

GENERAL SITE INFORMATION, CHARACTERISTICS, AND STATUS

Project Name	<u>FOX RIVER - PROJECT 1 (SMU 56/57)</u>	ProjectID: 05-06
Last Updated:	05/22/02	
City:	Green Bay	
County:	Brown	
State:	WI	
Country:	USA	
Bodies of Water:	Lower Fox River - downstream of DePere Dam	
US EPA Region:	V	
Status (Active, Complete, or Monitoring Only):	Complete	
Date On NPL:	N/A	
ROD/ESD Date:	N/A	
Operable Unit:	N/A	
Areas of Concern (length or acres):	A 9-acre sediment depositional area in the Fox River below DePere Dam, designated as Sediment Management Unit (SMU) 56/57. The area is along the west bank of the river adjacent to the Fort James facility (now Georgia-Pacific).	
Other Characteristics of Water Body:	Fox River water depths range from 2 to 14 feet at this site (SMU 56/57).	
Contaminants of Concern:	Mainly PCBs (1242), metals (mercury); PAHs to a lesser extent.	
Source of Contamination:	Production of carbonless copy paper, wastepaper recycling, and other sources.	
Contaminated Area Physical Characteristics:	<p>The Fox River contains approximately 35 soft sediment deposits from Lake Winnebago to DePere (32 miles) containing an estimated PCB mass of 4,200 kg (4.63 tons) in a sediment volume of 2.4 million m³ (3.1 million cy). Sediment in the lower 7 miles (below De Pere Dam) contains an estimated 26,500 kg (29.2 tons) of PCBs in 6 million m³ (7.8 million cy of sediment). PCB concentrations below DePere have been shown to range from non-detectable to 400 ppm. More recent sampling showed a maximum PCB concentrations as high as 710 ppm, which is located at the SMU 56/57 site.</p> <p>Sediment Management Unit (SMU) 56/57 is a 9-acre sediment depositional area targeted for remediation. SMU 56/57 is located on the west bank of the Fox River downstream of the DePere Dam and adjacent to the Fort James (now Georgia-Pacific) facility, within the city limits of Green Bay. The total PCB mass was estimated to be between 4,600 and 6,000 lbs.; PCB concentrations ranged from non-detectable to 710 ppm. The average PCB concentration was 54 ppm and the volume of PCB-contaminated sediment was estimated to be 92,000 cy. Sediments consist primarily of high-plasticity organic silts with some sand and gravel.</p>	
Type of Regulatory Action:	1999 dredging: Part of a Cooperative Agreement between the Fox River Group (FRG) and the State of Wisconsin; 2000 dredging: Consent Order for Time-Critical Removal Action between USEPA, Wisconsin DNR, and Fort James Corporation (now Georgia-Pacific).	
Overall Status Summary:	A voluntary cooperative coalition was funding dredge studies several years ago in the Fox River. Pilot dredging projects were planned for two depositional areas: Deposit N (refer to Project No. 05-20) and Sediment Management Unit (SMU) 56/57, with planned removal of 12,000 cy and up to 92,000 cy, respectively. Dredging of both areas was anticipated to remove approximately 10% of the mass of PCBs in the river. An agreement between the State of Wisconsin and seven paper mills, collectively the Fox River Group (FRG), was reached for a \$10 million lump sum and a one-year moratorium on litigation, beginning January 31, 1997, until work under the agreement was completed.	

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It was originally anticipated that up to 92,000 cy of sediment would be dredged during the proposed pilot dredging project from the 9-acre sediment depositional area designated as SMU 56/57 beginning in Spring 1999. Wisconsin DNR collected seven core samples in 1995 through a preliminary sediment sampling effort and then again in November 1997, with the USEPA, at an additional 32 locations, both in SMU 56/57, to determine the sediment chemical and physical characteristics for use in a conceptual design. The Basis of Design Report (BODR), prepared by Montgomery Watson, presents the pre-design results and conceptual design for the sediment removal project. The project was designed for sediment to be removed to a target depth based on a sediment PCB concentration of one ppm. In the January 1997 Agreement between the State of Wisconsin and the FRG, the FRG agreed to perform monitoring during SMU 56/57 dredging.

In November 1998, a 22-acre property known as the former Shell Oil Company property, currently owned by Fort James and located near the Fort James facility, was identified as available to locate land-based operations to support dredging activities. Sediments with PCB concentrations of 50 ppm or greater were to be disposed of at Wayne Disposal (MI); sediments with PCB concentrations <50 ppm were to be disposed in a local landfill. (The local populace was unsupportive of the plan for local disposal. Disposal issues required resolution prior to implementation of the planned remedial action.) By July 1999, Fort James had agreed to allow disposal of SMU 56/57 sediments in the Fort James landfill located about six miles from the land-based operations. The sediments would be isolated in a separate cell (Cell 12A) in the landfill and Fort James would monitor the cell and test the leachate for PCBs for the life of the landfill. The final removal volume was lowered to 80,000 cy based in part on landfill volume capacity limits in Cell 12A.

Montgomery Watson was the selected engineer and general contractor and Four Seasons Environmental the selected dredge contractor. Dredging began August 30 and ended December 15, 1999. The 9-acre area is adjacent to the shoreline of the Fort James property. Access was not an issue. A host of unanticipated complications, including the use of overly optimistic design assumptions and mechanical and operational failures combined to significantly lower project performance indicators (e.g., total dredge volume removed; average hourly and average daily dredging rates; dredge slurry percent solids; filter cake percent solids). As a result, only about 31,500 cy of the originally targeted 80,000 cy of sediments were removed and disposed at the Fort James landfill. Total cost was reportedly just under \$12.4 million (about \$396/cy) and included about \$3.4 million of in-kind services by Fort James, such as use of Shell property and transport and disposal of sediment.

Dredging was terminated due to winter weather conditions, including icing on the river and within the wastewater treatment system, and the exhaustion of designated funds. As reported by Wisconsin DNR following the conclusion of dredging (Reference A-541):

“In the subunits where the cleanup pass was completed, post-dredge concentrations tended to be lower than pre-dredge concentrations. Three of four subunits demonstrated a decrease in surface PCB concentration. The fourth subunit (Subunit 28) showed a slight increase in surface concentration. All cleanup pass subunits demonstrated that surface residual concentrations left after dredging were 10 to 1000 times less than the maximum pre-dredging concentration present in that subunit (Note, not part of quote: Eleven subunits (100 ft. x 100 ft.) were dredged as part of the project. The dredge “cleanup pass” was performed on smaller sections (30 ft. x 30 ft. each) within Subunits 25, 26, 27, and 28 only, reportedly centered over pre-dredging core sample locations. Therefore, in the quote, post-dredge surface residuals are being compared to maximum pre-dredge PCB concentration at that location, regardless of depth, and not pre-

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dredge surface PCB concentrations.) Further, Subunits 25 and 26 demonstrated that the proposed sediment quality threshold of 0.25 ppm proposed in the draft of the RI/FS can be readily achieved.”

“In subunits where the cleanup pass was not performed (Subunits 12-24), surface sediment concentrations increased considerably. Pre-dredging surface sediment concentrations generally ranged from 2 to 5 ppm in these subunits while post-dredging surface sediment concentrations ranged from 32 to 280 ppm. Four of these subunits have TSCA level material (>50 ppm) exposed at the surface.”

Initial conclusions (from Reference A-541) are:

- “That the project design and pre-dredging data provided sufficient resolution to define the lateral and vertical extent of contamination;”
- “Contaminated sediment can be effectively removed from areas with the highest PCB concentrations in the entire river without increasing the surface concentrations;”
- “The final cleanup pass is an important component of the dredging design;” and
- “Partial cleanup left significantly higher PCB concentrations in surface sediments that must be addressed.”

Follow-up sampling performed by the FRG in February 2000 in the four subareas where the additional “cleanup pass” was performed indicated that PCB concentrations in surface sediments in these areas increased nearly 10-fold in the two-month period since the previous sampling. As a result of these findings, the FRG proposed to USEPA and Wisconsin DNR the capping of SMU 56/57 to isolate the high residual PCB concentrations found in the surface sediments.

On May 26, 2000, a Consent Order was finalized between USEPA, Wisconsin DNR, and Fort James that required Fort James to complete the dredging at SMU 56/57 as a time-critical removal action. Fort James bid the additional dredging work (50,000 cy estimated) in early Summer 2000 and Severson Environmental Services was awarded the contract on July 14. Severson began mobilization of equipment to the site on July 17. Land-based facilities to support the dredging were again situated on the former Shell property. Dredging began on August 23, approximately three days ahead of Severson's proposed schedule. Dredging was performed in two phases: Phase I targeted areas previously dredged in 1999, performing follow-up passes in an attempt to lower PCB concentrations in surface sediments, and Phase II targeted areas not previously dredged. Phase I was also used by USEPA and Wisconsin DNR as a demonstration project to verify that the dredge and land-based systems would operate as designed.

Severson completed the removal of about 50,000 cy of sediment in 69 days vs. the proposed 60-day schedule for dredging. Three horizontal auger dredges were onsite throughout the removal but dredging reportedly was performed using only one at a time. The third dredge was mobilized to the site near the end of September. Of four targeted sections, Sections 1 and 2 were completed first and Section 3 was completed on or about October 13. Section 4 was the last area to be completed. Dredging was completed on October 31, 2000. A total of 50,316 cy of in-situ sediment was removed and 51,613 tons of dewatered sediment (2,484 truck loads) were disposed of in the Fort James landfill.

