Enbridge Energy, Limited Partners
(Enbridge) Marshall Pipeline Release
Sampling and Analysis Plan
Enbridge, Marshall Michigan

July 29, 2010

Prepared by URS Corporation

ENBRIDGE MARSHALL RESPONSE TO PIPELINE RELEASE SAMPLING AND ANALYSIS PLAN

July 29, 2010

The Enbridge petroleum pipeline in the vicinity of Marshall, Michigan experienced a release discovered on July 26, 2010. Two areas have been impacted by this release - the upstream Source Release Area and the Downstream Area. This sample and analysis plan will be used as appropriate in both areas.

SOIL AND WATER SMAPLING TECHNIQUES AND ANALYSIS

Chemical and Physical Characterization of Soil

Soil samples will be collected during investigation and remediation activities at the site. The soil samples will be used to characterize the nature and extent of impact and verify remedial activates. Soil samples will be collected from direct push and conventional auger sampling devices, hand augers, grab samples from the ground surface, excavation floors and sidewalls, and other sampling locations. The soil samples will be analyzed for the following parameters;

Parameter

- Volatile Organic hydrocarbons (BTEX, TMB, 2-methylnapthalene, naphthalene)
- Semi-Volatile Organic Compounds (Polynuclear Aromatic Hydrocarbons, Extractable Petroleum Hydrocarbons)

Chemical Characterization of Sediments

Sediment samples will be collected and analyzed to characterize the nature and extent of impact and to verify remedial activities. Potential sediment sampling devices include the following which will be used as appropriate:

- Driven Probes Box Core
- Gravity Core
- Piston Core
- Hand Driven Multi Sampler
- Clam Shell Sampler
- Vibracore
- Outer Pipe with hand auger bucket
- Water Trap (if needed)

The samples will be analyzed for the following parameters:

Parameter

- Volatile Organic hydrocarbons (BTEX, TMB, 2-methylnapthalene, naphthalene)

- Semi-Volatile Organic Compounds (Polynuclear Aromatic Hydrocarbons, Extractable Petroleum Hydrocarbons)

Chemical Characterization of Groundwater, Surface Water and Potable Water

Groundwater samples may be collected from temporary sampling points or permanent monitoring wells to characterize the nature and extent of impact. Where practicable, the groundwater samples will be collected using low flow sampling methodology.

Surface water samples will be collected using pumps and/or grab sampling devices. Potable well samples will be collected from the tap. The potable well system will be purged a sufficient time prior to sampling to ensure fresh ground water is collected.

The samples will be analyzed for the following parameters:

Parameter

- Volatile Organic hydrocarbons (BTEX, TMB, 2-methylnapthalene, naphthalene)
- Semi-Volatile Organic Compounds (Polynuclear Aromatic Hydrocarbons, Extractable Petroleum Hydrocarbons)
- GRO

The samples will be collected in 40 ml acid preserved VOA vials and 1 liter amber glass containers.

Sample Testing for Waste Characterization

Waste characterization samples will be collected for waste characterization and disposal. The samples will be analyzed for the specific parameters required by the selected disposal facilities.

Sample Preservation

Volatile organic hydrocarbon sediment and soil samples are to be preserved in the field using the methanol soil preservation procedure (USEPA Method 5035). Volatile organic hydrocarbon and GRO groundwater, surface water and potable well water samples will be preserved with hydrochloric acid. All samples are placed on ice in a cooler after collection, and maintained at 4 degrees C.

Sample Labeling

Sample jars and vials are to be clearly labeled with the following information:

- Unique sample identification;
- Sample Type (discrete or composite);
- Sampler name or initials;

- Date sample collected;
- Time sample collected; and
- Analysis to be performed.

Chain of Custody Procedures

All samples are logged on a chain-of-custody record form. Transfer or shipment will include the chain-of-custody record form. A release and/or receipt signature is required for a change in custody of samples. The last person to sign the form retains responsibility for the samples.

Quality Assurance/Quality Control

Accuracy and precision of results are to be evaluated by the use of duplicate sample analyses and field blank analyses. Duplicate samples will be collected and analyzed to verify that data are sufficiently repeatable, or precise. One duplicate sample or analysis will be collected or made for each twenty (20) samples collected. Surrogate recoveries during analyses of matrix spike samples will be used to evaluate the accuracy of results. Recoveries within established ranges specified by the specific laboratory test methods are acceptable. Testing of field blank samples will be completed to evaluate potential cross-contamination from field activities.

SOIL, SEDIMENT, AND WATER SAMPLING LOCAITONS

Soil

Soil sample locations have yet to be determined and will depend on site access and sample locations. In general soil sampling will be used to delineate the horizontal and vertical extent of the crude oil impacts. Samples will be taken within the impact zone to characterize severity of the impacts and samples will be obtained at the depth that corresponds with apparently unimpacted soils. Visual observations and head space tests will be used to guide the determination of apparently clean soils. The horizontal extents of the soils impacts will be confirmed with laboratory analysis as outlined n the previous sections.

Surface Water

Enbridge is currently conducting water sampling as outlined in the Draft Water Monitoring Plan dated July 27, 2010. Enbridge has added additional sample points since the draft was completed. These points are included on Figure 1.

Sediment

Enbridge has initiated sediment sampling on the North side of Morrow Lake, upstream of release site in Talmadge Creek, and in Kalamazoo River upstream of the confluence of the creek and the river. Additional sample locations may be added based on the analytical results of these locations.

Potable Water

The potable water sampling plan has been provided in the Draft Water Monitoring Plan dated July 27, 2010. Modifications to this plan will continue and changes will be communicated to the EPA based on results and public demand.

Figure 1
Surface Water Sampling Locations
as of 12:00pm 7-29-10