

US EPA ARCHIVE DOCUMENT

**U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION V  
POLLUTION/SITUATION REPORT #152**



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



**Re-installation of the Ceresco Dam Control Point**

**To:** Susan Hedman, U.S. EPA Regional Administrator  
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Scott Corbin, Allegan County Emergency Management  
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:** 7/20/2012

**Reporting/Operational Period:** 0700 hours 6/28/2012 through 0700 hours 7/12/2012

### ***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; 4) Air Operations; and 5) Waste Management.
- During this reporting period, the Overbank Branch and the River Opening Branch were eliminated. The OSCAR Group replaced the Submerged Oil Assessment Group within the Submerged Oil Branch.

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

##### ***2.1.1 OSCAR Group***

- The OSCAR Group began review and evaluation of recent Source Area investigation results. The Group will continue its review of the data and assessment results and develop recommendations for necessary actions.
- Monitoring of submerged oil in Morrow Lake and the Morrow Lake Delta continued according to the Morrow Lake Monitoring, Assessment, and Management Plan.
- 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/product (globules). 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 monitoring and response. See Table 1 for information regarding the total number of sheen differentiation tests conducted, and the results of those tests.

### ***2.1.2 Submerged Oil Science Group***

- Enbridge's Kalamazoo River Hydrodynamic Transport Model Report containing baseline model calibration results (e.g. riverine and floodplain grids) and various baseline scenario results, sensitivity analysis results, and the Report addendum are currently under review by U.S. EPA.
- U.S. EPA and Enbridge continued discussions regarding interpretation of oil fingerprinting data for samples collected from Morrow Lake and from below the Morrow Lake Dam.
- Enbridge collected velocity profiling data from the Kalamazoo River System. The data will be utilized for the development of containment strategies to prevent the continued migration of oil, oil sheen, submerged oil and oil containing sediments into the Morrow Lake fan, and for refinement of the hydrodynamic model.

### ***2.1.3 Submerged Oil Compliance Group***

- No activities were performed during this operational period.

### ***2.1.4 Submerged Oil Recovery Group***

- Daily sheen management activities continued with sheen sweep boats conducting routine recovery activities at Ceresco Dam, Mill Ponds, MP 21.5 – MP 30.8, and the Morrow Lake Delta, along with other ongoing sheen sweep responses as sheen was identified. See Table 2 for information regarding the total number of sheen responses by date.

### ***2.1.5 Submerged Oil Monitoring Group***

- Enbridge continued to maintain an odor response team; however, no odor complaints were received during the operational period.
- Air monitoring and sampling information is included in Tables 3 and 4.

## **2.2 Containment Branch**

### ***2.2.1 Containment Science Group***

- The Group continued to develop strategies for evaluating and enhancing the planned sediment trap locations. Alternate placement of structures is being evaluated through additional hydrodynamic model runs at 6 of the additional 14 sediment trap locations. Completed model results were reviewed by Enbridge, U.S. EPA and MDEQ. Two out of the six locations were selected to receive sediment trap structures. The remaining four locations will be monitored utilizing cylindrical sampling devices.

### ***2.2.2 Containment Compliance Group***

- Enbridge tracked an MDEQ permit application for enhancements (e.g. structures) and monitoring devices at 14 sediment trap locations, based on a review of existing hydrodynamic model data set forth by MDEQ. The permit application is currently under review pending the submittal of HEC RAS model results for one of the proposed site locations.

### ***2.2.3 Containment Recovery Group***

- Installation of the enhanced E4 Containment System continued during this operational period.
- Due to an increase in oil sheen and globules observed above Ceresco Dam, teams re-installed the control point above Ceresco Dam on July 7, 2012.
- As of July 11, 2012, a total of 8,400 feet of surface hard boom and 4,550 of subsurface half curtain had been installed at the Ceresco Control Point and the E4 Containment system boom locations. Teams removed debris accumulated within the boomed areas and recorded observations and estimates of surface area of accumulated oil sheen at the control point.

### ***2.2.4 Containment Monitoring Group***

- Teams continued implementation of the EOMP process. See Section 2.2.1 for additional details regarding the EOMP.
- Teams performed weekly inspection of the 6 currently-permitted sediment trap locations, including visual inspection and poling within the sediment traps. Teams performed monthly visual inspections of the sediment sampling devices and sample retrieval from selected samplers. Sample results will be used to evaluate and verify the effectiveness of the sediment traps.
- Water level gauges were monitored at multiple locations along the Kalamazoo River, Morrow Lake Delta, and Morrow Lake. In addition, daily water and sediment temperature readings were collected at 10 locations.
- One to two crews tracked sheen/product (globules) observations in Talmadge Creek and the Kalamazoo River.

