

US EPA ARCHIVE DOCUMENT

**Enbridge Line 6B MP 608
Marshall, Michigan Pipeline Release
Oil Recovery and Containment Plan**

**August 2, 2010
(Revised August 5, 2010 per U.S. EPA August 3, 2010
Notice of Approval with Modifications)**

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**August 2, 2010
(Revised August 4, 2010)**

1.0 INTRODUCTION

As required in the Federal Response Framework and Area Contingency Plans, Enbridge Energy, Limited Partnership (The Company) owns and maintains extensive emergency response equipment throughout its operating liquids pipelines system. In addition, The Company has working agreements with qualified contractors to supply supplemental resources in the case of a significant case discharge scenario. This Oil Recovery and Containment Plan has been prepared to present a summary of oil recovery efforts completed as of August 1, 2010, as well as anticipated activities necessary to complete the initial response related to mobile crude oil.

For the Enbridge Marshall, Michigan pipeline release in Marshall, Michigan, The Company has enacted its Emergency Response Plan to provide a rapid and comprehensive response. Oil Spill Response Organizations (OSRO) as classified by the United States Coast Guard (USGC) have been deployed in force along with other trained and qualified contractors for the recovery and containment of oil.

2.0 OBJECTIVES

The Company, in tandem with the Unified Incident Command Organization, has developed the following objectives for the containment and recovery of oil which are intended to be protective of human health and the environment:

- Cease the flow of oil from the pipeline, thereby isolating the source until clean up is completed,
- Isolate the source area by placement of berms between release point and Talmadge Creek,
- Contain and recover oil at Talmadge Creek through use of inverted flumes, sometimes referred to as siphon dams or underflow dams,
- Contain and recover oil from Talmadge Creek and Kalamazoo River through use of deflection booms, oil absorbent booms, absorbent pads, skimmers, drum skimmers, vac trucks and pumps, as necessary.
- Remove residual crude from all affected locations,
- Evaluate effectiveness of containment and recovery efforts and modify as necessary to improve containment and recovery.

3.0 RESOURCES

Oil Recovery and Containment Plan

The Company has mobilized personnel, including contractor personnel, to respond to the release. As of August 1, 2010, the following were actively involved in the response:

- Trained personnel: Over 800 trained and qualified Company and contractor personnel are engaged in spill cleanup activities.
- Equipment assigned, including, but not limited to:
 - Over 36,000 feet of containment boom at 19 sites,
 - Over 32,000 feet of absorbent boom at 36 boom sites,
 - 79 Vacuum Trucks,
 - 69 Frac tanks, with more coming,
 - 19 Tanker Trucks,
 - 43 Boats,
 - 46 Skimmers
- Equipment unassigned, and available for deployment
 - 48,800 feet of containment boom, and
 - 102,000 feet of absorbent boom

4.0 HEALTH AND SAFETY

Issues relating to the health and safety of on-site workers and/or the general public are addressed in the "Health and Safety Plan". Such issues may include but are not limited to: inhalation, direct contact and site control. All Company and contracted employees will sign and adhere to the Site Health and Safety Plan.

5.0 MATERIALS DISPOSITION

Throughout the oil recovery and containment activities, various solid and liquid materials will be generated that will be properly handled, documented, and disposed or recycled as appropriate. Details for this process are included in the "Waste Treatment, Transportation, and Disposal Plan."

6.0 GEOGRAPHICAL RESPONSE DIVISIONS

A geographic, zone-based system (referred to as divisions) to strategically recover oil as safely and quickly as possible has been implemented. These divisions include:

- Division A: Release site to the first Talmadge Creek Flume
- Division B: Flume Site to Fourteen Mile Road
- Division C: Fourteen Mile Road to Angell Road
- Division D: Angell Road to County Line
- Division E: Kalamazoo County line to Morrow Lake Dam

See Figures 1 and 2, for site locations and designations, and figures 3 through 7 for division specific maps.

The Company is performing daily over flights of all divisions for visual inspections of the condition of the river surface and integrity of the boom arrays, which will continue until Unified Command has approved reduction or elimination of daily flights.

Should deficiencies be noted, these will be immediately communicated to the division supervisor so remedies can be documented and implemented in a timely manner. If weather precludes the safe performance of over flights, the Company will notify the Unified Command.

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In addition, The Company has retained the services of a consultant specializing in boom placement to assist with booming strategies.

6.1 DIVISION A

Division A consists of the area encompassing the pipeline release site (Release Site) to the last interdiction flume on Talmadge Creek immediately adjacent to the Release Site (see Figure 3 – Division A Map).

