

Appendix A

Summary of Previous Remedial Action Objectives

Summary of Previous RAOs

Document 1

The first document, *Polychlorinated Biphenyl (PCB) Contaminated Sediment in the Lower Fox River: Modeling Analysis of Selective Sediment Remediation* (WDNR - Bureau of Watershed Management, February 1997), provides the following goals (referred to as endpoints) for the management of impacted sediments:

- Meet existing PCB water quality standards
 - ▶ 0.01 ng/L (warm water fisheries)
 - ▶ 0.003 ng/L (Great Lakes)
 - ▶ 0.12 ng/L (wildlife)

[Note: The concentrations reported above reflect present surface water quality criteria, which are not the same as those originally stated in the referenced document.]

- Reduce mass transport of PCBs from Lower Fox River to Green Bay
- Reduce fish tissue concentrations to levels protective of:
 - ▶ Human health
 - ▶ Fish-consuming birds and mammals

Document 2

The second document, *Feasibility Study Report for Deposits POG and N on the Fox River* (Graef, Anhalt, Schloemer & Assoc. Inc., April 1997), provides the following RAOs:

- General Lower Fox River and Watershed
 - ▶ Reduce the mass and volume of PCB- and mercury-contaminated sediments before the sediments are transported downstream of the De Pere dam or enter Green Bay
 - ▶ Reduce or eliminate off-site transport of PCBs and other contaminants from deposits POG and N
 - ▶ Eliminate POG and N as continued input/source of contaminants to the system

- Human Health Protection
 - ▶ Reduce exposure to humans (via direct ingestion, dermal contact with sediments or from consumption of fish and waterfowl) to mercury and PCBs in sediments transported from deposits N and POG
 - ▶ Reduce the exposure of humans to PCBs and mercury bioaccumulated in fish and waterfowl from sediments of deposits N and POG.
- Ecological Protection of Top Receptors (Eagles and Mink)
 - ▶ Reduce or eliminate bioavailability of PCBs and mercury present in sediments at POG and N to eliminate biotransfers in the food chain (aquatic and terrestrial) and bioaccumulation in top receptors that cause hazard quotients above 1 and/or acute and chronic toxicity
- Chemical Specific ARARs
 - ▶ Reduce exceedances of chemical-specific ARARs/TBCs in water, sediment, fish, and waterfowl in the Lower Fox River resulting from exposure and transport of chemicals originating from Deposits N and POG

Document 3

The third document, *Remedial Investigation/Feasibility Study: Little Lake Butte des Morts Sediment Deposit A* (Blasland, Bouck & Lee, Inc., July 1993), provides the following RAOs:

- Human Health Protection
 - ▶ Prevent the ingestion of fish containing PCB concentration in excess of FDA limit (2 ppm)
 - ▶ Reduce PCB availability from Deposit A to levels resulting in the reduction of PCB concentrations in fish to levels that are acceptable for ingestion.
- Environmental Protection
 - ▶ Reduce bioavailability of Deposit A PCBs to prevent acute or chronic toxicity to aquatic and terrestrial organisms

- Chemical-Specific ARARs
 - Minimize the potential for exceeding Ambient Water Quality Criteria (AWQC) in Little Lake Butte des Morts

Document 4

The fourth document, *Draft Feasibility Study Report for Sheboygan Harbor and River Superfund Site* (Blasland, Bouck & Lee, Inc., April 1998), lists items provided by the EPA to be included as RAOs for the Sheboygan River and Harbor Site. These items were synthesized into four Primary/comprehensive RAOs provided in the FS.

- Provide further protection of human health and the environment from potential adverse effects of PCBs attributable to the Site.
- Mitigate potential PCB sources to the River/Harbor system, and reduce PCB transport within the River system.
- Remove and dispose of Confined Treatment Facility (CTF)/Sediment Management Facility (SMF) sediments.
- Minimize potential human health and environmental risks that may be associated with remedial activities, to the extent practical.

Document 5

The fifth document, *Manistique River and Harbor Engineering Evaluation/Cost Analysis* (Blasland, Bouck & Lee, Inc., April 1994), provides the following RAOs:

- Reduce PCB concentrations in fish and water in the Manistique River and Harbor to levels that would not present an unacceptable human-health or ecological risk and allow elimination of existing fish consumption advisories.
- Maintain the harbor as a navigable waterway for commercial shipping, fishing boats, and recreational watercraft. In general, restore the river and harbor areas for use by deeper draft vessels.
- Minimize the need for future remedial action in the area following completion of a non-time critical action.
- Implement actions which would best contribute to the efficient performance of any future remedial action(s) in the area.
- Achieve compliance consistent with federal and state ARARs for the Site.

- Comply with risk-based objectives defined by TERRA, Inc., as part of the risk assessment.
- Reduce, as much as practicable, the release of PCBs associated with particles and dissolved in the water to Lake Michigan.