Dredge production averaged about 720 cy per day and sediment slurry solids content averaged

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4.4% (target was 7.5%). Production rates in areas of virgin sediment reached as high as 1,600 cy per day and sediment slurry solids content averaged 8.4% and ranged from 3.5% to 14.4% in these areas. The highest daily production rate averaged over a one-week period was 1,265 cy. Typical production rates in areas of virgin sediment were 1,000 to 1,200 cy per day (50-60 cy per hour over 20 hours). All production rates reflected 24-hour-per-day operation.

Nine recessed-plate filter presses were used (total capacity: 1725 cu. ft.); a 94 cu. ft. capacity press was replaced near the end of September with two 220 cu. ft. capacity presses (relocated from the Cumberland Bay project) to provide contingent dewatering capacity.

Nine to 12 inches of clean sand was placed over dredged areas using a clamshell bucket immediately upon receipt of confirmation sample results showing between 1 and 10 ppm PCBs. It is not clear how many dredge passes preceded collection of confirmation samples. No increase in river turbidity levels were reported due to the dredging, however, river water was periodically very turbid due to an unusually large algae bloom in the upstream areas of the river. Silt curtains were deployed around the perimeter of the dredging area to control resuspension and to divide the dredge area into cells. Treated water reportedly was consistently discharged back to the river at below PCB background levels (river water background level: 0.2 ppb PCBs).

The following summarizes the results of the Phase II removal project (2000):

- Prior to the start of 2000 dredging, surface sediment concentrations reportedly averaged 47.9 ppm (310 ppm maximum).
- Average remaining PCB concentrations in surface sediments (the top 4 inches) was 2.2 ppm; verification sample results ranged from "non-detect" to 9.5 ppm with 11 of 28 samples being below 1 ppm and 24 of 28 samples being below 4 ppm.
- Based on pre- and post-dredging bathymetric surveys, a total of 50,316 cy of in situ sediment was removed.
- The average daily removal rate was 723 cy per day (~30 cy per hr); maximum daily and maximum average weekly removal rates were 1,600 cy per day (67 cy per hr) and 1,265 cy per day (53 cy per hr), respectively.
- Approximately 52,000 tons (41,000 cy) of dewatered sediment was disposed in the Fort James Landfill near Green Bay; this equated to 2,484 truckloads of sediment.
- Approximately 66 million gallons of water were treated and discharged back to the Fox River.
- Project cost as reported by Fort James is: \$8.2 million (direct costs only) (\$163/cy); \$14.9 million (direct costs plus the costs for in-kind services) (\$296/cy).

Remedial Action Planned:



Risk Assessment:



Remedial Action Implemented:



Status of Dredging



PRPs:



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<i>Contacts:</i>	<input checked="" type="checkbox"/>
<i>References:</i>	<input checked="" type="checkbox"/>
<i>Modeling:</i>	<input type="checkbox"/>
<i>Fishing Advisory:</i>	<input checked="" type="checkbox"/>
<i>Key Conditions:</i>	capping, dedicated landfill or CDF, dredging, Great Lakes AOC, pilot/demonstration test

REMEDIAL ACTION PLANNED

Project Name	<u>FOX RIVER - PROJECT 1 (SMU 56/57)</u>	ProjectID: 05-06
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Target Sediment Cleanup Standards (TSCS):	<p>In 1999, a demonstration dredging project, with a depth target selected based on the deepest sediments containing 1 ppm PCBs or less. The year 2000 time-critical removal action required that for each subunit dredged:</p> <ul style="list-style-type: none">• A surficial sediment (upper four inches) PCB concentration of 1 ppm or less be obtained;• A surficial sediment PCB concentration of 10 ppm or less be obtained and a six inch sand layer be installed; or• A surficial sediment PCB concentration of 10 ppm or less be obtained in 90% of the subunits, the surficial sediment PCB concentration not exceed 25 ppm in any subunit, and a six inch sand layer be installed.	
How TSCS Established:		
Target Bank and Floodplain Cleanup Levels (if applicable):	N/A	
Other Target:		
Environmental Sample Data References:	<ul style="list-style-type: none">• Sediment:• Water:• Fish:	
Estimated Target Volume:	Originally 92,000 cy. Subsequently, a \$2.5 million dollar contract was awarded in mid-1999 for removal of about 55,000 cy in 1999 (the primary dredging goal was to sustain an average production rate of 200 cy per hour). The year 2000 removal action targeted removal of up to 50,000 cy.	
Planned Disposal Method:	Sediments having >50 ppm PCBs were originally planned to be sent off site to a landfill near Detroit operated by Wayne Disposal of Wayne, Michigan; sediments having <50 ppm PCBs were to be sent offsite to the Winnebago County Landfill, WI. As of July 1999, all sediment were to be disposed in the Fort James landfill in Brown County, located near Green Bay. Sediment from the 2000 removal action was to be disposed in Cell 12A of the Fort James Landfill.	
Estimated Calendar Time to Implement Remedy:	Dredging was targeted to begin in August in both 1999 and 2000.	
Estimated Time to Implement Remedy:	In both 1999 and 2000, approximately 2 months (dredging); 3 months total including mob/demob.	
Estimated Cost to Implement Remedy:	Per the 1999 contract, \$2.5 million for removal, dewatering, and water treatment of about 55,000 cy. This cost did not include disposal.	
Stated Remedial Action Objectives (and Source):	In 1999, a demonstration dredging project with an ultimate depth target based on sediment containing 1 ppm or less PCBs.	
Measures of Success to be Used:	The 1999 SMU 56/57 dredging demonstration project combined with the Deposit N (Project ID 05-20) dredging project was to remove approximately 10% of the mass of PCBs in the river.	

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**Planned Monitoring and
Restoration:**

**Agency Position on Sediment
Removal (and Source):**

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Physical Target:	A 9-acre near-shore area on the west bank of the Lower Fox River adjacent to the Fort James (now Georgia-Pacific) facility, about three miles from the mouth of the river.	
Goals:	In 1999, a demonstration dredging project and, in 2000, a time-critical removal action, each with an ultimate target of 1 ppm or less PCBs in sediment.	
Primary Contractor:	1999: Montgomery-Watson; 2000: Severson Environmental Services, Inc.	
Other Contractors:	1999: Four Seasons Environmental (dredging) and Terra Engineering and Construction; 2000: VOS Electric and Spirit Construction (mobilization services), McKeefry & Sons (transport placement of dewatered sediment into Fort James Landfill), Buffalo Industrial Diving Company (marine construction).	
Generic Remediation Method:	Hydraulic dredging (auger)	
Equipment:	<p>1999: 12-inch cutterhead dredge initially; subsequently replaced by a an IMS 4010 Versi Dredge with a ten-inch discharge (horizontal auger dredge) and an in-line pump due to low percent solids in the dredge slurry; subsequently replaced with an IMS 5012 Versi Dredge and larger booster pump; double-walled, butt-fused HDPE slurry pipe; perimeter silt curtain (woven geotextile).</p> <p>2000: Three horizontal auger dredges maintained and available for use, one 12-inch (6,000 gpm capacity) and two 10-inch (3,500 gpm capacity each); two were reportedly previously used at Cumberland Bay. The 12-inch dredge was an Ellicott Mud Cat MC-2000. Two dredges were used for dredging; as one was dredging an area, the second was being positioned in the next area targeted. Upon receipt of acceptable confirmation samples in a completed area, dredging would begin using the second dredge in the next area. The third dredge was mobilized to the site near the end of September and was maintained as backup for the two active dredges. Dredging uptime for the entire project was estimated by Severson at 87%.</p> <p>Prior to beginning the project, the boom on the Mud Cat MC-2000 was modified to increase its depth of reach from 20 ft. to 30 ft. at a cost of \$60,000. Silt curtains were installed around the area perimeter and anchored to sheetpile posts at each corner and intermittently in other sections. Two working barges were used, one equipped with a mounted crane to support dredging operations and anchored outside the dredge area and one with a mounted excavator to remove debris and located inside the dredge area.</p> <p>Severson maintained divers on-site at all times (the diving company utilized was Buffalo Industrial Diving Company) to assist with debris removal and to inspect the river bottom following dredging and prior to moving the dredge from a completed area.</p>	
Material Handling:	<p>1999 dredging: Sediment was hydraulically dredged and pumped through a double-walled 2,800-foot long HDPE pipe (12-inch inside pipe diameter) to two land-based holding basins. The basins were each about 180 feet by 250 feet and four to six feet deep and were lined with 12 inches of landfill-quality clay covered by a 60-mil thick HDPE liner. Following gravity settling in the holding ponds, the settled sediments were removed using 6-inch horizontal auger dredges, one per basin. The dredges were equipped with rubber-tired wheels mounted on each end of the auger designed to keep the auger from contacting and tearing the HDPE liner. The dredges discharged to a shaker screen where oversized material was removed. Lime was then added to the sediment slurry prior to dewatering in recessed chamber filter presses. The project began with four 100-cubic foot (cf) presses and one 200-cf press; eventually a second 200-cf press was added.</p> <p>The dewatered sediment was loaded onto tri-axle and semi-trailers for transport to the Fort James</p>	