- The objectives of the activities at the release site are to contain the source, prevent the migration of oil overland to, and into Talmadge Creek, and to recover oil.
- Steps taken to accomplish this objective include the construction of isolation berms, and a flume system on the creek.
 - To date, three earthen berms have been constructed: the first to isolate the Release site, which was completed on July 29th at 7:00 AM; the second completed later in the day on the 29th. The third berm, placed down-gradient of the release, and roughly parallel to the creek to intercept and contain any residual oil was completed on July 30th. Shallow sump trenches have been excavated within the isolation zone between the earthen berms to concentrate the residual oil to facilitate recovery by vacuum trucks. The plan for excavation, transport and disposal of oil saturated soils from this area is described in the “Source Release Area Remediation Work Plan”.
 - A flume system, consisting of a series of inverted weirs has been constructed in Talmadge Creek and was made operational by 7:00 AM on July 28th. Vacuum trucks are used to capture and remove the oil trapped in the flumes.
- Going forward: removal and recycling/disposal of the remaining crude oil to minimize or prevent future releases utilizing excavated sump trenches, vacuum trucks, and absorbent materials. Continue to maintain the containment berms. Monitor for the effectiveness of the containment and recovery efforts and modify as necessary to recover oil.
- Endpoint: All free surficial oil has been recovered and or removed.
- Contingency: Additional resources will be deployed (i.e., excavation equipment, vacuum trucks, containment booms, absorbent booms, and additional personnel) during source removal activities should conditions warrant. Those conditions include, but are not limited to, excessive precipitation that may overpower the flumes and/or damage the containment berms resulting in a further release to Talmadge Creek. Observation by representatives of The Company and participating contractors will be continuous during active source removal activities. If excavation is halted periodically, such as nighttime hours, security contractors will include the site in their rounds with instructions to immediately inform Company representatives if deteriorating conditions are observed from the closest distance appropriate for their level of training. Appropriate Company personnel will be informed and corrective actions will be initiated if a breach is deemed to be developing or imminent. A sump and inverted weir system similar in scope and construction to the existing structures will be installed at the berm adjacent to the creek to allow for the containment of oil within the isolation zone between the earthen berms. In addition, USEPA or any member of Unified Command (through

Oil Recovery and Containment Plan

Incident Commander) may request additional resources be deployed due to potential breaches of the containment system.

6.2 DIVISION B

Division B consists of Talmadge Creek and the Kalamazoo River beginning immediately downstream of the Talmadge Creek flumes adjacent to the release site to a point on the Kalamazoo River opposite 14-Mile Road (see Figure 4 – Division B Map).

- The objective of the activities conducted within Division B is to contain and recover oil that has made its way into Talmadge Creek and/or the Kalamazoo River.
- Actions taken to-date to accomplish this objective include the placement of containment booms at ten points of access (bridges, culverts, etc.) within the division. In general, the booms are placed in such way as to contain and direct the oil to an accessible collection point, and anchored upstream and down using trees or stakes. Drum skimmers are used within the containment areas to collect the oil for removal. Vacuum trucks are used to recover the oil and water for transport to the central storage facility where the contents are off-loaded to frac tanks for temporary storage. Absorbent booms have been placed to assist in the removal of oil and oil sheen from the surface of Talmadge Creek and the Kalamazoo River.
- As of August 1, 2010, 2,520-feet of containment boom, and 2,630-feet of absorbent boom have been deployed within Division B.
- Going forward: O&M of the current array of containment booms, absorbent booms, skimmers, as well as collection and transport of crude oil and water containing a sheen to the temporary tank farm, or other approved location, will continue on a 24 hour/7 days per week schedule until no further oil accumulates, or as approved by the USEPA. O&M consists of inspection of the boom anchor points, overall condition of the containment and absorption booms, replacement of absorption booms as necessary, maintenance of skimming devices, removal of accumulated oil via vacuum truck, and site housekeeping.
- Visual inspection of all existing boom arrays will be conducted daily and documented. Should deficiencies be noted, these will be immediately communicated to the division supervisor so remedies can be implemented in a timely manner. Remedies will also be documented. These operations will remain in effect as long as upstream shoreline remediation activities continue. Additional control points will be installed and maintained if deemed necessary by Unified Command.
- Endpoint: Control measures will be sequentially demobilized as conditions merit, i.e., oil skimming activities will decrease and cease when no additional residual crude oil or sheen is present at the collection points for a period of 14 days after the last observable sheen, and as approved by the USEPA; boom systems will be removed or downgraded from containment to sheen-specific absorbent booms as may be appropriate and approved by Unified Command.
- Contingency: Additional resources will be mobilized (personnel and equipment) should conditions warrant, such as increased precipitation, an increase in residual crude oil or sheen observed during routine inspections, confirmed reports from outside sources, or damage to containment and collection systems due to natural causes or vandalism. Inventories of containment booms and absorbent booms beyond normal O&M supplies will be maintained and dedicated for deployment if deemed necessary by Unified Command.

6.3 DIVISION C

Division C consists of the Kalamazoo River beginning at a point on the Kalamazoo River opposite 14-Mile Road, west to the Angell Street Bridge in Battle Creek (see Figure 5 – Division C Map).

