FIELD SAMPLING PLAN
FOR THE
CLINE AVE DITCH MYSTERY OIL SHEEN SITE
GARY, LAKE COUNTY, INDIANA

Prepared for
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region V

Prepared by
WESTON SOLUTIONS, INC.
Region V Superfund Technical Assessment and Response Team

March 25, 2011

Approved by: _____ Date: _____
U.S. EPA Region V
On-Scene Coordinator

Project Dates of Sampling:	Week of March 28, 2011 (TBD)
CERCLA Site/Spill Identifier No.:	Z5KF
Contractor Organization:	Weston Solutions, Inc.
Contract Name:	START III
Contract No.:	EP-S5-06-04
Technical Direction Document No.:	S05-0005-1103-005
Document Control No.:	1394-4H-AMCR

ACRONYM LIST

CFR	Code of Federal Regulations
COC	Chain-of-Custody
DRO	Diesel Range Organics
FSP	Field Sampling Plan
GRO	Gasoline Range Organics
MS/MSD	Matrix Spike/ Matrix Spike Duplicate
ORO	Oil Range Organics
OSC	On-Scene Coordinator
PPE	Personal Protective Equipment
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
SOP	Standard Operating Procedure
START	Superfund Technical Assessment and Response Team
TPH	Total Petroleum Hydrocarbons
TDD	Technical Direction Document
U.S. EPA	United States Environmental Protection Agency
WESTON	Weston Solutions, Inc.

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1.0 Introduction

This Field Sampling Plan (FSP) identifies the data collection activities and associated quality assurance/quality control (QA/QC) measures specific to the Cline Ave Ditch Mystery Oil Sheen Site (the Site) located at the intersection of Gary Avenue and Cline Avenue in Gary, Lake County, Indiana. All data will be generated in accordance with the quality requirements described in the *Superfund Technical Assessment and Response Team (START) III Generic Quality Assurance Project Plan (QAPP)*, dated June 2006. The purpose of this FSP is to describe site-specific tasks that will be performed in support of the stated objectives. The FSP will reference back to the QAPP for generic tasks common to all data collection activities including routine procedures for sampling and analysis, sample documentation, equipment decontamination, sample handling, data management, assessment and data review. Additional site-specific procedures and/or modifications to procedures described in the *START III Generic QAPP* are described in the following FSP elements.

This FSP is prepared, reviewed, and approved in accordance with the procedures detailed in the *START III Generic QAPP*. Any deviations or modifications to the approved FSP will be documented using **Table 1: FSP Revision Form.**

2.0 Project Management and FSP Distribution and Project Team Member List

Management of the Site will be as documented in the *START III Generic QAPP*. Refer to the *START III Generic QAPP* for an organizational chart, communication pathways, personnel responsibilities and qualifications, and special personnel training requirements.

The following personnel will be involved in planning and/or technical activities performed for this data collection activity. Each will receive a copy of the approved FSP. A copy of the FSP will also be retained in the Site file.

Personnel	Title	Organization	Phone Number	Email
Mike Beslow	OSC	U.S. EPA	312-353-8678	beslow.mike@epamail.epa.gov
Lauren Pesce	Project Manager	START	312-424-3328	lauren.pesce@westonsolutions.com
Jeff Bryniarski	Sampler	START	312-424-3307	jeff.bryniarski@westonsolutions.com
Tonya Balla	Health and Safety	START	847-918-4094	t.balla@westonsolutions.com
Lisa Graczyk	QA Reviewer	START	312-424-3339	lgraczyk@dynamac.com

NOTES:
OSC – On-Scene Coordinator
QA – Quality Assurance
START – Superfund Technical Assessment and Response Team
U.S. EPA – United States Environmental Protection Agency

3.0 Planning and Problem Definition

3.1 Problem Definition

The United States Environmental Protection Agency (U.S. EPA) was informed through the National Response Center (NRC) (NRC Report No. 910106) that oil sheen was observed on the Cline Avenue Ditch north of the intersection of Cline Avenue and Gary Avenue in Gary, Lake County, Indiana. British Petroleum (BP) consultants, Heritage Environmental, placed absorbent boom in the ditch to remove the sheen and prevent contaminants from migrating to the nearby Grand Calumet River. The source of the sheen is unknown.

U.S. EPA will conduct a site assessment to investigate the conditions on site that could pose an imminent or substantial threat to human health, welfare, or the environment.

