

## **GENERAL SITE INFORMATION, CHARACTERISTICS, AND STATUS**

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<b>Project Name</b>	<b><u>FOX RIVER - PROJECT 3 (OU 1)</u></b>	<b>ProjectID:</b> 05-27
<b>Last Updated:</b>	06/24/04	
<b>City:</b>	Neenah to Green Bay	
<b>County:</b>	Brown, Door, Kewaunee, Marinette, Oconto, Outagamie, and Winnebago	
<b>State:</b>	WI	
<b>Country:</b>	USA	
<b>Bodies of Water:</b>	Lower Fox River, between Lake Winnebago and the mouth of the river at Green Bay, and all of Green Bay from the City of Green Bay to where Green Bay enters Lake Michigan.	
<b>US EPA Region:</b>	V	
<b>Status (Active, Complete, or Monitoring Only):</b>	Active	
<b>Date On NPL:</b>	N/A	
<b>ROD/ESD Date:</b>	N/A	
<b>Operable Unit:</b>	N/A	
<b>Areas of Concern (length or acres):</b>	The Little Lake Butte des Morts reach of the river (OU 1) extends from the outlet of Lake Winnebago to Appleton, a distance of about 6 miles.	
<b>Other Characteristics of Water Body:</b>	<p>The entire Lower Fox River is approximately 39 miles long with an average flow of about 4,300 cfs, a five-year maximum flow of about 17,000 cfs, and a mean discharge into Green Bay of 5,000 cfs. A 100-year flood flow occurred in 1990. The Lower Fox River is generally less than 1,000 ft wide and ranges in depth between six and 20 feet in its main channel. The river drops in elevation about 168 feet from Lake Winnebago to Green Bay and contains 12 dams and 17 locks.</p> <p>The Little Lake Butte des Morts reach is characterized as relatively shallow, approximate water depths ranging between two and five feet except in the main channel, and 3,500 feet wide by about 3 miles long. Average stream flow velocity in the reach is about 0.5 ft/s and velocities range from 0.3 to 1.2 ft/s.</p>	
<b>Contaminants of Concern:</b>	PCBs (1242); also, dioxin, furan, DDT, heavy metals (arsenic, lead, mercury)	
<b>Source of Contamination:</b>	Potential sources include but are not limited to 14 paper mills and 6 major municipal wastewater treatment facilities discharging directly to the 39 miles of Fox River from Lake Winnebago to Green Bay (Reference A-29). The great majority of PCB-containing waste discharged to the Fox River was reportedly from paper recycling and the use of "paper broke," (Reference A-24) and occurred prior to the 1970s.	
<b>Contaminated Area Physical Characteristics:</b>	<p>Thirty-five individual PCB-contaminated sediment deposits have been identified in the 32 miles between Lake Winnebago and DePere, containing about 2 million cubic yards with an overall average PCB concentration of roughly 1 to 1.5 ppm. For the remaining seven miles, from the DePere Dam downstream to Green Bay, there is reportedly a continuous layer of contaminated sediment, representing an estimated 8 million cubic yards of sediment with an overall average PCB concentration of roughly 2 to 2.5 ppm.</p> <p>The Little Lake Butte des Morts (LLBdM) reach contains nine sediment deposits identified as Deposits A through H and POG, collectively OU 1, that contain an estimated 3,400 pounds of PCBs in about 1.77 million cy of sediment with concentrations greater than 50 ppb PCBs. The deposits cover about 775 acres and contain sediment deposits of up to six feet thick. The maximum PCB concentration was 222 ppm. The most upstream three deposits, A, B, and POG, contain the highest PCB mass to volume ratios in this reach; 2,100 pounds of PCBs in about 329,600 cy of sediment. Reportedly, about 95% of the PCBs are in the upper 40 inches of</p>	

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sediment.

In addition to PCB contamination, sampling in 1992-1993 at four sites upstream of the DePere Dam and three sites downstream of the Dam exhibited elevated levels of one or more heavy metals (arsenic, antimony, beryllium, cadmium, chromium, copper, lead, mercury, silver, and thallium).

**Type of Regulatory Action:** Negotiated agreement between the State of Wisconsin and the Fox River Group.

**Overall Status Summary:** The 1989-1990 Lower Fox River/Green Bay Mass Balance Study quantified PCB contamination in the 39 miles of the Lower Fox River and began seven years of data gathering and water and fish quality model development. In response, the Fox River Coalition (FRC) formed in 1992, because members of the coalition felt it was apparent that a potential human and wildlife health problem existed due to PCBs in the river and bay. The goal of the FRC was to develop a process for private and public participation in determining the degree of cleanup, cost-effective methods, funding, and timetables for contaminated sediment remediation in the Lower Fox River.

The Fox River Coalition is a voluntary, cooperative coalition comprising various paper mills and other industries, citizens groups, public officials, WI DNR, and quasi-public agencies. From 1992-1995, a subset of the FRC and liaisons from the Green Bay Remedial Action Plan Science and Technical Advisory Committee met to discuss and develop consensus on a full range of technical issues. These included: examining all existing data and model results; prioritizing contaminated sites upstream and downstream of DePere; managing a remedial investigation and feasibility study at selected sites upstream of DePere; identifying the need for and coordinating collection of detailed sediment data downstream of DePere; and developing methods to represent environmental benefits of various levels of remediation. This resulted in a draft technical package presented to the FRC in January 1996.

In 1997, the State of Wisconsin reached agreement with the Fox River Group (seven paper companies) providing for a moratorium on litigation and a \$10 million lump sum to fund several projects in the river including sediment removal demonstration projects, additional modeling, and habitat restoration. Two removal demonstration projects have since been implemented (Projects No. 05-06 and 05-20 in this Database). As a result of this agreement, the role of the FRC has decreased substantially.

In early 1998, EPA approved a grant of \$1.7 million to the WI DNR to proceed with development of an RI/FS for the Lower Fox River. The initial draft RI and FS documents, including a Baseline Risk Assessment, were issued for public comment in late February 1999. The RI/FS explored remedial options for sediments which exceed 0.25 ppm PCBs, a volume estimated at 8.9 million cy. Also, in 1998, EPA proposed the Fox River for Superfund listing. The public comment period, which ended in September 1998, generated a record number of responses for a proposed Superfund site. A decision on NPL listing remains "on hold."

A Fact Sheet (Reference A-116) issued by the WI DNR in March 1999 explained that the draft RI and FS identify PCBs in sediments as the primary constituent of concern, and stated that the great majority of calculated risk to human health is from exposure to PCBs, primarily through consumption of contaminated fish and waterfowl. Thirty-five sediment deposits have been identified in the 32 miles between Lake Winnebago and DePere which contain an estimated 2 million cubic yards and an overall average PCB concentration of roughly 1 to 1.5 ppm. For the remaining seven miles of river, from the DePere Dam downstream to Green Bay, there is reportedly a continuous layer of contaminated sediment, representing 8 million cubic yards with an overall average PCB concentration of roughly 2 to 2.5 ppm. According to the FS, the maximum PCB level measured in any sediment samples from above the DePere Dam is 223 ppm,

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and below the DePere Dam is 710 ppm.

The draft FS (Reference A -171) summarized the volumes of sediments which exceed the target cleanup level of 0.25 ppm PCBs as follows:

- Reaches 1-3 (first 32 miles): 86,500 cy (TSCA)  
3,088,250 cy (non-TSCA)
- Reach 4 (final 7 miles): 250,000 cy (TSCA)  
5,440,000 cy (non-TSCA)

Five remedial action objectives (RAOs) were identified in the draft FS. These RAOs are (1) Achieve, to the extent practicable, surface water quality ARARs and TBCs throughout the Lower Fox River; (2) Reduce, to the extent practicable, the potential for chemicals of concern in the Lower Fox River to cause adverse human health effects principally through exposure to PCBs from ingestion of fish by anglers; (3) Reduce, to the extent practicable, the potential for chemicals of concern in the Lower Fox River to cause adverse effects to environmental receptors in the Lower Fox River; (4) Reduce, to the extent practicable, future transport of PCBs from the Lower Fox River to Green Bay; and (5) Minimize the potential for contaminant releases during any active remediation. The FS presented and evaluated eight remedial alternatives for each of the four reaches across the 39 miles, but did not present a recommendation.