- The objective of the activities conducted within Division C is to contain and recover oil from the Kalamazoo River and any adjacent areas.
- Actions taken to-date to accomplish this objective include the placement of containment booms at nine points of access within the division. As noted above (see section 4.2), the booms are placed in such way as to contain and direct the oil to an accessible collection point, where drum skimmers are used to collect the oil for removal. Vacuum trucks are used to recover the oil and water for transport to the central storage facility where the contents are off-loaded to frac tanks for temporary storage. Absorbent booms have been placed to assist in the removal of oil and oil sheening from the surface of the Kalamazoo River.
- As of August 1, 2010, 9,100-feet of containment boom, and 2,195-feet of absorbent boom have been deployed within Division C.
- Going forward: O&M of the current array of containment booms, absorbent booms, skimmers, as well as collection and transport of crude oil and water containing a sheen to the temporary tank farm, or other approved location, will continue on a 24 hour/7 days per week schedule until no further oil accumulates, or as approved by the USEPA. O&M consists of inspection of the boom anchor points, overall condition of the containment and absorption booms, replacement of absorption booms as necessary, maintenance of skimming devices, removal of accumulated oil via vacuum truck, and site housekeeping.
- Visual inspection of all existing boom arrays will be conducted daily and documented. Should deficiencies be noted, these will be immediately communicated to the division supervisor so remedies can be implemented in a timely manner. Remedies will also be documented. These operations will remain in effect as long as upstream shoreline remediation activities continue. Additional control points will be installed and maintained if deemed necessary by Unified Command.
- Endpoint: Control measures will be sequentially demobilized as conditions merit, i.e., oil skimming activities will decrease and cease when no additional residual crude oil or sheen is present at the collection points for a period of 14 days after the last observable sheen, and as approved by the USEPA; boom systems will be removed or downgraded from containment to sheen-specific absorbent booms when approved by Unified Command.
- Contingency: Additional resources will be mobilized (personnel and equipment) should conditions warrant, such as a significant rain event, an increase in residual crude oil or sheen observed during routine inspections, confirmed reports from outside sources, or damage to containment and collection systems due to natural causes or vandalism. Inventories of containment booms and absorbent booms beyond normal O&M supplies will be maintained and dedicated for deployment if deemed necessary by Unified Command.

Oil Recovery and Containment Plan

6.4 DIVISION D

Division D consists of the Kalamazoo River from the Angell Street Bridge west to the Calhoun County Line. (see Figure 6 – Division D)

- The objective of the activities conducted within Division D is to contain and recover oil that has made its way into the Kalamazoo River.
- Actions taken to-date to accomplish this objective include the placement of a containment boom at Site Location D2 (milepost 17.9), and absorbent booms at the four remaining designated points of access. As noted in Section 4.2 above, the containment boom is placed in such way as to contain and direct the oil to an accessible collection point, where a drum skimmer is used to concentrate the oil for removal. Vacuum trucks are used to recover the oil and water for transport to the central storage facility where the contents are off-loaded to frac tanks for temporary storage. Absorbent booms have been placed to assist in the removal of oil and oil sheen from the surface of the Kalamazoo River.
- As of August 1, 2010, 5,270-feet of containment boom, and 9,870-feet of absorbent boom have been deployed within Division C.
- Going forward: O&M of the current array of containment booms, absorbent booms, skimmers, as well as collection and transport of crude oil and water containing a sheen to the temporary tank farm, or other approved location, will continue on a 24 hour/7 days per week schedule until no further oil accumulates, or as approved by the USEPA. O&M consists of inspection of the boom anchor points, overall condition of the containment and absorption booms, replacement of absorption booms as necessary, maintenance of skimming devices, removal of accumulated oil via vacuum truck, and site housekeeping.
- Visual inspection of all existing boom arrays will be conducted daily and documented. Should deficiencies be noted, these will be immediately communicated to the division supervisor so remedies can be implemented in a timely manner. Remedies will also be documented. These operations will remain in effect as long as upstream shoreline remediation activities continue. Additional control points will be installed and maintained if deemed necessary by Unified Command.
- Endpoint: Control measures will be sequentially demobilized as conditions merit, i.e., oil skimming activities will decrease and cease when no additional residual crude oil or sheen is present at the collection points for a period of 14 days after the last observable sheen, and as approved by the USEPA; boom systems will be removed or downgraded from containment to sheen-specific absorbent booms.
- Contingency: Additional resources will be mobilized (personnel and equipment) should conditions warrant, such as a significant rain event, an increase in residual crude oil or sheen observed during routine inspections, confirmed reports from outside sources, or damage to containment and collection systems due to natural causes or vandalism. Inventories of containment booms and absorbent booms beyond normal O&M supplies will be maintained and dedicated for deployment if deemed necessary by Unified Command.

6.5 DIVISION E

Division E consists of the Kalamazoo River and Morrow Lake, from the Calhoun/Kalamazoo County line west to the Morrow Lake Dam. (see Figure 7 – Division E)

