A Department of Ecology Report

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Data Appendix: Reconnaissance Survey on Metals, Semivolatiles, and PCBs in Sediment Deposits Behind Upriver Dam, Spokane River

Abstract

This is the data appendix for Publication No. 00-03-021: *Reconnaissance Survey on Metals, Semivolatiles, and PCBs in Sediment Deposits Behind Upriver Dam, Spokane River.*

Contacts

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By Art Johnson
June 2000

Publication No. 00-03-026

Washington State Department of Ecology
Manchester Laboratory

February 14, 2000

TO: Art Johnson

FROM: Catherine Bickle, Technician CB

THROUGH: Jim Ross, Chemist

SUBJECT: General Chemistry Quality Assurance memo for the Upriver Dam Sediment project.

SUMMARY

The data generated by the analyses of these samples can be used without qualifications.

SAMPLE INFORMATION

The Manchester Laboratory received samples 00018080 - 85 from the Upriver Dam project on 01-04-00 in good condition.

HOLDING TIMES

Analyses were performed within all applicable EPA holding times.

ANALYSIS PERFORMANCE

Instrument Calibration

Instrument calibration was performed before each analytical run and checked by initial calibration verification standards.

Precision Data

The results of the triplicate analyses of the samples were used to evaluate the precision. The Relative Percent Differences (RPD) and the Relative Standard Deviation (RSD) were within their acceptance windows of +/- 20%.

Laboratory Control Sample (LCS) Analyses

LCS analyses were within their acceptance windows of +/- 20%.

Please call Catherine Bickle @ 871-8807 or Jim Ross @ 871-8808 with any questions or concerns about this project.

cc: Project File

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Total Organic Carbon (70 C)

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Project Officer: Art Johnson
Date Reported: 02-FEB-00

Method: PSEP-TOC
Matrix: Frozen Sediment/soil
Analyte: Total Organic Carbon

Sample	QC	Field ID	Result	Qualifier	Units	Collected	Analyzed
00018080		#1	8.3		%	10/14/99	02/02/00
00018081		#2	3.5		%	10/14/99	02/02/00
00018082		#3	13.4		%	10/14/99	02/02/00
00018085		#9	1.7		%	10/14/99	02/02/00
00018085	Duplicate		1.8		%	10/14/99	02/02/00
00018085	Duplicate		1.7		%	10/14/99	02/02/00

Authorized By: C Bickle Release Date: 2/2/2000 Page: 1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Total Organic Carbon (104 C)

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Project Officer: Art Johnson
Date Reported: 07-FEB-00

Method: PSEP-TOCM
Matrix: Frozen Sediment/soil
Analyte: Total Organic Carbon

Sample	QC	Field ID	Result	Qualifier	Units	Collected	Analyzed
00018080		#1	8.4		%	10/14/99	02/03/00
00018081		#2	3.6		%	10/14/99	02/03/00
00018082		#3	13.7		%	10/14/99	02/03/00
00018085		#9	1.8		%	10/14/99	02/03/00
00018085	Duplicate		1.8		%	10/14/99	02/03/00
00018085	Duplicate		1.7		%	10/14/99	02/03/00

Authorized By: C. Bickle Release Date: 2/7/00

Washington Department of Ecology
Manchester Environmental Laboratory
7411 Beach Drive East
Port Orchard, WA 98366

February 28, 2000

TO: Art Johnson
FROM: Jim Ross, Manchester Lab
SUBJECT: Metals Quality Assurance memo for the Upriver Dam sediments project

SUMMARY

Antimony spike recoveries were low (39,46%). All antimony data is qualified as estimated (J) or estimated below reporting limit (UJ). Mercury was analyzed for site #1 as originally requested. The analyst was not informed of the change in request to analyze all samples until after samples had remained unfrozen past normal holding time for Hg (28 days). Sites 2, 3 and 9 are qualified as estimated for mercury due to exceedance of holding time. All other data for this project met all quality assurance and quality control criteria.

SAMPLE RECEIPT

The samples were received by the Manchester Laboratory on 1/4/00

HOLDING TIMES

All analysis except mercury were performed within the specified holding time (28 days for Hg, 180 days all other metals).

INSTRUMENT CALIBRATION

Instrument calibration was performed before each analytical run and checked by initial calibration verification standards and blanks. The AA calibration curves returned a correlation coefficient of 0.995 or better. Continuing calibration standards and blanks were analyzed at a frequency of 10% during the run and again at the end of the analytical run. All initial and continuing calibration verification standards and blanks were within the relevant control limits.

PROCEDURAL BLANKS

The procedural blanks associated with these samples showed no analytically significant levels of requested analytes.

SPIKED SAMPLE ANALYSES

All spike and duplicate spike recoveries met the acceptance criteria (75-125%) except antimony.

PRECISION DATA

Precision estimates based on duplicate spike analysis were all within the acceptance criteria for duplicate analysis ($\pm$20%)

LABORATORY CONTROL SAMPLE (LCS) ANALYSES

All LCS analyses were within the acceptance criteria for the individual analytes.

Please call Jim Ross at (360) 871-8808 to further discuss this project.

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Inductively Coupled Plasma

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018080 **Date Collected:** 10/14/99 **Method:** SW6010
Field ID: #1 **Date Prepared:** 01/14/00 **Matrix:** Sediment/Soil
Project Officer: Art Johnson **Date Analyzed:** 01/21/00 **Units:** mg/Kg dw

Analyte	Result	Qualifier
Antimony	5	UJ
Beryllium	**0.51**	
Cadmium	**26.6**	
Chromium	**24.2**	
Copper	**42.8**	
Lead	**564**	
Nickel	**15.6**	
Silver	1	U
Zinc	**3280**	

Authorized By: _____ Release Date: 2/21/00 Page: 1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Inductively Coupled Plasma

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018080 (Matrix Spike - LMX1) **Date Collected:** 10/14/99 **Method:** SW6010
Field ID: #1 **Date Prepared:** 01/14/00 **Matrix:** Sediment/Soil
Project Officer: Art Johnson **Date Analyzed:** 01/21/00 **Units:** % Recovery

Analyte	Result	Qualifier
Antimony	**39**	
Beryllium	**101**	
Cadmium	**142**	
Chromium	**103**	
Copper	**109**	
Lead		NC
Nickel	**100**	
Silver	**119**	
Zinc		NC

Authorized By: _____ Release Date: 2/21/00

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Inductively Coupled Plasma

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018080 (Matrix Spike - LMX2) **Date Collected:** 10/14/99 **Method:** SW6010
Field ID: #1 **Date Prepared:** 01/14/00 **Matrix:** Sediment/Soil
Project Officer: Art Johnson **Date Analyzed:** 01/21/00 **Units:** % Recovery

Analyte	Result	Qualifier
Antimony	**46**	
Beryllium	**101**	
Cadmium	**104**	
Chromium	**99**	
Copper	**105**	
Lead		NC
Nickel	**100**	
Silver	**115**	
Zinc		NC

Authorized By: _____ Release Date: 2/21/00

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Inductively Coupled Plasma

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018081 **Date Collected:** 10/14/99 **Method:** SW6010
Field ID: #2 **Date Prepared:** 01/14/00 **Matrix:** Sediment/Soil
Project Officer: Art Johnson **Date Analyzed:** 01/21/00 **Units:** mg/Kg dw

Analyte	Result	Qualifier
Antimony	5	UJ
Beryllium	**0.33**	
Cadmium	**12.7**	
Chromium	**17.5**	
Copper	**27.2**	
Lead	**342**	
Nickel	**11.2**	
Silver	1	U
Zinc	**1990**	

Authorized By: _____ Release Date: 2/21/00 Page: 1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Inductively Coupled Plasma

