

**Spring 2011  
Data Summary Report  
Upper Hudson River Floodplain  
Deposition Sampling Program**

**Contract No. W912DQ-06-D-0008**

**October 2011**

**Prepared for:**

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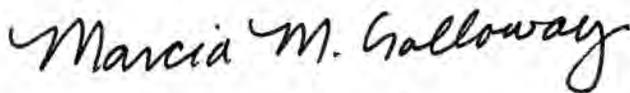
**Certificate of Compliance**

**Draft  
Spring 2011  
Data Summary Report  
Upper Hudson River Floodplain  
Deposition Sampling Program**

**Upper Hudson River, New York**

**October 2011**

On behalf of Ecology and Environment, Inc. (E & E), the undersigned certify that the attached document(s) were developed in conformance with E & E's Scope of Work, contract requirements, and E & E's Quality Control Plan.



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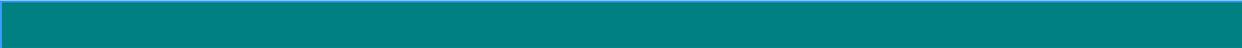
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## List of Abbreviations and Acronyms

cfs	cubic feet per second
DESA	Division of Environmental Science and Assessment
DSR	Data Summary Report
EPA	United States Environmental Protection Agency
FDSP	Floodplain Deposition Sampling Program
FSP	Field Sampling Plan
GC/ECD	Gas Chromatograph/Electron Capture Detector
GE	General Electric Company
NELAC	National Environmental Laboratory Accreditation Conference
NOAA	National Oceanic and Atmospheric Administration
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
PCB	polychlorinated biphenyl
ppm	parts per million
QA/QC	quality assurance/quality control
RM	river mile
RPD	relative percent difference
SGS	SGS North America, Inc.
SOP	standard operating procedure
STRA	Short-Term Removal Action
TCL	Target Compound List
TOC	total organic carbon

## List of Abbreviations and Acronyms (cont.)

UHR	Upper Hudson River
USACE	United State Army Corps of Engineers
USGS	United States Geological Survey

# 1

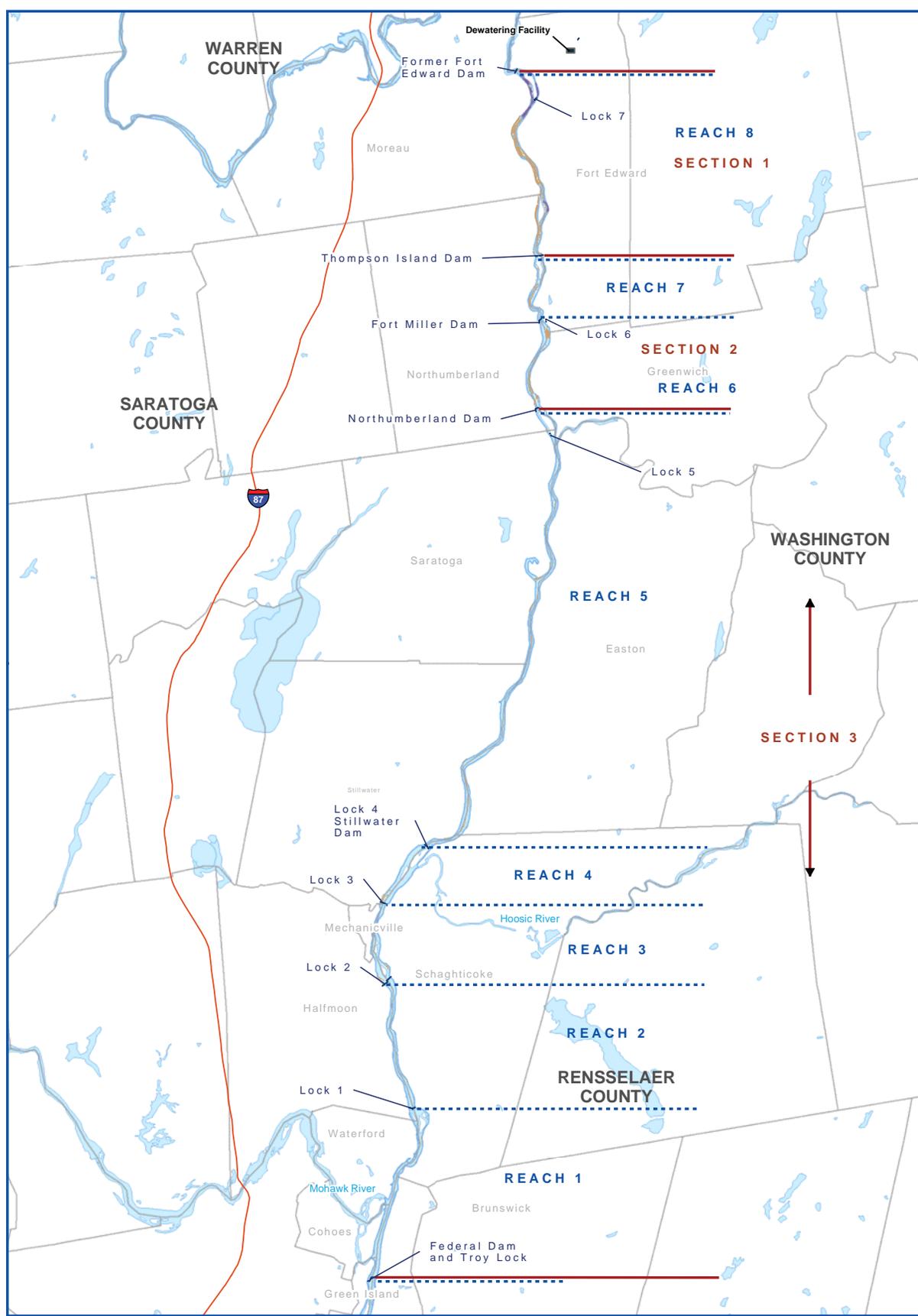
## Introduction

This Data Summary Report (DSR) summarizes the 2011 spring sampling event activities and analytical results for the Upper Hudson River Floodplain Deposition Sampling Program (FDSP). Field activities were performed by Ecology and Environment, Inc. (E & E) for the United States Environmental Protection Agency (EPA) Region 2, and were conducted in accordance with the FDSP Final Field Sampling Plan (FSP; E & E 2010). The spring 2011 sampling event was the second event under this program. Flooding in 2011 reached a maximum flow of 48,800 cubic feet per second (cfs). These flows caused significantly more flooding than normal years and is the largest flood since the Fort Edward dam was removed in 1973, releasing polychlorinated biphenyls (PCBs) downstream. In response to the observed flows, General Electric Company (GE) and New York State Department of Environmental Conservation (NYSDEC) collected additional samples outside the original scope of the FDSP. Both GE and NYSDEC followed their own sample collection work plans, approved by the EPA (ARCADIS 2011). These activities are summarized in this report. E & E prepared this report for the EPA under contract to the U.S. Army Corps of Engineers (USACE) Kansas City District, Contract Number W912DQ-06-D-0008. Details on the extent of sampling are described in Section 2 of this report.

The Upper Hudson River (UHR) and the FDSP project area are located in upstate New York and extend from the former location of the Fort Edward Dam to the Mohawk River confluence (approximate river mile [RM] 194.8 to approximate RM 156.3). The EPA divided the UHR between Fort Edward and Troy into three river sections for the sediment remediation activities outlined in the *Hudson River PCBs Site, New York, Record of Decision* (EPA 2002). The floodplain program further subdivided the river sections into eight reaches defined by dams or locks (see Figure 1-1).

During the 1940s through 1977, GE discharged PCBs into the Hudson River. Many of these PCBs have been transported downstream and deposited within the UHR and adjacent floodplains. To gain a better understanding of soil contamination within the UHR floodplain, soil sampling was conducted by the National Oceanic and Atmospheric Administration (NOAA), EPA, and GE between 2000 and the present. The data from this historic soil sampling were used during the development of the FDSP, but are not the subject of the FDSP.

During seasonal high-flow events, sediment from the river, potentially contaminated with PCBs, can become suspended in the flow and re-deposited elsewhere in the river system, including the ground surfaces along the floodplains. Limited sampling of these re-deposited sediments was conducted by NYSDEC and GE prior to 2009 (NYSDEC 2008; ARCADIS 2008). The sampling results indicated the presence of PCBs. The FDSP continues the sampling effort to help determine the nature of re-deposited sediment along the floodplains.



- LEGEND**
- Reach
  - Upper Hudson River Sections
  - Dredge Areas
  - Phase 1
  - Dredge Areas
  - Phase 2
  - Hudson River
  - Municipality Boundary

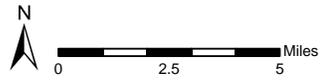


Figure 1-1  
Upper Hudson River Study Area

# 2

## Spring 2011 Activities

Activities conducted during the spring 2011 sampling event are described in the following sections. Activities included: determining property access, sampling device decontamination, location monitoring, and sample collection. Activities performed by EPA were conducted in accordance with the FSP (E & E 2010), with any deviations noted below. Table 2-1 provides a summary of the 2011 EPA, GE, and NYSDEC sampling dates and major activities.

**Table 2-1 2011 Sampling Dates and Activities**

Date	Activity
4/04/2011	Sample Device Decontamination
4/07/2011	Sample Device Decontamination
4/15/2011 – 4/17/2011	EPA Sample Location Monitoring and Scrape Sample Collection
4/29/2011	Documentation of High Flow Event
5/02/2011 – 5/03/2011	EPA Sample Location Monitoring and Scrape Sample Collection
5/03/2011 – 5/05/2011	EPA Oversight of GE Sample Collection
5/03/2011 – 5/06/2011	GE Sample Collection
5/09/2011 – 5/10/2011	EPA Oversight of GE Sample Collection
5/09/2011 – 5/10/2011	GE Sample Collection
5/11/2011	NYSDEC Sample Collection
6/08/2011 – 6/09/2011	EPA Sample Location Monitoring and Sample Collection
6/14/2011	EPA Sample Location Monitoring and Sample Collection
6/15/2011	EPA Oversight of GE Sample Collection
6/15/2011	GE Sample Collection
6/16/2011 – 6/17/2011	EPA Sample Location Monitoring and Sample Collection

### 2.1 Property Access

The initial property selection process was primarily based on information provided through consultation with the EPA, NYSDEC, and New York State Department of Health (NYSDOH). Additional factors considered in the selection process included the distribution of sampling locations within the study area, consideration of areas previously sampled by NYSDEC, the ability to access the property and

sampling location, and the probability of inundation from periodic flooding and deposited sediment. As of May 2010, the EPA was granted access to 21 locations on 19 properties.

In spring 2011, an additional 14 EPA sampling locations, 12 of which were on properties not previously sampled for the floodplain deposit sampling program, were added to EPA's 2010 sampling list. The new properties consisted of: 1) parcels on which owners requested sampling, 2) Short-Term Removal Action (STRA) properties, and 3) public lands owned by New York State. Property access was obtained through previous access or verbal agreement prior to sampling.

The locations on STRA parcels were added in the field subsequent to identification of flooding sediment deposits. The STRA parcels were inspected to determine if sediment had been deposited over previously installed covers, which consist of vegetation/stone overlaid on geotextile fabric, or in areas where PCB warning signs have been posted.

In addition to EPA's sampling, GE sampled properties where access had been previously obtained and public rights of way. NYSDEC independently obtained access through verbal agreements with property owners.

Property ownership changed for device location EPA-R7-W-8687-01. Multiple attempts were made to obtain access to the device for sampling or removal; however, access was not obtained for the 2011 sampling season. Therefore, this location was not sampled in 2011.

## **2.2 Sampling Device Installation**

To increase the likelihood of collecting flood-related sediment rather than soil/mud runoff from rain events, a sampling device was specifically designed and fabricated for this project (see Appendix A for diagrams). The design was based on information obtained during discussions with NYSDEC and NYSDOH.

Sampling devices were initially installed on 14 properties in 2010 prior to the spring flood event. No additional sampling devices were installed in 2011, and no sampling devices have been removed. Please see the 2010 FDSP data summary report for installation details.

## **2.3 2011 Sample Device Inspection**

On April 4 and 7, 2011, the sampling devices were inspected and, if necessary, visible sediment was removed and the devices were triple rinsed with potable water using a hand held pressurized sprayer. The inspections were completed prior to the start of the 2011 spring flood season. Devices were also inspected for broken or missing parts, and the results of these inspections were recorded in the field logbook and sample location log sheets (see Appendix C).

## 2.4 Sample Location Monitoring

### 2.4.1 General Sampling Location and Flow Rate Monitoring

On April 13, 2011, the discharge measured at the Ft. Edward United States Geological Survey (USGS) hydrological station reached an initial peak of 20,700 cfs, and subsequently decreased to 13,600 cfs on April 15, 2011. On that date, EPA sample location monitoring began to determine sample availability, as well as device locations relative to river flows at various discharge rates. On April 29, 2011, the discharge measured at the Ft. Edward station reached a peak of 48,800 cfs (see Section 2.4.2 for high flow documentation details). Flows generally decreased after April 29, allowing for additional monitoring and subsequent sampling. Monitoring continued intermittently by the EPA, GE, and NYSDEC through June 17, 2011, coupled with sampling (see Table 2-1).

### 2.4.2 High-Flow Event Documentation

In April 2011, the flow of the Hudson River rose rapidly from 11,700 cfs, as measured at the Ft. Edward station, on April 25, 2011, to a peak of 48,800 cfs on April 29, 2011. The EPA documented the flooding event in the field logbook and with photos on April 29, 2011. The flow subsided to 25,900 cfs and a sampling event was initiated the following day. The EPA, GE, and NYSDEC conducted sampling following this event.

### 2.4.3 STRA Sampling Location Monitoring

After the river receded, the STRA properties were inspected for flood sediment deposits. These inspections occurred throughout May and June. Field inspections were conducted on properties, generally those with no nearby sampling, to determine if any flood sediment had been deposited in the STRA area. Preference was given to STRA locations with previously installed protective covers; however, some properties with PCB contamination warning signs were sampled as well.