## **2.3 Kalamazoo River System Branch**

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

- Implementation of the Kalamazoo River Remedial Investigation (RI) Work Plan continued. As of July 11, 2012, the RI was in progress for 41.18% of the system.

### ***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***

- No activities were conducted during the reporting period.

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

- Monitoring of erosion control devices continued.

## 2.4 Air Operations Branch

- Five over-flights were conducted for situational awareness during this reporting period. Personnel reported observations of sheen/product (globules) to Operations for follow-up testing and or response consistent with the EOMP. See Section 2.2.1 for additional details regarding the EOMP.
- Photographs were taken during the over-flights for presentation during Operations, Command and General Staff, and Multi-Agency Coordination (MAC) Group meetings.

## 2.5 Waste Management Branch

- Contaminated soil, water, and debris continue to be transported to Frac Tank City. Samples are collected for oil recovery determination prior to off-site disposal. Waste management characterization, manifesting, and coordination of transportation and disposal continued according to approved plans.
- A summary of equipment and boom decontaminated during this reporting period is presented in Table 5.
- Quantities of soil, debris, and liquid shipped off-site during the reporting period are presented in Tables 6 and 7.
- 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 8.

## 3. *Planning*

### 3.1 Situation Unit

- Situation Unit personnel observed and documented progress in operational areas, and continued to assess areas of interest including locations of oil globules and oil sheen consistent with the EOMP. See Section 2.2.1 for additional details regarding the EOMP.
- Daily situation photo logs were prepared and distributed to project participants.

#### 3.1.1 *GIS Specialists*

- GIS personnel continued to support operations with the generation of site maps.

### 3.2 Environmental Unit

- U.S. EPA continued coordination with United States Geological Survey (USGS) regarding the Kalamazoo River geomorphology evaluation and the impact on strategy and tactics for future oil recovery efforts.

### 3.3 Documentation Unit

- Documentation Unit personnel continued organizing and archiving electronic and paper files.

### 3.4 Resource Unit

- Personnel continued to produce Incident Action Plans (IAPs), support the planning efforts of operations, and provide information to Logistics personnel in order to properly prepare and procure resources.

#### **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.
- Two near-miss safety incidents occurred during the reporting period. On July 10, 2012, an Enbridge contractor hit his hard hat with a slambar. On July 12, 2012, an exhaust extension was cracked when a steam cleaner at Frac Tank City back fired; accumulated soot in the burn chamber caused the back fire to be stronger.

##### **4.2 Public Information**

- The number of public inquires reported by Enbridge for this period is presented in Table 9.

#### **5. Landowner Environmental Issues**

- Landowner environmental issues, as reported by Enbridge, are presented in Table 10.

#### **6. Finance**

- The current National Pollution Funds Center (NPFC) ceiling is \$52.7 Million. Approximately 85.1% of the ceiling has been spent through July 8, 2012. The latest average 7-day burn rate was \$19,261, reflecting the decreased staff during the Fourth of July Federal Holiday. These cost summaries reflect only U.S. EPA-funded expenditures for the incident. A summary of these expenses is presented in Table 11.

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

- The SSCG met in Marshall for an all-hands meeting to review the status of on-going studies, and identify approaches to assist in the determination of residual Line 6B submerged oil, and assessment of the potential impacts of agitation on submerged oil.
- Individuals in the Eco-Toxicity Subgroup continue to use the interim version of a Net Environmental Benefits Analysis (NEBA) to assess the harm and benefits accompanying oil recovery efforts. The draft recommendation document is near completion and will be submitted to the FOSC for review upon incorporation of Spring 2012 poling results.
- The U.S. EPA's Environmental Response Team (ERT) has submitted a report documenting studies with 14 and 28 day sample incubation periods that evaluate the potential biodegradability of submerged oil.

#### **8. 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).

### **9. Personnel On-Site**

- Staffing numbers for the entities and agencies active in the response are presented in Table 12.

