SITE-SPECIFIC SAMPLING AND ANALYSIS PLAN
SUPPLEMENTAL PHASE II ENVIRONMENTAL SITE ASSESSMENT

Saxony Village Development Property
Main Street
Germantown, Wisconsin

U.S. EPA Brownfield Cooperative Agreement No.: BF-00E01347-0

April 25, 2016
Project No.: 193703514
April 25, 2016

Mr. Fred Bartman, Project Officer
U. S. Environmental Protection Agency
77 West Jackson Boulevard
Chicago, IL 60604-3507

Cooperative Agreement No.: BF-00E01347-0
Submittal of Site-Specific Sampling and Analysis Plan
Saxony Village Development Property
Main Street, Germantown, Wisconsin
Stantec Project No.: 193703514

Dear Mr. Bartman:

The Site-Specific Sampling and Analysis Plan (SSSAP) for the above referenced site is enclosed. Please contact us if you have any questions.

Sincerely,

STANTEC CONSULTING SERVICES INC.

[Signature]

David B. Holmes, PG
Senior Project Manager

Debora Sielski, Washington County
TABLE OF CONTENTS

1.0 INTRODUCTION ................................................................................................................ 1
1.1 GENERAL ............................................................................................................................... 1
1.2 SITE DESCRIPTION/BACKGROUND .................................................................................... 1
1.3 ENVIRONMENTAL CONCERNS ........................................................................................... 2

2.0 DATA QUALITY OBJECTIVES ............................................................................................ 3
2.1 PROBLEM STATEMENT .......................................................................................................... 3
2.2 ASSESSMENT REQUIREMENTS .............................................................................................. 3

3.0 SOIL ASSESSMENT ............................................................................................................ 4
3.1 GENERAL ............................................................................................................................... 4
3.2 OBJECTIVES........................................................................................................................... 4
3.3 SOIL BORING AND SUBSURFACE ASSESSMENT ................................................................. 4
  3.3.1 Soil Sampling Methods ................................................................................................. 5
  3.3.2 Special Handling Considerations and QA/QC Samples ............................................... 5
  3.3.3 Chain-Of-Custody ...................................................................................................... 6
  3.3.4 Field Log Book ....................................................................................................... 6

4.0 GROUNDWATER ASSESSMENT ......................................................................................... 7
4.1 GENERAL ............................................................................................................................... 7
4.2 OBJECTIVES........................................................................................................................... 7
4.3 GROUNDWATER ASSESSMENT ............................................................................................. 7
  4.3.1 Special Handling Considerations and QA/QC Samples ............................................... 8
  4.3.2 Chain-Of-Custody ...................................................................................................... 9
  4.3.3 Field Log Book ....................................................................................................... 9

5.0 REPORTING ..................................................................................................................... 10

6.0 REFERENCES.................................................................................................................... 11

TABLES
Table 1: Proposed Laboratory Analyses for Soil
Table 2: Proposed Laboratory Analyses for Groundwater

FIGURES
Figure 1: Property Location and Local Topography
Figure 2: Proposed Borehole/Temporary Monitoring Well Location Map

APPENDICES
Appendix A: Site-Specific Health and Safety Plan
1.0 INTRODUCTION

1.1 GENERAL

This Site-Specific Sampling and Analysis Plan (SSSAP) has been prepared on behalf of Washington County (hereinafter referred to as the “County”) by Stantec Consulting Services Inc. (Stantec) for field sampling and associated laboratory analyses to be performed as part of a supplemental Phase II Environmental Site Assessment (ESA) of the Saxony Village Redevelopment Property in the Village of Germantown, Wisconsin (the Property; the Site). The project is being performed using funds from an assessment grant for hazardous substance and petroleum brownfields awarded to the County by the United States Environmental Protection Agency (U.S. EPA) in 2014. The U.S. EPA approved the hazardous substance brownfield eligibility determination during February 2016. The purpose of the Phase II ESA is to evaluate current soil and groundwater conditions with respect to documented residual petroleum and hazardous substance contamination at the Property and provide additional data requested by the Wisconsin Department of Natural Resources (WDNR). The additional sampling data will be used to develop the final Contamination Management Plan being prepared by Himalayan Consultants, LLC (Himalayan), on behalf of the Property owner.

1.2 SITE DESCRIPTION/BACKGROUND

The Property consists of three contiguous parcels totaling 23.74 acres and located on the south side of the Wisconsin & Southern Railroad and Main Street intersection in the Village of Germantown, Wisconsin. Parcel information is summarized below.

<table>
<thead>
<tr>
<th>Parcel Designation</th>
<th>Address</th>
<th>Tax Key No.</th>
<th>Current Owner</th>
<th>Size</th>
<th>Zoning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Former CMC Heartland Parcel (“CMC Parcel”)</td>
<td>N116 W16257 Main Street</td>
<td>224025</td>
<td>MCB Investments, LLC</td>
<td>1.3 acres</td>
<td>Commercial</td>
</tr>
<tr>
<td>Former Jacobus Energy Parcel (“Jacobus Parcel”)</td>
<td>N116 W16261 Main Street</td>
<td>224027</td>
<td>Land15, LLC</td>
<td>0.87 acres</td>
<td>Commercial</td>
</tr>
<tr>
<td>Heritage Parcel</td>
<td>Squire Drive</td>
<td>224992</td>
<td>Heritage Place Joint Venture</td>
<td>21.57 acres</td>
<td>Agricultural/Agricultural Forest</td>
</tr>
</tbody>
</table>

The Property currently is vacant with only an approximately 2,400 square foot storage building remaining on the west edge of the former Jacobus Parcel. A gravel path extends onto the Property from Main Street. The majority of the Property is a grassy open field with brush and trees lining portions of the Property boundary. The northern portion of the Property is currently vacant and grass covered. All aboveground structures have been razed except for the storage building. The southern portion of the Property has been agricultural cropland, vacant land, or lightly forested land since before 1900. Surrounding properties are a mix of residential and commercial properties. A map illustrating the location of the Property is provided as Figure 1. A map illustrating the main features of the Property is provided as Figure 2.

The northern portion of the Property has a long history of industrial use. A petroleum bulk storage and distribution facility occupied a portion of the Property from the 1940s to the 1980s. A lumber yard, bulk coal storage, and/or feed mill operated on a portion of the Property from at least 1915 through the 1980s. Agricultural chemicals were stored and distributed on this portion of the Property. Petroleum and hazardous substance releases to soil and groundwater have been reported on the northern portion of the Property. Extensive investigation and remediation of
these historic releases have been completed. However, residual petroleum-contaminated soil and groundwater remains on the northwest portion of the Site.

The owners are interested in redeveloping the Property with a six building (175 total units) apartment complex with associated clubhouse, parking, landscaping, municipal services, and on-site stormwater ponds known as “the Saxony Village Development”. The apartment buildings will include underground parking. Since the redevelopment area would be disturbing areas of known petroleum contamination, the Property owners retained Himalayan to develop a Contamination Management Plan for the Saxony Village Development. During January 2016, Himalayan submitted a Contamination Management Plan to the WDNR for review and comment (Himalayan, 2016). During March 2016, the WDNR reviewed the Contamination Management Plan and requested additional information/clarification of specific items in the plan and collection of additional soil and groundwater samples east of recently completed boreholes EB-3, EB-4, and EB-5 (identified on Figure 2).

1.3 ENVIRONMENTAL CONCERNS

The supplemental Phase II ESA will focus on additional investigation at the Site requested by the WDNR during March 2016. Soil samples from borehole EB-3, EB-4, and EB-5 contained petroleum volatile organic compounds (PVOCs) concentrations exceeding one or more NR 720 Wisconsin Administrative Code (WAC) Residual Contaminant Levels (RCLs). These boreholes were placed on the eastern edge of the historic soil remediation area. Soil and groundwater samples will be collected east and south of EB-3, EB-4, and EB-5 to better define the extent of petroleum contamination before initiating Site redevelopment. In addition, investigation of soil conditions directly beneath the floor drain in the storage building will be conducted. This data will be used to more precisely define the soil management areas proposed in the Contamination Management Plan.
2.0 DATA QUALITY OBJECTIVES

2.1 PROBLEM STATEMENT

Various environmental concerns associated with the Property have been identified. The supplemental Phase II ESA’s purpose is to evaluate current soil and groundwater conditions with respect to documented residual petroleum contamination at the Property and provide additional data requested by the WDNR. Specifically, the purpose of the assessment is to further assess the presence/absence of, as well as the magnitude and extent of, petroleum products in soil and groundwater beneath the Site building and south and east of boreholes EB-3, EB-4, and EB-5. The results of the additional sampling conducted by Stantec will be supplied to the owner for use in their revised Contamination Management Plan.

2.2 ASSESSMENT REQUIREMENTS

Following are key observations by Stantec relevant to developing a scope for assessment activities:

- **General constituents of concern** – The primary constituents of concern are PVOCs related to documented petroleum releases at the Property. The historic soil sampling activities identified petroleum compounds associated with historic use of the Jacobus Parcel by a bulk petroleum storage and distribution facility. These constituents of concern will therefore be the focus for assessment activities.

- **Further assessment of documented and potential release areas** – Previous soil sampling completed at the Property identified petroleum-contaminated soil across large portions of the Jacobus and CMC Parcels and the northern edge of the Heritage Parcel. Based on historic use and concerns raised by the WDNR during their review of the Contamination Management Plan, Stantec proposes to investigate underneath the storage building that contains a floor drain; and the area east and south of soil boreholes EB-3, EB-4, and EB-5.

Additional discussion of soil sample locations and analysis is provided in Section 3.0.
3.0 SOIL ASSESSMENT

3.1 GENERAL

Proposed soil sampling locations and analyses are based on the environmental concerns and assessment requirements detailed in Sections 1.3 and 2.2, respectively. Diggers Hotline will be contacted to locate and mark the locations of registered utilities in the project area. A private locating contractor may be retained to locate on-site and/or private underground utilities. Any investigative waste (i.e. soil cuttings and fluids) will be placed into labeled containers. Appropriate disposal of the waste will be determined based on the results of laboratory analyses.

The locations for each soil boring will be documented using global positioning satellite (GPS) survey equipment. A site-specific Health and Safety Plan (HASP), to be utilized by Stantec personnel during the assessment activities, is presented in Appendix A.

3.2 OBJECTIVES

The goal of the soil assessment is to evaluate soil quality at the Property. Soil boreholes will be advanced to confirm known residual petroleum contamination extent and concentration and evaluate potential contamination associated with the Property building floor drain. Soil sampling results will also be used to fulfill, at least in part, Chapter NR 718.11 WAC soil sampling requirements for on-site movement and placement of contaminated soils.

Standard operating procedures (SOPs) for tasks associated with this work plan are presented in the Quality Assurance Project Plan (QAPP) prepared by Stantec on July 10, 2015 (Stantec, 2015), including subsequent revisions (Revision 1) as submitted to U.S. EPA on February 29, 2016 (Holmes, 2016).

3.3 SOIL BORING AND SUBSURFACE ASSESSMENT

The soil assessment will include 9 soil boreholes advanced using direct-push soil sampling equipment. Proposed borehole locations and depths were chosen after considering specific environmental concerns within each area. Soil samples will be collected continuously in each borehole extending to a maximum depth of approximately 4 feet below the observed water table. We anticipate boreholes to extend 12 or less feet below ground surface (fbgs). The actual number and locations of borings may be adjusted based on accessibility, the locations of underground utilities, and on-site field screening data. The proposed borehole locations are illustrated on Figure 2. The sampling rational is provided below and in Table 1. The proposed laboratory analysis types and quantities are also included in Table 1.

Soil Conditions Beneath Property Building

The primary goal in this area is to determine if the long term presence of a floor drain in the building, potentially subject to preferential exposure to any petroleum liquids or other hazardous liquids released spilled in the building interior, caused a release of contaminants to the underlying soil (via seepage through cracks, through concrete, or any liner material). Residual petroleum-contaminated soil and/or groundwater related to previously identified petroleum releases originating at the Jacobus Parcel may also be present in this area. Soil samples will be collected from a borehole placed adjacent to the center of the trench-style drain present within the floor of the building.
WDNR-requested Investigation
Residual petroleum-contaminated soil and groundwater associated with the Jacobus Parcel remains at the Property. The primary goal in this area is to further evaluate the magnitude and extent existing residual petroleum-contaminated soil and groundwater concentrations and extent so that this information can be used to develop the final Contamination Management Plan for the Saxony Village Development.

