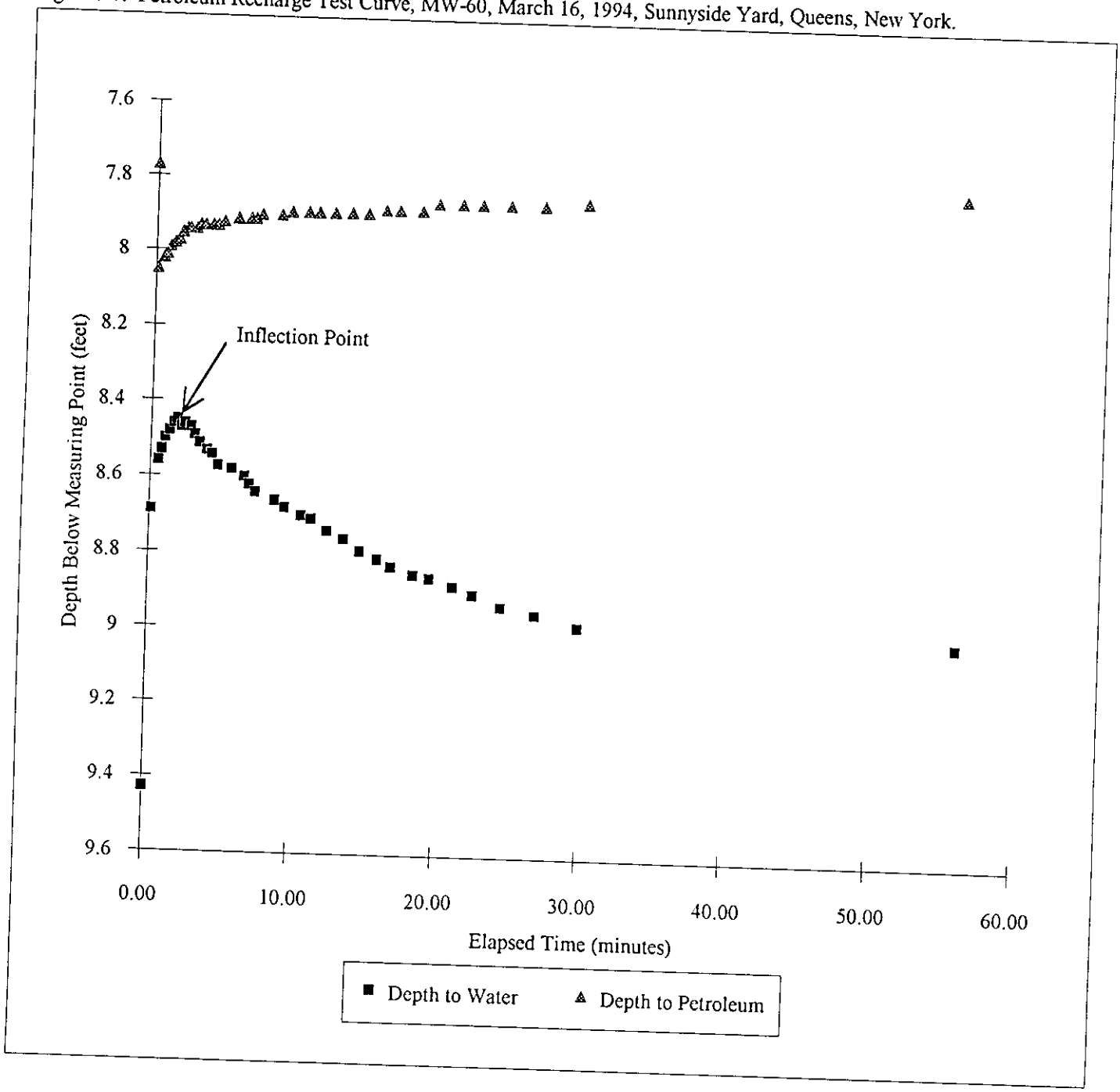
Figure J-6. Petroleum Recharge Test, MW-54, March 16, 1994, Sunnyside Yard, Queens, New York.

Elapsed Time (minutes)	Depth to Water (ft-bmp)	Depth to Petroleum (ft-bmp)
0.00	4.96	3.81
0.10	4.3	4.08
0.62	4.2	4
0.93	4.11	3.97
1.42	4.15	3.97
1.70	4.17	3.96
2.00	4.18	3.96
2.37	4.19	3.96
2.73	4.19	3.95
3.05	4.19	3.94
3.38	4.2	3.94
3.88	4.2	3.94
4.42	4.21	3.94
4.62	4.21	3.94
5.25	4.22	3.94
5.75	4.23	3.94
6.63	4.23	3.94
7.25	4.25	3.93
9.33	4.25	3.92
10.30	4.26	3.92
11.18	4.27	3.92
12.17	4.29	3.92
13.77	4.3	3.92
15.12	4.32	3.92
18.83	4.36	3.91
19.93	4.36	3.91
22.10	4.37	3.91
23.97	4.38	3.91
26.85	4.39	3.9
29.12	4.4	3.9
41.62	4.44	3.9
66.70	4.5	3.89

Note:

ft-bmp - feet below measuring point

Figure J-7. Petroleum Recharge Test Curve, MW-60, March 16, 1994, Sunnyside Yard, Queens, New York.



MW-60	Elapsed Time (minutes)	Depth to Water (ft-bmp)	Depth to Petroleum (ft-bmp)
Static Condition	0.00	9.43	7.77
Inflection Point	1.80	8.45	7.95
Actual Petroleum Thickness 8.45 - 7.95 = 0.50			

Figure J-7. Petroleum Recharge Test, MW-60, March 16, 1994, Sunnyside Yard, Queens, New York.

Elapsed Time (minutes)	Depth to Water (ft-bmp)	Depth to Petroleum (ft-bmp)
0.00	9.43	7.77
0.13	8.69	8.05
0.50	8.56	8.02
0.77	8.53	8.01
0.98	8.5	7.99
1.28	8.48	7.98
1.55	8.46	7.97
1.80	8.45	7.95
2.07	8.47	7.94
2.33	8.46	7.94
2.73	8.47	7.94
3.00	8.49	7.93
3.33	8.51	7.93
3.87	8.53	7.93
4.22	8.54	7.93
4.63	8.57	7.92
5.60	8.58	7.91
6.48	8.60	7.91
6.83	8.62	7.91
7.27	8.64	7.9
8.62	8.66	7.9
9.28	8.68	7.89
10.45	8.70	7.89
11.18	8.71	7.89
12.25	8.74	7.89
13.42	8.76	7.89
14.53	8.79	7.89
15.75	8.81	7.88
16.70	8.83	7.88
18.25	8.85	7.88
19.42	8.86	7.86
21.05	8.88	7.86
22.47	8.90	7.86
24.40	8.93	7.86
26.77	8.95	7.86
29.77	8.98	7.85
56.00	9.01	7.81

Note:

ft-bmp - feet below measuring point