After receipt of public comments on the draft RI and FS documents (References A-170 and A-171) in April 1999, and after review of the draft RI and FS documents by the National Remedy Review Board beginning in July 1999, EPA pushed back the release of a proposed cleanup plan until mid-2000. In the meantime, EPA granted the WI DNR \$1.5 million for additional RI/FS work, including broadening the scope to include Green Bay.

In November 1999, the Trustees issued the sixth in a series of reports that have addressed claimed injuries to natural resources of the Lower Fox River and Green Bay ecosystems due to releases of PCBs. The purpose of the latest report (Reference A-538) is to present an injury determination and quantification for fishery resources in the ecosystems.

Also in November 1999, EPA released two reports prepared by two separate peer review panels. In one instance, a peer review panel reviewed the draft RI and Data Management Reports that had been issued for public comment in February 1999. In the second instance, a peer review panel reviewed the draft FS that had been released at the same time.

The peer reviewers for the draft RI report concluded that data are adequate for characterization and remedy selection but are insufficient for developing in-situ biotechnologies. The review panel further concluded that "the RI does not summarize or evaluate all available data gaps that should have been addressed as part of the RI" and recommended that "information on the ongoing sediment demonstration projects, Deposit N and SMU 56/57, . . . should be included in the development of a remedy." Other conclusions and recommendations are also presented in the peer reviewer's report (Reference M-207).

The peer reviewers for the draft FS were charged with responding to two questions, namely, (1) is natural recovery appropriately characterized and (2) are the literature review and subsequent analyses complete regarding the environmental transformation (e.g., dechlorination, changes in toxicity) of PCBs in sediments. Several of the conclusions drawn by the peer reviewers questioned the validity of the science which supports the draft FS, as follows:

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"Although the Draft FS references the WI DNR model as the basis for the natural recovery predictions, the Draft FS does not provide sufficient information on input assumptions or model outputs to permit an adequate assessment of the accuracy or reliability of the predictive modeling. In fact, as indicated above, in some cases the Draft FS seems to contradict previously published reports on the WI DNR model." And "Reliable long-term predictions of contamination with depth are critically important when it is recognized that the Draft FS indicates that only 4.8% of the contaminants in the DePere to Green Bay Reach of the Fox River are presently located within 10 cm of the surface. The presence of more than 95% of the contaminants at depths below the biologically active zone also raises concerns for active removal options that will expose and redistribute a portion of this material. This redistribution is recognized in the Draft FS in that partial remediation options assume a residual surficial sediment concentration of 2 ppm PCBs. Complete remediation options, however, assumed 0.25 ppm residual surficial sediment concentrations. These differing assumptions may significantly influence the relative effectiveness of partial and complete remedial options."

Other conclusions and recommendations are also presented in the peer reviewer's report (Reference M-208).

In October 2001, WI DNR issued new draft versions of the RI and FS documents for public comment. Other documents included with the RI/FS documents were a draft Baseline Human Health and Ecological Risk Assessment, a draft Model Documentation Report, and a Proposed Remedial Action Plan (PRAP). The study area for the revised RI/FS included the Lower Fox River as well as Green Bay. The PRAP identified the proposed remedial alternative selected for each of the Lower Fox River OUs and for the Green Bay OU, as well as the rationale for the selection.

The RAOs in the 2001 Draft RI/FS were similar to the 1999 Draft RI/FS discussed above. The proposed alternative described in the PRAP targeted the removal by environmental dredging of approximately 7.25 million cy of contaminated sediment containing an estimated PCB mass of greater than 64,000 lbs. (29,000 kg) from the Lower Fox River. The proposed alternative also incorporated the concept of monitored natural recovery for addressing the residual PCB-contaminated sediment that would remain in both dredged and undredged areas. The PRAP proposed the following remedial alternatives:

- Operable Unit 1 (Little Lake Butte des Morts): Dredging with offsite disposal for 784,200 cy of sediment, to a remedial action level (RAL) of 1.0 ppm PCB.
- Operable Unit 2 (Appleton to Little Rapids): Monitored Natural Recovery to include 40 years of measuring PCB and mercury levels in water, sediment, invertebrates, fish, and birds, and the use of institutional controls.
- Operable Unit 3 (Little Rapids to DePere): Dredging with offsite disposal for 586,800 cy of sediment, to a RAL of 1.0 ppm PCB.
- Operable Unit 4 (DePere to Green Bay): Dredging with offsite disposal for 5,879,500 cy of sediment, to a RAL of 1.0 ppm PCB.
- Operable Unit 5 (Green Bay Zones 2, 3, and 4): Monitored Natural Recovery to include 40 years of measuring PCB and mercury levels in water, sediment, invertebrates, fish, and birds, and institutional controls.

The PCB remedial action level for the Lower Fox River and Green Bay was selected to be 1.0

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ppm to balance the feasibility (implementability), effectiveness, duration, and cost of remedial actions. In addition to the proposed remedial alternatives, monitoring is required during remedial activities and a model long-term monitoring plan was developed to direct the monitoring of site conditions for 40 years following remedy implementation.

The PRAP estimated the proposed remedial alternatives would cost approximately \$307.6 million to implement at the 1.0 ppm action level. This includes a cost estimate of approximately \$258.1 million to remove contaminated sediments from OUs 1, 3, and 4 and \$49.5 million for Monitored Natural Recovery in OUs 2 and 5. The PRAP did not include a contingency amount (typically 20%) as part of these costs.

The public comment period for the RI/FS and PRAP concluded in January 2002. In December 2002, WDNR and USEPA Region 5 issued a ROD for OU 1 and OU 2 in which the selected remedy for both OUs closely mirrored the proposed remedy described above. The stated goal for the OU 1 selected remedy is to reduce PCB levels in the top 10 centimeters of sediment to a surface-weighted average concentration of below 0.25 ppm PCBs by implementing dredging to remove all sediment above the RAL of 1.0 ppm PCBs. The ROD also allows for capping with sand in areas where the RAL cannot be achieved and the use of an engineered cap as a contingent remedy as long as specific conditions, as specified in the ROD, are met. The ROD estimates the present-worth cost of the selected remedy for both OUs is \$76.1 million. Of this amount, OU 1 is estimated to cost \$61.7 million, \$50 million of which is to be paid by WTM 1 and P.H. Glatfelter Company. OU 2 will cost an estimated \$14.4 million for 40 years of long-term monitoring. In June 2003, a separate ROD was released with selected remedies for OUs 3 through 5.

In October 2003, WTM 1 (formerly Wisconsin Tissue) and P.H. Glatfelter Company entered into a Consent Decree under which they agreed to design and implement the remedy for OU 1. The Consent Decree was approved in Federal court in April 2004. The remedy includes dredging and landfilling an estimated 784,200 cy from LLBdM. WTM 1 has agreed to take the lead for designing the remedy. WTM 1 and P.H. Glatfelter formed GW Partners LLC, under which the dredging of OU 1 is to be implemented.

Dredging within LLBdM is expected to begin in September 2004 and is intended to test various dredging equipment and the use of geotubes for the dewatering of the removed sediment. A single hydraulic dredge will remove between 6,000 and 10,000 cy of sediment from two separate areas of OU 1. The sediment slurry will be transported up to two miles through pipelines to a staging area for discharge into geotubes. The dredge will initially be working 10 hours per day, 5 days per week, and then in October, likely expand this to 24 hours per day, 6 days per week. Water that drains from the geotubes will be treated and released back to the river. Also to be tested as part of the in-water activities are various methods of sand placement, which will be done in a separate area of the river outside of OU 1. Reportedly, dredged material will be made available to study other dewatering technologies as well. Beginning in early 2005, the dewatered sediment will be transported by truck for offsite disposal; a contract between GW Partners and Onyx Hickory Meadows Landfill, LLC, located in the Town of Chilton, Calumet County, WI, is in place for the disposal of all sediment containing less than 50 ppm PCBs.

Reportedly, lessons learned from the 2004 dredging will be used to finalize the dredging design to be implemented for the remainder of OU 1. Dredging in 2005 and beyond is currently anticipated to require the use of two dredges operating 24 hours per day, 6 days per week and take six years to complete.