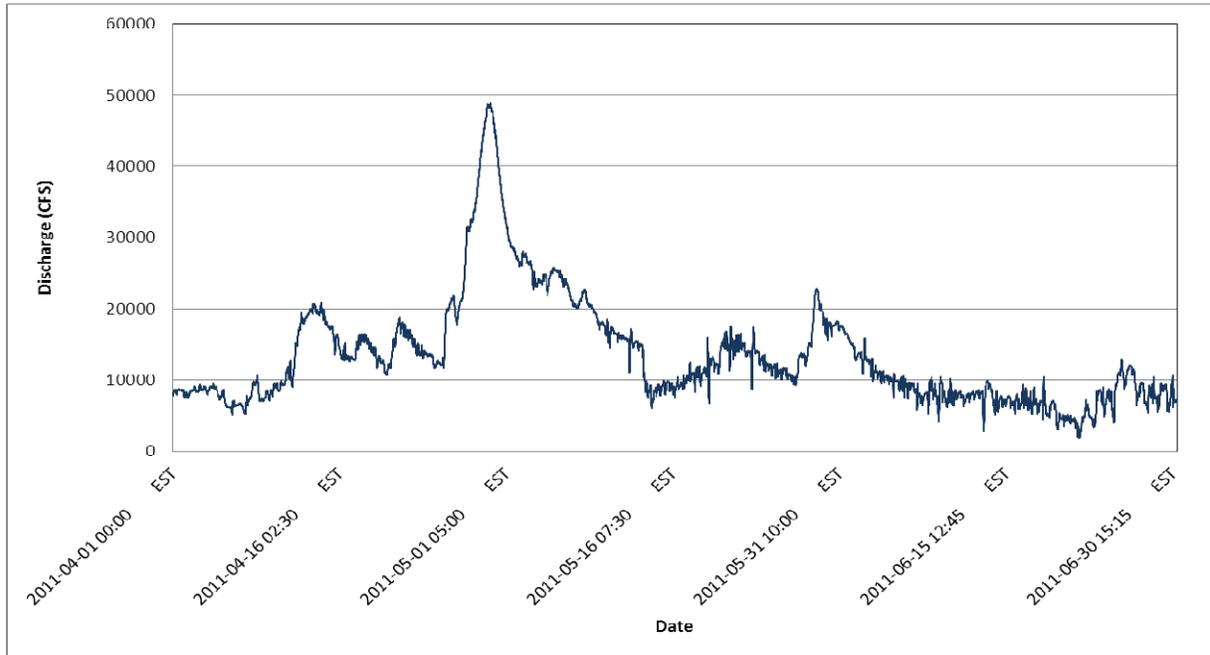
## 2.5 Sampling Activities

Flows during spring 2011 in the UHR remained below 10,000 cfs until flows began to increase on April 11, 2011. Flows reached 20,900 cfs, on April 14, 2011, as measured at the Ft. Edward USGS hydrological station. Historically, spring flooding occurs prior to mid-April. The flows in the river had remained low through the 2011 spring snow melt, and it appeared the peak flow on April 14 would likely be the extent of the spring flooding. A major rain event in the north-east United States, following the April sampling, caused significant flooding, which had not been anticipated. Based on discussions with the EPA and USACE, it was decided that the flows prior to and on April 14 were sufficient to trigger the start of the EPA sampling event.

Prior to finishing sample collection, river flows increased on April 29, 2011, to a peak flow of 48,800 cfs, and subsequently subsided to 25,900 cfs. In response to the high flow, GE and NYSDEC also initiated sampling in addition to the EPA's program.

In June, when the UHR flow returned to levels below 10,000 cfs, additional locations were sampled by the EPA and GE to document sediment deposits on lower-lying areas that had been inundated since April.

Figure 2-1 shows the flows in the UHR from April 1 to June 30, 2011.



Source: USGS 2011.

**Figure 2-1 UHR Spring 2011 April through June Flows – as Measured at the Fort Edward Gauge Station**

### 2.5.1 Sample Collection

During the spring 2011 sampling event, the EPA collected a total of 41 samples, including three field duplicates, on 29 properties (not all properties where access has been provided were sampled – see below):

- Eleven of the 14 sampling devices were sampled; and
- Twenty-seven scrape samples were collected at 22 locations (five locations were initially sampled in April, four of which were again sampled in May, and one again in June).

Three devices were not sampled:

- Water, but no sediment, was found in the sampling devices located in Reach 2 of the river (EPA-R2-E-6162-01, EPA-R2-W-6162-01); however, the device location EPA-R2-W-6162-01 was sampled as a scrape and was counted in the 22 scrape samples above; and

- The third device (EPA-R7-W-8687-01) was not sampled due to unresolved access discussions with the property owner.

In spring 2011, GE collected a total of 129 scrape samples, including seven duplicates, on 37 properties, as well as non-parcel access areas, such as road rights of way.

NYSDEC collected 21 scrape samples, including one duplicate, on eight properties, as well as non-parcel access areas, such as road rights of way.

The overall spring 2011 sample collection totaled 191 samples, of which all but 11 were scrape samples. The samples were collected from April 15, 2011, through June 17, 2011. Seventy-four properties were sampled, as well as additional non-parcel areas, such as road rights of way.

Previous experience has shown flood deposits at scrape locations wash away, from rain or subsequent river flows over the area within a few days of flood waters receding; therefore, these samples were collected as soon as possible as water levels began to recede. Scrape samples were collected by the EPA, GE, and NYSDEC on April 15 through 17, May 2 through 6 and 9 through 11, and June 8, 9, 15, and 17; after river flows receded sufficiently for collection of deposited sediments. Sample collection from devices began on June 8 and continued through June 16.

A summary of the sampling locations is listed in Table 2-2 and presented in Figures 2-2 through 2-27. The EPA samples are symbolized by squares, GE's samples are shown as circles, and NYSDEC's samples are depicted as triangles. For all samples, blue coloring represents PCB levels between non-detect and 1ppm; green coloring represents PCB levels from greater than 1ppm to 10ppm.

**Table 2-2 Summary of Sampling Locations**

Location ID	Approx. River Mile	Spring 2011 Sample Date	Type of Sample	Location Notes	Location Notes
2011FM11	194	5/11/2011	Scrape	NYSDEC 2011 Location	Figure 2-3
EPA-R8-E-9495-01	194	5/3/2011	Scrape	Original FSP Location	Figure 2-3
EPA-R8-E-9495-02	194	6/9/2011	Scrape	Location Added in 2011	Figure 2-3
EPA-R8-E-9495-03	194	6/9/2011	Scrape	Location Added in 2011	Figure 2-3
EPA-R8-I-9495-01	194	6/8/2011	Device	Location added in 2010	Figure 2-3
EPA-R8-E-9394-02	194	6/9/2011	Scrape	Location Added in 2011	Figure 2-3
2011FM10	193	5/11/2011	Scrape	NYSDEC 2011 Location	Figure 2-3
EPA-R8-E-9394-01	193	5/2/2011	Scrape	Location Added in 2011	Figure 2-3
EPA-R8-W-9394-01	193	4/16/11, 5/2/11	Scrape	Original FSP Location	Figure 2-3
GE11-R8-I-9394-01	193	5/5/2011	Scrape	GE 2011 Location	Figure 2-3
GE11-R8-I-9394-02	193	5/9/2011	Scrape	GE 2011 Location	Figure 2-3
EPA-R8-W-9293-01	193	6/8/2011	Scrape	Location Added in 2011	Figure 2-4
EPA-R8-E-9293-01	192	6/16/2011	Device	Original FSP Location	Figure 2-4
GE11-R8-E-9293-02	192	5/6/2011	Scrape	GE 2011 Location	Figure 2-4

Table 2-2 Summary of Sampling Locations

Location ID	Approx. River Mile	Spring 2011 Sample Date	Type of Sample	Location Notes	Location Notes
GE11-R8-E-9293-03	192	5/4/2011	Scrape	GE 2011 Location	Figure 2-4
GE11-R8-I-9192-01	191	6/15/2011	Scrape	GE 2011 Location	Figure 2-4
GE11-R8-I-9192-02	191	6/15/2011	Scrape	GE 2011 Location	Figure 2-4
GE11-R8-I-9192-03	191	6/15/2011	Scrape	GE 2011 Location	Figure 2-4
GE11-R8-W-9192-01	191	5/3/2011	Scrape	GE 2011 Location	Figure 2-5
EPA-R8-W-9091-01	190	6/17/2011	Scrape	Location Added in 2011	Figure 2-5
GE11-R8-E-9091-01	190	5/10/2011	Scrape	GE 2011 Location	Figure 2-5
GE11-R8-E-9091-02	190	5/9/2011	Scrape	GE 2011 Location	Figure 2-5
GE11-R8-I-9091-03	190	5/5/2011	Scrape	GE 2011 Location	Figure 2-5
2011FM08	189	5/11/2011	Scrape	NYSDEC 2011 Location	Figure 2-6
2011FM09	189	5/11/2011	Scrape	NYSDEC 2011 Location	Figure 2-6
EPA-R8-W-8889-01	189	6/8/2011	Device	Original FSP Location	Figure 2-6
EPA-R8-W-8889-02	189	4/15/11, 5/3/11	Scrape	Location Added in 2010	Figure 2-6
GE11-R8-E-8889-01	188	5/5/2011	Scrape	GE 2011 Location	Figure 2-7
EPA-R7-W-8788-01	187	6/17/2011	Scrape	Location Added in 2011	Figure 2-7
GE11-R7-W-8788-01	187	5/3/2011	Scrape	GE 2011 Location	Figure 2-7
EPA-R7-E-8687-01	187	4/16/11, 6/9/11	Scrape	Location Added in 2010	Figure 2-8
EPA-R7-W-8687-01	187	Not Sampled	Device	Original FSP Location	N/A
GE11-R7-E-8687-01	186	5/4/2011	Scrape	GE 2011 Location	Figure 2-8
EPA-R6-E-8586-01	185	6/14/2011	Device	Original FSP Location	Figure 2-8
EPA-R6-E-8586-02	185	6/9/2011	Scrape	Location Added in 2011	Figure 2-8
GE11-R6-E-8586-01	185	5/10/2011	Scrape	GE 2011 Location	Figure 2-8
GE11-R5-E-8182-03	185	5/10/2011	Scrape	GE 2011 Location	Figure 2-9
GE11-R6-E-8485-02	184	5/10/2011	Scrape	GE 2011 Location	Figure 2-10
2011FM07	182	5/11/2011	Scrape	NYSDEC 2011 Location	Figure 2-11
EPA-R5-W-8182-01	182	6/8/2011	Device	Original FSP Location	Figure 2-11
EPA-R5-W-8182-02	182	4/16/11, 5/2/11	Scrape	Location Added in 2010	Figure 2-11
EPA-R5-W-8283-01	182	5/2/2011	Scrape	Location Added in 2011	Figure 2-11
GE11-R5-I-8182-01	181	5/3/2011	Scrape	GE 2011 Location	Figure 2-11
GE11-R5-W-8182-02	181	5/3/2011	Scrape	GE 2011 Location	Figure 2-11
GE11-R5-E-7980-01	179	5/10/2011	Scrape	GE 2011 Location	Figure 2-12
GE11-R5-W-7980-02	179	5/10/2011	Scrape	GE 2011 Location	Figure 2-13
EPA-R5-E-7879-01	178	6/14/2011	Device	Original FSP Location	Figure 2-14
EPA-R5-W-7778-01	178	4/17/2011	Scrape	Location Added in 2011	Figure 2-14
GE11-R5-W-7778-01	177	5/10/2011	Scrape	GE 2011 Location	Figure 2-14
EPA-R5-W-7677-01	177	6/9/2011	Device	Original FSP Location	Figure 2-15
EPA-R5-E-7576-01	175	6/9/2011	Device	Original FSP Location	Figure 2-16
EPA-R5-E-7576-02	175	5/3/2011	Scrape	Location Added in 2011	Figure 2-16
GE11-R5-E-7576-03	175	5/6/2011	Scrape	GE 2011 Location	Figure 2-16
2011FM06	174	5/11/2011	Scrape	NYSDEC 2011 Location	Figure 2-16
GE11-R5-W-7475-01	174	5/4/2011	Scrape	GE 2011 Location	Figure 2-16
2011FM05	173	5/11/2011	Scrape	NYSDEC 2011 Location	Figure 2-17
GE11-R5-W-7374-01	173	5/10/2011	Scrape	GE 2011 Location	Figure 2-17
EPA-R5-W-7273-01	173	6/9/2011	Device	Original FSP Location	Figure 2-18

**Table 2-2 Summary of Sampling Locations**

Location ID	Approx. River Mile	Spring 2011 Sample Date	Type of Sample	Location Notes	Location Notes
GE11-R5-E-7273-01	172	5/6/2011	Scrape	GE 2011 Location	Figure 2-18
EPA-R5-E-7071-01	171	6/9/2011	Device	Original FSP Location	Figure 2-19
GE11-R5-W-7172-01	171	5/6/2011	Scrape	GE 2011 Location	Figure 2-19
GE11-R5-W-7071-02	170	5/5/2011	Scrape	GE 2011 Location	Figure 2-19
GE11-R5-E-7071-01	170	5/6/2011	Scrape	GE 2011 Location	Figure 2-20
GE11-R5-W-6970-01	169	5/4/2011	Scrape	GE 2011 Location	Figure 2-21
2011FM03	168	5/11/2011	Scrape	NYSDEC 2011 Location	Figure 2-22
2011FM04	168	5/11/2011	Scrape	NYSDEC 2011 Location	Figure 2-22
GE11-R4-W-6768-01	167	5/5/2011	Scrape	GE 2011 Location	Figure 2-22
EPA-R3-W-6566-01	165	5/3/2011	Scrape	Original FSP Location	Frame 2-23
GE11-R3-E-6566-02	165	5/9/2011	Scrape	GE 2011 Location	Frame 2-23
2011FM02	165	5/11/2011	Scrape	NYSDEC 2011 Location	Frame 2-23
2011FM01	165	5/11/2011	Scrape	NYSDEC 2011 Location	Frame 2-24
EPA-R3-W-6465-01	165	6/9/2011	Device	Original FSP Location	Frame 2-24
EPA-R3-W-6465-02	165	4/17/11, 5/3/11	Scrape	Location Added in 2011	Frame 2-24
EPA-R2-E-6162-01	162	Not Sampled	Device	Original FSP Location	N/A
EPA-R2-W-6162-01	161	5/3/2011	Scrape	Original FSP Location (Device)	Figure 2-26
EPA-R2-W-6162-02	161	5/3/2011	Scrape	Location Added in 2011	Figure 2-26
EPA-R2-W-5960-01	160	5/3/2011	Scrape	Original FSP Location	Figure 2-27
EPA-R1-E-5758-01	158	5/3/2011	Scrape	Location Added in 2011	Figure 2-28
GE11-R1-W-5758-01	157	5/5/2011	Scrape	GE 2011 Location	Figure 2-28

### 2.5.1.1 Scrape Locations

Scrape sample locations were identified with sufficient sediment to sample. Preference was given to areas with preexisting man-made structures, such as concrete boat ramps, to limit the potential of collecting native soil. After the April 2011 flooding event, areas at previously sampled locations were selected in the field, by the field team leader, which had sufficient sediment (approximately a half inch or more) so as to ensure native materials would not be included in the collected sample. Newly-deposited sediment was collected from the ground, homogenized in an aluminum pan, and placed into the appropriate sample containers. The samples were then labeled and shipped to the laboratory for analysis. Each final sample location was documented as described in Section 2.6.

