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The Trusted Integrator for Sustainable Solutions

October 21, 2011

Mr. Michael Beslow
On-Scene Coordinator
United States Environmental Protection Agency, Region V
77 W. Jackson Boulevard
Chicago, Illinois 60604

Re: Site Assessment Report (Revision 1) Addendum 1
Cline Avenue Ditch Oil Sheen Site
Technical Direction Document: S05-0005-1103-005
Document Control Number: 1349-2A-ARTG

Dear Mr. Beslow:

The United States Environmental Protection Agency (U.S. EPA) tasked the Weston Solutions, Inc., (WESTON®) Superfund Technical Assessment and Response Team (START) under Technical Direction Document (TDD) S05-0005-1103-005 to perform additional site characterization activities at the Cline Avenue Ditch Oil Sheen Site located in Gary, Lake County, Illinois. This document is an addendum to the Site Assessment (SA) Report – Revision 1 dated July 20, 2011.

Additional site characterization activities were completed and include the field activities described below.

Test Pit Sampling

On August 26, 2011, U.S. EPA OSC Michael Beslow and WESTON START mobilized to the Site to collect oil samples from test pits that were being excavated on the future Gary-Chicago Airport expansion property. WESTON START collected oil samples from two of the test pit locations: Pit 1-082611 and Pit 2-082611 (**Figure 1**).

The oil samples were submitted to the United States Coast Guard (USCG) Marine Safety Laboratory (MSL) in New London, Connecticut, for fingerprint (forensic oil) analysis (**Attachment A**). The fingerprint analysis was used to determine if a relationship exists between the oil in the test pits and the samples previously collected in April and May 2011. The results of the fingerprinting analysis, USCG MSL Report 11-307, and a comparison of USCG MSL Reports 11-181, 11-235, and 11-307 are summarized below.

- The oil samples collected on August 26, 2011 (USCG MSL Report 11-307), are representative of spilled oil.
- The following samples are derived from a common source (Source A) of petroleum oil:

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Soil Boring No.	Sample No.
Test Pits	Pit 1-082611
	Pit 2-082611
SB-05	CAD-Soil11-003-052411

- The following samples are derived from a common source (Source B) of petroleum oil:

Soil Boring No.	Sample No.
SB-02	CAD-Soil15-003-052411
SB-03	CAD-Soil01-004-052311
	CAD-Soil02-009-052311
SB-04	CAD-Soil05-005-052311
	CAD-Soil06-009-052311
SB-07	CAD-Soil03-003-052311
	CAD-Soil04-006-052311
SB-08	CAD-Soil07-003-052311
SB-10	CAD-Soil09-003-052411
SB-10A	CAD-Soil10-005-052411
Ditch	CAD-SHN01-040111
	CAD-SHN02-04011
	CAD-SHN05-040111
	CAD-SHN06-040111
	CAD-SOIL02-040111
	CAD-SOIL05-040111
	CAD-SOIL06-040111

- Source B samples appear to be related to the Source A samples through a common source of petroleum oil. However, important non-weathering differences indicate input from more than one source of petroleum oil.

Piezometer Installation Activities

On September 27-29, 2011, U.S. EPA OSC Michael Beslow, WESTON START, and Cabeno Environmental Field Services, LLC (Cabeno) mobilized to the Site to conduct piezometer installation activities. The objective of the piezometer installation activities was to determine groundwater flow direction, oil/water interface depths in the water column, and soil conditions. No samples were collected for analysis.

- Twelve piezometers (PZ-1 through PZ-12) were installed along the Cline Avenue Ditch to a depth of 12 feet below ground surface (bgs). Each boring was logged by the field geologist (**Attachment B**). One of the 12 soil borings (PZ-7) was advanced to the clay layer which was encountered at a depth of approximately 36 feet bgs (**Figure 2**).

- The piezometers were constructed from 1-inch inner diameter (ID), schedule 40 polyvinyl chloride (PVC), flush-mount. Well screens were factory-cut with 0.02-inch slots and 10-foot lengths. All piezometers were screened from 2 to 12 feet bgs which straddles the water table/saturated zone.

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Groundwater Flow

On September 30, 2011, the oil/water interface depth in the piezometers was measured with an electrical sounding device (accuracy ±0.01 feet). The oil/water interface depth and the time of measurement was recorded. The reference point for these depths was the top of the casing. Each piezometer was surveyed for horizontal and vertical reference using ground control equipment (transit, rod, etc.) at the following locations: ground surface, top of inner well casing riser, and top of outer protective casing. The accuracy of horizontal and vertical measurements was ±1.0 feet and ±0.01 feet, respectively. The data collected was referenced to the Indiana State Plane Coordinates and tied to two points on or near the Site. All piezometer locations were located and mapped using a global positioning system (GPS).