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018082 **Date Collected:** 10/14/99 **Method:** SW6010
Field ID: #3 **Date Prepared:** 01/14/00 **Matrix:** Sediment/Soil
Project Officer: Art Johnson **Date Analyzed:** 01/21/00 **Units:** mg/Kg dw

Analyte	Result	Qualifier
Antimony	16.9	J
Beryllium	0.47	
Cadmium	14.2	
Chromium	14.3	
Copper	34.4	
Lead	1420	
Nickel	21.3	
Silver	1.5	
Zinc	8960	

Authorized By: _____ Release Date: 2/21/00 Page: 1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Inductively Coupled Plasma

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018085 **Date Collected:** 10/14/99 **Method:** SW6010
Field ID: #9 **Date Prepared:** 01/14/00 **Matrix:** Sediment/Soil
Project Officer: Art Johnson **Date Analyzed:** 01/21/00 **Units:** mg/Kg dw

Analyte	Result	Qualifier
Antimony	5	UJ
Beryllium	**0.26**	
Cadmium	**4.6**	
Chromium	**14.7**	
Copper	**15.2**	
Lead	**308**	
Nickel	**7.6**	
Silver	1	U
Zinc	**1410**	

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Inductively Coupled Plasma

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Lab ID: M0014SB1 **Method:** SW6010
QC Type: Laboratory Method Blank **Date Prepared:** 01/14/00 **Matrix:** Sediment/Soil
Project Officer: Art Johnson **Date Analyzed:** 01/21/00 **Units:** mg/Kg dw

Analyte	Result	Qualifier
Antimony	5	U
Beryllium	0.1	U
Cadmium	0.5	U
Chromium	1	U
Copper	1	U
Lead	5	U
Nickel	1	U
Silver	1	U
Zinc	0.5	U

Authorized By: _____ Release Date: 2/21/00 Page: 1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Inductively Coupled Plasma

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Lab ID: M0014SL1 **Method:** SW6010
QC Type: Laboratory Control Sample **Date Prepared:** 01/14/00 **Matrix:** Sediment/Soil
Project Officer: Art Johnson **Date Analyzed:** 01/21/00 **Units:** mg/Kg dw

Analyte	Result	Qualifier
Antimony	114	%
Beryllium	118	%
Cadmium	113	%
Chromium	116	%
Copper	122	%
Lead	119	%
Nickel	114	%
Silver	119	%
Zinc	113	%

Authorized By: _____ Release Date: 2/24/00

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Arsenic

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Project Officer: Art Johnson
Date Reported: 24-FEB-00

Method: SW7060
Matrix: Sediment/Soil
Analyte: Arsenic

Sample	QC	Field ID	Result	Qualifier	Units	Collected	Analyzed
00018080		#1	**11.5**		mg/Kg dw	10/14/99	02/22/00
00018080	Matrix Spike		**97 %**			10/14/99	02/22/00
00018080	Matrix Spike		**104 %**			10/14/99	02/22/00
00018081		#2	**5.84**		mg/Kg dw	10/14/99	02/23/00
00018082		#3	**34.9**		mg/Kg dw	10/14/99	02/22/00
00018085		#9	**3.77**		mg/Kg dw	10/14/99	02/22/00
M0014SB1			0.2	**U**	mg/Kg dw		02/22/00
M0014SL1			**113**		%		02/22/00

Authorized By: Randy S Knox Release Date: 2/25/00

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Selenium

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Project Officer: Art Johnson
Date Reported: 24-FEB-00

Method: SW7740
Matrix: Sediment/Soil
Analyte: Selenium

Sample	QC	Field ID	Result	Qualifier	Units	Collected	Analyzed
00018080		#1	**0.35**		mg/Kg dw	10/14/99	02/17/00
00018080	Matrix Spike		**76 %**			10/14/99	02/17/00
00018080	Matrix Spike		**76 %**			10/14/99	02/17/00
00018081		#2	0.3	U	mg/Kg dw	10/14/99	02/24/00
00018082		#3	**0.73**		mg/Kg dw	10/14/99	02/23/00
00018085		#9	0.3	U	mg/Kg dw	10/14/99	02/23/00
M0014SB1			0.3	U	mg/Kg dw		02/17/00
M0014SL1			**98**		%		02/17/00

Authorized By: Randy L Knox Release Date: 2/25/00

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Thallium

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Project Officer: Art Johnson
Date Reported: 25-FEB-00

Method: SW7841
Matrix: Sediment/Soil
Analyte: Thallium

Sample	QC	Field ID	Result	Qualifier	Units	Collected	Analyzed
00018080		#1	0.6	U	mg/Kg dw	10/14/99	02/18/00
00018080	Matrix Spike		**92 %**			10/14/99	02/18/00
00018080	Matrix Spike		**88 %**			10/14/99	02/18/00
00018081		#2	0.6	U	mg/Kg dw	10/14/99	02/24/00
00018082		#3	0.6	U	mg/Kg dw	10/14/99	02/22/00
00018085		#9	0.6	U	mg/Kg dw	10/14/99	02/22/00
M0014SB1			0.2	U	mg/Kg dw		02/18/00
M0014SL1			**113**		%		02/18/00

Authorized By: Randy L Shuman Release Date: 2/25/00

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Mercury

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Project Officer: Art Johnson
Date Reported: 24-FEB-00

Method: EPA245.5
Matrix: Sediment/Soil
Analyte: Mercury

Sample	QC	Field ID	Result	Qualifier	Units	Collected	Analyzed
00018081		#2	.117	J	mg/Kg dw	10/14/99	02/24/00
00018082		#3	.171	J	mg/Kg dw	10/14/99	02/24/00
00018085		#9	.0643	J	mg/Kg dw	10/14/99	02/24/00
00018085	Duplicate		.102	J	mg/Kg dw	10/14/99	02/24/00
00018085	Matrix Spike		93 %			10/14/99	02/24/00
00018085	Matrix Spike		92 %			10/14/99	02/24/00
M0055SG			108		%		02/24/00
M0055SH			.003		mg/Kg dw		02/24/00

Authorized By: Release Date: 2/24/00

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Mercury

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Project Officer: Art Johnson
Date Reported: 20-JAN-00

Method: EPA245.5
Matrix: Sediment/Soil
Analyte: Mercury

Sample	QC	Field ID	Result	Qualifier	Units	Collected	Analyzed
00018080		#1	**0.0242**		mg/Kg dw	10/14/99	01/19/00
00018080	Matrix Spike		**87 %**			10/14/99	01/19/00
00018080	Matrix Spike		**89 %**			10/14/99	01/19/00
M0018SG			**104**		%		01/19/00
M0018SH			0.003	U	mg/Kg dw		01/19/00

Authorized By: Sally Cull Release Date: 1/20/00

Department of Ecology

Manchester Environmental Laboratory

Project Statement

Project Name: Upriver Dam Sediments
LIMS Project ID: 1044-00

Project Officer: Johnson, Art
Location: HQ
Program: EAP
Start Date: 01/04/00
Due Date: 02/03/00
Statement Date: 02/29/00

Samples:

Parameter	Matrix	Method	Lab	Qty	Unit Price	Extended Price
BNALL	41	SW8270	ECO	4	$ 404	$ 1,616
PCB	41	SW8082	ECO	4	$ 91	$ 364
PCLNOAA	41	SW8081	ECO	1	$ 184	$ 184
PPMETS	41	SW7841	ECO	4	$ 128	$ 512
TOCSOIL	41	PSEP-TOCM	ECO	4	$ 33	$ 132

QC:

Parameter	Matrix	Method	Lab	Qty	Unit Price	Extended Price
BNALL	41	SW8270	ECO	2	$ 404	$ 808
PCB	41	SW8082	ECO	6	$ 91	$ 546
PCLNOAA	41	SW8081	ECO	2	$ 184	$ 368
PPMETS	41	SW7841	ECO	5	$ 169	$ 845
TOCSOIL	41	PSEP-TOCM	ECO	2	$ 0	$ 0

Total Preparation Charges: $ 306

Method	Type	Matrix	Samples	Rate	Total
HG-PREP	PREP	40	9	$ 17	$ 153
SW3050	PREP	40	9	$ 17	$ 153
SW3540A	PREP	41	10	$ 0	$ 0
SW3545	PREP	41	3	$ 0	$ 0

PIC	%	In House	Contract	Generals	Metals	Organics	Bioassay	Special	Total
J2A57	100	$ 5,681	$ 0	$ 132	$ 1,663	$ 3,886	$ 0	$ 0	$ 5,681

Totals:	**$ 5,681**	**$ 0**	**$ 132**	**$ 1,663**	**$ 3,886**	**$ 0**	**$ 0**	**$ 5,681**

Washington State Department of Ecology
Manchester Environmental Laboratory
Client Satisfaction Survey

Please complete this survey and return it to the the lab committee chair. Your feedback will be used to evaluate service delivery and improve communications between clients and the lab. Send to mailstop: 47710; or fold and send to address on reverse side.

Project Name _____

Client Name _____ Program/Region_____

ANALYTICAL PRODUCT

Using a scale of 1 to 5, where 5 is excellent, please indicate your level of satisfaction with the data package you received.

	Satisfaction
Timeliness - (i.e.: you received the data within the requested turnaround time)	____
Communication - (i.e.: you understood the data report we sent you)	____
Usability - (i.e.: the data satisfied QAPP or other quality expectations)	____
Problem resolution - (i.e.: any problems resolved to your satisfaction and in a timely manner)	____
Overall impression of lab performance on this project	____

PROCESS

Planning: Did you involve anyone from the laboratory in planning the project? (Y/N)
If yes, who?_____ Were they helpful? (Y/N)
If no, would it have helped in scoping or in data delivery? (Y/N)

Access: Did you contact anyone at the lab during the course of the project? (Y/N)
If yes, did you know who to contact? (Y/N)
If no, would you have called if you had a better understanding of who to call? (Y/N)

Follow-up: Did you contact anyone at the laboratory after you received your data?
If yes, who?_____ Were they helpful? (Y/N)

Please comment on lab services associated with this project that were notably good or that could use improvement: _____

_____

_____

TO:

Mary Ann Blazevich
WA State Department of Ecology
Manchester Environmental Laboratory
Mail Stop: ManLab
7411 Beach Drive East
Port Orchard, WA 98366-8204

MANCHESTER ENVIRONMENTAL LABORATORY
7411 Beach Drive E. , Port Orchard Washington 98366

February 24, 2000

Subject:	Upriver Dam Sediments (revised 2/24/00)
Samples:	00018080 - 85
Project ID:	104400
Project Officer:	Art Johnson
By:	Greg Perez

SEMIVOLATILE ORGANICS

ANALYTICAL METHODS:

The samples were extracted following the EPA CLP and SW-846 8270 procedure. Analysis was by capillary gas chromatography with mass spectrometry (GC/MS). The extracts were cleaned up with Gel Permeation Chromatography (GPC). Routine QA/QC procedures were performed with the analyses.

HOLDING TIMES:

The samples were stored at 4 degrees C until extraction. They were extracted and analyzed within the recommended holding times.

BLANKS:

Low levels of some analytes were detected in the laboratory blanks. An analyte is considered native to the sample when the on-column concentration is at least five times greater than in the associated method blanks. A phthalate is considered native to the sample when the concentration is at least ten times greater than in the associated method blanks.

SURROGATES:

The standard Manchester Laboratory Base/Neutral/Acid (BNA) surrogates were added to the sample prior to extraction. All surrogate recoveries were within acceptable limits.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE:

Matrix spikes recoveries and relative percent differences (RPD's) were acceptable for most compounds. Compounds not recovered in the matrix spikes were rejected in the native sample.

COMMENTS:

The sample extracts were concentrated down to 1ml. Unknown interferences prevented further concentration. Low percent solids also contributed to higher than desired PQL's.

The data is acceptable for use as reported.

The matrix spike reports for this project were corrected and reissued. Three compounds were reported which were not in the spiking solution. The data processing software produced artificial results for these compounds. These compounds were deleted from the revised report. The surrogate recoveries for the matrix spikes were also in error and have been corrected.

DATA QUALIFIER CODES:

U	-	The analyte was not detected at or above the reported value.
J	-	The analyte was positively identified. The associated numerical value is an estimate.
UJ	-	The analyte was not detected at or above the reported estimated result.
REJ	-	The data are unusable for all purposes.
NAF	-	Not analyzed for.
N	-	There is evidence the analyte is present in the sample.
NJ	-	There is evidence that the analyte is present. The associated numerical result is an estimate.
E	-	This qualifier is used when the concentration of the associated value exceeds the known calibration range. The associated numerical result is an estimate.
bold	-	The analyte was present in the sample. (Visual Aid to locate detected compounds on report sheet.)

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Base/Neutral/Acids Low level targets only

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018080 **Date Collected:** 10/14/99 **Method:** SW8270
Field ID: #1 **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/02/00 **Units:** ug/Kg dw

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Phenol	**239**		2,4-Dinitrotoluene	28	U
Bis(2-Chloroethyl)Ether	28	U	2,6-Dinitrotoluene	28	U
2-Chlorophenol	28	U	**Diethylphthalate**	**14**	**J**
1,3-Dichlorobenzene	28	U	4-Chlorophenyl-Phenylether	28	U
1,4-Dichlorobenzene	**21**	**J**	**Fluorene**	**33**	
Benzyl Alcohol	**89**		4-Nitroaniline	28	U
1,2-Dichlorobenzene	**4.5**	**J**	4,6-Dinitro-2-Methylphenol	112	U
2-Methylphenol	**32**		N-Nitrosodiphenylamine	28	U
2,2'-Oxybis[1-chloropropane]	28	U	4-Bromophenyl-Phenylether	28	U
4-Methylphenol	**1820**		Hexachlorobenzene	28	U
N-Nitroso-Di-N-Propylamine	28	U	**Pentachlorophenol**	**74**	
Hexachloroethane	28	U	**Phenanthrene**	**489**	
Nitrobenzene	28	U	**Anthracene**	**64**	
Isophorone	28	U	Carbazole	28	U
2-Nitrophenol	28	U	**Di-N-Butylphthalate**	**114**	
2,4-Dimethylphenol	28	U	**Fluoranthene**	**412**	
Benzoic Acid	**1660**		**Pyrene**	**378**	
Bis(2-Chloroethoxy)Methane	28	U	**Retene**	**29900**	**E**
2,4-Dichlorophenol	28	U	Butylbenzylphthalate	28	U
1,2,4-Trichlorobenzene	28	U	3,3'-Dichlorobenzidine	28	U
Naphthalene	**973**		**Benzo(a)anthracene**	**51**	
4-Chloroaniline	28	U	Bis(2-Ethylhexyl) Phthalate	176	U
Hexachlorobutadiene	28	U	**Chrysene**	**102**	
4-Chloro-3-Methylphenol	28	U	Di-N-Octyl Phthalate	28	U
2-Methylnaphthalene	**94**		**Benzo(b)fluoranthene**	**93**	
1-Methylnaphthalene	**65**		**Benzo(k)fluoranthene**	**67**	
Hexachlorocyclopentadiene	28	U	**Benzo(a)pyrene**	**118**	
2,4,6-Trichlorophenol	28	U	**Indeno(1,2,3-cd)pyrene**	**100**	
2,4,5-Trichlorophenol	28	U	Dibenzo(a,h)anthracene	28	U
2-Chloronaphthalene	28	U	**Benzo(ghi)perylene**	**86**	
2-Nitroaniline	28	U			
Dimethylphthalate	**41**		**Surrogate Recoveries**		
Acenaphthylene	**198**				
3-Nitroaniline	28	U	**D5-Nitrobenzene**	**57**	**%**
Acenaphthene	**45**		**2-Fluorobiphenyl**	**70**	**%**
2,4-Dinitrophenol	280	U	**Terphenyl-D14**	**63**	**%**
4-Nitrophenol	28	U	**Pyrene-D10**	**66**	**%**
Dibenzofuran	**79**		**D5-Phenol**	**69**	**%**