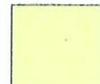
Oil Recovery and Containment Plan

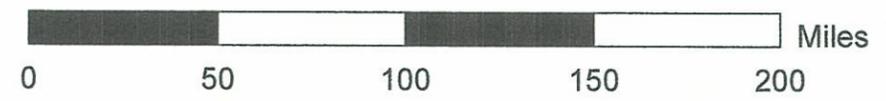
- The objective of the activities conducted within Division E is to contain and recover oil and oil sheen that has made its way into the Kalamazoo River.
- Actions taken to-date to accomplish this objective include the placement of a containment boom at the approaches to the Morrow Dam outlet (Site Location E5, Milepost 38.5), and absorbent booms at the four remaining designated points of access. The containment boom at the dam has been placed as a precautionary measure, and absorbent booms have been placed upstream of Morrow Lake to intercept any oil or oil sheen before it can enter the lake.
- As of August 1, 2010, 20,310-feet of containment boom, and 17,650-feet of absorbent boom have been deployed within Division E.
- Going forward: Continue operation and maintenance of the current array of containment boom and absorbent booms. Continue over flights for visual inspections of the river surface condition and integrity of the boom arrays. These systems will remain in place as long as upstream shoreline remediation activities continue. Additional control points will be installed if deemed necessary by Unified Command.
- Endpoint: Control measures will be sequentially demobilized as conditions improve, i.e., oil skimming activities will decrease and cease when no additional residual crude oil or oil sheen is present at the control points for a period of 14 days after the last observable sheen, and as approved by the USEPA; boom systems will be removed or downgraded from containment to sheen-specific absorbent booms as approved by Unified Command.
- Contingency: Additional resources will be mobilized (personnel and equipment) should conditions warrant, such as a significant rain event, an increase in residual crude oil or sheen observed during routine inspections, from confirmed reports from outside sources, or damage to containment and collection systems due to natural causes or vandalism. Inventories of containment booms and absorbent booms beyond normal O&M supplies will be maintained and dedicated for deployment if needed.

7.0 DOWNSTREAM OF MORROW LAKE

Response efforts to-date have been successful at keeping visual impacts from reaching Morrow Lake. Should conditions change at the site that would result in residual crude oil or sheen to escape to Morrow Lake, immediate actions will be initiated to control and mitigate the impacts. These actions will be detailed in the separate "Contingency Plan".

