

GENERAL SITE INFORMATION, CHARACTERISTICS, AND STATUS

Project Name	<u>BUFFALO RIVER</u>	ProjectID: 02-02
Last Updated:	08/27/98	
City:	Buffalo	
County:	Erie	
State:	NY	
Country:	USA	
Bodies of Water:	Buffalo River; Lake Erie	
US EPA Region:	II	
Status (Active, Complete, or Monitoring Only):	Active	
Date On NPL:	N/A	
ROD/ESD Date:	N/A	
Operable Unit:	N/A	
Areas of Concern (length or acres):	From confluence with three main tributaries (Buffalo, Cazenovia, and Cayuga Creeks) to Lake Erie, 5.5 miles.	
Other Characteristics of Water Body:	Average annual peak daily flow is 12,300 cfs. The U.S. Army Engineer District, Buffalo, continues to maintain navigable depths in the Buffalo River Channel and the connecting Buffalo Ship Canal through dredging. Depths are maintained at 21-22 feet. Bottom channel width in the Buffalo River is about 150 feet. Up until at least 1992, the river has been dredged every other year with the dredged material quantity in the 100,000 to 150,000 cy range. Open water disposal of the dredged sediments is no longer allowed (1996) because of high levels of heavy metals (i.e., arsenic, barium, copper, iron, lead, manganese, zinc) and cyanide in the sediments. The dredged sediments are being stored in a confined disposal facility.	
Contaminants of Concern:	PCBs; pesticides; metals; PAHs	
Source of Contamination:	Historically, grain mills, chemical and oil refineries and coke and steel mills operated, but many are no longer in operation. In addition to the historical discharge of pollutants from these facilities, combined sewer overflows (CSOs) and inactive hazardous waste sites remain as potential sources of river contamination. Thirty-eight CSOs discharge to the river or lower Cazenovia Creek during periods of high runoff, and represent potential sources of organic and inorganic contaminants as well as BOD. Inactive hazardous waste sites are documented in 19 locations within or adjacent to the Buffalo River. Metals and cyanides have been detected in 12 of the sites, while the potential for off-site migration has been confirmed or indicated at 4 of these sites. (Source: Reference E-26.)	
Contaminated Area	No clear description of contaminated areas identified.	
Physical Characteristics:		
Type of Regulatory Action:	None. Great Lakes priority AOC.	
Overall Status Summary:	Extensive studies completed including several dozen water, sediment, and biota monitoring projects, a dredging demonstration project in 1992, modeling, storm event sampling to measure scour, and pilot testing of thermal desorption. No volume estimates, target cleanup levels, or remedy selection as yet. Apparently multiple PRP sites and sources have been identified. The 1992 dredging demonstration (which was part of a larger navigation channel dredging project) removed 10,200 cy from 3 targeted areas totaling 2.8 acres, and deposited the material into an available CDF. Only low contamination levels: PCBs avg. 4-8 ppm; PAHs 240-410 ppm. Three removal methods were tested: open and closed clamshell bucket and cable suspended Toyo submersible pump.	

GENERAL SITE INFORMATION, CHARACTERISTICS, AND STATUS

Project Name	<u>BUFFALO RIVER</u>	ProjectID: 02-02
Last Updated:	08/27/98	

Remedial Action Planned:	<input checked="" type="checkbox"/>	
Risk Assessment:	<input checked="" type="checkbox"/>	
Remedial Action Implemented:	<input checked="" type="checkbox"/>	
Status of Dredging	<input type="checkbox"/>	
PRPs:	<input checked="" type="checkbox"/>	
Contacts:	<input checked="" type="checkbox"/>	
References:	<input checked="" type="checkbox"/>	
Modeling:	<input checked="" type="checkbox"/>	
Fishing Advisory:	<input checked="" type="checkbox"/>	
Key Conditions:	confined disposal facility, extended (>1 mile) river, Great Lakes AOC, hydrodynamic modeling, pilot/demonstration test	