Authorized By: _____ Release Date: 2/14/00 Page: 1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Base/Neutral/Acids Low level targets only

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018080 **Date Collected:** 10/14/99 **Method:** SW8270
Field ID: #1 **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/02/00 **Units:** ug/Kg dw

Surrogate Recoveries (continued)

2-Fluorophenol	**74**	**%**

Authorized By: _____ Release Date: 2/14/00

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Base/Neutral/Acids Low level targets only

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018081 **Date Collected:** 10/14/99 **Method:** SW8270
Field ID: #2 **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/02/00 **Units:** ug/Kg dw

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Phenol	**110**		2,4-Dinitrotoluene	20	U
Bis(2-Chloroethyl)Ether	20	U	2,6-Dinitrotoluene	20	U
2-Chlorophenol	20	U	Diethylphthalate	20	U
1,3-Dichlorobenzene	20	U	4-Chlorophenyl-Phenylether	20	U
1,4-Dichlorobenzene	20	U	**Fluorene**	**232**	
Benzyl Alcohol	**34**		4-Nitroaniline	20	U
1,2-Dichlorobenzene	20	U	4,6-Dinitro-2-Methylphenol	81	U
2-Methylphenol	20	U	N-Nitrosodiphenylamine	20	U
2,2'-Oxybis[1-chloropropane]	20	U	4-Bromophenyl-Phenylether	20	U
4-Methylphenol	**1820**		Hexachlorobenzene	20	U
N-Nitroso-Di-N-Propylamine	20	U	Pentachlorophenol	20	U
Hexachloroethane	20	U	**Phenanthrene**	**1800**	
Nitrobenzene	20	U	**Anthracene**	**413**	
Isophorone	20	U	**Carbazole**	**109**	
2-Nitrophenol	20	U	Di-N-Butylphthalate	45	U
2,4-Dimethylphenol	20	U	**Fluoranthene**	**1680**	
Benzoic Acid	**834**		**Pyrene**	**1700**	
Bis(2-Chloroethoxy)Methane	20	U	**Retene**	**5440**	**E**
2,4-Dichlorophenol	20	U	Butylbenzylphthalate	20	U
1,2,4-Trichlorobenzene	20	U	3,3'-Dichlorobenzidine	20	U
Naphthalene	**673**		**Benzo(a)anthracene**	**553**	
4-Chloroaniline	20	U	Bis(2-Ethylhexyl) Phthalate	102	U
Hexachlorobutadiene	20	U	**Chrysene**	**588**	
4-Chloro-3-Methylphenol	20	U	Di-N-Octyl Phthalate	20	U
2-Methylnaphthalene	**498**		**Benzo(b)fluoranthene**	**344**	
1-Methylnaphthalene	**318**		**Benzo(k)fluoranthene**	**402**	
Hexachlorocyclopentadiene	20	U	**Benzo(a)pyrene**	**460**	
2,4,6-Trichlorophenol	20	U	**Indeno(1,2,3-cd)pyrene**	**264**	
2,4,5-Trichlorophenol	20	U	**Dibenzo(a,h)anthracene**	**37**	
2-Chloronaphthalene	20	U	**Benzo(ghi)perylene**	**240**	
2-Nitroaniline	20	U			
Dimethylphthalate	20	U	**Surrogate Recoveries**		
Acenaphthylene	**138**				
3-Nitroaniline	20	U	**D5-Nitrobenzene**	**54**	%
Acenaphthene	**238**		**2-Fluorobiphenyl**	**69**	%
2,4-Dinitrophenol	202	U	**Terphenyl-D14**	**72**	%
4-Nitrophenol	20	U	**Pyrene-D10**	**74**	%
Dibenzofuran	**126**		**D5-Phenol**	**67**	%

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Base/Neutral/Acids Low level targets only

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018081 **Date Collected:** 10/14/99 **Method:** SW8270
Field ID: #2 **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/02/00 **Units:** ug/Kg dw

Surrogate Recoveries (continued)

2-Fluorophenol	66	%

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Base/Neutral/Acids Low level targets only

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018082 **Date Collected:** 10/14/99 **Method:** SW8270
Field ID: #3 **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/02/00 **Units:** ug/Kg dw

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Phenol	67	U	2,4-Dinitrotoluene	67	U
Bis(2-Chloroethyl)Ether	67	U	2,6-Dinitrotoluene	67	U
2-Chlorophenol	67	U	Diethylphthalate	67	U
1,3-Dichlorobenzene	67	U	4-Chlorophenyl-Phenylether	67	U
1,4-Dichlorobenzene	67	U	Fluorene	67	U
Benzyl Alcohol	**708**		4-Nitroaniline	67	U
1,2-Dichlorobenzene	67	U	4,6-Dinitro-2-Methylphenol	267	U
2-Methylphenol	67	U	N-Nitrosodiphenylamine	67	U
2,2'-Oxybis[1-chloropropane]	67	U	4-Bromophenyl-Phenylether	67	U
4-Methylphenol	**47**	**J**	Hexachlorobenzene	67	U
N-Nitroso-Di-N-Propylamine	67	U	Pentachlorophenol	67	U
Hexachloroethane	67	U	**Phenanthrene**	**31**	**J**
Nitrobenzene	67	U	Anthracene	67	U
Isophorone	67	U	Carbazole	67	U
2-Nitrophenol	67	U	Di-N-Butylphthalate	338	U
2,4-Dimethylphenol	67	U	**Fluoranthene**	**13**	**J**
Benzoic Acid	**2650**		**Pyrene**	**13**	**J**
Bis(2-Chloroethoxy)Methane	67	U	**Retene**	**2640**	
2,4-Dichlorophenol	67	U	Butylbenzylphthalate	67	U
1,2,4-Trichlorobenzene	67	U	3,3'-Dichlorobenzidine	67	U
Naphthalene	**31**	**J**	Benzo(a)anthracene	67	U
4-Chloroaniline	67	U	Bis(2-Ethylhexyl) Phthalate	146	U
Hexachlorobutadiene	67	U	**Chrysene**	**23**	**J**
4-Chloro-3-Methylphenol	67	U	Di-N-Octyl Phthalate	67	U
2-Methylnaphthalene	**28**	**J**	Benzo(b)fluoranthene	67	U
1-Methylnaphthalene	**20**	**J**	**Benzo(k)fluoranthene**	**29**	**J**
Hexachlorocyclopentadiene	67	U	Benzo(a)pyrene	67	U
2,4,6-Trichlorophenol	67	U	Indeno(1,2,3-cd)pyrene	67	U
2,4,5-Trichlorophenol	67	U	Dibenzo(a,h)anthracene	67	U
2-Chloronaphthalene	67	U	Benzo(ghi)perylene	67	U
2-Nitroaniline	67	U			
Dimethylphthalate	67	U	**Surrogate Recoveries**		
Acenaphthylene	67	U			
3-Nitroaniline	67	U	**D5-Nitrobenzene**	**66**	**%**
Acenaphthene	67	U	**2-Fluorobiphenyl**	**69**	**%**
2,4-Dinitrophenol	668	U	**Terphenyl-D14**	**72**	**%**
4-Nitrophenol	67	U	**Pyrene-D10**	**72**	**%**
Dibenzofuran	67	U	**D5-Phenol**	**72**	**%**