**Remedial Action Planned:**



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***Risk Assessment:***                      ☒

***Remedial Action Implemented:***   ☐

***Status of Dredging***                      ☐

***PRPs:***                                      ☒

***Contacts:***                                 ☒

***References:***                              ☒

***Modeling:***                                 ☒

***Fishing Advisory:***                      ☒

***Key Conditions:***                      capping, commercial landfill, dredging, extended (> 1 mile) river, Great Lakes AOC, hydrodynamic modeling, natural recovery, particle separation/soil washing, pilot/demonstration test, property access issues

## REMEDIAL ACTION PLANNED

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<b>Target Sediment Cleanup Standards (TSCS):</b>	1.0 ppm PCBs	
<b>How TSCS Established:</b>	Risk-based levels.	
<b>Target Bank and Floodplain Cleanup Levels (if applicable):</b>		
<b>Other Target:</b>	A surface-weighted average concentration of 0.25 ppm PCBs in the upper 10 cm of sediment in each OU.	
<b>Environmental Sample Data References:</b>	<ul style="list-style-type: none"><li>• <b>Sediment:</b></li><li>• <b>Water:</b></li><li>• <b>Fish:</b></li></ul>	
<b>Estimated Target Volume:</b>	OU 1: 784,000 cy	
<b>Planned Disposal Method:</b>	Local landfills (not yet constructed)	
<b>Estimated Calendar Time to Implement Remedy:</b>		
<b>Estimated Time to Implement Remedy:</b>	OU 1: 6 years plus long-term monitoring	
<b>Estimated Cost to Implement Remedy:</b>	OU 1: Sediment removal - \$61.7 million; O&M - \$4.5 million	
<b>Stated Remedial Action Objectives (and Source):</b>	<p>Source: Reference A-909</p> <p>"Remedial Action Objectives (RAOs) are site-specific goals for the protection of human and ecological health. Five RAOs were developed; all five apply to the River, while RAOs 1, 2, 3, and 5 apply to Green Bay. The RAOs are:"</p> <p>"RAO 1. Achieve, to the extent practicable, surface water quality criteria throughout the Lower Fox River and Green Bay. This RAO is intended to reduce PCB concentration in surface water as quickly as possible. The current water quality criteria for PCBs are 0.003 ng/L for the protection of human health and 0.012 ng/L for the protection of wild and domestic animals. Water quality criteria incorporate all routes of exposure assuming the maximum amount is ingested daily over a person's lifetime."</p> <p>"RAO 2. Protect humans who consume fish from exposure to COCs that exceed protective levels. This RAO is intended to protect human health by targeting removal of fish consumption advisories as quickly as possible. DNR and EPA defined the expectation for the protection of human health as the likelihood for recreational anglers and high-intake fish consumers to consume fish within 10 years and 30 years, respectively, at an acceptable level of risk or without restrictions following completion of a remedy."</p> <p>"RAO 3. Protect ecological receptors from exposure to COCs above protective levels. RAO 3 is intended to protect ecological receptors like invertebrates, birds, fish, and mammals. DNR and</p>	



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EPA defined the ecological expectation as the likelihood of achieving safe ecological thresholds for fish-eating birds and mammals within 30 years following remedy completion. Although the FS did not identify a specific time frame for evaluating ecological protection, the 30-year figure was used as a measurement tool.”

“RAO 4. Reduce transport of PCBs from the Lower Fox River into Green Bay and Lake Michigan. The objective of this RAO is to reduce the transport of PCBs from the River into Green Bay and Lake Michigan as quickly as possible. DNR and EPA defined the transport expectation as a reduction in loading to Green Bay and Lake Michigan to levels comparable to the loading from other Lake Michigan tributaries. This RAO applies only to River reaches.”

“RAO 5. Minimize the downstream movement of PCBs during implementation of the remedy. A remedy is to be completed within 10 years.”

**Measures of Success to be Used:**

Source: Reference A-909

“RAO 1 may not be achieved in the foreseeable future due to the very stringent goals for PCBs acceptable in surface waters, but nevertheless significant risk reduction will occur. Recovery times estimated for RAOs 2 (i.e., protection of human health) and 3 (i.e., protection of ecological receptors) indicate that they will be met well within the defined goals. RAO 4 relates to loading of Green Bay and Lake Michigan and indirectly relates to OUs 1 and 2. However, reductions of loadings from removal of contaminants in OU 1 will significantly reduce contaminant migration downstream and will therefore contribute to achieving RAO 4. RAO 5 is achievable with conventional environmental removal technologies for OU 1 and does not apply to OU 2.”

**Planned Monitoring and Restoration:**

Verification sampling will be performed to (1) determine if the remedial action level (RAL) of 1.0 ppm PCBs has been achieved, and if not, (2) determine if the surface-weighted average concentration (SWAC) of 0.25 ppm PCBs has been achieved. If neither is met, provisions are to be included in the work plan to allow either additional dredging passes to attempt to obtain the RAL and/or use a sand cover to meet the SWAC.

The remedies for both OU 1 and OU 2 include long-term monitoring. Long-term monitoring is defined as including measuring PCB and mercury levels in water, sediment, invertebrates, fish and birds. Also included is the use of institutional controls until RA objectives are met.

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

Source: Reference A-909

“WDNR and EPA believe the removal of sediments with PCB concentrations greater than the 1.0 ppm remedial action level (RAL) in OU 1 is important to achieving the timely reduction of risks to an acceptable level. WDNR and EPA envision that all sediment contaminated at concentrations above the RAL in OU 1 will be removed. Therefore, this ROD provides that under certain circumstances a sand cover may be used to supplement the primary dredging remedy in order to reach the risk reduction targets. Pre-remediation sampling and characterization efforts will define a spatial “footprint” (both horizontally and vertically) of the sediment in OU 1 that has a concentration of PCBs greater than 1 ppm. It is this footprint that is targeted for removal by dredging. If dredging is able to achieve this result (i.e., remove all sediments with PCB concentrations greater than 1 ppm), the active remediation portion of the OU 1 remedy will be complete.”

“However, if after dredging is completed for OU 1, sampling shows that the 1 ppm RAL has not been achieved, a SWAC of 0.25 ppm may be used to assess the effectiveness of PCB removal. If that SWAC of 0.25 ppm has not been achieved for OU 1, then the remedy provides certain options to further reduce risk. The first option is that additional dredging may be undertaken to



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ensure that all sediments with PCB concentrations greater than the 1 ppm RAL are removed throughout the particular deposit. A second option would be to place a sand cover on dredged areas to reduce surficial concentrations such that a SWAC of 0.25 ppm for OU 1 is achieved.”

Additionally,

“Dredging of sediments is a readily implementable and environmentally effective engineering activity. Two concerns are relevant to whether sediments can be dredged effectively: 1) resuspension and releases during dredging and, 2) resulting residual contaminant concentrations that may remain in sediments after dredging is completed. Regarding resuspension, as discussed above environmental dredges have been shown to generally not release significant quantities of contaminants during removal operations. The type of dredging equipment (mechanical and/or hydraulic) will be selected during the remedial design, using the most appropriate equipment for the specific conditions in the River. The use of silt screens or other barriers, as appropriate, could further assist in limiting downstream migration of PCBs and may be used as well. Regarding post-dredging residual contaminant concentrations comparable projects indicate that achieving the 1 ppm Action Level in remaining sediments is readily achievable. The Fox River SMU 56/57 dredging project achieved a 96 percent reduction in the average concentration of contaminated sediments targeted for removal in that project. This is consistent with results for other dredging projects having similar site conditions (see Appendix B of the FS, and Hudson River White Paper ID 312663, “Post-Dredging PCB Residuals”).”

## ***RISK ASSESSMENT***

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***RA Type:***      Baseline Human Health & Ecological; Public Health

***RA Status:***      Complete

***RA Objectives:***      “The overall goals of the BLRA for the Lower Fox River and Green Bay were to:

- “Examine how the contaminants of potential concern (COPCs) carried forward from the Screening Level Risk Assessment (SLRA) (RETEC, 1998b) move from the sediment and water into human and ecological receptors within the Lower Fox River and Green Bay.”
- “Quantify the current (or baseline) human health and ecological risks associated with the COPCs.”
- “Distinguish those COPCs which pose the greatest potential for risk to human health and the environment and should be carried forward as contaminants of concern (COCs) in the FS.”
- “Determine which exposure pathways lead to the greatest risks.”
- “Support the selection of a remedy which eliminates, reduces, and/or controls identified risks by calculating sediment quality thresholds (SQTs).”