3.2 Site History and Background

The U.S. EPA received information that oil sheen was observed on the Cline Avenue Ditch north of the intersection of Cline Avenue and Gary Avenue in Gary, Lake County, Indiana. BP investigated whether one of their pipelines underlying the Site was leaking. As a precaution, BP consultants, Heritage Environmental, placed absorbent boom in the ditch to remove the sheen. Samples were collected of the spent absorbent boom from the ditch and alayzed for disposal parameters. Analytical results of the spent absorbent boom indicated aroclor 1254 concentrations of 722 micrograms per kilogram (µg/kg). In addition, analytical results from a water sample collected by BP indicated that the sheen was not consistent with crude oil and is a mixture of components suspected to be a distillate and lube oil. The source of the sheen remains unknown.

On March 21, 2011, U.S. EPA and their Emergency and Rapid Response Services (ERRS) contractor, Environmental Restoration, LLC (ER), mobilized to the Site to place absorbent boom in locations where sheen was observed on the ditch. Four areas were observed with oil sheen. The most upstream sheen was observed on the ditch at approximately 41° 37' 13.76" north latitude and 87° 25' 52.84" west longitude. The furthest downstream location of the observed sheen was from an two outfall pipes that discharge from the ditch into the Grand Calumet River.

3.3 Contaminants of Concern/Target Analytes

The potential contaminants of concern at the Site are oil constituents, including total petroleum hydrocarbons (TPH). In order to characterize the contamination that exists at the site, laboratory analyses will be performed on the following samples:

If oil sheen is observed, then up to six sheen/water samples may be collected and submitted for the following analyses at the U.S. Coast Guard (USCG) Marine Safety Laboratory (MSL):

- Fingerprinting (Forensic Oil Analysis).

In addition, if stained soil is observed, then up to five soil samples may be collected and submitted for the following analyses at the USCG MSL:

- Fingerprinting (Forensic Oil Analysis).

If stained soil is observed, then up to five soil samples may be collected and submitted for the following analyses at a commercial laboratory:

- TPH as Gasoline Range Organics (GRO),
- TPH as Diesel Range Organics (DRO), and
- TPH as Oil Range Organics (ORO).

4.0 Project Description and Schedule

The site assessment will consist of tasks necessary to document and characterize threats posed to human health or the environment at the Site. Specifically the following tasks will be performed:

- Site reconnaissance, including documenting site conditions and the presence of sheen or product in the ditch and/or stained soil, identifying sampling locations, and conducting continuous air monitoring with a MultiRAE 5-gas meter;
- Sampling (sheen/water and soil, as appropriate) at the Site;

The sampling design is provided below in Section 6.0.

A commercial laboratory will be utilized for analytical services of soil samples. The USCG MSL will be used for sheen/water samples. WESTON START will provide sample coordination including laboratory procurement and sample shipment. Sample labels and chain-of-custody (COC) paperwork will be generated by WESTON START. Samples will be packaged properly by WESTON START and shipped daily for next-day delivery unless a local laboratory is procured. If a local laboratory is utilized, then WESTON START will either deliver the samples or arrange for a laboratory pick-up. The turn-around time for the sample data will be one week. The sample results will be reviewed and validated by a WESTON START chemist within two weeks of data receipt from the laboratory. A summary report of the sampling results will be submitted to U.S. EPA within two weeks of receipt of the validated data.

U.S. EPA and WESTON START will perform the site assessment on a date to be determined (TBD) in March or April 2011. The site assessment is expected to take one day.

5.0 Project Quality Objectives

5.1 Project Objectives

The objective of sampling activities is to determine if the materials stored on the Site pose a threat to human health or the environment.

The objectives for this investigation include:

- Identify the constituents and/or characteristic properties of oil sheen or stained soil at the Site;
- Determine if a removal action is warranted based on National Contingency Plan criteria and, if so, whether the response should be classified as emergency, time-critical, or non-time critical;
- Rapidly assess and evaluate the urgency, magnitude, extent, and effects of a release, or threatened release, of hazardous substances, pollutants or contaminants identified and their affects on human health and/or the environment;
- Supply the Agency for Toxic Substances and Disease Registry or others with information about the nature and magnitude of any health threats associated with the identified threats;
- Support subsequent public health advisories; and
- Determine a remedy to eliminate, reduce, or control risks to human health or the environment and to support an Action Memorandum documenting the identified removal approach.