3.3.1 Soil Sampling Methods
Soil sampling and field classification will be conducted according to SOP No. 02 (Stantec, 2015b). Sample collection and laboratory analytical methods for soil samples, as well as the rationale for selecting sample locations and criteria to be used for selection of specific depth intervals for analysis, are presented in Table 1. In addition, pertinent observations noted during installation of the soil borings will be documented on the soil boring logs.

Each soil sample will be assigned a sample identification number (SIN) based on the following format:

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>Label for Type of Sample</th>
<th>Location Number</th>
<th>Sample Interval (feet bgs)</th>
<th>Sample Round</th>
<th>Sample Identification No. (SIN)</th>
<th>Location ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil boring</td>
<td>SB</td>
<td>1</td>
<td>(0-2)</td>
<td>---</td>
<td>SB1(0-2)</td>
<td>SB1</td>
</tr>
<tr>
<td>Trip blank</td>
<td>TB</td>
<td>---</td>
<td>Number</td>
<td>TB1</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

bgs = below ground surface

Soil samples will be field screened for the presence of VOCs using a photoionization detector (PID) as described in SOP No. 01 (Stantec, 2015). The PID will be calibrated daily in the field in accordance with the manufacturer’s specifications. Immediately following collection, soil samples will be placed in pre-preserved laboratory supplied containers and stored on ice in a cooler as detailed in the QAPP (Stantec, 2015). Any visual evidence of contamination will be noted on the field log. Soil samples will be submitted in accordance with SOP No. 02 (Stantec, 2015).

Soil sampling equipment such as drilling tools will be decontaminated prior to arrival on-site and between each sampling location (SOP No. 08, Stantec, 2015). Soil borings not completed as temporary groundwater monitoring wells will be sealed in accordance with Chapter NR 141.25 Wisconsin Administrative Code by backfilling with bentonite after completion of drilling and soil sampling.

Investigative wastes generated will be managed per SOP No. 10 (Stantec, 2015). In general, waste soil cuttings or core samples will be collected in Department of Transportation (DOT)-approved 55 gallon drums or other appropriate containers, sealed, labeled, and stored on site pending the completion of laboratory analysis and determination of disposal restrictions, if any. As appropriate, waste soil will be handled, transported, and disposed of by a licensed waste hauler per federal and state requirements. The generator of the waste will be the property owner at the time of the investigation.

3.3.2 Special Handling Considerations and QA/QC Samples
Soil samples collected from the unsaturated zone from each boring will be submitted for laboratory analyses as summarized on Table 1. All soil samples will be collected and preserved in accordance with SOP No. 02 and Table 4 of the QAPP (Stantec, 2015). The laboratory will supply the appropriate containers. Samples will be submitted to the laboratory as soon as possible after collection (i.e., on a daily basis).
Quality assurance/quality control (QA/QC) samples to be collected and analyzed will include trip blanks, equipment blanks (for any non-disposable equipment used), and field replicate/duplicate samples. Trip blanks prepared by the analytical laboratory will accompany the sample bottles from the time of shipment from the laboratory through the time the samples are returned for analysis. Trip blanks will be used to document any contamination detected in samples that may be attributable to shipping and field handling procedures, or contaminated sample containers. Trip blanks will be provided by the laboratory and will be subject to the same handling and transportation procedures as the investigative samples. At least one trip blank sample will accompany each shipping container that contains samples for PVOC or VOC analysis.

If non-disposable sampling equipment is used, equipment blanks will be prepared by: (a) filling the decontaminated sampling device with laboratory-supplied reagent-grade water; (b) transferring the water to appropriate sample containers; and (c) submitting the sample for analysis. If contaminants are found in the equipment or trip blanks, the source for the contamination will be assessed and corrective action measures taken (such as modifying the sampling procedures and/or resampling as appropriate). The estimated number of equipment blank samples to be analyzed for each constituent is shown in Table 1. Please note that it is anticipated that only disposable sampling equipment will be used and that equipment blanks will therefore not be required.

### 3.3.3 Chain-Of-Custody

Chain-of-custody procedures will be utilized to track possession and handling of individual samples from the time of collection in the field through the time of delivery to the analytical laboratory. The chain-of-custody program will include use of sample labels, custody seals, field logbooks, chain-of-custody forms, and laboratory logbooks. All chain-of-custody procedures will be performed in accordance with SOP No. 07 (Stantec, 2015).

### 3.3.4 Field Log Book

An up-to-date field log book will be maintained by each sampling team to document daily activities (if more than one group of individuals is sampling). The log book will include a general list of tasks performed, additional data, or observations not listed on field data sheets, and document communications with on-site personnel or visitors as these apply to the project.
4.0 GROUNDWATER ASSESSMENT

4.1 GENERAL

Proposed groundwater monitoring well sampling locations and analyses are based on the environmental concerns and assessment requirements detailed in Sections 1.3 and 2.2, respectively. The nine soil boreholes documented in Section 3.0 will be converted into temporary groundwater monitoring wells that extend into shallow groundwater. The locations for each temporary groundwater monitoring well will be documented using GPS survey equipment. Ground surface and top of riser pipe elevations will be measured to the nearest 0.01-foot using a previously surveyed reference point (if available) or a site datum.

4.2 OBJECTIVES

Stantec will conduct groundwater sampling activities to characterize groundwater at the Site as necessary to facilitate planning for future reuse. In addition, the sampling will determine appropriate future actions, if any, to obtain closure from the WDNR per the Chapter NR 700 WAC rule series. SOPs for tasks associated with this work plan are presented in the QAPP (Stantec, 2015). The subsurface silty soil documented at the Site should allow sufficient groundwater to accumulate in the well so that the wells can be developed and representative groundwater samples be collected shortly after well construction.

Groundwater quality data will be compared to Chapter NR 140 WAC groundwater standards. In addition, VOCs detected in groundwater will be used to evaluate the vapor intrusion pathway per WDNR Pub-RR800.

4.3 GROUNDWATER ASSESSMENT

The groundwater assessment will include the completion of nine soil borings described in Section 3 as one-inch diameter temporary groundwater monitoring wells. The depth for the new wells will depend on the actual depth at which groundwater is encountered beneath the Site. The wells will be constructed using 1-inch diameter PVC casing with 10-foot long 0.010-inch slotted-screens placed to intersect the water table surface, which was encountered at depths of 7 to 10 ft during previous assessment work completed at the Site as summarized in the Contamination Management Plan (Himalayan, 2016). It is anticipated that well depths will be approximately 12 ft.

Although the temporary wells will be sampled the same day as installation, water levels will be measured at all wells and used to document the general depth to groundwater, groundwater elevations, and groundwater flow direction at the Property. Each groundwater sample will be assigned a SIN based on the following format:

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>Label for Type of Sample</th>
<th>Location Number</th>
<th>Sample Round</th>
<th>Sample Identification No. (SIN)</th>
<th>Location ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temporary well</td>
<td>TW</td>
<td>1</td>
<td>01</td>
<td>TW1(01)</td>
<td>TW1</td>
</tr>
<tr>
<td>Field Duplicate</td>
<td>FD</td>
<td>---</td>
<td>---</td>
<td>FD1</td>
<td>---</td>
</tr>
<tr>
<td>Equipment Blank</td>
<td>TB</td>
<td>---</td>
<td>---</td>
<td>EB1</td>
<td>---</td>
</tr>
<tr>
<td>Trip blank</td>
<td>TB</td>
<td>---</td>
<td>---</td>
<td>TB2</td>
<td>---</td>
</tr>
</tbody>
</table>

Following installation and recovery, and prior to purging and collection of groundwater samples, the elevation of the groundwater table will be measured and the volume of water present within each well will be calculated using the procedures set forth in SOP No. 04 (Stantec, 2015). Decontamination procedures for any non-dedicated or non-disposable equipment used for
collection of groundwater samples will also be performed using the procedures set forth in SOP No. 08 (Stantec, 2015).

Although not anticipated at the Site, the depth and thickness of floating (light) and/or sinking (dense) non-aqueous phase liquids, if present, will be measured using an interface probe. SOP No. 04 details the procedures that will be used to detect immiscible layers. The interface probe will be decontaminated in accordance with SOP No. 08 (Stantec, 2015).

Each temporary well will be purged prior to sampling in accordance with SOP No. 04 (Stantec, 2015). If sufficient groundwater does not accumulate in a temporary well during the day of well installation, a groundwater sample from the well will not be collected. Temperature, pH, dissolved oxygen and specific conductance will be measured on the evacuated purge water (SOP No. 04).

The well may be purged using any of the following methods: a peristaltic pump, a low-flow Micro-Purge Sampling System (or equivalent), a Voss disposable polyethylene bailer (or equivalent), or a Waterra hand pump (or equivalent) or similar equipment. Non-disposable purging equipment will be decontaminated in accordance with SOP No. 08 (Stantec, 2015).

All purged water will be collected in 55-gallon drums or other secure containers (SOP No. 10). Each drum or container will be sealed, labeled, and stored in an appropriate location pending receipt of laboratory analytical results for the groundwater samples, which will be used to determine, what if any, special measures are necessary for handling and proper disposal of the purge water.

After purging, groundwater samples will be collected from all temporary groundwater monitoring wells, and analyzed for PVOCs plus naphthalene. Anticipated sample collection and laboratory analytical methods for groundwater samples are summarized in Table 2. Immediately following groundwater sample collection, the groundwater monitoring wells will be decommissioned in accordance with SOP No. 02 (Stantec, 2015).

4.3.1 Special Handling Considerations and QA/QC Samples

Collection and preservation of groundwater samples for PVOC analysis will be performed in accordance with SOP No. 04 (Stantec, 2015). Headspace should not be present in the sample container, thus minimizing the volatilization of organics from the sample. The laboratory will supply the pre-preserved 40-ml glass vials with Teflon™-lined lids.

Trip blanks prepared by the analytical laboratory will accompany the sample bottles from the time of shipment from the laboratory through the time the samples are returned for analysis. Trip blanks will be used to document any contamination detected in samples that may be attributable to shipping and field handling procedures, or contaminated sample containers. Trip blanks will be provided by the laboratory and will be subject to the same handling and transportation procedures as the investigative samples. At least one trip blank sample will accompany each shipping container that contains samples for PVOC analysis.

If non-disposable sampling equipment is used, equipment blanks will be prepared by: (a) filling the decontaminated sampling device with laboratory-supplied reagent-grade water; (b) transferring the water to appropriate sample containers; and (c) submitting the sample for analysis. If contaminants are found in the equipment or trip blanks, the source for the contamination will be assessed and corrective action measures taken (such as modifying the sampling procedures and/or resampling as appropriate). The estimated number of equipment blank samples to be analyzed for each contaminant of concern is shown in Table 2.

Duplicate samples will be collected and analyzed to evaluate sample variability and overall data precision. For groundwater samples, the duplicate samples will be “field replicate samples” collected at the same time from the same well. To the extent practicable, multiple
bottles associated with a set of duplicate samples will be filled in two or three stages such that each bottle receives a portion of the water from each section of the bailer, or each interval of sample pump operation. In recognition that data for duplicate samples are most meaningful when there are detectable concentrations present of constituents of concern, if there are existing groundwater data, or other data by which to anticipate wells with greater levels of contamination, duplicate samples will be preferentially collected from wells where detectable concentrations of constituents of concern are most likely to be present. Otherwise, duplicate samples will be collected from a randomly selected well or wells. Duplicate samples will be collected and analyzed for constituents at a rate of one sample for every 20 or fewer investigative samples to be analyzed for each constituent. The estimated number of duplicate samples to be collected and analyzed for each constituent is shown in Table 2.

4.3.2 Chain-Of-Custody

Chain-of-custody procedures will be utilized to track possession and handling of individual samples from the time of collection in the field through the time of delivery to the analytical laboratory. The chain-of-custody program will include use of sample labels, custody seals, field logbooks, chain-of-custody forms, and laboratory logbooks. All chain-of-custody procedures will be performed in accordance with SOP No. 07 (Stantec, 2015).