### 2.5.1.2 Device Locations

At locations with preinstalled sampling devices, each device was opened and a representative amount of sediment was removed from the device, homogenized in an aluminum pan and placed into the appropriate sample containers. The samples were then labeled and shipped to the laboratory for analysis. Sampling activities were documented as described in Section 2.6.

## 2.5.2 Sample Management

### 2.5.2.1 EPA Sample Nomenclature

Each EPA sample was assigned a unique sample identifier (see Table 2-3 for EPA identifier set up). The identifier contains the sampling entity, location name which includes the river reach, east or west bank location, RM range, a location identification number, and the year and month of the sample. (Note that not all documents keep the sampling entity nomenclature on the front of the sample.) As an example, the first location identified in Reach 8 along the east bank between RM 194 and 195 in April 2011 would read as follows: EPA-R8-E-9495-01-2011-04.

**Table 2-3 EPA Unique Sample Identifier**

Entity Sampling	River Reach	East/West Bank	River Mile Range	Location ID	Year	Month
EPA	R8	E	9495	01	2011	04

EPA field duplicates were submitted blind to the analytical laboratory. Duplicate samples were collected in May and June. The May nomenclature was modified so that both the sample ID and location ID were replaced with “FD” and a number count. The June sample nomenclature was modified so that the sample ID was replaced with “FD” and a number count.

EPA sample labels and chain-of-custody forms were prepared using FORMS II Lite for the April sampling, and Scribe for the May and June sampling. Sample labels included the unique sample identifier, type of analysis to be performed, and time and date the sample was collected.

### 2.5.2.2 GE Sample Nomenclature

GE’s identifiers are similar to EPA’s identifiers, with the exception of the first portion, which contains “GE” and the two-digit year of the sample; and the last portion, which instead of containing the year and month of sample collection, contains an assigned number based on each individual sample collected at a location, as part of the larger transect (e.g., GE11-R8-E-9495-01-01; see Table 2-4).

**Table 2-4 GE Unique Sample Identifier**

Entity Sampling	River Reach	East/West Bank	River Mile Range	Transect ID	Sample Location ID
GE11	R8	E	9495	01	01

GE sample labels and chain-of-custody form were prepared using GE’s sample management program developed by Anchor, QEA. Sample labels included the unique sample identifier, type of analysis to be performed, and time and date the sample was collected.

### 2.5.2.3 NYSDEC Sample Nomenclature

NYSDEC's identifiers contain the year of the sample, immediately followed by "FM" (flood mud) as the sampling program identification, then a transect number, and ending with a unique sample number (e.g., 2011FM09-01; see Table 2-5).

**Table 2-5 NYSDEC Unique Sample Identifier**

Sample Year	Program ID	Transect ID	Sample ID
2011	FM	09	01

### 2.5.2.4 Sample Shipment

April EPA samples were packaged and shipped to the EPA Region 2 Division of Environmental Science and Assessment laboratory in Edison, New Jersey, for analysis of PCBs and total organic carbon (TOC). Additional EPA samples, collected in May and June, were released to GE's custody for analysis at SGS North America, Inc. (SGS), laboratories. In addition, GE's samples were packaged and shipped to SGS laboratories. NYSDEC's samples were analyzed by Mitkem Laboratories, a division of Spectrum Analytical, Inc.

### 2.5.3 Sample Device Decontamination

As described in the FSP, the sample devices were decontaminated after sampling activities were completed. Each device had all visible sediment removed and was triple rinsed with potable water using a handheld pressurized sprayer. One equipment rinsate blank was collected for the 11 sampled devices in accordance with the FSP (one equipment rinsate blank is required per 20 device samples).

## 2.6 Field Documentation

EPA field activities, which include but are not limited to, sample device decontamination, sample location monitoring, and sample collection are documented. Each visit to a sampling location was documented by the field team. Photographs of the sampling location were taken (see Appendix B for select photographs). Information was recorded in the log book, including the date and time that the location was checked, the flow rate at the Fort Edward USGS hydrological station, and a brief description of activities performed during the site visit. In addition to observations recorded in the field log books, the activities performed at each location were documented on the location log sheets included in Appendix C as well as on daily log sheets included in each trip report, provided in Appendix D.

# 3

## Quality Assurance/Quality Control

This section describes the quality assurance/quality control (QA/QC) procedures that were followed during the collection and analysis of spring 2011 samples and the historical floodplain samples.

### 3.1 Sampling and Analysis Performed

Samples collected for the EPA spring 2011 event are described in Section 2.5 and are summarized in Table 2-2. Samples were collected as planned except as noted in Section 2. The deviations from the planned sampling program did not impact the ability to meet project objectives. The sample collection included one equipment blank (EPA-R8-W-01-RB01) and three field duplicates:

- The parent sample for field duplicate EPA-R5-W-7273-01-FD1 is EPA-R5-W-7273-01-2011-06;
- The parent sample for field duplicate EPA-R8-W-8889-01-FD2 is EPA-R8-W-8889-01-2011-06; and
- The parent sample for field duplicate EPA-R3-W-6566-FD is EPA-R3-W-6566-01-2011-05.

The EPA samples were analyzed for Target Compound List (TCL) PCBs and TOC by the EPA Region 2 Division of Environmental Science and Assessment (DESA) laboratory (April samples) or by GE's subcontracted laboratory, SGS North America, Inc. (May and June samples). In addition, GE's samples were analyzed for TCL PCBs and TOC by SGS laboratories. NYSDEC's samples were analyzed for TCL PCBs by Mitkem Laboratories, a division of Spectrum Analytical, Inc. All laboratories are accredited by the National Environmental Laboratory Accreditation Conference (NELAC). The laboratory methods that are accredited have met all the requirements established under the NELAC Standards. The laboratory methods include:

- DESA TCL Pesticides/PCBs Analysis, EPA standard operating procedure (SOP) C-91 Gas Chromatography/Electron Capture Detection ([GC/ECD] Method – NELAC accredited for both waters and solids).
- DESA TOC Analysis, EPA SOP C-88 (Thermo Conductivity Detector Method – NELAC accredited method for waters only).

- DESA TOC Analysis, EPA SOP C-83 (Combustion/Infrared Detection Method – internal method for solids only).
- SGS/Mitkem PCB Analysis, EPA SW846 8082A (PCBs by Gas Chromatography).
- SGS/Mitkem TOC Analysis, Lloyd Kahn Method

Samples were sent to laboratories on the following dates:

- EPA Region 2 DESA received EPA's April 2011 samples on April 19, 2011 (six sediments). The report is identified as 11040062.
- SGS received EPA's May 2011 samples on May 6, 2011 (14 sediments, including one duplicate). The report is identified as G582-984.
- Mitkem Laboratories received NYSDEC's May 2011 samples on May 13, 2011 (21 sediments, including one duplicate). The report is identified as case number K0826.
- SGS received GE's May 2011 samples on May 4, 5, 6, 7, 10, and 11, 2011 (112 sediments, including six duplicates.) The reports are identified as G582-981, -982, -983, -985, -986, -987, and -988.
- SGS received EPA's June 2011 samples on June 21, 2011 (23 sediments, including two duplicates, one matrix spike, and one matrix spike duplicate and an aqueous sample for a rinsate blank). The report is identified as G582-990.
- SGS received GE's June 2011 samples on June 16, 2011 (17 sediments, including one duplicate). The report is identified as G582-989.

### **3.2 EPA Data Review**

All data submitted to the EPA Region 2 laboratory were validated by the laboratory in accordance with internal SOPs for data review and validated results were submitted electronically. Samples that were submitted to SGS by EPA were reviewed by EEEPC data validators, as appropriate. PCB Aroclors are identified and quantitated according to the SOP, C-91 and EPA SW846 8082 (GC/ECD Method). Several samples had detections above the laboratory's reporting limit for Aroclor 1242, Aroclor 1248, and Aroclor 1254. No other Aroclors were identified during this investigation.

Data qualifiers were assigned as follows:

- U – The analyte was not detected at or above the reporting limit.
- L – The identification of the analyte is acceptable; the reported value may be biased low.

- UL – The analyte was not detected at or above the reporting limit; the reporting limit may be biased low.
- J - The analyte was detected but is considered estimated due to laboratory or general QC issues.
- UJ - The analyte was not detected at or above the reporting limit but is considered estimated at that concentration due to laboratory or general QC issues.

No specific details were provided on the nature of the qualification.

Samples submitted to SGS by EPA were reviewed according to EPA SOP HW-45 validation of Aroclors by SW846 8082. Sample data was reviewed for accuracy and precision. Several samples had surrogates that were out of QC limits causing the data to be qualified “J” or “UJ” as appropriate. These samples were re-extracted outside of the laboratory sample holding time, after which the highest of the two reported results was included in this report. One of the matrix spikes had a recovery that was above QC limits; however, there was not a positive detection of this compound in the corresponding field sample, so no data qualification was necessary. In general, the data was of good quality and can be considered to be usable for the project.

### **3.3 EPA Data Quality Evaluation**

#### **3.3.1 Field Duplicates**

Field duplicate analysis is performed to evaluate the overall precision of the sampling and analysis program. Precision is measured as the relative percent difference (RPD) between analytical results for field duplicate samples. The lack of similar results for field duplicate samples may indicate that the samples were non-homogeneous, sample collection procedures were not representative, or that method defects may exist in the laboratory's techniques. The field duplicate results for positive results are presented in Table 3-1. Sample results with RPDs less than 60% (twice the acceptable analytical precision) are considered “Good.” Sample results with RPDs higher are considered to have greater sampling variability and are flagged “J” as estimated. All field duplicate results were evaluated against the raw data and considered valid. Sample concentrations in field duplicates were less than 1ppm. The samples did have low percent solids which may have contributed to the overall variability. Consideration to improve percent solids or work with the laboratory to compensate with higher sample amounts may improve results. Field duplicate variability can be attributed to the low percent solids, low concentrations of PCBs, and the high variability of the sample matrices in the sampling devices.

#### **3.3.2 Field Blank Samples**

An equipment rinsate blank is a sample of analyte-free water poured over or through decontaminated field sampling equipment prior to the collection of environmental samples to assess the adequacy of the decontamination process. One rinsate sample was collected for every 20 samples as a measure of the decontamination of the sampling device. The rinsate sample showed a low-level detection

of PCBs at EPA-R8-W-8889-01. Due to the small amount of PCBs in the sample potential sample contamination is not a concern.

**Table 3-1 Spring 2010 Positive Field Duplicate Results**

Location ID	EPA Spring 2011 Total PCBs (ppm)			EPA Spring 2011 TOC (%)		
	Parent	Duplicate	RPD	Parent	Duplicate	RPD
EPA-R5-W-7273-01	0.1702	0.469	93.5	4.99	5.98	18.1
EPA-R8-W-8889-01	0.44	0.32	31.6	11	8.35	27.4
EPA-R3-W-6566-01	0.71	0.15	130.2	0.82	0.66	21.6

Key:

ppm = Parts per million.

RPD = Relative Percent Difference.

TOC = Total Organic Carbon.

Overall, the data quality was acceptable and the laboratory analysis and reporting procedures were representative of the appropriate methodology for sediment collection. The objectives for completeness were 100% for all samples. High levels of percent moisture may have impacted precision of the results.

Samples submitted by EPA and GE to the SGS laboratory showed similar results to the samples by EPA submitted to the EPA Region 2 DESA laboratory. All samples had a general high percent moisture content that could impact the precision of sample results.

### 3.4 Data Quality Evaluation – Other Results

In 2010, EPA collected 18 samples for total PCBs and TOC as presented in Section 4. Samples were collected by EPA and analysis was performed by a DESA laboratory. All results were validated by the DESA and eight (including one duplicate) sample results were flagged “J” as estimated. Overall results are considered valid and usable for the project. Sample results for previous investigations are comparable to data collected under the current investigation based on analytical methodology and data review procedures.

NYSDEC collected a total of 10 samples for total PCBs as presented in Section 4. Samples were collected by NYSDEC personnel and analyzed and validated by the NYSDEC Division of Environmental Remediation laboratory. Four sample results were flagged “J” as estimated. Overall results are considered valid and usable for the project.