REMEDIAL ACTION PLANNED

Project Name **BUFFALO RIVER**

ProjectID: 02-02

Last Updated: 08/27/98

**Target Sediment Cleanup
Standards (TSCS):**

How TSCS Established:

**Target Bank and Floodplain
Cleanup Levels (if applicable):**

Other Target:

Environmental Sample Data References A-150, E-17
References:

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

Estimated Target Volume:

Planned Disposal Method:

**Estimated Calendar Time to
Implement Remedy:**

**Estimated Time to Implement
Remedy:**

**Estimated Cost to Implement
Remedy:**

**Stated Remedial Action
Objectives (and Source):**

**Measures of Success to
be Used:**

**Planned Monitoring and
Restoration:**

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

Source: Reference E-17
"Toxicity and TIE analyses of the six sediments from the Buffalo River essentially yielded two sets of results. For the five surficial samples under the test conditions in this study, fathead minnows were the most sensitive species, and ammonia was the predominant pore water toxicant. In contrast, pore water from deeper sediment at Site 8 (8D) was significantly more toxic to both species than surficial samples, and was more toxic to *C. dubia* than fathead minnows. This toxicity appeared to be due mostly to cationic metals. This apparent dichotomy between surficial and deep sediments in the Buffalo River is supported by evaluations of contaminant concentrations and toxicity (Microtox®) in deep cores from several sites within the river that showed, in general, deeper sediments were far more contaminated and toxic than surficial sediments (E. Smith, ASCI Corporation, Ann Arbor, personal communication). These data suggest that, other factors notwithstanding, efforts to remediate currently contaminated (surficial) sediments should consider the consequences of their possible removal in terms of uncovering sedimentary layers of greater contamination/toxicity. This is especially true when considering the nature of the toxicants identified in the surficial sediments (a relatively labile

REMEDIAL ACTION PLANNED

Project Name ***BUFFALO RIVER***

ProjectID: 02-02

Last Updated: 08/27/98

compound, ammonia) versus the deeper horizons (persistent metals)."

RISK ASSESSMENT

<i>Project Name</i>	<u>BUFFALO RIVER</u>	<i>ProjectID:</i> 02-02
<i>Last Updated:</i>	08/27/98	
<i>RA Type:</i>	No Risk Assessment Performed	
<i>RA Status:</i>	N/A	
<i>RA Objectives:</i>	N/A	
<i>Company</i>	N/A	
<i>Performing RA:</i>		
<i>RA Reference Report:</i>	N/A	
<i>RA Summary and</i> <i>Conclusions:</i>	No site-specific risk assessment, other than a baseline human health RA associated with fish consumption at five Great Lakes AOCs, reported in Reference E-19.	

REMEDIAL ACTION IMPLEMENTED

Project Name:	<u>BUFFALO RIVER</u>	ProjectID: 02-02
Last Updated:	08/27/98	
Physical Target:	A 0.5 acre area on the right slope of the Federal Channel at Dead Man's Creek and a 1.9 acre area on the left slope of the Federal Channel at the Mobil Oil refinery site, selected for the demonstration project.	
Goals:	Determine and evaluate three methods of removal.	
Primary Contractor:	Great Lakes Dredge and Dock	
Other Contractors:		
Generic Remediation Method:	Hydraulic and mechanical dredging; submersible pump removal demonstration.	
Equipment:	Open clamshell bucket, closed clamshell bucket, and cable suspended Toyo submersible pump.	
Material Handling:	From dredge to barge; from barge, pumped to flocculation unit for polymer addition, then to CDF.	
Volume Removed:	10,200 cy	
Calendar Time:	July 27 - August 8, 1992	
Time To Implement:	Thirteen days	
Total Cost:	Not available	
Dredging Cost:	Not available	
Disposal of Sediment:	CDF (no details provided)	
Volume of Water:		
Method of Water Treatment:		
Water Discharge Limit:		
Air Monitoring During Remediation:		
Water Monitoring During Remediation:		
Outcome:	<p>As presented under "Recommendations" in Reference A-183:</p> <ul style="list-style-type: none">• "Clamshell bucket dredges or other mechanical dredge types are well-suited for environmental dredging of sites like the Buffalo River where the contaminated material is located in a small part of the river cross section, where debris and obstacles may be encountered, and where the dredged material must be transported long distances to the disposal site. These conditions limit the use of hydraulic dredges. The results of this demonstration project indicate that Buffalo River contaminated sediment can be carefully dredged using conventional equipment and removed from the aquatic ecosystem without major environmental impacts resulting from sediment resuspension, contaminant release, and toxicity. Water column TSS concentrations may be held at a lower level with slower operation of the bucket at the expense of a loss in production rate."• "The precision of removal for all of the dredges tested was inadequate to ensure removal of the	