4.3.3 Field Log Book

An up-to-date field log book will be maintained by each sampling team to document daily activities (if more than one group of individuals is sampling). The log book will include a general list of tasks performed, additional data or observations not listed on field data sheets, and document communications with on-site personnel or visitors as these apply to the project.
5.0 REPORTING

A report summarizing the results of the supplemental Phase II ESA will be completed. The supplemental Phase II ESA report will identify the physical subsurface conditions and determine if RECs identified in the Phase I ESA for the Property resulted in contaminant releases to soil. The Phase II ESA report will include:

- Laboratory analytical reports;
- Soil boring logs;
- Monitoring well construction forms;
- Field PID data;
- Groundwater elevation data;
- Tables summarizing analytical results for soil and groundwater samples, and comparing the results to applicable soil and groundwater standards;
- Maps of boring locations and utilities; and
- Potentiometric surface map of shallow groundwater.
6.0 REFERENCES


Holmes, David (Stantec Consulting Services Inc.) letter to Jan Pels (U.S. EPA), February 29, 2016.

Stantec Consulting Services Inc. “Phase I Environmental Site Assessment, Saxony Village Redevelopment Area, Germantown, Wisconsin.” April 7, 2016.

## Proposed Laboratory Analyses for Soil

**Saxony Village Development Property**  
**Germantown, Wisconsin**

<table>
<thead>
<tr>
<th>Area of Concern</th>
<th>No. of Soil Borehole/Temporary Monitoring Wells</th>
<th>Estimated Soil Boring Depth</th>
<th>Rationale</th>
<th>Laboratory Analysis Criteria</th>
<th>Estimated # of Samples Submitted for Laboratory Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>WDNR- Requested Sampling</td>
<td>8</td>
<td>~4 feet below observed water table (up to 16 fbgs)</td>
<td>soil samples will evaluate current petroleum contamination extent and concentration</td>
<td>Near-surface and highest PID from each borehole (or just above water table if no PID response). DRO and GRO analysis of 2 soil samples with highest PID responses.</td>
<td>16 - 8 8</td>
</tr>
<tr>
<td>Property Building Floor Drain</td>
<td>1</td>
<td>~4 feet below observed water table (up to 16 fbgs)</td>
<td>soil samples will evaluate soil conditions adjacent to the building floor drain to determine if the drains were a historic contamination source</td>
<td>Near-surface and highest PID from each borehole (or just above water table if no PID response).</td>
<td>- 2 1 1</td>
</tr>
</tbody>
</table>

**Estimated number of investigative samples to be analyzed**  
16 2 9 9

| Field Blank | Field and laboratory QA/QC sample | 1 per cooler | 1 | - | - |
| Field Blank | Assess the quality of the data and collection techniques. | Not required - sampling equipment all disposable | - | - | - |
| MS/MSD | Evaluate laboratory matrix and measurement methodology. | At least 1 per 20 samples | 1 | - | - |
| Field Duplicates | At least 1 per 20 samples | 1 | - | - | - |

**Estimated number of QA/QC samples to be analyzed**  
3 0 0 0

**Estimated total number of samples to be analyzed**  
19 2 9 9

Notes:  
actual depths for various laboratory analysis may change based on field observations  
fbgs = feet below ground surface  
DRO = diesel range organics  
FD = Field Duplicate  
GRO = gasoline range organics  
MS/MSD = matrix spike/matrix spike duplicate  
PAH = Polycyclic Aromatic Hydrocarbons  
PID = photoionization detector  
QA/QC = Quality Assurance Quality Control  
VOC = Volatile Organic Compounds  
(8260) = Laboratory analytical method (SW-846)
<table>
<thead>
<tr>
<th>Area</th>
<th>No. of Temporary Monitoring Wells</th>
<th>Estimated Well Depth (ft)</th>
<th>Rationale</th>
<th>PVOCs + Naphthalene (8260)</th>
</tr>
</thead>
<tbody>
<tr>
<td>WDNR-Requested Sampling</td>
<td>8</td>
<td>12</td>
<td>evaluate existing petroleum-contaminated groundwater concentrations and extent extending onto this parcel from the Jacobus Parcel.</td>
<td>8</td>
</tr>
<tr>
<td>Property Building Floor Drain</td>
<td>1</td>
<td>12</td>
<td>determine if floor drains inside building caused a contaminant release to groundwater.</td>
<td>1</td>
</tr>
</tbody>
</table>

**Estimated total number of investigative samples to be analyzed for each constituent**: 9

**Trip Blanks**: Field and Laboratory QAQC Sample 1

**Field Duplicates**: Assess the quality of the data and collection techniques. 1

**Estimated total number of QAQC samples to be analyzed for each constituent**: 2

**Estimated total number of samples to be analyzed for each constituent**: 11

Notes:
FD = Field Duplicate
QAQC = Quality Assurance Quality Control
VOCs = Volatile Organic Compounds
(8260) = Laboratory analytical method (SW-846)
FIGURES
Title:
Property Location and Local Topography

Client/Project:
Saxony Village Development Property
Main Street
Germantown, Wisconsin

Project Location:
193703314 Task 2.0.4
TN: R30B, S32
C of Germantown
Prepared by AJS on 2016-03-16
Technical Review by BT on 2016-03-16
Independent Review by CCH on 2016-03-16

Coordinate System: NAD 1983 HARN WISCRS
Washington County Feet
Data Sources Include: Stantec
Background: USGS 7.5' Topographic Quadrangle

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.

Legend:
Approximate Property Line

Notes:
   Washington County Feet
2. Data sources include: Stantec
3. Background: USGS 7.5' Topographic Quadrangle

1:24,000 (at original document size of 8.5x11)
Figure No. 2

Title: Proposed Borehole/Temporary Monitoring Well Location Map

Client/Project: Saxony Village Development Property
Main Street
Germantown, WI

Project Location: 193703514 Task 2.0.4
Prepared by AJS on 2016-03-16
Technical Review by BT on 2016-03-16
Independent Review by CCH on 2016-03-16

Washington County Feet

Legend:
- Approximate Property Line
- Storage Building
- Railroad
- Unnamed Creek
- Borehole Location and Identification (Himalayan, 2016)
- Proposed Borehole/Temporary Groundwater Monitoring Well Location

Coordinate System: NAD 1983 HARN WSCRS
Washington County Feet

Data Sources Include: Stantec
Orthophotography: ESRI World Imagery

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.
APPENDIX A – SITE-SPECIFIC HEALTH AND SAFETY PLAN
Site-Specific Health and Safety Plan

Saxony Village Development Property
Main Street
Germantown, Wisconsin

U.S. EPA Brownfield Cooperative Agreement No.: BF-00E01347-0

April 20, 2016
Project Number 193703514
SITE-SPECIFIC HEALTH AND SAFETY PLAN
Saxony Village Development Property
Main Street
Germantown, Wisconsin

April 20, 2016

Prepared For:
Mr. Fred Bartman, Project Officer
U. S. Environmental Protection Agency
77 West Jackson Boulevard
Chicago, IL 60604-3507

Prepared By:
Stantec Consulting Services Inc.
12075 Corporate Parkway Suite 200
Mequon WI 53092-2649

The information presented in this Site-Specific Health and Safety Plan is intended solely to denote the health and safety measures/guidelines applicable to Stantec personnel engaged in field activities at the above-referenced Site. Stantec makes no warranties regarding the accuracy of the Site-Specific Health and Safety Plan, and nothing contained herein shall be construed as providing recommendations or direction, either expressed or implied, regarding health and safety measures to be taken by anyone other than Stantec personnel. Non-Stantec personnel shall be responsible for complying with Site safety plans and local, state, and/or federal regulations applicable to non-Stantec personnel.

Stantec Project Number: 193703514

David Holmes, PG
Senior Project Manager

c: Debora Sielski, Washington County
# Table of Contents

1.0 **INTRODUCTION** ........................................................................................................... 1

2.0 **BACKGROUND INFORMATION** ................................................................................. 2
    Project Manager................................................................................................................. 2
    Site-Safety Officer........................................................................................................... 2

3.0 **SITE INFORMATION** .................................................................................................. 3

4.0 **CONTAMINANT/CHEMICAL HAZARD ASSESSMENT** .................................................. 4

5.0 **PHYSICAL HAZARD ASSESSMENT** .......................................................................... 5
    Flammability/Explosive ..................................................................................................... 5
    Heavy Equipment ............................................................................................................. 5
    Excavations ...................................................................................................................... 5
    Slips, Trips, and Falls ....................................................................................................... 5
    Lifting .............................................................................................................................. 6
    Tools and Equipment....................................................................................................... 6

6.0 **PERSONAL PROTECTIVE EQUIPMENT** ................................................................. 7

7.0 **MEDICAL REQUIREMENTS** .................................................................................... 8
    Medical Data Summary .................................................................................................... 8

8.0 **TRAINING REQUIREMENTS** ................................................................................... 9
    Confined Space Entry ..................................................................................................... 9

9.0 **ENVIRONMENTAL MONITORING** ......................................................................... 10
    Monitoring Equipment Checklist .................................................................................. 10
    Surveillance Methods ...................................................................................................... 10

10.0 **SITE SAFETY PROCEDURES** ................................................................................. 11
    Perimeter Establishment .................................................................................................. 11
    Site Entry Procedures .................................................................................................... 11
    Site Control and Designation of Work Zones ............................................................... 11
    Exclusion Zone ............................................................................................................. 11
    Contamination Reduction Zone ..................................................................................... 12
    Support Zone ................................................................................................................ 12

11.0 **DECONTAMINATION** ............................................................................................ 13
    Personnel Decontamination Procedures ....................................................................... 13
    Sampling/Monitoring Equipment Decontamination Procedures ..................................... 13

12.0 **EMERGENCY PLAN** ............................................................................................... 14
    Emergency Personnel Responsibilities .......................................................................... 14
    Communication ............................................................................................................... 14
    Emergency Procedures .................................................................................................. 15
    Decontamination during Medical Emergencies ............................................................ 15
    Fire/Explosion ................................................................................................................ 16
    Unknown Intact Drums .................................................................................................... 16
    Spill/Release .................................................................................................................... 16
    Adverse Weather Conditions ......................................................................................... 17
    General Site Evacuation Procedures .............................................................................. 17

13.0 **EMERGENCY REFERENCES** .................................................................................... 18
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Resources</td>
<td>18</td>
</tr>
<tr>
<td>Other Emergency Contacts</td>
<td>18</td>
</tr>
<tr>
<td>14.0 EVACUATION/HOSPITAL ROUTES</td>
<td>19</td>
</tr>
<tr>
<td>15.0 SITE-SPECIFIC HEALTH AND SAFETY PLAN REVIEW</td>
<td>21</td>
</tr>
<tr>
<td>16.0 SITE-SPECIFIC HEALTH AND SAFETY PLAN FOLLOW-UP REPORT</td>
<td>22</td>
</tr>
<tr>
<td>17.0 ADDENDUM TO SITE-SPECIFIC HEALTH AND SAFETY PLAN</td>
<td>23</td>
</tr>
<tr>
<td>ATTACHMENT A – MEDICAL DATA SUMMARY FORMS</td>
<td>24</td>
</tr>
<tr>
<td>ATTACHMENT B – INCIDENT REPORT SHEETS</td>
<td>26</td>
</tr>
<tr>
<td>ATTACHMENT C – PERSONAL PROTECTIVE EQUIPMENT</td>
<td>28</td>
</tr>
<tr>
<td>ATTACHMENT D – FIRST AID</td>
<td>30</td>
</tr>
</tbody>
</table>
1.0 INTRODUCTION

The purpose of this Site-Specific Health and Safety Plan (SHSP) is to identify, evaluate, and control the safety and health hazards associated with the planned tasks to complete a supplemental Phase II ESA at the Saxony Village Development on Main Street in Germantown, Wisconsin (the Site) and ensure the health and safety of all Stantec Consulting Services Inc. (Stantec) employees involved. The planned tasks are outlined in the Site-Specific Sampling and Analysis Plan (SSSAP).

All field activities must be conducted in compliance with this SHSP. Personnel covered by this SHSP who cannot or will not comply with the SHSP will be excluded from on-site activities. Anyone who will be on-site will be required to sign the SHSP review found in this SHSP.