***Company  
Performing RA:***      ThermoRetec Consulting Corporation

***RA Reference Report:***      Draft Baseline Human Health and Ecological Risk Assessment (BLRA): Lower Fox River and Green Bay, Wisconsin: Remedial Investigation and Feasibility Study, October 2001

***RA Summary and  
Conclusions:***      “General conclusions of both the human health and ecological assessments were:

- “Fish consumption is the exposure pathway that represents the greatest level of risk for receptors (other than direct risk to benthic invertebrates).”
- “The primary COC is PCBs, and other COCs carried forward for remedial evaluation and long-term monitoring are mercury and DDE.”
- “In general, areas evaluated with the greatest risk are Green Bay Zones 1 and 2.”

***POTENTIALLY RESPONSIBLE PARTIES***

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***Project Name*** **FOX RIVER - PROJECT 3 (OU 1)**

***ProjectID:*** 05-27

***PRP Name:*** PRP INFORMATION NOT RELEASED

***PRPID:***

***Street Address:***

***City:***

***State:***

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## **KEY CONTACTS**

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***Project Name*** **FOX RIVER - PROJECT 3 (OU 1)**

***ProjectID:*** 05-27

***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:***

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## REFERENCES

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**Project Name** **FOX RIVER - PROJECT 3 (OU 1)**

**ProjectID:** 05-27

**Reference Type:** A

**ReferenceID:** 29

**Title:** ***Lower Green Bay Remedial Action Plan - 1993 Update for the Lower Green Bay and Fox River Area of Concern***

**Location:** AEM

**Category:** Site Update

**Prepared by/Author:** Wisconsin Department of Natural Resources

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

**Prepared For:**

**Date Published:** September 1993

**Key Words and Phrases:**

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**Reference Type:** A

**ReferenceID:** 116

**Title:** ***Draft Studies Completed on Cleanup of PCBs in Lower Fox River Sediments***

**Location:** AEM

**Category:** RI/FS

**Prepared by/Author:** Wisconsin Department of Natural Resources

**Preparer/Author Address:** 101 South Webster  
Madison, WI 53707

**Prepared For:** General Public

**Date Published:** March 1999

**Key Words and Phrases:**

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## REFERENCES

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**Project Name** FOX RIVER - PROJECT 3 (OU 1)

**ProjectID:** 05-27

**Reference Type:** A

**ReferenceID:** 170

**Title:** *Draft Remedial Investigation: Lower Fox River, Wisconsin*

**Location:** AEM

**Category:** RI/FS

**Prepared by/Author:** (1) ThermoRetec Consulting Corporation and (2) Natural Resource Technology, Inc.

**Preparer/Author Address:** (1) TCC  
413 Wacouta Street, Suite 400  
St. Paul, MN 55101-1957  
(2) NRT  
23713 W. Paul Road, Unit D  
Pewaukee, WI 53072

**Prepared For:** Wisconsin DNR

**Date Published:** February 1999

**Key Words and Phrases:**

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**Reference Type:** A

**ReferenceID:** 171

**Title:** *Draft Feasibility Study: Lower Fox River, Wisconsin*

**Location:** AEM

**Category:** RI/FS

**Prepared by/Author:** ThermoRetec Consulting Corporation

**Preparer/Author Address:** 413 Wacouta Street, Suite 400  
St. Paul, MN 55101-1957  
and  
1011 SW Klickitat Way, Suite 207  
Seattle, WA 98134

**Prepared For:** Wisconsin DNR

**Date Published:** February 1999

**Key Words and Phrases:**

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## REFERENCES

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**Project Name** **FOX RIVER - PROJECT 3 (OU 1)**

**ProjectID:** 05-27

**Reference Type:** A

**ReferenceID:** 433

**Title:** **Baseline Human Health and Ecological Risk Assessment for Lower Fox River, Wisconsin**

**Location:** AEM

**Category:** Risk Assessment

**Prepared by/Author:** ThermoRetec Consulting Corporation

**Preparer/Author Address:** 1011 S.W. Klickitat Way, Suite 207  
Seattle, WA 98134  
and  
3040 William Pitt Way  
Pittsburgh, PA 15238

**Prepared For:** Wisconsin Department of Natural Resources

**Date Published:** February 24, 1999

**Key Words and Phrases:**

---

**Reference Type:** A

**ReferenceID:** 537

**Title:** **Fact Sheet: Summary of Findings by Peer Review Panels: Review of Fox River Remedial Investigation/Feasibility Report**

**Location:** AEM

**Category:** RI/FS

**Prepared by/Author:** US EPA Region V

**Preparer/Author Address:**

**Prepared For:** General Public

**Date Published:** November 4, 1999

**Key Words and Phrases:**

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## REFERENCES

---

**Project Name** **FOX RIVER - PROJECT 3 (OU 1)**

**ProjectID:** 05-27

**Reference Type:** A

**ReferenceID:** 538

**Title:** ***Injuries to Fishery Resources, Lower Fox River/Green Bay Natural Resources Damage Assessment: Final Report***

**Location:** AEM

**Category:** Natural Resource Damages

**Prepared by/Author:** Stratus Consulting, Inc.

**Preparer/Author Address:** Boulder, CO

**Prepared For:** US Fish and Wildlife Service, US Department of the Interior, and US Department of Justice

**Date Published:** November 8, 1999

**Key Words and Phrases:**

---

**Reference Type:** A

**ReferenceID:** 561

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

**Location:** AEM

**Category:** Miscellaneous

**Prepared by/Author:** US EPA Region V

**Preparer/Author Address:**

**Prepared For:** General Public

**Date Published:** April 1998

**Key Words and Phrases:**

---

**Reference Type:** A

**ReferenceID:** 562

**Title:** ***Fact Sheet: The Lower Fox River and the Remedy Review Board - Questions and Answers***

**Location:** AEM

**Category:** Miscellaneous

**Prepared by/Author:** US EPA Region V

**Preparer/Author Address:**

**Prepared For:** General Public

**Date Published:** July 1999

**Key Words and Phrases:**

---

## REFERENCES

---

**Project Name** FOX RIVER - PROJECT 3 (OU 1)

**ProjectID:** 05-27

**Reference Type:** A

**ReferenceID:** 678

**Title:** *Feasibility Study Appendix B (Final): Sediment Technologies  
Memorandum for the Lower Fox River and Green Bay, Wisconsin*

**Location:** AEM

**Category:** Contaminated Sediments: Remedial Options/Guidance

**Prepared by/Author:** ThermoRetec Consulting Corporation

**Preparer/Author  
Address:**

**Prepared For:** Wisconsin DNR  
[www.dnr.state.wi.us/org/water/wm/lowerfox/reports.html](http://www.dnr.state.wi.us/org/water/wm/lowerfox/reports.html)

**Date Published:** December 2002

**Key Words and  
Phrases:**

---

**Reference Type:** A

**ReferenceID:** 856

**Title:** *Remedial Investigation Report (Final): Lower Fox River and Green  
Bay, Wisconsin (TOC and Executive Summary)*

**Location:** AEM

**Category:** RI/FS

**Prepared by/Author:** (1) ThermoRetec Consulting Corporation  
(2) Natural Resource Technology

**Preparer/Author  
Address:** (1) 413 Wacouta Street, Suite 400  
St. Paul, Minnesota 55101-1957  
(2) 23713 W. Paul Road, Unit D  
Pewaukee, Wisconsin 53072

**Prepared For:** Wisconsin DNR  
101 S. Webster Street  
Madison, WI 53707-7921  
[www.dnr.state.wi.us/org/water/wm/lowerfox/reports.html](http://www.dnr.state.wi.us/org/water/wm/lowerfox/reports.html)