### **10. Source of Additional Information**

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

### **11. Clean-up Progress Metrics**

**Table 1 – Sheen Differentiation Test Results**

	July 2012												June 2012		
	Total	11	10	9	8	7	6	5	4	3	2	1	30	29	28
Sheen Tests Performed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Results Indicated Petroleum Source	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Results Indicated Biogenic Source	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Inconclusive Test Results	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**Table 2 – Sheen Responses**

Total	July 2012											June 2012		
	11	10	9	8	7	6	5	4	3	2	1	30	29	28
122	11	12	12	0	11	12	12	12	11	7	0	8	5	9

**Table 3 – Real Time Air Monitoring Counts Performed by Enbridge**

Monitoring Location	Total	July 2012											June 2012		
		11	10	9	8	7	6	5	4	3	2	1	30	29	28
Odor Response	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Work Area	35	10	12	11	0	0	1	0	0	0	0	0	0	0	1

**Table 4 – Samples Collected By Enbridge**

Sample Type	Total	July 2012											June 2012		
		11	10	9	8	7	6	5	4	3	2	1	30	29	28
Surface Water	20	0	18	0	0	0	2	0	0	0	0	0	0	0	0
Private Well	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Groundwater	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Sediment	6	5	0	0	0	0	0	0	0	1	0	0	0	0	0
Soil	48	8	10	5	0	0	0	0	0	6	7	0	0	6	6
Dewatering	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sheen	2	0	0	0	0	0	0	0	0	0	2	0	0	0	0

**Table 5 - Equipment Decontamination**

Location/Media	Total	July 2012											June 2012			
		11	10	9	8	7	6	5	4	3	2	1	30	29	28	
Frac Tanks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vac Trucks-Tankers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roll-Off Boxes	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
Yellow Iron (light)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Yellow Iron (heavy)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Jon Boats	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	
Air Boats	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Boom (linear ft)	1650	200	200	200	0	0	100	250	0	250	0	0	0	350	100	
Miscellaneous Items	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	

**Table 6 - Soil and Debris Shipped Off Site (as of 7/9/2012)**

Waste Stream	Cumulative	Disposal Facility
Haz Soil (yd <sup>3</sup> )	19,644	Envirosafe (Oregon, OH)
Non-Haz Soil & Debris (yd <sup>3</sup> ) (Excluding Ceresco Dredge)	76,443	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)	1,713	SET/C&C
Non-Haz Impacted Debris (ton)	7,024	

Shaded items are discontinued waste streams.

**Table 7 - Liquid Shipped Off-Site (as of 7/9/2012)**

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	1,364,757
Non-Haz Water	Plummer	Kentwood, MI	392,526
<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>17,115,312</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.

\* Treated Non-Haz Water no longer sent to this location.

**Table 8 – Estimated Recovered Oil (as of 7/2/2012)**

Waste Stream Containing Recovered Oil	Destination Company	Destination Location	Estimated Oil Volume in Waste Stream (gallons)
Soil - (Impacted Soil & Debris)	C&C Landfill	Marshall, MI	13,813*
Soil - (Impacted Soil & Debris)	Envirosafe/ Westside RDF	Oregon, OH	278,665
Geotube Sediment - (Impacted Sediment)	Envirosafe/ Westside RDF	Oregon, OH	1,298
Debris - (Roll Off Boxes with Impacted Sorbents, boom, pads, plastic, PPE, vegetation, and biomass)	EQ Michigan	Belleville, MI	33,964
Frac Tank City - Influent to Carbon Filtration System	C&C Landfill	Marshall, MI	8,109
Frac Tank City - Water	Dynecol	Detroit, MI	46,176
	Liquid Industrial Waste Services, Inc.	Kentwood, MI	
	Plumbers Env Inc.	Holland, MI	
	BC POTW	Battle Creek, MI	
Ceresco Pretreatment System	C&C Landfill	Marshall, MI	90
A-1 Pretreatment System	C&C Landfill	Marshall, MI	9
Oily Water - RPP	Enbridge Facility	Griffith, IN	766,288
<b>Total</b>	-	-	<b>1,148,411</b>

\* Not all analytical is available at the time of report generation.  
Shaded items represent discontinued waste streams

**Table 9 – Public Inquiries Received by U.S. EPA and Enbridge**

Location/Media	Total	July 2012											June 2012		
		11	10	9	8	7	6	5	4	3	2	1	30	29	28
Marshall Community Center	20	2	6	0	0	0	2	4	0	3	1	0	0	0	2
Oil Spill Public Information Hotline	12	1	0	1	1	0	1	2	0	0	3	1	0	2	0
Website	2	0	0	0	0	0	1	1	0	0	0	0	0	0	0
<b>Total Public Inquiries</b>	<b>34</b>	<b>3</b>	<b>6</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>7</b>	<b>0</b>	<b>3</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>2</b>