Contractors and sub-contractors will be given a copy of this SHSP and will sign the review acknowledging that they have read and understood this SHSP. Their signature indicates that Stantec has informed them of the Site emergency response procedures and any potential fire, explosion, health, safety or other hazards of the hazardous waste operation that have been identified. However, Stantec does not assume responsibility for the actions of the contractors or sub-contractor. Contractors will be required to develop and follow their own SHSP related to specific on-site activities.

This SHSP was prepared from the best available information concerning Site conditions at the time of development. The health and safety specifications in this SHSP are based on reasonably available sampling information and reports. The project manager or Site safety officer have the authority to amend any part of this program at any time due to changes to Site conditions that may affect the health and safety of on-site personnel.
2.0 BACKGROUND INFORMATION

1. Site Name: Saxony Village Development Property
2. Site Location: Main Street, Germantown, Wisconsin
3. Client Name: Washington County
4. Client Contact: Debora Sielski     Phone: (262) 335-4445
5. Stantec Project Manager: David Holmes Phone: (262) 643-9177
6. Anticipated On-Site Personnel:

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>David Holmes</td>
<td>Project Manager</td>
<td>Supervisor</td>
</tr>
<tr>
<td>Chris Hatfield</td>
<td>Senior Geologist</td>
<td>Site-Safety Officer</td>
</tr>
<tr>
<td>Andy Swaim</td>
<td>Geologist</td>
<td>Site-Safety Officer</td>
</tr>
<tr>
<td>Nick Heim</td>
<td>Geologist</td>
<td>Site-Safety Officer</td>
</tr>
</tbody>
</table>

7. Plan Prepared by: Chris Hatfield, P.G. Date: 4/20/2016
8. Plan Reviewed by: David Holmes, P.G Date: 4/20/2016

The Project Manager and Site-Safety Officer (SSO) or an alternate designee will be responsible for the implementation of this SHSP. Provided below are the key titles and associated responsibilities for personnel that are involved in the Site activities.

PROJECT MANAGER

The Stantec Project Manager provides overall direction for the implementation of field activities in accordance with this SHSP. The Project Manager will also serve as the program liaison to federal, state, and local authorities. Specific program questions will be directed to this individual.

SITE-SAFETY OFFICER

The SSO will be the Stantec field supervisor. She/he will direct the implementation and field evaluation of the SHSP. The SSO will be in charge during any emergency until she/he is relieved by Fire or other senior Emergency Responders. The SSO will be responsible for:

- Conduct health and safety briefings for Stantec employees based upon potential hazards specific to the designated work tasks scheduled;
- Modify SHSP as required to address specific situations; and
- Investigate and report on-site accidents/incidents.
3.0 SITE INFORMATION

1. Purpose of Investigation/Field Work: This work is being performed as part of a Phase II Environmental Site Assessment (ESA) of the property located at Main Street in the Village of Germantown, Wisconsin (herein referred to as the Site or Property). The location of the Site is illustrated on Figure 1.

2a. Potential Hazard to Personnel  
2b. Protective Equipment Required

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire/explosive condition</td>
<td>X First aid kit</td>
</tr>
<tr>
<td>Worker exposure/injury</td>
<td>X Eye wash</td>
</tr>
<tr>
<td>Confined spaces</td>
<td>X Ladder</td>
</tr>
<tr>
<td>Steep/uneven terrain</td>
<td>X Fire Extinguisher</td>
</tr>
<tr>
<td>Chemical/contaminant exposure</td>
<td>X Safety Glasses</td>
</tr>
<tr>
<td>Traffic/heavy machinery</td>
<td>X Communication</td>
</tr>
<tr>
<td>Noise exposure</td>
<td>X Hard Hat</td>
</tr>
<tr>
<td>Thermal/cold exposure</td>
<td>X Hearing Protection</td>
</tr>
<tr>
<td>Respirator/SCBA</td>
<td>Tyvex™ Suit</td>
</tr>
<tr>
<td>Latex Gloves</td>
<td>X</td>
</tr>
</tbody>
</table>

Other (describe) ____________________________

Estimated days on-site: two days.
## 4.0 CONTAMINANT/CHEMICAL HAZARD ASSESSMENT

1. The purpose of this work is to determine if historic use of the Site resulted in a hazardous substance and/or petroleum product release occurred. The following assessment is related to on-site substances which may potentially be encountered.

<table>
<thead>
<tr>
<th>SUBSTANCE</th>
<th>MAXIMUM CONCENTRATION (UNITS)</th>
<th>MEDIUM¹,²</th>
<th>PEL/TLV (PPM)³</th>
<th>CANCER STATUS⁴</th>
<th>ROUTE⁵</th>
</tr>
</thead>
<tbody>
<tr>
<td>PVOCs</td>
<td></td>
<td>S, GW</td>
<td>varies</td>
<td>varies</td>
<td>I, A, C</td>
</tr>
<tr>
<td>RCRA Metals</td>
<td></td>
<td>S,GW</td>
<td>varies</td>
<td>varies</td>
<td>A, IN</td>
</tr>
</tbody>
</table>

¹Environmental Medium: Soil (S), Groundwater (GW)

²List the maximum concentration for each medium separately

³Use the lower of the two exposure limits (PEL/TLV)

⁴Cancer status: EPA Classification

   - **Group A:** Human carcinogen – Sufficient evidence to support a casual association between exposure and cancer.
   - **Group B1:** Probable Human Carcinogen – Limited evidence of carcinogenicity in humans
   - **Group B2:** Probable Human Carcinogen – Sufficient evidence of carcinogenicity in animals, inadequate evidence of carcinogenicity in humans.
   - **Group C:** Possible Human Carcinogen – Limited evidence of carcinogenicity in animals.
   - **Group D:** Not Classified – Inadequate evidence of carcinogenicity in animals.
   - **Group E:** No Evidence of Carcinogenicity in Humans – No evidence for carcinogenic in at least two adequate animal tests or in both epidemiologist and animal studies.

⁵Route: (I) – Inhalation, (A) – Skin absorption, (IN) – Ingestion, (C) – Eye/skin contact

2. The following chemical(s) may be/could be brought to the work Site:

   Fuel for equipment, sample preservatives (methanol, nitric acid, hydrochloric acid).
5.0 PHYSICAL HAZARD ASSESSMENT

FLAMMABILITY/EXPLOSIVE

It is unlikely that explosive atmospheres will be encountered while performing tasks. However, it is possible that unknown chemicals may be encountered. Therefore, the following standard safety procedures will be implemented.

- All field vehicles and heavy equipment will be equipped with a type-ABC fire extinguisher. Fire extinguishers will be mounted on the vehicles where field personnel can easily access them. A fire extinguisher check, including inspection of gauges, hoses, and tanks, will be conducted before use of the field vehicle to ensure proper operation of the equipment.
- When necessary, other appropriate firefighting equipment will be made available.
- Open fires and burning are prohibited. Smoking will be prohibited in all areas where flammable, combustible, or oxidizing materials are stored or are in use, and any area containing unknown contaminants.

HEAVY EQUIPMENT

The hazards associated with the operation of heavy equipment can be effectively managed through adequate training and constant awareness. Any subcontractor equipment operators must have had the required training and must demonstrate the necessary skills for the piece of equipment they are operating. Constant visual and verbal contact should be maintained with the operator to facilitate awareness. Equipment will not obstruct roadways, walkways, electrical lines, etc. Proper distance from power lines should be observed. The operator and field personnel should be aware of loose soil or uneven terrain that cannot be driven over or parked on for sake of a roll-over hazard. All personnel working around heavy equipment will wear hard hats and safety-toed boots (at a minimum). Personnel should avoid turning their back to operating machinery.

EXCAVATIONS

Under no circumstances should an employee enter an un-shored excavation greater than 4 feet in depth. Shored excavations may also be considered confined spaces. A soil sample from excavations should be obtained from the backhoe bucket or other means, if at all possible. Before entering an excavation, the situations should be discussed with the project manager to assess confined space requirements (See Section 8).

SLIPS, TRIPS, AND FALLS

Although it can be difficult to prevent slips, trips, and fall hazards, these hazards can be minimized through good housekeeping, proper site-control measures, and keeping the work area free of obstructions. In the event that only one Stantec field person is on-site, that person will inform the on-site subcontractors of where he/she will be working and ask them to accompany him/her for the work. Since it is virtually impossible to eliminate all slip, trip, and fall hazards in the Assessment Area, personnel should always be aware of the terrain they are walking across and have sure footing, taking very deliberate steps and the easiest path of travel. Cones and or caution tape will be used to mark identifiable hazards.
LIFTING

Field operations often require that physical labor tasks be performed. All employees should employ proper lifting procedures. Additionally, employees should not attempt to lift bulky or heavy objects (greater than 40 pounds) without assistance.

TOOLS AND EQUIPMENT

Hazards present during the use of tools and equipment are generally associated with improper tool handling and inadequate maintenance. Management of these hazards requires a rigorous maintenance of tools and equipment and effective training of employees in the proper use of these tools. Electrical cords must have unbroken insulation and should not be exposed to water or other liquids. A ground fault circuit interrupter outlet or cord must be used in any area where water may be present.
6.0 PERSONAL PROTECTIVE EQUIPMENT

Based on the waste (e.g., sludge, metals, and/or petroleum contamination in soil/groundwater) identified to potentially be at the Site, it is concluded that there is likely minimal health risk to Site personnel; therefore, Level D will be the required level for work at the Site.

Levels A, B, and C are not anticipated for the project tasks. However, if Site conditions change (e.g., unknown contaminants encountered, employee complaints, etc.) and a higher degree of protection is required, the SSO will consult the Project Manager and the required changes in personal protective equipment (PPE) will be made. A change in the level of PPE will result in this SHSP being amended and reviewed by the Project Manager.

<table>
<thead>
<tr>
<th>PROJECT TASK</th>
<th>LEVEL OF PROTECTION HAZ. WASTE &amp; NON-HAZ. SITE (A, B, C, D, [OTHER SPECIFY BELOW])¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil Sampling</td>
<td>Level D</td>
</tr>
<tr>
<td>Groundwater Sampling</td>
<td>Level D</td>
</tr>
</tbody>
</table>

See Attachment C for PPE description by level.
7.0 MEDICAL REQUIREMENTS

Stantec personnel, whose presence may be required on a site where exposure to toxic and/or hazardous substances exists, shall be required to participate in any medical monitoring as deemed necessary by Stantec. All medical examinations performed for Stantec personnel shall be conducted in accordance with the requirements of 29 CFR 1910.120, 29 CFR 1910.134. In addition, it may be necessary to require specific clinical tests for certain sites. Any Site-specific testing shall be identified below.

<table>
<thead>
<tr>
<th>SITE-SPECIFIC CLINICAL TESTS PARAMETER</th>
<th>REQUIRED TESTING</th>
<th>ACTION LEVEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

All Stantec employees will be medically qualified and fit tested for respiratory protection as appropriate.

MEDICAL DATA SUMMARY

This form shall be completed by Stantec personnel prior to commencement of activities at the Site. This form shall be kept at the project Site for the duration of project activities. This form must be delivered to the attending physician when medical assistance is required.

Medical Data Summary Forms are provided in Attachment A.
8.0 TRAINING REQUIREMENTS

All Stantec personnel participating in site investigations where exposure to toxic and/or hazardous substances is possible must complete at least 40 hours of health and safety training required by 29 CFR 1910.120. The dates of certification are documented in the following Stantec office:

Stantec
12075 Corporate Parkway Suite 200
Mequon WI 53092-2649
Contact: Mr. Jon Currie

CONFINED SPACE ENTRY

As a general rule, Stantec employees who are engaged in activities at sites covered by 29 CFR 1910.120 are prohibited from entering confined spaces. However, if it becomes absolutely necessary to enter a confined space to accomplish a required task, specific procedures will be established by the Stantec project manager and safety personnel on a task-by-task basis.
9.0 ENVIRONMENTAL MONITORING

Service, maintenance, and calibration of monitoring equipment shall be performed in accordance with manufacturers’ recommendations.

