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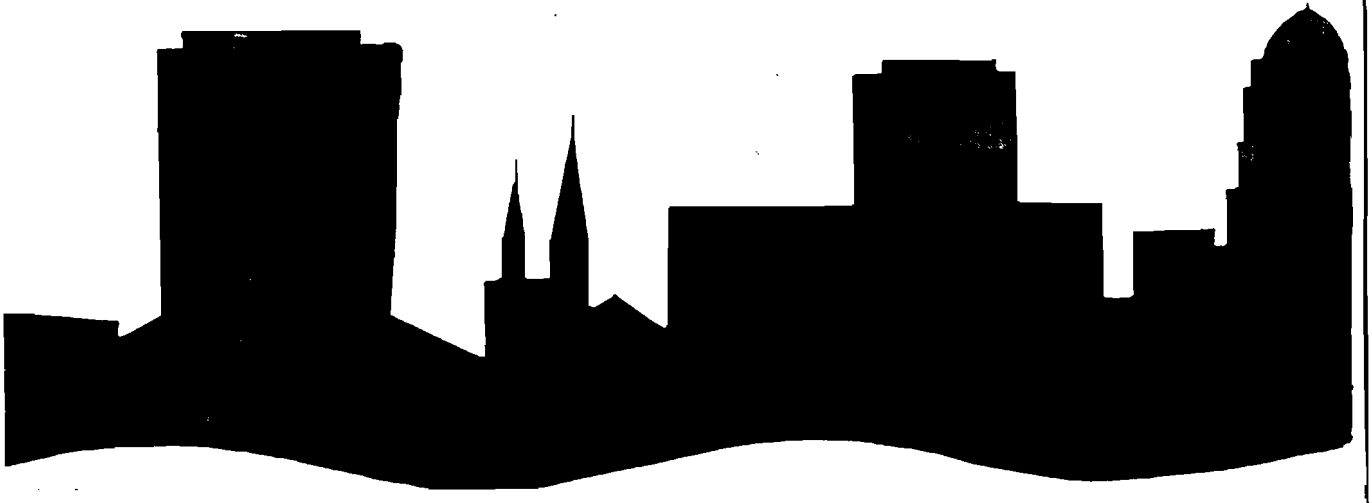
Department of Environmental Conservation

Buffalo River Remedial Action Plan Annual Report

June 1990



New York State Department of Environmental Conservation

MARIO M. CUOMO, *Governor* THOMAS C. JORLING, *Commissioner*

BUFFALO RIVER

REMEDIAL ACTION PLAN

ANNUAL REPORT

June 1990

New York State Department of Environmental Conservation

This Buffalo Remedial Action Plan Annual Report was prepared by the New York State Department of Environmental Conservation in cooperation with the Buffalo River Remedial Advisory Committee.

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EXECUTIVE SUMMARY

In November 1989 the Buffalo River Remedial Action Plan (RAP) was issued. A Remedial Advisory Committee (RAC) was formed early in 1990 to assist the DEC in the implementation of the RAP. The RAC is representative of concerned groups within the community that have an interest in the Buffalo River.

The Remedial Action Plan contained agency commitments to be attained by March 1990. The accomplishments over this four month period and activity projections for the next fiscal year are summarized as follows:

Stream Water Quality Monitoring

- A flow activated sampling station was established by DEC on the Buffalo River at Ohio Street. Event related sampling will be undertaken through the year.

- A dissolved oxygen sampling program was undertaken by DEC. The data analysis indicated the need for additional information on sediment generated dissolved oxygen demand. Additional data acquisition and analysis is planned for this year.

Bottom Sediments

- Requirements for sediment transport model improvements were developed by a contractor for DEC. Funding of the model improvements will be deferred as sediment transport modeling of the Buffalo River is being undertaken by USEPA under the Assessment and Remediation of Contaminated Sediments (ARCS) program.

- Methods for determining sediment criteria are continuing to be developed by USEPA.

Inactive Hazardous Waste Sites

- All Phase I investigations for sites in the Buffalo River basin have been completed.

- Phase II investigations were completed for three sites. One site under Phase II investigation, HiView Terrace, was remediated by contaminant removal. Five Phase II investigations are to be completed in 1990 and six additional investigations are to be started.

- A Remedial Investigations/Feasibility Study (RI/FS) was completed for the Madison Wire site. Four additional RI/FS's are to be completed by March 1991.

- A remedial design is underway at the Madison Wire site.

Municipal & Industrial Wastewater Facilities

- Discharge permit monitoring and renewal activities are on-going.

Combined Sewer Overflows

- A combined sewer system model has been developed and verified for the main interceptors. Operational simulations are underway.

Fish & Wildlife Habitat

- A plan to assess fish and wildlife habitat conditions and improvement potential has been developed. Efforts to obtain funding for plan implementation are being initiated.

CHAPTER I
INTRODUCTION

The Buffalo River Remedial Action Plan (RAP) was completed and issued in November 1989. To track implementation of the Remedial Action Plan, DEC will issue an annual report to show the progress on remediation by listing accomplishments in the previous fiscal year [1/] and describing commitments for the current fiscal year. This is the first annual report.

To assist DEC in the remediation process a Remedial Advisory Committee (RAC) was formed early in 1990. The RAC is representative of concerned groups within the community that have an interest in the Buffalo River. The groups include government officials, public interest groups (non-economic), economic interests and private citizens. In addition to RAC members, agencies at all levels of government will be asked to participate and provide input in RAP implementation as needed.

DEC and other responsible agencies had been, and are currently carrying out remediation of environmental problems on the Buffalo River. The remedial strategy outlined in the RAP included initial (1989-90) commitments to be completed by March 1990 to advance the remediation of the Buffalo River. A summary of the status of those undertakings and an overview of commitments for 1990-91 is presented.

1/ The New York State fiscal year extends from April 1 to March 31.

CHAPTER 2
1989-90 ACCOMPLISHMENTS

An overview of 1989-90 accomplishments describing the objectives, responsible agency and status is shown in Table 1. A more detailed description follows. Under each accomplishment the "Next step:" heading denotes those actions needed to carry forward the overall RAP strategy.

A. Stream Water Quality Monitoring

1. Flow Activated Sampling Station

Establish a flow activated sampling station on the lower Buffalo River.

DEC has established a flow activated sampling station at Ohio Street for sample collection during high flow events.

Next step: The station will be used for one season of sample collection. The station will take samples for the determination of pesticides, mirex, PCBs, PAHs, hexachlorobenzene and metals.

2. Dissolved Oxygen Measurements

Conduct dissolved oxygen measurements on the Buffalo River.

DEC made extensive dissolved oxygen measurements under a variety of conditions and at different depths and cross sections. In addition, biochemical oxygen demand measurements were made to

determine upstream, bottom sediment, and other contributors to oxygen demand. The data analysis indicated the need for additional information on sediment generated dissolved oxygen demand.

Next step: Additional sediment generated dissolved oxygen data acquisition is required to understand and identify the causes of low dissolved oxygen.

B. Bottom Sediments

1. Sediment dynamics modeling

Develop requirements for improvements to a sediment dynamics model that would allow sediment scouring and deposition to be accurately predicted under a wide variety of flow conditions, and for alternative dredging scenarios.

A review and analysis of previous modeling on the Buffalo River was made and requirements for sediment model improvements were developed by a contractor for DEC.