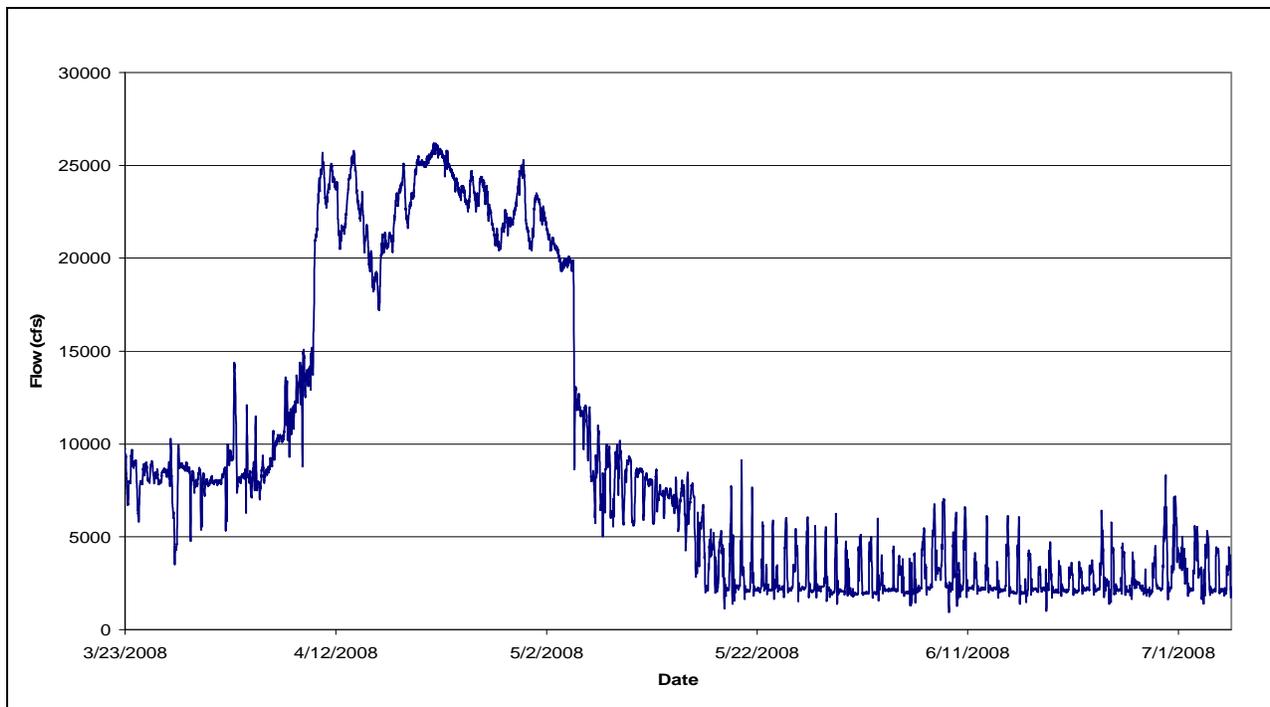
GE collected a total of six samples, including one field duplicate, for total PCBs and TOC as presented in Section 4. Samples were collected by GE contractors and analysis was performed by a NELAC-certified contract laboratory. All results were validated by GE contractors and most sample results were flagged “J” as estimated. Overall results are considered valid and usable for the project. Sample results for previous investigations are comparable to data collected under the current investigation based on analytical methodology and data review procedures.

# 4

## Analytical Results

### 4.1 Previous Results

Prior to the start of the FDSP in 2010 by EPA, both GE and NYSDEC collected flood deposition samples after the spring 2008 high-flow event. The locations of the samples collected were considered in the development of the FDSP and many of the FDSP sample locations are similar. The flow rate in the UHR, as measured at the Fort Edward USGS hydrological station during the spring 2008 high-flow event, reached a maximum of 26,200 cfs (see Figure 4-1).



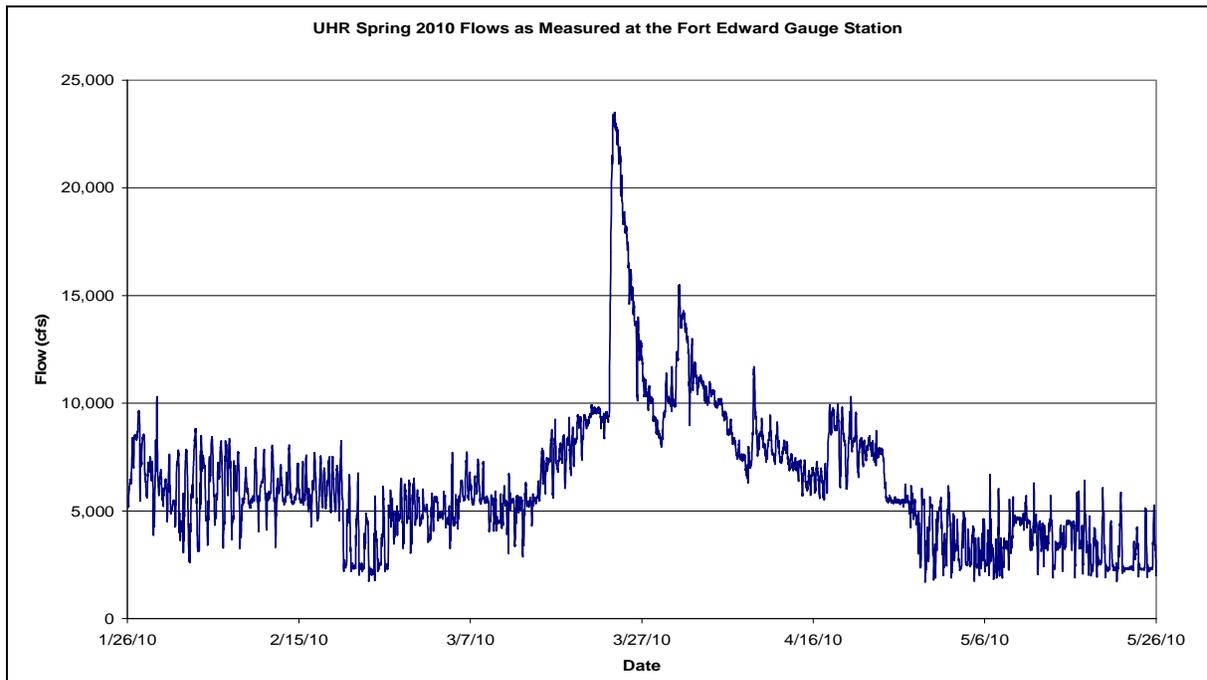
Source: USGS 2011.

**Figure 4-1 Spring 2008 High Flows as Measured at the Fort Edward Hydrological Station**

NYSDEC collected a total of 10 samples from six properties on May 8, 2008. Scrape samples of floodplain deposition were collected from the ground and analyzed for total PCBs (see Table 4-1). Total PCB results from this sampling event ranged from 0.46 parts per million (ppm) to 3.06 ppm.

GE collected a total of six samples, including one field duplicate, from four properties on July 2, 2008. These samples were composite samples and each aliquot came from the same property. Scrape samples of flood deposition were collected from the ground and analyzed for total PCBs and TOC (see Table 4-1). Total PCB results from this sampling event ranged from 0.64 ppm to 0.93 ppm.

In 2010, samples from the EPA spring sampling event were analyzed for Total PCBs and TOC. The results are included in Table 4-1. The flow rate in the UHR as measured at the Fort Edward USGS hydrological station during the spring 2010 high-flow event reached a maximum of 23,470 cfs (see Figure 4-2).



Source: USGS 2011.

**Figure 4-2 UHR Spring 2010 Flows**

Total PCB concentrations of the 21 sediment samples collected by the EPA, including three field duplicates, ranged from non-detect to 2.69 ppm (see Table 4-1).

## 4.2 Spring 2011 Results

In 2011, floodplain deposition samples were collected by the EPA, GE, and NYSDEC. Spring 2011 samples from the EPA and GE were analyzed for Total PCBs and TOC. NYSDEC samples were analyzed for Total PCBs only. The Spring 2011 sampling results are included in Table 4-1. The flow rate in the UHR as measured at the Fort Edward USGS hydrological station during the spring 2011 high-flow event reached a maximum of 48,800 cfs (see Figure 2-1). Total PCB concentrations of the 191 sediment samples, including 11 field duplicates, collected by the EPA, GE, and NYSDEC in 2011 ranged from non-detect to 4.85 ppm.

**Table 4-1 2008-2011 Analytical Results for All Samples**

2011 Location ID	Approx. River Mile	Adjacent to Proposed Dredge Area	2008 Location ID	Spring 2008 Total PCBs (ppm)	Spring 2008 TOC (%)	2010 Sample ID	Spring 2010 Total PCBs (ppm)	Spring 2010 TOC (%)	2011 Sample ID	Spring 2011 Total PCBs (ppm)	Spring 2011 TOC (%)
2011FM11	194	Yes	WS8-02	0.46	-	-	-	-	01	1.3	-
									02	1.5	-
EPA-R8-E-9394-02	194	Yes	-	-	-	-	-	-	2011-06	0.0686* J	3.63
EPA-R8-E-9495-01	194	Yes	-	-	-	2010-04	0.61	1.6	2011-05	0.24	0.65
EPA-R8-E-9495-02	194	No	-	-	-	-	-	-	2011-06	1.32	2.23
EPA-R8-E-9495-03	194	No	-	-	-	-	-	-	2011-06	2.04	1.45
EPA-R8-I-9495-01	194	Yes	-	-	-	2010-04	0.13	11	2011-06	0.171 J	7.86
2011FM10	193	Yes	WS8-01	0.795	-	-	-	-	01	2.4	-
									02	0.96	-
EPA-R8-E-9394-01	193	Yes	-	-	-	-	-	-	2011-05	1.45	1.55
EPA-R8-W-9293-01	193	Yes	-	-	-	-	-	-	2011-06	1.03	5.38
EPA-R8-W-9394-01	193	Yes	-	-	-	2010-03	ND (0.08)	5.2	2011-04	ND (0.065835) U	3
									2011-05	0.74	1.84
GE11-R8-I-9394-01	193	Yes	T-NI-S1**	3.2 J	7.24	-	-	-	01	0.54	2.11
									02	0.42 J	3.51
									03	1.51	2.18
									04	0.38 J	5.66
GE11-R8-I-9394-02	193	Yes	-	-	-	-	-	-	01	0.4	0.11
									02	0.08 J	0.13
									03	0.19	0.75
									04	0.42	1.71
									05	0.16 J	0.15
EPA-R8-E-9293-01	192	Yes	-	-	-	2010-04	ND (0.08)	9.1	2011-06	0.906	6.72
GE11-R8-E-9293-02	192	Yes	-	-	-	-	-	-	01	1.15 J [1.37 JN]	1.52 [1.77]
									02	0.59 J	3.25
GE11-R8-E-9293-03	192	Yes	-	-	-	-	-	-	01	0.3 J	3.38
									02	0.22 J	4.45
N/A	192	Yes	T-9E-S1*	5.4	2.68	-	-	-	-	-	-
GE11-R8-I-9192-01	191	Yes	-	-	-	-	-	-	01	0.12 J	0.33
									02	0.71 J	0.44
									03	0.82 J [1.12]	1.31 J [2.57 J]
									04	0.94 J	2.99
									05	1.64	2.19
									06	0.54 J	0.41

4-3

**Table 4-1 2008-2011 Analytical Results for All Samples**

2011 Location ID	Approx. River Mile	Adjacent to Proposed Dredge Area	2008 Location ID	Spring 2008 Total PCBs (ppm)	Spring 2008 TOC (%)	2010 Sample ID	Spring 2010 Total PCBs (ppm)	Spring 2010 TOC (%)	2011 Sample ID	Spring 2011 Total PCBs (ppm)	Spring 2011 TOC (%)
GE11-R8-I-9192-02	191	Yes	T-NI-S1**	3.2 J	7.24				01	2.75 J	1.9
									02	2.33	1.85
									03	1.77 J	1.4
									04	1.15	2.39
									05	1.02	3.01
GE11-R8-I-9192-03	191	Yes	T-NI-S1**	3.2 J	7.24				01	2.54 J	4.87
									02	0.92	1.75
									03	4.85 J	2.83
									04	2.37	2.94
									05	2.35	2.43
GE11-R8-W-9192-01	191	Yes	-	-	-	-	-	-	01	0.32 J	1.85
									02	0.45 J	2.27
									03	0.55 J	1.33
EPA-R8-W-9091-01	190	Yes	-	-	-	-	-	-	2011-06	0.306	0.765
GE11-R8-E-9091-01	190	Yes	-	-	-	-	-	-	01	0.05 J	1.13
									02	0.52 J	4.75
									03	0.23 J	7.52 J
GE11-R8-E-9091-02	190	Yes (Sample 01)	-	-	-	-	-	-	01	0.31 J [0.24 J]	4.47 [5.35]
									02	ND(0.02) U	3.71
GE11-R8-I-9091-03	190	Yes	-	-	-	-	-	-	01	0.13	6.13
									02	0.31 J	0.89
									03	0.46	1.96
2011FM08	189	No	WS8-03	1.8	-	-	-	-	01	1.7	-
									02	0.296	-
2011FM09	189	Yes	-	-	-	-	-	-	01	1.52 E,P	-
EPA-R8-W-8889-01	189	No	-	-	-	2010-03	0.16 L	6.6	2011-06	0.44 J [0.32]	11 [8.35]
EPA-R8-W-8889-02	189	No	-	-	-	2010-03	0.082	6.3	2011-04	ND (0.058608) U	4.9
									2011-05	0.08	5.36
N/A	189	No	T-26W-G1-S1*	2.1 J	4.57	-	-	-	-	-	-
GE11-R8-E-8889-01	188	Yes	-	-	-	-	-	-	01	0.43	1.56
									02	0.28 J	3.81
EPA-R7-E-8687-01	187	No	-	-	-	2010-03	0.19 [.66 J]	4.5	2011-04	0.16	5.5
									2011-06	0.381* J	2.15

4-4

**Table 4-1 2008-2011 Analytical Results for All Samples**

2011 Location ID	Approx. River Mile	Adjacent to Proposed Dredge Area	2008 Location ID	Spring 2008 Total PCBs (ppm)	Spring 2008 TOC (%)	2010 Sample ID	Spring 2010 Total PCBs (ppm)	Spring 2010 TOC (%)	2011 Sample ID	Spring 2011 Total PCBs (ppm)	Spring 2011 TOC (%)
EPA-R7-W-8687-01	187	No	-	-	-	2010-03	0.23 J	3.8 [4.6]	-	-	-
EPA-R7-W-8788-01	187	Yes	-	-	-	-	-	-	2011-06	0.781	0.78
GE11-R7-W-8788-01	187	No	-	-	-	-	-	-	01	0.48	1.09
									02	1.1	2.88
GE11-R7-E-8687-01	186	Yes (Samples 01, 02)	-	-	-	-	-	-	01	0.28 J	3.25
									02	0.17 J	1.5
									03	0.19 J	6.02
									04	0.28 J	3.3
									05	0.14 J	3.54
									06	0.35	3.32
EPA-R6-E-8586-01	185	No	-	-	-	2010-04	ND (0.06)	6.3	2011-06	2.25	3.55
EPA-R6-E-8586-02	185	No	-	-	-	-	-	-	2011-06	0.2469* J	2.27
GE11-R6-E-8586-01	185	No	T-37E-G1** T-37E-S1**	1.3 J 0.93 J [0.64 J]	5.59 5.6 [3.61]	-	-	-	01	0.14 J	3.36
									02	0.03 J	2.08
									03	0.14 J	2.04
									04	0.68	1.02
									05	0.03 J	1.73
GE11-R6-E-8485-02	184	Yes	-	-	-	-	-	-	01	0.3	3.92
									02	0.14 J	5.75 J
2011FM07	182	No	WS8-04 WS8-05	2.64 3.06	-	-	-	-	01	1.53 E	-
									02	1.43 P	-
									03	1.22 P [1.6]	-
									04	1.14 P	-
EPA-R5-W-8182-01	182	No	-	-	-	2010-04	0.74 J [2.69 J]	5.9 [6.1]	2011-06	0.1491 J	4.93
EPA-R5-W-8182-02	182	No	-	-	-	2010-03	0.29	7.1	2011-04	ND (0.073425) U	7.2
									2011-05	.11	5.72
EPA-R5-W-8283-01	182	No	-	-	-	-	-	-	2011-05	0.32	5.62
GE11-R5-E-8182-03	181	Yes	-	-	-	-	-	-	01	ND(0.01) U	2.78
									02	ND(0.02) U	4.76
GE11-R5-I-8182-01	181	No	-	-	-	-	-	-	01	0.41	3.41
									02	0.32 J	4.63
									03	0.55 J	6.93