MONITORING EQUIPMENT CHECKLIST

<table>
<thead>
<tr>
<th>TYPE OF EQUIPMENT</th>
<th>SERIAL NO.</th>
<th>WRITTEN SOP AVAILABLE</th>
<th>DATE CALIBRATED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photoionization Detector (PID)</td>
<td>To Be Determined</td>
<td>Yes</td>
<td>Daily</td>
</tr>
</tbody>
</table>

SURVEILLANCE METHODS

The monitoring methods to be used at the project Site are described below:

The breathing zone and work area will be periodically screened for volatile organic compounds (VOCs) using the PID. If elevated VOCs are detected in the breathing zone, Stantec staff will remove their persons from the work Site, notify the project manager and evaluate appropriate actions (e.g. upgrade to Level C, etc.).
10.0 SITE SAFETY PROCEDURES

A Site-specific/pre-entry meeting will be held before the start of any Site activities in the Assessment Area. Additional meetings will be held as necessary. The purpose of these safety meetings is to:

- Describe the assigned tasks and their potential hazards.
- Coordinate activities.
- Identify methods and precautions to prevent injuries.
- Plan for emergencies.
- Describe any changes in the Site Safety Plan.
- Solicit worker feedback on conditions affecting safety and health.
- Solicit worker feedback on how well the Site Safety Plan is working.

Safety meetings will also be held at all other times necessary to ensure that all field personnel and visitors are aware of the health and safety hazards at the Site. All field personnel and visitors will be required to attend these meetings. The on-site SSO or alternate designee will conduct the meetings.

The SSO will also conduct frequent inspections of Site conditions, equipment, and activities to determine whether the SHSP is adequate and being followed. In order to make safety inspections effective, the following guidelines should be observed:

- Review the results of these inspections with supervisors and workers.
- Re-inspect any identified problems to ensure that they have been corrected.
- Document all inspections and subsequent follow-up actions in field notebook kept for this project. Retain these records until Site activities are completed and at least 5 years after project has been completed.

The frequency of inspections shall be both at the beginning and the end of each work shift or when Site conditions change due to factors such as weather, tasks are performed or new hazards being introduced on-site or discovered during Site activities.

PERIMETER ESTABLISHMENT

The property lines of the Property will be used as the perimeter.

SITE ENTRY PROCEDURES

Before entering the Site, all personnel shall wear the required PPE and follow the decontamination procedures when exiting Site.

SITE CONTROL AND DESIGNATION OF WORK ZONES

The following procedures shall be observed to minimize the potential for contaminant transfer, personnel exposure to hazardous materials and work place injury.

EXCLUSION ZONE

We do not plan to formally delineate the exclusion zone because of numerous and small work locations involved across the Site over a relatively short period of time, and the limited likelihood of exposure to personnel other than those doing the actual work. The exclusion zone will be determined at each work location.
CONTAMINATION REDUCTION ZONE
We do not plan to formally delineate the contamination reduction zone because of numerous and small work locations involved across the Site over a relatively short period of time, and the limited likelihood of exposure to personnel other than those doing the actual work. The contamination reduction zone will be determined at each work location.

SUPPORT ZONE
The support zone will consist of an area outside of the exclusion and contamination reduction zone where field vehicles and equipment will be staged. Eating, drinking, and smoking will only be allowed in this area.
11.0 DECONTAMINATION

All non-disposable field equipment will be decontaminated before each use and between samples to avoid cross-contamination between samples and to ensure the health and safety of the field crews. Field personnel must follow the procedures outlined below whenever leaving the exclusion areas. All decontamination procedures will be performed in accordance with the field standard operating procedure for Equipment Decontamination and Management of Investigative Wastes Procedures included in the Stantec (2015) Quality Assurance Project Plan.

PERSONNEL DECONTAMINATION PROCEDURES

Gloves will be placed in a plastic bag and disposed of properly. Re-usable PPE will be decontaminated with an appropriate detergent wash and rinsed with water. Decontamination water will be containerized and disposed of properly.

SAMPLING/MONITORING EQUIPMENT DECONTAMINATION PROCEDURES

Disposable equipment will be placed in a garbage bag and disposed of properly. Re-usable equipment will be washed and scrubbed with an appropriate detergent wash and rinsed with water. Equipment will be decontaminated after each sampling event to prevent cross contamination. Decontamination water will be containerized and disposed of properly.
12.0 EMERGENCY PLAN

This emergency action plan can be fully or partially activated depending on the extent of the encountered incident. The plan will be activated whenever an emergency is discovered. Where possible, the emergency will be brought under control by the on-site personnel. The on-site SSO has full responsibility in the event of an emergency and will be required to determine if outside response needs to be contacted.

The personnel who have responsibilities in the event of an emergency are listed below with their area(s) of responsibility. In addition, procedures to be followed in the event of a Site evacuation are also outlined.

**EMERGENCY PERSONNEL RESPONSIBILITIES**

<table>
<thead>
<tr>
<th>NAME</th>
<th>RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nick Heim</td>
<td>Site-Safety Officer</td>
</tr>
<tr>
<td>Andy Swaim</td>
<td>Site-Safety Officer</td>
</tr>
<tr>
<td>Chris Hatfield</td>
<td>Site-Safety Officer</td>
</tr>
</tbody>
</table>

The SSO is the on-site emergency coordinator who has the responsibility for controlling emergency response operations at the Site. In the event of an emergency, the SSO must identify, as best as possible, all hazardous substances or conditions present. She/he must implement appropriate emergency operations in accordance with this plan. In addition, she/he must limit the number of personnel exposed to the emergency, by communicating with all personnel on-site and assuring they get to a safe area.

**COMMUNICATION**

Before starting field activities, the appropriate representatives of Washington County will be notified of the planned activities. Stantec will review the SHSP and Emergency Plan with Washington County representatives to inform them of potential emergencies related to the field activities at the Site.

If an emergency occurs, fast and effective communication is essential. Without proper communication, the ability to initiate and carry out an appropriate response could be severely hindered. There are three important elements to effective communications. First, the appropriate message to be communicated must be determined. Second, the message then must be transmitted correctly. Finally, the person receiving the message must understand the message on-site. Communication will be accomplished through direct-voice contact, two-way radio dispatch, and cell phones. The SSO will have a cell phone either on person or in the field vehicle at all times while performing tasks at the Site.

In the event of an emergency, the SSO will contact off-site first responders or transport the victim to the hospital following the evacuation/hospital route found in this SHSP. If victim is in distress, 911 can be called immediately by the individual who discovers the emergency. Outside medical assistance should be requested if any of the following conditions occur.

- Cardiac Arrest
- Chest Pain
- Breathing Difficulty
- Burns (2nd or 3rd degree over 10 percent of the body or about the face or neck)
• Diabetic Emergency
• Drug Overdose
• Hypertension
• Multiple Trauma
• Seizure
• Smoke, Heat or Toxic Gas Inhalation
• Uncontrollable Bleeding

Emergency eye wash bottles will be kept in field vehicles in case of any eye emergencies requiring immediate flushing of the eyes to prevent permanent damage to the person’s sight. If outside assistance is required, immediately dial 911. Call from a safe area. The following information should be given:

• Inform the dispatcher of the emergency
• Identify yourself
• Indicate if someone is injured
• Describe how to get to the area of emergency

After making the call, evacuate victims to safe area if they can be moved and wait to meet the responders.

**EMERGENCY PROCEDURES**

**INJURY**

• All Site personnel shall assemble at the decontamination line.
• The SSO shall evaluate the nature of injury and contact outside emergency services if needed.
• Move victim to contamination reduction zone if can be moved.
• Perform emergency decontamination procedures (section below) on victim.
• Transport victim to hospital if needed or inform outside emergency personnel of situation and designated medical facility.
• No persons shall re-enter the Exclusion Zone until the cause of the injury (or symptoms) is determined.
• Perform an accident investigation using Attachment B (Incident Report Sheet).

**DECONTAMINATION DURING MEDICAL EMERGENCIES**

If emergency life-saving first aid and/or medical treatment are required, decontamination procedures may be limited or omitted. If the contamination does not present a hazard to the rescue personnel, life-saving care may be instituted immediately. If contamination will present a risk to rescue personnel, minimal decontamination should be performed to allow initiation of aid.

If contamination presents a significant risk to rescue personnel, then decontamination will need to be performed until the contamination is no longer a risk.

Medical assistance personnel will be notified before transporting the victim if the victim may be contaminated. Assurance must be made that the medical personnel at the receiving area are able and willing to handle a victim who is contaminated. Site personnel will accompany contaminated victim to the medical facility to advice on matters involving decontamination. A copy of this SHSP, including safety data sheets (SDS), if known, will be brought along with the victim.
Heat-related illnesses range from heat fatigue to heat stroke. Heat stroke requires prompt treatment to prevent irreversible damage or death. Protective clothing must be promptly removed. Less serious forms of heat stress also require prompt attention. Unless the victim is obviously contaminated, decontamination may be omitted or minimized and treatment should begin immediately.

**FIRE/EXPLOSION**

If fire or explosions occur in the Assessment Area, the following actions will be performed:

- Any personnel who discover a fire should immediately notify 911 to request assistance.
- On-site personnel, under the direction of the SSO, will attempt to control or extinguish fire with a fire extinguisher, if possible.
- A 10-second air horn blast shall be sounded.
- All Site personnel not involved with fighting the fire shall assemble at the decontamination line.
- Evacuation of the affected area may be necessary in case of major fire or explosion. All personnel will be familiar with excavation procedures and means of exit from their work areas.
- Emergency Response officials will determine the appropriate actions for off-site response actions.

**UNKNOWN INTACT DRUMS**

It is not anticipated that unknown intact drums will be encountered during the assessment activities, however, if encountered; the following steps will be performed.

- The drum will first be inspected from the surface by the SSO. The SSO will be looking for the following items:
  - Symbols, words or other marks on the drum indicating that its contents are hazardous (e.g., radioactive, explosive, corrosive, toxic or flammable);
  - Symbols, words or other marks on the drum indicating that it contains discarded laboratory chemicals, reagents, or potentially dangerous materials in small volume individual containers;
  - Evidence of deterioration such as corrosion, rust, and leaks;
  - Evidence that the drum is under pressure such as swelling and bulging; and
  - Drum type and drum lid.
- After surface inspection of the drum, investigative activities will cease, and the drum will remain intact.

**SPILL/RELEASE**

If a spill or release occurs, the following steps will be performed:

- Report it immediately to the SSO;
- All personnel shall then re-locate upwind and upgradient of the spill to a safe distance (e.g., 1000 feet);
- SSO will assess the spill and inform the drilling contractor to put absorbent material down to try to contain the spill if possible;
• If spill or release cannot be contained and/or cannot be safely characterized, a 10-second blast shall be sounded and all personnel shall be evacuated immediately to the decontamination line;
• Then a safe distance away, upwind and upgradient of spill;
• SSO will contact the Site hazardous material spill response contractor and inform them about the spill/release and to coordinate spill cleanup; and
• The SSO will contact the Washington County emergency response personnel and the Wisconsin Department of Natural Resources.

The SSO will coordinate with the spill release contractor and determine through the SSO’s/spill contractor’s professional opinion if there is a threat to the neighboring community. Should the neighboring community require evacuation; the SSO will contact the local authorities, inform them of the situation, and ask that they contact the affected receptors.

ADVERSE WEATHER CONDITIONS

If the SSO is notified of adverse weather conditions, the following steps shall be performed.

• The SSO will determine if work can continue without endangering the health and safety of the field workers. The SSO will monitor the weather during the a.m. and p.m. hours and will document it in the field logbook. Some of the items to be considered before determining the continuance of work are:
  − Potential for heat stress and heat related injuries;
  − Potential for cold stress and frostbite related injuries;
  − Dangerous weather related working conditions (high winds);
  − Limited visibility;
  − Potential for electrical storms/lightning. No activities will be permitted during electrical storms;
  − Tornado watches and warnings. No activities will be permitted during a tornado warning; and
  − Winter weather watches and warnings. No activities will be permitted during a snow storm.

In the event of a weather emergency:

• Take appropriate cover in either nearby buildings or vehicles depending on the emergency.
• Work will cease until the conditions clear up and all watches/warnings are lifted.

GENERAL SITE EVACUATION PROCEDURES

Exit exclusion zone, contaminant reduction zone, and support zone. Contact emergency services (911) if necessary.