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	<p>Landfill. A total of 1,240 truck loads of materials (including water treatment filter media and other wastes) were sent to the landfill; an additional four truck loads of sediment were sent to the Brown County Landfill for use in vitrification tests; and 249 truck loads of materials were sent to the Fort James Landfill during final site demobilization (in 2001).</p> <p>2000 dredging: Sediment slurry was pumped directly from the dredge to the land-based operations through a combined floating and over-land pipeline. Booster pumps were installed in the slurry transport line for use during dredging at the southern-most end of the target area, which added an additional 1000 ft. to the pumping distance.</p> <p>Sediment slurry was discharged from the transport pipeline to three vibratory screens (operating in parallel) where 1/4-inch or greater material was removed; the slurry water was then directed through three hydrocyclones to remove gravel and sand particles.</p> <p>Slurry water exiting the hydrocyclones discharged to a single frac tank (20,000 gallons) for homogenizing. Oversized material removed by the screens and hydrocyclones was moved to the solids handling area. Slurry water was then distributed from the single receiving frac tank to eight separate frac tanks equipped with mixers, each one dedicated to one of eight of the nine recessed chamber filter presses. Two of the nine recessed chamber filter presses were added to the project near the end of September. Between each frac tank and filter press was an automated control system comprising an electric hydraulic pump, pressure gauge, polymer injection system, and flow meter. The pressure gauge monitored pressure created in the transfer line by back pressure from the filter presses and, in turn, controlled pump operation (the pump automatically shuts down when a specified line pressure is reached). Polymer (Manufacturer: Vulcan) injection was automatically controlled to 1 ppm consistent with the measured flow rate provided by the inline flow meter. Cost for the automated control system was about \$60,000 per set for the nine sets.</p> <p>Eight of nine recessed-plate filter presses received water from dedicated frac tanks. Water discharged from the presses was directed to a common header that discharged to a 75,000 gallon holding tank; solids dropped to the filter press conveyor and then to a common conveyor which moved them to the solids handling area. The filter presses were outdoors, but were covered by tarps draped over wooden frames for protection from the elements. The holding tank was a field erected modular tank.</p> <p>Solids from the filter presses, screens, and hydrocyclones were stockpiled in an asphalted area adjacent to the filter presses. Samples were periodically collected and analyzed for PCB and moisture content. The solids were maintained in the solids handling area for a maximum of two days prior to loading into trucks for disposal.</p> <p>One front-end loader was used to move solids piles and to load trucks for transfer of material to the Fort James landfill. A mobile scale was onsite to measure the weight of each truck prior to leaving the work area. The landfill, although on Fort James property, was located about six miles from the work area.</p>	
Volume Removed:	1999: about 31,500 cy (~120 tons of dewatered material per day); 2000: approximately 50,316 cy (based on bathymetric surveys).	
Calendar Time:	August 30 to December 15, 1999; August 23 to October 31, 2000.	
Time To Implement:	In 1999, 3.5 months; reportedly initially operating on a 24 hour per day, 7 day per week schedule; this included about 4-6 hours of actual dredging per day to completely fill two settling basins; sediment was transferred from the settling basins to the WWTP the remaining 18-20 hours per day.	

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In 2000, 69 days; operations continued 24 hours per day (two 12-hour shifts), 7 days per week for the project duration.

Sevenson typically maintained a staff of 48 (includes day and night shifts), not including two persons stationed at the landfill and truck drivers.

Total Cost: 1999: About \$12.4 million (\$396/cy) which included approximately \$3.4 million of in-kind services provided by Fort James.

2000: Reported by Fort James at between \$8.2 and \$14.9 million; \$163 to \$296 per cy.

Dredging Cost: Not available

Disposal of Sediment: For both 1999 and 2000 dredging, into a dedicated cell in an industrial landfill owned by Fort James Corporation (one of the seven paper mill PRPs). The 1999 demonstration project resulted in the landfilling of 31,792 tons of sediment and other project debris. For 2000 dredging, 2,484 truck loads containing an estimated 51,613 tons (41,000 cy) of dewatered sediment were disposed of in the Fort James landfill.

Volume of Water: 1999: 75.3 million gallons; 2000: 66.3 million gallons.

Method of Water Treatment: 1999: Initially, supernatant from the two setting basins and filtrate from the filter presses were combined for treatment by polymer and acid addition, then dual media (sand/gravel) filtration followed by tertiary treatment using granulated carbon prior to discharge back to the Fox River. Subsequently, the wastewater streams were segregated to allow targeted use of polymer and acid additions on the specific wastewater streams each was intended to treat.

In 2000, water treatment was performed through a series of four parallel operating systems comprising a five-micron (2x10-4 in.) bag filter, a sand filter with media comprising one foot of 1/4-inch gravel on the bottom and about three feet of sand, a carbon filter filled with 15,000 pounds of carbon, and a one-micron (4x10-5 in.) bag filter. The bag filters were changed periodically, although how often is unclear. Both the sand and carbon filters were back-washed as needed as determined by back-pressure through the units. Two spare carbon units were also maintained on-site for use as needed.

Treated water was discharged to a 75,000 gallon holding tank. A pulsating sampler was used to collect a composite sample of the treated water from the transfer pipe prior to its discharge to the holding tank. Treated water samples were analyzed for PCBs, mercury, and BOD. PCBs were the only regulated analyte and reportedly the discharge limit was consistently achieved throughout the project. (Mercury and BOD were analyzed for information purposes at the request of the environmental agencies.) System slurry processing was typically operated at 2,000 gpm but had a maximum capacity of 2,400 gpm.

Water Discharge Limit: 1999: 1.2 µg/L PCBs and 0.0072 lb/day PCBs; 2000: 1.2 ppb PCBs

Air Monitoring During Remediation: In 1999 (Phase I), high volume air sampling for PCBs at 25 stations at the site and up to 1.25 miles distance for air dispersion modeling. According to Wisconsin DNR (Reference B-427): "Any PCBs released into the air during the project were not detectable away from the site and reached only very low levels on the dredging sites." Concentrations ranged from non-detect to 80 ng/m3. (Detection limit was not defined in the reference). No air monitoring was performed during Phase II dredging.

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Water Monitoring During Remediation:

1999: Upstream and downstream river water sampling was performed by the U.S. Geological Survey (USGS) for PCBs (congener-specific), TSS, TOC, DOC, and, by the dredge contractor, turbidity before and during dredging. Although turbidity and TSS data from SMU 56/57 tended to show relatively small differences between upstream and downstream samples, PCB samples clearly indicated statistically significant increases in PCB concentrations measured downstream of the dredging site during dredging. Increases were observed in both dissolved and particulate PCB fractions. (Source: Reference M-287): "Results indicate that the cleanup at SMU 56/57 had the following effect on PCB mass: dredging permanently removed more than 650 kg (1441 lb) of PCBs, transported 14.5 kg (32 lb) downstream, and volatilized 2.6 kg (5.7 lb) to the atmosphere; associated activities on the shore returned 0.1 kg (0.3 lb) to the river.

The lack of a large increase in downstream turbidity or TSS measurements associated with the observed PCB increase may indicate that mechanisms such as the release of sediment pore water or the relatively rapid desorption of PCBs from locally resuspended sediments may be important.

In addition, background and near-dredge-area caged fish analysis was performed for PCBs before and during dredging. The first caged fish study, conducted from April 22 to May 20, 1999, showed that both upstream and downstream PCB concentrations were higher toward the west bank of the river nearer the SMU 56/57 site by roughly a factor of 2 compared to samples collected from the eastern shore. Lipid-adjusted PCB concentrations showed similar trends. A second study conducted during dredging activity from September 9 to October 8, 1999 showed similar PCB accumulation as samples nearest to the eastern shore in the predredge study. Fish from the two upstream cages located outside of the silt curtain during dredging also showed comparable PCB accumulation relative to the upstream fish near the dredge area from the predredge study, with total Aroclor PCB concentrations generally in the 0.8 ppm to 1.0 ppm range. Significantly higher levels of PCB accumulation were observed during dredging within the silt curtain and at the sidestream outside location, where total PCB concentrations ranged from 1.2 ppm to 2.4 ppm. This is also reflected in the lipid-adjusted PCB concentrations.

2000: The USEPA collected a limited number of water column samples that were analyzed for total PCBs and the dredge contractor monitored for turbidity. Turbidity levels above the action level (downstream turbidity levels being two times greater than upstream levels) were to trigger the requirement for the contractor to collect water column samples for PCB analysis. The turbidity action level was never exceeded. Results of the water column sampling performed by USEPA indicated that PCBs were lost to the water column during dredging. Comparability of the 2000 data set with that collected by USGS in 1999 is difficult, as described below (Source: Reference L-100):

- "EPA's 2000 data are not inconsistent with USGS' 1999 data. EPA's data suggest that there was an increase in average river water PCB concentrations in downstream samples collected during dredging compared with upstream samples. The USGS data show such an increase quite clearly."
- "However, the comparability of the 1999 and 2000 water column data sets is marginal and any comparisons should be made with caution because:
 - there were many fewer data collected in 2000;
 - more than half the samples collected by EPA in 2000 were analyzed with a detection limit of 1 ug/L. This detection limit is several times higher than the maximum total PCB concentration measured during the 1999 study (USGS data ranged from 0.007 to 0.273 ug/L);
 - sampling locations in 2000 were somewhat different than the 1999 locations; and

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- sampling and analytical methodologies in 2000 were different than those in 1999.”

Turbidity monitoring around the perimeter silt curtain did not exceed the target level and therefore, did not trigger the requirement for further water column sampling.

Outcome:

1999: About 31,500 cy of sediment containing an estimated 1,450 pounds of PCBs were removed by hydraulic dredging over a 3.5 month period. Removal rates and total volume removed were lower than anticipated. In the four areas (totaling about 3,600 ft.²) where a final pass was performed before the winter shutdown, post-dredge surface concentrations ranged from 0.01 to 17.0 ppm PCBs (median of 8 samples was 0.2 - 1.7 ppm). In the subunits where the final pass was not performed, post-dredging surface sediment concentrations ranged from 32 to 280 ppm PCBs (exceeding 50 ppm at four of the subunits), showing a significant increase from 2 to 5 ppm predredge levels in these same subareas.