Next step: Funding of the model improvements will be deferred as sediment dynamics modeling of the Buffalo River is being undertaken by the USEPA under the Assessment and Remediation of Contaminated Sediments (ARCS) program (See Appendix A).

2. Criteria Development

Develop methods for determining sediment criteria that have scientific validity.

The USEPA has been working for several years on developing and validating tests and associated acceptance criteria that would allow decisions to be made relative to the likely environmental impacts of contaminated sediments.

Next step: Once a criteria methodology has been developed by EPA, DEC will apply this methodology to the Buffalo River sediments.

C. Inactive Hazardous Waste Sites

1. Phase I Site Investigations

Conduct Phase I investigations involving existing data accumulation and assessment.

All Phase I studies for the Buffalo River basin have been completed by DEC (Appendix B, Tables B-1 and B-2).

Next step: The conduct of Phase II investigations, which include preliminary field studies to fill data gaps to complete the initial site assessment, can be scheduled.

2. Phase II Site Investigations

Conduct Phase II field investigations to fill data gaps to complete initial site assessments.

Phase II investigations have been completed by DEC at the following sites since issuance of the RAP: Allied Chemical, MacNaughton Brooks and Lancaster Reclamation. The HiView Terrace site was remediated through a removal action. Sites with

Phase II investigations on-going are Town of Marilla, Land Reclamation, Old Land Reclamation, Donner Hanna Coke and Lehigh Valley Railroad (Appendix B, Tables B-1 and B-2).

Next step: Once Phase II site investigations are complete, the sites will be ranked and determinations of need for the conduct of Remedial Investigation/Feasibility Studies (RI/FS) will be made. Once an RI/FS is determined to be required, implementation action can be initiated under a DEC Consent Order by the responsible party or directly by DEC in the absence of a known responsible party.

3. Remedial Investigation/Feasibility Studies

Conduct Remedial Investigation/Feasibility Studies to define contaminant pathways and assess alternative remedial measures.

A Remedial Investigation/Feasibility Study has been completed at Madison Wire and is on-going at the Buffalo Color site.

Next step: Once Remedial Investigation/ Feasibility Studies are complete, site remedial measures can be designed.

D. Municipal and Industrial Wastewater Facilities

Discharge Permit Monitoring and Renewal

Continue discharge permit monitoring to achieve compliance with secondary treatment for municipal discharges and best available technology and best management practices for industrial discharges.

DEC has reviewed self-monitoring reports from dischargers, inspected facilities in operation and independently sampled effluent to check on the validity of self-monitoring data. General compliance with permit requirements has been maintained.

Next step: As the end of the five year term for each existing discharge permit approaches, each permit will be reassessed as part of the reissuance process.

E. Combined Sewer Overflows

Combined Sewer System Modeling

Evaluate the combined sewer system model currently under development to assess its ability to reflect sewer system response to various storm events and system operation plans.

The Buffalo Sewer Authority (BSA) has undertaken an evaluation of initial model development and testing along with additional system monitoring to verify the modeled system response. Model adjustment and refinement has been completed.

Next step: Selected simulations are being run to assess system conditions and alternative operations.

F. Fish and Wildlife Habitat

Habitat Improvement Potential

Develop plan to assess fish and wildlife habitat conditions and improvement potential.

A plan has been developed by DEC which specifically identifies work to be undertaken to assess existing habitat conditions in the Buffalo River both aquatic and terrestrial and to identify potentials for habitat improvement.

Next step: The work plan could be segmented into phases for accomplishment. A contract(s) (dependent upon NYS Division of Budget approval) could be let to accomplish the work.

TABLE 1
BUFFALO RIVER REMEDIAL ACTION PLAN
1989-90 ACCOMPLISHMENTS

Objective	Target Completion Date	Responsible Agency	Status	Projected Completion Date
A. Stream Water Quality Monitoring				
1. Establish a flow activated sampling station	March 1990	DEC	Complete	
2. Measure dissolved oxygen	March 1990	DEC	Complete 1/	
B. Bottom Sediments				
1. Develop requirements for sediment model improvements	March 1990	DEC	Complete	
2. Develop methods for determining sediment criteria		EPA	On-going	?
C. Inactive Hazardous Waste Sites				
1. Conduct Phase I site investigations	March 1990	DEC	Complete	
2. Conduct Phase II investigations	March 1990	DEC		
. Allied Chemical			Complete	
. MacNaughton-Brooks			Complete	
. Lancaster Reclamation			Complete	
. Town of Marilla			On-going	December 1990
. Land Reclamation			On-going	December 1990
. Old Land Reclamation			On-going	December 1990

1/ Work planned for 1989-90 completed. Additional data required is to be obtained in 1990-91.

TABLE 1 (Continued)
BUFFALO RIVER REMEDIAL ACTION PLAN
1989-90 ACCOMPLISHMENTS

Objective	Target Completion Date	Responsible Agency	Status	Projected Completion Date
. HiView Terrace			Complete	
. Donner-Hanna Coke			On-going	December 1990
. Lehigh Valley Railroad			On-going	December 1990
3. Conduct Remedial Investigation/Feasibility Studies	March 1990	DEC		
. Madison Wire			Complete	
. Buffalo Color			On-going	December 1990
D. Municipal and Industrial Wastewater Facilities				
Continue discharge permit monitoring	On-going	DEC	On-going	On-going
E. Combined Sewer Overflows				
Evaluate combined sewer model	March 1990	BSA	On-going 1/	December 1990
F. Fish and Wildlife Habitat				
Develop plan for assessment of habitat conditions and improvement potential	March 1990	DEC	Complete	

1/ Model complete, simulations underway

CHAPTER 3

1990-91 COMMITMENTS

The following is a description of 1990-91 commitments describing objectives, time for completion and responsible agency. An overview of agency commitments is shown in Table 2.

A. Stream Water Quality Monitoring

1. Flow Activated Sampling Station

Conduct high flow event sampling with a flow activated sampling station on the lower Buffalo River.

DEC has established a flow activated sampling station at Ohio Street for sample collection during high flow events. The station will be used for one season of sample collection. Measurements will also be made at a station at the upper end of the Area of Concern, and the results compared to determine the loading of contaminants of concern from both the upper basin and the Area of Concern.

Completion date - March 1991
Responsible agency - DEC

Next step: Once measurements are completed an analysis should indicate the amount of contaminants discharged from the Buffalo River. The loading of contaminants from both the upper basin and the Area of Concern will be determined.

2. Dissolved Oxygen Measurements

Conduct dissolved oxygen measurements on the Buffalo River.

Additional water and sediment generated dissolved oxygen demand measurements will be taken. An assessment will be made of the benefits of supplemental water imput from the Buffalo Harbor to the Buffalo River through the Buffalo River Improvement Corporation pumping and transmission system.

Completion date - March 1991
Responsible agency - DEC

Next step: Once the exact nature of the low dissolved oxygen is understood and the contributing causes are identified, remedial measures can be planned.

B. Bottom Sediments

1. Sediment dynamics modeling

Develop a sediment dynamics model that would allow sediment scouring and deposition to be accurately predicted under a wide variety of flow conditions, and for alternative dredging scenarios.

A sediment dynamics model of the Buffalo River is being developed by the USEPA under the Assessment and Remediation of Contaminated Sediments (ARCS) program (Appendix A).