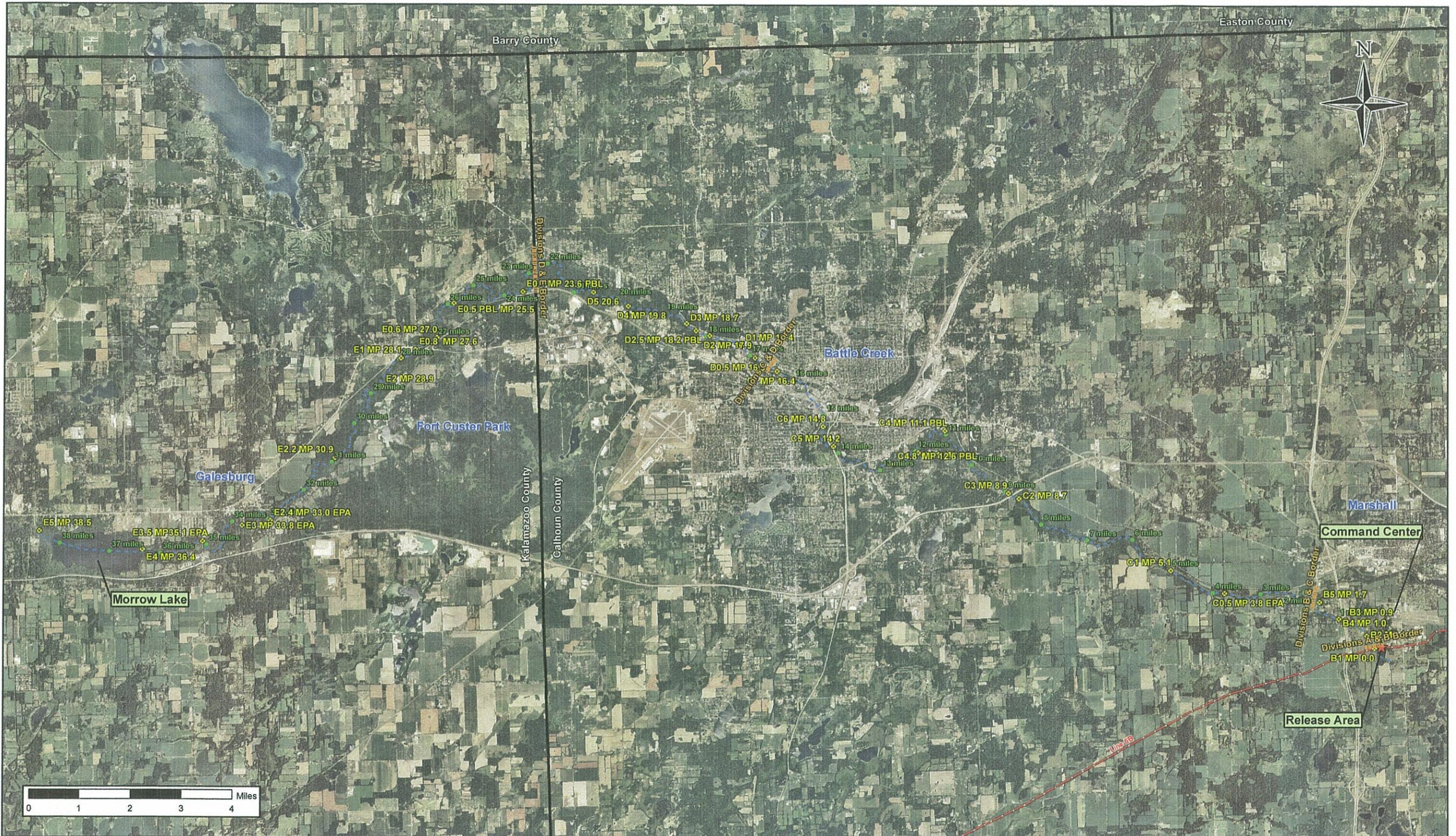


-  = Calhoun County
-  = Kalamazoo County
-  = Enbridge Pipeline
-  = Leak Site

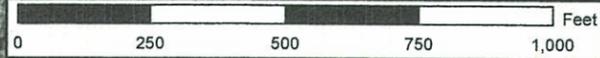
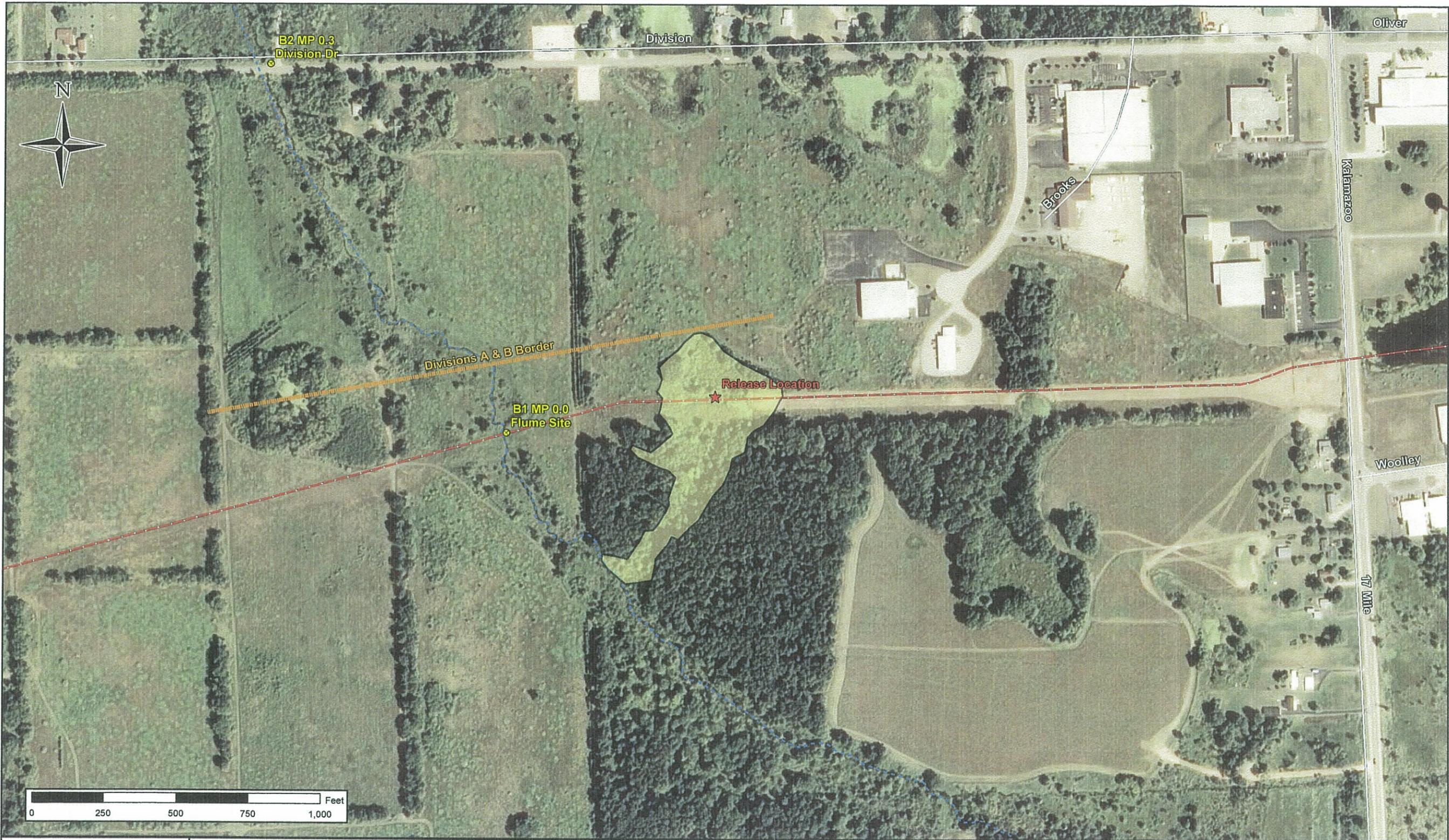


Enbridge Energy, Limited Partnership
Line 6B MP 608 - Marshall, MI
EPA Report Figures
Figure 1: Site Location

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| DATE ISSUED: Aug 1, 2010 |
| DATE REVISED: |
| SCALE: 1:1,500,000 |
| DRAWN BY: NMS/JPM |
| SERIES: 1 of 7 |



