CHAPTER I TABLES

CHAPTER I

SECTION 1 TABLES

Table I-1-1
Summary of Resuspension Standard Criteria for Phase 1

Parameter		Evaluation Level		Control Level		Standard Level	
		Limit	Duration	Limit	Duration	Limit	Duration
Far-field PCB Concentration	Total PCBs			350 ng/L	7-day running average	500 ng/L	Confirmed occurrence
Far-Field Net PCB Load	Total PCBs			117 kg/year	Phase 1 dredging season		
	Tri+ PCB			39 kg/year			
	Total PCBs	541 g/day	7-day running average	1,080 g/day	7-day running average		
	Tri+ PCB	180 g/day		361 g/day			
Far-Field Net TSS Concentration	TSS	12 mg/L	24-hr average	24 mg/L	24-hr average		
Near-Field (300m) TSS Concentration	TSS	100 mg/L	6-hr average net increase over ambient	100 mg/L	6-hr average net increase over ambient		
Near-Field (100 m and Channel-Side) Net TSS Concentration	TSS	700 mg/L	Calculated from discrete turbidity measurements made in 2 sampling events per day				

Source: Phase 1 Performance Standards Compliance Plan, May 2009, Table 2-1.

Table I-1-2
Summary of Data Quality Objectives and Associated Measurement Performance Criteria

Data Quality Objective	Measurement Performance Criteria
Near-Field Monitoring	
Evaluate on a real-time basis whether dredging activities have caused near-field TSS to be elevated to an extent indicative of elevated rates of PCB export from dredging activities	• Determine TSS concentration in four 6-hour composite samples per day from monitoring buoys upstream and downstream of dredging operation • Determine TSS at location of highest turbidity along transects upstream, downstream, and adjacent to dredging operation(s) twice per day • Measure turbidity, DO, pH, temperature, conductivity continuously at monitoring buoys
Far-Field Monitoring	
Evaluate achievement of the Total PCB, lead, and cadmium concentration components of the Resuspension Standard and the Substantive WQ Requirements	• Measure and electronically transmit water quality data continuously at automated sampling stations • Collect one 24-hour composite from the automated stations (two 12-hour composite samples from TI during high flows) daily for analyses of PCBs, TSS, POC/DOC, hardness, and metals analysis • Utilize expedited turn-around times at TI (Aroclor PCBs reported within 8 hours; other analytes within 24 hours), Schuylerville (24 hours), and Waterford (72 hours)
Rapidly assess water column Total PCB levels so that public water suppliers can be advised when water column concentrations are expected to approach or exceed the federal MCL (applicable when the relevant downstream public water suppliers are not obtaining water from an alternate source on a full-time basis)	• Collect one 24-hour composite from the automated stations (two 12-hour composite samples from TI if flow >8,000 cfs) daily for PCB analysis • Determine river flow during sampling period • Obtain Aroclor PCB data from TI within 8 hours of sample collection (not applicable when downstream public water suppliers are obtaining water from an alternate source on a full-time basis)
Evaluate achievement of the Total and Tri+ PCB load components of the Resuspension Standard	• Collect one 24-hour composite from TI (two 12-hour composite samples if flow >8,000 cfs) daily for Aroclor PCB analysis (or congener PCB analysis by mGBM if downstream public water suppliers are obtaining water on a full-time basis from an alternate source) • Collect one 24-hour composite from Schuylerville and Waterford daily for congener PCB analysis by mGBM • Determine river flow during sampling period • Calculate seven-day running average Total and Tri+ PCB loading and compare to load criteria (as adjusted)

