

US EPA ARCHIVE DOCUMENT

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION V  
POLLUTION/SITUATION REPORT #161



**KALAMAZOO RIVER/ENBRIDGE SPILL – REMOVAL**  
**SITE # Z5JS**  
**MARSHALL, MICHIGAN**  
**LATITUDE: 42.2395273; LONGITUDE: -84.9662018**



**To:** Susan Hedman, U.S. EPA Regional Administrator  
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Mike McKenzie, City of Battle Creek  
Cheryl Vosburg, City of Marshall  
Christine Kosmowski, City of Battle Creek

**From:** Ralph Dollhopf, U.S. EPA, Federal On-Scene Coordinator

**Date:** 10/3/2012

**Reporting/Operational Period:** 0700 hours 9/13/2012 through 0700 hours 9/20/2012

### ***1. Site Data***

<b>Site Number:</b>	Z5JS	<b>Response Type:</b>	Emergency
<b>Response Authority:</b>	OPA	<b>Incident Category:</b>	Removal Action
<b>Response Lead:</b>	PRP	<b>NPL Status:</b>	Non-NPL
<b>Mobilization Date:</b>	7/26/2010	<b>Start Date:</b>	7/26/2010
<b>FPN#:</b>	E10527		

### ***2. Operations Section***

- The organizational response structure consisted of the following Branches: 1) Submerged Oil; 2) Containment; 3) Kalamazoo River System; and 4) Waste Management.

#### **2.1 Submerged Oil Branch**

##### ***2.1.1 Submerged Oil Science Group***

- Initial poling and bathymetry monitoring was conducted for Phase II sediment trap locations.
- Quarterly bathymetry monitoring and monthly CSD sampling and poling of Phase I sediment traps was completed during this operational period.
- Reinstallation of all walling tubes was completed. Analytical results from sediment samples will be used for additional calibration of the hydrodynamic model and to further characterize submerged oil fate and transport.
- Teams conducted Late Summer Reassessment poling in the north and south coves of the Morrow Lake fan.
- Enbridge continued reviewing analytical results from the chemical and fingerprint analyses for the oil quantification pilot study. Results of the pilot testing will be used to evaluate the UV inspection process for evaluating sediment cores.

- Sediment cores collected during the agitation effects study and the submerged oil quantification program continue to be held in cold storage pending the results of the pilot testing to validate the UV inspection screening process.

### ***2.1.2 Submerged Oil Compliance Group***

- No activities were conducted during this operational period.

## **2.2 Containment Branch**

### ***2.2.1 Containment Compliance Group***

- No activities were conducted during this operational period.

### ***2.2.2 Containment Recovery Group***

- Pursuant to the Emerging Oil Management Program (EOMP), Enbridge, U.S. EPA, and MDEQ continued to track the location, response, and sheen differentiation test results of each identified location of sheen. Teams recorded and documented sheen observations in the main channel and overbank areas, and conducted sheen testing as necessary. Sheen observations were reported back to Operations Section Chiefs for response and/or monitoring. See Table 1 for information regarding the total number of sheen differentiation tests conducted, and the results of those tests.
- U.S. EPA, MDEQ, and Enbridge continued to implement the decision matrix for responding to observations of oil sheen.
- Daily sheen management activities continued with sheen sweep boats conducting routine recovery activities at Ceresco Dam (MP 5.25 to Ceresco control point), the Mill Ponds and the Morrow Lake Delta/Morrow Lake, along with other ongoing sheen sweep responses as determined necessary. See Table 2 for information regarding the total number of sheen responses by date.
- As of September 19, 2012, a total of 800 feet of surface hard boom is deployed at the Ceresco Control Point. Additionally, a total of 8,400 feet of surface hard boom and 5,350 feet of subsurface half curtain have been deployed at the E4 Containment system boom locations. Teams removed debris accumulated within the boomed areas and continued to monitor the E4 system boom locations using an underwater camera.
- Teams completed installation of structures at Phase II sediment trap locations and continued installation of cylindrical sampling devices (CSDs) at the trap locations. Installation of 3 CSDs near Ceresco Dam remains pending property owner/access permission.
- Teams performed weekly visual inspections of the 4 currently-installed Phase I enhanced sediment trap locations and the 3 currently-installed Phase II enhanced sediment trap locations.