Authorized By: _____ Release Date: 2/04/00 Page: 1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Base/Neutral/Acids Low level targets only

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018082 **Date Collected:** 10/14/99 **Method:** SW8270
Field ID: #3 **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/02/00 **Units:** ug/Kg dw

Surrogate Recoveries (continued)

2-Fluorophenol	**70**	**%**

Authorized By: _____ Release Date: 2/14/00 Page: 2

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Base/Neutral/Acids Low level targets only

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018085 **Date Collected:** 10/14/99 **Method:** SW8270
Field ID: #9 **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/02/00 **Units:** ug/Kg dw

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Phenol	77	U	2,4-Dinitrotoluene	14	U
Bis(2-Chloroethyl)Ether	14	U	2,6-Dinitrotoluene	14	U
2-Chlorophenol	14	U	Diethylphthalate	14	U
1,3-Dichlorobenzene	14	U	4-Chlorophenyl-Phenylether	14	U
1,4-Dichlorobenzene	14	U	**Fluorene**	**.41**	**J**
Benzyl Alcohol	**26**		4-Nitroaniline	14	UJ
1,2-Dichlorobenzene	14	U	4,6-Dinitro-2-Methylphenol	54	U
2-Methylphenol	14	U	N-Nitrosodiphenylamine	14	U
2,2'-Oxybis[1-chloropropane]	14	U	4-Bromophenyl-Phenylether	14	U
4-Methylphenol	**41**		Hexachlorobenzene	14	U
N-Nitroso-Di-N-Propylamine	14	U	Pentachlorophenol	14	U
Hexachloroethane	14	UJ	**Phenanthrene**	**69**	
Nitrobenzene	14	U	**Anthracene**	**8.9**	**J**
Isophorone	14	U	Carbazole	14	U
2-Nitrophenol	14	U	Di-N-Butylphthalate	14	U
2,4-Dimethylphenol	14	U	**Fluoranthene**	**64**	
Benzoic Acid	**753**		**Pyrene**	**58**	
Bis(2-Chloroethoxy)Methane	14	U	**Retene**	**809**	
2,4-Dichlorophenol	14	U	Butylbenzylphthalate	14	U
1,2,4-Trichlorobenzene	14	U	3,3'-Dichlorobenzidine	14	U
Naphthalene	**43**		**Benzo(a)anthracene**	**24**	
4-Chloroaniline	14	U	Bis(2-Ethylhexyl) Phthalate	46	U
Hexachlorobutadiene		REJ	**Chrysene**	**38**	
4-Chloro-3-Methylphenol	14	U	Di-N-Octyl Phthalate	14	U
2-Methylnaphthalene	**42**		**Benzo(b)fluoranthene**	**37**	
1-Methylnaphthalene	**39**		**Benzo(k)fluoranthene**	**25**	
Hexachlorocyclopentadiene		REJ	**Benzo(a)pyrene**	**30**	
2,4,6-Trichlorophenol	14	U	**Indeno(1,2,3-cd)pyrene**	**46**	
2,4,5-Trichlorophenol	14	U	Dibenzo(a,h)anthracene	14	U
2-Chloronaphthalene	14	U	**Benzo(ghi)perylene**	**31**	
2-Nitroaniline	14	U			
Dimethylphthalate	14	U	**Surrogate Recoveries**		
Acenaphthylene	14	U			
3-Nitroaniline		REJ	**D5-Nitrobenzene**	**37**	%
Acenaphthene	14	U	**2-Fluorobiphenyl**	**42**	%
2,4-Dinitrophenol	136	U	**Terphenyl-D14**	**69**	%
4-Nitrophenol	14	U	**Pyrene-D10**	**70**	%
Dibenzofuran	**19**		**D5-Phenol**	**63**	%

Authorized By: _____ Release Date: 2/14/00 Page: 1

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Base/Neutral/Acids Low level targets only

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018085 **Date Collected:** 10/14/99 **Method:** SW8270
Field ID: #9 **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/02/00 **Units:** ug/Kg dw

Surrogate Recoveries (continued)

2-Fluorophenol	**49**	%

Authorized By: _____ Release Date: 2/14/00

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Base/Neutral/Acids Low level targets only

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018085 (Matrix Spike - LMX1) **Date Collected:** 10/14/99 **Method:** SW8270
Field ID: #9 **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/02/00 **Units:** % Recovery

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Phenol	85		2,6-Dinitrotoluene	73	
Bis(2-Chloroethyl)Ether	76		Diethylphthalate	70	
2-Chlorophenol	74		4-Chlorophenyl-Phenylether	78	
1,3-Dichlorobenzene	60		Fluorene	79	
1,4-Dichlorobenzene	61		4-Nitroaniline	15	
Benzyl Alcohol	74		4,6-Dinitro-2-Methylphenol	76	
1,2-Dichlorobenzene	65		N-Nitrosodiphenylamine	84	
2-Methylphenol	77		4-Bromophenyl-Phenylether	78	
2,2'-Oxybis[1-chloropropane]	73		Hexachlorobenzene	80	
4-Methylphenol	80		Pentachlorophenol	77	
N-Nitroso-Di-N-Propylamine	74		Phenanthrene	81	
Hexachloroethane	28		Anthracene	67	
Nitrobenzene	71		Di-N-Butylphthalate	84	
Isophorone	74		Fluoranthene	81	
2-Nitrophenol	71		Pyrene	88	
2,4-Dimethylphenol	73		Butylbenzylphthalate	88	
Benzoic Acid	100		Benzo(a)anthracene	84	
Bis(2-Chloroethoxy)Methane	74		Bis(2-Ethylhexyl) Phthalate	89	
2,4-Dichlorophenol	76		Chrysene	84	
1,2,4-Trichlorobenzene	68		Di-N-Octyl Phthalate	88	
Naphthalene	80		Benzo(b)fluoranthene	85	
4-Chloroaniline	0		Benzo(k)fluoranthene	82	
Hexachlorobutadiene	65		Benzo(a)pyrene	81	
4-Chloro-3-Methylphenol	81		Indeno(1,2,3-cd)pyrene	84	
2-Methylnaphthalene	87		Dibenzo(a,h)anthracene	81	
Hexachlorocyclopentadiene	0		Benzo(ghi)perylene	78	
2,4,6-Trichlorophenol	82				
2,4,5-Trichlorophenol	79		**Surrogate Recoveries**		
2-Chloronaphthalene	75				
2-Nitroaniline	67		D5-Nitrobenzene	72	%
Dimethylphthalate	67		2-Fluorobiphenyl	75	%
Acenaphthylene	75		Terphenyl-D14	82	%
3-Nitroaniline	7		Pyrene-D10	84	%
Acenaphthene	77		D5-Phenol	82	%
2,4-Dinitrophenol	91		2-Fluorophenol	74	%
4-Nitrophenol	88				
Dibenzofuran	75				
2,4-Dinitrotoluene	71				

Authorized By: _____ Release Date: 2/24/00

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Base/Neutral/Acids Low level targets only

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018085 (Matrix Spike - LMX2) **Date Collected:** 10/14/99 **Method:** SW8270
Field ID: #9 **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/02/00 **Units:** % Recovery