Completion date - April 1991
Responsible Agency - EPA

Next step: The ARCS program sediment dynamics model will produce detailed predictions of sediment scour and deposition under a variety of conditions. This will provide information necessary for an

assessment of the feasibility of remediation through sediment deposition and armoring.

2. Criteria Development

Develop methods for determining sediment criteria that have scientific validity.

EPA is developing and validating tests and associated acceptance criteria that would allow decisions to be made relative to the likely environmental impacts of contaminated sediments. This work will be brought to a conclusion with a report on recommended tests and criteria.

Completion date - ?
Responsible agency - USEPA

Next step: Once a criteria methodology has been developed by EPA, DEC will apply this methodology to the Buffalo River sediments. Funds to support this could come from a demonstration project under the Clean Water Act, Section 118. It would include both the development of site specific criteria, and actual testing of the bottom sediments.

C. Inactive Hazardous Waste Sites

1. Phase II Site Investigations

Conduct Phase II field investigations to fill data gaps to complete initial site assessments.

Phase II investigations are underway at five sites (Town of Marilla, Land Reclamation, Old Land Reclamation, Donner-Hanna Coke and Lehigh Valley Railroad).

Completion date - December 1990
Responsible agency - DEC

Six additional investigations are being started (Stocks Pond, Dresser Industries, Clinton-Bailey, Tifft-Hopkins, West Seneca Transfer Station and Bern Metal).

Completion date - December 1991
Responsible agency - DEC

Next step: Once Phase II site investigations are complete, the sites will be ranked and determinations of need for the conduct of Remedial Investigation/Feasibility Studies (RI/FS) will be made. Once an RI/FS is determined to be required, implementation action can be initiated under a DEC Consent Order by the responsible party or directly by DEC in the absence of a known responsible party.

2. Remedial Investigation/Feasibility Studies

<u>Conduct Remedial Investigation/Feasibility Studies to define contaminant pathways and assess alternative remedial measures.</u>

Remedial Investigation/Feasibility Studies are underway at four sites (Buffalo Color, Union Road, Houdaille-Manzel and Niagara Transformer).

Completion date - March 1991
Responsible agency - DEC

Next step: Once Remedial Investigation/ Feasibility Studies are complete, site remedial measures can be designed.

3. Remedial Design

Conduct Remedial Design

Remedial design is underway at the Madison Wire site.

Completion date - March 1991
Responsible agency - DEC

Next step: Once remedial design is complete remedial construction can begin.

D. Municipal and Industrial Wastewater Facilities

Discharge Permit Monitoring and Renewal

Continue discharge permit monitoring to achieve compliance with secondary treatment for municipal discharges and best available technology and best management practices for industrial discharges.

DEC reviews self-monitoring reports from discharges, inspects facilities in operation and independently samples effluent to check on the validity of self-monitoring data. Significant violations of permit conditions trigger compliance or enforcement measures.

Completion date - On-going
Responsible agency - DEC

Next step: As the end of the five year term for each existing discharge permit approaches, each permit will be reviewed and reissued to meet water

quality standards and with the application of the technology requirements applicable at the time of renewal.

E. Combined Sewer Overflows

Combined Sewer System Modeling

Utilize the combined sewer system model to assess sewer system response to various storm events and system operation plans.

Selected simulations are being run on the Buffalo Sewer Authority (BSA) combined sewer system model to assess system conditions and alternative operations.

Completion date - December 1990
Responsible agency - BSA

Next step: Once the exact nature of potential system modifications is defined, remedial measures can be planned.

F. Fish and Wildlife Habitat

Habitat Improvement Potential

Develop plan to assess fish and wildlife habitat conditions and improvement potential.

Habitat loss impairs beneficial uses such as fishing and observing wild birds and animals. The combination of dredging and bulkheading on the

Buffalo River has substantially reduced fish habitat by eliminating many productive shallow waters and wetlands. A plan has been developed by DEC which specifically identifies the work to be undertaken to assess the existing habitat conditions. No funds are currently available to implement the work plan developed by DEC. Efforts are being made to obtain funds.

Completion date - ?
Responsible agency - DEC

Next step: Upon completion of the assessment a habitat improvement scheme could then be developed which would lead to site acquisition to preserve habitat improvement potentials.

TABLE 2
BUFFALO RIVER REMEDIAL ACTION PLAN
1990-91 COMMITMENTS

Objective	Target Completion Date	Responsible Agency
A. Stream Water Quality Monitoring		
1. Conduct high flow event sampling with flow activated sampling station	March 1991	DEC
2. Continue dissolved oxygen investigation	March 1991	DEC
B. Bottom Sediments		
1. Conduct sediment dynamics modeling	April 1991	EPA (ARCS) 1/
2. Develop methods for determining sediment criteria	?	EPA
C. Inactive Hazardous Waste Sites		
1. Conduct Phase II site investigations		DEC
. Town of Marilla	December 1990	
. Land Reclamation	December 1990	
. Old Land Reclamation	December 1990	
. Donner-Hanna Coke	December 1990	
. Lehigh Valley Railroad	December 1990	
. Stocks Pond	December 1991	
. Dresser Industries	December 1991	
. Clinton-Bailey	December 1991	
. Tifft-Hopkins	December 1991	
. W. Seneca Transfer Sta.	December 1991	
. Bern Metal	December 1991	
2. Conduct Remedial Investigation/ Feasibility Studies		DEC
. Buffalo Color	March 1991	
. Union Road	March 1991	
. Houdaille-Manzel	March 1991	
. Niagara Transformer	March 1991	

1/ See Appendix A for this and other ARCS activities.

TABLE 2 (Continued)
BUFFALO RIVER REMEDIAL ACTION PLAN
1990-91 COMMITMENTS

Objective	Target Completion Date	Responsible Agency
3. Conduct remedial design		DEC
. Madison Wire	March 1991	
D. Municipal and Industrial Wastewater Facilities		
Continue discharge permit monitoring	On-going	DEC
E. Combined Sewer Overflows		
Conduct system simulations with combined sewer model	December 1990	BSA
F. Fish and Wildlife Habitat		
Obtain funding for assessment of habitat conditions and improvement potential	?	DEC

APPENDIX

A. ASSESSMENT AND REMEDIATION OF CONTAMINATED SEDIMENTS (ARCS) WORK PLAN EXCERPTS

B. INACTIVE HAZARDOUS WASTE SITE REMEDIATION

ASSESSMENT AND REMEDIATION OF CONTAMINATED SEDIMENTS (ARCS) WORK PLAN EXCERPTS

Introduction

The 1987 amendments to the Clean Water Act, in Section 118(c)(3), authorize the U.S. Environmental Protection Agency's (EPA) Great Lakes National Program Office (GLNPO) to coordinate and conduct a 5-year study and demonstration project relating to the control and removal of toxic pollutants in the Great Lakes, with emphasis on removal of toxic pollutants from bottom sediments. Five areas were specified in the Clean Water Act as requiring priority consideration in locating and conducting demonstration projects: Saginaw Bay, Michigan; Sheboygan Harbor, Wisconsin; Grand Calumet River, Indiana; Ashtabula River, Ohio; and Buffalo River, New York. In response, GLNPO has initiated the Assessment and Remediation of Contaminated Sediments (ARCS) program. ARCS is an integrated program for the development and testing of assessment and remedial action alternatives for contaminated sediments. Information from ARCS program activities will be used to guide the development of Remedial Action Plans (RAPs) for the 42 Great Lakes Areas of Concern (AOCs, as identified by the International Joint Commission), as well as Lakewide Management Plans.