Piezometer ID	X Coordinate	Y Coordinate	Oil Level Depth (ft)	Water Level Depth (ft)	Oil Thickness (ft)	TOC Elevation (ft AMSL)	Oil Thickness Factor (ft)	Corrected Water Level Depth (ft)	Water Level Elevation (ft AMSL)
PZ-1	41.62140274	-87.43114787	--	6.81	--	589.08	--	--	582.27
PZ-2	41.62123717	-87.43126235	--	6.16	--	588.29	--	--	582.13
PZ-3	41.62108155	-87.43125086	--	6.92	--	588.96	--	--	582.04
PZ-4	41.62089947	-87.43100101	8.23	11.32	3.09	590.85	2.78	8.54	582.31
PZ-5	41.6207397	-87.43123995	7.20	8.21	1.01	589.20	0.91	7.30	581.90
PZ-6	41.62043992	-87.43127126	5.99	6.22	0.23	588.02	0.21	6.01	582.01
PZ-7	41.62029136	-87.43099951	6.31	7.14	0.83	588.33	0.75	6.39	581.94
PZ-8	41.62010066	-87.43122975	7.12	8.35	1.23	587.39	1.11	7.24	580.15
PZ-9	41.61985236	-87.43122144	6.72	9.11	2.39	587.81	2.15	6.96	580.85
PZ-10	41.61933044	-87.43130708	7.11	8.57	1.46	587.20	1.31	7.26	579.94
PZ-11	41.61913363	-87.4311133	--	8.55	--	586.28	--	--	577.73
PZ-12	41.61895461	-87.43074565	--	8.91	--	587.89	--	--	578.98

Notes:
"- -" – Not Applicable
AMSL – Above Mean Sea Level
ft – Feet
ID – Identification
TOC – Top of Casing; NAVD88 DATUM

Based on the water level elevation data, the groundwater flow of the piezometers along the ditch is towards the south (**Figure 3**).

If you have any questions or require additional information please feel free to contact me at (312) 424-3314.

Very truly yours,

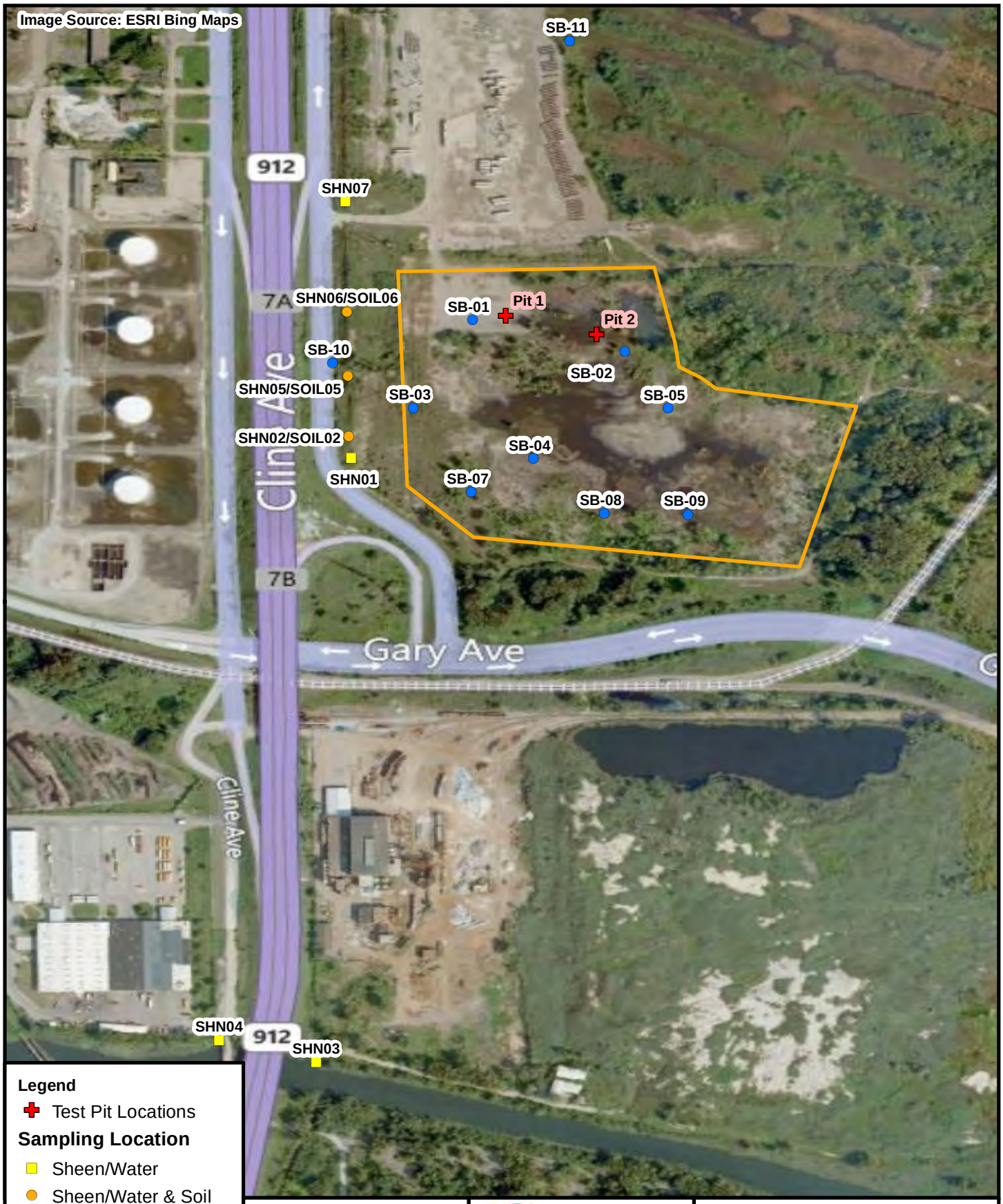
WESTON SOLUTIONS, INC.