45

**Table 4-1 2008-2011 Analytical Results for All Samples**

2011 Location ID	Approx. River Mile	Adjacent to Proposed Dredge Area	2008 Location ID	Spring 2008 Total PCBs (ppm)	Spring 2008 TOC (%)	2010 Sample ID	Spring 2010 Total PCBs (ppm)	Spring 2010 TOC (%)	2011 Sample ID	Spring 2011 Total PCBs (ppm)	Spring 2011 TOC (%)
GE11-R5-W-8182-02	181	No	-	-	-	-	-	-	01	0.48	5.78
									02	2.5 J	3.57
									03	0.34 J	1.49
									04	0.6 J	5.15
									05	0.42 [0.56]	4.55 [4.00]
									06	0.02 J	1.47
									07	ND(0.01) U	1.26
GE11-R5-E-7980-01	179	No	-	-	-	-	-	-	01	0.18 J	3.86
									02	1.82 J	0.97
									03	4.09 J	2.92
									04	0.2 J	2.68
GE11-R5-W-7980-02	179	No	-	-	-	-	-	-	01	0.02 J	2.32
									02	0.06 J [0.03 J]	4.54 [3.58]
GE11-R5-W-7980-02	179	Yes	-	-	-	-	-	-	03	ND(0.01) U	2.71
									04	0.5 J	2.5
									05	0.35	2.42
EPA-R5-E-7879-01	178	No	-	-	-	2010-03	0.81	4.6	2011-06	0.0716	1.56
EPA-R5-W-7778-01	178	No	-	-	-	-	-	-	2011-04	0.44	6.2
EPA-R5-W-7677-01	177	Yes	-	-	-	2010-04	ND (0.09)	3	2011-06	0.0345 J	4.23
GE11-R5-W-7778-01	177	No	-	-	-	-	-	-	01	1.16 J [0.92]	3.80 [3.10]
									02	0.24 J	4.63
									03	0.21 J	4.98
									04	0.13 J	1.64
									05	0.75	3.43
									06	0.57	2.86
									07	0.88	1.21
									08	0.1 J	1.07
									09	0.17 J	2.4
									10	0.07 J	4
									11	2.97 J	4.99
									12	0.32 J	0.72
									13	1.23	4.81
									14	0.67 J	1.33
EPA-R5-E-7576-01	175	No	-	-	-	2010-03	ND (0.11)	7.2	2011-06	0.0765* J	5.45
EPA-R5-E-7576-02	175	No	-	-	-	-	-	-	2011-05	0.14	3.56

4-6

**Table 4-1 2008-2011 Analytical Results for All Samples**

2011 Location ID	Approx. River Mile	Adjacent to Proposed Dredge Area	2008 Location ID	Spring 2008 Total PCBs (ppm)	Spring 2008 TOC (%)	2010 Sample ID	Spring 2010 Total PCBs (ppm)	Spring 2010 TOC (%)	2011 Sample ID	Spring 2011 Total PCBs (ppm)	Spring 2011 TOC (%)
GE11-R5-E-7576-03	175	No	-	-	-	-	-	-	01	0.43	1.01
									02	0.55 J	2.08
									03	0.51 J	2.93
2011FM06	174	Yes	-	-	-	-	-	-	01	1.04 E,P	-
GE11-R5-W-7475-01	174	Yes	-	-	-	-	-	-	01	0.12 J	2.16
									02	0.12 J [0.23]	2.90 [3.21]
2011FM05	173	No	-	-	-	-	-	-	01	0.95	-
EPA-R5-W-7273-01	173	Yes	-	-	-	2010-03	0.12 [ND (0.11)]	5.4 [5.1]	2011-06	0.1702* J [0.469]	4.99 [5.98]
GE11-R5-W-7374-01	173	No	-	-	-	-	-	-	01	2.37	3.78
									02	1.43 J	2
GE11-R5-E-7273-01	172	No	-	-	-	-	-	-	01	0.52	3.64
									02	0.33	4.76
EPA-R5-E-7071-01	171	Yes	-	-	-	2010-04	0.17	3.8	2011-06	0.0811* J	4.37
GE11-R5-W-7172-01	171	No	-	-	-	-	-	-	01	0.53	2.8
									02	0.45	4.63
									03	0.31	3.29
GE11-R5-E-7071-01	170	Yes	-	-	-	-	-	-	01	0.02 J	1.2
GE11-R5-W-7071-02	170	No	-	-	-	-	-	-	01	0.15 J	6.83
									02	0.01 J	1.38
									03	0.18 J	2.85
GE11-R5-W-6970-01	169	Yes (Sample 03)	-	-	-	-	-	-	01	0.17 J	1.37
									02	0.26 J	2.87
									03	0.53 J	2.79
2011FM03	168	No	-	-	-	-	-	-	01	0.45	-
2011FM04	168	No	-	-	-	-	-	-	01	0.065	-
GE11-R4-W-6768-01	167	No	-	-	-	-	-	-	01	0.11 J	2.49
2011FM01	165	No	-	-	-	-	-	-	01	2.3	-
									02	1.93	-
2011FM02	165	No	WS8-06	0.97 J	-	-	-	-	01	0.62 P	-
			WS8-07	0.53 J					02	0.319 P	-
									03	0.62 P	-
EPA-R3-W-6465-01	165	Yes	-	-	-	2010-04	ND (0.11)	4.8	2011-06	0.226 J	5.44

4-7

**Table 4-1 2008-2011 Analytical Results for All Samples**

2011 Location ID	Approx. River Mile	Adjacent to Proposed Dredge Area	2008 Location ID	Spring 2008 Total PCBs (ppm)	Spring 2008 TOC (%)	2010 Sample ID	Spring 2010 Total PCBs (ppm)	Spring 2010 TOC (%)	2011 Sample ID	Spring 2011 Total PCBs (ppm)	Spring 2011 TOC (%)
EPA-R3-W-6465-02	165	No	-	-	-	-	-	-	2011-04	ND (0.06831) U	4.3
									2011-05	0.15	3.21
EPA-R3-W-6566-01	165	No	-	-	-	2010-03	0.6	3.9	2011-05	0.71 [0.15]	0.82 [0.66]
GE11-R3-E-6566-02	165	No	-	-	-	-	-	-	01	ND(0.01) U	0.19
									02	ND(0.01) U	0.11
									03	ND(0.01) U	0.27
									04	ND(0.01) U	0.09
									05	0.05	0.64
EPA-R2-W-6162-01	161	No	-	-	-	-	-	-	2011-05	0.06	4.28
EPA-R2-W-6162-02	161	No	-	-	-	-	-	-	2011-05	0.05	4.7
EPA-R2-W-5960-01	160	No	-	-	-	-	-	-	2011-05	0.11	3.84
EPA-R1-E-5758-01	158	No	-	-	-	-	-	-	2011-05	0.09	1.24
GE11-R1-W-5758-01	157	No	-	-	-	-	-	-	01	0.07 J	5.42
									02	0.17 J	3.15
									03	0.06 J	2.72
									04	0.46	1.47
									05	0.09 J	2.49
N/A	157	No	WS8-08	0.68 J	-	-	-	-	-	-	-
N/A	157	No	WS8-09	0.51	-	-	-	-	-	-	-
N/A	157	No	WS8-10	0.63 J	-	-	-	-	-	-	-

NOTES:

\*Sample re-extracted due to low surrogate recovery. Re-extracted sample analyzed outside holding time.

\*\*Composite Sample.

Key:

[ ] = Duplicate Result.

- = No Sample

E = One peak on GC column is above the calibration range. A diluted analysis was not performed as the average of all the peaks was below the calibration range.

J = The reported value is an estimate.

JN = The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.

L = Result may be biased low

ND (X.XX) = Non Detect (Reporting Limit)

P = The difference for the detected concentrations between two GC columns is greater than 25%.

ppm = Parts per million.

TOC = Total Organic Carbon.

U = The analyte was not detected at or above the Reporting Limit.

### 4.3 Conceptual Site Model

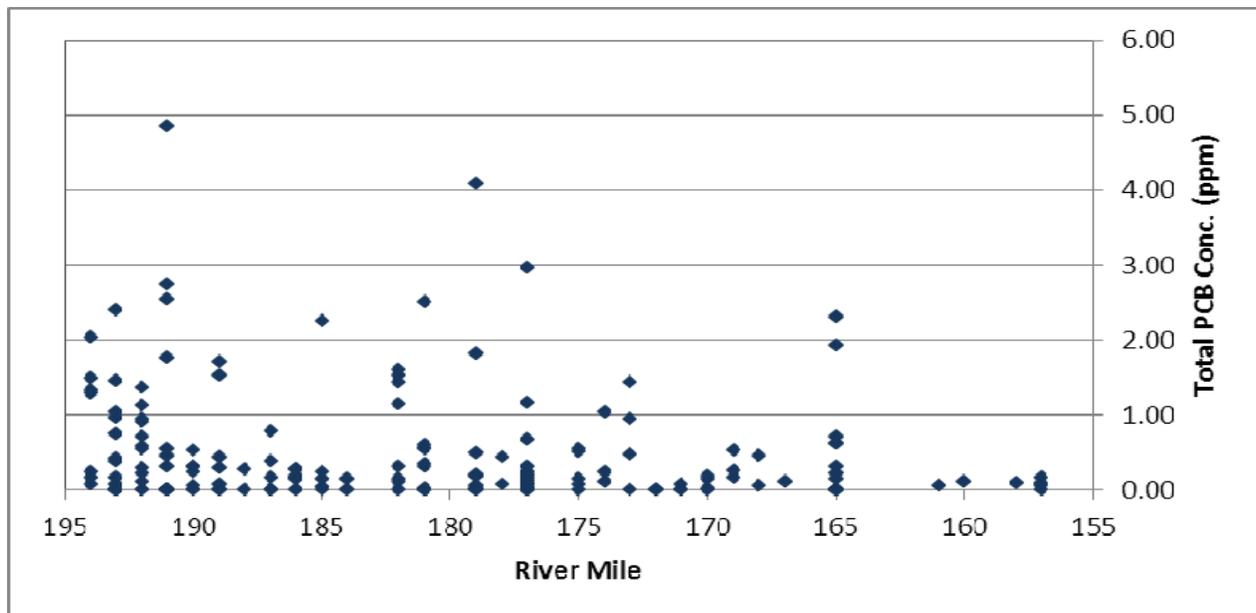
As a part of the floodplain investigation, GE has developed a conceptual site model. This model indicates that PCB concentrations generally decrease as distance downstream increases. Table 4-2 presents the number of samples collected in each river reach as well as the average PCB concentration from the 2011 sampling event. Reach 8 has the highest average concentration and also contains the highest single total PCB concentration (4.85 ppm). In general, the spring 2011 total PCB results are relatively low and do not appear to show a significant trend as distance from the former Fort Edward dam increases. This is shown in both Table 4-2 and Figure 4-3.

**Table 4-2 Sampling by River Reach**

River Reach	Number of 2011 Samples Collected	EPA 2011 Average Total PCB Concentration (ppm)
8	67	0.88
7	11	0.39
6	9	0.44
5	77	0.57
4	3	0.21
3	15	0.48
2	3	0.07
1	6	0.16

Note: Average calculated using half the method detection limit where sample result was non-detect.

Key:  
ppm = Parts per million.