Data Quality Objective	Measurement Performance Criteria
Determine the baseline Total PCB levels entering River Section 1 from upstream sources	• Determine PCB concentrations monthly at Bakers Falls and weekly at Fort Edward • Depth integrated samples, where possible • Analysis of PCBs using large-volume, low MDL mGBM
Determine ancillary remediation-related effects on the river (e.g., barge traffic-related resuspension, and spillage during transit) that may occur in areas that are not captured by the nearest representative far-field station	• Utilize additional far-field monitoring stations further downstream
Special Studies	
Evaluate the extent to which the PCBs released by remedial operations are dissolved or associated with suspended matter	• Measure PCBs (using mGBM), DOC, POC, and TSS on dissolved and particulate water samples from upstream and downstream of dredging operation • Characterize plume using turbidity probe
Determine the spatial extent, concentration, and mass of Tri+ PCB contamination deposited in non-target nearfield areas downstream from the dredged target areas	• Place sediment traps at multiple locations prior to start of Phase 1 dredging • Measure deposited solids mass, PCBs, organic carbon, and grain size on temporal basis

Provide sufficient data to assess the relative performance of the near-field monitoring procedures in the EPS and the revised procedures used in Phase 1	• Use monitoring procedures specified in EPS around a single dredging operation during Phase 1, starting in EGIA and moving to location(s) in NTIP after dredging in EGIA is completed
	• At locations around this operation:
	  o Collect continuous reading pH, DO, temperature, turbidity, and conductivity from fixed buoy locations
	  o Measure TSS in a daily grab sample from each buoy
	  o Measure hardness and metals from one upstream and two downstream stations in a 24-hour composite sample.

Source: Hudson River PCBs Site Phase 1 Remedial Action Monitoring Program Quality Assurance Project Plan, May 2009, Table 1-2.

Table I-1-3
Near-Field Water Sampling Program Summary

Monitoring Station Description				Analyte and Frequency			
Area	Station ID	Locations When Containment Barrier Not in Use	Locations When Containment Barrier in Use	DO, Temp., pH, Conductivity, Turbidity	TSS	Metals (Total and Dissolved) and Hardness	Metals Contingency
NTIP - Rogers Island East Channel	Upstream/ Background	NA	Buoy located 100 m upstream of furthest upstream dredging operation in Rogers Island (West Channel)	Continuous	Four 6-hr. composites/day	One 24-hr. composite/day	NA
	Within Containment	NA	Buoy located within containment downstream of dredging	Continuous	Four 6-hr. composites/day	One 24-hr. composite/day	NA
	Downstream Buoys	NA	Two buoys approximately 25 m downstream of containment, one near each shore of east channel	Continuous	Four 6-hr. composites/day	One 24-hr. composite/day	NA
	Downstream Transect	NA	Bank to bank transect ~25 m downstream of containment	Twice daily by boat	One mid-depth grab at point on transect w/highest turbidity or if turbidity peak not observed, at location the same approximate distance from shore as the dredging operation, 2X/day	One mid-depth grab at point on transect w/highest turbidity or if turbidity peak not observed, at location the same approximate distance from shore as the dredging operation, 2X/day	One mid-depth grab at point on transect w/highest turbidity or if turbidity peak not observed, at location the same approximate distance from shore as the dredging operation, 4X/day
NTIP - Rogers Island West Channel	Upstream/ Background	(Same station as one used for East Channel)	(Same station as one used for East Channel)	Continuous	Four 6-hr. composites/day	One 24-hr. composite/day	NA
	Upstream Cross Channel Transect	100 m upstream of each dredging operation	100 m upstream of each dredging operation	Twice daily by boat	One mid-depth grab at point on transect w/highest turbidity or if turbidity peak not observed, at location the same approximate distance from shore as the dredging operation, 2X/day	NA	NA
	Along-Channel Transect	10 m towards center of channel from dredge; extends from 100 m upstream to 100 m downstream	10 m towards center of channel from dredge; extends from 100 m upstream to 50 m downstream	Twice daily by boat	One mid-depth grab at point on transect w/highest turbidity, 2X/day; collected adjacent to dredge if no peak in turbidity observed	NA	NA
	Downstream Cross Channel Transect	100 m downstream of each dredging operation	50 m downstream of each dredging operation	Twice daily by boat	One mid-depth grab at point on transect w/highest turbidity or if turbidity peak not observed, at location the same approximate distance from shore as the dredging operation, 2X/day	NA	NA
		300 m downstream of each dredging operation	150 m downstream of each dredging operation	Twice daily by boat	One mid-depth grab at point on transect w/highest turbidity or if turbidity peak not observed, at location the same approximate distance from shore as the dredging operation, 2X/day	One mid-depth grab at point on transect w/highest turbidity or if turbidity peak not observed, at location the same approximate distance from shore as the dredging operation, 2X/day	One mid-depth grab at point on transect w/highest turbidity or if turbidity peak not observed, at location the same approximate distance from shore as the dredging operation, 4X/day

Source: Hudson River PCBs Site Phase 1 Remedial Action Monitoring Program Quality Assurance Project Plan, May 2009, Table 2-1.