**Date Published:** December 2002

**Key Words and  
Phrases:**

---

## REFERENCES

---

**Project Name** FOX RIVER - PROJECT 3 (OU 1)

**ProjectID:** 05-27

**Reference Type:** A

**ReferenceID:** 857

**Title:** *Feasibility Study (Final): Lower Fox River and Green Bay, Wisconsin (TOC and Executive Summary)*

**Location:** AEM

**Category:** RI/FS

**Prepared by/Author:** ThermoRetec Consulting Corporation

**Preparer/Author Address:** 1011 S.W. Klickitat Way, Suite #207  
Seattle, WA 98134

**Prepared For:** Wisconsin DNR  
101 S. Webster Street  
Madison, WI 55703  
[www.dnr.state.wi.us/org/water/wm/lowerfox/reports.html](http://www.dnr.state.wi.us/org/water/wm/lowerfox/reports.html)

**Date Published:** December 2002

**Key Words and Phrases:**

---

**Reference Type:** A

**ReferenceID:** 858

**Title:** *Baseline Human Health and Ecological Risk Assessment (Draft): Lower Fox River and Green Bay, Wisconsin (TOC and Executive Summary)*

**Location:** AEM

**Category:** Risk Assessment

**Prepared by/Author:** ThermoRetec Consulting Corporation

**Preparer/Author Address:** 1011 S.W. Klickitat Way, Suite #207  
Seattle, WA 98134  
and  
3040 William Pitt Way  
Pittsburgh, PA 15238

**Prepared For:** Wisconsin DNR  
101 S. Webster Street  
Madison, WI 55703  
[www.dnr.state.wi.us/org/water/wm/lowerfox/reports.html](http://www.dnr.state.wi.us/org/water/wm/lowerfox/reports.html)

**Date Published:** October 2001

**Key Words and Phrases:**

---

## REFERENCES

---

**Project Name** FOX RIVER - PROJECT 3 (OU 1)

**ProjectID:** 05-27

**Reference Type:** A

**ReferenceID:** 859

**Title:** ***Model Documentation Report (Draft): Lower Fox River and Green Bay, Wisconsin***

**Location:** AEM

**Category:** Modeling

**Prepared by/Author:** (1) Wisconsin DNR  
(2) ThermoRetec Consulting Corporation

**Preparer/Author Address:** (1) 101 S. Webster Street  
Madison, WI 55703  
(2) 1011 SW Klickitat Way, Suite #207  
Seattle, WA 98134

**Prepared For:** General Public

**Date Published:** October 2001

**Key Words and Phrases:**

---

**Reference Type:** A

**ReferenceID:** 860

**Title:** ***Proposed Remedial Action Plan: Lower Fox River and Green Bay***

**Location:** AEM

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

**Prepared by/Author:** (1) Wisconsin Department of Natural Resources, (2) US EPA Region V

**Preparer/Author Address:** (1) 101 South Webster Street  
Madison, WI 53707  
and  
1125 North Military Avenue  
Green Bay, WI 54307  
(2) 77 West Jackson Blvd.  
Chicago, IL 60604

**Prepared For:** General Public

**Date Published:** October 2001

**Key Words and Phrases:**

---

## REFERENCES

---

**Project Name** FOX RIVER - PROJECT 3 (OU 1)

**ProjectID:** 05-27

**Reference Type:** A

**ReferenceID:** 861

**Title:** *Comments of the Fox River Group on the Wisconsin Department of Natural Resources Draft Remedial Investigation, Draft Feasibility Study, Baseline Human Health and Ecological Risk Assessment, and Proposed Remedial Action Plan (TOC and Executive Summary)*

**Location:** AEM

**Category:** Contaminated Sediments: Overview of Issues

**Prepared by/Author:** Fox River Group

**Preparer/Author  
Address:**

**Prepared For:** General Public

**Date Published:** January 22, 2002

**Key Words and  
Phrases:**

---

**Reference Type:** A

**ReferenceID:** 862

**Title:** *Quality Assurance Project Plan for the Minergy Corporation Glass Furnace Technology Demonstration in Winneconne, Wisconsin*

**Location:** AEM

**Category:** Analytical Protocol/Issues/QAPP

**Prepared by/Author:** Minergy Corporation

**Preparer/Author  
Address:**

**Prepared For:** US EPA  
Office of Research and Development  
National Risk Management Research Laboratory  
Cincinnati, Ohio

**Date Published:** April 2001

**Key Words and  
Phrases:**

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## **REFERENCES**

---

**Project Name** **FOX RIVER - PROJECT 3 (OU 1)**

**ProjectID:** 05-27

**Reference Type:** A

**ReferenceID:** 863

**Title:** ***Consent Decree: U.S. of America and the State of Wisconsin vs. Fort James Operating Company***

**Location:** AEM

**Category:** Natural Resource Damages

**Prepared by/Author:**

**Preparer/Author  
Address:**

**Prepared For:** General Public

**Date Published:** June 12, 2002

**Key Words and  
Phrases:**

---

**Reference Type:** A

**ReferenceID:** 887

**Title:** ***Lower Fox River Food Web Model***

**Location:** AEM

**Category:** Modeling

**Prepared by/Author:** Limno-Tech, Inc.

**Preparer/Author  
Address:** 501 Avis Drive  
Ann Arbor, MI 48108

**Prepared For:** Fox River Group

**Date Published:** January 2002

**Key Words and  
Phrases:**

---

## REFERENCES

---

**Project Name** FOX RIVER - PROJECT 3 (OU 1)

**ProjectID:** 05-27

**Reference Type:** A

**ReferenceID:** 909

**Title:** *Record of Decision - Operable Unit 1 and Operable Unit 2*

**Location:** AEM

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

**Prepared by/Author:** (1) Wisconsin Department of Natural Resources, (2) US EPA Region V

**Preparer/Author** (1) Wisconsin Department of Natural Resources

**Address:** 101 South Webster Street  
Madison, WI 53707  
and  
Northeast Regional Headquarters  
1125 North Military Avenue  
Green Bay, WI 54307  
(2) 77 West Jackson Blvd.  
Chicago, IL 60604

**Prepared For:** General Public

**Date Published:** December 2002

**Key Words and  
Phrases:**

---

**Reference Type:** A

**ReferenceID:** 1028

**Title:** *Consent Decree for Remedial Design and Remedial Action at  
Operable Unit 1 of the Lower Fox River and Green Bay Site*

**Location:** AEM

**Category:** Legal

**Prepared by/Author:** United States of America and the State of Wisconsin (plaintiffs)

**Preparer/Author**

**Address:**

**Prepared For:** P.H. Glatfelter Company and WTM I Company (f/k/a Wisconsin Tissue Mills,  
Inc.) (Defendants)

**Date Published:** October 1, 2003

**Key Words and  
Phrases:**

---

## REFERENCES

---

**Project Name** FOX RIVER - PROJECT 3 (OU 1)

**ProjectID:** 05-27

**Reference Type:** A

**ReferenceID:** 1047

**Title:** *Quality Assurance Project Plan -- Lower Fox River Pre-Design Characterization Study*

**Location:** AEM

**Category:** Analytical Protocol/Issues/QAPP

**Prepared by/Author:** (1) The RETEC Group, Inc.  
(2) MAKuehl Company  
(3) En Chem, Inc.  
(4) Natural Resource Technology, Inc.