2000: An additional 50,316 cy of sediment were removed by hydraulic dredging over a 69-day period. The average sediment removal rate for the 2000 project was reportedly 723 cy per day (~30 cy per hr). Maximum daily and maximum avg. weekly removal rates were reportedly 1,600 cy (76 cy per hour) and 1,265 cy (53 cy per hr), respectively. Verification samples of the top 4 inches of sediment reportedly averaged 2.2 ppm, with a range of “nondetect” to 9.5 ppm. Eleven of 28 samples were reportedly below 1 ppm and 24 of 28 samples were reportedly below 4 ppm.

Restoration and Post-Monitoring:

Fort James was originally required to place a 6-inch sand cover over any areas with surface PCB concentrations greater than 1 ppm. The company decided to cover the entire 6.1-acre dredge area with the sand cover following dredging regardless of final surface sediment PCB concentrations. Reportedly, Fort James views the sand cover as a separation layer between what they claim responsibility for and any future contamination of the target area, thus providing them a means to potentially limit their future liabilities within the target area. As a result, a sand cover 9 to 12 inches thick was placed over the entire removal area including the side slopes along the edges of the remediated area to cover exposed PCBs remaining following dredging and to clearly delineate the dredged area.

Site-Specific Difficulties:

1999:

- Several times the perimeter silt curtain was dislodged or torn by the currents (due to lake seiche).
- Lower than anticipated production rates were realized due, in part, to solids being removed at an average 4.4% vs. the 7.5% assumed by the contractor in its bid. The 3% to 5% solids content also led to higher than anticipated water volumes and some water treatment system limitations.
- Initially dredging commenced using a cutterhead dredge. Due to low percent solids in the dredge slurry, this dredge was replaced early in the project with a horizontal auger dredge.
- Significant amounts of debris were encountered during dredging that apparently had not been identified during the sediment delineation and characterization phase of the project. Some of the smaller debris was removed during dredging, while dredging was performed around the larger debris pieces. In either case, the necessity to deal with the debris slowed the removal of sediment from the target area.
- As described in Reference A-541: “Dredging started in the northwest corner of the footprint and proceeded to the south (Note, not part of quote: this is from downstream to upstream). By mid-November, dredging had progressed south into Subunits 18 and 29. During this initial pass, the dredging was not being conducted to the final elevation. The original project design was to follow

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up the initial dredging pass with a "cleanup pass" 0.5 feet below the design elevation of 565 ft. Mean Sea Level (MSL). Weekly acoustical surveys were conducted and showed that the initial dredge pass was leaving behind an irregular surface with deep furrows and ridges. In mid-November 1999, the project team began discussing how to wrap up the dredging in anticipation of winter conditions. At this time the FRG directed (the contractor) to stop movement into new undredged areas (south) and return to the previously dredged areas and address the furrows and ridges left behind from the previous pass and remove more PCB mass by dredging in Subunits 13, 14, 24, and 25."

"As time was running out, the FRG directed the contractors to perform the cleanup pass on smaller sections of four subunits (Subunits 25, 26, 27, and 28) in order to "finish" these areas and collect the surface concentration data for analysis and consideration in the development of the final Remedial Investigation/Feasibility Study (RI/FS). These smaller areas, on the order of 30 feet by 30 feet, were centered in the middle of the subunits where the pre-dredging core sampling had occurred. This data would facilitate a direct comparison of pre- and post-dredge surface concentrations."

"The post-dredge acoustical survey conducted by Superior Special Services indicates that in some areas of these "final pass" subunits the final dredge elevation 564.5 ft. MSL (565 ft. minus 0.5 ft) was achieved. However, the elevation determined at the time and location of the post-dredge sampling indicates that the final elevation was not achieved at that specific sample location. Sediment bed elevations at the "final pass" subunits were within 2 feet of the design elevation. Subunits where the "final pass" was not completed varied from within 1 foot of final elevation to 7.5 feet above the final elevation."

- Small horizontal auger dredges were used to transfer sediment from the settling basins to the filter presses. The auger heads were equipped with rubber-tired wheels to prevent contact with and subsequent tearing of the settling basin HDPE liner. During operation, one of the auger wheels broke an axle that resulted in multiple tears of the settling basin liner. The project was delayed approximately two weeks to allow for repair of the liner and re-establishment of full settling basin capacity.

2000 dredging:

- Debris remained a considerable problem. As described in Reference A-806: "One common problem during the removal action was damage to the dredge impeller caused by large foreign objects such as rocks and pieces of metal. When this happened, the dredge was taken out of service and replaced with another dredge to allow continued operation."
- The silt curtain configuration used by Severson reportedly worked better than the configuration used by the contractor in 1999. However, problems (dislodging and tearing) were encountered in the upstream end of the silt curtain where it was installed perpendicular to the shoreline. Discussions with USEPA indicated that, if a similar configuration of silt curtain were used again, a sheetpile breakwater would be required upstream of the work area to lessen the effects of river velocities and boat wakes on the upstream portion of silt curtain.
- The use of silt curtains was discouraged by the environmental agencies. Severson's opinion was that not using silt curtains would increase their liability due to potential redistribution of contaminated sediment downstream as a result of dredging. As a result, Severson elected to include purchase and installation costs for silt curtains in their bid package. Apparently, the agency position stemmed from multiple failures of the silt curtains used by the contractor during

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dredging in 1999 when the curtains were regularly torn or dislodged and required significant maintenance throughout the project. To address these issues, Severson installed sheetpile at the target area corners and intermittently along the perimeter sections of silt curtain to provide stable anchoring points, extended the length of the silt curtain downward to 15 ft. below the water surface (compared to 5-10 ft. below water surface during 1999 dredging), and provided stable anchoring at the river bottom.

Monitoring Data

References:

- **Sediment**
- **Water:**
- **Fish:**

POTENTIALLY RESPONSIBLE PARTIES

Project Name FOX RIVER - PROJECT 1 (SMU 56/57)

ProjectID: 05-06

PRP Name: PRP INFORMATION NOT RELEASED

PRPID:

Street Address:

City:

State:

KEY CONTACTS

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Last Name: KEY CONTACT INFORMATION NOT RELEASED

Contact ID:

First Name:

Title:

Company:

Address:

City:

State:

Postal Code:

Work Phone # :

Other Phone #:

Fax # :

Email Address:

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: A

ReferenceID: 232

Title: ***Draft Pre-Design Work Plan for the Sediment Management Unit 56/57 Sediment Removal Demonstration Project***

Location: BBL

Category: Remedial Action Plan/Work Plan

Prepared by/Author: Montgomery-Watson

Preparer/Author Address: Milwaukee and Madison, WI

Prepared For: Fox River Group and WDNR

Date Published: April 1998

Key Words and Phrases:

Reference Type: A

ReferenceID: 354

Title: ***Basis of Design Report Sediment Removal Demonstration Report Sediment Management Unit 56/57***

Location: BBL

Category: Remedial Design

Prepared by/Author: Montgomery-Watson

Preparer/Author Address: Milwaukee and Madison, WI

Prepared For: Fox River Group and WDNR

Date Published: May 1998

Key Words and Phrases:

Reference Type: A

ReferenceID: 389

Title: ***Fact Sheet: PCBs: Lower Fox River Impacts***

Location: AEM

Category: Site Update

Prepared by/Author: US EPA Region V

Preparer/Author Address: 77 West Jackson Blvd.
Chicago, IL 60604

Prepared For: General Public

Date Published: July 1998

Key Words and Phrases:

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: A

ReferenceID: 514

Title: **Operational Monitoring Quality Assurance Project Plan -
Sediment Removal Demonstration Project, Sediment Management
Unit 56/57, Fox River, Green Bay, WI**

Location: BBL

Category: Analytical Protocol/Issues/QAPP

Prepared by/Author: Montgomery-Watson

**Preparer/Author
Address:**

Prepared For: Fox River Group and WDNR

Date Published: August 1999

**Key Words and
Phrases:**

Reference Type: A

ReferenceID: 541

Title: **Memo re: Post Dredging Results for SMU 56/57**

Location: AEM

Category: Site Update

Prepared by/Author: Bob Paulson

**Preparer/Author
Address:** WDNR

Prepared For: WI DNR (Bruce Baker and Greg Hill)

Date Published: February 21, 2000

**Key Words and
Phrases:**

REFERENCES

Project Name FOX RIVER - PROJECT 1 (SMU 56/57)

ProjectID: 05-06

Reference Type: A

ReferenceID: 570

Title: *Memo re: Enforcement Action Memorandum: Determination of Need to Conduct a Time-Critical Removal Action at Sediment management Units 56 and 57, part of the Lower Fox River NRDA/PCB Releases Site, Winnebago, Outagamie, Brown, Oconto, Marinette, Kewaunee, and Door Counties, Wisconsin and Menominee and Delta Counties, Michigan (Site ID# A565)*

Location: AEM

Category: ROD/Proposed Plan/Action Memo/Decision Document

Prepared by/Author: Samuel Borries, On-Scene Coordinator

Preparer/Author Address: US EPA Region V

Prepared For: Francis X. Lyons, US EPA Regional Administrator

Date Published: Undated (circa summer 2000)

Key Words and Phrases:

Reference Type: A

ReferenceID: 585

Title: *Statement of Work - Lower Fox River Sediment Management Unit 56/57 Removal Action*

Location: AEM

Category: Remedial Action Plan/Work Plan

Prepared by/Author: Wisconsin Department of Natural Resources

Preparer/Author Address:

Prepared For:

Date Published: June 12, 2000

Key Words and Phrases:

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: A

ReferenceID: 586

Title: ***Draft Feasibility Study - Lower Fox River, Wisconsin (TOC and Lists of Tables and Figures only)***

Location: AEM

Category: RI/FS

Prepared by/Author: ThermoRetec Consulting Corporation

Preparer/Author Address: 413 Wacouta Street, Suite 400
St. Paul, MN 55101-1957

1011 SW Klickitat Way, Suite 207
Seattle, WA 98134

Prepared For: Wisconsin Department of Natural Resources

Date Published: February 1999

Key Words and Phrases:

Reference Type: A

ReferenceID: 587

Title: ***Administrative Order by Consent***

Location: AEM

Category: Legal

Prepared by/Author: US EPA Region V, WDNR, WDOJ, U.S. DOJ

Preparer/Author Address:

Prepared For: Fort James Corporation and Fort James Operating Company

Date Published: June 12, 2000

Key Words and Phrases:

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: A

ReferenceID: 605

Title: ***Final Report: 2000 Sediment Management Unit 56/57 Project - Lower Fox River, Green Bay, Wisconsin***

Location: AEM

Category: Close-Out Report

Prepared by/Author: (1) Fort James Corporation, (2) Foth & Van Dyke, (3) Hart Crowser, Inc.