Trenna Seilheimer

Trenna Seilheimer
Project Manager

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FIGURES



FILE: D:\Cline_Ave\mxd\FSP\Addendum\F1_Sampling_Locations.mxd 10/6/2011 9:59:47 AM wojdakon

Prepared for:
U.S. EPA REGION V

Contract No.: EP-S5-06-04
TDD: S05-0005-1103-005
DCN: 1349-2A-ARTG

Prepared By:
WESTON SOLUTIONS, INC

20 N. Wacker Drive
Suite 1210
Chicago, Illinois 60606

Figure 1
Sampling Location Map
Cline Avenue Ditch Oil Sheen
Gary, Lake County, Indiana



Legend

Piezometers

Seep Location

0 125 Feet

N

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20 N. Wacker Drive
Suite 1210
Chicago, Illinois 60606

Figure 2
Piezometer Location Map
Cline Avenue Ditch Oil Sheen
Gary, Lake County, Indiana

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Legend

- Piezometers
- GW Contours (ft)
- Seep Location

0 125 Feet

N

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TDD: S05-0005-1103-005
DCN: 1349-2A-ARTG

Prepared By:
WESTON SOLUTIONS, INC
20 N. Wacker Drive
Suite 1210
Chicago, Illinois 60606

Figure 3
Groundwater Flow Map
Cline Avenue Ditch Oil Sheen
Gary, Lake County, Indiana

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ATTACHMENT A

USCG MSL REPORT 11-307

Oil Sample Analysis Report

U. S. EPA Region V
Case Number E11513

Marine Safety Laboratory
Case Number 11-307



U.S. Department of
Homeland Security

**United States
Coast Guard**

Manager
U.S. Coast Guard
Marine Safety Laboratory

1 Chelsea Street
New London, CT 06320
Phone: (860) 271-2704
Fax: (860) 271-2641

16450
14 Sep 2011

U. S. Environmental Protection Agency
Attn: On-Scene Coordinator
25089 Center Ridge Road
Mail Code ME-W
Westlake, OH 44145

Dear On-Scene Coordinator:

The laboratory analysis of this case has been completed and our report is forwarded. The technical data supporting the report (spectrograms and chromatograms) have been archived at our facility and are available upon request. We will maintain the oil samples in refrigerated storage pending final case disposition.

Questions concerning this report or the analytical methods used should be directed to the Supervisor of Analysis, Kristy Juaire.

K. JUAIRE
By direction

Encl: (1) MSL Report 11-307

United States Coast Guard
Marine Safety Laboratory
Oil Spill Identification Report
11-307

Requestor: U. S. EPA Region V
Unit Case/Activity Number: E11513
Received: 29-Aug-11 **Via:** Federal Express 4814 2237 5121

Number Of Samples: 2

Lab NO. of Spills: 1 and 2

Lab NO. of Suspects: n/a

Lab NO. of Background: n/a

Analysis Methods:

- [x] GAS CHROMATOGRAPHY (GC)
- [x] GAS CHROMATOGRAPHY-MASS SPECTROMETRY (GC-MS)
- [ ] INFRARED SPECTROSCOPY (IR)

Laboratory's Conclusion (as explained below): MATCH

SPECIAL INSTRUCTIONS: Compare the samples to MSL Cases 11-181 and 11-235. The following samples were reanalyzed for comparison purposes - 11-181-1, 2, 5, 6, 8, 9, 10, 11-235-1, 2, 3, 4, 5, 6, 7, 9, 10, 11 and 15.

RESULTS:

1. Samples 11-307-1 and 2 were specified to be representative of spilled oil. Analysis indicates these samples are similar to each other and contain an intermediate to heavy mixture of petroleum hydrocarbons. There is not a "typical" n-alkane profile, but volatile compounds are still present (i.e. naphthalenes), which indicates the samples are only slightly to moderately evaporatively weathered.

2. Sample 11-235-11 contains a mixture of hydrocarbons with characteristics similar to those of spill samples 11-307-1 and 2. Differences are attributable to weathering.

3. Samples 11-181-1, 2, 5, 6, 8, 9, 10, 11-235-1, 2, 3, 4, 5, 6, 7, 9, 10 and 15 contain an intermediate to heavy mixture of petroleum hydrocarbons with characteristics somewhat similar to each other and to those of samples 11-307-1 and 2. The similarities observed between all of these samples indicate they are related to each other through a common source of petroleum oil. However, the significant non-weathering differences observed between the polycyclic aromatic hydrocarbons (PAHs) indicate there is more than one petroleum hydrocarbon mixture present in the environment.