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Phenol	77		2,6-Dinitrotoluene	79	
Bis(2-Chloroethyl)Ether	71		Diethylphthalate	77	
2-Chlorophenol	72		4-Chlorophenyl-Phenylether	72	
1,3-Dichlorobenzene	57		Fluorene	72	
1,4-Dichlorobenzene	59		4-Nitroaniline	17	
Benzyl Alcohol	73		4,6-Dinitro-2-Methylphenol	79	
1,2-Dichlorobenzene	62		N-Nitrosodiphenylamine	88	
2-Methylphenol	74		4-Bromophenyl-Phenylether	83	
2,2'-Oxybis[1-chloropropane]	77		Hexachlorobenzene	85	
4-Methylphenol	76		Pentachlorophenol	77	
N-Nitroso-Di-N-Propylamine	72		Phenanthrene	87	
Hexachloroethane	26		Anthracene	69	
Nitrobenzene	67		Di-N-Butylphthalate	87	
Isophorone	70		Fluoranthene	89	
2-Nitrophenol	68		Pyrene	82	
2,4-Dimethylphenol	68		Butylbenzylphthalate	80	
Benzoic Acid	95		Benzo(a)anthracene	77	
Bis(2-Chloroethoxy)Methane	70		Bis(2-Ethylhexyl) Phthalate	82	
2,4-Dichlorophenol	72		Chrysene	78	
1,2,4-Trichlorobenzene	64		Di-N-Octyl Phthalate	84	
Naphthalene	70		Benzo(b)fluoranthene	80	
4-Chloroaniline	0		Benzo(k)fluoranthene	74	
Hexachlorobutadiene	61		Benzo(a)pyrene	73	
4-Chloro-3-Methylphenol	75		Indeno(1,2,3-cd)pyrene	79	
2-Methylnaphthalene	68		Dibenzo(a,h)anthracene	88	
Hexachlorocyclopentadiene	0		Benzo(ghi)perylene	70	
2,4,6-Trichlorophenol	87				
2,4,5-Trichlorophenol	63		Surrogate Recoveries		
2-Chloronaphthalene	71				
2-Nitroaniline	77		D5-Nitrobenzene	69	%
Dimethylphthalate	73		2-Fluorobiphenyl	72	%
Acenaphthylene	70		Terphenyl-D14	76	%
3-Nitroaniline	0		Pyrene-D10	77	%
Acenaphthene	73		D5-Phenol	79	%
2,4-Dinitrophenol	96		2-Fluorophenol	73	%
4-Nitrophenol	81				
Dibenzofuran	71				
2,4-Dinitrotoluene	63				

Authorized By: _____ Release Date: 2/24/00

Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Base/Neutral/Acids Low level targets only

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Lab ID: OBS0018A2 **Method:** SW8270
QC Type: Laboratory Method Blank **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/02/00 **Units:** ug/Kg dw

Analyte	Result	Qualifier	Analyte	Result	Qualifier
Phenol	**5.2**	**J**	2,4-Dinitrotoluene	14	U
Bis(2-Chloroethyl)Ether	14	U	2,6-Dinitrotoluene	14	U
2-Chlorophenol	14	U	**Diethylphthalate**	**.14**	**J**
1,3-Dichlorobenzene	14	U	4-Chlorophenyl-Phenylether	14	U
1,4-Dichlorobenzene	14	U	Fluorene	14	U
Benzyl Alcohol	14	U	4-Nitroaniline	14	U
1,2-Dichlorobenzene	14	U	4,6-Dinitro-2-Methylphenol	54	U
2-Methylphenol	14	U	N-Nitrosodiphenylamine	14	U
2,2'-Oxybis[1-chloropropane]	14	U	4-Bromophenyl-Phenylether	14	U
4-Methylphenol	14	U	Hexachlorobenzene	14	U
N-Nitroso-Di-N-Propylamine	14	U	Pentachlorophenol	14	U
Hexachloroethane	14	U	Phenanthrene	14	U
Nitrobenzene	14	U	Anthracene	14	U
Isophorone	14	U	Carbazole	14	U
2-Nitrophenol	14	U	**Di-N-Butylphthalate**	**2.8**	**J**
2,4-Dimethylphenol	14	U	Fluoranthene	14	U
Benzoic Acid	**263**	**J**	Pyrene	14	U
Bis(2-Chloroethoxy)Methane	14	U	Retene	14	U
2,4-Dichlorophenol	14	U	**Butylbenzylphthalate**	**8.9**	**J**
1,2,4-Trichlorobenzene	14	U	3,3'-Dichlorobenzidine	14	U
Naphthalene	14	U	Benzo(a)anthracene	14	U
4-Chloroaniline	14	U	**Bis(2-Ethylhexyl) Phthalate**	**17**	
Hexachlorobutadiene	14	U	Chrysene	14	U
4-Chloro-3-Methylphenol	14	U	Di-N-Octyl Phthalate	14	U
2-Methylnaphthalene	14	U	Benzo(b)fluoranthene	14	U
1-Methylnaphthalene	14	U	Benzo(k)fluoranthene	14	U
Hexachlorocyclopentadiene	14	U	Benzo(a)pyrene	14	U
2,4,6-Trichlorophenol	14	U	Indeno(1,2,3-cd)pyrene	14	U
2,4,5-Trichlorophenol	14	U	Dibenzo(a,h)anthracene	14	U
2-Chloronaphthalene	14	U	Benzo(ghi)perylene	14	U
2-Nitroaniline	14	U			
Dimethylphthalate	14	U	**Surrogate Recoveries**		
Acenaphthylene	14	U			
3-Nitroaniline	14	U	**D5-Nitrobenzene**	**64**	**%**
Acenaphthene	14	U	**2-Fluorobiphenyl**	**67**	**%**
2,4-Dinitrophenol	136	U	**Terphenyl-D14**	**79**	**%**
4-Nitrophenol	14	U	**Pyrene-D10**	**78**	**%**
Dibenzofuran	14	U	**D5-Phenol**	**69**	**%**

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Manchester Environmental Laboratory

Department of Ecology

Analysis Report for

Base/Neutral/Acids Low level targets only

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Lab ID: OBS0018A2 **Method:** SW8270
QC Type: Laboratory Method Blank **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/02/00 **Units:** ug/Kg dw

Surrogate Recoveries (continue)

2-Fluorophenol	**64**	**%**

Authorized By: _____ Release Date: 2/14/00 Page: 2

Manchester Environmental Laboratory

7411 Beach DR E, Port Orchard Washington 98366

CASE NARRATIVE

February 14, 2000

Subject: Upriver Dam Sediments

Samples: 00018080 - 00018082, 00018085

Case No. 1044-00

Officer: Art Johnson

By: M. Mandjikov

PCB Congener and Aroclor Analysis

SUMMARY:

Sample bottles were marked as 99418080 – 99418085 but have been reported as 00018080 – 00018085.

All samples were analyzed for PCB aroclors. The presence of aroclors 1242, 1248, 1254 and 1260 are detected in samples 00018080, 00018081 and 00018085. Some of these samples required dilutions to bring the aroclor results within the instrument calibration range. The results of these dilutions may be found on the reports marked as DIL1.

The aroclor 1260 result for sample 00018085 is qualified "J", as an estimate due to its very low quantitation.

Since aroclors 1242 and 1248 share many of the same congeners, it is difficult to separate one from the other to give an accurate quantitation. There are congeners present in the samples that are unique to aroclor 1242 and provide evidence that this aroclor is indeed present. Because the volatile congeners of 1242 weather more than the heavier aroclors and 1248 is a significant interference upon 1242 in these samples, the 1242 results are qualified "J" as estimates.

The aroclor 1248 and 1254 results in sample 00018085 are both qualified as estimates, "J" because they share many congeners. Both are present, but there may be bias in the result due to their interference upon one another. All 1254 results above the reporting limit are qualified due to possible interference from 1248.