REMEDIAL ACTION IMPLEMENTED

Project Name: BUFFALO RIVER

ProjectID: 02-02

Last Updated: 08/27/98

contaminated sediment to a given elevation. Improved operational controls for positioning and depth of cut are needed for environmental dredging."

- "The submersible pump was not suitable for dredging this site. Its mechanical cutting capability was inadequate for consolidated materials. Its production rate ranged from 2 to 17 cu yd per hour, and its low solids concentration in the pumped slurry resulted in excessive water being entrained during dredging. This excess water could be potentially contaminated during environmental dredging projects and require treatment. . ."
- "Sediment dispersion barriers using permeable geotextile material offer limited containment of TSS from dredging operations. They should be used only for slow currents, stable water levels, and relatively shallow depths. The sediment dispersion barrier must be adequately anchored to hold its position. Removal of the barrier and its anchors will release suspended material to the water column. Re-deployment of the barrier system offers operational challenges."

Restoration and Post-Monitoring:

Site-Specific Difficulties:

"A 22-ft textile sediment dispersion barrier was installed around the open clamshell bucket operation at the downstream Dead Man's Creek site. The barrier was constructed of 100-ft. sections of 22-ft. deep (two 11 ft. wide x 100 ft.- long sections seamed together). Each 100-ft. section contained four circular Styrofoam flotation packs, a steel tension cable on top, and a chain at the bottom. The steel cables were used to provide structural integrity while the chains were used for ballast."

"The barrier broke loose of its anchorage on 27 July 1992 after experiencing 0.1 to 0.3 fps water velocities. The barrier was retrieved by the tugboat Mackie and suffered some damage from the tug's prop. On 28 July 1992, the barrier was anchored to the river shoreline and the port side of the transportation barge stern. On 29 July 1992, the barrier was anchored to the shoreline and the mid-stern of the dredge barge. These deployment methods managed to keep the barrier in place during 0.0 to 0.4 fps water velocities."

Monitoring Data

References:

References A-183 and E-9.

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

POTENTIALLY RESPONSIBLE PARTIES

Project Name **BUFFALO RIVER**

ProjectID: 02-02

PRP Name: PRP INFORMATION NOT RELEASED

PRPID:

Street Address:

City:

State:

KEY CONTACTS

Project Name **BUFFALO RIVER**

ProjectID: 02-02

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 **BUFFALO RIVER**

ProjectID: 02-02

Reference Type: A

ReferenceID: 150

Title: **Information Summary, Area of Concern: Buffalo River, New York (Misc. Paper EL-91-9)**

Location: AEM

Category: Contaminated Sediments: Overview of Issues

Prepared by/Author: C.R. Lee, D.L. Brandon, J.W. Simmers, H.E. Tatem and J.G. Skogerboe

Preparer/Author Address: U.S. Army Corps of Engineers
U.S. Army Engineer Waterways Experiment Station
Department of the Army
P.O. Box 631
Vicksburg, MS 39181-0631