Table I-1-4
Far-Field Water Sampling Program Summary

Station	Sampling Method	Analyte and Frequency					
		Water Quality	PCBs, DOC, POC		TSS	Metals and Hardness[1]	
		DO, Temp., pH, Conductivity, Turbidity	Routine	Contingency	Routine	Routine	Contingency
Bakers Falls	Manual depth integrated composite at centroid (~center channel)	Monthly	Monthly (7 day. TAT)	NA	Monthly	NA	NA
Rogers Island	Manual (grab) at centroid (~center channel)	Weekly	Weekly (7 day TAT)	Daily manual grab if TI or SV > 500 ng/L, 2 day minimum; TAT reduced to 24 hrs. (only PCBs analyzed)	Weekly (7 day TAT)	NA	NA
Thompson Island	Automated EDI Transect	Continuous	Daily 24-hr composite (PCBs by Aroclor; 8 hr. TAT; POC/DOC 24-hr TAT). Twice/week 24-hr composite (mGBM PCBs, 7 day TAT). Daily 24-hr composite at TI (mGBM PCBs, 24-hr TAT) if both Waterford and Halfmoon on Troy water	2 12-hr. composites/day if flow at FE > 8,000 cfs (Aroclor PCBs; 8 hr TAT) unless both Waterford and Halfmoon are on Troy water. Submit PCB samples in triplicate on next day if PCBs are > 500 ng/L at TI or SV.	Daily 24-hr composite (2 12-hr composites/day if flow at FE >8,000 cfs, unless both Waterford and Halfmoon are on Troy water); all 24-hr TAT	Daily 24-hr composite for total and dissolved Cd and Pb (24 hr. TAT from time of collection)	2 12-hr composites/day (for total and dissolved Cd & Pb) if flow at FE > 8,000 cfs (unless Waterford and Halfmoon are on Troy water). If exceedance, 4 6-hr. composites/day for all TAL metals (total and dissolved) plus Hg & Cr6 (24 hr. TAT from time of collection)
Schuylerville	Automated EDI Transect	Continuous	Daily 24-hr composite (24 hr. TAT)	Submit samples for Aroclor PCBs (8 hr. TAT) if TI station down; 2 12-hr. composites/day if flow at FE > 5,000 cfs and TI station is down -- not applicable ifboth Waterford and Halfmoon on Troywater. Submit PCB samples in triplicate on next day if PCBs are > 500 ng/L at TI or SV. No contingency for POC/DOC.	Daily 24-hr composite (2 12-hr composites/day if flow at FE> 5,000 cfs and TI station is down, unless both Waterford and Halfmoon are on Troy water); all 24 hr TAT	Daily 24-hr composite for total and dissolved Cd and Pb(24 hr. TAT from time of laboratory receipt)	2 12-hr composites/day (for total and dissolved Cd & Pb) if flow at FE > 5,000 cfs and TI station is down (unless Waterford and Halfmoon are on Troy water). If exceedance, 4 6-hr. composites/day for all TAL metals(total and dissolved) plus Hg & Cr6 (24 hr. TAT from time of laboratory receipt)
Stillwater	Manual EDI Transect	Weekly	Weekly (7 day TAT)	NA	(Same as PCBs)	NA	NA
Waterford	Automated Single Point	Continuous	Daily 24-hr composite (72 hr. TAT)	PCB TAT reduced to 24 hr. if PCBs > 500 ng/L at TI or SV	(Same as PCBs)	Daily 24-hr composite (72 hr. TAT from time of laboratory receipt)	4 6-hr. composites/day (24 hr. TAT from time of laboratory receipt)
Mohawk River	Manual depth integrated composite at centroid (~center channel)	Every other month (May-Nov)	Every other month (May-Nov; 7 day TAT)	If Albany PCBs > WF, collect one sample as soon as practicable. If Mohawk PCBs increase significantly, sample at same frequency as Albany	(Same as PCBs)	NA	NA
Albany/ Troy	Manual depth integrated composite at centroid (~center channel)	Monthly	Monthly (7 day TAT)	Sampling increased to weekly with 24 hr. TAT if PCBs at Waterford > 350 ng/L	(Same as PCBs)	NA	NA
Poughkeepsie	Manual depth integrated composite at centroid (~center channel)	Monthly	Monthly (7day TAT)	Sampling increased to weekly with 24 hr. TAT if PCBs at Albany > 350 ng/L	(Same as PCBs)	NA	NA