**Preparer/Author  
Address:**

**Prepared For:** WDNR and US EPA Region V Superfund

**Date Published:** November 2003

**Key Words and  
Phrases:**

---

**Reference Type:** A

**ReferenceID:** 1055

**Title:** *Response to Petition to Amend Record of Decision for Operable Unit 1 and Operable Unit 2 and Supplement to Administrative Records for the December 2002 and June 2003 Records of Decision*

**Location:** AEM

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

**Prepared by/Author:** US EPA Region V and WDNR

**Preparer/Author  
Address:**

**Prepared For:** General Public

**Date Published:** 2004 Spring

**Key Words and  
Phrases:**

---

## REFERENCES

---

**Project Name** **FOX RIVER - PROJECT 3 (OU 1)**

**ProjectID:** 05-27

**Reference Type:** B

**ReferenceID:** 1046

**Title:** ***Landfill Agreement Reached Between Onyx Hickory Meadows and GW Partners in Accordance with Record of Decision for OU1***

**Location:** AEM

**Category:** Site Update

**Prepared by/Author:** Little Lake Cleanup Team

**Preparer/Author  
Address:**

**Prepared For:** General Public

**Date Published:** May 18, 2004

**Key Words and  
Phrases:**

---

**Reference Type:** B

**ReferenceID:** 1047

**Title:** ***Fact Sheet: Little Lake Butte des Morts Cleanup to Begin in June***

**Location:** AEM

**Category:** Site Update

**Prepared by/Author:** US EPA Region V

**Preparer/Author  
Address:**

**Prepared For:** General Public

**Date Published:** May 2004

**Key Words and  
Phrases:**

---

**Reference Type:** B

**ReferenceID:** 1048

**Title:** ***See Fox River - Project 4 (OUs 2 - 5) for Additional Reference Type "B" Documents***

**Location:** AEM

**Category:** Miscellaneous

**Prepared by/Author:** Multiple

**Preparer/Author  
Address:** Multiple

**Prepared For:** Multiple

**Date Published:** Multiple

**Key Words and  
Phrases:**

---

## REFERENCES

---

**Project Name** **FOX RIVER - PROJECT 3 (OU 1)**

**ProjectID:** 05-27

**Reference Type:** B

**ReferenceID:** 1081

**Title:** ***Little Lake Butte des Morts Cleanup Begins***

**Location:** AEM

**Category:** Site Update

**Prepared by/Author:** Susan Pastor

**Preparer/Author**

**Address:**

**Prepared For:** Fox River Current

**Date Published:** May / June 2004

**Key Words and  
Phrases:**

---

**Reference Type:** B

**ReferenceID:** 1137

**Title:** ***On-Shore Construction Underway Along Little Lake Butte des Morts***

**Location:** AEM

**Category:** Site Update

**Prepared by/Author:** Greg Swanson, Wisconsin DNR

**Preparer/Author**

**Address:**

**Prepared For:** Fox River Current

**Date Published:** July/August 2004

**Key Words and  
Phrases:**

---

**Reference Type:** B

**ReferenceID:** 1138

**Title:** ***Chilton Landfill Proves to be Safe Choice for PCB Disposal***

**Location:** AEM

**Category:** Site Update

**Prepared by/Author:** Susan Pastor, US EPA

**Preparer/Author**

**Address:**

**Prepared For:** Fox River Current

**Date Published:** July/August 2004

**Key Words and  
Phrases:**

---

## REFERENCES

---

**Project Name** FOX RIVER - PROJECT 3 (OU 1)

**ProjectID:** 05-27

**Reference Type:** B

**ReferenceID:** 1139

**Title:** *Technical Update . . . Construction Starts for Little Lake Butte des Morts Cleanup*

**Location:** AEM

**Category:** Site Update

**Prepared by/Author:** Greg Swanson, Wisconsin DNR

**Preparer/Author  
Address:**

**Prepared For:** Fox River Current

**Date Published:** July/August 2004

**Key Words and  
Phrases:**

---

**Reference Type:** C

**ReferenceID:** 1104

**Title:** *See Fox River - Project 4 (OUs 2 - 5) for Additional Reference Type "C" Documents*

**Location:** AEM

**Category:** Miscellaneous

**Prepared by/Author:** Multiple

**Preparer/Author  
Address:** Multiple

**Prepared For:** Multiple

**Date Published:** Multiple

**Key Words and  
Phrases:**

---

**Reference Type:** C

**ReferenceID:** 1105

**Title:** *Onyx Begins Fox River Survey With Mini-Sweep Boat*

**Location:** AEM

**Category:** Contaminated Sediments: Investigation/Delineation

**Prepared by/Author:**

**Preparer/Author  
Address:**

**Prepared For:** International Dredging Review

**Date Published:** March / April 2004

**Key Words and  
Phrases:**

---



## REFERENCES

---

**Project Name** **FOX RIVER - PROJECT 3 (OU 1)**

**ProjectID:** 05-27

**Reference Type:** C

**ReferenceID:** 1127

**Title:** **EPA, Wisconsin DNR Monitoring Little Lake Butte des Morts Cleanup**

**Location:** AEM

**Category:** Site Update

**Prepared by/Author:**

**Preparer/Author Address:**

**Prepared For:** Hazardous Waste/Superfund Week

**Date Published:** July 19, 2004

**Key Words and Phrases:**

---

**Reference Type:** D

**ReferenceID:** 512

**Title:** **See Fox River - Project 4 (OUs 2 - 5) for Additional Reference Type "D" Documents**

**Location:** AEM

**Category:** Miscellaneous

**Prepared by/Author:** Multiple

**Preparer/Author Address:** Multiple

**Prepared For:** Multiple

**Date Published:** Multiple

**Key Words and Phrases:**

---

**Reference Type:** E

**ReferenceID:** 252

**Title:** **See Fox River - Project 4 (OUs 2 - 5) for Additional Reference Type "E" Documents**

**Location:** AEM

**Category:** Miscellaneous

**Prepared by/Author:** Multiple

**Preparer/Author Address:** Multiple

**Prepared For:** Multiple

**Date Published:** Multiple

**Key Words and Phrases:**

---

## REFERENCES

---

**Project Name** FOX RIVER - PROJECT 3 (OU 1)

**ProjectID:** 05-27

**Reference Type:** E

**ReferenceID:** 263

**Title:** ***High-Resolution Geophysical and Hydrographic Survey Applications on the Lower Fox River, Wisconsin***

**Location:** AEM

**Category:** Contaminated Sediments: Investigation/Delineation

**Prepared by/Author:** (1) M.K. Meyer, (2) R.L. Paulson, (3) E.K. Lynch

**Preparer/Author Address:** (1) and (2) The RETEC Group, Inc.  
22 North Carroll Street, Suite 370  
Madison, WI 53703  
(3) Wisconsin DNR  
Bureau of Remediation and Redevelopment  
P.O. Box 7921  
Madison, WI 53707