5.2 Measurement and Performance Criteria

Generic measurement and performance criteria described in the *START III Generic QAPP* will be used to ensure that data are sufficiently sensitive, precise, accurate, and representative to support site decisions.

5.3 Data Quality Objectives

Data quality objectives address requirements that include when, where, and how to collect samples, the number of samples, and the limits on tolerable error rates. These steps should periodically be revisited as new information about a problem is learned.

Soil sample analytical results for TPH as GRO, DRO, and ORO will be used to determine the presence of petroleum hydrocarbons for each range of organics (diesel, gasoline, and oil). Sheen/water samples and soil samples will go through forensic oil analysis fingerprinting analysis to determine whether the oil resembles a gasoline, diesel, or oil product. Comparison of the sheen/water samples to a source sample will not be conducted because the source of the oil is unknown. There are no benchmarks for these analyses.

6.0 Sampling Design

WESTON START will perform the Site activities detailed in the following subsections.

6.1 Sample Collection

The locations of the samples will be determined during the initial site reconnaissance. The collection of each sample type is described below.

- **Soil Sampling**. If stained soil is observed, WESTON START will collect up to five soil samples for forensic oil analysis fingerprinting at the USCG MSL and TPH as GRO, DRO, ORO analysis at a commercial laboratory. Soil sample collection will be accomplished with the use of a disposable scoop.

- **Sheen/water Sampling**. If oil sheen is observed in the ditch, WESTON START will collect up to six sheen samples for fingerprinting analysis at the USCG MSL. Sheen sample collection will be accomplished using a disposable bailer or by dipping the jar directly into the sheen on the ditch.

The sample container, volume, and preservation requirements are presented in **Table 2: Sampling and Analysis Summary.**

6.2 Sample Numbering System

All samples for analysis, including QC samples, will be given a unique sample number. The sample numbers will be recorded in the field logbook, the COC paperwork, and the shipment documents.

WESTON START will assign each sample a project sample number. The project sample number highlights the suspected contaminated area and location, and will be used for documentation purposes in field logbooks, as well as for presentation of the analytical data in memoranda and reports. The project sample numbering system will be composed of the components below.

Project Identifier

The first part of the project sample numbering system will be the three-character designation CAD to identify the sampling site, Cline Ave Ditch Mystery Oil Sheen.

Matrix

This shall consist of three to four letters identifying the matrix. These matrix identifiers are as follows:

SOIL – Soil
SHN – Sheen

Sequence Identifier

This shall consist of a two-digit sequence number that tracks the number of samples collected from the Site for a particular matrix. Sequence 01 refers to the first sample, and sequence 02 refers to the second sample.

Sample Date

This shall consist of a six digit date; *e.g.*, 032811 for March 28, 2011.

Examples of the sample identifications for the Site are as follows:

- CAD-SOIL02-031111: second soil sample collected from the Cline Ave Ditch Mystery Oil Sheen Site on March 28, 2011.
- CAD-SHN03-031111: third sheen sample collected from the Cline Ave Ditch Mystery Oil Sheen Site on March 28, 2011.

6.3 Management of Investigation-Derived Wastes

For purposes of this FSP, investigation-derived wastes are defined as any byproduct of the field activities that is suspected or known to be contaminated with hazardous substances. The performance of field activities will produce waste products, such as spent sampling supplies (*e.g.*, gloves, scoops), and expendable Personal Protective Equipment (PPE). All waste generated during the site assessment will be placed in trash bags and left on-site in a staging area with U.S. EPA approval. If required, disposal arrangements will be executed in accordance with appropriate local, state, or federal regulations. WESTON START will refer to the U.S. EPA's *Management of Investigation-Derived Wastes During Site Inspections* (U.S. EPA, 1991) guidance on off-site disposal policies, if this action is deemed necessary.

7.0 Sampling Procedures

7.1 Sampling Standard Operating Procedures

Sampling procedures will follow the procedures described in Section 6.

7.2 Decontamination Procedures

General decontamination procedures are described in Section B.2 of the *START III Generic QAPP*.

The following standard decontamination protocols will be used:

- All disposable sampling supplies and PPE will be bagged, labeled, and sealed with duct tape.

8.0 Sample Handling, Tracking, and Custody Procedures

All samples will be identified, handled, shipped, tracked, and maintained under COC, in accordance with *START III Generic QAPP* Section B.3.