Prepared For: US EPA, Great Lakes National Program Office

Date Published: March 1991

Key Words and Phrases:

Reference Type: A

ReferenceID: 183

Title: **Buffalo River Dredging Demonstration (Technical Report EL-96-2)**

Location: AEM

Category: Dredging: Remedial (Contaminated Sediments)

Prepared by/Author: (1) Daniel E. Averett, Paul A. Zappi, Henry E. Tatem, Anthony C. Gibson, Elizabeth A. Tominey, Natale S. Tate and Sherry L. Graham and (2) B. Thomas Kenna and Stephen M Yaksich

Preparer/Author Address: (1) U S Army Engineer Waterways Experiment Station
Environmental Laboratory
3909 Halls Ferry Road
Vicksburg, MS 39180-6199
(2) U.S. Army Corps of Engineers - Buffalo District

Prepared For: US Army Corps of Engineers, District, Buffalo

Date Published: February 1996

Key Words and Phrases:

REFERENCES

Project Name **BUFFALO RIVER**

ProjectID: 02-02

Reference Type: A

ReferenceID: 208

Title: *Assessment and Remediation of Contaminated Sediments (ARCS) Program - Application of Mass Balance Modeling to Assess Remediation Options for the Buffalo River*

Location: AEM

Category: Risk Assessment

Prepared by/Author: Joseph V. DePinto, Michael Morgante, Joseph Zaraszcak, Tricia Bajak, and Joseph F. Atkinson

Preparer/Author Address: State University of New York (Buffalo)

Prepared For: US EPA Great Lakes National Program Office

Date Published: April 1995

Key Words and Phrases:

Reference Type: A

ReferenceID: 336

Title: *Buffalo Color Area "D" (NYS Inactive Hazardous Waste Disposal Report)*

Location: AEM

Category: Site Update

Prepared by/Author: New York State Department of Environmental Conservation

Preparer/Author Address:

Prepared For: General Public

Date Published: April 1, 1998

Key Words and Phrases:

REFERENCES

Project Name **BUFFALO RIVER**

ProjectID: 02-02

Reference Type: B

ReferenceID: 773

Title: ***Realizing Remediation I - Great Lakes Contaminated Sediments
Buffal Color - Area D
(see Reference A-905)***

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: August 1, 2002

**Key Words and
Phrases:**

Reference Type: B

ReferenceID: 823

Title: ***Realizing Remediation II - Updated Summary:
Niagara River AOC: Buffalo Color - Area D (Buffalo River)
(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:**

Reference Type: B

ReferenceID: 1077

Title: ***Significant Activities Report: Buffalo River Probed***

Location: AEM

Category: Site Update

Prepared by/Author: USEPA GLNPO

**Preparer/Author
Address:**

Prepared For: General Public

Date Published: June-July 2003

**Key Words and
Phrases:**

REFERENCES

Project Name **BUFFALO RIVER**

ProjectID: 02-02

Reference Type: C

ReferenceID: 310

Title: *Allied-Signal designing Buffalo color fix*

Location: AEM

Category: Site Update

Prepared by/Author:

Preparer/Author

Address:

Prepared For: Superfund Week

Date Published: November 18, 1994

**Key Words and
Phrases:**

Reference Type: E

ReferenceID: 5

Title: *Pilot-Scale Demonstrations of Thermal Desorption for the
Treatment of Contaminated River Sediment*

Location: AEM

Category: Contaminated Sediments: Treatment Technologies

Prepared by/Author: (1) B. Thomas Kenna, (2) David J. Conboy, (3) Judith Leithner, (4) Stephen Yaksich, and (5) Daniel Averett

**Preparer/Author
Address:** (1 thru 4) U.S. Army Corps of Engineers - Buffalo District, and
(5) U.S. Army Corps of Engineers
Vicksburg, MS

Prepared For: Dredging 1994 - Proceedings of the Second International Conference on
Dredging and Dredged Material Placement
Volumes 1 & 2