**Prepared For:** WEDA XXIV, Orlando, FL

**Date Published:** July 6-9, 2004

**Key Words and Phrases:**

---

**Reference Type:** F

**ReferenceID:** 15

**Title:** ***See Fox River - Project 4 (OUs 2 - 5) for Additional Reference Type "F" Documents***

**Location:** AEM

**Category:** Miscellaneous

**Prepared by/Author:** Multiple

**Preparer/Author Address:** Multiple

**Prepared For:** Multiple

**Date Published:** Multiple

**Key Words and Phrases:**

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## REFERENCES

---

**Project Name** **FOX RIVER - PROJECT 3 (OU 1)**

**ProjectID:** 05-27

**Reference Type:** G

**ReferenceID:** 62

**Title:** *See Fox River - Project 4 (OUs 2 - 5) for Additional Reference Type "G" Documents*

**Location:** AEM

**Category:** Miscellaneous

**Prepared by/Author:** Multiple

**Preparer/Author Address:** Multiple

**Prepared For:** Multiple

**Date Published:** Multiple

**Key Words and Phrases:**

---

**Reference Type:** I

**ReferenceID:** 109

**Title:** *See Fox River - Project 4 (OUs 2 - 5) for Additional Reference Type "I" Documents*

**Location:** AEM

**Category:** Miscellaneous

**Prepared by/Author:** Multiple

**Preparer/Author Address:** Multiple

**Prepared For:** Multiple

**Date Published:** Multiple

**Key Words and Phrases:**

---

**Reference Type:** J

**ReferenceID:** 38

**Title:** *Little Lake Cleanup Team (Website)*

**Location:** AEM

**Category:** Site Update

**Prepared by/Author:** Little Lake Cleanup Team

**Preparer/Author Address:** www.littlelakecleanup.com

**Prepared For:** General Public

**Date Published:** Undated

**Key Words and Phrases:**

---

## REFERENCES

---

**Project Name** FOX RIVER - PROJECT 3 (OU 1)

**ProjectID:** 05-27

**Reference Type:** J

**ReferenceID:** 39

**Title:** See Fox River - Project 4 (OUs 2 - 5) for Additional Reference Type "J" Documents

**Location:** AEM

**Category:** Miscellaneous

**Prepared by/Author:** Multiple

**Preparer/Author Address:** Multiple

**Prepared For:** Multiple

**Date Published:** Multiple

**Key Words and Phrases:**

---

**Reference Type:** L

**ReferenceID:** 225

**Title:** See Fox River - Project 4 (OUs 2 - 5) for Additional Reference Type "L" Documents

**Location:** AEM

**Category:** Miscellaneous

**Prepared by/Author:** Multiple

**Preparer/Author Address:** Multiple

**Prepared For:** Multiple

**Date Published:** Multiple

**Key Words and Phrases:**

---

**Reference Type:** M

**ReferenceID:** 440

**Title:** See Fox River - Project 4 (OUs 2 - 5) for Additional Reference Type "M" Documents

**Location:** AEM

**Category:** Miscellaneous

**Prepared by/Author:** Multiple

**Preparer/Author Address:** Multiple

**Prepared For:** Multiple

**Date Published:** Multiple

**Key Words and Phrases:**

---

## REFERENCES

---

**Project Name** FOX RIVER - PROJECT 3 (OU 1)

**ProjectID:** 05-27

**Reference Type:** N  
**Title:** *e-mail re: Fox River Contractors*  
**Location:** AEM  
**Category:** Site Update  
**Prepared by/Author:** Wisconsin DNR PM  
**Preparer/Author Address:**  
**Prepared For:** AEM, Inc.  
**Date Published:** June 30, 2004  
**Key Words and Phrases:**

---

**ReferenceID:** 56

**Reference Type:** O  
**Title:** *See Fox River - Project 4 (OUs 2 - 5) for Additional Reference Type "O" Documents*  
**Location:** AEM  
**Category:** Miscellaneous  
**Prepared by/Author:** Multiple  
**Preparer/Author Address:** Multiple  
**Prepared For:** Multiple  
**Date Published:** Multiple  
**Key Words and Phrases:**

---

**ReferenceID:** 16

**Reference Type:** P  
**Title:** *See Fox River - Project 4 (OUs 2 - 5) for Additional Reference Type "P" Documents*  
**Location:** AEM  
**Category:** Miscellaneous  
**Prepared by/Author:** Multiple  
**Preparer/Author Address:** Multiple  
**Prepared For:** Multiple  
**Date Published:** Multiple  
**Key Words and Phrases:**

---

**ReferenceID:** 36

## MODELING

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**Project Name:** FOX RIVER - PROJECT 3 (OU 1)

**ProjectID:** 05-27

**Last Updated:** 04/15/99

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**Modeling Performed:** (1) GBTOX  
(2) In-place Pollutant Export Model (IPX)  
(3) Upstream Fox River Modeling (UFRM)

**Modeling Objectives:** (1) Simulate the transport and fate of PCBs in Green Bay.  
  
(2) Predict temporary increases in both the PCB concentration in surficial sediments and the PCB concentration in suspended sediments in response to future high-flow events.  
  
(3) Identify the physical processes important for understanding present-day water column PCB concentrations and transport fluxes; assist in understanding future river conditions.

**Modeling Description:** (1) The model contains a water balance, a sorbent mass balance supported by a separate eutrophication model, and a toxic chemical mass balance that integrates all three. This is used to relate time-variable concentrations of PCBs in the water and sediments of Green Bay to external loadings and forcing functions.  
  
(2) The IPX is a screening-level model for estimating contaminant export from tributaries with contaminated sediments to receiving waterbodies, and is based on the WASP4 modeling framework developed by the USEPA.  
  
(3) WASP4

**Company Performing Modeling:** (1) USEPA-LLRS  
(2) Mark Velleux (WI DNR), Joseph Gailani (USACE), Doug Endicott (USEPA).  
(3) WI DNR

**Modeling Status:** (1) Models were being re-evaluated.  
(2) Model was being re-evaluated.  
(3) Model was being re-evaluated.

**Modeling Summary:** (1) Estimated trends and present day concentrations of PCBs in water, sediment, and fish. Forecasts for water, sediment, and fish models for 100-years and for a "worst case" situation (including a 100-year flood event). Also forecasts were used to predict environmental endpoints achievable with "no action" and with varying levels of remediation scenarios.  
  
(2) Case studies performed on the upper and lower Fox River in Wisconsin, and the Buffalo and Oswego Rivers in New York.  
  
(3) Water column concentrations, PCB advection.



## ***FISH ADVISORIES***

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***Project Name*** ***FOX RIVER - PROJECT 3 (OU 1)***

***ProjectID:*** 05-27

<b><i>Advisory:</i></b>	Fox River, Lower	<b><i>AdvisoryID:</i></b> 659
<b><i>Extent:</i></b>	From Little Lake Butte des Morts to the dam at DePere	
<b><i>Pollutant:</i></b>	PCBs (total)	
<b><i>Species:</i></b>	bass-smallmouth	
<b><i>Population:</i></b>	RGP	
<b><i>Population Definition:</i></b>	Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed.	
<b><i>Advisory Type:</i></b>	River	<b><i>Advisory Number:</i></b> 4259
<b><i>Status (Active or Rescinded):</i></b>	Active	<b><i>Date Rescinded:</i></b>
<b><i>Contact Name:</i></b>	Candy Schrank	<b><i>Contact Number:</i></b> 608-262-7614
<b><i>Advisory:</i></b>	Fox River, Lower	<b><i>AdvisoryID:</i></b> 660
<b><i>Extent:</i></b>	From Little Lake Butte des Morts to the dam at DePere	
<b><i>Pollutant:</i></b>	PCBs (total)	
<b><i>Species:</i></b>	bass-smallmouth	
<b><i>Population:</i></b>	RSP	
<b><i>Population Definition:</i></b>	Restricted Consumption-Subpopulation(s): Advises subpopulations potentially at greater risk, e.g., pregnant or nursing women, and/or small children, to restrict the size of the organism and/or frequency of meals consumed.	
<b><i>Advisory Type:</i></b>	River	<b><i>Advisory Number:</i></b> 4259
<b><i>Status (Active or Rescinded):</i></b>	Active	<b><i>Date Rescinded:</i></b>
<b><i>Contact Name:</i></b>	Candy Schrank	<b><i>Contact Number:</i></b> 608-262-7614
<b><i>Advisory:</i></b>	Fox River, Lower	<b><i>AdvisoryID:</i></b> 661
<b><i>Extent:</i></b>	From Little Lake Butte des Morts to the dam at DePere	
<b><i>Pollutant:</i></b>	PCBs (total)	
<b><i>Species:</i></b>	bass-white	
<b><i>Population:</i></b>	RGP	
<b><i>Population Definition:</i></b>	Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed.	
<b><i>Advisory Type:</i></b>	River	<b><i>Advisory Number:</i></b> 4259
<b><i>Status (Active or Rescinded):</i></b>	Active	<b><i>Date Rescinded:</i></b>
<b><i>Contact Name:</i></b>	Candy Schrank	<b><i>Contact Number:</i></b> 608-262-7614

## ***FISH ADVISORIES***

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***Project Name*** ***FOX RIVER - PROJECT 3 (OU 1)***