9.0 Field Analytical Methods and Procedures

9.1 Field Analytical Methods and Standard Operating Procedures

Field analytical methods will not be employed during the site assessment. All analytical methods will be performed by a commercial laboratory and are presented in Table 2 of this report.

9.2 Field Testing Laboratory

A field testing laboratory will not be used during the site assessment.

9.3 Screening/Confirmatory Analyses

Screening/confirmatory analyses will not be used during the site assessment.

10.0 Fixed Laboratory Analytical Methods and Procedures

A U.S. EPA-certified commercial laboratory will be used for analysis of soil samples. The laboratory contact information is below.

Contact: Craig Chawla
STAT Analysis Corporation
2242 W. Harrison, Suite 200
Chicago, IL 60612
Phone Number: (312)733-0551

The USCG MSL will be used for analysis of soil and sheen/water samples. The USCG MSL contact info is below.

Contact: Kristy Juaire
Marine Safety Laboratory
1 Chelsea Street
New London, CT 06320
Phone Number: (860) 271-2704
Fax Number: (860) 271-2641

The analytical methods are detailed in Table 2 of this FSP.

11.0 Quality Control Activities

11.1 Field Quality Control

Field QC samples will be collected and analyzed for this project at the frequency described in *START III Generic QAPP*, Table 4. The number of QC samples collected for each analytical parameter and concentration level are listed in **Table 2: Sampling and Analysis Summary.**

11.2 Analytical Quality Control

QC for analytical procedures will be performed at the frequency described in *START III Generic QAPP*, Tables 5 and 6. In addition, method-specific QC requirements will be used to ensure data quality.

11.3 Performance Evaluation Samples

Performance Evaluation Samples will not be collected during this sampling event.

12.0 Documentation, Records, and Data Management

Documentation, record keeping, and data management activities will be conducted in accordance with the *START III Generic QAPP*, Section B.10.

13.0 Quality Assurance Assessment and Corrective Actions

No field audits will be conducted due to the short-term (one day) sampling activity.

14.0 Reports to Management

Reports to management will be written and distributed in accordance with the *START III Generic QAPP,* Section C.

15.0 Steps 1, 2 and 3: Data Review Requirements and Procedures

Step 1: Data collection activities, including sample collection and data generation, will be verified in accordance with the *START III Generic QAPP*, Section D.

Step 2: Data will be validated in accordance with the *START III Generic QAPP*, Section D.
A WESTON START chemist will validate the data.

Step 3: Data will be reviewed for usability in accordance with the *START III Generic QAPP*, Section D.

Table 1
FSP Revision Form

Site: Cline Ave Ditch Mystery Oil Sheen, Gary, Lake County, Indiana
OSC: Mike Beslow
TDD: S05-0005-1103-005

Date	Rev. No.	Proposed Change to FSP/QAPP	Reason for Change of Scope/Procedures	SAP Section Superseded	Requested By	Approved By

Table 2
Sampling and Analysis Summary

Site: Cline Ave Ditch Mystery Oil Sheen, Gary, Lake County, Indiana
OSC: Mike Beslow
TDD: S05-0005-1103-005