**Figure 4-3 Total PCB Concentration vs. River Mile**

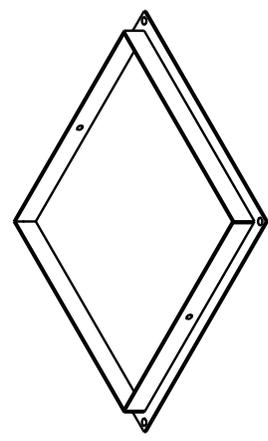
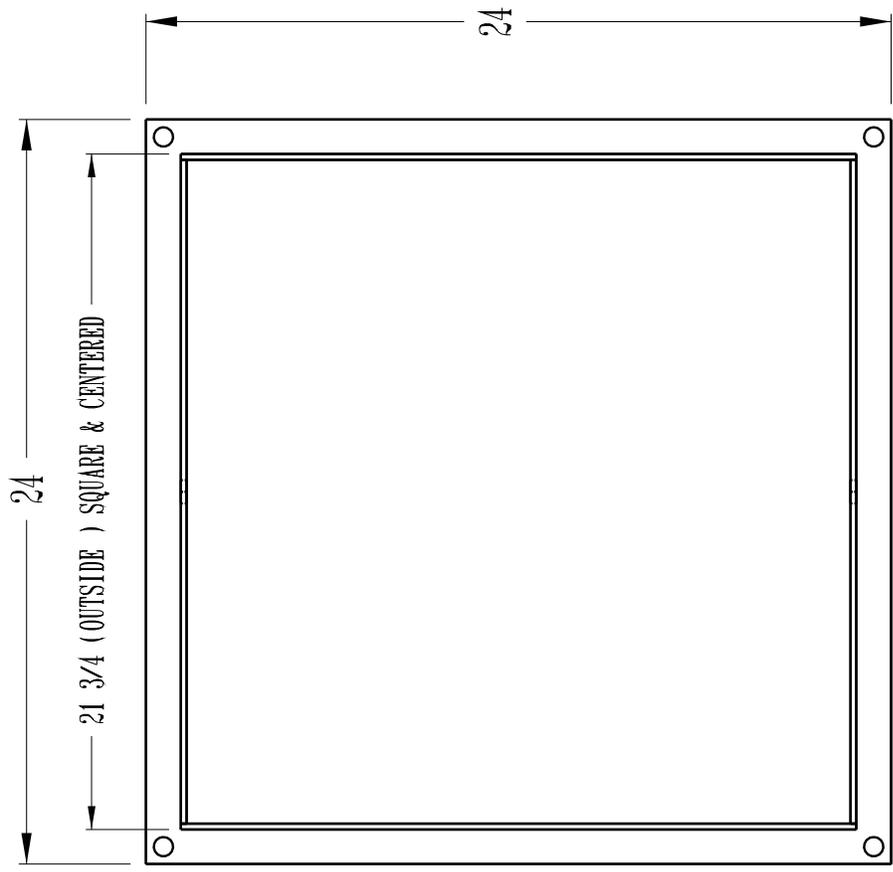
# 5

## References

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- \_\_\_\_\_. 2011. *General Electric Company, Upper Hudson River Floodplains Project, Sampling Plan – 2011 Flood Deposit Sampling*. Prepared for General Electric Company, Albany, New York. May 2011.
- Ecology and Environment, Inc. (E & E). 2010. *Final Field Sampling Plan Upper Hudson River Floodplain Deposition Sampling Program*. Prepared for United States Environmental Protection Agency (EPA), Edison, New Jersey. May 2010.
- \_\_\_\_\_. 2010. *Spring 2010 Data Summary Report Upper Hudson River Floodplain Deposition Sampling Program*. Prepared for United States Environmental Protection Agency (EPA), Edison, New Jersey. September 2010.
- New York State Department of Environmental Conservation (NYSDEC). 2008. *Internal Memorandum and Laboratory Report*, Division of Environmental Remediation Laboratory, Albany, New York. May 2008.
- United States Environmental Protection Agency (EPA). 2002. *Hudson River PCBs Site, New York, Record of Decision*.
- United States Geological Survey (USGS). 2011. Department of the Interior. National Water Information System: Web Interface. "USGS 01327750 Hudson River at Fort Edward NY." Accessed online at: [http://waterdata.usgs.gov/nwis/nwisman/?site\\_no=01327750&agency\\_cd=USGS](http://waterdata.usgs.gov/nwis/nwisman/?site_no=01327750&agency_cd=USGS).

# A

## Sampling Device Diagram



NOTE:  
 MATERIAL = 3/16" HOT ROLLED - CUT & DRILLED  
 WELD CORNERS AND STITCH WELD TO PLATE

The BROWNELL GROUP, L.P.  
 2357 STATE ROUTE 4  
 FORT EDWARD, NEW YORK 12828

TITLE: **BOTTOM ASSEMBLY**

DATE: 05 NOVEMBER 2009  
 DRAWING NO: SK-110509-01-01

CHECKED BY: MB  
 SCALE: NONE  
 TOLERANCES: DEC ANG  
 FRACT: +/- .02" +/- .03 +/- .05  
 APPROVED DATE: 05 NOVEMBER 2009  
 REV: #  
 ISSUE: PRODUCT & ENHANCEMENT

REV	BY	DESCRIPTION	DATE

BREAK ALL SHARP EDGES  
 125 RMS FINISH UNLESS OTHERWISE SPECIFIED  
 THIS PRINT IS THE PROPERTY OF  
 THE BROWNELL GROUP, L.P.  
 This drawing and all parts herein are the property of the Brownell Group, L.P. and shall remain the property of the Brownell Group, L.P. until the written permission of the Brownell Group, L.P. is obtained.

REVISIONS



**B**

**Photo Log**

## Select Photographs from EPA Spring 2011 Activities



Photo 1: Location EPA-R5-W-8283-01 prior to sample collection.



Photo 2: Sediment collected from location EPA-R5-W-8283-01.

## Select Photographs from EPA Spring 2011 Activities



Photo 3: Location EPA-R8-W-8889-01 prior to sample collection.



Photo 4: Sediment collected within device at location EPA-R8-W-8889-01.

**Select Photographs from EPA Spring 2011 Activities**



Photo 5: Sediment collected from location EPA-R8-W-8889-01.



Photo 6: Location EPA-R2-W-5960-01 prior to sample collection.

# C

## Sample Location Log Sheets

**D**

**Trip Reports**



## ecology and environment, inc.

Global Environmental Specialists

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125 Wolf Road, Suite 301  
Albany, New York 12205  
Tel: (518) 459-1980, Fax: (518) 459-1980

April 21, 2011

Kathy Baker, Project Manager  
U.S. Army Corps of Engineers, Kansas City District  
601 East 12<sup>th</sup> Street  
Kansas City, Missouri 64106

Re: Floodplain Deposit Sampling Program – April 2011 Sampling Event Summary Report

Dear Ms. Baker:

Please find the attached Daily Summary Reports describing field sampling activities that occurred on April 15, 16, and 17, 2011. Also included is the April 2011 Floodplain Deposit Sampling Table, the Chain of Custody (CoC) used to ship the samples to the lab, and a graph depicting the river flows during the month of April.

A sampling event was triggered after the river flows within the Upper Hudson River (UHR) reached a flow rate of 20,900 cfs (gauge height - 25.29 feet), as measured at the Fort Edward hydrological station on April 14, 2011. Sediment samples were collected at four Floodplain Deposit Sampling Program (FDSP) locations; hence 17 of the 2010 FDSP locations were not sampled at this time. Based on observed sediment deposits, two locations were added in the field after discussion with officials from the U.S. Environmental Protection Agency (EPA) (EPA-R3-W-6465-02 and EPA-R5-W-7778-01) with sediment samples successfully collected at both locations, bringing the total number of sediment samples collected in April to six. Samples were not collected at the other FDSP locations because 1) water levels within the UHR never reached the sampling devices, 2) the devices remained underwater at the time of sampling, or 3) no deposit was found (scrape sample locations).

Please feel free to contact me with any questions. I can be reached at 518-459-1980.

Sincerely,

Melanie O'Meara  
Field Team Leader

Enclosure

## 2010 FLOODPLAIN DEPOSITION SAMPLING PROGRAM

**APRIL 2011**

Location ID	Sample ID	QC Sample	Activity Date	Sample Type	Deviations From Work Plan/Notes
EPA-R2-E-6162-01	N/A	N/A	Device not inundated - 4/15/2011	Device	
EPA-R2-W-5960-01	N/A	N/A	Could not access location - 4/15/2011	Scrape	
EPA-R2-W-6162-01	N/A	N/A	Device not inundated - 4/15/2011	Device	
EPA-R3-W-6465-01	N/A	N/A	Device underwater - 4/15/2011	Device	
EPA-R3-W-6465-02	2011-04	N/A	Sample collected - 4/17/2011	Scrape	Location added in field
EPA-R3-W-6566-01	N/A	N/A	Checked for deposit: none - 4/15/2011	Scrape	
EPA-R5-E-7071-01	N/A	N/A	Device underwater - 4/15/2011	Device	
EPA-R5-E-7576-01	N/A	N/A	Device underwater - 4/15/2011	Device	
EPA-R5-E-7879-01	N/A	N/A	Device underwater - 4/15/2011	Device	
EPA-R5-W-7273-01	N/A	N/A	Device underwater - 4/15/2011	Device	
EPA-R5-W-7677-01	N/A	N/A	Device underwater - 4/15/2011	Device	
EPA-R5-W-7778-01	2011-04	N/A	Sample collected - 4/17/2011	Scrape	Location added in field
EPA-R5-W-8182-01	N/A	N/A	Device underwater - 4/15/2011	Device	
EPA-R5-W-8182-01	N/A	N/A	Device underwater - 4/16/2011	Device	
EPA-R5-W-8182-02	N/A	N/A	Checked for deposit: underwater - 4/15/2011	Scrape	
EPA-R5-W-8182-02	2011-04	N/A	Sample collected - 4/16/2011	Scrape	
EPA-R6-E-8586-01	N/A	N/A	Device underwater - 4/15/2011	Device	
EPA-R7-E-8687-01	N/A	N/A	Checked for deposit: underwater - 4/15/2011	Scrape	
EPA-R7-E-8687-01	2011-04	N/A	Sample collected - 4/16/2011	Scrape	
EPA-R8-E-9293-01	N/A	N/A	Device underwater - 4/15/2011	Device	
EPA-R8-E-9293-01	N/A	N/A	Device underwater - 4/16/2011	Device	
EPA-R8-E-9495-01	N/A	N/A	Checked for deposit: none - 4/15/2011	Scrape	
EPA-R8-I-9495-01	N/A	N/A	Device underwater - 4/15/2011	Device	
EPA-R8-I-9495-01	N/A	N/A	Device underwater - 4/16/2011	Device	
EPA-R8-W-8889-01	N/A	N/A	Device underwater - 4/15/2011	Device	
EPA-R8-W-8889-01	N/A	N/A	Device underwater - 4/16/2011	Device	
EPA-R8-W-8889-02	2011-04	N/A	Sample collected - 4/15/2011	Scrape	
EPA-R8-W-9394-01	N/A	N/A	Checked for deposit: underwater - 4/15/2011	Scrape	
EPA-R8-W-9394-01	2011-04	N/A	Sample collected - 4/16/2011	Scrape	

**Table 1 – Sample Location Summary Sheet (device decontamination activities not included)**

# 2011 FLOODPLAIN DEPOSITION SAMPLING PROGRAM

## APRIL 2011 UPPER HUDSON RIVER FLOW

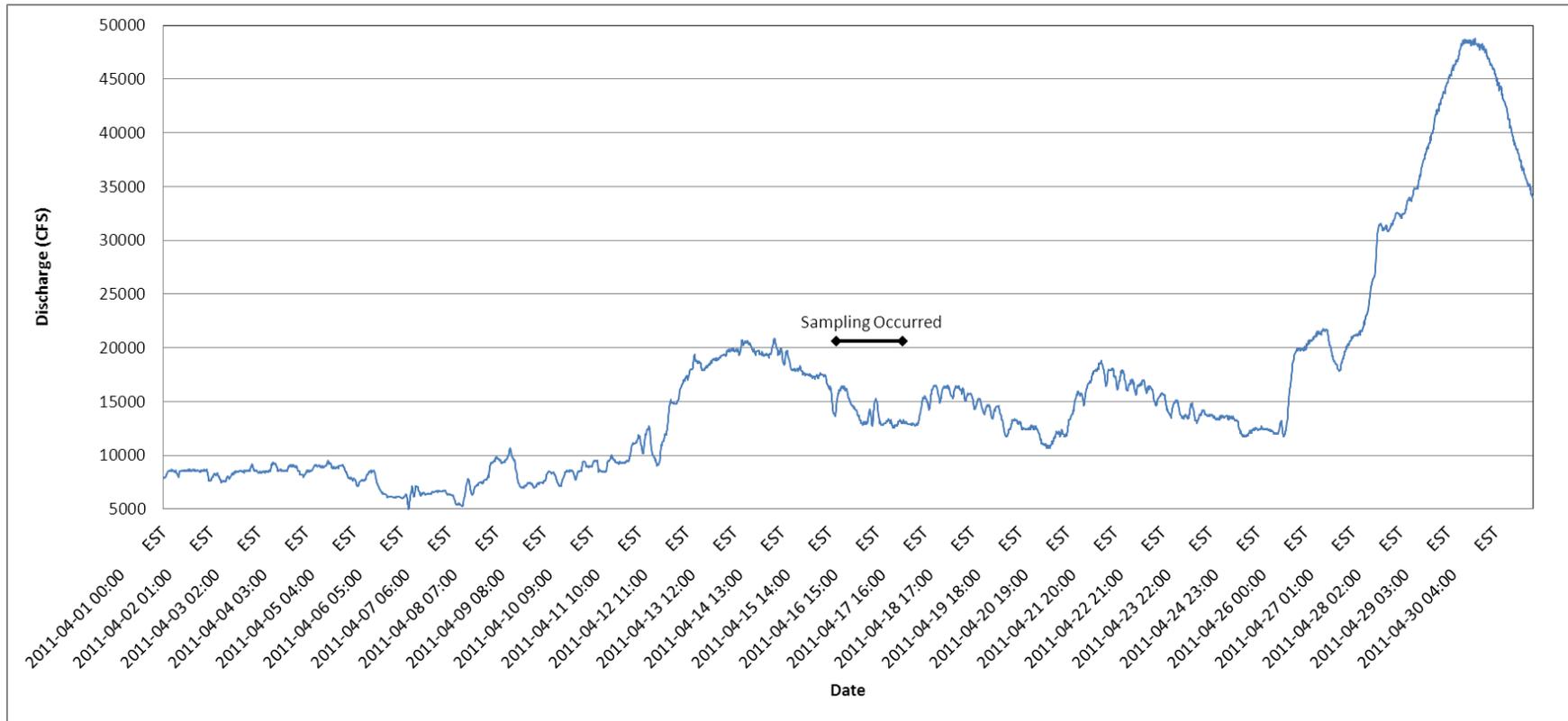


Figure 1 – Discharge from USGS Hydrological Station #01327750

Source obtained from USGS website ([http://waterdata.usgs.gov/nwis/uv?site\\_no=01327750](http://waterdata.usgs.gov/nwis/uv?site_no=01327750))



**USEPA Contract Laboratory Program  
Generic Chain of Custody**

<b>Reference Case</b>
Client No: _____
SDG No: _____

<b>Date Shipped:</b> 4/18/2011 <b>Carrier Name:</b> FedEx <b>Airbill:</b> 862283488023 <b>Shipped to:</b> EPA Region 2 DESA 2890 Woodbridge Ave Building 209 MS-230 Edison NJ 08837 (732) 906-6886	<b>Chain of Custody Record</b>		<b>Sampler Signature:</b>	<b>For Lab Use Only</b>	
	<b>Relinquished By</b>	<b>(Date / Time)</b>	<b>Received By</b>		<b>(Date / Time)</b>
	1				
	2				
	3				
	4				
				<b>Lab Contract No:</b> _____	
				<b>Unit Price:</b> _____	
				<b>Transfer To:</b> _____	
				<b>Lab Contract No:</b> _____	
				<b>Unit Price:</b> _____	