## **2.3 Kalamazoo River System Branch**

### ***2.3.1 Talmadge Creek/Kalamazoo River Remedial Investigation Group***

- No activities were conducted during the reporting period.

### ***2.3.2 Kalamazoo River Compliance Group***

- Restoration and stabilization activities were conducted at various Kalamazoo River Bank Erosion Assessment (KRBEA) sites.

### ***2.3.3 Kalamazoo River Remedial Action Group***

- Enbridge began excavation and re-grading of the Source Area on September 18, 2012. As of September 19, 2012 approximately 300 cubic yards of impacted soil were excavated for off-site disposal from the Source Area work.

### ***2.3.4 Talmadge Creek/Kalamazoo River Monitoring Group***

- Monitoring of erosion control devices continued.
- Water level and flow rate information continued to be downloaded daily from three USGS gauging stations at Marshall, Battle Creek, and Comstock.
- Collection of daily water and sediment temperature readings were collected where operational tasks were being performed.
- Enbridge conducted weekly monitoring of buoys and signage along the Kalamazoo River.

## **2.5 Waste Management Branch**

- A summary of equipment and boom decontaminated during this reporting period is presented in Table 3.
- Quantities of soil, debris, and liquid shipped off-site during the reporting period are presented in Tables 4 and 5.
- The total amount of recovered oil from the inception of the response has been estimated using actual waste stream volumes, analytical data, and physical parameters of oil-containing media. A summary of the estimated volume of recovered oil is presented in Table 6.

## **3. Planning**

### **3.1 Situation Unit**

- Situation Unit personnel observed and documented progress in operational areas, documented locations of oil globules and oil sheen through field observations and weekly over-flights. Personnel reported observations of sheen/product (globules) to Operations for follow-up testing and/or response, consistent with the EOMP. Specific observations during this period include the repeated observation of oil sheen and/or globules at Ceresco Dam impoundment area (MP 5.25 to Ceresco control point) and in the north and south coves of the Morrow Lake fan. Due to cooler surface water temperatures, observed oil globules appear to be staying in the globule form longer, rather than dissipating into sheen... See Section 2.2.2 for additional details regarding the EOMP.
- Photographs were taken and distributed to project participants during Operations, Command and General Staff, and Multi-Agency Coordination (MAC) Group meetings.

### 3.2 Environmental Unit

- U.S. EPA continued discussions with Enbridge regarding U.S. EPA comments (provided to Enbridge on August 22, 2012) on the Kalamazoo River Hydrodynamic Transport Model Calibration Report.
- The pilot study for validation of the UV inspection process for sediment cores continued. This also includes evaluating the sediment cores for the possible presence of oil-mineral aggregate (OMA), which may not be visible using current core inspection/UV processes.
- Field data/measurements collected during the agitation experiment are currently being compiled.
- Enbridge and MDEQ continued to review and track RI progress.

### 3.3 Documentation Unit

- The Documentation Unit continued organizing and archiving electronic and paper files for post-incident use.

### 3.4 Resource Unit

- The Resources Unit continued to support production of the Incident Action Plan (IAP), supported the planning efforts of operations, and provided information to Logistics personnel in order to properly prepare and procure resources. The resource unit continued the logistical preparation for relocation of the EPA ICP.

## 4. *Command*

### 4.1 Safety Officers

- Safety personnel continued conducting work-site safety inspections and implementing the plan for integration of public safety and worker safety on the Kalamazoo River.

### 4.2 Public Information

- The number of public inquires reported by Enbridge for this period is presented in Table 8.

## 5. *Finance*

- The current National Pollution Funds Center (NPFC) ceiling is \$52.7 Million. Approximately 89.4% of the ceiling has been spent through September 16, 2012. The latest average 7-day burn rate was \$29,545. These cost summaries reflect only U.S. EPA-funded expenditures for the incident. A summary of these expenses is presented in Table 9.

## 6. *Scientific Support Coordination Group (SSCG)*

- Recommendations regarding the Net Environmental Benefits Analysis (NEBA), agitation effects study and quantification of submerged oil are being reviewed by the FOSC.
- SSCG and Enbridge forensic chemists continued periodic conference calls to examine the oil fingerprinting results and compare procedures for applying oil fingerprinting results to measuring Line 6B oil remaining in the Kalamazoo River sediments.

## 7. Participating Entities

- Entities participating in the MAC include:
  - U.S. Environmental Protection Agency
  - Michigan Department of Environmental Quality
  - Michigan Department of Community Health
  - City of Battle Creek
  - City of Marshall
  - Allegan County Emergency Management
  - Calhoun County Public Health Department
  - Calhoun County Emergency Management
  - Kalamazoo County Health and Community Services Department
  - Kalamazoo County Sheriff
  - Enbridge (Responsible Party)
- For a list of cooperating and assisting agencies, see SITREP #51 (Sections 3.2 and 3.3).

## 8. Personnel On-Site

- Staffing numbers for the entities and agencies active in the response are presented in Table 10.

## 9. Source of Additional Information

- For additional information, refer to <http://www.epa.gov/enbridgespill>. For sampling analysis data, see <http://response.enbridge.com/response/>.

## 10. Clean-up Progress Metrics

**Table 1 – Sheen Differentiation Test Results**

Description	Total	September 2012						
		19	18	17	16	15	14	13
Sheen Tests Performed	0	0	0	0	0	0	0	0
Results Indicated Petroleum Source	0	0	0	0	0	0	0	0
Results Indicated Biogenic Source	0	0	0	0	0	0	0	0
Inconclusive Test Results	0	0	0	0	0	0	0	0

**Table 2 – Sheen Responses**

Description	Total	September 2012						
		19	18	17	16	15	14	13
Responses	63	9	9	9	0	9	9	9

**Table 3 - Equipment Decontamination**

Location/Media	Total	September 2012						
		19	18	17	16	15	14	13
Frac Tanks	0	0	0	0	0	0	0	0
Vac. Trucks-Tankers	0	0	0	0	0	0	0	0
Roll-Off Boxes	0	0	0	0	0	0	0	0
Yellow Iron (light)	0	0	0	0	0	0	0	0
Yellow Iron (heavy)	0	0	0	0	0	0	0	0
Jon Boats	0	0	0	0	0	0	0	0
Air Boats	0	0	0	0	0	0	0	0
Vehicles	0	0	0	0	0	0	0	0
Boom (linear ft)	0	0	0	0	0	0	0	0
Miscellaneous Items	0	0	0	0	0	0	0	0

**Table 4 - Soil and Debris Shipped Off Site (as of 9/19/2012)**

Waste Stream	Cumulative	Disposal Facility
Haz Soil (yd <sup>3</sup> )	19,644	Envirosafe (Oregon, OH)
Non-Haz Soil (yd <sup>3</sup> ) (Excluding Ceresco Dredge)	76,698	SET/C&C
Non-Haz Soil & Debris (yd <sup>3</sup> ) (Excluding Ceresco Dredge)	64,815	Westside Recycling (Three Rivers, MI)
Non-Haz Soil (yd <sup>3</sup> ) (Ceresco Dredge Only)	5,562	EQ/Republic (Marshall, MI)
Haz Debris (yd <sup>3</sup> )	12,075	EQ/Michigan Disposal (Wayne, MI) and Republic (Marshall, MI)
Non-Haz Household Debris (ton)	1,765	SET/C&C
Non-Haz Impacted Debris (ton)	7,099	

Shaded items are discontinued waste streams.

**Table 5 - Liquid Shipped Off-Site (as of 9/19/2012)**

Stream	Destination Company	Destination Location	Cumulative Volume (gallons) †
Non-Haz Water	Battle Creek POTW	Battle Creek, MI	1,143,280
Non-Haz Water	Dynecol	Detroit, MI	981,792
Non-Haz Water	Liquid Industrial Waste	Holland, MI	1,376,757
Non-Haz Water	Plummer	Kentwood, MI	416,726
<i>Hazardous Water</i>	<i>Dynecol</i>	<i>Detroit, MI</i>	<i>3,594,579</i>
<i>Oil</i>	<i>Enbridge Facility</i>	<i>Griffith, IN</i>	<i>766,288</i>
<i>Other Material</i>			<i>1,405,525</i>
<i>Treated Non-Haz Water</i>	<i>Liquid Industrial Waste</i>	<i>Holland, MI</i>	<i>370,200</i>
<i>Treated Non-Haz Water</i>	<i>Plummer</i>	<i>Kentwood, MI</i>	<i>4,976,140</i>
<i>Hazardous Water</i>	<i>Safety Kleen<sup>a</sup></i>		<i>825</i>
<i>Treated Non-Haz Water</i>	<i>Dynecol</i>	<i>Detroit, MI</i>	<i>150,700</i>
<i>Treated Non-Haz Water</i>	<i>Battle Creek POTW</i>	<i>Battle Creek, MI</i>	<i>1,968,700</i>
<b>Total</b>			<b>17,151,512</b>

Shaded and italicized items are discontinued waste streams.

† Cumulative quantities may not reconcile with previous reports (due to auditing).

a New Age lab water and methanol mix generated by mobile laboratory.

**Table 6 – Estimated Recovered Oil (as of 9/17/2012)**

<b>Waste Stream Containing Recovered Oil</b>	<b>Destination Company</b>	<b>Destination Location</b>	<b>Estimated Oil Volume in Waste Stream (gallons)</b>
<b>Soil</b> Impacted Soil & Debris	C&C Landfill	Marshall, MI	13,814
	Envirosafe/ Westside RDF	Oregon, OH	278,665
<i><b>Geotube Sediment - (Impacted Sediment)</b></i>	<i>Envirosafe/ Westside RDF</i>	<i>Oregon, OH</i>	1,298
<b>Debris -</b> (Roll Off Boxes with Impacted Sorbents, boom, pads, plastic, PPE, vegetation, and biomass)	EQ Michigan	Belleville, MI	34,348
<i><b>Frac Tank City - Influent to Carbon Filtration System</b></i>	<i>C&amp;C Landfill</i>	<i>Marshall, MI</i>	8,109
<b>Frac Tank City - Water</b>	Dynecol	Detroit, MI	46,176
	Liquid Industrial Waste Services, Inc.	Kentwood, MI	
	Plummers Env. Inc.	Holland, MI	
	BC POTW	Battle Creek, MI	
<i><b>Ceresco Pretreatment System</b></i>	<i>C&amp;C Landfill</i>	<i>Marshall, MI</i>	90
<i><b>A-1 Pretreatment System</b></i>	<i>C&amp;C Landfill</i>	<i>Marshall, MI</i>	9
<b>Oily Water - RPP</b>	Enbridge Facility	Griffith, IN	766,288
<b>Total</b>			<b>1,148,797</b>

Shaded and *italicized* items represent discontinued waste streams

**Table 7 – Samples Collected By Enbridge**

<b>Sample Type</b>	<b>Total</b>	<b>September 2012</b>						
		<b>19</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>13</b>
Surface Water	<b>18</b>	0	3	15	0	0	0	0
Private Well	<b>17</b>	10	7	0	0	0	0	0
Groundwater	<b>10</b>	0	0	0	0	0	0	0
Sediment	<b>5</b>	3	1	2	0	0	0	0
Soil	<b>2</b>	2	0	0	0	0	0	0
Product	<b>0</b>	0	0	0	0	0	0	0
Dewatering	<b>0</b>	0	0	0	0	0	0	0
Sheen	<b>0</b>	0	0	0	0	0	0	0

**Table 8 – Public Inquiries Received by U.S. EPA and Enbridge**

Location/Med	Total	September 2012						
		19	18	17	16	15	14	13
Marshall Community Center	7	0	1	6	0	0	0	0
Oil Spill Public Information Hotline	1	0	0	0	0	0	1	0
Website	0	0	0	0	0	0	0	0
<b>Total Public Inquiries</b>	<b>8</b>	<b>0</b>	<b>1</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>

**Table 9 - Financial Summary (as of 9/16/2012)**

Item	Expended (Cumulative)
<b><i>ERRS Contractors</i></b>	
<i>EQM (EPS50802)</i> T057	\$ 1,199,522
T060	\$ 213,636
<i>LATA (EPS50804)</i> T019	\$ 1,161,082
<i>ER LLC (EPS50905)</i> T040	\$ 683,330
<b>Total ERRS Contractors</b>	<b>\$ 3,257,571</b>
<b><i>Other Contractors</i></b>	
<i>Lockheed Martin (EPW09031) – TAGA Support</i>	\$ 198,379
<i>Lockheed Martin (EPW09031) -Biodegradability Study</i>	27,357
<i>T&amp;T Bisso (EPA:HS800008)</i>	\$ 882,087
<b>Total Other Contractors</b>	<b>\$ 1,107,823</b>
<b>START Contractor – WESTON (EPS50604)</b>	
T030-Response	\$ 27,357,602
T032-Sampling	\$ 183,567
T037-Doc Support	\$ 1,731,906
<b>Total START Contractor</b>	<b>\$ 29,273,075</b>
<b>Response Contractor Sub-Totals</b>	<b>\$ 33,611,112</b>
<b>U.S. EPA Funded Costs: Total U.S. EPA Costs</b>	<b>\$ 6,105,243</b>
<b>Pollution Removal Funding Agreements</b>	
Total Other Agencies	\$ 2,051,535
Indirect Cost (16.00%)	\$ 3,598,252
Indirect Cost (8.36%)	\$ 1,445,933
Cost Documentation/Billing Admin Fee (2.93%)*	\$ 280,421
<b>Total Est. Oil Spill Cost</b>	<b>\$ 47,092,496</b>
<b>Oil Spill Ceiling Authorized by USCG</b>	<b>\$ 52,700,000</b>
<b>Oil Spill Ceiling Available Balance</b>	<b>\$ 5,607,504</b>

Shaded and italicized items are discontinued ; \* Effective on EPA Enbridge costs billed to USCG for bills issued after 6/5/12.

**Table 10 - Personnel On-Site**

Agency/Entity	September 2012						
	19	18	17	16	15	14	13
U.S. EPA	1	1	1	0	0	2	2
START	20	18	17	0	6	17	18
MDEQ	4	5	5	0	0	6	6
MDEQ Contractors	4	6	5	0	0	5	5
USGS	0	0	0	0	0	0	1
Calhoun County Public Health	0	0	0	0	0	0	0
Calhoun County (CC) EM	0	0	0	0	0	0	1
City of Battle Creek	0	0	0	0	0	0	1
City of Marshall	0	0	0	0	0	0	1
Kalamazoo County Public Health	0	0	0	0	0	0	0
Kalamazoo Sheriff	0	0	0	0	0	0	1
MDCH	0	0	0	0	0	0	1
Michigan State Police EMD	0	0	0	0	0	0	0
Allegan County Emergency Mgmt.	0	0	0	0	0	0	0
MDNR	0	0	0	0	0	0	0
Enbridge – Operations Center	42	48	46	1	8	34	39
Enbridge – Kalamazoo River	25	27	27	0	0	28	29
Enbridge – Containment	13	13	11	0	6	13	19
Enbridge – Submerged Oil	34	37	37	0	0	41	37
Enbridge – Waste Management	11	11	10	0	0	1	1
Enbridge – Security & Flaggers	4	4	4	4	4	4	4
Enbridge – Communications Ctr.	5	4	7	0	0	2	5
<b>Total</b>	<b>163</b>	<b>174</b>	<b>170</b>	<b>5</b>	<b>24</b>	<b>153</b>	<b>171</b>

\*Enbridge Operations and Field include Enbridge and contractors as reported by Enbridge