First Aid procedures for a variety of situations are included in Attachment D.
13.0 EMERGENCY REFERENCES

EMERGENCY RESOURCES

* Ambulance 911
* Hospital Emergency Center 911
* Hospital Life Line NA
* Hospital Poison Center NA
* Local Police 911
* County Sheriff 911
* State Police 911
* Fire Department 911
* Explosives Disposal Unit NA
* Radio Channel NA

OTHER EMERGENCY CONTACTS

* Stantec Office (800) 880-4700
* Client (Washington County) (262) 335-4445
* Village of Germantown (262) 253-7780
* National Response Center (800) 424-8802
* WI Emergency Government (800) 943-0003

Note: Incident reports are provided in Attachment B.
14.0 EVACUATION/HOSPITAL ROUTES

From Main Street to Community Memorial Hospital of Menomonee Falls:
DRIVING DIRECTIONS FROM MAIN STREET TO COMMUNITY MEMORIAL HOSPITAL OF MENOMONEE FALLS, N112 W15415 MEQUON ROAD, MENOMONEE FALLS, WISCONSIN

Start out going east on Main St toward Westminster Ct.

Then 0.65 miles

Turn slight right onto WI-145/Fond du Lac Ave.

WI-145 is 0.2 miles past Church St.

Then 0.12 miles

Turn right onto WI-145/Pilgrim Rd.

If you are on Fond du Lac Ave and reach Gettysburg Dr you've gone a little too far.

Then 0.43 miles

Turn left onto Mequon Rd/WI-145/WI-167.

Mequon Rd is 0.1 miles past Francese Dr.

If you reach Lyle Ln you've gone about 0.3 miles too far.

Then 0.12 miles

N112W15415 MEQUON RD.

If you reach Montgomery Dr you've gone about 0.1 miles too far.
## 15.0 SITE-SPECIFIC HEALTH AND SAFETY PLAN REVIEW

This document shall be signed by Site personnel prior to their first Site visit.

“I have read and understand the contents of this Site Safety Plan and will comply with its provisions, requirements, and restrictions.”

<table>
<thead>
<tr>
<th>NAME (PRINT)</th>
<th>SIGNATURE</th>
<th>DATE</th>
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<tbody>
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</tbody>
</table>
16.0 SITE-SPECIFIC HEALTH AND SAFETY PLAN FOLLOW-UP REPORT

Project Site: ________________________________________________________

1. Was the Site Health and Safety Plan followed?
   □ Yes    □ No

2. If no, explain all changes to the Site Health and Safety Plan:
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

3. Reason for changes:
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

4. Report prepared by: ___________________________ Date: ______________

5. Report reviewed by: ___________________________ Date: ______________
17.0 ADDENDUM TO SITE-SPECIFIC HEALTH AND SAFETY PLAN

Use this page to add additional Site data or describe any special circumstances that have become apparent after the original preparation of this Site Health and Safety Plan. Include any changes in Site conditions, PPE and monitoring modifications and other items as appropriate.
ATTACHMENT A – MEDICAL DATA SUMMARY FORMS
MEDICAL DATA SUMMARY FORM:

This form shall be completed by Stantec personnel prior to commencement of activities of the Site. This form shall be kept at the project Site for the duration of project activities. This form must be delivered to the attending physician when medical assistance is required.

Site: 
Location: 
Name: 
Address: 
Home Phone: 
Height:  Weight:  Age:  Sex:  
In case of emergency contact: 
Address: 
Phone (____)  
Allergies: 
Recent Illnesses: 
Previous exposure to hazardous substances?  Yes  No 
Current medication: 
Medical restrictions: 
Name of personal physician: 
Address: 
Phone (____)  
Date Completed: 

Stantec
Project Number 193703514
ATTACHMENT B – INCIDENT REPORT SHEETS
INCIDENT REPORT

Project #:_____________________

Site: __________________________________________________________________________

Location: __________________________________________________________________________

Name of Affected Individual: __________________________________________________________________________

Address: __________________________________________________________________________

Age: ______   Sex: ______

Description of Incident: __________________________________________________________________________

Date of Incident: __________   Time of Incident: __________

Was Medical Care Required?  ☐ YES  ☐ NO

Immediate Family Notified?  ☐ YES  ☐ NO

If Yes, Describe Care Received (attach medical record): __________________________________________________________________________

Date Care Received: __________   Location: __________________________________________________________________________

Future Preventative Measures/Corrective Action Taken: __________________________________________________________________________

______________________________________________________________________________

______________________________________________________________________________

Report Prepared By: __________   Date: __________

Report Reviewed By: __________   Date: __________
ATTACHMENT C – PERSONAL PROTECTIVE EQUIPMENT
PERSONAL PROTECTIVE EQUIPMENT (PPE)

1. Level A protection should be selected when the highest level of respiratory, skin, eye, and mucous membrane protection is needed.
   - Positive-pressure, self-contained, breathing apparatus (MSHA/NIOSH approved) (REQUIRED)
   - Fully encapsulated, chemical resistant suit (REQUIRED)
   - Chemical-resistant inner and outer gloves (REQUIRED)
   - Chemical-resistant boots with steel toe and shank (REQUIRED)
   - Chemical-resistant coveralls
   - Two-way radio communication (REQUIRED)

2. Level B protection should be selected when the highest level of respiratory protection is needed, but with a lesser degree of skin and eye protection.
   - Positive-pressure, self-contained, breathing apparatus (MSHA/NIOSH approved) (REQUIRED)
   - Chemical-resistant clothing (coveralls, hooded two-piece, chemical resistant splash suit, or disposable chemical-resistant coveralls) (REQUIRED)
   - Coveralls (under splash suit)
   - Chemical-resistant inner and outer gloves (REQUIRED)
   - Chemical-resistant boots with steel toe and shank (REQUIRED)
   - Two-way radio communication
   - Hard hat (REQUIRED)

3. Level C protection should be selected when the type and concentration of hazardous airborne substance is known, the criteria for using air-purifying respirators is met, and skin and eye exposure is unlikely. Monitoring of the air must be performed to comply with OSHA regulations and to ensure respirator effectiveness.
   - Full face, air purifying respirator (MSHA/NIOSH approved) with appropriate cartridges (REQUIRED)
   - Chemical-resistant clothing (coveralls, hooded two-piece, chemical resistant splash suit, or disposable chemical-resistant coveralls) (REQUIRED)
   - Chemical-resistant inner and outer gloves (REQUIRED)
   - Chemical-resistant boots with steel toe and shank (REQUIRED)
   - Two-way radio communication
   - Hard hat (REQUIRED)
   - Escape respirator

4. Level D is primarily a work uniform. It shall not be worn on-site where respiratory or skin hazards exist.
   - Protective coveralls and protective gloves (REQUIRED)
   - Boots with steel toe and shank (REQUIRED)
   - Hard hat (REQUIRED, when applicable)
   - Safety glasses (REQUIRED)
   - Safety vest (REQUIRED)
ATTACHMENT D – FIRST AID
FIRST AID

BITES

**ANIMAL Bites**
Thoroughly wash the wound with soap and water, flush the area with running water, and apply a sterile dressing. Immobilize affected part until the victim has been attended by a physician. See that the animal is kept alive and in quarantine. Obtain the name and address of the owner of the animal.

**INSECT Bites:**
Remove “stinger” without squeezing if present; keep affected part below the level of the heart; and apply ice bag. For minor bites and stings, apply soothing lotions such as calamine.

BURNS AND SCALDS

**MINOR BURNS:**
DO NOT APPLY VASELINE OR GREASE OF ANY KIND. If there are no areas of open skin, apply cold water until pain subsides; cover with a dry, sterile dressing. Do not break blisters or remove tissue. Seek medical attention.

**SEVERE BURNS:**
Do not remove adhered particles of clothing. Do not apply ice or immerse in water. Do not apply any ointments or grease. Cover burns with thick, sterile dressings. Keep burned feet or legs elevated if possible. May need to treat for shock.

**CHEMICAL BURNS:**
Wash away the chemical soaked clothing with large amounts of water. Remove victim’s chemical-soaked clothing. If dry lime, brush away before flushing. Apply sterile dressing and seek medical attention.

CRAMPS

**SYMPTOMS:**
Muscle cramps in abdomen and extremities. Heat exhaustion may also be present.

**TREATMENT:**
Same as for heat exhaustion.

CUTS
Apply pressure with sterile gauze dressing and elevate the area until bleeding stops. Apply bandage and seek medical attention.

EYES

**FOREIGN OBJECTS:**
Keep the victim from rubbing eyes and flush the eye with water. If flushing fails to remove the object, apply a dry protective dressing to both eyes and seek medical attention.

**CHEMICALS:**
Flood the eye thoroughly with water for 15 minutes. Cover the eye with a dry sterile pad and seek medical attention.
FAINTING
Keep the victim lying down. Loosen tight clothing. If victim vomits, roll person onto side or turn head to the side. Maintain an open airway. Bathe the person’s face gently with cool water. Unless recovery is prompt, seek medical attention.

FRACTURES
Deformity of an injured part usually means a fracture. If a fracture is suspected, splint the part. DO NOT ATTEMPT TO MOVE THE VICTIM. Seek medical attention immediately.

FROSTBITE
**Symptoms:**
Just before frostbite occurs, skin may be flushed then changes to white or grayish-yellow. Pain may be felt early; then may subside. Blisters may appear; affected part feels very cold and/or may be numb.

**Treatment:**
Bring victim indoors, cover the frozen area; provide extra clothing and blankets. Re-warm frozen area quickly by immersion in warm water—NOT HOT WATER. DO NOT RUB THE PART. Seek medical attention.

HEAT EXHAUSTION
Caused by exposure to heat, either sun or indoor.

**Symptoms:**
Near-normal body temperature; pale and clammy skin; profuse sweating, tiredness, weakness, headache, perhaps cramps, nausea, dizziness, and possible fainting.

**Treatment:**
Keep victim in lying position and raise feet. Loosen clothing, apply cool wet cloths. If conscious, give sips of water. Seek medical attention immediately.

SUNSTROKE
**Symptoms:**
High body temperature; hot, red, and dry skin; rapid pulse. Victim may be unconscious.

**Treatment:**
Keep victim in lying position with head elevated. Remove clothing and repeatedly sponge the bare skin with cool water. Seek medical attention immediately.

POISONING
Call the Poison Control Center for instruction on immediate care. If victim becomes unconscious, keep the airway open. If breathing stops, begin rescue breathing. Call Emergency Medical Services (EMS) immediately.

POISON IVY
Remove contaminated clothing. Wash all exposed areas thoroughly with soap and water. If rash is mild, apply calamine lotion or other soothing skin lotion. If a severe reaction occurs, seek medical attention.

PUNCTURE WOUNDS
If puncture wounds is deeper than skin surface, seek medical attention. Serious infection can occur unless proper treatment is received.
SPRAINS
Elevate injured part and apply ice bag or cold packs. Do not soak in hot water. Immobilize affected part and seek medical attention.

UNCONSCIOUSNESS
Never attempt to give anything by mouth. Keep victim lying flat, maintain open airway. If victim is not breathing, perform rescuer breathing and call EMS immediately.
Material Name: Diesel Fuel, All Types

Synonyms: Ultra Low Sulfur Diesel; Low Sulfur Diesel; No. 2 Diesel; Motor Vehicle Diesel Fuel; Non-Road Diesel Fuel; Locomotive/Marine Diesel Fuel

*** Section 1 - Product and Company Identification ***

Manufacturer Information
Hess Corporation
1 Hess Plaza
Woodbridge, NJ 07095-0961
Phone: 732-750-6000 Corporate EHS
Emergency # 800-424-9300 CHEMTREC
www.hess.com (Environment, Health, Safety Internet Website)

*** Section 2 - Hazards Identification ***

GHS Classification:
- Flammable Liquids - Category 3
- Skin Corrosion/Irritation – Category 2
- Germ Cell Mutagenicity – Category 2
- Carcinogenicity - Category 2
- Specific Target Organ Toxicity (Single Exposure) - Category 3 (respiratory irritation, narcosis)
- Aspiration Hazard – Category 1
- Hazardous to the Aquatic Environment, Acute Hazard – Category 3

GHS LABEL ELEMENTS
Symbol(s)

Signal Word
DANGER

Hazard Statements
- Flammable liquid and vapor.
- Causes skin irritation.
- Suspected of causing genetic defects.
- Suspected of causing cancer.
- May cause respiratory irritation.
- May cause drowsiness or dizziness.
- May be fatal if swallowed and enters airways.
- Harmful to aquatic life.