CONCLUSIONS:

1. Samples 11-307-1 and 2 represent different portions of the same spilled oil.

2. Sample 11-235-11 and samples 11-307-1 and 2 are derived from a common source of petroleum oil.

SUPERVISOR OF ANALYSIS K. JUAIRE **DATE** 14-Sep-11

United States Coast Guard
Marine Safety Laboratory
Oil Spill Identification
Report Continuation
11-307

3. Samples 11-181-1, 2, 5, 6, 8, 9, 10, 11-235-1, 2, 3, 4, 5, 6, 7, 9, 10 and 15 appear related to samples 11-307-1 and 2 through a common source of petroleum oil. However, important non-weathering differences indicate input from more than one source of petroleum oil.

SUPERVISOR OF ANALYSIS K. JUAIRE _____ **DATE** 14-Sep-11

United States Coast Guard
Marine Safety Laboratory

Oil Spill Identification Analysis
Cost Recovery Documentation

Laboratory Case Number:	11-307
Requestor:	U. S. EPA Region V
Unit Case Number:	E11513
Number of Samples:	3
Cost Per Sample Prepared:	$20.00
Total Costs of Sample Preparation:	$60.00
Number of Analysis:	44
Cost Per Sample Prepared:	$86.00
Total Costs for Analysis:	$3,784.00
TOTAL COSTS:	$3,844.00

This documentation is provided for purposes of Phase IV - Documentation and Cost Recovery under the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300)

Signature: Kristy Juaire **Date:** 14 Sep 2011

United States Coast Guard
Marine Safety Laboratory Sample
Check-In Log

MSL Case/Activity Number: 11-307

Requestor: U. S. EPA Region V **Unit Case Number** E11513

Federal Project Number: E11513 **Delivery Method:** Federal Express

Received Date: 29 Aug 11 **Delivery Number:** 4814 2237 5121

Priority: No **Rush:** No **Comparison** Yes

Lab Number 11-307	Sample Descriptions from Sample Jars	Spill	Source
1	PIT1 PIT 1 SAMPLE @ 1115 8-26-11	☑	☐
2	PIT2 PIT 2 SAMPLE @ 1130 8/26/11	☑	☐
3		☐	☐
4		☐	☐
5		☐	☐
6		☐	☐
7		☐	☐
8		☐	☐
9		☐	☐
10		☐	☐

Remarks: Sample descriptions and Spill/Source designations taken from CoC. Compare to 11-181 and 11-235.

Samples checked in by: MST3 ZACHARY COTE Zachary A. Cote **Date:** 29 Aug 11

Sample Custodian: MST3 MICHELLE KOSMO Michelle Kosmo **Date:** 30 AUG 11

Supervisor of Analysis: K. JUAIRE Kristy Juaire **Date:** 14 Sep 11

United States Coast Guard
Marine Safety Laboratory Sample
Check-In Log

MSL Case/Activity Number: 11-181

Requestor: U. S. EPA Region V (Chicago Office) **Unit Case Number** E11513

Federal Project Number: E11513 **Delivery Method:** Federal Express

Received Date: 04 Apr 11 **Delivery Number:** 8736 4122 0457

Priority: No **Rush:** No **Comparison** No

Lab Number 11-181	Sample Descriptions from Sample Jars		Spill	Source
1	CAD-SHN01-040111	04/01/11 0940	✓	
2	CAD-SHN02-040111	04/01/11 0948	✓	
3	CAD-SHN03-040111	04/01/11 1010	✓	
4	CAD-SHN04-040111	04/01/11 1023	✓	
5	CAD-SHN05-040111	04/01/11 1033	✓	
6	CAD-SHN06-040111	04/01/11 1042	✓	
7	CAD-SHN07-040111	04/01/11 1100	✓	
8	CAD-SOIL02-040111	04/01/11 0948	✓	
9	CAD-SOIL05-040111	04/01/11 1033	✓	
10	CAD-SOIL06-040111	04/01/11 1042	✓	

Remarks: Spill/Source designations taken from CoC.