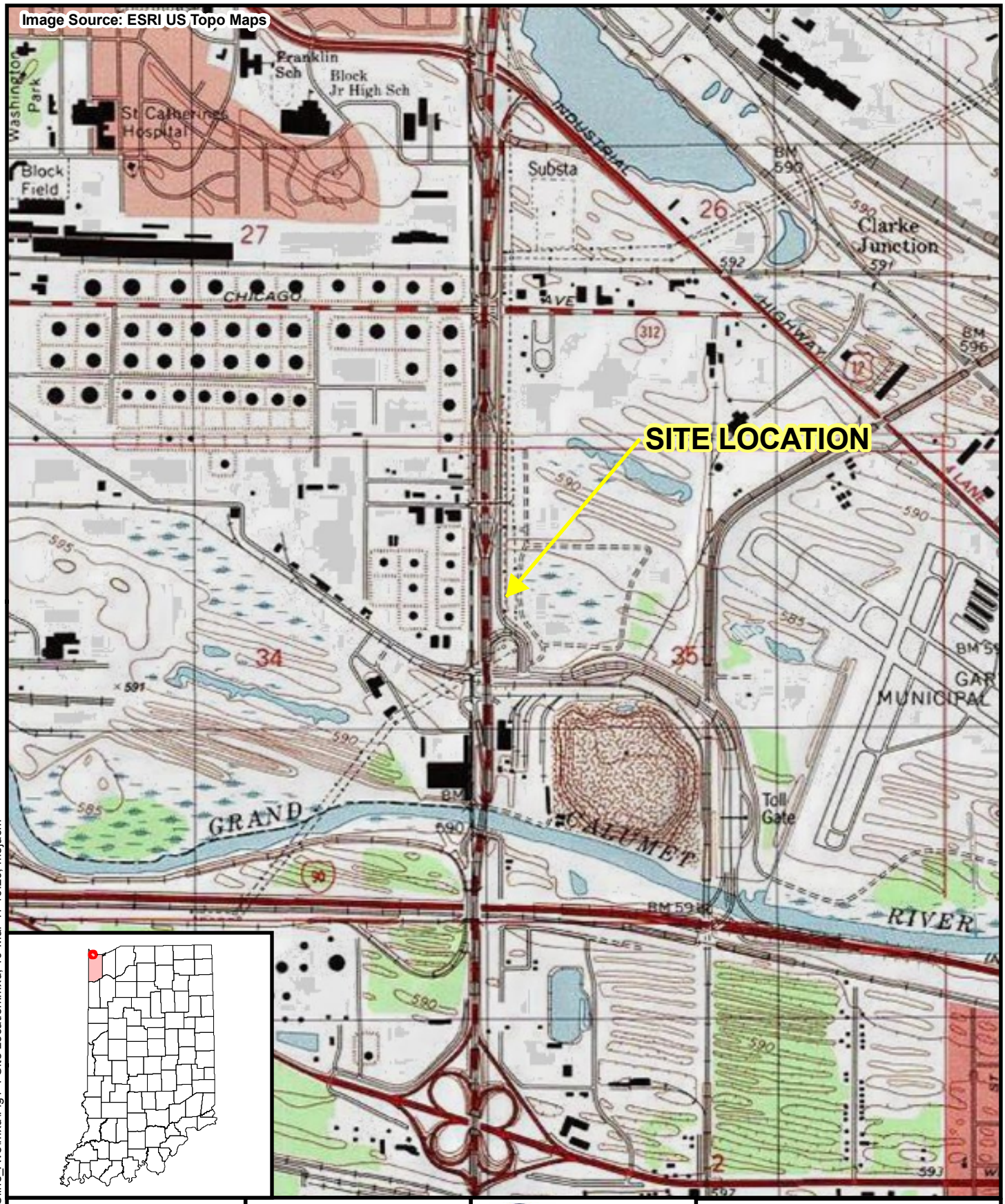
Matrix	Analytical Parameter	Analytical Method	Containers (Numbers, Size, and Type)	Preservation Requirements	No. of Sampling Locations	No. of Field Duplicates	No. of MS/MSD Pair or Spike / Duplicates	No. of VOA Trip Blanks[1]	No. of Equip./ Rinsate Blanks	Total No. of Samples to Lab[2]
Sheen/ water	Oil Finger-printing	GC	4-oz. glass wide-mouth jar	None	6	0	0	0	0	6
Soil	Oil Finger-printing	GC	4-oz. glass wide-mouth jar	None	5	0	0	0	0	5
	TPH as GRO, DRO, ORO	SW-846 8015C	4-oz. glass wide-mouth jar	Ice, Cool to 4°C	5	0	0	0	0	5

Notes:
[1]Trip blanks are only required for VOCs in water samples.
[2]Total number of samples to the laboratory does not include MS/MSD or spike/duplicate samples. However, please note that MS/MSD or spike/duplicate analysis may require additional sample volume.

°C – Degrees Celsius
DRO – Diesel Range Organics
Equip. – Equipment
GC – Gas Chromatography
GRO – Gasoline Range Organics
MS/MSD – Matrix Spike/Matrix Spike Duplicate
NA – Not applicable
No. – Number
ORO – Oil Range Organics
oz. - Ounce
TPH – Total petroleum hydrocarbon
VOA – Volatile Organic Analysis

FIGURES

SITE LOCATION MAP



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Prepared for:
U.S. EPA REGION V

Contract No.: EP-S5-06-04
TDD: S05-0005-1103-005
DCN: 1394-4H-AMCR

Prepared By:
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Figure 1-1
Site Location
Cline Ave Ditch Mystery Oil Sheen SA
Gary, Lake County, Indiana