GLNPO is responsible for administering the ARCS Program. However, the Program is really a multi-organization endeavor. Other participants in ARCS include the U.S. Army Corps of Engineers (COE), the U.S. Fish and Wildlife Service (FWS), the National Oceanic and Atmospheric Administration (NOAA), EPA headquarters offices, EPA Regions II, III and V, Great Lakes State Agencies, numerous universities and public interest groups.

The management framework for the ARCS Program is depicted in Figure 1. The Management Advisory Committee provides overall advice on ARCS Program activities. The Management Advisory Committee is made up of representatives from the organizations noted above. Three technical Work Groups identify and prioritize tasks to be accomplished in their areas of expertise. These are the Toxicity/Chemistry, Risk Assessment/ Modeling, and the Engineering/Technology Work Groups. The Communication/Liaison Work Group oversees technology transfer and public information, public participation activities. In between the Management Advisory Committee and the Work Groups, the Activities Integration Committee integrates the technical aspects of the work groups' activities.

Objectives

The overall objectives of the ARCS program are:

- To assess the nature and extent of bottom sediment contamination at selected Great Lakes Areas of Concern,
- To evaluate and demonstrate remedial options, including removal, immobilization and advanced treatment technologies, as well as the "no action" alternative, and
- To provide guidance on the assessment of contaminated sediment problems and the selection and implementation of necessary remedial actions in the Areas of Concern and other locations in the Great Lakes.

The primary aim of the ARCS Program is to develop guidance that can be used at sites throughout the Great Lakes. Site-specific factors at the five priority consideration areas will need to be considered in conducting assessments and choosing appropriate remedial alternatives for those locations. Nevertheless, the varying characteristics at the five areas should provide a range of conditions applicable to other sites. The five sites are to be viewed as case studies of the application of the procedures developed under ARCS.

Another important aim of the ARCS Program is to provide guidance that is at once scientifically sound and technologically and economically practical. The intent is for the guidance to provide the environmental manager with methods for making cost-effective, environmentally sound decisions. As a result, the ARCS Program is based as much as possible on the application of proven techniques rather than on basic research into new ones. However, where needed techniques are not available, some developmental work will also be undertaken.

To completely assess the causes and effects of contaminated sediments and to fully evaluate the remedial options available and their impacts, a mass balance of each of the priority areas, including quantification of contaminant loadings from point and non-point sources, would be desirable. Unfortunately, this kind of characterization could cost several millions of dollars for each priority area. Recognizing that sufficient funds are not available for complete characterizations of all the areas and also recognizing that complete characterization may not be necessary to reach a decision regarding the need for remediation, the ARCS Program intends to use the available resources to develop a basic framework for site characterization. More in-depth evaluations could be performed if additional funds became available.

Although the major emphasis of the ARCS Program is the evaluation and demonstration of remedial alternatives, these cannot occur without adequate characterizations of the nature and extent of contaminated sediment problems. Therefore, assessments of the contaminated sediment problems at each of the priority consideration areas will also be performed, if not available from other sources.

It is important to stress at the outset that ARCS is not a cleanup program, and will not solve the contaminated sediment problems at the five priority consideration areas. The Program will, however, provide valuable experience, methods, and guidance that could be used by other programs to actually solve the identified problems.

There are several important aspects of the management of contaminated sediments that will not be fully addressed by the ARCS Program because they were felt to be outside the main objectives of the study. Regulatory requirements and programs and socioeconomic factors in decision-making are two such aspects that will be critical in the choice of a remedial alternative (or whether to remediate at all). While not addressing such issues in depth, the ARCS Program will identify issues that need to be resolved before sediment cleanups can go forward.

Activities

Many complicated issues need to be addressed in order to accomplish the objectives of this Program. However, they can be boiled down to a few basic questions:

- Are the sediments contaminated with substances that are impairing or injuring biota (aquatic, mammalian, avian or human)?
- Is the injury of such magnitude or quality that remedial action is needed?
- Will remedial actions be effective in reducing or eliminating the impairment or injury?
- What remedial action alternatives are available, what are their limitations and how effective are they likely to be?
- What are the impacts of the remedial action itself?
- What are the costs of taking remedial action?

Toxicity/Chemistry Work Group Work Plan

Introduction

The Toxicity/Chemistry Work Group is responsible for developing and testing sediment assessment methods. This Work Group will assess the nature and extent of contaminated sediment problems by studying the chemical, physical and biological characteristics of contaminated sediments and their biotic communities. The Work Group will demonstrate effective assessment techniques for aquatic life at the priority consideration areas. Finally, it will use the information obtained to produce contamination maps of the areas.

Objectives

The primary objectives of the Toxicity/Chemistry Work Group are:

1. Contamination Survey Guidance. To develop guidance on the performance of assessment surveys of contaminated sediments through the development of a methodology for such surveys; and

2. Performance of Contamination Surveys. To implement contamination survey techniques at the priority consideration areas.

Activities

The tasks needed to accomplish these objectives are:

1) General characterization, sampling and mapping of sediment deposits,

2) Toxicity testing of sediment samples,

3) Chemical analysis of sediment and fish samples,

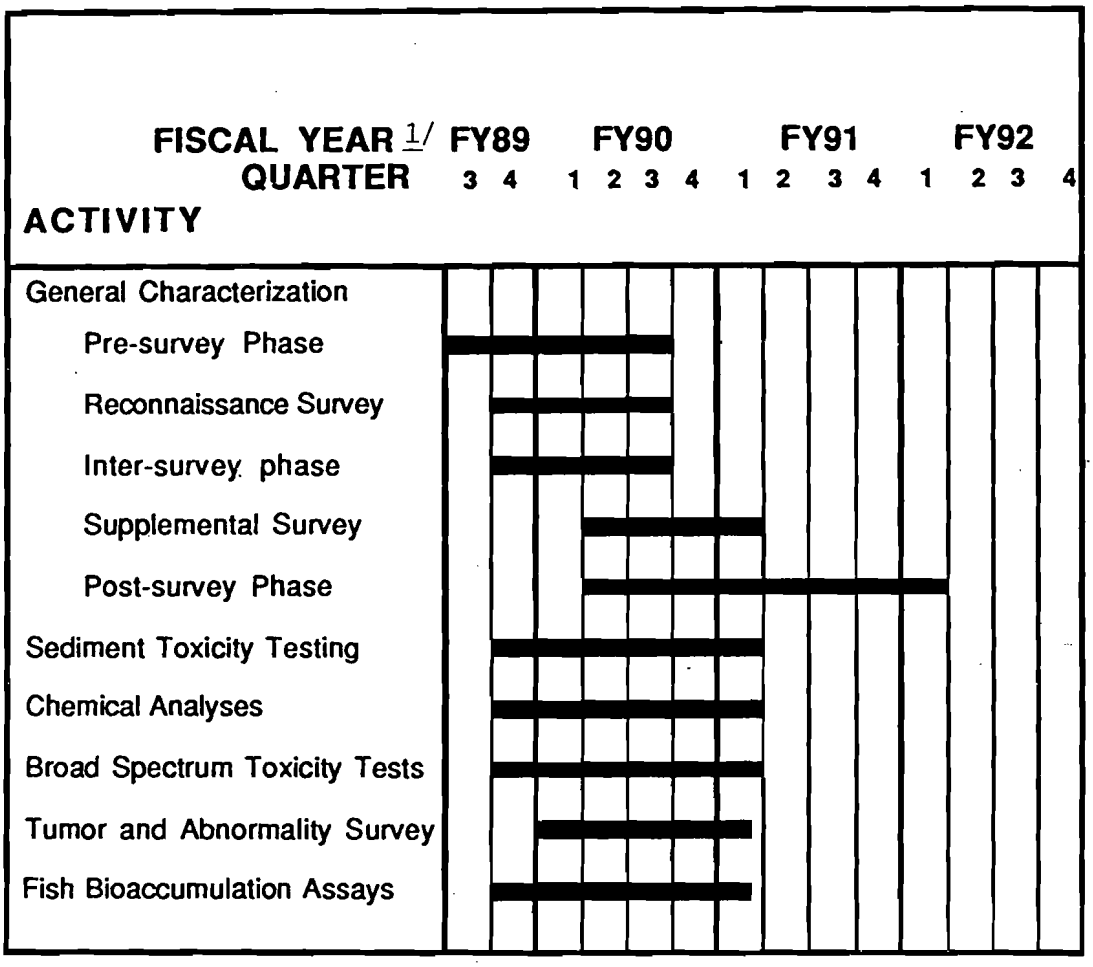
4) Broader spectrum toxicity testing on a selected subset of sediment samples,