Samples checked in by: MST3 MICHELLE KOSMO **Date:** 04 Apr 11

Sample Custodian: MST2 JOHN AGAPITO **Date:** 05 APR11

Supervisor of Analysis: K. JUAIRE **Date:** 01 Apr 11

United States Coast Guard
Marine Safety Laboratory Sample
Check-In Log

MSL Case/Activity Number: 11-235

Requestor: U. S. EPA Region V (Chicago Office) **Unit Case Number** E11513

Federal Project Number: E11513 **Delivery Method:** Federal Express

Received Date: 25 May 11 **Delivery Number:** 8515 7492 9274

Priority: No **Rush:** No **Comparison** Yes

Lab Number 11-235		Sample Descriptions from Sample Jars		Spill	Source
1	1	CAD-SOIL01-004-052311	5/23/11 1043	✓	
2	2	CAD-SOIL02-009-052311	5/23/11 1048	✓	
3	3	CAD-SOIL03-003-052311	5/23/11 1143	✓	
4	4	CAD-SOIL04-006-052311	5/23/11 1205	✓	
5	5	CAD-SOIL05-005-052311	5/23/11 1344	✓	
6	6	CAD-SOIL06-009-052311		✓	
7	7	CAD-SOIL07-003-052311	5/23/11 1439	✓	
8	8	CAD-SOIL08-002-052311	5/23/11 1540	✓	
9	9	CAD-SOIL09-003-052411	5/24/11 0838	✓	
10	10	CAD-SOIL10-005-052411	5/24/11 0856	✓	

Remarks: To be compared to MSL case 11-181. Sample 8 designated as 'Spill' for comparison purposes only. Spill designations for samples 6,16, and 17 were taken from the COC.

Samples checked in by: MST1 ALICIA TODMAN **Date:** 25 May 11

Sample Custodian: MST3 MICHELLE KOSMO **Date:** 25May11

Supervisor of Analysis: K. JUAIRE **Date:** 03 Jun 11

United States Coast Guard
Marine Safety Laboratory
Check-In Log

MSL Case Number: 11-235

Lab Number 11-235	Sample Descriptions from Sample Jars	Spill	Source
11	11 CAD-SOIL11-003-052411 5/24/11 0957	☑	☐
12	12 CAD-SOIL12-005-052411 5/24/11 1000	☑	☐
13	13 CAD-SOIL13-003-052411 5/24/11 1111	☑	☐
14	14 CAD-SOIL14-006-052411 5/24/11 1115	☑	☐
15	15 CAD-SOIL15-003-052411 5/24/11 1307	☑	☐
16	16 CAD-SOIL16-003-052411 5/24/11 1350	☑	☐
17	17 CAD-SOIL17-005-052411 5/24/11 1347	☑	☐
18		☐	☐
19		☐	☐
20		☐	☐

Samples checked in by: MST1 ALICIA TODMAN **Date:** 25 May 11

Sample Custodian: MST3 MICHELLE KOSMO **Date:** 25MAY11

Supervisor of Analysis: K. JUAIRE **Date:** 03 Jun 11

ATTACHMENT B

SOIL BORING LOGS

09/28/11

BORELOG	CLIENT: U.S. EPA	PROJECT: Cline Ave Ditch Oil Sheen	LOCATION: Gary, IN	SAMPLE STATION ID: 1 0847

DEPTH (FT)	LITHOLOGIC DESCRIPTION	SAMPLE COLLECTED	SAMPLE TIME	RECOVERY	REMARKS/FIELD OBSERVATIONS
2	• Fine sand w/ tr. gravel; light and dark brown; no odor; dry 0.0 ppm [0-1.5'] small silt layer @ ~ 9"; Roots throughout				
	• Fine sand; light brown; no odor; wet 0.0 ppm [1.5-3.0]				
4	• Fine sand; black; strong odor; saturated some sheen; 23.7 ppm [3.5-5.5']				
0	• Fine sand; light gray; saturated; strong odor; some sheening 62.1 ppm [5.5'-8.5']				
3	• Fine to medium sand; light gray; saturated; strong odor; product present; 71.8 ppm [8.5-11]				
10	• Fine sand; light gray; saturated; faint odor; 31.6 ppm [11-12.5]				
2	End of boring				

Describe the following: soil type, grain size, color, consistency, odor, presence of oil sheen

EXPLANATION

DATE	PAGE
09/28/11	1

DRILLING METHOD: Geoprobe

DRILLED BY Cabeno

LOGGED BY J. Colomb

WESTON SOLUTIONS SM

BORELOG	CLIENT: U.S. EPA	PROJECT: Cline Ave Ditch Oil Sheen	LOCATION: Gary, IN	SAMPLE STATION ID: Z 0907

DEPTH (FT)	LITHOLOGIC DESCRIPTION	SAMPLE COLLECTED	SAMPLE TIME	RECOVERY	REMARKS/FIELD OBSERVATIONS
2	° Fin sand w/ tr. gravel, light brown; roots; no odor; 0.0 ppm; dry [0-1'] ° Fin sand; light brown w/ dark brown; banding; no odor damp; 0.0 ppm [1-3.5'] ° Fin sand; light gray; no odor; saturated; slight odor 0.3 ppm [3.5-5.0'] ° Fin sand; light gray; strong odor; saturated; 31.6 ppm [5.0-9.5'] ° Fin to medium sand; light gray; strong odor; shining; 39.5 ppm [9.5'-11.0'] ° Fin sand; light gray; slight odor; wet 2.6 ppm (11.0-12.0'] End of boring				

Describe the following: soil type, grain size, color, consistency, odor, presence of oil sheen