Notes:
NA = not analyzed/applicable.
1 Hardness, total lead and cadmium and dissolved lead and cadmium reported routinely; if criterion for lead or cadmium is exceeded chromium, all TAL total and dissolved metals by EPA Method 208, and hexavalent chromium and mercury added.

Source: Hudson River PCBs Site Phase 1 Remedial Action Monitoring Program Quality Assurance Project Plan, May 2009. Table 2-6.

Table I-1-5

Off-season Water Sampling Program Summary[1]

Station	Hudson RM	Sample Type	PCBs, Dissolved OC, Suspended OC, TSS	DO, Temp, pH, Conductivity, Turbidity
Bakers Falls	197.0	Manual at centroid (~center channel)	Monthly	Monthly
Rogers Island	194.2	Manual at centroid (~center channel)	Weekly	Weekly
Thompson Island	187.5	Automated or Manual EDI Transect	Weekly	Weekly
Schuylerville	181.4	Automated or Manual EDI Transect	Weekly (Only performed if elevated PCB loading is observed at TI)	Weekly (Only performed if elevated PCB loading is observed at TI)
Waterford	156	Automated station or Manual EDI Transect	Weekly	Weekly
Mohawk River	--	Manual at centroid (~center channel)	Every other month	Every other month
Albany/ Troy	145	Manual at centroid (~center channel)	Monthly	Monthly
Poughkeepsie	75	Manual at centroid (~center channel)	Monthly	Monthly

Notes:

[1] *Sampling will only be performed when weather/ice conditions permit working safely.*

Source: Hudson River PCBs Site Phase 1 Remedial Action Monitoring Program Quality Assurance Project Plan, May 2009, Table 2-10.

Table I-1-6
Special Studies Program Summary

Program	No. of Study Areas	No. of Sampling Events/Areas	Station Locations	Samples Collected	Analyses
Near-field PCB Release Mechanism	5	3	Single station, 100m Upstream Transect, 30m Downstream Transect, 100m Downstream Transect, 300m Downstream	Composite developed from aliquots pumped from 0.2 and 0.8 water depth, filtered continuously with in-line 0.7 µm glass fiber filter during collection.	Dissolved Congener Specific PCBs
					DOC
					TSS
				Filter pad(s) with solids.	Particulate Congener Specific PCBs
					POC
				Continuous probe measurements.	DO, Temperature, pH, Conductivity, Turbidity[2]
Non-Target Downstream Area Contamination[2]	3	6	Transect, 15m Downstream, Transect, 30m Downstream, Transect 100m Downstream, 2 nodes, 300m Downstream	Sediment collected in traps; traps deployed in pairs (approximately 10 feet apart), 1 trap in each pair sampled and redeployed during each sampling event, remaining trap in each pair retrieved during final event. Captured sediment submitted for analysis.	Aroclor PCBs
					POC
					Mass of solids
					Grain Size

Notes:
NA = not analyzed/applicable.
[1] Modified to be consistent with ASTM Method 3977-97.
[2] A boat-mounted continuous turbidity probe will be used to assess the location of plumes and place stations accordingly.

Source: Hudson River PCBs Site Phase 1 Remedial Action Monitoring Program Quality Assurance Project Plan, May 2009, Table 9-1.