5) Fish tumor and abnormality surveys,

6) Fish Bioaccumulation Assays.

These tasks primarily address Objective 2. Objective 1 will be accomplished by summarizing and interpreting the results of the assessment activities undertaken in support of Objective 2 in preparing Volume III of the ARCS outputs, the Contaminated Sediments Assessment Guidance.

Timeline - Toxicity/Chemistry Work Group



1/ Federal fiscal year extends from October 1 to September 30

Risk Assessment/Modeling Work Group Work Plan

Introduction

The Risk Assessment/Modeling Work Group is responsible for the evaluation of environmental and human health impacts resulting from contaminated sediments, and the development of techniques for assessing the environmental impacts resulting from the implementation of remedial alternatives. The assessments will serve to identify and develop techniques and tools for performing sediment-related hazard evaluations. Assessments will consider the difficult task of separating the effects of sediments from those of the water column or other sources. A system for prioritizing sites with contaminated sediments will be developed and applied to the five priority consideration areas to provide a comparative framework for assessing multiple sites in need of remediation.

Objectives

The primary objectives of the RAM Work Group are:

1. Hazard Evaluation: To evaluate exposures to, and impacts resulting from, contact with contaminated sediments and media contaminated by sediment contaminants, incurred by all receptors of concern under the "no action" alternative and other remedial alternatives. This evaluation will draw upon the development and integration of predictive tools to describe future hazards and risks.

2. Prioritization System Development: To develop and apply a numerically-based system for use as a decision tool to aid in the prioritization of sites for remedial action;

3. Development of Assessment Guidance: To develop guidance on the methods of assessing environmental and human health impacts of contaminated sediments.

Activities

The tasks needed to accomplish these objectives are:

1) Hazard Evaluation

- Exposure Assessment
  - Exposure Model Development
  - Synoptic Surveys
- Risk/Hazard Assessments
  - Human
  - Aquatic Life
  - Wildlife

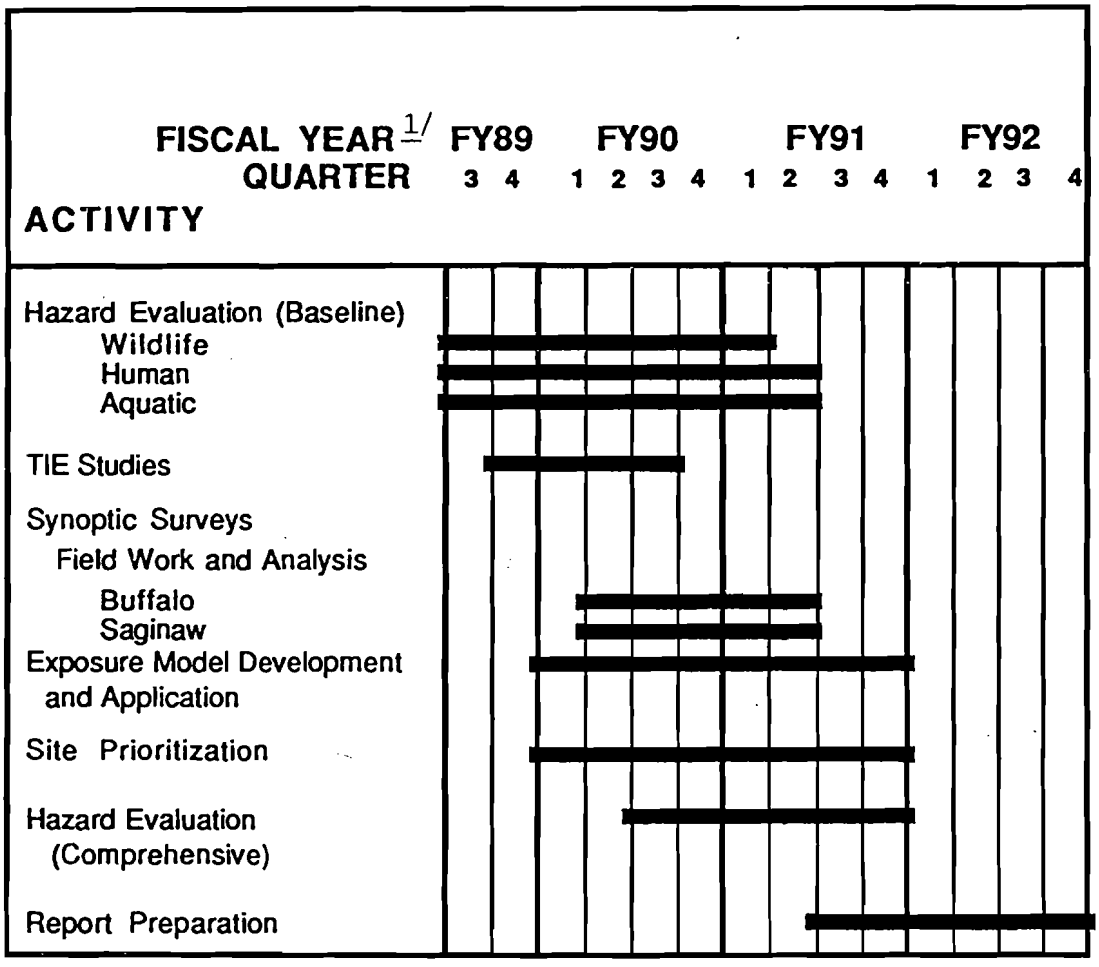
2) Site Prioritization

Tasks under section 3.1 address Objective 1; tasks under section 3.2 address Objective 2. Objective 3 will be accomplished by the implementation and interpretation of activities under Objectives 1 and 2, in overall ARCS guidance documents.

Table 3. Components of Phase I and II Exposure Modeling Efforts

Phase I:
1) Compilation, review and analysis of all pertinent historical environmental information,
2) Development of a sediment transport, deposition and resuspension model,
3) Development of a Unit Toxicity Model in areas where the cause of sediment toxicity (e.g., the particular chemicals) has not been identified,
4) Development of Load/Response relationships for the chemicals of concern, based on existing information about chemical loadings to the system.
Phase II:
1) Measure contaminant loadings to the system from: o Upstream loadings, o Tributary loadings, o Combined sewer overflows, o Hazardous waste site discharges,
2) Sample aquatic biota,
3) Measure flow characteristics of river,
4) Measure conventional parameters,
5) Characterize sediment deposits,
6) Perform a Toxicity Identification Evaluation (TIE) on selected sediment samples.

Timeline - Risk Assessment/Modeling Work Group



1/ Federal fiscal year extends from October 1 to September 30

Engineering/Technology Work Group Work Plan

Introduction

The primary responsibilities of the Engineering/Technology Work Group are to evaluate and test available removal and remedial technologies for contaminated sediments, to select promising new technologies for further testing, to demonstrate alternatives at priority consideration areas and estimate contaminant losses during remediation. The Engineering/Technology Work Group will seek technologies that are available, implementable, and economically feasible. Both removal and *in situ* alternatives will be considered.

Objectives

The primary objectives of the Engineering/Technology Work Group are:

1. Evaluation of existing technologies: To evaluate the effectiveness, technical feasibility and cost of existing technologies to remediate contaminated sediments and estimate contaminant losses during remediation,

2. Demonstration of effectiveness: To demonstrate the effectiveness of sediment remedial technologies through the performance of bench-scale tests, and pilot-scale demonstration projects at selected priority consideration areas,

3. Options Development: To develop options for the remediation of contaminated sediments at the five priority consideration areas,

4. Development of Remediation Guidance: To develop guidance on the selection and implementation of contaminated sediment remedial alternatives.

Activities

The tasks needed to accomplish the Work Group objectives are:

1) Review of technical literature,

2) Evaluation of applicability of technologies for bench-scale studies,

3) Develop recommendations for pilot-scale demonstration,

4) Estimate contaminant losses during remediation,

5) Collection of sediments for bench-scale testing,

6) Sediment storage and analysis,

7) Bench-scale testing of selected treatment technologies,

8) Treatment technologies for inorganic contaminants,

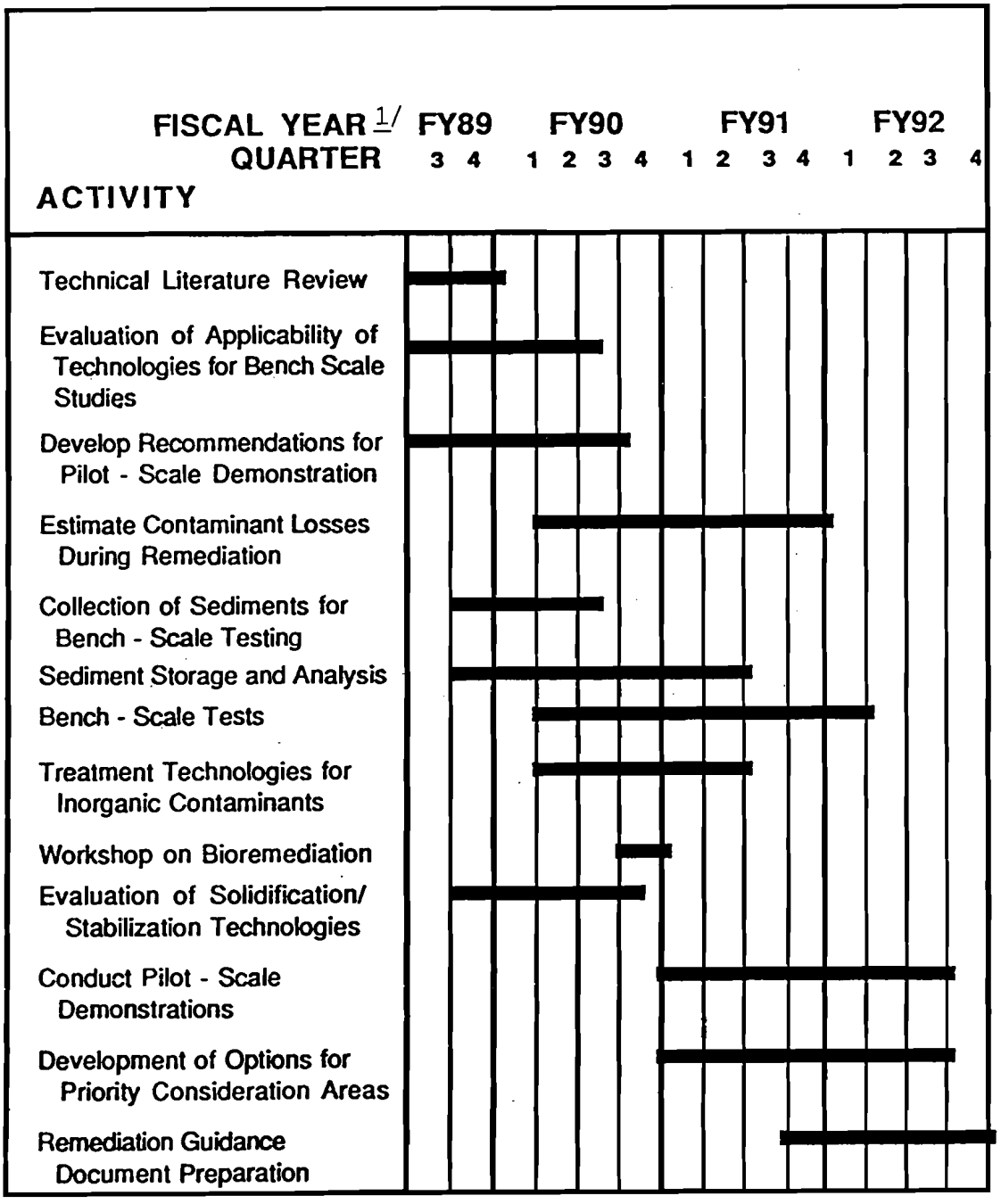
9) Workshop on bioremediation technologies,

10) Evaluation of solidification/stabilization technologies,

11) Conduct pilot-scale demonstrations,

12) Development of options for priority consideration areas.

Timeline - Engineering/Technology Work Group



1/ Federal fiscal year extends from October 1 to September 30

Specific Fiscal Year 1990 Work Plan Elements

This section will provide more detailed information in bullet form on ARCS Program activities by the work groups in FY 1990.

Activities Integration Committee

- The Activities Integration Committee will continue management and integration of day-to-day ARCS Program activities.
- The Committee will provide QA/QC support and review with the assistance of EPA EMSL. Existing and new data sets will be subjected to QA review as needed.
- The Committee will oversee implementation of the data management program for ARCS, as well as the GIS system. Basic mapping information for all of the priority consideration areas will be entered into the GIS system.
- Finally, the Activities Integration Committee will initiate development of the ARCS Program reports and guidance documents to ensure timely completion and to help identify inputs that will be needed from the Work Groups.

Toxicity/Chemistry Work Group

- The Work Group will complete analyses of samples collected in FY 1989 at the Buffalo River and Grand Calumet River/Indiana Harbor Canal.
- Sampling and analysis will be conducted of the first ten Master Stations on the Saginaw River. Later in the year, the second set of Master Stations will also be sampled. Sediments will be analyzed for chemistry, biological toxicity testing, and benthic community structure analysis.
- Sampling and analysis will be conducted on the second set of Master Stations on the Buffalo River.
- Analyses will be conducted on Ashtabula River sediments for biological toxicity testing and benthic community structure analysis. The samples will be collected by EPA Superfund and the Fields Brook/Ashtabula River PRPs.
- Sediment profiling and core sampling will be done on the Buffalo River, Grand Calumet River/Indiana Harbor Canal, and Saginaw River. Analyses will be conducted for the indicator chemical parameters.
- Surveys will be conducted in the Grand Calumet River and Saginaw River for tumors and other abnormalities in resident fish populations. Histopathology will be conducted on fish tissue previously collected from the Buffalo River.
- Bioaccumulation testing will be done on sediment samples from the Buffalo River, Grand Calumet River and Saginaw River.

Risk Assessment/Modeling Work Group

- Baseline hazard evaluations will be undertaken for the five priority consideration areas. Impacts upon aquatic, wildlife, and human receptors will be evaluated.

- Mini mass balances of selected contaminants will be conducted on the Buffalo River and the Saginaw River. The sampling will include a synoptic survey of sources.

- The sediment resuspension and toxic unit models will be developed on the Buffalo River and the Saginaw River.

- Sediment prioritization ranking schemes will be tested using data from all five priority consideration areas.

- A study of the recovery of an impacted benthic community will be conducted on the Black River (Lorain), Ohio following a sediment cleanup project there by USX.

- Research on the Toxicity Identification Evaluation (TIE) procedure will be conducted on sediments from the Buffalo River and Saginaw Bay to identify what is causing the toxicity observed in the samples collected there.

Engineering/Technology Work Group

- Bench-scale treatment tests will be completed on the Buffalo River sediment samples collected in FY 1989.

- Sediment samples will be collected from the Ashtabula River, Grand Calumet River/Indiana Harbor Canal, Saginaw River, and Sheboygan Harbor for bench-scale treatment technology evaluations.

- Bench-scale treatment technology evaluations will be conducted according to the following plan:

    - Solidification/Stabilization treatments on sediments from the Buffalo River,

    - Inorganic chemical treatment/recovery technologies on sediments from the Ashtabula River, Grand Calumet River, and Saginaw Bay,

    - Nucleophilic substitution (KPEG process) on sediments from the Ashtabula River and Sheboygan Harbor,

    - B.E.S.T. solvent extraction process on sediments from the Buffalo River, Grand Calumet River, and Saginaw River,

    - CF Systems solvent extraction process on sediments from the Grand Calumet River and Saginaw Bay,

    - Incineration on sediments from the Grand Calumet River,

    - Low Temperature Thermal Stripping on sediments from the Ashtabula River,

    - Wet Air Oxidation process on sediments from the Buffalo River, and

- Low Energy Extraction using both a solvent and thermal treatment on sediments from the Buffalo River and Saginaw Bay.

- The Engineering/Technology Work Group will initiate development of guidance on selecting cleanup options.

- The Work Group will sponsor a workshop on biological treatment processes (bioremediation) to assess the state-of-the-art and determine which bioremediation technologies might be selected for testing by the ARCS Program.

- Concept plans for sediment remedial options will be developed for the Buffalo River, Grand Calumet River, and Saginaw River.

Communication/Liaison Work Group

- Public meetings on the ARCS Program will be held in the Buffalo River, Grand Calumet River, and Saginaw Bay priority consideration areas.

- A meeting will be held for Remedial Action Plan Citizens Advisory Committees in February in Buffalo, New York, and will include a special ARCS Program session.

- The Work Group will continue to issue fact sheets on the ARCS Program approximately every 2 months.

- The ARCS slide show will be prepared.

- Frequent news releases on the ARCS Program will be prepared on an ongoing basis in cooperation with the EPA Office of Public Affairs.

- The Communication/Liaison Work Group will continue to facilitate communication between the ARCS Work Groups.

INACTIVE HAZARDOUS WASTE SITE REMEDIATION

Thirty-two sites were identified in the Buffalo River basin where hazardous wastes may have been deposited. New information obtained as a result of work undertaken during 1989-90 is summarized and underlined in Table B-1. Site investigation and remediation program progress in the Buffalo River basin is shown in Table B-2.

Two new sites were identified during 1989-90 in the Buffalo River basin. These sites have been added to the above listings.

TABLE B-1
REMEDIATION STATUS
HAZARDOUS WASTE SITES
BUFFALO RIVER WATERSHED

NUMBER	SITE NAME	SITE CODE	REMEDIATION STATUS	CONTAMINANT MIGRATION CONCERNS
CAYUGA CREEK				
915093	Town of Marilla	2A	Phase I investigation completed. Phase II investigation underway.	Leachate problems at the site and groundwater data indicate a potential for contaminant migration from this site.
915069	Lancaster Reclamation	2A	Phase I Investigation completed. Phase II Investigation completed.	Analyses of groundwater indicate the site is impacting groundwater quality. Surface water results do not indicate a significant contamination condition exists.
915082	Stocks Pond	2A	Phase I Investigation completed. Phase II investigation underway.	Proximity of this site to Cayuga Creek and slightly elevated levels of metals and phenols at site indicate a potential for contaminant movement to the creek.
915064	Dresser Industries	2A	Phase I investigation completed Phase II investigation underway.	Potential for contaminant migration indeterminable.
915105	Village of Depew - Borden Rd.	2A	Phase I investigation completed. Supplemental sampling completed.	The site contains foundy sands with phenolic based binders. A portion of the site has been excavated. Investigations indicate no hazardous waste present on site.
915070	Land Reclamation	3	Phase I Investigation complete. Phase II Investigation underway.	Data indicates presence of contaminants in groundwater and surface water. Contaminant migration confirmed.

TABLE B-1

NUMBER	SITE NAME	SITE CODE	REMEDIATION STATUS	CONTAMINANT MIGRATION CONCERNS
915129	Old Land Reclamation	2A	Phase I Investigation complete. Phase II Investigation underway.	Soil and leachate sampling indicates the presence of inorganic and organic contaminants. Proximity of this site to Cayuga Creek indicates a potential for contaminant movement to the creek.
915128	Union Road	2	Phase I investigation completed. Remedial Investigation due summer 90. Feasibility Study planned.	Site contains sludges and tar. Data indicates the presence of elevated levels of heavy metals in tar. Surface water and sediment sampling confirm the migration of lead from the site.
BUFFALO CREEK				
915088	Northern Demolition	D	Phase I Investigation completed. Site delisted in 1989.	Data does not indicate hazardous waste present on site.
CAZENOVIA CREEK				
915062	CID (Chaffee Landfill)	4	Leachate collection system installed.	Data available indicates no contaminant migration.
915130	Hi View Terrace	D	Phase I Investigation in final form USEPA removal action performed.	Data indicates presence of total cyanides in waste material. Site remediated.
BUFFALO RIVER				
915039	West Seneca Transfer Station	2A	Phase I Investigation completed. Phase II Investigation underway.	Potential for contaminant migration is indeterminable.