EXPLANATION

DATE	PAGE
09/28/11	1

DRILLING METHOD: Geoprobe

DRILLED BY Cabeno

LOGGED BY J. Colomb

WESTON SOLUTIONS SM

BORELOG	CLIENT: U.S. EPA	PROJECT: Cline Ave Ditch Oil Sheen	LOCATION: Gary, IN	SAMPLE STATION ID: 3 1500

DEPTH (FT)	LITHOLOGIC DESCRIPTION	SAMPLE COLLECTED	SAMPLE TIME	RECOVERY	REMARKS/FIELD OBSERVATIONS
2	° Fine sand w/ tr. gravel; light brown; dry; no odor; roots. 0.0 ppm [0 - 1.0] ° Fine sand; light brown; some banding; dry; no odor; 0.0 ppm [1.0 - 2.0] ° Dark brown silt layer ~ 2" thick; no odor [2.2] ° Fine sand; no odor; wet; no odor light brown; 0.2 ppm [2.2' - 5.5'] ° Fine sand → medium sand; slight odor; wet; light brown; 16.2 ppm [5.5' - 6.5'] ° Fine sand; saturated; light gray; strong odor; 33.7 ppm [6.5' - 8.0'] ° Fine sand; saturated; light gray; visible sheening; strong odor; 70.3 ppm [8.0 - 10.5'] ° Fine sand; saturated; some medium light gray; strong odor 61.3 ppm [10.5 - 12.5'] End of boring				

Describe the following: soil type, grain size, color, consistency, odor, presence of oil sheen

EXPLANATION

DATE	PAGE
09/27/11	1

DRILLING METHOD: Geoprobe

DRILLED BY Cabeno

LOGGED BY J. Colomb

WESTON SOLUTIONS SM

BORELOG	CLIENT: U.S. EPA	PROJECT: Cline Ave Ditch Oil Sheen	LOCATION: Gary, IN	SAMPLE STATION ID: 4 152←

DEPTH (FT)	LITHOLOGIC DESCRIPTION	SAMPLE COLLECTED	SAMPLE TIME	RECOVERY	REMARKS/FIELD OBSERVATIONS
2	°silty sand w/ tr gravel; light brown → dark brown; roots; no odor; 0.0 ppm [0-1.0']				
	°Fine sand w/ brown and black banding; slight odor; dry; 0.8 ppm [1.0'-3.0']				
4	°Fine sand; black; strong odor; damp; 37.6 ppm; [3.0-3.5']				
	°Fine sand → medium sand; dark gray w/ light gray banding; strong odor; saturated; [3.5'-7.0']				
6	°Fine sand; dark brown; strong odor; saturated; visible product; 73.5 ppm [7.0'-9.5']				
8	°Fine sand; saturated; some sheening; dark brown/gray; strong odor; 36.5 ppm [9.5'-12.5']				
0					
2	End of boring				

Describe the following: soil type, grain size, color, consistency, odor, presence of oil sheen

EXPLANATION

DATE	PAGE
09/27/11	1

DRILLING METHOD: Geoprobe

DRILLED BY Cabeno

LOGGED BY J. Colomb

WESTON SOLUTIONS SM

BORELOG	CLIENT: U.S. EPA	PROJECT: Cline Ave Ditch Oil Sheen	LOCATION: Gary, IN	SAMPLE STATION ID: 5 1412

DEPTH (FT)	LITHOLOGIC DESCRIPTION	SAMPLE COLLECTED	SAMPLE TIME	RECOVERY	REMARKS/FIELD OBSERVATIONS
	0 Fin sand w/ tr. gravel; no odor; dry; roots; light brown 0.0 ppm [0-1.5']				
2	0 Fine sand; light brown; damp; no odor; 0.0 ppm [1.5 - 3.5']				
4	0 Fin sand; light gray; saturated; strong odor; visible product; sheen 60.3 ppm [3.5'- 5.0']				
6	0 Fin sand; light brown; wet; slight odor; 3.1 ppm [5.0 - 6.0']				
8	0 Fin sad; light gray; saturated; no odor; 0.9 ppm [6.0 - 7.5']				
10	0 Fin sand; light gray; saturated; strong odor; 78.2 ppm; visible product; sheen [7.5' - 10.0']				
12	0 Fin sand → medium sand; light gray saturated; mild odor; 30.6 ppm [10.0 - 12.5']				
	End of boring				

Describe the following: soil type, grain size, color, consistency, odor, presence of oil sheen

EXPLANATION

DATE	PAGE
09/27/11	1

DRILLING METHOD: Geoprobe

DRILLED BY Cabeno

LOGGED BY J. Colomb

WESTON SOLUTIONS SM

BORELOG	CLIENT: U.S. EPA	PROJECT: Cline Ave Ditch Oil Sheen	LOCATION: Gary, IN	SAMPLE STATION ID: 6 1350