Date Published: November 13-16, 1994

**Key Words and
Phrases:** also, Ashtabula River

REFERENCES

Project Name **BUFFALO RIVER**

ProjectID: 02-02

Reference Type:

E

ReferenceID: 9

Title:

Demonstration of Equipment for Dredging Contaminated Sediments at Buffalo River, Buffalo, New York

Location:

AEM

Category:

Dredging: Equipment

Prepared by/Author:

(1) B. Thomas Kenna, (2) Stephen M. Yaksich, (3) Daniel E. Averett, and (4) Paul A. Zappi

Preparer/Author Address:

(1 and 2) U.S. Army Corps Engineers - Buffalo District,
(3 and 4) U.S. Army Corps of Engineers
Vicksburg, MS

Prepared For:

Dredging 1994 - Proceedings of the Second International Conference on Dredging and Dredged Material Placement
Volumes 1 & 2

Date Published:

1994

Key Words and Phrases:

Reference Type:

E

ReferenceID: 17

Title:

Application of Toxicity Identification Evaluation Techniques to Pore Water from Buffalo River Sediments

Location:

AEM

Category:

Contaminated Sediments: Characteristics/Bioavailability

Prepared by/Author:

(1) Gerald T. Ankley, (2) Mary K. Schubauer-Berigan, and (3) Joseph R. Dierkes

Preparer/Author Address:

(1) US EPA Region V, Duluth, MN and
(2 and 3) ASci Corporation

Prepared For:

Journal of Great Lakes Research 22 (3) : 534-544

Date Published:

1996

Key Words and Phrases:

REFERENCES

Project Name **BUFFALO RIVER**

ProjectID: 02-02

Reference Type: E

ReferenceID: 19

Title: *Carcinogenic Human Health Risks Associated with Consuming Contaminated Fish from Five Great Lakes Areas of Concern*

Location: AEM

Category: Risk Assessment

Prepared by/Author: Judy L. Crane

Preparer/Author Address: EVS Consultants
(N. Vancouver, BC)

Prepared For: Journal of Great Lakes Research 22 (3): 653-668

Date Published: 1996

Key Words and Phrases:

Reference Type: E

ReferenceID: 26

Title: *Development and Calibration of a Fine-Grained Sediment Transport Model for the Buffalo River*

Location: AEM

Category: Modeling

Prepared by/Author: (1) Joseph Gailani, (2) Wilbert Lick, (3) C. Kirk Ziegler and (4) Douglas Endicott

Preparer/Author Address: (1) AScl Corporation,
(2) University of California (Santa Barbara),
(3) HydroQual, Inc., and
(4) US EPA Region II

Prepared For: Journal of Great Lakes Research 22 (3): 765-778

Date Published: 1996

Key Words and Phrases:

Reference Type: M

ReferenceID: 35

Title: *Buffalo River Notes*

Location: AEM

Category: Site Update

Prepared by/Author: AEM, Inc.

Preparer/Author Address: Malvern, PA 19355

Prepared For: Internal file

Date Published: April 9, 1992

Key Words and Phrases:

REFERENCES

Project Name **BUFFALO RIVER**

ProjectID: 02-02

Reference Type: M

ReferenceID: 153

Title: ***ARCS Bench-Scale Evaluation of SoilTech's Anaerobic Thermal Process Technology on Contaminated Sediments from the Buffalo and Grand Calumet Rivers***

Location: AEM

Category: Contaminated Sediments: Treatment Technologies

Prepared by/Author: Michael Giordano and Evelyn Meagher-Hartzell

Preparer/Author Address: Science Applications International Corporation
Cincinnati, OH

Prepared For: US EPA
Great Lakes National Program Office
Assessment and Remediation of Contaminated Sediments (ARCS) Program
Chicago, IL 60604,

Date Published: 1994

Key Words and Phrases:

Reference Type: M

ReferenceID: 155

Title: ***ARCS Bench-Scale Evaluation of RCC's Basic Extraction Sludge Treatment (B.E.S.T.) Process on Contaminated Sediments from the Buffalo, Saginaw, and Grand Calumet Rivers***

Location: AEM

Category: Contaminated Sediments: Treatment Technologies

Prepared by/Author: Clyde J. Dial

Preparer/Author Address: Science Applications International Corporation
Cincinnati, OH

Prepared For: US EPA
Great Lakes National Program Office
Assessment and Remediation of Contaminated Sediments (ARCS) Program
Chicago, IL 60604,

Date Published: October 1994

Key Words and Phrases:

REFERENCES

Project Name **BUFFALO RIVER**

ProjectID: 02-02

Reference Type: M

ReferenceID: 159

Title: ***Bench-Scale Evaluation of Bioremediation for the Treatment of Sediments from the Ashtabula, Buffalo, Saginaw and Sheboygan Rivers***

Location: AEM

Category: Contaminated Sediments: Treatment Technologies

Prepared by/Author: W. Jack Jones, Rochelle Araujo, and John E. Rogers

Preparer/Author Address: US EPA NERL-Ahens
National Exposure Research Laboratory
Ecosystems Research Division
Athens, GA

Prepared For: US EPA
Great Lakes National Program Office
Assessment and Remediation of Contaminated Sediments (ARCS) Program
Chicago, IL 60604,

Date Published: Undated

Key Words and Phrases:

Reference Type: M

ReferenceID: 162

Title: ***An Evaluation of Solidification/Stabilization Technology for Buffalo River Sediment***

Location: AEM

Category: Contaminated Sediments: Treatment Technologies

Prepared by/Author: Elizabeth C. Fleming, Daniel E. Averett, Michael G. Channell, and Bret D. Perry

Preparer/Author Address: U.S. Army Corps of Engineers
U.S. Army Engineer Waterways Experiment Station
Environmental Laboratory
3909 Halls Ferry Road
Vicksburg, MS 39180-6199

Prepared For: US EPA
Great Lakes National Program Office
Assessment and Remediation of Contaminated Sediments (ARCS) Program
Chicago, IL 60604,

Date Published:

Key Words and Phrases:

REFERENCES

Project Name **BUFFALO RIVER**

ProjectID: 02-02

Reference Type: M

ReferenceID: 215

Title: ***Buffalo River, New York***

Location: AEM

Category: Site Update

Prepared by/Author: Beth A. Millemann

Preparer/Author

Address:

Prepared For: Muddy Waters - The Toxic Wasteland Below America's Oceans, Coasts,
Rivers and Lakes (Reference M-220)

Date Published: August 1999

Key Words and
Phrases:

MODELING

Project Name: **BUFFALO RIVER**

ProjectID: 02-02

Last Updated: 08/11/98

Modeling Performed: (1) Mass balance modeling and (2) fine-grained sediment transport modeling.

Modeling Objectives: (1) Evaluate remedial alternatives and support comparative human health risk assessments.
(2) Develop a quantitative, predictive model for the transport of fine-grained sediments, with particular emphasis on export of sediments to Lake Erie.

Modeling Description: Refer to "Modeling Results:"

Company Performing Modeling: (1) State U. of NY at Buffalo
(2) AS&I, HydroQual, U. of Cal. (Santa Barbara), and EPA Large Lakes Research Station.