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No./ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	FOR LAB USE ONLY	
							Sample Condition On Receipt	
R3-W-6465-02-2011-04	Sediment/ Michael Cheplowitz	L/G	PCB (24 hrs), TOC (28)	997, 998 (2)	R3-W-6465-02-2011-0 4	S: 4/17/2011 11:28		
R5-W-7778-01-2011-04	Sediment/ Michael Cheplowitz	L/G	PCB (24 hrs), TOC (28)	990, 994, 995, 996 (4)	R5-W-7778-01-2011-0 4	S: 4/17/2011 10:25		
R5-W-8182-02-2011-04	Sediment/ Michael Cheplowitz	L/G	PCB (24 hrs), TOC (28)	985, 986 (2)	R5-W-8182-02-2011-0 4	S: 4/16/2011 12:58		
R7-E-8687-01-2011-04	Sediment/ Michael Cheplowitz	L/G	PCB (24 hrs), TOC (28)	987, 988 (2)	R7-E-8687-01-2011-04	S: 4/16/2011 15:07		
R8-W-8889-02-2011-04	Sediment/ Michael Cheplowitz	L/G	PCB (24 hrs), TOC (28)	978, 979 (2)	R8-W-8889-02-2011-0 4	S: 4/15/2011 11:06		
R8-W-9394-01-2011-04	Sediment/ Michael Cheplowitz	L/G	PCB (24 hrs), TOC (28)	982, 983 (2)	R8-W-9394-01-2011-0 4	S: 4/16/2011 14:00		

D-9

<b>Shipment for Case Complete?</b> N	<b>Sample(s) to be used for laboratory QC:</b> R5-W-7778-01-2011-04	<b>Additional Sampler Signature(s):</b>	<b>Cooler Temperature Upon Receipt:</b>	<b>Chain of Custody Seal Number:</b>	
<b>Analysis Key:</b> PCB = PCBs (AROCLORS), TOC = Total Organic Carbon	<b>Concentration:</b> L = Low, M = Low/Medium, H = High	<b>Type/Designate:</b> Composite = C, Grab = G		<b>Custody Seal Intact?</b> <input type="checkbox"/>	<b>Shipment Iced?</b> <input type="checkbox"/>

**TR Number: 2-495796706-041811-0002**

**LABORATORY COPY**



## ecology and environment, inc.

Global Environmental Specialists

---

125 Wolf Road, Suite 301  
Albany, New York 12205  
Tel: (518) 459-1980, Fax: (518) 459-1980

June 20, 2011

Kathy Baker, Project Manager  
U.S. Army Corps of Engineers, Kansas City District  
601 East 12<sup>th</sup> Street  
Kansas City, Missouri 64106

Re: Floodplain Deposit Sampling Program – June 2011 Sampling Event Summary Report

Dear Ms. Baker:

Please find the attached Daily Summary Reports describing field sampling activities that occurred on June 8, 9, 14, 16, and 17, 2011. Also included is the June 2011 Floodplain Deposit Sampling Table, the Chain of Custody (CoC) used to ship the samples to the lab, and a graph depicting the river flows during the month of June.

A sampling event was triggered after the river flows within the Upper Hudson River (UHR) receded enough from the April/May 100-year flood event to sample the Floodplain Deposit Sampling Program (FDSP) devices, as well as other locations. During June sampling, the UHR flows mostly remained below 10,000 cfs (gauge height – 22.97 ft), as measured at the Fort Edward hydrological station starting June 7, 2011. Sediment samples were collected at 12 FDSP locations. One of the sampled locations had also been sampled in April; hence, after the April, May, and June sampling events, only two of the 2010 FDSP locations (both devices) were not sampled in 2011 (EPA-R7-W-8687-01 and EPA-R2-E-6162-01).

Based on observed sediment deposits, four locations were added in the field after discussion with officials from the U.S. Environmental Protection Agency (EPA) (EPA-R8-E-9394-02, EPA-R8-E-9495-02, EPA-R8-E-9495-03, and EPA-R6-E-8586-02). Also, three locations were added in response to property owner requests for sampling (EPA-R8-W-9293-01, EPA-R8-W-9091-01, and EPA-R7-W-8788-01). Sediment samples were successfully collected at all locations, bringing the total number of sediment samples collected in June to 19. Samples were not collected at the remaining FDSP locations because, at one location, no sediment collected in the device, and at the other location, access issues were not resolved prior to the conclusion of sampling.

Please feel free to contact me with any questions. I can be reached at 518-459-1980.

Sincerely,

Melanie O'Meara  
Field Team Leader

Enclosure

## 2010 FLOODPLAIN DEPOSITION SAMPLING PROGRAM

JUNE 2011

Location ID	Sample ID	QC Sample	Activity Date	Sample Type	Deviations From Work Plan/Notes
EPA-R8-I-9495-01	2011-06	N/A	Sample collected - 6/8/2011	Device	
EPA-R8-W-9293-01	2011-06	N/A	Sample collected - 6/8/2011	Scrape	Owner requested sampling
EPA-R8-W-8889-01	2011-06	Duplicate/Rinsate Blank	Sample collected - 6/8/2011	Device	
EPA-R5-W-8182-01	2011-06	N/A	Sample collected - 6/8/2011	Device	
EPA-R8-E-9394-02	2011-06		Sample collected - 6/9/2011	Scrape	Location added in field
EPA-R8-E-9495-02	2011-06		Sample collected - 6/9/2011	Scrape	Location added in field
EPA-R8-E-9495-03	2011-06		Sample collected - 6/9/2011	Scrape	Location added in field
EPA-R7-E-8687-01	2011-06	MS/MSD	Sample collected - 6/9/2011	Scrape	
EPA-R6-E-8586-02	2011-06		Sample collected - 6/9/2011	Scrape	Location added in field
EPA-R5-W-7677-01	2011-06	N/A	Sample collected - 6/9/2011	Device	
EPA-R5-E-7576-01	2011-06		Sample collected - 6/9/2011	Device	
EPA-R5-W-7273-01	2011-06	Duplicate	Sample collected - 6/9/2011	Device	
EPA-R5-E-7071-01	2011-06		Sample collected - 6/9/2011	Device	
EPA-R3-W-6465-01	2011-06		Sample collected - 6/9/2011	Device	
EPA-R6-E-8586-01	2011-06		Sample collected - 6/14/2011	Device	
EPA-R5-E-7879-01	2011-06		Sample collected - 6/14/2011	Device	
EPA-R8-E-9293-01	2011-06	N/A	Sample collected - 6/16/2011	Device	
EPA-R8-W-9091-01	2011-06	N/A	Sample collected - 6/17/2011	Scrape	Owner requested sampling
EPA-R7-W-8788-01	2011-06	N/A	Sample collected - 6/17/2011	Scrape	Owner requested sampling
EPA-R8-E-9293-01	N/A	N/A	Device not located - 6/14/2011	Device	
EPA-R2-W-6162-01	N/A	N/A	Checked for deposit: none - 6/9/2011	Scrape	
EPA-R2-E-6162-01	N/A	N/A	Checked for deposit: none - 6/9/2011	Scrape	

**Table 1 – Sample Location Summary Sheet**

# 2011 FLOODPLAIN DEPOSITION SAMPLING PROGRAM

## JUNE 2011 UPPER HUDSON RIVER FLOW

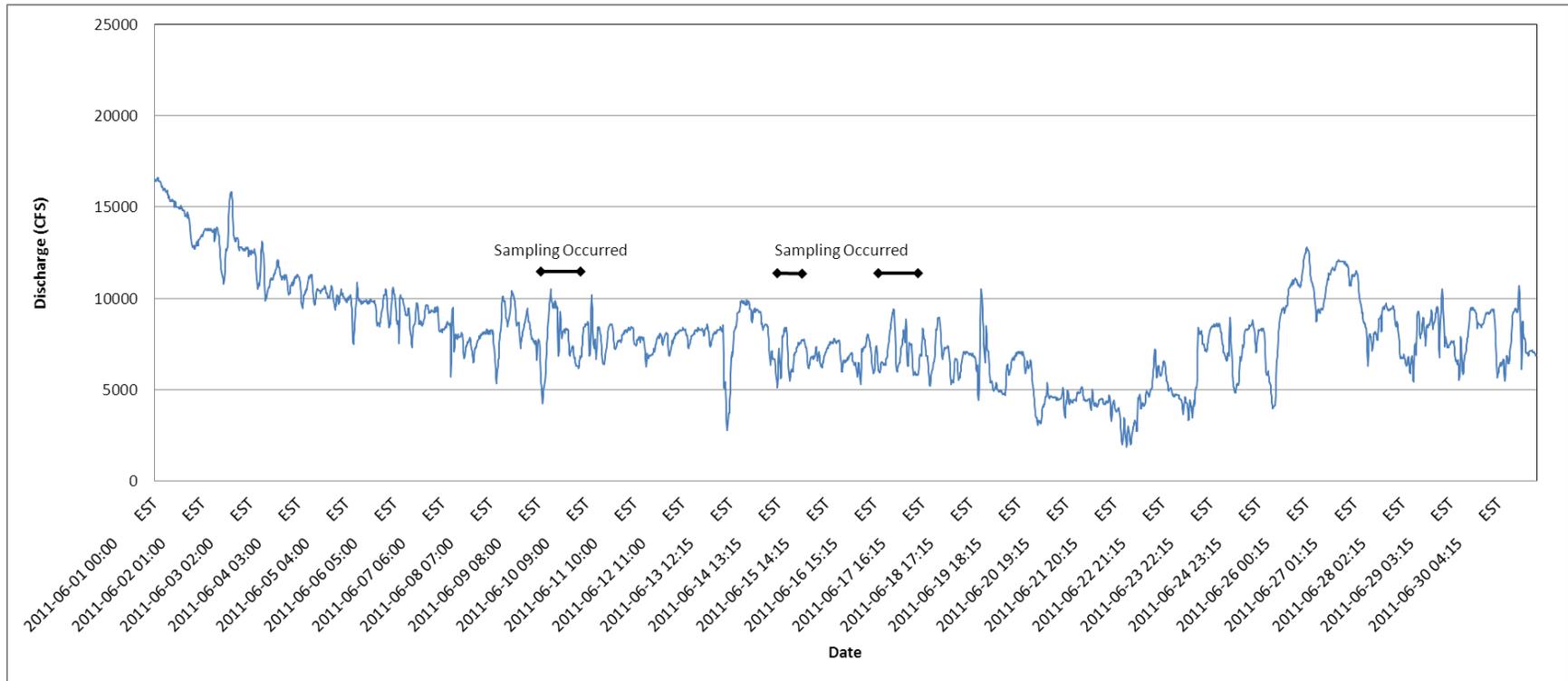


Figure 1 – Discharge from USGS Hydrological Station #01327750

Source obtained from USGS website ([http://waterdata.usgs.gov/nwis/uv?site\\_no=01327750](http://waterdata.usgs.gov/nwis/uv?site_no=01327750))

6582-990

**USEPA**

Date Shipped:  
Carrier Name:  
Airbill No:

**CHAIN OF CUSTODY RECORD**

Hudson River PCBs/NY  
Contact Name: Melanie O'Meara  
Contact Phone: 518-747-4389

No: 2-061711-163023-0001

Cooler #: 1  
Lab:  
Lab Phone:

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	NYD980763841-0001	EPA-R8-I-9495-01-2011-06	PCBs (AROCLORS)	Sediment	6/8/2011	1	4 oz glass jar	4 C	N
	NYD980763841-0001	EPA-R8-I-9495-01-2011-06	Total Organic Carbon	Sediment	6/8/2011	1	4 oz glass jar	4 C	N
	NYD980763841-0002	EPA-R8-W-9293-01-2011-06	PCBs (AROCLORS)	Sediment	6/8/2011	1	4 oz glass jar	4 C	N
	NYD980763841-0003	EPA-R8-W-8889-01-2011-06	PCBs (AROCLORS)	Sediment	6/8/2011	1	4 oz glass jar	4 C	N
	NYD980763841-0004	EPA-R5-W-8182-01-2011-06	PCBs (AROCLORS)	Sediment	6/8/2011	1	4 oz glass jar	4 C	N
	NYD980763841-0004	EPA-R5-W-8182-01-2011-06	Total Organic Carbon	Sediment	6/8/2011	1	4 oz glass jar	4 C	N
	NYD980763841-0005	EPA-R5-W-7677-01-2011-06	PCBs (AROCLORS)	Sediment	6/9/2011	1	4 oz glass jar	4 C	N
	NYD980763841-0005	EPA-R5-W-7677-01-2011-06	Total Organic Carbon	Sediment	6/9/2011	1	4 oz glass jar	4 C	N
	NYD980763841-0006	EPA-R5-W-7273-01-2011-06	PCBs (AROCLORS)	Sediment	6/9/2011	1	4 oz glass jar	4 C	N
	NYD980763841-0006	EPA-R5-W-7273-01-2011-06	Total Organic Carbon	Sediment	6/9/2011	1	4 oz glass jar	4 C	N
	NYD980763841-0007	EPA-R5-W-7273-01-FD1	PCBs (AROCLORS)	Sediment	6/9/2011	1	4 oz glass jar	4 C	N

Special Instructions: Transfer COC from EPA to GE.	<b>SAMPLES TRANSFERRED FROM</b>
	<b>CHAIN OF CUSTODY #</b>

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
Transfer for shipping	<i>[Signature]</i>	6/20/11	<i>[Signature]</i>	6/20/11	1600		<i>[Signature]</i>	6/20/11	<i>[Signature]</i>	6/21/11	1000
									5.9c	Custody Seal	<i>[Signature]</i>

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D-31

GS82-990

**USEPA**

Date Shipped:  
Carrier Name:  
Airbill No:

**CHAIN OF CUSTODY RECORD**

Hudson River PCBs/NY  
Contact Name: Melanie O'Meara  
Contact Phone: 518-747-4389

No: 2-061711-163023-0001

Cooler #: 1  
Lab:  
Lab Phone:

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	NYD980763841-0007	EPA-R5-W-7273-01-FD1	Total Organic Carbon	Sediment	6/9/2011	1	4 oz glass jar	4 C	N
	NYD980763841-0008	EPA-R3-W-6465-01-2011-06	PCBs (AROCLORS)	Sediment	6/9/2011	1	4 oz glass jar	4 C	N
	NYD980763841-0008	EPA-R3-W-6465-01-2011-06	Total Organic Carbon	Sediment	6/9/2011	1	4 oz glass jar	4 C	N
	NYD980763841-0009	EPA-R5-E-7071-01-2011-06	PCBs (AROCLORS)	Sediment	6/9/2011	1	4 oz glass jar	4 C	N
	NYD980763841-0009	EPA-R5-E-7071-01-2011-06	Total Organic Carbon	Sediment	6/9/2011	1	4 oz glass jar	4 C	N
	NYD980763841-0010	EPA-R5-E-7576-01-2011-06	PCBs (AROCLORS)	Sediment	6/9/2011	1	4 oz glass jar	4 C	N
	NYD980763841-0010	EPA-R5-E-7576-01-2011-06	Total Organic Carbon	Sediment	6/9/2011	1	4 oz glass jar	4 C	N
	NYD980763841-0011	EPA-R6-E-8586-02-2011-06	PCBs (AROCLORS)	Sediment	6/9/2011	1	4 oz glass jar	4 C	N
	NYD980763841-0011	EPA-R6-E-8586-02-2011-06	Total Organic Carbon	Sediment	6/9/2011	1	4 oz glass jar	4 C	N
	NYD980763841-0012	EPA-R7-E-8687-01-2011-06	PCBs (AROCLORS)	Sediment	6/9/2011	1	4 oz glass jar	4 C	N
	NYD980763841-0012	EPA-R7-E-8687-01-2011-06	Total Organic Carbon	Sediment	6/9/2011	1	4 oz glass jar	4 C	N

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Special Instructions: Transfer COC from EPA to GE.	<b>SAMPLES TRANSFERRED FROM</b>
	<b>CHAIN OF CUSTODY #</b>

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
	<i>[Signature]</i>	6/20/11	<i>[Signature]</i>	6/20/11	1000		<i>[Signature]</i>	6/20/11	<i>[Signature]</i>	6/21/11	1000

*5.908* *Custody Seal*  
*Intact*









## ecology and environment, inc.

Global Environmental Specialists

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125 Wolf Road, Suite 301  
Albany, New York 12205  
Tel: (518) 459-1980, Fax: (518) 459-1980

May 31, 2011

Kathy Baker, Project Manager  
U.S. Army Corps of Engineers, Kansas City District  
601 East 12<sup>th</sup> Street  
Kansas City, Missouri 64106

Re: Floodplain Deposit Sampling Program – May 2011 Sampling Event Summary Report

Dear Ms. Baker:

Please find the attached Daily Summary Reports describing field sampling activities that occurred on May 2 and 3, 2011. Also included is the May 2011 Floodplain Deposit Sampling Table, the Chain of Custody (CoC) used to ship the samples to the lab, and a graph depicting the river flows during the month of May.

A sampling event was triggered after the river flows within the Upper Hudson River (UHR) reached a flow rate above 48,800 cubic feet per second (cfs) (gauge height – 31.34 ft) on April 29, 2011, and subsequently receded below 30,000 cfs (gauge height - 27.29 ft), as measured at the Fort Edward hydrological station on May 1, 2011. Sediment samples were collected at eight Floodplain Deposit Sampling Program (FDSP) locations. Four of the sampled locations had also been sampled in April; hence, 13 of the 2010 FDSP locations had not yet been sampled in 2011 as of the conclusion of the May sampling event.

In addition to the original 2010 FDSP locations, two locations were added in the office after discussions with officials from the U.S. Environmental Protection Agency (EPA) (EPA-R8-E-9394-01 and EPA-R5-W-8283-01), and, based on observed sediment deposits, four more locations were added in the field after discussion with EPA (EPA-R5-E-7576-02, EPA-R3-W-6465-02, EPA-R2-W-6162-02, EPA-R1-E-5758-01). Sediment samples were successfully collected at all locations, bringing the total number of sediment samples collected in May to 13. Samples were not collected at the other FDSP locations because most devices remained underwater at the time of sampling, and collecting scrape samples following the 100-year flood event was the objective of the May sampling event.

Please feel free to contact me with any questions. I can be reached at 518-459-1980.

Sincerely,

Melanie O'Meara  
Field Team Leader

Enclosure

## 2010 FLOODPLAIN DEPOSITION SAMPLING PROGRAM

**MAY 2011**

Location ID	Sample ID	QC Sample	Activity Date	Sample Type	Deviations From Work Plan/Notes
EPA-R8-E-9394-01	2011-05	N/A	Sample collected - 5/2/2011	Scrape	Location added in office - 2011
EPA-R8-W-9394-01	2011-05	N/A	Sample collected - 5/2/2011	Scrape	
EPA-R5-W-8182-02	2011-05	N/A	Sample collected - 5/2/2011	Scrape	
EPA-R5-W-8283-01	2011-05	N/A	Sample collected - 5/2/2011	Scrape	Location added in office - 2011
EPA-R8-E-9495-01	2011-05	N/A	Sample collected - 5/3/2011	Scrape	
EPA-R8-W-8889-02	2011-05	N/A	Sample collected - 5/3/2011	Scrape	
EPA-R7-E-8687-01	N/A	N/A	Checked for deposit: underwater - 5/2/2011	Scrape	
EPA-R5-E-7576-02	2011-05	N/A	Sample collected - 5/3/2011	Scrape	Location added in field
EPA-R5-E-7576-01	N/A	N/A	Checked for deposit/device: underwater - 5/3/2011	Device	
EPA-R3-W-6465-02	2011-05	N/A	Sample collected - 5/3/2011	Scrape	Location added in field
EPA-R3-W-6566-01	2011-05	Duplicate	Sample collected - 5/3/2011	Scrape	
EPA-R2-E-6162-01	N/A	N/A	Checked for deposit: underwater - 5/3/2011	Scrape	
EPA-R2-W-6162-01	2011-05	N/A	Sample collected - 5/3/2011	Scrape/Device	
EPA-R2-W-6162-02	2011-05	N/A	Sample collected - 5/3/2011	Scrape	Location added in field
EPA-R2-W-5960-01	2011-05	N/A	Sample collected - 5/3/2011	Scrape	
EPA-R1-E-5758-01	2011-05	N/A	Sample collected - 5/3/2011	Scrape	Location added in field

**Table 1 – Sample Location Summary Sheet**

# 2011 FLOODPLAIN DEPOSITION SAMPLING PROGRAM

## MAY 2011 UPPER HUDSON RIVER FLOW

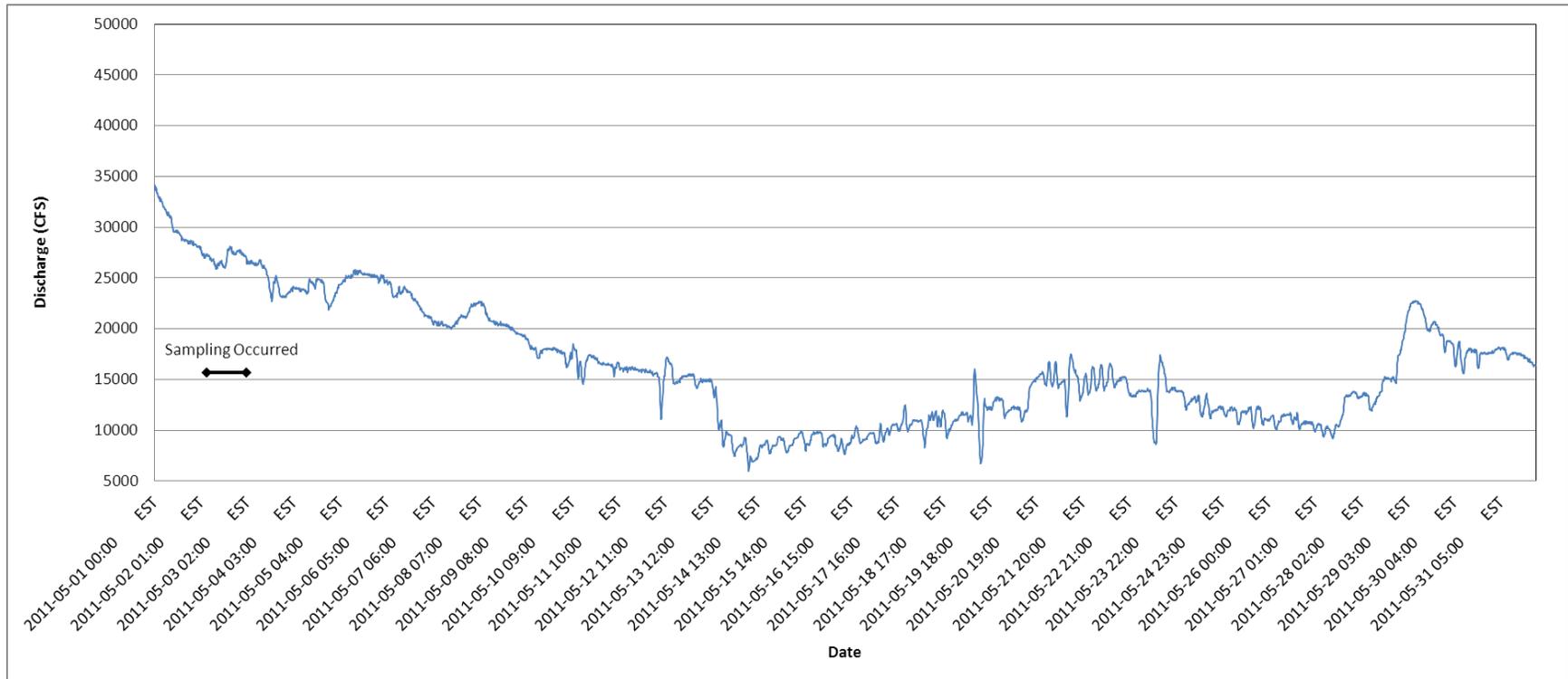


Figure 1 – Discharge from USGS Hydrological Station #01327750

Source obtained from USGS website ([http://waterdata.usgs.gov/nwis/uv?site\\_no=01327750](http://waterdata.usgs.gov/nwis/uv?site_no=01327750))



**USEPA Contract Laboratory Program  
Generic Chain of Custody**

6582-184

**Reference Case**  
Client No: \_\_\_\_\_  
SDG No: \_\_\_\_\_

**L**

Date Shipped: 5/5/2011 Carrier Name: FedEx Airbill: Shipped to: SGS North America 5500 Business Dr. Wilmington NC 28405 (910) 350-1903	<b>Chain of Custody Record</b>		Sampler Signature: <i>[Signature]</i>	<b>For Lab Use Only</b>	
	Relinquished By	(Date / Time)	Received By		(Date / Time)
	1 <i>[Signature]</i>	5-5-11/11:00AM	Joseph [Signature]		5-5-11/11:00
	2 <i>[Signature]</i>	5-5-11/17:00	<i>[Signature]</i>		5/6/11 10:30
	3				
4					
				Lab Contract No: _____	
				Unit Price: _____	
				Transfer To: _____	
				Lab Contract No: _____	
				Unit Price: _____	

SAMPLE No.	MATRIX/ SAMPLER	CONC/ TYPE	ANALYSIS/ TURNAROUND	TAG No/ PRESERVATIVE/ Bottles	STATION LOCATION	SAMPLE COLLECT DATE/TIME	FOR LAB USE ONLY Sample Condition On Receipt
1	R8-E-9394-01-2 Sediment/ 011-05 Melanie Chapman	L/G	PCB (24 hrs), TOC (28)	1003, 1004 (2)	R8-E-9394-01-2011-05	S: 5/2/2011 11:15	
2	R8-E-9495-01-2 Sediment/ 011-05 Melanie Chapman	L/G	PCB (24 hrs), TOC (28)	1007, 1008 (2)	R8-E-9495-01-2011-05	S: 5/5/2011 9:45	
3	R8-W-8889-02-2011-05 Sediment/ Melanie Chapman	L/G	PCB (24 hrs), TOC (28)	1040, 1041 (2)	R8-W-8889-02-2011-0 5	S: 5/3/2011 10:20	
4	R8-W-9394-01-2011-05 Sediment/ Melanie Chapman	L/G	PCB (24 hrs), TOC (28)	1005, 1006 (2)	R8-W-9394-01-2011-0 5	S: 11/2/2011 13:00	

D-55

Shipment for Case Complete? <input checked="" type="checkbox"/> N	Sample(s) to be used for laboratory QC: <i>R8-W-8102-02</i> <i>R1-E-5758-01-2011-05 MC</i>	Additional Sampler Signature(s):	Cooler Temperature Upon Receipt: 4.7	Chain of Custody Seal Number: <i>NA</i>
Analysis Key:	Concentration: L = Low, M = Low/Medium, H = High	Type/Designate: Composite = C, Grab = G	Custody Seal Intact? <input checked="" type="checkbox"/>	Shipment Iced? <input checked="" type="checkbox"/>

PCB = PCBs (AROCLORS), TOC = Total Organic Carbon

TR Number: **2-495796706-050511-0002**

**LABORATORY COPY**



## ecology and environment, inc.

Global Environmental Specialists

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125 Wolf Road, Suite 301  
Albany, New York 12205  
Tel: (518) 459-1980, Fax: (518) 459-1980

June 30, 2011

Kathy Baker, Project Manager  
U.S. Army Corps of Engineers, Kansas City District  
601 East 12<sup>th</sup> Street  
Kansas City, Missouri 64106

Re: Floodplain Deposit Sampling Program – May 2011 Sampling Event Oversight Report

Dear Ms. Baker:

On May 3-5 and 9-10, 2011, and June 15, 2011 Ecology & Environment, Inc. represented the U.S. Environmental Protection Agency (EPA) by providing oversight of General Electric Company (GE) floodplain deposit sampling.

A GE sampling event was triggered after the river flows within the Upper Hudson River (UHR) reached a flow rate of 48,800 cubic feet per second (cfs) (gauge height – 31.34 ft) on April 29, 2011. On May 3, 4, 5, 6, 9, and 10, 2011, as well as June 15, 2011, GE collected 129 samples, including seven duplicates, from 33 transects on 37 properties and additional access areas (i.e. roads). EPA provided oversight for 104 samples at 26 locations (transects).

Oversight activities field logbook entries and photos can be obtained from the Hudson River Field Office. Please feel free to contact me with any questions. I can be reached at 518-459-1980.

Sincerely,

Melanie O'Meara  
Field Team Leader

Enclosure