DEPTH (FT)	LITHOLOGIC DESCRIPTION	SAMPLE COLLECTED	SAMPLE TIME	RECOVERY	REMARKS/FIELD OBSERVATIONS
	° Fine sand w tr. gravel; dry; light brown; no odor; roots [0-1.5'] 0.0 ppm				
2	° Fine sand; damp; light brown w/ dark brown stratification; damp; no odor 0.0 ppm [1.5 - 4.0']				
4	° Fine sand; light gray; strong odor; product observed; saturated 63.2 ppm [4.0-4.5']				
	° Fine sand; light gray; slight odor; sheen observed; saturated 33.1 ppm [4.5' - 8.0']				
6					
8	° Fine sand; light brown; wet; no odor; 0.8 ppm [8.0' - 9.0']				
10	° Fine sand; light gray; saturated; some sheen observed; 16.3 ppm [9.0 - 12.5']				
12	End of boring				

Describe the following: soil type, grain size, color, consistency, odor, presence of oil sheen

EXPLANATION

DATE	PAGE
09/27/11	1

DRILLING METHOD: Geoprobe

DRILLED BY Cabeno

LOGGED BY J. Colomb

WESTON SOLUTIONS SM

BORELOG	CLIENT: U.S. EPA	PROJECT: Cline Ave Ditch Oil Sheen	LOCATION: Gary, IN	SAMPLE STATION ID: TD 0930

DEPTH (FT)	LITHOLOGIC DESCRIPTION	SAMPLE COLLECTED	SAMPLE TIME	RECOVERY	REMARKS/FIELD OBSERVATIONS
	• Fine sand; light brown w/ dark brown banding; dry; no odor; roots; 0.0 ppm [0-1.5']				
2	• Fine sand: black; strong odor; wet; 26.7 ppm; [1.5-4.5']				
4	• Fine sand; light gray; strong odor; wet; 39.5 ppm [4.5-5.0'] product present.				
6	• Fine sand; light gray; strong odor. saturated; product visible; 64.9 ppm [5.0-8.5'] Thick product layer @ [5.75-6.0] (75.0 ppm)				
8	• Fine to medium sand; strong odor; saturated; sheening; 42.6 ppm [8.5-9.25'] light gray				
10	• Fine sand; saturated; strong odor; 21.6 ppm [9.25-12.0] light gray				
12	• Fine sand; wet; light brown; ~~tan~~ slight odor; 3.2 ppm [12.0-15.0]				
14					

Describe the following: soil type, grain size, color, consistency, odor, presence of oil sheen

EXPLANATION

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DRILLING METHOD: Geoprobe

DRILLED BY Cabeno

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7D Continued

15.-17.0 No recovery

° Fine sand; light gray; stiff and compacted; saturated; no odor 0.8 ppm; [17.0-20] saturated

° Fine sand; light gray; stiff and compacted; saturated; no odor; 0.0 ppm [20'-25'] saturated

° Fine → medium sand; light gray; stiff and compacted; saturated; no odor; 0.0 ppm [25-28]

° Fine sand; light gray; stiff and compacted; saturated; no odor; 0.0 ppm [28-30']

° Fine sand; light gray; stiff and compacted; saturated; no odor; 0.0 ppm [30-33.5]

° Gravel w/ tr fine sand; brown; saturated; no odor ≥ 1cm 0.0 ppm [33.5-34.25]

° Fine sand; light gray; stiff and compacted; saturated; no odor; 0.0 ppm [34.25-36']

° Clay (fat); light gray; stiff; wet; no odor; 0.0 ppm [36-40']

End of boring

WESTON SOLUTIONS SM

BORELOG	CLIENT: U.S. EPA	PROJECT: Cline Ave Ditch Oil Sheen	LOCATION: Gary, IN	SAMPLE STATION ID: 8 1320

DEPTH (FT)	LITHOLOGIC DESCRIPTION	SAMPLE COLLECTED	SAMPLE TIME	RECOVERY	REMARKS/FIELD OBSERVATIONS
2	• Fine sand w/ tr. gravel; light brown; dry; no odor; roots; [0 - 1.5'] 0.0 ppm • Fine sand; dark gray/black; strong odor; wet. [1.5 - 3.5'] 77.3 ppm				
4	• Fine sand; light brown; damp; no odor; [3.5 - 3.75'] 2.3 ppm • silt w/ tr. fine sand; damp; no odor [3.75 - 4.0] 1.0 ppm				
6	• Fine sand w/ some medium; light gray; strong odor; saturated [4.0 - 9.0] 2.2 ppm				
8					
10	• Fine sand w/ some medium; light gray; strong odor; saturated [9.0 - 11.5] 49.2 ppm • Fine to medium sand; light gray; saturated; no odor [11.5 - 13.0] 2.7 ppm				
12	End of boring				

Describe the following: soil type, grain size, color, consistency, odor, presence of oil sheen

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DRILLING METHOD: Geoprobe	
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BORELOG	CLIENT: U.S. EPA	PROJECT: Cline Ave Ditch Oil Sheen	LOCATION: Gary, IN	SAMPLE STATION ID: 9 1302