Preparer/Author Address: (1) P.O. Box 19130
Green Bay, WI 54307-9130
(2), (3) Green Bay, WI

Prepared For: US EPA and WI DNR

Date Published: January 2001

Key Words and Phrases:

Reference Type: A

ReferenceID: 619

Title: ***Basis of Design Report: Sediment Demonstration Project, Sediment Management Unit 56/57 (select pages)***

Location: AEM

Category: Remedial Design

Prepared by/Author: Montgomery Watson

Preparer/Author Address: Milwaukee, WI

Prepared For: Fox River Group and Wisconsin Department of Natural Resources

Date Published: May 1998

Key Words and Phrases:

Reference Type: A

ReferenceID: 803

Title: ***Site Specific Health and Safety Plan - Fox River SMU 56/57***

Location: AEM

Category: Miscellaneous

Prepared by/Author:

Preparer/Author Address:

Prepared For: Fort James Corporation

Date Published: May 2000

Key Words and Phrases:

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: A

ReferenceID: 804

Title: ***Quality Assurance Project Plan; Sampling and Analysis Plan***

Location: AEM

Category: Analytical Protocol/Issues/QAPP

Prepared by/Author: Hart Crowser, Inc.

**Preparer/Author
Address:**

Prepared For: Fort James Corporation

Date Published: July 26, 2000

**Key Words and
Phrases:**

Reference Type: A

ReferenceID: 805

Title: ***Final Summary Report: Sediment Management Unit 56/57
Demonstration Project (CD-ROM)***

Location: AEM

Category: Close-Out Report

Prepared by/Author: Montgomery Watson Harza

**Preparer/Author
Address:** One Science Court
P.O. Box 5385
Madison, WI 53705-0385

Prepared For: Fox River Group of Companies and Wisconsin DNR

Date Published: September 2001

**Key Words and
Phrases:**

Reference Type: A

ReferenceID: 806

Title: ***Potentially Responsible Party Removal Summary Report***

Location: AEM

Category: Close-Out Report

Prepared by/Author: Tetra Tech EM, Inc.

**Preparer/Author
Address:**

Prepared For: US EPA Region V

Date Published: July 27, 2001

**Key Words and
Phrases:**

REFERENCES

Project Name FOX RIVER - PROJECT 1 (SMU 56/57)

ProjectID: 05-06

Reference Type: A

ReferenceID: 813

Title: *Final Summary Report: Sediment Management Unit 56/57
Demonstration Project (Complete document on CD-ROM -
Reference A-805)*

Location: AEM

Category: Close-Out Report

Prepared by/Author: Montgomery Watson Harza

**Preparer/Author
Address:** One Science Court
P.O. Box 5385
Madison, WI 53705-0385

Prepared For: Fox River Group of Companies and Wisconsin DNR

Date Published: September 2001

**Key Words and
Phrases:**

Reference Type: B

ReferenceID: 11

Title: *Establishment of Sediment Quality Objective Concentrations for
PCBs in Deposit A, Little Lake
Butte des Morts, Winnebago County, WI*

Location: AEM

Category: Cleanup Levels and Risks

Prepared by/Author: Wisconsin Department of Natural Resources

**Preparer/Author
Address:** 101 South Webster Street
P.O. Box 7921
Madison, WI 53707

Prepared For: General Public

Date Published: March 2, 1993

**Key Words and
Phrases:**

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: B
Title: *Fort James Offers Landfill Space for SMU 56/57*
Location: AEM
Category: Site Update
Prepared by/Author: Corinne Billings
Preparer/Author Address: Wisconsin Department of Natural Resources
Prepared For: Fox River Current, July/August 1999, Vol. 2, No. 3
Date Published: July 1999
Key Words and Phrases:

ReferenceID: 105

Reference Type: B
Title: *Memo re: Deposit 56/57 Remedial Action (report of site tour)*
Location: AEM
Category: Site Update
Prepared by/Author: Unknown
Preparer/Author Address:
Prepared For: Distribution
Date Published: November 1999 (Circa)
Key Words and Phrases:

ReferenceID: 120

Reference Type: B
Title: *Dredging Resumes at Deposit N and Begins at SMU 56/57*
Location: AEM
Category: Site Update
Prepared by/Author: Kelly Mella and Corinne Billings
Preparer/Author Address: WDNR
Prepared For: Fox River Current
Date Published: November / December 1999
Key Words and Phrases:

ReferenceID: 210

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: B

ReferenceID: 259

Title: ***Materials for Consideration Prior to the Nov. 28, 1995 Fox River Coalition Meeting***

Location: AEM

Category: Contaminated Sediments: Characteristics/Bioavailability

Prepared by/Author: Jo Mercurio

Preparer/Author Address: WI Department of Natural Resources
101 South Webster Street
Madison, WI 53707

Prepared For: Fox River Coalition

Date Published: November 22, 1995

Key Words and Phrases:

Reference Type: B

ReferenceID: 262

Title: ***State's Accord with EPA Could Hasten Cleanup of Polluted Waterways; PCBs in Sediment would be Target of Initial Efforts***

Location: AEM

Category: Site Update

Prepared by/Author: Associated Press

Preparer/Author Address: St. Paul Pioneer

Prepared For: News Release

Date Published: October 6, 1994

Key Words and Phrases:

Reference Type: B

ReferenceID: 314

Title: ***FRG Offers Additional Restoration Work on the Fox River***

Location: AEM

Category: Site Update

Prepared by/Author: Fox River Group

Preparer/Author Address: www.foxrivergroup.org

Prepared For:

Date Published: March 2, 2000

Key Words and Phrases:

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: B

ReferenceID: 315

Title: ***Review of Fox Dredging Data Shows Dredging Increases PCB Concentrations***

Location: AEM

Category: Site Update

Prepared by/Author: Fox River Group

Preparer/Author Address: www.foxrivergroup.org

Prepared For:

Date Published: March 2, 2000

Key Words and Phrases:

Reference Type: B

ReferenceID: 316

Title: ***Fox River Group Statement Regarding Next Steps on 56/57***

Location: AEM

Category: Site Update

Prepared by/Author: Fox River Group

Preparer/Author Address: www.foxrivergroup.org

Prepared For:

Date Published: March 21, 2000

Key Words and Phrases:

Reference Type: B

ReferenceID: 317

Title: ***The Fox River Group Proposes Capping for 56/57 Dredged Areas and Other Restoration Action on the River***

Location: AEM

Category: Site Update

Prepared by/Author: Fox River Group

Preparer/Author Address: www.foxrivergroup.org

Prepared For:

Date Published: March 24, 2000

Key Words and Phrases:

REFERENCES

Project Name FOX RIVER - PROJECT 1 (SMU 56/57)

ProjectID: 05-06

Reference Type: B

ReferenceID: 381

Title: *Polychlorinated Biphenyl (PCB) Contaminated Sediment in the Lower Fox River: Modeling Analysis of Selective Sediment Remediation*

Internet:

http://www.dnr.state.wi.us/org/water/wm/lowerfox/sediment/model/foxreport_print.html

Location: AEM

Category: Modeling

Prepared by/Author: Wisconsin Department of Natural Resources

Preparer/Author Address:

Prepared For: General Public

Date Published: June 8, 1998

Key Words and Phrases:

Reference Type: B

ReferenceID: 383

Title: *Fox River Current: Frequently Asked Questions about PCBs in a river vs a landfill*

Location: AEM

Category: Site Update

Prepared by/Author: Lower Fox River Intergovernmental Partnership

Preparer/Author Address:

Prepared For: General Public

Date Published: 1998 Fall

Key Words and Phrases:

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: B

ReferenceID: 386

Title: ***Sediment Removal Demonstration Project - Sediment Management Unit (SMU) 56/57***

Internet:

<http://www.dnr.state.wi.us/org/water/wm/lowerfox/sediment/smu5657.html>

Location: AEM

Category: Site Update

Prepared by/Author: Wisconsin Department of Natural Resources

Preparer/Author Address:

Prepared For: General Public

Date Published: August 25, 1998

Key Words and Phrases:

Reference Type: B

ReferenceID: 427

Title: ***Fox River Dredging Project***

Location: AEM

Category: Site Update

Prepared by/Author: Wisconsin Department of Natural Resources

Preparer/Author Address: P.O. Box 7921
Madison, WI 53707-7921

Prepared For: General Public

Date Published: March 2, 2000

Key Words and Phrases:

Reference Type: B

ReferenceID: 428

Title: ***FRG Response to Issues Raised at SMU 56/57***

Location: AEM

Category: Site Update

Prepared by/Author: Fox River Group

Preparer/Author Address: www.foxrivergroup.org

Prepared For:

Date Published: April 4, 2000

Key Words and Phrases:

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: B

ReferenceID: 429

Title: ***FRG Issues Report on SMU 56/57 and Deposit N***

Location: AEM

Category: Site Update

Prepared by/Author: Fox River Group

**Preparer/Author
Address:** www.foxrivergroup.org

Prepared For:

Date Published: April 4, 2000

**Key Words and
Phrases:**

Reference Type: B

ReferenceID: 430

Title: ***Report on the Results of Dredging at Deposit N and SMU 56/57***

Location: AEM

Category: Site Update

Prepared by/Author: Fox River Group

**Preparer/Author
Address:** www.foxrivergroup.org

Prepared For:

Date Published: April 4, 2000

**Key Words and
Phrases:**

Reference Type: B

ReferenceID: 448

Title: ***EPA Signs Agreement with Fort James to Continue Work on
Lower Fox River SMU 56/57 Project***

Location: AEM

Category: Site Update

Prepared by/Author: US EPA Region V

**Preparer/Author
Address:**

Prepared For: General Public

Date Published: May 25, 2000

**Key Words and
Phrases:**

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: B

ReferenceID: 465

Title: **Technical Corner ... SMU 56/57 by the Numbers**

Location: AEM

Category: Site Update

Prepared by/Author: Rich Trotto

Preparer/Author Address: Wisconsin Department of Natural Resources

Prepared For: Fox River Current

Date Published: January/February 2001

Key Words and Phrases:

Reference Type: B

ReferenceID: 466

Title: **EPA, DNR Oversee Successful SMU 56/57 Dredging Project**

Location: AEM

Category: Site Update

Prepared by/Author: Susan Pastor

Preparer/Author Address: US EPA Region V

Prepared For: Fox River Current

Date Published: January/February 2001

Key Words and Phrases:

Reference Type: B

ReferenceID: 469

Title: **Technical Corner ... More Capacity, Longer Hours Highlight SMU 56/57 Dredging Project**

Location: AEM

Category: Dredging: Remedial (Contaminated Sediments)

Prepared by/Author: Rich Trotto

Preparer/Author Address: Wisconsin Department of Natural Resources

Prepared For: Fox River Current

Date Published: September / October 2000

Key Words and Phrases:

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type:

B

ReferenceID: 470

Title:

Cleanup Planned for SMU 56/57 - Lower Fox River Site

Location:

AEM

Category:

Site Update

Prepared by/Author:

US EPA Region V

Preparer/Author

77 West Jackson Boulevard

Address:

Chicago, IL 60604-3590

Prepared For:

General Public

Date Published:

July 2000

**Key Words and
Phrases:**

Reference Type:

B

ReferenceID: 475

Title:

Agreement Reached for Completion of SMU 56/57

Location:

AEM

Category:

Site Update

Prepared by/Author:

Susan Pastor

Preparer/Author

US EPA Region V

Address:

Prepared For:

Fox River Current

Date Published:

July/August 2000

**Key Words and
Phrases:**

Reference Type:

B

ReferenceID: 476

Title:

Agreement to be Reached for Completion of SMU 56/57

Location:

AEM

Category:

Site Update

Prepared by/Author:

Susan Pastor

Preparer/Author

US EPA Region V

Address:

Prepared For:

Fox River Current

Date Published:

May / June 2000

**Key Words and
Phrases:**

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: B
Title: ***EPA, DNR Update Public on SMU 56/57 Progress***
Location: AEM
Category: Site Update
Prepared by/Author: Susan Pastor
Preparer/Author Address: US EPA Region V
Prepared For: Fox River Current
Date Published: September / October 2000
Key Words and Phrases:

ReferenceID: 477

Reference Type: B
Title: ***Report Finds Little Health Risk from Dredged PCBs Released into Air***
Location: AEM
Category: Monitoring, Remediation (Pre- and during)
Prepared by/Author: Rich Trotto
Preparer/Author Address: WI DNR
Prepared For: Fox River Current
Date Published: March/April 2001
Key Words and Phrases: Air monitoring

ReferenceID: 494

Reference Type: B
Title: ***Public Meeting: Fox River PCB Contamination Cleanup - SMU 56/57 Wrap Up***
Location: AEM
Category: Site Update
Prepared by/Author: US EPA Region V
Preparer/Author Address:
Prepared For: Distribution
Date Published: December 5, 2000
Key Words and Phrases:

ReferenceID: 558

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: B

ReferenceID: 686

Title: ***Letter re: SMU 56-57 Fox River Project Monthly Report, June 2000***

Location: AEM

Category: Site Update

Prepared by/Author: Roger F. Kaminski

Preparer/Author Address: Fort James Corporation
Green Bay, WI 54307-9130

Prepared For: Sam Borries, US EPA Region V and Gary Kincaid, Wisconsin DNR

Date Published: June 30, 2000

Key Words and Phrases:

Reference Type: B

ReferenceID: 687

Title: ***Letter re: SMU 56-57 Fox River Project Monthly Report, July 2000***

Location: AEM

Category: Site Update

Prepared by/Author: Roger F. Kaminski

Preparer/Author Address: Fort James Corporation
Green Bay, WI 54307-9130

Prepared For: Sam Borries, US EPA Region V and Gary Kincaid, Wisconsin DNR

Date Published: August 1, 2000

Key Words and Phrases:

Reference Type: B

ReferenceID: 688

Title: ***Letter re: SMU 56-57 Fox River Project Monthly Report, September 2000***

Location: AEM

Category: Site Update

Prepared by/Author: Roger F. Kaminski

Preparer/Author Address: Fort James Corporation
Green Bay, WI 54307-9130

Prepared For: Sam Borries, US EPA Region V and Gary Kincaid, Wisconsin DNR

Date Published: September 30, 2000

Key Words and Phrases:

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: B

ReferenceID: 689

Title: ***Letter re: SMU 56-57 Fox River Project Monthly Report, October 2000***

Location: AEM

Category: Site Update

Prepared by/Author: Roger F. Kaminski

Preparer/Author Address: Fort James Corporation
Green Bay, WI 54307-9130

Prepared For: Sam Borries, US EPA Region V and Gary Kincaid, Wisconsin DNR

Date Published: October 30, 2000

Key Words and Phrases:

Reference Type: B

ReferenceID: 690

Title: ***Letter re: Quality Assurance Project Plan/Sampling and Analysis Plan Comments***

Location: AEM

Category: Analytical Protocol/Issues/QAPP

Prepared by/Author: Samuel Borries

Preparer/Author Address: US EPA Region V

Prepared For: Roger F. Kaminski, Fort James Corporation

Date Published: July 11, 2000

Key Words and Phrases:

Reference Type: B

ReferenceID: 691

Title: ***Letter re: QAPP/SAP Approval***

Location: AEM

Category: Analytical Protocol/Issues/QAPP

Prepared by/Author: Samuel Borries

Preparer/Author Address: US EPA Region V

Prepared For: Roger F. Kaminski, Fort James Corporation

Date Published: August 21, 2000

Key Words and Phrases:

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: B

ReferenceID: 692

Title: ***Letter re: Contractor Selection***

Location: AEM

Category: Miscellaneous

Prepared by/Author: David J. Devroy

**Preparer/Author
Address:** Fort James Corporation

Prepared For: Sam Borries, US EPA Region V and Gary Kincaid, Wisconsin DNR

Date Published: July 14, 2000

**Key Words and
Phrases:**

Reference Type: B

ReferenceID: 693

Title: ***Governor Announces Agreement with Fort James***

Location: AEM

Category: Natural Resource Damages

Prepared by/Author: State of Wisconsin

**Preparer/Author
Address:**

Prepared For: Distribution

Date Published: November 15, 2000

**Key Words and
Phrases:**

Reference Type: B

ReferenceID: 694

Title: ***Fact Sheet: Fort James - State of Wisconsin Natural Resource
Damages Agreement***

Location: AEM

Category: Natural Resource Damages

Prepared by/Author:

**Preparer/Author
Address:**

Prepared For: Distribution

Date Published: November 2000 (circa)

**Key Words and
Phrases:**

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: B
Title: **SMU 56/57 Remediation Project Completed**
Location: AEM
Category: Site Update
Prepared by/Author: Wisconsin DNR
Preparer/Author Address:
Prepared For: Distribution
Date Published: December 8, 2000
Key Words and Phrases:

ReferenceID: 695

Reference Type: B
Title: **Realizing Remediation II - Updated Summary:
Fox River - Deposit 56/57 (Fox River - Project 1)
(see Reference A-907)**
Location: AEM
Category: Dredging; Remedial (Contaminated Sediments)
Prepared by/Author: US EPA Great Lakes National Program Office (GLNPO)
Preparer/Author Address: 77 West Jackson Boulevard (G-17J)
Chicago, IL 60604
Prepared For: General Public
Date Published: July 2000
Key Words and Phrases:

ReferenceID: 834

Reference Type: B
Title: **e-mail re: Dredging difficulties in the Fox**
Location: AEM
Category: Site Update
Prepared by/Author: Sidley & Austin
Preparer/Author Address: 1722 Eye Street, NW
Washington, DC 20006
Prepared For: Distribution
Date Published: September 8, 1999
Key Words and Phrases:

ReferenceID: 981

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: C

ReferenceID: 19

Title: ***Two projects eyed for Fox River***

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Superfund Week

Date Published: August 1, 1997

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 128

Title: ***Fox River voluntary sediment cleanup plan stalled***

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Environmental Science & Technology, 1997, Vol. 31, No. 6, pp 271 A