Modeling Status: Uncertain

Modeling Summary: (1) Source: Reference A-208:

"The model code employed for this study was a modified version of WASP4/TOXI4 (Freeman, et al. 1992) designed specifically for application in river systems where sediment-water exchange of solids and associated contaminants has a potential impact on contaminant exposure and export. The model permitted the calculation of the time-variable concentrations of solids and contaminants in the water column and bottom sediments of the river as a function of external loadings and forcing functions for the system. The application of this framework to the Buffalo River included configuration, parameterization, and calibration of the model to data from river, followed by application of the model to help us gain a better understanding of the effects of contaminated sediments on exposure and effects of contaminants in Areas of Concern and to evaluate a number of remediation options for the Buffalo River. Loading data were compiled for eleven contaminants in the first report, but only five of the most significant contaminants were modeled: total PCBs, benzo[a]anthracene, benzo[a]pyrene, lead, and copper. In addition to this physical-chemical transport and fate modeling, this report also contains the results of our application of a PCB bioaccumulation model for carp (adaptation of FDCHN4 (Connolly, et al. 1992) to the Buffalo River."

"Five basic remediation alternatives were evaluated with the above modeling framework."

"In conducting this remediation assessment, we discovered that the geometry and hydraulics of the Buffalo River are such that sediment resuspension only contributes a significant amount of contaminants to the water column during major high flow events. Furthermore, that resuspension contribution virtually all comes from the dredged channel of the river. On days of average or low flow, resuspension of contaminated sediments was not a significant factor in water column concentrations. The primary source of water column exposure and subsequent export to Lake Erie was determined to be loading from upstream of the modeled section of the river. This rather surprising result is reflective of the fact that significant decreases in point and combined sewer overflow loadings of contaminants to the river have already occurred."

"Because of these modeling results, we concluded that sediment remediation would not have a significant impact on reducing water column contaminant exposure. However, both the mass balance modeling and the carp bioaccumulation modeling indicated that sediment remediation would be a potentially important action for reducing direct sediment exposure, especially in "hot spots". The contaminant body burdens of bottom-feeding organisms, such as carp, will improve in response to sediment remediation actions."

(2) Source: Reference E-26:

MODELING

Project Name: **BUFFALO RIVER**

ProjectID: 02-02

Last Updated: 08/11/98

"The modeling approach used in the Buffalo River simulations was successfully used to predict sediment transport on other Great Lakes tributaries (Gailani et al. 1991, Cardenas et al. 1995). For use on the Buffalo River, where the geometry does not lend itself to a rectangular grid, the SEDZL code was transformed from rectangular to curvilinear coordinates. With this modification, it was possible to conduct both short-term and long-term simulations efficiently."

"The sediment transport component of the model was calibrated using field data for suspended solids and transect measurements. Comparison of model predictions to transect measurements demonstrated that the model does, in general, realistically predict the net flux of sediments at the sediment/water interface during low, medium and high flows. In particular, the model accurately predicted the absence of net sediment bed/water flux during low flows and the erosion/deposition patterns at high flows. Additional research is necessary to determine model accuracy for gross erosion and gross deposition during high flow events."

"Despite the shortcomings in some areas of data collection and subsequent laboratory experiments, the modeling efforts and field data demonstrate that SEDZL can realistically predict fine-grained sediment transport in the Buffalo River for a wide range of flow conditions."

FISH ADVISORIES

Project Name **BUFFALO RIVER**

ProjectID: 02-02

Advisory: Buffalo River and Harbor

AdvisoryID: 9

Extent: Erie County

Pollutant: PCBs (total)

Species: all fish

Population: NCSP

Population Definition: No Consumption-Subpopulation(s): Advises against consumption for populations that are potentially at greater risk, e.g., pregnant or nursing women, and small children.

Advisory Type: River

Advisory Number: 726

Status (Active or Rescinded): Active

Date Rescinded:

Contact Name: Tony Forti

Contact Number: 518-402-7815

Advisory: Buffalo River and Harbor

AdvisoryID: 8

Extent: Erie County

Pollutant: PCBs (total)

Species: carp-common

Population: NCGP

Population Definition: No Consumption-General Population: Advise against consumption by the general population.

Advisory Type: River

Advisory Number: 726

Status (Active or Rescinded): Active

Date Rescinded:

Contact Name: Tony Forti

Contact Number: 518-402-7815