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|--|-------------------|---------------------|---|--------------------------|
| | Legend | | Enbridge Energy, Limited Partnership Line 6B MP 608 - Marshall, MI EPA Report Figures Figure 2: Site Designation Map | DATE ISSUED: Aug 1, 2010 |
| | Enbridge Pipeline | Release Location | | DATE REVISED: |
| | River Centerline | Downstream Milepost | | SCALE: 1:60,000 |
| | Major Road | Containment Site | | DRAWN BY: NMS/JPM |
| | Division Boundary | | | SERIES: 2 of 7 |



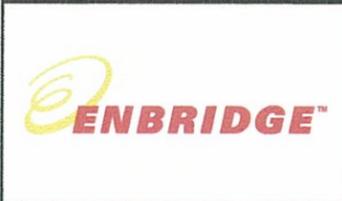
- Enbridge Pipeline
- River Centerline
- Major Road
- Division Boundary

Legend

- Release Location
- Downstream Milepost
- Containment Site
- Approximate Extent Of Oil

**Enbridge Energy, Limited Partnership
Line 6B MP 608 - Marshall, MI
EPA Report Figures
Figure 3: Division A Map**

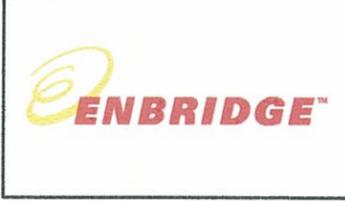
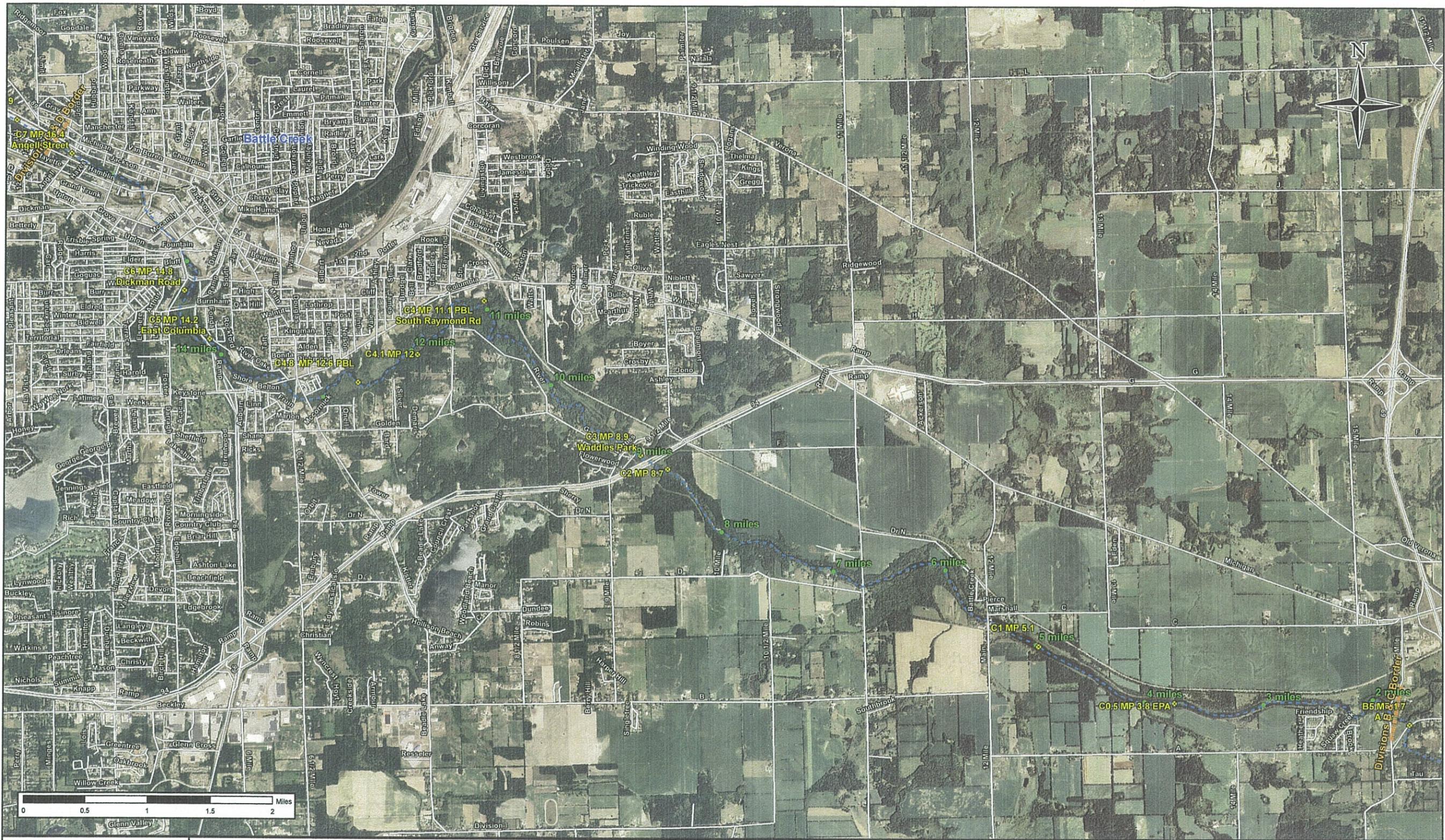
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| SERIES: 3 of 7 |



| Legend | | | |
|--------|-------------------|-----------------------|---------------------------|
| | Enbridge Pipeline | ★ Release Location | |
| | River Centerline | ● Downstream Milepost | |
| | Major Road | ⊙ Containment Site | |
| | Division Boundary | | Approximate Extent Of Oil |

Enbridge Energy, Limited Partnership
Line 6B MP 608 - Marshall, MI
EPA Report Figures
Figure 4: Division B Map

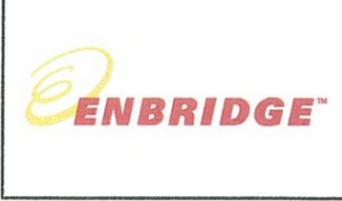
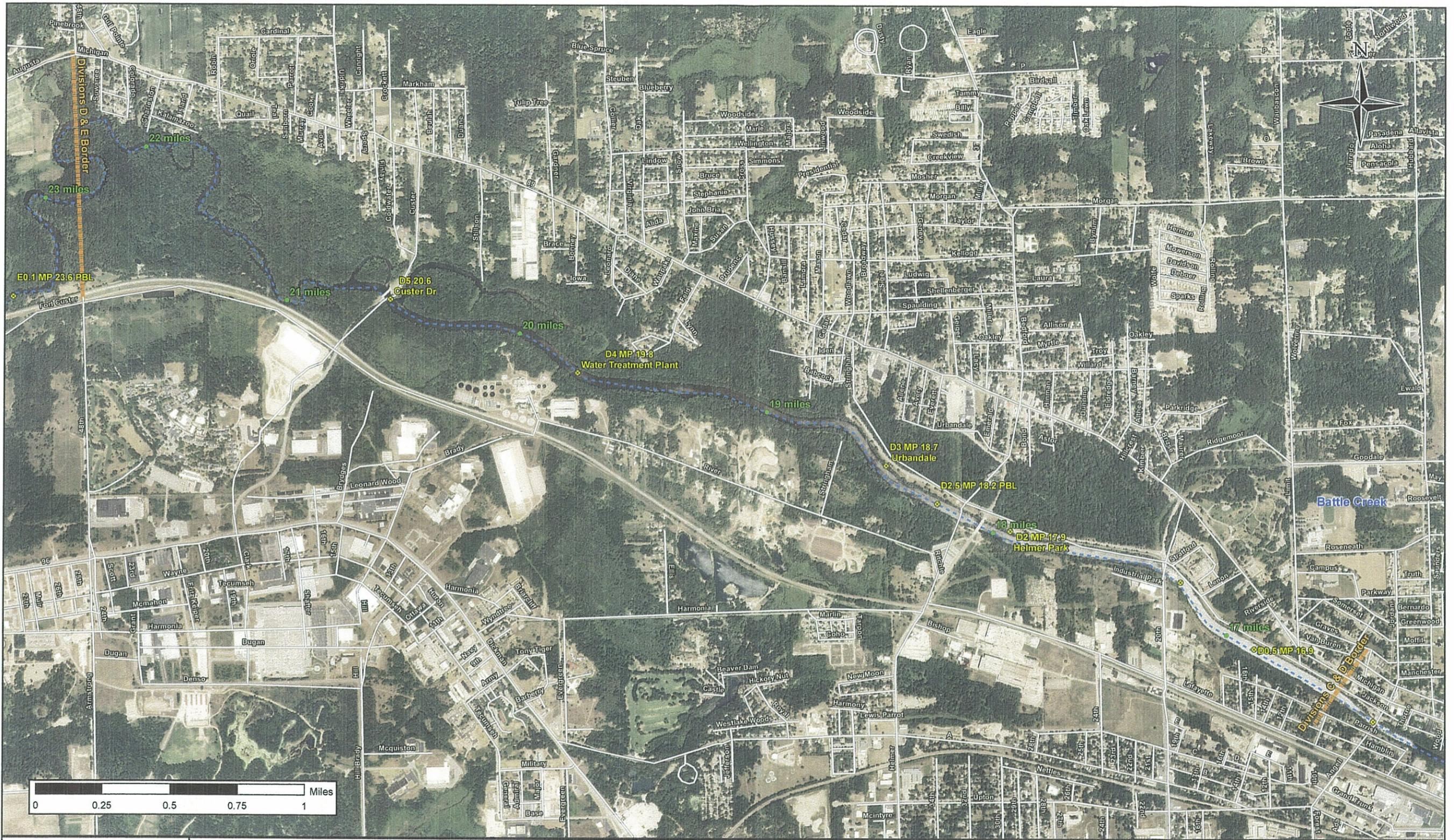
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| SERIES: 4 of 7 |



| Legend | | |
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| | Enbridge Pipeline | ★ Release Location |
| | River Centerline | ● Downstream Milepost |
| | Major Road | ◆ Containment Site |
| | Division Boundary | |
| | | Approximate Extent Of Oil |

Enbridge Energy, Limited Partnership
Line 6B MP 608 - Marshall, MI
EPA Report Figures
Figure 5: Division C Map

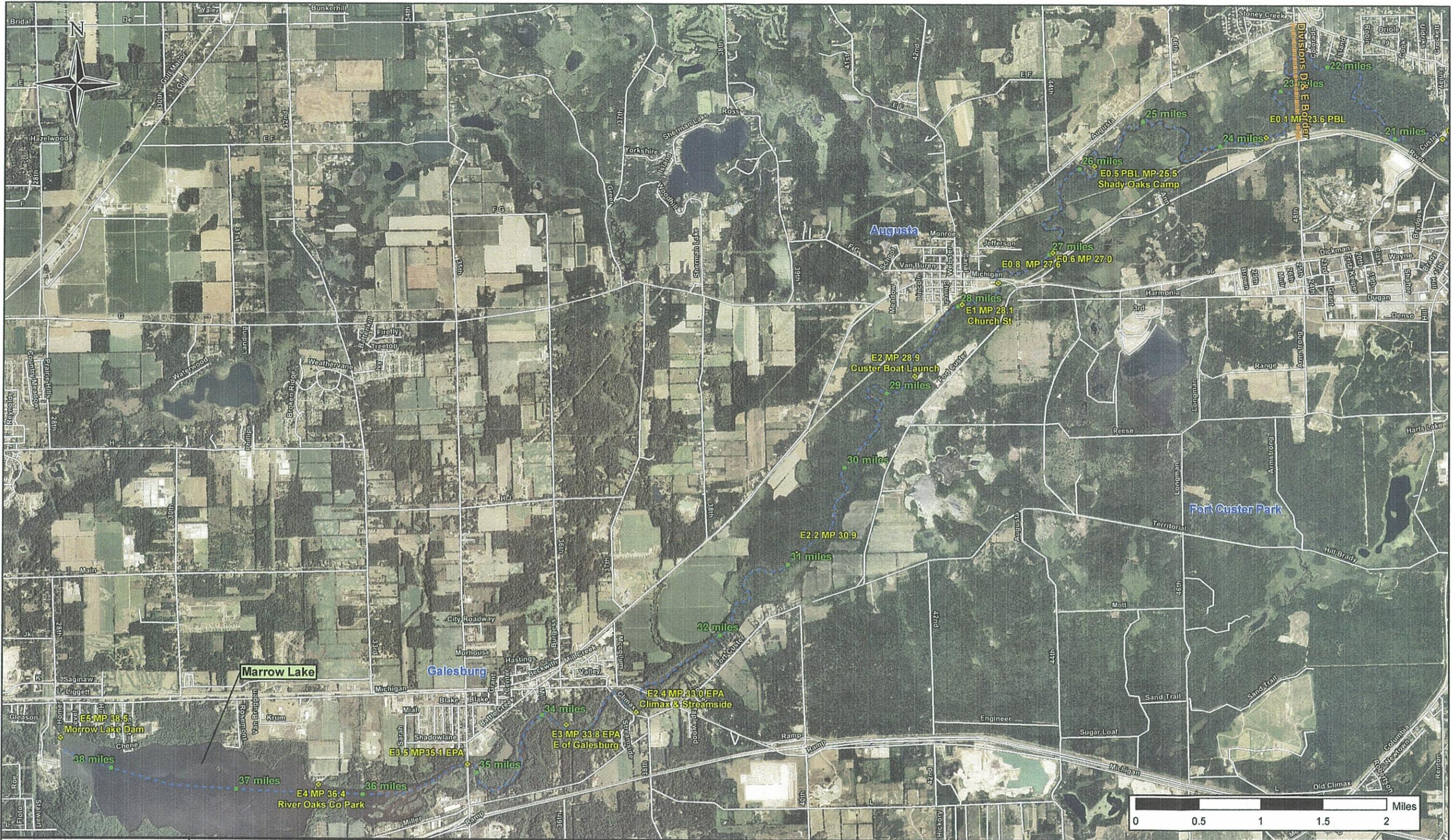
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| SERIES: 5 of 7 |



| Legend | | | |
|--------|-------------------|--|---------------------------|
| | Enbridge Pipeline | | Release Location |
| | River Centerline | | Downstream Milepost |
| | Major Road | | Approximate Extent Of Oil |
| | Division Boundary | | Containment Site |

Enbridge Energy, Limited Partnership
Line 6B MP 608 - Marshall, MI
EPA Report Figures
Figure 6: Division D Map

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| SCALE: 1:11,250 |
| DRAWN BY: NMS/JPM |
| SERIES: 6 of 7 |



| Legend | | | |
|--------|-------------------|--|---------------------------|
| | Enbridge Pipeline | | Release Location |
| | River Centerline | | Downstream Milepost |
| | Major Road | | Containment Site |
| | Division Boundary | | Approximate Extent Of Oil |

Enbridge Energy, Limited Partnership
Line 6B MP 608 - Marshall, MI
EPA Report Figures
Figure 7: Division E Map

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| DATE REVISED: |
| SCALE: 1:24,000 |
| DRAWN BY: NMS/JPM |
| SERIES: 7 of 7 |