Date Published: 1997

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 183

Title: ***Fox River cleanup requested***

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Superfund Week

Date Published: August 12, 1994

**Key Words and
Phrases:**

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: C

ReferenceID: 410

Title: ***Fox River Sediment Study to Produce Cleanup Strategies***

Location: AEM

Category: Mass Balance

Prepared by/Author: Rebecca Renner

**Preparer/Author
Address:**

Prepared For: Environmental Science & Technology, 1995, No. 18, pp 11A

Date Published: September 7, 1995

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 593

Title: ***PRP Agrees to Perform Dredging on Lower Fox River Under Agreement***

Location: AEM

Category: Site Update

Prepared by/Author:

**Preparer/Author
Address:**

Prepared For: Superfund Week

Date Published: June 2, 2000

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 623

Title: ***BB&L Throws Another Dig at Dredging; Points to Fox River Contaminant Levels***

Location: AEM

Category: Site Update

Prepared by/Author:

**Preparer/Author
Address:**

Prepared For: Superfund Week

Date Published: August 18, 2000

**Key Words and
Phrases:**

REFERENCES

Project Name FOX RIVER - PROJECT 1 (SMU 56/57)

ProjectID: 05-06

Reference Type: C

ReferenceID: 625

Title: *Fox River Cleanup in Wisconsin Achieved Two Weeks Ahead of Time*

Location: AEM

Category: Site Update

Prepared by/Author:

**Preparer/Author
Address:**

Prepared For: Superfund Week

Date Published: December 15, 2000

**Key Words and
Phrases:**

Reference Type: C

ReferenceID: 855

Title: *Navigating the bureaucracy of river recovery*

Location: AEM

Category: Miscellaneous

Prepared by/Author: Sara Scharpf

**Preparer/Author
Address:** Oshkosh, WI

Prepared For: PIMA's PAPERMAKER

Date Published: July 2000

**Key Words and
Phrases:**

Reference Type: D

ReferenceID: 46

Title: *Merits of dredging put to test*

Location: AEM

Category: Site Update

Prepared by/Author: Susan Campbell

**Preparer/Author
Address:** Press Gazette

Prepared For: The Green Bay (WI) Press-Gazette

Date Published: August 22, 1999

**Key Words and
Phrases:**

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: D

ReferenceID: 55

Title:
(1) *Dredging project unveiled*
(2) *Fort James gives tour of cleanup*

Location: AEM

Category: Site Update

Prepared by/Author: (1) Unknown
(2) Susan Campbell

Preparer/Author Address: (1) Unknown, (2) Press Gazette

Prepared For: The Green Bay (WI) Press-Gazette

Date Published: September 18, 1999

Key Words and Phrases:

Reference Type: D

ReferenceID: 56

Title: *Two groups on opposite sides of Fox River recovery*

Location: AEM

Category: Site Update

Prepared by/Author: Melinda Naparalla

Preparer/Author Address:

Prepared For: The Green Bay (WI) News-Chronicle

Date Published: September 28, 1999

Key Words and Phrases:

Reference Type: D

ReferenceID: 84

Title: *River Dredging Is Started*

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author Address:

Prepared For: The De Pere (WI) Journal

Date Published: September 2, 1999

Key Words and Phrases:

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type:

D

ReferenceID: 112

Title:

EPA: Leftover chemicals in Fox River a concern

Location:

AEM

Category:

Site Update

Prepared by/Author:

The Associated Press

Preparer/Author

Address:

Prepared For:

www.pioneer planet.com
(The St. Paul (MN) Pioneer Press)

Date Published:

March 10, 2000

**Key Words and
Phrases:**

Reference Type:

D

ReferenceID: 133

Title:

Fox River dredging company attacks aborted project's leaders

Location:

AEM

Category:

Site Update

Prepared by/Author:

Susan Campbell

Preparer/Author

Address:

Press Gazette

Prepared For:

The Green Bay (WI) Press-Gazette

Date Published:

July 7, 2000

**Key Words and
Phrases:**

Reference Type:

D

ReferenceID: 134

Title:

PCB contamination levels remain very high near the Fort James Corp. west mill

Location:

AEM

Category:

Site Update

Prepared by/Author:

Jeff Decker

Preparer/Author

Address:

Prepared For:

The Green Bay (WI) News-Chronicle

Date Published:

July 7, 2000

**Key Words and
Phrases:**

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: D

ReferenceID: 161

Title: ***PCB cleanup beat winter's onset, officials say -- Fox River's worst hot spot removed ahead of schedule***

Location: AEM

Category: Site Update

Prepared by/Author: Ed Culhane

**Preparer/Author
Address:**

Prepared For: The Green Bay (WI) Press-Gazette

Date Published: December 6, 2000

**Key Words and
Phrases:**

Reference Type: D

ReferenceID: 170

Title: ***The Cleanup at the Fox River's hottest spot cost an estimated \$20 million***

Location: AEM

Category: Site Update

Prepared by/Author: Jeff Decker

**Preparer/Author
Address:**

Prepared For: The Green Bay (WI) News-Chronicle

Date Published: January 31, 2001

**Key Words and
Phrases:**

Reference Type: D

ReferenceID: 181

Title: ***Dredging declared a success***

Location: AEM

Category: Site Update

Prepared by/Author: Jeff Decker

**Preparer/Author
Address:**

Prepared For: The Green Bay (WI) News-Chronicle

Date Published: December 6, 2000

**Key Words and
Phrases:**

REFERENCES

Project Name FOX RIVER - PROJECT 1 (SMU 56/57)

ProjectID: 05-06

Reference Type: D
Title: *Wisconsin weighs dredging merits*
Location: AEM
Category: Site Update
Prepared by/Author: Lee Coleman
Preparer/Author Address:
Prepared For: The Schenectady (NY) Daily Gazette
Date Published: March 18, 2001
Key Words and Phrases:

ReferenceID: 190

Reference Type: D
Title: *Officials say PCB dredging is on schedule near Fort James*
Location: AEM
Category: Site Update
Prepared by/Author: Jeff Decker
Preparer/Author Address:
Prepared For: The Green Bay (WI) News-Chronicle
Date Published: October 4, 2000
Key Words and Phrases:

ReferenceID: 196

Reference Type: D
Title: *Pollution remedy has mixed record*
Location: AEM
Category: Site Update
Prepared by/Author: Alex Nussbaum
Preparer/Author Address:
Prepared For: The Hackensack (NJ) Record
Date Published: August 27, 2001
Key Words and Phrases:

ReferenceID: 266

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: D

ReferenceID: 378

Title: ***Fox River cleanup agreement made with Fort James***

Location: AEM

Category: Site Update

Prepared by/Author: Ed Culhane

**Preparer/Author
Address:**

Prepared For: The Appleton (WI) Post-Crescent

Date Published: May 25, 2000

**Key Words and
Phrases:**

Reference Type: D

ReferenceID: 379

Title: ***Fort James steps up on PCB dredging - Agreement could be first step in comprehensive cleanup plan for Lower Fox***

Location: AEM

Category: Site Update

Prepared by/Author: Dan Wilson

**Preparer/Author
Address:**

Prepared For: The Appleton (WI) Post-Crescent

Date Published: May 26, 2000

**Key Words and
Phrases:**

Reference Type: D

ReferenceID: 380

Title: ***Report stirs up dredging conflict - DNR, mills differ on conclusions***

Location: AEM

Category: Site Update

Prepared by/Author: Susan Campbell

**Preparer/Author
Address:**

Prepared For: The Green Bay (WI) Press-Gazette

Date Published: March 3, 2000

**Key Words and
Phrases:**

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: D

ReferenceID: 381

Title: ***Papermakers, DNR disagree on results of dredging***

Location: AEM

Category: Site Update

Prepared by/Author: The Associated Press

**Preparer/Author
Address:**

Prepared For: The Milwaukee (WI) Journal Sentinel

Date Published: March 4, 2000

**Key Words and
Phrases:**

Reference Type: D

ReferenceID: 382

Title: ***Fox River tests still provoking PCB brouhaha***

Location: AEM

Category: Site Update

Prepared by/Author: The Associated Press

**Preparer/Author
Address:**

Prepared For: The Milwaukee (WI) Journal Sentinel

Date Published: March 4, 2000

**Key Words and
Phrases:**

Reference Type: D

ReferenceID: 400

Title: ***DNR, companies disagree on success of PCB dredging***

Location: AEM

Category: Site Update

Prepared by/Author: Christopher Clough

**Preparer/Author
Address:**

Prepared For: The Green Bay (WI) News-Chronicle

Date Published: March 3, 2000

**Key Words and
Phrases:**

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: E

ReferenceID: 115

Title: ***Lower Fox River Dredging Demonstration Projects***

Location: AEM

Category: Site Update

Prepared by/Author: Unknown

**Preparer/Author
Address:**

Prepared For: Poster Session: BBL Sediment Management Seminar, Tampa, FL

Date Published: February 2000

**Key Words and
Phrases:**

Reference Type: E

ReferenceID: 211

Title: ***Negotiating and Implementing Achievable Cleanup Levels: Case Study Dredging SMU 56/57, Fox River, (WI), 2000***

Location: AEM

Category: Cleanup Levels and Risks

Prepared by/Author: Richard G. Fox

**Preparer/Author
Address:** Natural Resource Technology, Inc.

Prepared For: Sediment Management Seminar 2003

Date Published: February 6-7, 2003

**Key Words and
Phrases:**

Reference Type: E

ReferenceID: 212

Title: ***Dredging Success Stories and Case Studies - A Contractor's Perspective***

Location: AEM

Category: Site Update

Prepared by/Author: Mike Crystal

**Preparer/Author
Address:** Severson Environmental Services, Inc.

Prepared For: Sediment Management Seminar 2003

Date Published: February 6-7, 2003

**Key Words and
Phrases:**

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: E

ReferenceID: 230

Title: ***Environmental Dredging: Methods, Trends, and Case Histories***

Location: AEM

Category: Dredging: Remedial (Contaminated Sediments)

Prepared by/Author: B.S. Cushing and M.K. Hammaker

Preparer/Author

Address: AEM, Inc.