DEPTH (FT)	LITHOLOGIC DESCRIPTION	SAMPLE COLLECTED	SAMPLE TIME	RECOVERY	REMARKS/FIELD OBSERVATIONS
	• Fine sand w/ tr. gravel; no odor; dry; roots; 0.0 ppm [0-1.0']				
2	• Fine sand; black; strong odor; wet; 65.6 ppm [1.0'-3.5']				
4	• silt w/ tr fine sand; dark brown/black; strong odor; damp 31.2 ppm [3.5'-4.0']				
	• Fine sand; light gray/gray; wet; faint odor; 1.4 ppm [4.0'-5.0']				
6	• Fine sand; light gray; saturated; strong odor; 675 ppm [5.0'-9.0']				
8	• Fine sand; light gray; saturated; strong odor; 41.2 ppm Sheen observed [9.0'-12.0']				
10					
12	• Fine to medium sand; light gray; saturated strong odor 30.6 [12.0-13.0']				
	End of boring				

Describe the following: soil type, grain size, color, consistency, odor, presence of oil sheen

EXPLANATION

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BORELOG	CLIENT: U.S. EPA	PROJECT: Cline Ave Ditch Oil Sheen	LOCATION: Gary, IN	SAMPLE STATION ID: 10 1207

DEPTH (FT)	LITHOLOGIC DESCRIPTION	SAMPLE COLLECTED	SAMPLE TIME	RECOVERY	REMARKS/FIELD OBSERVATIONS
2	• Fine sand; light brown; some gravel and roots; no odor; dry 0.0 ppm [0-6"] • Fine sand; light brown; no odor; dry to damp; 0.0 ppm [6"- 3.0'] • Fine to medium sand; dark brown; saturated; faint odor [3.0'- 5.0'] 0.2 ppm				
4					
6	• Fine sand; gray; saturated; faint odor [5.0 - 9.0'] slight sheen observed 1.2 ppm				
8					
10	• Fine sand; light gray; saturated; no odor [9.0' - 13'] 0.4 ppm				
12	• Fine sand; light gray/brown; saturated; no odor [13'- 14'] 0.1 ppm End of boring				

Describe the following: soil type, grain size, color, consistency, odor, presence of oil sheen

EXPLANATION

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DRILLING METHOD: Geoprobe

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BORELOG	CLIENT: U.S. EPA	PROJECT: Cline Ave Ditch Oil Sheen	LOCATION: Gary, IN	SAMPLE STATION ID: 11 1130

DEPTH (FT)	LITHOLOGIC DESCRIPTION	SAMPLE COLLECTED	SAMPLE TIME	RECOVERY	REMARKS/FIELD OBSERVATIONS
	• Fine sand; light brown; no odor; dry; 0.0 ppm; roots. [0-1']				
2	• Fine sand; dark brown; no odor; damp; light brown stratification 0.0 ppm [1-2.0']				
4	• Fine sand; ~~dark~~ light brown; faint product odor; damp; 0.2 ppm [2.0 - 3.0']				
	• Fine sand; gray; strong odor; saturated sheen observed [3.0 - 6.0] 6.0 ppm				
6	• F → medium sand; gray strong odor; saturated; no sheen observed [6.0-9.0] 20.4 ppm				
8	• Fine sand; gray; faint odor; wet; no sheen observed [9.0 - 11.5] 1.3 ppm				
10	• Fine sand; dark gray; strong odor; saturated. Sheen observed. [11.5 - 15.0] 18.6 ppm				
12	End of boring				

Describe the following: soil type, grain size, color, consistency, odor, presence of oil sheen

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DRILLING METHOD: Geoprobe

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BORELOG	CLIENT: U.S. EPA	PROJECT: Cline Ave Ditch Oil Sheen	LOCATION: Gary, IN	SAMPLE STATION ID: 12 1055

DEPTH (FT)	LITHOLOGIC DESCRIPTION	SAMPLE COLLECTED	SAMPLE TIME	RECOVERY	REMARKS/FIELD OBSERVATIONS
2	• Fine sand; dry; light brown; no odor; roots from 0-6" [0-2']				
4	• Fine sand; damp; light brown w/ dark brown stratification; 0.0 ppm; [2'-3']				
	• Fine sand; wet; gray; strong odor; 4.4 ppm; no sheen [3'-5']				
6	• Fine → medium sand; saturated; strong odor; sheen observed; [5'-7'] ~~5 ppm~~ 33.6 ppm				
8	• Fine sand; saturated; gray; strong odor; sheen observed; 14.5 ppm [7'-10']				
10	• Fine → medium sand; wet; strong odor no sheen; 0.5 ppm [10'-12']				
12	End of boring				

Describe the following: soil type, grain size, color, consistency, odor, presence of oil sheen

EXPLANATION

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DRILLING METHOD: Geoprobe

DRILLED BY Cabeno

LOGGED BY J. Colomb

Site Assessment Report (Revision 1) Addendum 1
Cline Avenue Ditch Oil Sheen Site
Gary, Lake County, Indiana

Prepared by:

WESTON SOLUTIONS, INC.
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Approved by: _____ Date: _____
Michael Beslow, U.S. EPA On-Scene Coordinator