**Table 10 – Landowner Environmental Issues (as of 7/12/2012)**

Issues this Period	Issues Undergoing Evaluation	Issues Considered Addressed
0	4	1

**Table 11 - Financial Summary**

Item	Expended (Cumulative) (as of 7/8/2012)
<b>ERRS Contractors</b>	
EQM (EPS50802) T057	\$ 1,199,522
T060	\$ 213,636
LATA (EPS50804) T019	\$ 1,161,082
ER LLC (EPS50905) T040	\$ 683,330
<b>Total ERRS Contractors</b>	<b>\$ 3,257,571</b>
<b>Other Contractors</b>	
Lockheed Martin (EPW09031) – TAGA Support	\$ 198,379
Lockheed Martin (EPW09031) -Biodegradability Study	25,694
T&T Bisso (EPA:HS800008)	\$ 882,087
<b>Total Other Contractors</b>	<b>\$ 1,106,160</b>
<b>START Contractor – WESTON (EPS50604)</b> T030-Response	\$ 25,973,674
T032-Sampling	\$ 183,567
T037-Doc Support	\$ 1,636,660
<b>Total START Contractor</b>	<b>\$ 27,793,901</b>
<b>Response Contractor Sub-Totals</b>	<b>\$ 32,131,938</b>
<b>U.S. EPA Funded Costs: Total U.S. EPA Costs</b>	<b>\$ 5,998,879</b>
<b>Pollution Removal Funding Agreements – Total Other Agencies</b>	<b>\$ 1,790,754</b>
Indirect Cost (16.00%)	\$ 3,598,252
Indirect Cost (8.36%)	\$ 1,313,382
<b>Total Est. Oil Spill Cost</b>	<b>\$ 44,833,205</b>
<b>Oil Spill Ceiling Authorized by USCG</b>	<b>\$ 52,700,000</b>
<b>Oil Spill Ceiling Available Balance</b>	<b>\$ 7,866,795</b>

Shaded items are discontinued

**Table 12 - Personnel On-Site**

Agency/Entity	July 2012											June 2012		
	11	10	9	8	7	6	5	4	3	2	1	30	29	28
U.S. EPA	2	1	1	0	1	1	1	0	2	2	0	1	1	1
START	23	22	19	0	8	11	11	0	13	14	0	12	21	23
MDEQ	6	6	5	0	0	1	2	0	6	5	0	0	6	6
MDEQ Contractors	6	6	6	0	0	1	2	0	6	6	0	0	7	7
USGS	2	1	0	0	0	0	0	0	0	0	0	1	1	1
Calhoun County Public Health	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Calhoun County (CC) EM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Battle Creek	0	0	0	0	0	0	0	0	0	0	0	0	0	0
City of Marshall	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kalamazoo County Public Health	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kalamazoo Sheriff	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MDCH	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Michigan State Police EMD	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Allegan County Emergency Management	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MDNR	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Enbridge – Operations Center	49	51	51	0	2	27	25	0	38	35	0	5	44	49
Enbridge – Kalamazoo River	28	23	21	0	1	9	11	0	14	14	0	2	14	19
Enbridge – Containment	29	27	28	0	17	20	20	14	22	23	0	24	27	27
Enbridge – Submerged Oil	8	7	7	0	0	2	2	0	3	3	0	1	5	6
Enbridge – Overbank	-	-	-	-	-	-	-	0	7	7	0	1	7	10
Enbridge – River Opening	-	-	-	-	-	-	-	0	1	0	3	5	0	1
Enbridge – Waste Management	1	1	2	0	0	1	1	0	2	2	0	1	6	6
Enbridge – Security & Flaggers	4	4	4	4	4	4	4	4	5	5	5	5	5	5
Enbridge – Communications Center	6	3	2	0	0	2	2	0	4	4	0	0	2	3
<b>Total</b>	<b>164</b>	<b>152</b>	<b>146</b>	<b>4</b>	<b>33</b>	<b>79</b>	<b>81</b>	<b>18</b>	<b>123</b>	<b>120</b>	<b>8</b>	<b>58</b>	<b>146</b>	<b>164</b>

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