Prepared For: WEDA XXI Conference, Houston, TX

Date Published: June 24-27, 2001

**Key Words and
Phrases:**

Reference Type: G

ReferenceID: 52

Title: ***PCB Releases During Environmental Dredging of Contaminated
Sediments in the Fox River, WI
(for complete presentation see Reference G-41)***

Location: AEM

Category: Resuspension

Prepared by/Author: (1) Douglas B. McLaughlin, (2) Dongson Pham, (3) Victor L. Menting

Preparer/Author

Address: (1), (2), (3) Blasland, Bouck & Lee, Inc.

Prepared For: EPA Forum on Managing Contaminated Sediments at Hazardous Waste Sites

Date Published: May 30 - June 1, 2001

**Key Words and
Phrases:**

Reference Type: I

ReferenceID: 40

Title: ***Mud Cat One-Truck Transportable Series, MC2000***

Location: AEM

Category: Dredging: Equipment

Prepared by/Author: Ellicott International

Preparer/Author

Address: 1611 Bush Street
Baltimore, MD 21230

Prepared For: General Public

Date Published: 2000 circa

**Key Words and
Phrases:**

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: I

ReferenceID: 47

Title: ***New Mud Cat MC-2000 Dredge Used to Complete Successful PCB Clean-up from Fox River, Ahead of Schedule - Mud Cat Studies***

Location: AEM

Category: Dredging: Equipment

Prepared by/Author: Ellicott International

**Preparer/Author
Address:**

Prepared For: General Public

Date Published: 2000

**Key Words and
Phrases:**

Reference Type: K

ReferenceID: 10

Title: ***Dredging Film Footage - Fox River***

Location: AEM

Category: Dredging: Contaminated

Prepared by/Author: BBDO

**Preparer/Author
Address:** 1285 Avenue of the Americas
New York, NY 10019-6095

Prepared For: General Electric

Date Published: October 27, 2000

**Key Words and
Phrases:**

Reference Type: L

ReferenceID: 5

Title: ***Memo re: Fox River***

Location: AEM

Category: Site Update

Prepared by/Author: AEM, Inc.

**Preparer/Author
Address:** Malvern, PA 19355

Prepared For: Internal file

Date Published: August 13, 1997

**Key Words and
Phrases:**

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: L

ReferenceID: 76

Title: ***Memo re: Reconnaissance of Fox River SMU 56/57 Remedial Dredging Project***

Location: AEM

Category: Site Update

Prepared by/Author: AEM, Inc.

Preparer/Author Address: Malvern, PA 19355

Prepared For: Distribution

Date Published: September 13, 2000

Key Words and Phrases:

Reference Type: L

ReferenceID: 100

Title: ***Memo re: Review of Foth and Van Dyke Report on the 2000 Dredging Project at SMU 56/57***

Location: AEM

Category: Contaminated Sediments: Overview of Issues

Prepared by/Author: Blasland, Bouck & Lee, Inc

Preparer/Author Address: 6723 Towpath Road
P.O. Box 66
Syracuse, NY 13214

Prepared For: Internal Distribution

Date Published: March 30, 2001

Key Words and Phrases:

Reference Type: L

ReferenceID: 101

Title: ***Memo re: Fox River SMU 56/57 EPA 2000 Data***

Location: AEM

Category: Monitoring, Remediation (Pre- and during)

Prepared by/Author: Blasland, Bouck & Lee, Inc.

Preparer/Author Address: 6723 Towpath Road
P.O. Box 66
Syracuse, NY 13214

Prepared For: Internal Distribution

Date Published: February 23, 2001

Key Words and Phrases:

REFERENCES

Project Name FOX RIVER - PROJECT 1 (SMU 56/57)

ProjectID: 05-06

Reference Type: L

ReferenceID: 204

Title: *Results of Research for Short-Term Impacts on Sediment and Fish PCB Concentrations Due to Sediment Removal*

Location: AEM

Category: Fish/Biota

Prepared by/Author: AEM, Inc.

**Preparer/Author
Address:**

Prepared For: File

Date Published: March 19, 2001

**Key Words and
Phrases:**

Reference Type: M

ReferenceID: 212

Title: *River Dredging, Dewatering and Water Treatment (Green Bay, WI)*

Location: AEM

Category: Site Update

Prepared by/Author: Four Seasons Environmental, Inc.

**Preparer/Author
Address:**

Prepared For: Corporate literature

Date Published: 1999 circa

**Key Words and
Phrases:**

Reference Type: M

ReferenceID: 252

Title: *Environmental Dredging: An Evaluation of Its Effectiveness in Controlling Risks*

Location: AEM

Category: Contaminated Sediments: Overview of Issues

Prepared by/Author: Blasland, Bouck & Lee, Inc.

**Preparer/Author
Address:** 6723 Towpath Road
P.O. Box 66
Syracuse, NY 13214

Prepared For: General Electric Company

Date Published: August 2000

**Key Words and
Phrases:**

REFERENCES

Project Name FOX RIVER - PROJECT 1 (SMU 56/57)

ProjectID: 05-06

Reference Type: M

ReferenceID: 287

Title: *A Mass-Balance Approach for Assessing PCB Movement During Remediation of a PCB-Contaminated Deposit on the Fox River , Wisconsin*

Location: AEM

Category: Monitoring Plan/Report

Prepared by/Author: Jeffrey J. Steuer

Preparer/Author Address: U.S. Geological Survey
8505 Research Way
Middleton, WI 53562

Prepared For: General Public

Date Published: December 2000

Key Words and Phrases:

Reference Type: M

ReferenceID: 336

Title: *A Multimedia Model for Assessing Chemical Fate During Dredging of Contaminated Bed-Sediment*

Location: AEM

Category: Modeling

Prepared by/Author: Fabian F. Sanchez

Preparer/Author Address: Louisiana Tech University
Currently with Hart Crowser, Inc.
1910 Fairview Avenue East
Seattle, WA 98102

Prepared For: Graduate Faculty of the Louisiana State University
The Department of Chemical Engineering

Date Published: December 2001

Key Words and Phrases: Bayou Bonfouca, Grasse River Hot Spot, Fox River Deposit N

REFERENCES

Project Name FOX RIVER - PROJECT 1 (SMU 56/57)

ProjectID: 05-06

Reference Type: M

ReferenceID: 351

Title: *Memo re: PCB Air Emissions from 1999 SMU 56/57 Dredging Demonstration Project*

Location: AEM

Category: Miscellaneous

Prepared by/Author: Blasland, Bouck & Lee, Inc.

Preparer/Author Address: 1861 Nimitz Drive
DePere, WI 54115-9035

Prepared For: Internal Distribution

Date Published: March 31, 2001

Key Words and Phrases:

Reference Type: M

ReferenceID: 423

Title: *Results of Contaminated Sediment Cleanups Relevant to the Hudson River:
Lower Fox River, Wisconsin (Fox River - SMU 56/57)*

Location: AEM

Category: Contaminated Sediments: Overview of Issues

Prepared by/Author: Joshua Cleland

Preparer/Author Address:

Prepared For: Scenic Hudson
9 Vassar Street
Poughkeepsie, NY 12601

Date Published: October 2000

Key Words and Phrases:

REFERENCES

Project Name FOX RIVER - PROJECT 1 (SMU 56/57)

ProjectID: 05-06

Reference Type: S

ReferenceID: 16

Title: *Administrative Order by Consent - Lower Fox River Sediment Management Unit 56/57 Removal Action (Includes Statement of Work)*

Location: AEM

Category: Legal

Prepared by/Author: US EPA Region V

**Preparer/Author
Address:**

Prepared For:

Date Published: 2000

**Key Words and
Phrases:**

Reference Type: S

ReferenceID: 17

Title: *Agreement Between the State of Wisconsin and Fort James Corporation – Includes:
(1) Attachment A, Consent Decree;
(2) Attachment B, Summary of Basis of Natural Resource Damages Settlement Among State of Wisconsin and Fort James Corporation;
(3) Attachment C, Lower Fox River and Bay of Green Bay: Potential Natural Resource Damages and Restoration Offsets for Ecological Losses; and
(4) Attachment D, Lower Fox River and Bay of Green Bay: Assessment of Potential Recreational Fishing Losses and Restoration Offsets*

Location: AEM

Category: Legal

Prepared by/Author: Fort James Operating Company; Fort James Corporation; Wisconsin Department of Natural Resources; Wisconsin Department of Justice

**Preparer/Author
Address:**

Prepared For:

Date Published: November 15, 2000

**Key Words and
Phrases:**

REFERENCES

Project Name **FOX RIVER - PROJECT 1 (SMU 56/57)**

ProjectID: 05-06

Reference Type: T

ReferenceID: 17

Title: ***Daily Dredging Quantities: Fox River (SMU 56/57)***

Location: AEM

Category: Miscellaneous

Prepared by/Author:

Preparer/Author

Address:

Prepared For:

Date Published: December 4, 2000

***Key Words and
Phrases:***

FISH ADVISORIES

Project Name ***FOX RIVER - PROJECT 1 (SMU 56/57)***

ProjectID: 05-06

Advisory: Fox River, Lower

AdvisoryID: 408

Extent: From mouth at Green Bay up to DePere Dam
Refer to "Fox River, Lower" fish advisories under Project ID 05-27, Fox River
PROJECT 3 (Lower River)

Pollutant:

Species:

Population:

Population Definition:

Advisory Type:

Advisory Number:

***Status (Active or
Rescinded):***

Date Rescinded:

Contact Name: Ref: 05-06 Project 1

Contact Number:
