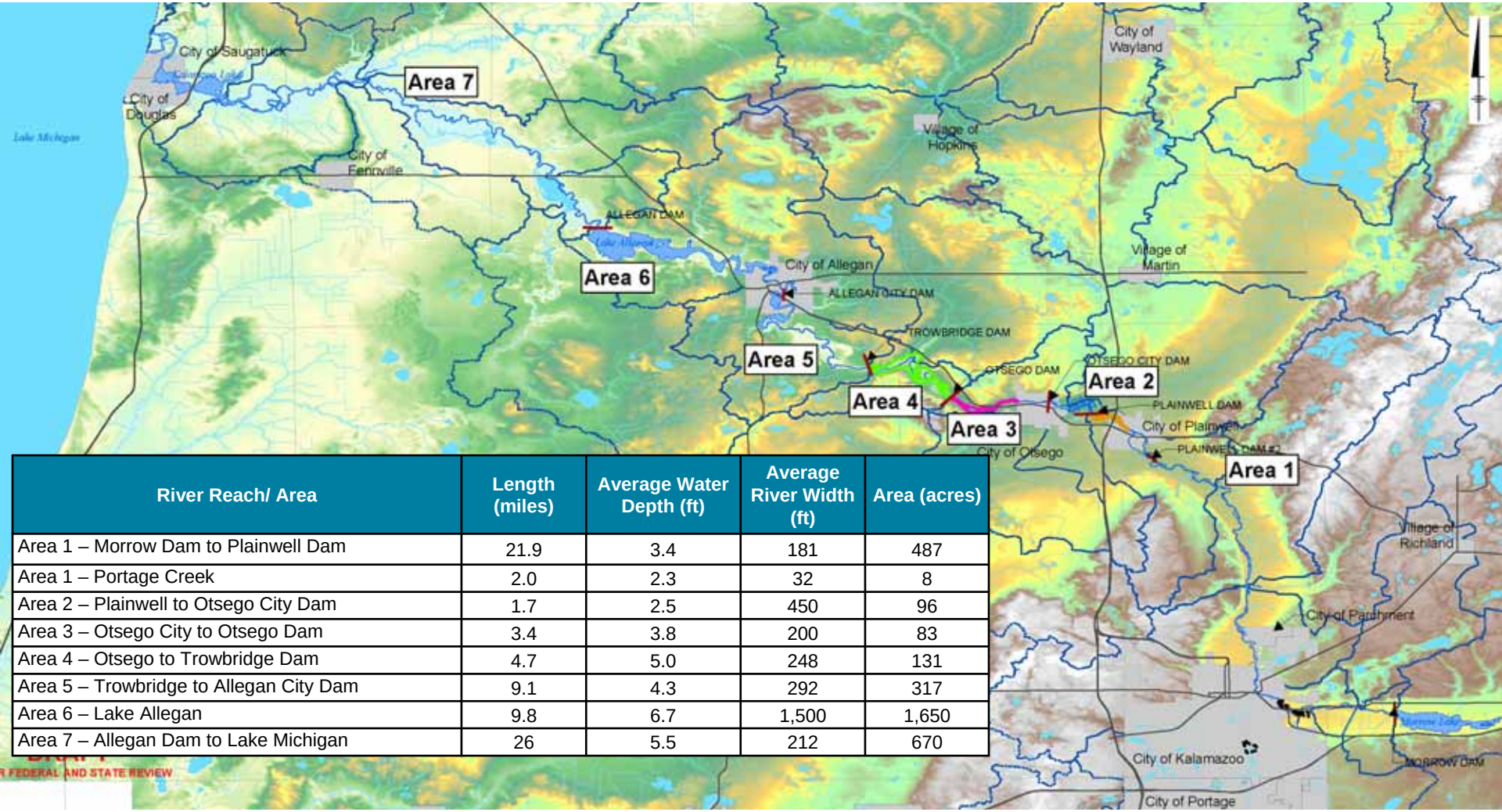
Former Plainwell Impoundment Time-Critical Removal Action

U.S. EPA Public Meeting - April 2, 2008
Plainwell, Michigan

Allied Paper, Inc./Portage Creek/ Kalamazoo River Superfund Site

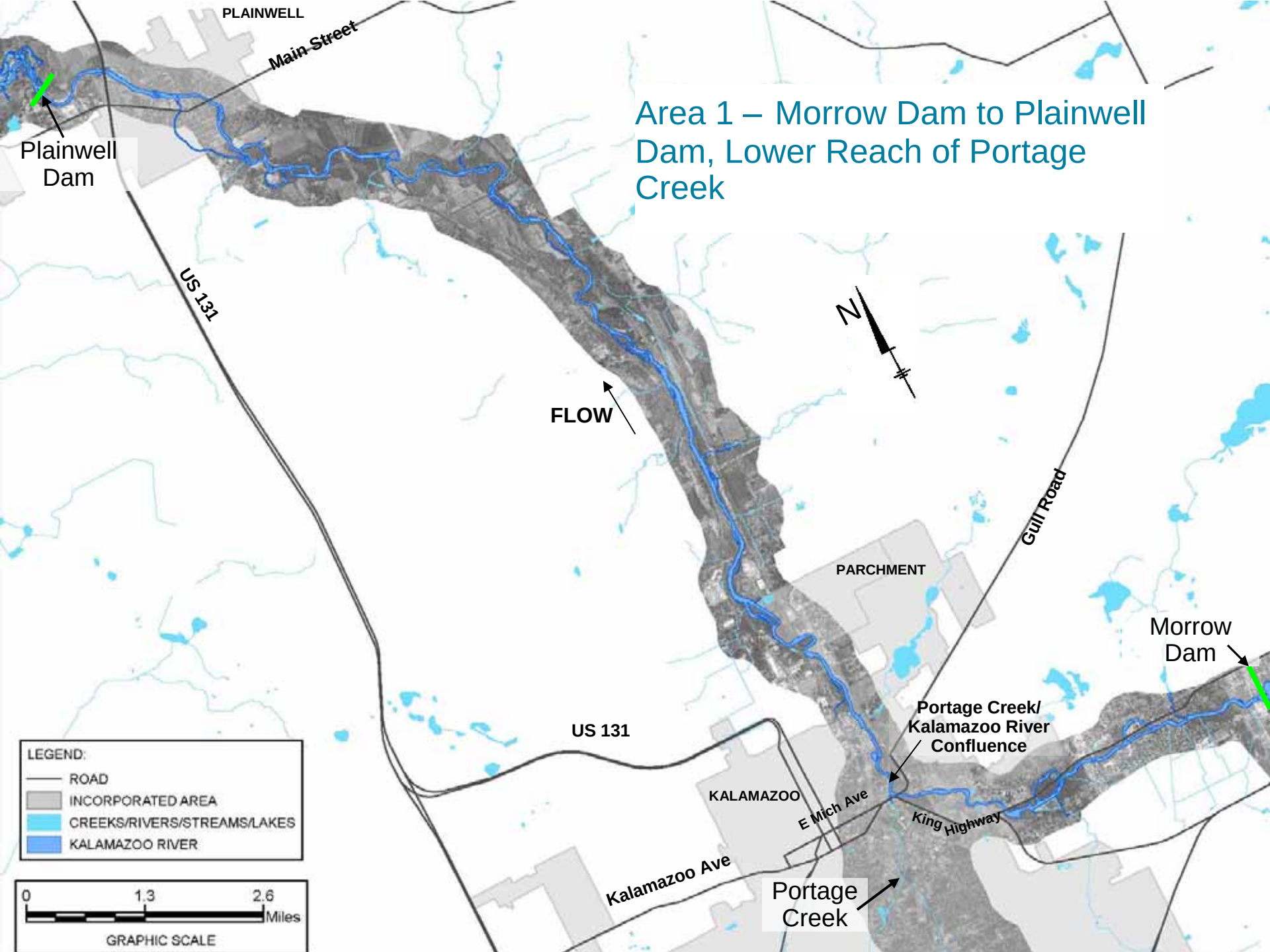
- Operable Unit 1: Allied Paper Landfill
- Operable Unit 2: Willow Boulevard and A-Site Landfill
- Operable Unit 3: King Highway Landfill
- Operable Unit 4: 12th Street Landfill
- Operable Unit 5: Portage Creek and 80 miles of Kalamazoo River
- Georgia Pacific/Hawthorn Mill Properties
- Operable Unit 7: Plainwell Mill Property

Areas of Operable Unit 5
(Kalamazoo River and Portage Creek)



River Reach/ Area	Length (miles)	Average Water Depth (ft)	Average River Width (ft)	Area (acres)
Area 1 – Morrow Dam to Plainwell Dam	21.9	3.4	181	487
Area 1 – Portage Creek	2.0	2.3	32	8
Area 2 – Plainwell to Otsego City Dam	1.7	2.5	450	96
Area 3 – Otsego City to Otsego Dam	3.4	3.8	200	83
Area 4 – Otsego to Trowbridge Dam	4.7	5.0	248	131
Area 5 – Trowbridge to Allegan City Dam	9.1	4.3	292	317
Area 6 – Lake Allegan	9.8	6.7	1,500	1,650
Area 7 – Allegan Dam to Lake Michigan	26	5.5	212	670

Area 1 – Morrow Dam to Plainwell Dam, Lower Reach of Portage Creek



Kalamazoo River – The Problem

- After the Fox River, the Kalamazoo River is the most significant source of PCBs to Lake Michigan.
- Approximately 113,000 lbs. of PCBs are currently located in the aquatic system, primarily as the result of waste practices associated with the de-inking of carbonless copy paper between the 1950s and early 1980s.
- The State of Michigan has issued a “DO NOT EAT” advisory since 1977 for many species of PCB-contaminated fish in the Kalamazoo River.
- The ongoing, uncontrolled erosion of contaminated paper wastes and soils from the river banks is the most significant source of PCB loading to the Kalamazoo River.

Sources of PCBs

paper waste on river banks

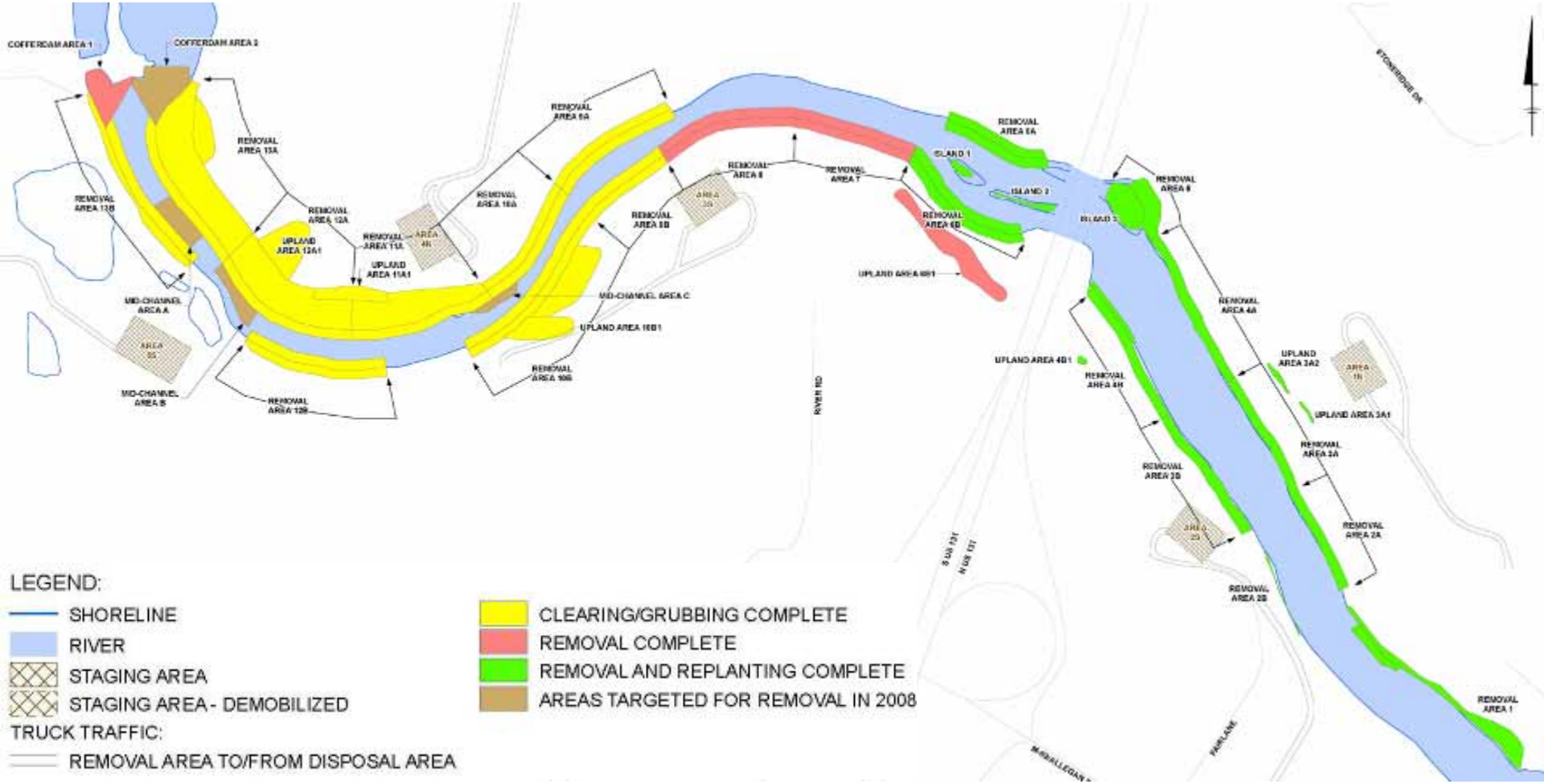
Residuals eroding into river

Photos by MDEQ

Kalamazoo River Enforcement History

- Settlement reached in 2007, when two potentially responsible parties (PRPs) signed two administrative settlement agreements worth approximately $45 million
- The first settlement agreement requires two PRPs (Millennium Holdings, LLC, and Georgia Pacific Corporation) to conduct a $30 million time-critical removal action in the former Plainwell Impoundment. Sediment removal action began in Spring 2007 and will be completed in December 2008.
- The second settlement agreement requires two PRPs to conduct an estimated $15 million supplemental RI/FS for the entire 80-mile stretch of the Kalamazoo River.

Plainwell TCRA – 2007 Overview



Disposal Volumes
(December 31, 2007)

- Non-TSCA cy removed 33,915
- TSCA cy removed 3,150
- Total cy removed 37,056

- TSCA Tons Disposed 4,095
- Non-TSCA Tons Disposed 44,090
- Total Tons Disposed 48,173

Removed/Restored

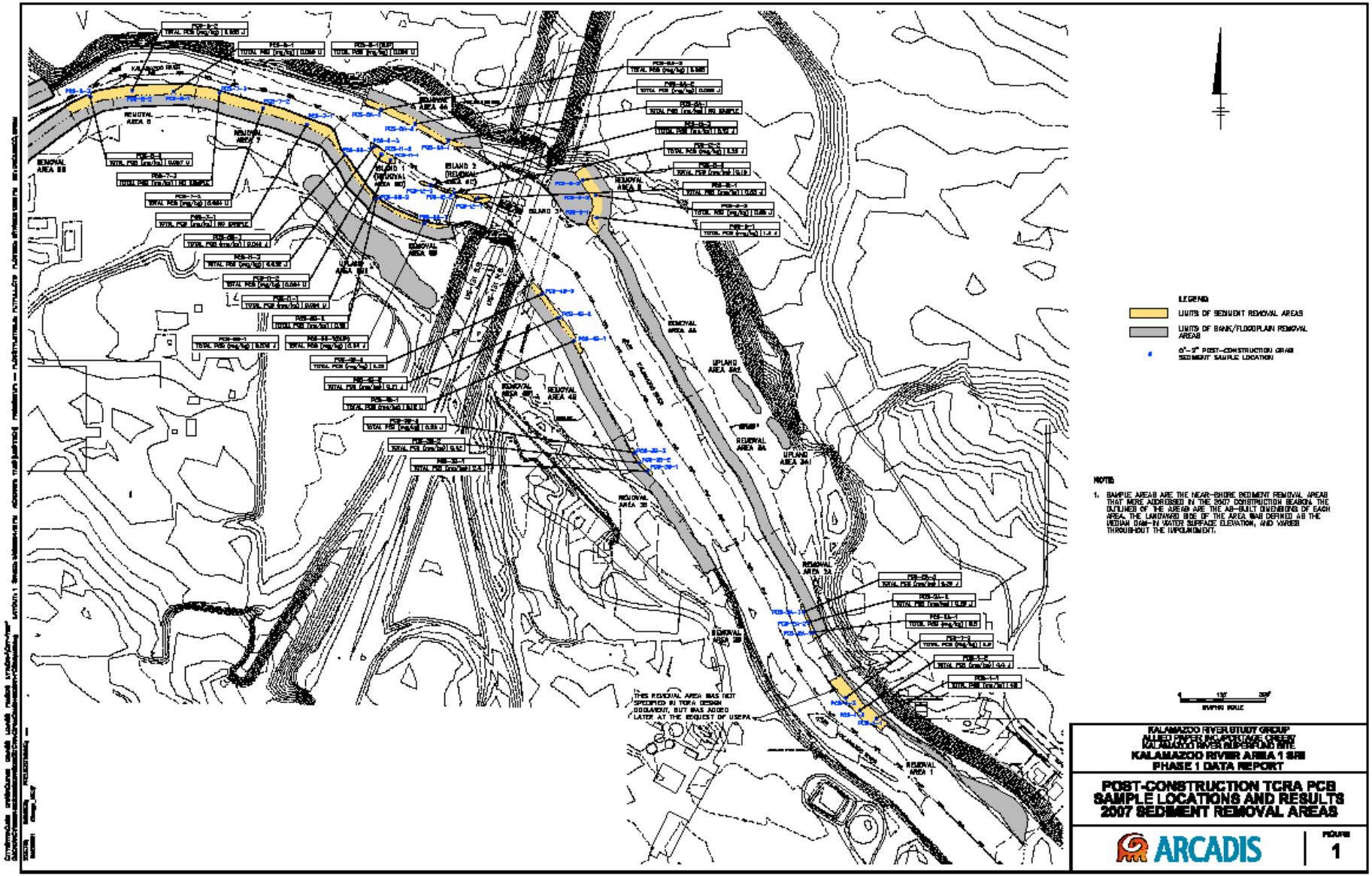
(December 31, 2007)

- 7,500 linear feet of bank removed
- 7,000 linear feet of bank restored

Plainwell TCRA – Health and Safety

- **Comprehensive safety program executed – Approximately 65,000 hours worked in 2007:**
  - No OSHA recordables
  - No serious injuries
  - 2 first aid injuries
- **Same program to be implemented in 2008**

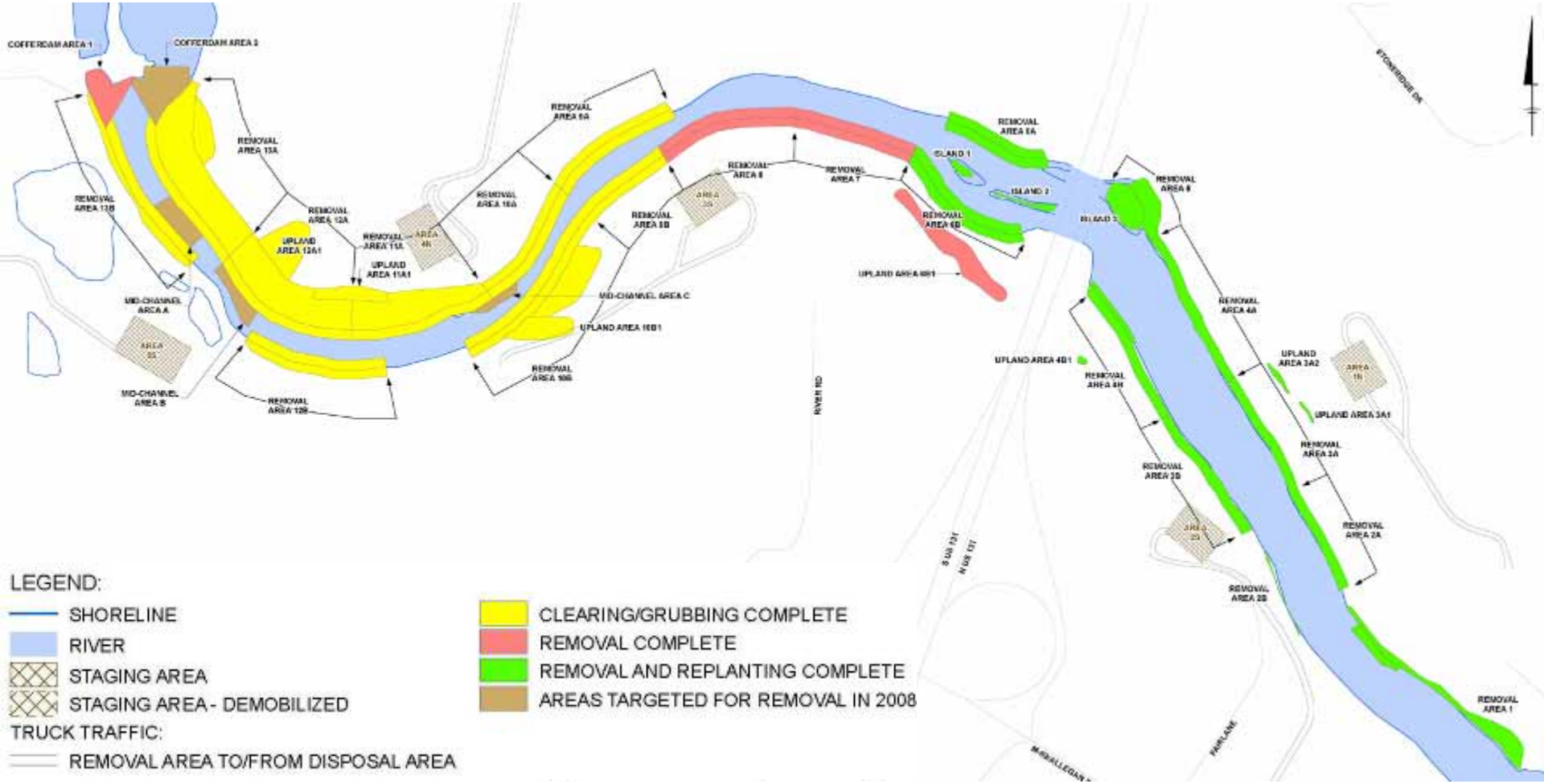
Post-Removal Surface Sediment PCB Sampling Results for Removal Areas Completed in 2007



Post-Removal Surface Sediment PCB Sampling Results for Removal Areas Completed in 2007

- Three surface sediment samples were collected from 11 areas within the former Plainwell Impoundment (33 total samples).
- PCBs were not detected in 23 percent of the samples and were less than 1.0 mg/kg in 80 percent of the samples.
- The total PCB concentration in six samples was greater than 1 mg/kg including a maximum observed concentration of 48 mg/kg.

Plainwell TCRA – 2008 Overview



Plainwell TCRA – 2008 Overview

- Begin excavation work during the week of March 17
- 17.5 acres to be excavated in 2008
  - Removal Areas 9-13
  - Mid-Channel Areas A-C
  - Upland Areas 10B1, 11A1, 12A1
- Approximately 83,000 cubic yards (cy) of material targeted for removal. 17,430 cy TSCA.
- Conclude work in December

Plainwell TCRA – Average Removal Rates

- Two excavation crews will be used throughout 2008. A third will be added if necessary.
- Schedule Basis
  - 500 cy/day Floodplain Soil (per crew)
  - 250 cy/day Near Shore Sediment (per crew)
  - 125 cy/day Mid-Channel Sediment (per crew)

Plainwell TCRA – Winter 2008 Activities

- Work performed in January and February 2008
- Cleared and grubbed Removal Areas 9-13
- Constructed access road from Miller Road to Staging Area 4N
- Developed Staging Area 4N
- Built haul roads in Removal Areas 9-13

Plainwell TCRA – March 2008 Work Activities

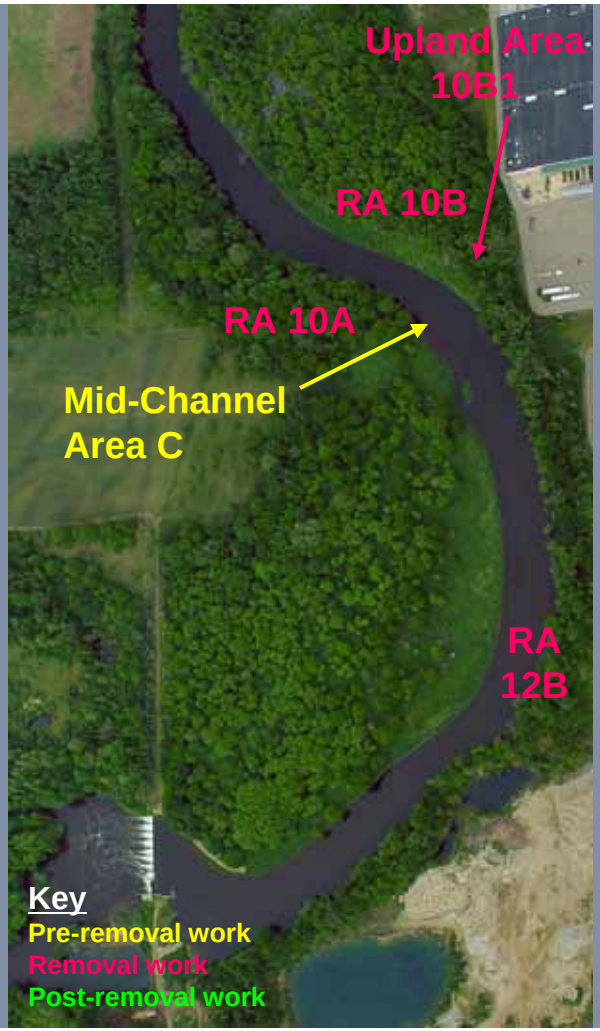
- Prepare RA 9B and RA 13B for removal work
- Remove 1,420 cy @ 570 cy/day
  - RA 13B: 1,420 cy
- Install WCS Scour Protection downstream and in mid-channel areas

Plainwell TCRA – April 2008 Work Activities

- Prepare RAs 9A, 10A, 10B, and 10B1 for removal work
- Remove 13,770 cy @ 405 cy/day
  - RA 9B: 4,840 cy
  - RA 9A: 2,360 cy
  - RAs 10B and 10B1: 6,570 cy
- Conduct post-removal work in RA 13B
- Plant trees and shrubs in Removal Areas 1-8
- Remove Phase 1 Cofferdam
- Operate WCS

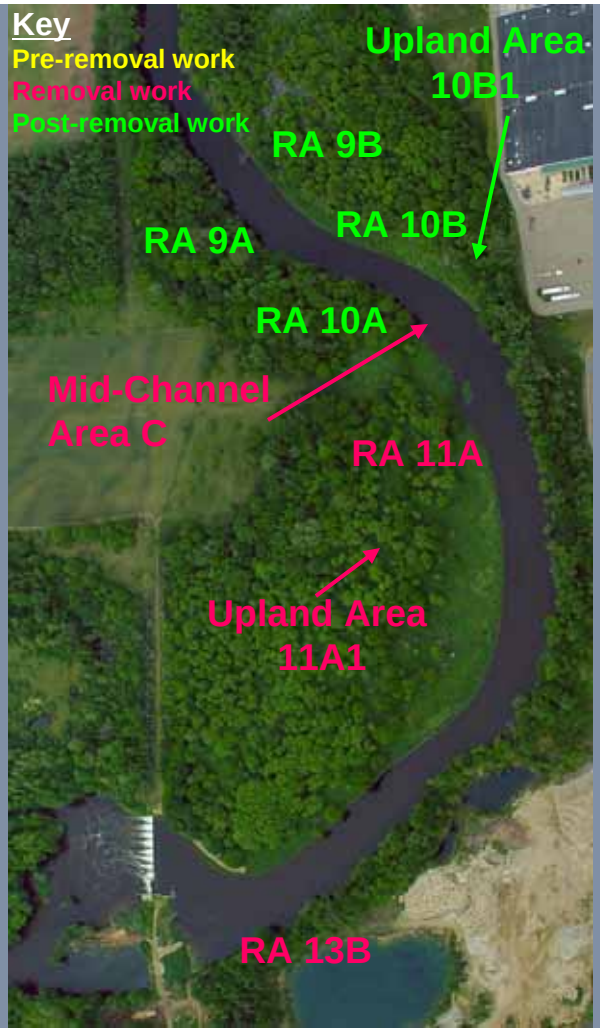
Plainwell TCRA – May 2008 Work Activities

- Prepare RA 12B and Mid-Channel Area C for removal work
- Remove 5,840 cy @ 280 cy/day
  - RA 10A: 1,890 cy
  - RAs 10B and 10B1: 1,010 cy
  - RA 12B: 2,940 cy
- Operate WCS



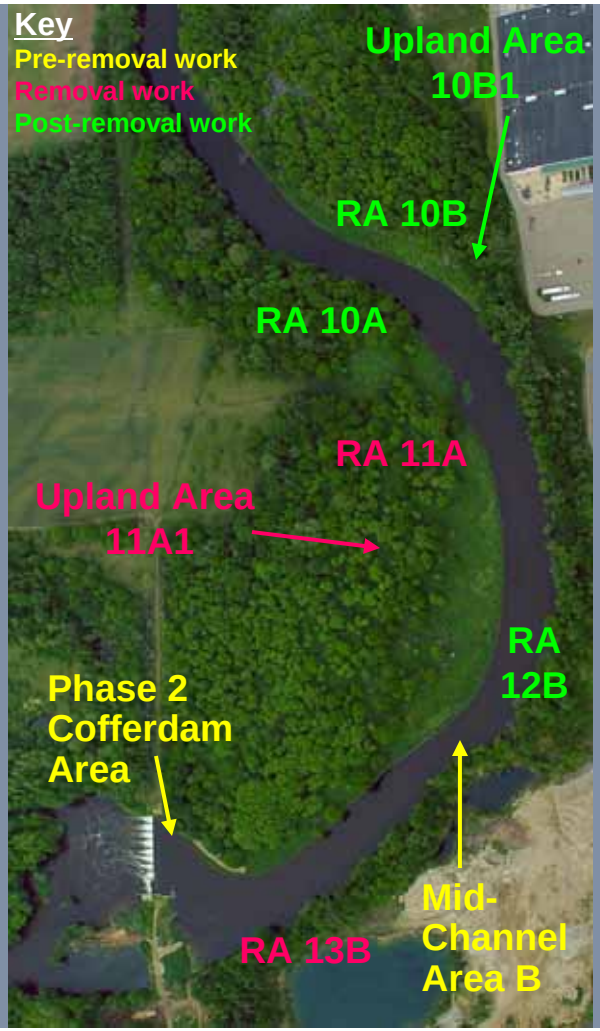
Plainwell TCRA – June 2008 Work Activities

- Conduct site prep work at RAs 11A and 13B
- Remove 5,855 cy @ 280 cy/day
  - Mid-Channel Area C: 550 cy
  - RAs 11A and 11A1: 2,185 cy
  - RA 13B: 3,120 cy
- Conduct post-removal work in RAs 9A, 9B, 10A, 10B, and 10B1
- Operate WCS



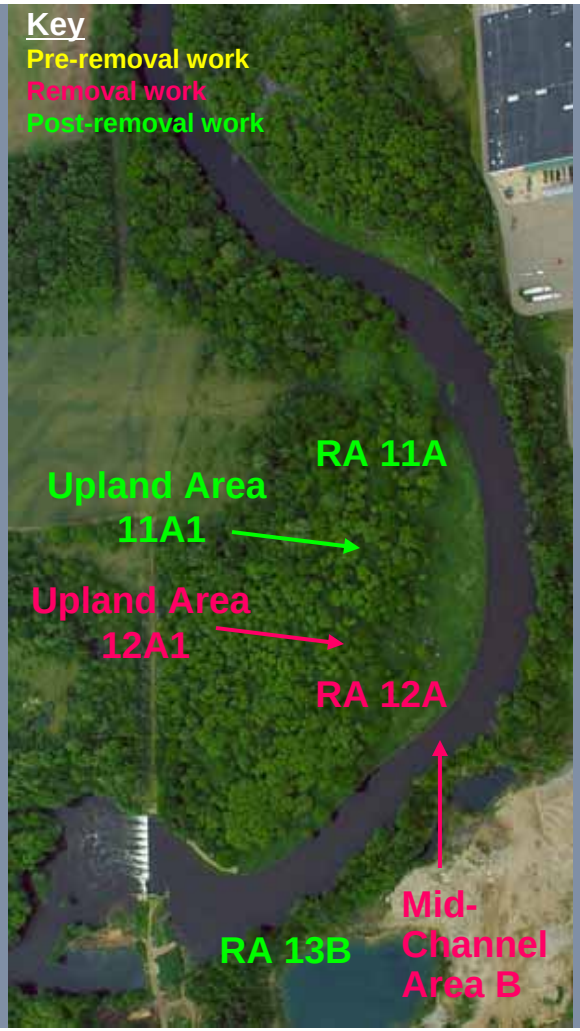
Plainwell TCRA – July 2008 Work Activities

- Remove 9,505 cy @ 430 cy/day
  - RAs 11A and 11A1: 8,370 cy
  - RA 13B: 1,135 cy
- Prepare Mid-Channel Area B and Phase 2 Cofferdam Area
- Conduct post-removal work in RAs 10A, 10B, 10B1, and 12B
- Operate WCS



Plainwell TCRA – August 2008 Work Activities

- Conduct site prep work in Mid-Channel Area B, RAs 12A and 12A1
- Remove 11,055 cy @ 525 cy/day
  - RAs 11A and 11A1: 365 cy
  - RAs 12A and 12A1: 9,240 cy
  - Mid-Channel Area B: 1,450 cy
- Conduct post-removal work in RAs 11A, 11A1, and 13B
- Install Phase 2 Cofferdam structure
- Operate WCS



Plainwell TCRA – September 2008 Work Activities

- Prepare Mid-Channel Area A and RA 13A for removal work
- Remove 11,475 cy @ 550 cy/day
  - RAs 12A and 12A1: 9,240 cy
  - RA 13A: 885 cy
  - Mid-Channel Area A: 1,350 cy
- Begin post-removal work in RAs 12A and 12A1
- Operate WCS

Plainwell TCRA – October 2008 Work Activities

- Prepare Phase 2 Cofferdam Area for removal
- Remove 15,455 cy @ 670 cy/day
  - RA 13A: 10,155 cy
  - Mid-Channel Area A: 1,350 cy
  - Phase 2 Cofferdam Area: 3,950 cy
- Finish post-removal activities in RAs 12A and 12A1
- Operate WCS

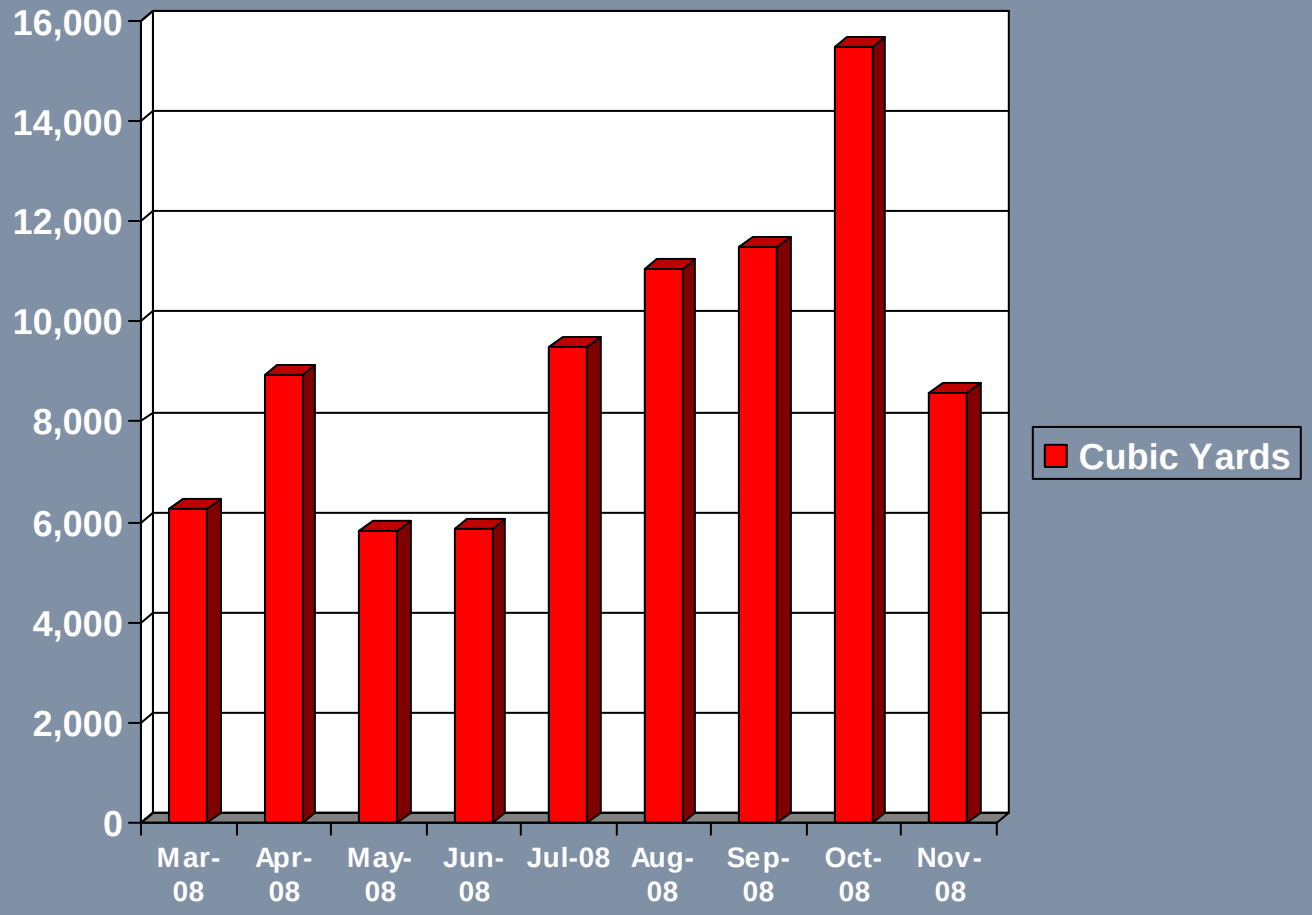
Plainwell TCRA – November 2008 Work Activities

- Remove 8,600 cy @ 430 cy/day
  - RA 13A: 6,625 cy
  - Phase 2 Cofferdam Area: 1,975 cy
- Begin post-removal work in RA 13A
- Begin removal of Phase 2 Cofferdam structure and WCS
- Operate WCS

Plainwell TCRA – December 2008 Work Activities

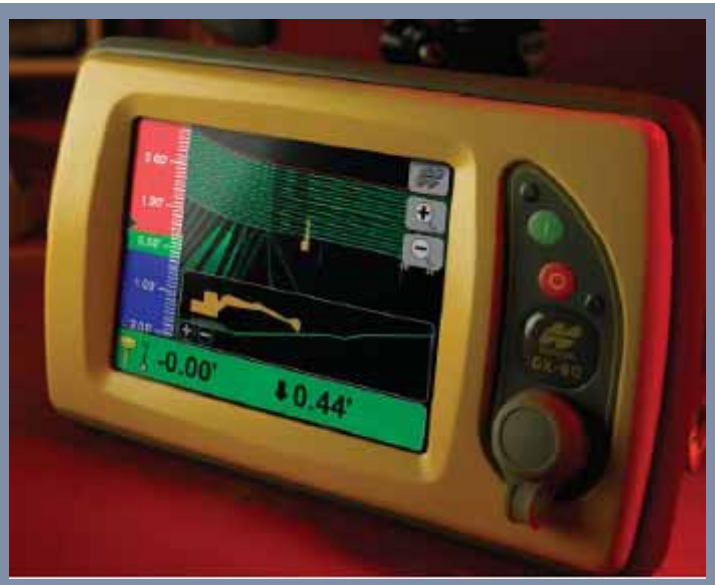
- No removal activities planned
- Complete post-removal work in RA 13A
- Complete removal of Phase 2 Cofferdam structure and WCS
- Restore Flow through Western Channel
- Complete Project Closeout Tasks
  - Remove staging areas
  - Decontaminate and demobilize

Plainwell TCRA –
Total Targeted Removal Volume by Month



Plainwell TCRA – RTK GPS

- Real Time Kinematic Global Positioning System used to confirm removal targets
- In 2008, collection frequency will increase compared to 2007 protocol



Plainwell TCRA – Resuspension Controls

- Physical resuspension controls will include:
  - Silt Curtains
  - Diversion Walls
  - Steel Sheeting
- Effectiveness of controls assessed by:
  - Turbidity monitoring
  - Visual inspections
  - Surface water sampling

10/22/2007

Plainwell TCRA – Staging Areas & Processing Activities

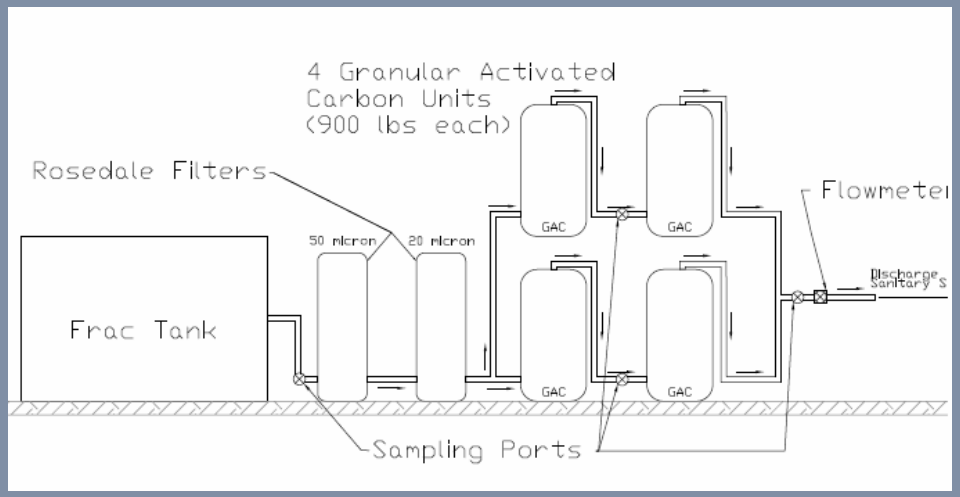
- Staging Areas 3S and 5S active in 2007 and 2008
- Staging Area 4N active in 2008
- Sediment processing – pug mill operation
- Water Treatment
- Sediment Hauling

26 4:24PM

27 9:47AM

Plainwell TCRA – Water Treatment

- Batch operation
- Self-monitoring discharge reporting system



Plainwell TCRA – Truck Hauling

- On average, 20 to 30 trucks per day leaving the project area to landfills
- Non-TSCA (less than 50 ppm PCBs) material transported to either Allied Waste's C&C Landfill near Marshall, MI, and their Ottawa Farms Landfill near Coopersville, MI
- TSCA material transported to EQ's Wayne Township Landfill, Belleville, MI.

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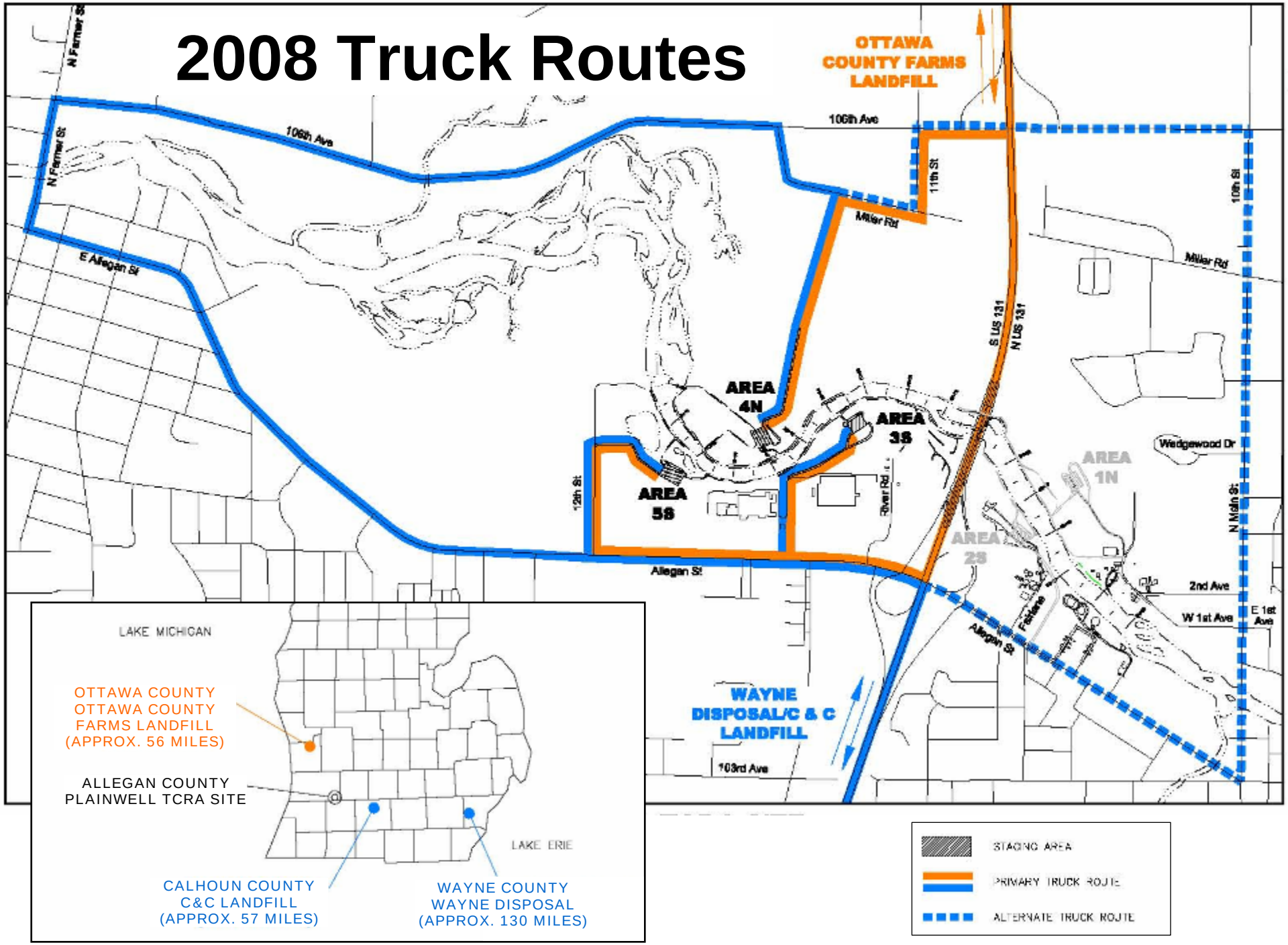
21 4:29PM

2008 Truck Routes



Plainwell TCRA – Cofferdams and WCS

- Phase 1 Cofferdam removal scheduled for April
- Phase 2 Cofferdam installation in August
- WCS and Phase 2 Cofferdam removal in December

Vibrating Head Pile Driver

Impact Hammer Pile Driver

12/20/2007

Plainwell TCRA – Replanting Activities

- Tree and shrub planting in 2007 Removal Areas in April
- Grading, seeding, and placement of erosion control blanket and rock will be done as necessary throughout the season
- Observation-based monitoring of replanted areas to begin this summer

11/06/2007

11/06/2007

Plainwell TCRA – Summary of 2008 Plans

- Construction Season: March through December
- 83,000 cy of material to be removed containing 4,000 pounds of PCBs
- Cofferdam and WCS installation, operation, and removal

US-131
Allegan St. / M-89
Plainwell Dam
River flowing freely through new Western Channel