Sample 00018080 was analyzed for the normal PCB congener list with the four additional congeners added. The congener 28 result is qualified "NJ" due to a shift in the expected retention time. The reporting limit of congener 77 is raised and estimated due to an interfering peak, which obscured its presence.

Several dilutions were made on sample 00018080 to bring the congener values within the calibration range of the instrument. Please use DIL1 for congeners 101 and 118. Please use DIL2 for congeners 18, 28, 44, 52, 66, and 77. Use the undiluted sample results for all other congeners.

Please call Myrna Mandjikov (360-871-8814) for further information on the PCB analysis of this project.

METHODS:

The samples were extracted into acetone by Soxhlet extraction and solvent exchanged into hexane. Each extract was then eluted through a Florisil® column with a 100% hexane solution.

This extract was then solvent exchanged to iso-octane and treated with elemental mercury to remove sulfur and then concentrated sulfuric acid before analysis by GC-ECD.

These methods are modifications of EPA SW- 846 methods 3540, 3620, 3660, and 8082.

BLANKS:

No target analytes were detected in the blanks.

SURROGATES:

All samples and blanks for PCB arochlors were spiked with tetrachloro-m-xylene (TMX), 4,4'-dibromooctafluorobiphenyl (DBOB), and decachlorobenzene (DCB) prior to extraction. Since DCB is PCB Congener # 209, a separate extraction was performed for the analysis of this compound. Only TMX was used as a surrogate for this extraction. All surrogate recoveries are within the acceptable range of 50 % - 150 % of the reference value.

DUPLICATE SAMPLES:

Sample 00018081 was prepared in duplicate to provide a measure of precision for the arochlor analysis method.

Arochlor	Relative Percent Difference
1242	11 %
1248	1 %
1254	8 %
1260	9 %

SPIKED AND SPIKED DUPLICATE SAMPLES:

Sample 00018085 was prepared in triplicate. Two of the replicates were spiked with aroclor 1260 to provide a measure of the accuracy and precision of this method. The

recoveries were 63% and 99% with a relative percent difference of 44%. These recoveries are within the method control limits of 50% - 150% of the reference value.

HOLDING TIMES:

The samples were analyzed within the recommended holding times.

DATA QUALIFIERS:

Code	Definition
E	Reported result is an estimate because it exceeds the calibration.
J	The analyte was positively identified. The associated numerical result is an estimate.
N	There is evidence the analyte is present in this sample.
NJ	There is evidence that the analyte is present. The associated numerical result is an estimate.
NAF	Not analyzed for.
NC	Not calculated.
REJ	The data are unusable for all purposes.
U	The analyte was not detected at or above the reported result.
UJ	The analyte was not detected at or above the reported estimated result.
Bold Type	The analyte was present in the sample. Used as a visual aid to locate detected compounds on the report sheet.

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Analysis Report for

Polychlorinated Biphenyls

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018080 **Date Collected:** 10/14/99 **Method:** SW8082
Field ID: #1 **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/04/00 **Units:** ug/Kg dw

Analyte	Result	Qualifier
PCB - 1016	7.3	U
PCB - 1221	7.3	U
PCB - 1232	7.3	U
PCB - 1242		NC
PCB - 1248		NC
PCB - 1254	**110**	**J**
PCB - 1260	**23**	

Surrogate Recoveries

4,4-Dibromooctafluorobiphenyl	**66**	%
Tetrachloro-m-xylene	**59**	%
Decachlorobiphenyl	**70**	%

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Analysis Report for

Polychlorinated Biphenyls

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018080 (Dilution - DIL1) **Date Collected:** 10/14/99 **Method:** SW8082
Field ID: #1 **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/04/00 **Units:** ug/Kg dw

Analyte	Result	Qualifier
PCB - 1242	180	J
PCB - 1248	960	

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Analysis Report for

Polychlorinated Biphenyls

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018081 **Date Collected:** 10/14/99 **Method:** SW8082
Field ID: #2 **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/04/00 **Units:** ug/Kg dw

Analyte	Result	Qualifier
PCB - 1016	4.7	U
PCB - 1221	4.7	U
PCB - 1232	4.7	U
PCB - 1242	**29**	**J**
PCB - 1248		NC
PCB - 1254	**21**	**J**
PCB - 1260	**6.7**	**J**

Surrogate Recoveries

4,4-Dibromooctafluorobiphenyl	**72**	**%**
Decachlorobiphenyl	**72**	**%**
Tetrachloro-m-xylene	**66**	**%**

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Analysis Report for

Polychlorinated Biphenyls

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018081 (Dilution - DIL1) **Date Collected:** 10/14/99 **Method:** SW8082
Field ID: #2 **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/04/00 **Units:** ug/Kg dw

Analyte	Result	Qualifier
PCB - 1248	190	

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Analysis Report for

Polychlorinated Biphenyls

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018081 (Duplicate - LDP1) **Date Collected:** 10/14/99 **Method:** SW8082
Field ID: #2 **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/04/00 **Units:** ug/Kg dw

Analyte	Result	Qualifier
PCB - 1016	5.0	U
PCB - 1221	5.0	U
PCB - 1232	5.0	U
PCB - 1242	**34**	**J**
PCB - 1248		NC
PCB - 1254	**20**	**J**
PCB - 1260	**6.5**	**J**

Surrogate Recoveries

4,4-Dibromooctafluorobiphenyl	**60**	**%**
Decachlorobiphenyl	**66**	**%**
Tetrachloro-m-xylene	**54**	**%**

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Analysis Report for

Polychlorinated Biphenyls

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018081 (Duplicate - LDP2) **Date Collected:** 10/14/99 **Method:** SW8082
Field ID: #2 **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/04/00 **Units:** ug/Kg dw

Analyte	Result	Qualifier
PCB - 1248	200	

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Analysis Report for

Polychlorinated Biphenyls

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018082 **Date Collected:** 10/14/99 **Method:** SW8082
Field ID: #3 **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/04/00 **Units:** ug/Kg dw

Analyte	Result	Qualifier
PCB - 1016	17	U
PCB - 1221	17	U
PCB - 1232	17	U
PCB - 1242	17	U
PCB - 1248	17	U
PCB - 1254	17	U
PCB - 1260	17	U

Surrogate Recoveries

4,4-Dibromooctafluorobiphenyl	**67**	**%**
Decachlorobiphenyl	**73**	**%**
Tetrachloro-m-xylene	**66**	**%**

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Analysis Report for

Polychlorinated Biphenyls

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018085 **Date Collected:** 10/14/99 **Method:** SW8082
Field ID: #9 **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/04/00 **Units:** ug/Kg dw

Analyte	Result	Qualifier
PCB - 1016	3.7	U
PCB - 1221	3.7	U
PCB - 1232	3.7	U
PCB - 1242	7.5	U
PCB - 1248	**51**	**J**
PCB - 1254	**16**	**J**
PCB - 1260	7.5	U

Surrogate Recoveries

4,4-Dibromooctafluorobiphenyl	**65**	**%**
Decachlorobiphenyl	**74**	**%**
Tetrachloro-m-xylene	**60**	**%**

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Analysis Report for

Polychlorinated Biphenyls

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018085 (Matrix Spike - LMX1) **Date Collected:** 10/14/99 **Method:** SW8082
Field ID: #9 **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/04/00 **Units:** % Recovery

Analyte	Result	Qualifier
PCB - 1260	63	

Surrogate Recoveries

4,4-Dibromooctafluorobiphenyl	72	%
Decachlorobiphenyl	79	%
Tetrachloro-m-xylene	69	%