TABLE B-1

NUMBER	SITE NAME	SITE CODE	REMEDIATION STATUS	CONTAMINANT MIGRATION CONCERNS
915036	Madison Wire - Indian Church Road	2	Phase I & II Investigations completed. RI/FS completed in 1989. Removal action for drums & liquids completed by EPA. Design of remedial alternative underway.	Soil, sediment and surface water samples show the presence of heavy metals and organics. Potential for contaminant migration is indicated.
915059	Houghton Park	3	Phase I Investigation completed. Buffalo Urban Renewal Agency investigated site in 1983.	Analytical data shows contamination of soil and groundwater with heavy metals and phenols. However no significant contaminant migration indicated.
915021	Erie Lackawanna Railroad	D	Phase I Investigation completed. Site was delisted in 1989.	Investigation indicated no hazardous waste disposed on site.
915040	Mobil Oil Corporation	3	Phase I Investigation completed. Phase II Investigation completed.	Investigation indicates no significant contaminant migration.
915037	Houdaille-Manzel	2	Negotiations for remediation Consent Order failed. State funded RI underway.	Site is contaminated with heavy metals and low levels of organic compounds. However off-site contamination migration is unlikely.
915017	Donner Hanna Coke	3	Phase I Investigation completed. Phase II Investigation underway.	Potential for contaminant migration is indeterminable.
915012(A,B)	Buffalo Color	2	Remedial Investigation completed. Feasibility Study underway.	Site contains organic and inorganic contaminants. Migration of contaminants to Buffalo River is confirmed.
915012C	Buffalo Color	D	Deep well has been properly closed out. Site delisted in 1989.	

TABLE B-1

NUMBER	SITE NAME	SITE CODE	REMEDIATION STATUS	CONTAMINANT MIGRATION CONCERNS
915004	Allied Chemical Ind. Chem. Div.	2A	Phase II investigation completed.	Investigation indicates groundwater quality has been impacted in part by this site. Groundwater is likely to discharge to Buffalo River.
915071	Lehigh Valley Railroad	2A	Phase II Investigation is underway.	Potential for contaminant migration is indeterminable.
915034	MacNaughton-Brooks	2A	Phase II Investigation completed.	Soil samples indicate the presence of heavy metals and pesticides. Groundwater samples indicate groundwater quality being impacted by heavy metals. Silt and sand underlying the site provides a potential for migration of chemicals to Buffalo River.
915041	Mollenberg-Betz	2A	Phase I Investigation completed Supplemental sampling completed.	Investigations did not indicate the presence of hazardous waste on site.
915072	Tifft Farm Nature Preserve	2A	Phase II Investigation completed.	Potential for contaminant migration is indeterminable.
915115	Bengart & Memel	4	Site has been remediated under Consent Order	PCB contaminated soils have been remediated.
915126	Clinton-Bailey	2A	Phase I Investigation completed. Niagara Frontier Transporatation Auth. also investigated the site. Phase II investigation underway.	Data indicates the presence of heavy metals (arsenic) and organic compounds in soil samples at site. Potential for contaminant migration indeterminable.
915113	U.S. Steel - Eastern Div.	2A	Phase I Investigation complete Supplemental sampling program underway.	Potential for contaminant migration is indeterminable.
915131	Tifft-Hopkins St.	2a	Phase I Investigation is completed. Phase II Investigation underway.	Potential for contaminant migration has not been determined yet.

NUMBER	SITE NAME	SITE CODE	REMEDIATION STATUS	CONTAMINANT MIGRATION CONCERNS
915133	Ameron	2	Investigation by Ameron has been completed and remedial system is in operation	Data does not indicate potential for contaminant migration.
ADJACENT TO MOUTH OF BUFFALO RIVER				
915080	Times Beach	2	Phase I Investigation complete. Corps of Engineers had undertaken sampling of surface and groundwater, sediment, flora and fauna.	Potential for contaminant movement to Outer Harbor exists.
SITES IDENTIFIED SUBSEQUENT TO RAP COMPLETION				
	Niagara Transformer (4)		Interim Remedial Measures being taken. RI/FS underway.	PCBs in soil/sediments/surface water found in storm water ditch. Potential for contaminant migration to Buffalo River exists.
915135	Bern Metal Corp. (4)	2a	Phase I Investigation complete. Phase II Investigation underway.	Heavy metals known to be present in soils. Potential for contaminant migration unknown.

WATER BODY

(1) Cayuga Creek
(2) Buffalo Creek
(3) Cazenovia Creek
(4) Buffalo River

TABLE B-1

SITE CODES

Classification 1 - causing or presenting an imminent danger of causing irreversible or irreparable damage to the public health or environment -- immediate action required;

Classification 2 - significant threat to the public health or environment -- action required;

Classification 2a - temporary classification assigned to sites for which there is inadequate data to assign them to the other classifications;

Classification 3 - does not present a significant threat to the public health or environment -- action may be deferred;

Classification 4 - site properly closed -- requires continued management;

Classification 5 - site properly closed, no evidence of present or potential adverse impact -- no further action required;

Classification D - site delisted, no hazardous waste present on site.

TABLE B-2
INACTIVE HAZARDOUS WASTE SITE
REMEDIATION PROGRAM PROGRESS
BUFFALO RIVER BASIN

	Phase I	Phase II	Remedial Invest. Feasibil. Study	Remedial Design	Remedial Constr.	Remediation Complete or Not Required
CAYUGA CREEK						
Town of Marilla	---------	---->				
Lancaster Reclamation	---------	---------->				
Stocks Pond	---------	---->				
Dresser Industries	---------	---->				
Village of Depew-Borden Road	---------	----------	----------	----------	----------	---------->
Land Reclamation	---------	---->				
Old Land Reclamation	---------	---->				
Union Road	---------	----------	----->			
BUFFALO CREEK						
Northern Demolition	---------	----------	----------	----------	----------	---------->
CAZENOVIA CREEK						
CID	---------	----------	----------	----------	----------	---------->
HiView Terrace	---------	----------	----------	----------	----------	---------->
BUFFALO RIVER						
W. Seneca Transfer Station	---------	---->				
Madison Wire	---------	----------	----------	---->		
Houghton Park	-------->					
Erie Lackawanna RR	---------	----------	----------	----------	----------	---------->
Mobil Oil Corp.	---------	----------	----------	----------	----------	---------->
Houdaille-Manzel	---------	----------	----->			
Donner Hanna Coke	---------	---->				

TABLE B-2 (Continued)
INACTIVE HAZARDOUS WASTE SITE
REMEDIATION PROGRAM PROGRESS
BUFFALO RIVER BASIN

	Phase I	Phase II	Remedial Invest. Feasibil. Study	Remedial Design	Remedial Constr.	Remediation Complete or Not Required
BUFFALO RIVER						
Buffalo Color (2)	---------	----------	----->			
Buffalo Color - Deep Well	---------	----------	----------	----------	----------	---------->
Allied Chemical	---------	---------->				
Lehigh Valley RR	---------	----->				
Mac Naughton Brooks	---------	---------->				
Mollenberg-Betz	---------	----------	----------	----------	----------	---------->
Tifft Farm	---------	---------->				
Bengart & Memel	---------	----------	----------	----------	----------	---------->
Clinton-Bailey	---------	----->				
U.S. Steel	-------->					
Tifft-Hopkins	---------	----->				
Ameron	---------	----------	----------	----------	----------	---------->
ADJACENT TO MOUTH OF BUFFALO RIVER						
Times Beach	-------->					
SITES IDENTIFIED SUBSEQUENT TO RAP COMPLETION						
Niagara Transformer	---------	----------	----->			
Bern Metal	---------	----->				