***ProjectID:*** 05-27

<b><i>Advisory:</i></b>	Fox River, Lower	<b><i>AdvisoryID:</i></b> 662
<b><i>Extent:</i></b>	From Little Lake Butte des Morts to the dam at DePere	
<b><i>Pollutant:</i></b>	PCBs (total)	
<b><i>Species:</i></b>	bass-white	
<b><i>Population:</i></b>	RSP	
<b><i>Population Definition:</i></b>	Restricted Consumption-Subpopulation(s): Advises subpopulations potentially at greater risk, e.g., pregnant or nursing women, and/or small children, to restrict the size of the organism and/or frequency of meals consumed.	
<b><i>Advisory Type:</i></b>	River	<b><i>Advisory Number:</i></b> 4259
<b><i>Status (Active or Rescinded):</i></b>	Active	<b><i>Date Rescinded:</i></b>
<b><i>Contact Name:</i></b>	Candy Schrank	<b><i>Contact Number:</i></b> 608-262-7614
<hr/>		
<b><i>Advisory:</i></b>	Fox River, Lower	<b><i>AdvisoryID:</i></b> 657
<b><i>Extent:</i></b>	From Little Lake Butte des Morts to the dam at DePere	
<b><i>Pollutant:</i></b>	PCBs (total)	
<b><i>Species:</i></b>	carp	
<b><i>Population:</i></b>	NCGP	
<b><i>Population Definition:</i></b>	No Consumption-General Population: Advise against consumption by the general population.	
<b><i>Advisory Type:</i></b>	River	<b><i>Advisory Number:</i></b> 4259
<b><i>Status (Active or Rescinded):</i></b>	Active	<b><i>Date Rescinded:</i></b>
<b><i>Contact Name:</i></b>	Candy Schrank	<b><i>Contact Number:</i></b> 608-262-7614
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<b><i>Advisory:</i></b>	Fox River, Lower	<b><i>AdvisoryID:</i></b> 658
<b><i>Extent:</i></b>	From Little Lake Butte des Morts to the dam at DePere	
<b><i>Pollutant:</i></b>	PCBs (total)	
<b><i>Species:</i></b>	carp	
<b><i>Population:</i></b>	NCSP	
<b><i>Population Definition:</i></b>	No Consumption-Subpopulation(s): Advises against consumption for populations that are potentially at greater risk, e.g., pregnant or nursing women, and small children.	
<b><i>Advisory Type:</i></b>	River	<b><i>Advisory Number:</i></b> 4259
<b><i>Status (Active or Rescinded):</i></b>	Active	<b><i>Date Rescinded:</i></b>
<b><i>Contact Name:</i></b>	Candy Schrank	<b><i>Contact Number:</i></b> 608-262-7614

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## ***FISH ADVISORIES***

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***Project Name*** ***FOX RIVER - PROJECT 3 (OU 1)***

***ProjectID:*** 05-27

<b><i>Advisory:</i></b>	Fox River, Lower	<b><i>AdvisoryID:</i></b> 663
<b><i>Extent:</i></b>	From Little Lake Butte des Morts to the dam at DePere	
<b><i>Pollutant:</i></b>	PCBs (total)	
<b><i>Species:</i></b>	perch-white	
<b><i>Population:</i></b>	RGP	
<b><i>Population Definition:</i></b>	Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed.	
<b><i>Advisory Type:</i></b>	River	<b><i>Advisory Number:</i></b> 4259
<b><i>Status (Active or Rescinded):</i></b>	Active	<b><i>Date Rescinded:</i></b>
<b><i>Contact Name:</i></b>	Candy Schrank	<b><i>Contact Number:</i></b> 608-262-7614
<b><i>Advisory:</i></b>	Fox River, Lower	<b><i>AdvisoryID:</i></b> 664
<b><i>Extent:</i></b>	From Little Lake Butte des Morts to the dam at DePere	
<b><i>Pollutant:</i></b>	PCBs (total)	
<b><i>Species:</i></b>	perch-white	
<b><i>Population:</i></b>	RSP	
<b><i>Population Definition:</i></b>	Restricted Consumption-Subpopulation(s): Advises subpopulations potentially at greater risk, e.g., pregnant or nursing women, and/or small children, to restrict the size of the organism and/or frequency of meals consumed.	
<b><i>Advisory Type:</i></b>	River	<b><i>Advisory Number:</i></b> 4259
<b><i>Status (Active or Rescinded):</i></b>	Active	<b><i>Date Rescinded:</i></b>
<b><i>Contact Name:</i></b>	Candy Schrank	<b><i>Contact Number:</i></b> 608-262-7614
<b><i>Advisory:</i></b>	Fox River, Lower	<b><i>AdvisoryID:</i></b> 665
<b><i>Extent:</i></b>	From Little Lake Butte des Morts to the dam at DePere	
<b><i>Pollutant:</i></b>	PCBs (total)	
<b><i>Species:</i></b>	perch-yellow	
<b><i>Population:</i></b>	RGP	
<b><i>Population Definition:</i></b>	Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed.	
<b><i>Advisory Type:</i></b>	River	<b><i>Advisory Number:</i></b> 4259
<b><i>Status (Active or Rescinded):</i></b>	Active	<b><i>Date Rescinded:</i></b>
<b><i>Contact Name:</i></b>	Candy Schrank	<b><i>Contact Number:</i></b> 608-262-7614

## ***FISH ADVISORIES***

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***Project Name*** **FOX RIVER - PROJECT 3 (OU 1)**

***ProjectID:*** 05-27

<b><i>Advisory:</i></b>	Fox River, Lower	<b><i>AdvisoryID:</i></b> 666
<b><i>Extent:</i></b>	From Little Lake Butte des Morts to the dam at DePere	
<b><i>Pollutant:</i></b>	PCBs (total)	
<b><i>Species:</i></b>	perch-yellow	
<b><i>Population:</i></b>	RSP	
<b><i>Population Definition:</i></b>	Restricted Consumption-Subpopulation(s): Advises subpopulations potentially at greater risk, e.g., pregnant or nursing women, and/or small children, to restrict the size of the organism and/or frequency of meals consumed.	
<b><i>Advisory Type:</i></b>	River	<b><i>Advisory Number:</i></b> 4259
<b><i>Status (Active or Rescinded):</i></b>	Active	<b><i>Date Rescinded:</i></b>
<b><i>Contact Name:</i></b>	Candy Schrank	<b><i>Contact Number:</i></b> 608-262-7614
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<b><i>Advisory:</i></b>	Fox River, Lower	<b><i>AdvisoryID:</i></b> 667
<b><i>Extent:</i></b>	From Little Lake Butte des Morts to the dam at DePere	
<b><i>Pollutant:</i></b>	PCBs (total)	
<b><i>Species:</i></b>	pike-northern	
<b><i>Population:</i></b>	RGP	
<b><i>Population Definition:</i></b>	Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed.	
<b><i>Advisory Type:</i></b>	River	<b><i>Advisory Number:</i></b> 4259
<b><i>Status (Active or Rescinded):</i></b>	Active	<b><i>Date Rescinded:</i></b>
<b><i>Contact Name:</i></b>	Candy Schrank	<b><i>Contact Number:</i></b> 608-262-7614
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<b><i>Advisory:</i></b>	Fox River, Lower	<b><i>AdvisoryID:</i></b> 668
<b><i>Extent:</i></b>	From Little Lake Butte des Morts to the dam at DePere	
<b><i>Pollutant:</i></b>	PCBs (total)	
<b><i>Species:</i></b>	pike-northern	
<b><i>Population:</i></b>	RSP	
<b><i>Population Definition:</i></b>	Restricted Consumption-Subpopulation(s): Advises subpopulations potentially at greater risk, e.g., pregnant or nursing women, and/or small children, to restrict the size of the organism and/or frequency of meals consumed.	
<b><i>Advisory Type:</i></b>	River	<b><i>Advisory Number:</i></b> 4259
<b><i>Status (Active or Rescinded):</i></b>	Active	<b><i>Date Rescinded:</i></b>
<b><i>Contact Name:</i></b>	Candy Schrank	<b><i>Contact Number:</i></b> 608-262-7614

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## ***FISH ADVISORIES***

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***Project Name*** ***FOX RIVER - PROJECT 3 (OU 1)***

***ProjectID:*** 05-27

***Advisory:*** Fox River, Lower

***AdvisoryID:*** 669

***Extent:*** From Little Lake Butte des Morts to the dam at DePere

***Pollutant:*** PCBs (total)

***Species:*** walleye

***Population:*** RGP

***Population Definition:*** Restricted Consumption-General Population: Advises the general population to restrict the size of the organisms and/or the frequency of meals consumed.

***Advisory Type:*** River

***Advisory Number:*** 4259

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

***Date Rescinded:***

***Contact Name:*** Candy Schrank

***Contact Number:*** 608-262-7614

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***Advisory:*** Fox River, Lower

***AdvisoryID:*** 670

***Extent:*** From Little Lake Butte des Morts to the dam at DePere

***Pollutant:*** PCBs (total)

***Species:*** walleye

***Population:*** RSP

***Population Definition:*** Restricted Consumption-Subpopulation(s): Advises subpopulations potentially at greater risk, e.g., pregnant or nursing women, and/or small children, to restrict the size of the organism and/or frequency of meals consumed.

***Advisory Type:*** River

***Advisory Number:*** 4259

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

***Date Rescinded:***

***Contact Name:*** Candy Schrank

***Contact Number:*** 608-262-7614

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