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Analysis Report for

Polychlorinated Biphenyls

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018085 (Matrix Spike - LMX2) **Date Collected:** 10/14/99 **Method:** SW8082
Field ID: #9 **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/04/00 **Units:** % Recovery

Analyte	Result	Qualifier
PCB - 1260	99	

Surrogate Recoveries

4,4-Dibromooctafluorobiphenyl	75	%
Decachlorobiphenyl	79	%
Tetrachloro-m-xylene	72	%

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Analysis Report for

Polychlorinated Biphenyls

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Lab ID: OBS0018B1 **Method:** SW8082
QC Type: Laboratory Method Blank **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/04/00 **Units:** ug/Kg dw

Analyte	Result	Qualifier
PCB - 1016	3.7	U
PCB - 1221	3.7	U
PCB - 1232	3.7	U
PCB - 1242	3.7	U
PCB - 1248	3.7	U
PCB - 1254	3.7	U
PCB - 1260	3.7	U

Surrogate Recoveries

4,4-Dibromooctafluorobiphenyl	**78**	**%**
Decachlorobiphenyl	**85**	**%**
Tetrachloro-m-xylene	**78**	**%**

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Analysis Report for

Polychlorinated Biphenyls

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Lab ID: OBS0018B2 **Method:** SW8082
QC Type: Laboratory Method Blank **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/04/00 **Units:** ug/Kg dw

Analyte	Result	Qualifier
PCB - 1016	3.7	U
PCB - 1221	3.7	U
PCB - 1232	3.7	U
PCB - 1242	3.7	U
PCB - 1248	3.7	U
PCB - 1254	3.7	U
PCB - 1260	3.7	U

Surrogate Recoveries

4,4-Dibromooctafluorobiphenyl	**64**	**%**
Decachlorobiphenyl	**83**	**%**
Tetrachloro-m-xylene	**64**	**%**

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Analysis Report for

Pesticides and PCB's NOAA list

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018080 **Date Collected:** 10/14/99 **Method:** SW8081 82
Field ID: #1 **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/03/00 **Units:** ug/Kg dw

Analyte	Result	Qualifier
PCB congener 8	**14**	
PCB congener 18	0.73	NC
PCB congener 28	0.73	NC
PCB congener 44	0.73	NC
PCB congener 52	0.73	NC
PCB congener 66	0.73	NC
PCB congener 101	0.73	NC
PCB congener 77	0.73	NC
PCB congener 118	0.73	NC
PCB congener 153	**4.7**	
PCB congener 105	**9.0**	
PCB congener 138	**6.4**	
PCB congener 126	0.73	U
PCB congener 128	**1.6**	
PCB congener 180	**2.1**	
PCB congener 170	**0.96**	
PCB congener 187	**1.2**	
PCB congener 195	0.73	U
PCB congener 206	0.73	U
Decachlorobiphenyl	0.73	U
PCB congener 81	0.73	U
PCB congener 114	0.73	U
PCB congener 156	**0.86**	
PCB congener 169	0.73	U

Surrogate Recoveries

Tetrachloro-m-xylene	**59**	**%**
4,4-Dibromooctafluorobiphenyl	**66**	**%**

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Analysis Report for

Pesticides and PCB's NOAA list

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018080 (Dilution - DIL1) **Date Collected:** 10/14/99 **Method:** SW8081 82
Field ID: #1 **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/03/00 **Units:** ug/Kg dw

Analyte	Result	Qualifier
PCB congener 8	**14**	
PCB congener 18		NC
PCB congener 28		NC
PCB congener 44		NC
PCB congener 52		NC
PCB congener 66		NC
PCB congener 101	**20**	
PCB congener 77		NC
PCB congener 118	**19**	
PCB congener 105	**8.7**	
PCB congener 153	**5.1**	
PCB congener 138	**6.4**	
PCB congener 126	1.5	U
PCB congener 128	**1.9**	
PCB congener 180	**2.2**	
PCB congener 170	1.5	U
PCB congener 187	1.5	U
PCB congener 195	1.5	U
PCB congener 206	1.5	U
Decachlorobiphenyl	1.5	U

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Analysis Report for

Pesticides and PCB's NOAA list

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Sample: 00018080 (Dilution - DIL2) **Date Collected:** 10/14/99 **Method:** SW8081
Field ID: #1 **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/03/00 **Units:** ug/Kg dw

Analyte	Result	Qualifier
PCB congener 8	**16**	**J**
PCB congener 18	**67**	
PCB congener 28	**80**	**NJ**
PCB congener 44	**63**	
PCB congener 52	**69**	
PCB congener 66	**63**	
PCB congener 101	**22**	
PCB congener 77	35	UJ
PCB congener 118	**21**	
PCB congener 153	7.3	U
PCB congener 105	**9.2**	
PCB congener 138	7.3	U
PCB congener 126	7.3	U
PCB congener 128	7.3	U
PCB congener 180	7.3	U
PCB congener 170	7.3	U
PCB congener 187	7.3	U
PCB congener 195	7.3	U
PCB congener 206	7.3	U
Decachlorobiphenyl	7.3	U

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Analysis Report for

Pesticides and PCB's NOAA list

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Lab ID: OBS0018B1 **Method:** SW8081
QC Type: Laboratory Method Blank **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/03/00 **Units:** ug/Kg dw

Analyte	Result	Qualifier
PCB congener 8	0.37	U
PCB congener 18	0.37	U
PCB congener 28	0.37	U
PCB congener 44	0.37	U
PCB congener 52	0.37	U
PCB congener 66	0.37	U
PCB congener 101	0.37	U
PCB congener 77	0.37	U
PCB congener 118	0.37	U
PCB congener 153	0.37	U
PCB congener 105	0.37	U
PCB congener 138	0.37	U
PCB congener 126	0.37	U
PCB congener 128	0.37	U
PCB congener 180	0.37	U
PCB congener 170	0.37	U
PCB congener 187	0.37	U
PCB congener 195	0.37	U
PCB congener 206	0.37	U
Decachlorobiphenyl	0.37	U
PCB congener 81	0.37	U
PCB congener 114	0.37	U
PCB congener 156	0.37	U
PCB congener 169	0.37	U

Surrogate Recoveries

Tetrachloro-m-xylene	**78**	**%**
4,4-Dibromooctafluorobiphenyl	**78**	**%**

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Analysis Report for

Pesticides and PCB's NOAA list

Project Name: Upriver Dam Sediments **LIMS Project ID:** 1044-00

Lab ID: OBS0018B2 **Method:** SW8081
QC Type: Laboratory Method Blank **Date Prepared:** 01/18/00 **Matrix:** Frozen Sediment/soil
Project Officer: Art Johnson **Date Analyzed:** 02/03/00 **Units:** ug/Kg dw

Analyte	Result	Qualifier
PCB congener 8	0.37	U
PCB congener 18	0.37	U
PCB congener 28	0.37	U
PCB congener 44	0.37	U
PCB congener 52	0.37	U
PCB congener 66	0.37	U
PCB congener 101	0.37	U
PCB congener 77	0.37	U
PCB congener 118	0.37	U
PCB congener 153	0.37	U
PCB congener 105	0.37	U
PCB congener 138	0.37	U
PCB congener 126	0.37	U
PCB congener 128	0.37	U
PCB congener 180	0.37	U
PCB congener 170	0.37	U
PCB congener 187	0.37	U
PCB congener 195	0.37	U
PCB congener 206	0.37	U
Decachlorobiphenyl	0.37	U
PCB congener 81	0.37	U
PCB congener 114	0.37	U
PCB congener 156	0.37	U
PCB congener 169	0.37	U

Surrogate Recoveries

4,4-Dibromooctafluorobiphenyl	**64**	**%**
Tetrachloro-m-xylene	**64**	**%**

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