Precautionary Statements
Prevention
- Keep away from heat/sparks/open flames/hot surfaces. No smoking
- Keep container tightly closed.
- Ground/bond container and receiving equipment.
Use explosion-proof electrical/ventilating/lighting/equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Wear protective gloves/protective clothing/eye protection/face protection.
Wash hands and forearms thoroughly after handling.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Avoid breathing fume/mist/vapours/spray.

Response
In case of fire: Use water spray, fog or foam to extinguish.
IF ON SKIN (or hair): Wash with plenty of soap and water. Remove/Take off immediately all contaminated clothing and wash it before reuse. If skin irritation occurs: Get medical advice/attention.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell.
If swallowed: Immediately call a poison center or doctor. Do NOT induce vomiting.
IF exposed or concerned: Get medical advice/attention.

Storage
Store in a well-ventilated place. Keep cool.
Keep container tightly closed.
Store locked up.

Disposal
Dispose of contents/container in accordance with local/regional/national/international regulations.

### Section 3 - Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Component</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>68476-34-6</td>
<td>Fuels, diesel, no. 2</td>
<td>100</td>
</tr>
<tr>
<td>91-20-3</td>
<td>Naphthalene</td>
<td>&lt;0.1</td>
</tr>
</tbody>
</table>

A complex mixture of hydrocarbons with carbon numbers in the range C9 and higher.

### Section 4 - First Aid Measures

**First Aid: Eyes**
In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 min. Hold eyelids open to ensure adequate flushing. Seek medical attention.

**First Aid: Skin**
Remove contaminated clothing. Wash contaminated areas thoroughly with soap and water or with waterless hand cleanser. Obtain medical attention if irritation or redness develops. Thermal burns require immediate medical attention depending on the severity and the area of the body burned.

**First Aid: Ingestion**
DO NOT INDUCE VOMITING. Do not give liquids. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Monitor for breathing difficulties. Small amounts of material which enter the mouth should be rinsed out until the taste is dissipated.
First Aid: Inhalation
Remove person to fresh air. If person is not breathing, provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

*** Section 5 - Fire Fighting Measures ***

General Fire Hazards
See Section 9 for Flammability Properties.
Vapors may be ignited rapidly when exposed to heat, spark, open flame or other source of ignition. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

Hazardous Combustion Products
Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).

Extinguishing Media
SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, CO2, water spray, fire fighting foam, and other gaseous agents.

LARGE FIRES: Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

Unsuitable Extinguishing Media
None

Fire Fighting Equipment/Instructions
Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other fire fighting equipment. Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing. Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam.

*** Section 6 - Accidental Release Measures ***

Recovery and Neutralization
Carefully contain and stop the source of the spill, if safe to do so.

Materials and Methods for Clean-Up
Take up with sand or other oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal. Caution, flammable vapors may accumulate in closed containers.

Emergency Measures
Evacuate nonessential personnel and remove or secure all ignition sources. Consider wind direction; stay upwind and uphill, if possible. Evaluate the direction of product travel, diking, sewers, etc. to confirm spill areas. Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact.
Personal Precautions and Protective Equipment
Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).

Environmental Precautions
Protect bodies of water by diking, absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of fire fighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection.

Prevention of Secondary Hazards
None

*** Section 7 - Handling and Storage ***

Handling Procedures
Handle as a combustible liquid. Keep away from heat, sparks, excessive temperatures and open flame! No smoking or open flame in storage, use or handling areas. Bond and ground containers during product transfer to reduce the possibility of static-initiated fire or explosion.

Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil) is loaded into tanks previously containing low flash point products (such as this product) - see API Publication 2003, "Protection Against Ignitions Arising Out Of Static, Lightning and Stray Currents."

Storage Procedures
Keep away from flame, sparks, excessive temperatures and open flame. Use approved vented containers. Keep containers closed and clearly labeled. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition.

Store in a well-ventilated area. This storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". Avoid storage near incompatible materials. The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks."

Incompatibilities
Keep away from strong oxidizers.

*** Section 8 - Exposure Controls / Personal Protection ***

Component Exposure Limits
Fuels, diesel, no. 2 (68476-34-6)
AGCIH: 100 mg/m³ TWA (inhalable fraction and vapor, as total hydrocarbons, listed under Diesel fuel)
Skin - potential significant contribution to overall exposure by the cutaneous route (listed under Diesel fuel)
Naphthalene (91-20-3)

ACGIH: 10 ppm TWA
15 ppm STEL
Skin - potential significant contribution to overall exposure by the cutaneous route
OSHA: 10 ppm TWA; 50 mg/m3 TWA
NIOSH: 10 ppm TWA; 50 mg/m3 TWA
15 ppm STEL; 75 mg/m3 STEL

Engineering Measures
Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

Personal Protective Equipment: Respiratory
A NIOSH/MSHA-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited.

Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.

Personal Protective Equipment: Hands
Gloves constructed of nitrile, neoprene, or PVC are recommended.

Personal Protective Equipment: Eyes
Safety glasses or goggles are recommended where there is a possibility of splashing or spraying.

Personal Protective Equipment: Skin and Body
Chemical protective clothing such as of E.I. DuPont TyChem®, Saranex® or equivalent recommended based on degree of exposure. Note: The resistance of specific material may vary from product to product as well as with degree of exposure. Consult manufacturer specifications for further information.

*** Section 9 - Physical & Chemical Properties ***

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<thead>
<tr>
<th>Property</th>
<th>Value</th>
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<tbody>
<tr>
<td>Appearance</td>
<td>Clear, straw-yellow.</td>
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<tr>
<td>Physical State</td>
<td>Liquid</td>
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<tr>
<td>Vapor Pressure</td>
<td>0.009 psia @ 70 °F (21 °C)</td>
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<tr>
<td>Boiling Point</td>
<td>320 to 690 °F (160 to 366 °C)</td>
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<tr>
<td>Solubility (H2O):</td>
<td>Negligible</td>
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<tr>
<td>Evaporation Rate</td>
<td>Slow; varies with conditions</td>
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<tr>
<td>Percent Volatile</td>
<td>100%</td>
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<tr>
<td>Flash Point</td>
<td>&gt;125 °F (&gt;52 °C) minimum</td>
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<tr>
<td>Upper Flammability Limit (UFL):</td>
<td>7.5</td>
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<tr>
<td>Lower Flammability Limit (LFL):</td>
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<tr>
<td>Burning Rate</td>
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<tr>
<td>Odor</td>
<td>Mild, petroleum distillate odor</td>
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<td>Vapor Density</td>
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<td>Specific Gravity</td>
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<tr>
<td>Flash Point Method</td>
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<tr>
<td>Auto Ignition</td>
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</table>

*** Section 10 - Chemical Stability & Reactivity Information ***

Chemical Stability
This is a stable material.

Hazardous Reaction Potential
Will not occur.
Conditions to Avoid
Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources.

Incompatible Products
Keep away from strong oxidizers.

Hazardous Decomposition Products
Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).

*** Section 11 - Toxicological Information ***

Acute Toxicity

A: General Product Information
Harmful if swallowed.

B: Component Analysis - LD50/LC50
Naphthalene (91-20-3)
Inhalation LC50 Rat >340 mg/m3 1 h; Oral LD50 Rat 490 mg/kg; Dermal LD50 Rat >2500 mg/kg; Dermal LD50 Rabbit >20 g/kg

Potential Health Effects: Skin Corrosion Property/Stimulativeness
Practically non-toxic if absorbed following acute (single) exposure. May cause skin irritation with prolonged or repeated contact. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are repeatedly exposed.

Potential Health Effects: Eye Critical Damage/ Stimulativeness
Contact with eyes may cause mild irritation.

Potential Health Effects: Ingestion
Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.

Potential Health Effects: Inhalation
Excessive exposure may cause irritations to the nose, throat, lungs and respiratory tract. Central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.

WARNING: the burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

Respiratory Organs Sensitization/Skin Sensitization
This product is not reported to have any skin sensitization effects.

Generative Cell Mutagenicity
This material has been positive in a mutagenicity study.

Carcinogenicity
A: General Product Information
Suspected of causing cancer.
Studies have shown that similar products produce skin tumors in laboratory animals following repeated applications without washing or removal. The significance of this finding to human exposure has not been determined. Other studies with active skin carcinogens have shown that washing the animal’s skin with soap and water between applications reduced tumor formation.

B: Component Carcinogenicity

Fuels, diesel, no. 2 (68476-34-6)
ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans (listed under Diesel fuel)

Naphthalene (91-20-3)
ACGIH: A4 - Not Classifiable as a Human Carcinogen
NTP: Reasonably Anticipated To Be A Human Carcinogen (Possible Select Carcinogen)
IARC: Monograph 82 [2002] (Group 2B (possibly carcinogenic to humans))

Reproductive Toxicity
This product is not reported to have any reproductive toxicity effects.

Specified Target Organ General Toxicity: Single Exposure
This product is not reported to have any specific target organ general toxicity single exposure effects.

Specified Target Organ General Toxicity: Repeated Exposure
This product is not reported to have any specific target organ general toxicity repeat exposure effects.

Aspiration Respiratory Organs Hazard
The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.

*** Section 12 - Ecological Information ***

Ecotoxicity
A: General Product Information
Keep out of sewers, drainage areas and waterways. Report spills and releases, as applicable, under Federal and State regulations.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

Fuels, diesel, no. 2 (68476-34-6)

Test & Species  Conditions
96 Hr LC50 Pimephales promelas 35 mg/L [flow-through]

Naphthalene (91-20-3)

Test & Species  Conditions
96 Hr LC50 Pimephales promelas 5.74-6.44 mg/L [flow-through]
96 Hr LC50 Oncorhynchus mykiss 1.6 mg/L [flow-through]
96 Hr LC50 Oncorhynchus mykiss 0.91-2.82 mg/L [static]
96 Hr LC50 Pimephales promelas 1.99 mg/L [static]
### Persistence/Degradability
No information available.

### Bioaccumulation
No information available.

### Mobility in Soil
No information available.

---

#### *** Section 13 - Disposal Considerations ***

**Waste Disposal Instructions**
See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations.

**Disposal of Contaminated Containers or Packaging**
Dispose of contents/container in accordance with local/regional/national/international regulations.

---

#### *** Section 14 - Transportation Information ***

**DOT Information**
- **Shipping Name:** Diesel Fuel
- **NA #:** 1993  **Hazard Class:** 3  **Packing Group:** III
- **Placard:**

---

#### *** Section 15 - Regulatory Information ***

**Regulatory Information**

**Component Analysis**
This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

- **Naphthalene (91-20-3)**
  - **CERCLA:** 100 lb final RQ; 45.4 kg final RQ

**SARA Section 311/312 – Hazard Classes**

<table>
<thead>
<tr>
<th>Acute Health</th>
<th>Chronic Health</th>
<th>Fire</th>
<th>Sudden Release of Pressure</th>
<th>Reactive</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>X</td>
<td>X</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>
SARA SECTION 313 - SUPPLIER NOTIFICATION
This product may contain listed chemicals below the de minimis levels which therefore are not subject to the supplier notification requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372. If you may be required to report releases of chemicals listed in 40 CFR 372.28, you may contact Hess Corporate Safety if you require additional information regarding this product.

State Regulations

Component Analysis - State
The following components appear on one or more of the following state hazardous substances lists:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>CA</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
<th>RI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuels, diesel, no. 2</td>
<td>68476-34-6</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>91-20-3</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer.

Component Analysis - WHMIS IDL
No components are listed in the WHMIS IDL.

Additional Regulatory Information

Component Analysis - Inventory

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>TSCA</th>
<th>CAN</th>
<th>EEC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuels, diesel, no. 2</td>
<td>68476-34-6</td>
<td>Yes</td>
<td>DSL</td>
<td>EINECS</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>91-20-3</td>
<td>Yes</td>
<td>DSL</td>
<td>EINECS</td>
</tr>
</tbody>
</table>

*** Section 16 - Other Information ***

NFPA® Hazard Rating
- Health: 1
- Fire: 2
- Reactivity: 0

HMIS® Hazard Rating
- Health: 1* Slight
- Fire: 2 Moderate
- Physical: 0 Minimal
  *Chronic
Safety Data Sheet

Material Name: Diesel Fuel, All Types

Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists; ADG = Australian Code for the Transport of Dangerous Goods by Road and Rail; ADR/RID = European Agreement of Dangerous Goods by Road/Rail; AS = Standards Australia; DFG = Deutsche Forschungsgemeinschaft; DOT = Department of Transportation; DSL = Domestic Substances List; EEC = European Economic Community; EINECS = European Inventory of Existing Commercial Chemical Substances; ELINCS = European List of Notified Chemical Substances; EU = European Union; HMIS = Hazardous Materials Identification System; IARC = International Agency for Research on Cancer; IMO = International Maritime Organization; IATA = International Air Transport Association; MAK = Maximum Concentration Value in the Workplace; NDSL = Non-Domestic Substances List; NFPA = National Fire Protection Association; NOHSC = National Occupational Health & Safety Commission; NTP = National Toxicology Program; STEL = Short-term Exposure Limit; TDG = Transportation of Dangerous Goods; TLV = Threshold Limit Value; TSCA = Toxic Substances Control Act; TWA = Time Weighted Average

Literature References
None

Other Information

Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgment.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.

End of Sheet
### EMERGENCY OVERVIEW

**DANGER!**

EXTREMELY FLAMMABLE - EYE AND MUCOUS MEMBRANE IRRITANT
- EFFECTS CENTRAL NERVOUS SYSTEM - HARMFUL OR FATAL IF SWALLOWED - ASPIRATION HAZARD

High fire hazard. Keep away from heat, spark, open flame, and other ignition sources.

If ingested, do NOT induce vomiting, as this may cause chemical pneumonia (fluid in the lungs). Contact may cause eye, skin and mucous membrane irritation. Harmful if absorbed through the skin. Avoid prolonged breathing of vapors or mists. Inhalation may cause irritation, anesthetic effects (dizziness, nausea, headache, intoxication), and respiratory system effects.

Long-term exposure may cause effects to specific organs, such as to the liver, kidneys, blood, nervous system, and skin. Contains benzene, which can cause blood disease, including anemia and leukemia.

### 1. CHEMICAL PRODUCT and COMPANY INFORMATION

**Hess Corporation**
1 Hess Plaza
Woodbridge, NJ 07095-0961

**EMERGENCY TELEPHONE NUMBER (24 hrs):** CHEMTREC (800)424-9300
**COMPANY CONTACT (business hours):** Corporate Safety (732)750-6000
**MSDS (Environment, Health, Safety) Internet Website** www.hess.com

**SYNONYMS:** Hess Conventional (Oxygenated and Non-oxygenated) Gasoline; Reformulated Gasoline (RFG); Reformulated Gasoline Blendstock for Oxygenate Blending (RBOB); Unleaded Motor or Automotive Gasoline

See Section 16 for abbreviations and acronyms.

### 2. COMPOSITION and INFORMATION ON INGREDIENTS *

<table>
<thead>
<tr>
<th>INGREDIENT NAME (CAS No.)</th>
<th>CONCENTRATION PERCENT BY WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline (86290-81-5)</td>
<td>100</td>
</tr>
<tr>
<td>Benzene (71-43-2)</td>
<td>0.1 - 4.9 (0.1 - 1.3 reformulated gasoline)</td>
</tr>
<tr>
<td>n-Butane (106-97-8)</td>
<td>&lt; 10</td>
</tr>
<tr>
<td>Ethyl Alcohol (Ethanol) (64-17-5)</td>
<td>0 - 10</td>
</tr>
<tr>
<td>Ethyl benzene (100-41-4)</td>
<td>&lt; 3</td>
</tr>
<tr>
<td>n-Hexane (110-54-3)</td>
<td>0.5 to 4</td>
</tr>
<tr>
<td>Methyl-tertiary butyl ether (MTBE) (1634-04-4)</td>
<td>0 to 15.0</td>
</tr>
<tr>
<td>Tertiary-amyl methyl ether (TAME) (994-05-8)</td>
<td>0 to 17.2</td>
</tr>
<tr>
<td>Toluene (108-88-3)</td>
<td>1 - 25</td>
</tr>
<tr>
<td>1,2,4- Trimethylbenzene (95-63-6)</td>
<td>&lt; 6</td>
</tr>
<tr>
<td>Xylene, mixed isomers (1330-20-7)</td>
<td>1 - 15</td>
</tr>
</tbody>
</table>

A complex blend of petroleum-derived normal and branched-chain alkane, cycloalkane, alkene, and aromatic hydrocarbons. May contain antioxidant and multifunctional additives. Non-oxygenated Conventional Gasoline and RBOB do not have oxygenates (Ethanol or MTBE and/or TAME).
Oxygenated Conventional and Reformulated Gasoline will have oxygenates for octane enhancement or as legally required.

### 3. HAZARDS IDENTIFICATION

**EYES**
Moderate irritant. Contact with liquid or vapor may cause irritation.

**SKIN**
Practically non-toxic if absorbed following acute (single) exposure. May cause skin irritation with prolonged or repeated contact. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are exposed repeatedly.

**INGESTION**
The major health threat of ingestion occurs from the danger of aspiration (breathing) of liquid drops into the lungs, particularly from vomiting. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.

Ingestion may cause gastrointestinal disturbances, including irritation, nausea, vomiting and diarrhea, and central nervous system (brain) effects similar to alcohol intoxication. In severe cases, tremors, convulsions, loss of consciousness, coma, respiratory arrest, and death may occur.

**INHALATION**
Excessive exposure may cause irritations to the nose, throat, lungs and respiratory tract. Central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.

**WARNING**: the burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

**CHRONIC EFFECTS and CARCINOGENICITY**
Contains benzene, a regulated human carcinogen. Benzene has the potential to cause anemia and other blood diseases, including leukemia, after repeated and prolonged exposure. Exposure to light hydrocarbons in the same boiling range as this product has been associated in animal studies with systemic toxicity. See also Section 11 - Toxicological Information.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE**
Irritation from skin exposure may aggravate existing open wounds, skin disorders, and dermatitis (rash). Chronic respiratory disease, liver or kidney dysfunction, or pre-existing central nervous system disorders may be aggravated by exposure.

### 4. FIRST AID MEASURES

**EYES**
In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 min. Hold eyelids open to ensure adequate flushing. Seek medical attention.

**SKIN**
Remove contaminated clothing. Wash contaminated areas thoroughly with soap and water or waterless hand cleanser. Obtain medical attention if irritation or redness develops.

**INGESTION**
DO NOT INDUCE VOMITING. Do not give liquids. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Small amounts of material which enter the mouth should be rinsed out until the taste is dissipated.

INHALATION
Remove person to fresh air. If person is not breathing, ensure an open airway and provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:
FLASH POINT: -45 °F (-43°C)
AUTOIGNITION TEMPERATURE: highly variable; > 530 °F (>280 °C)
OSHA/NFPA FLAMMABILITY CLASS: 1A (flammable liquid)
LOWER EXPLOSIVE LIMIT (%): 1.4%
UPPER EXPLOSIVE LIMIT (%): 7.6%

FIRE AND EXPLOSION HAZARDS
Vapors may be ignited rapidly when exposed to heat, spark, open flame or other source of ignition. Flowing product may be ignited by self-generated static electricity. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

EXTINGUISHING MEDIA
SMALL FIRES: Any extinguisher suitable for Class B fires, dry chemical, CO2, water spray, fire fighting foam, or Halon.

LARGE FIRES: Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

During certain times of the year and/or in certain geographical locations, gasoline may contain MTBE and/or TAME. Firefighting foam suitable for polar solvents is recommended for fuel with greater than 10% oxygenate concentration - refer to NFPA 11 “Low Expansion Foam - 1994 Edition.”

FIRE FIGHTING INSTRUCTIONS
Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other fire fighting equipment.

Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing.

Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam.

See Section 16 for the NFPA 704 Hazard Rating.
6. ACCIDENTAL RELEASE MEASURES

ACTIVATE FACILITY SPILL CONTINGENCY or EMERGENCY PLAN.

Evacuate nonessential personnel and remove or secure all ignition sources. Consider wind direction; stay upwind and uphill, if possible. Evaluate the direction of product travel, diking, sewers, etc. to confirm spill areas. Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact.

Carefully contain and stop the source of the spill, if safe to do so. Protect bodies of water by diking, absorbents, or absorbent boom, if possible. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of fire fighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection.

Take up with sand or other oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal - caution, flammable vapors may accumulate in closed containers. Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).

7. HANDLING and STORAGE

HANDLING PRECAUTIONS

******USE ONLY AS A MOTOR FUEL******
******DO NOT SIPHON BY MOUTH******

Handle as a flammable liquid. Keep away from heat, sparks, and open flame! Electrical equipment should be approved for classified area. Bond and ground containers during product transfer to reduce the possibility of static-initiated fire or explosion.

Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil) is loaded into tanks previously containing low flash point products (such as this product) - see API Publication 2003, "Protection Against Ignitions Arising Out Of Static, Lightning and Stray Currents.

STORAGE PRECAUTIONS

Keep away from flame, sparks, excessive temperatures and open flame. Use approved vented containers. Keep containers closed and clearly labeled. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition.

Store in a well-ventilated area. This storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". Avoid storage near incompatible materials. The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks".

WORK/HYGIENIC PRACTICES

Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure. Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.
8. EXPOSURE CONTROLS and PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Component (CAS No.)</th>
<th>Source</th>
<th>TWA (ppm)</th>
<th>STEL (ppm)</th>
<th>Exposure Limits</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline (86290-81-5)</td>
<td>ACGIH</td>
<td>300</td>
<td>500</td>
<td>A3</td>
<td></td>
</tr>
<tr>
<td>Benzene (71-43-2)</td>
<td>OSHA</td>
<td>1</td>
<td>5</td>
<td>Carcinogen</td>
<td>A1, skin</td>
</tr>
<tr>
<td></td>
<td>ACGIH</td>
<td>0.5</td>
<td>2.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>USCG</td>
<td>1</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n-Butane (106-97-8)</td>
<td>ACGIH</td>
<td>1000</td>
<td>--</td>
<td>Aliphatic Hydrocarbon Gases Alkane (C1-C4)</td>
<td></td>
</tr>
<tr>
<td>Ethyl Alcohol (ethanol) (64-17-5)</td>
<td>OSHA</td>
<td>1000</td>
<td>--</td>
<td></td>
<td>A4</td>
</tr>
<tr>
<td>Ethyl benzene (100-41-4)</td>
<td>ACGIH</td>
<td>100</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n-Hexane (110-54-3)</td>
<td>OSHA</td>
<td>500</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methy-tertiary butyl ether [MTBE]</td>
<td>ACGIH</td>
<td>50</td>
<td>--</td>
<td>Skin</td>
<td></td>
</tr>
<tr>
<td>(1634-04-4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tertiary-amyl methyl ether [TAME]</td>
<td>ACGIH</td>
<td>50</td>
<td>--</td>
<td>A3</td>
<td></td>
</tr>
<tr>
<td>(994-05-8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toluene (108-86-3)</td>
<td>OSHA</td>
<td>200</td>
<td>--</td>
<td>Ceiling: 300 ppm; Peak: 500 ppm (10 min.)</td>
<td>A4</td>
</tr>
<tr>
<td></td>
<td>ACGIH</td>
<td>20</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,2,4-Trimethylbenzene (95-63-6)</td>
<td>ACGIH</td>
<td>25</td>
<td>--</td>
<td></td>
<td>A4</td>
</tr>
<tr>
<td>Xylene, mixed isomers (1330-20-7)</td>
<td>OSHA</td>
<td>100</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ACGIH</td>
<td>100</td>
<td>150</td>
<td>A4</td>
<td></td>
</tr>
</tbody>
</table>

ENGINEERING CONTROLS
Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

EYE/FACE PROTECTION
Safety glasses or goggles are recommended where there is a possibility of splashing or spraying.

SKIN PROTECTION
Gloves constructed of nitrile or neoprene are recommended. Chemical protective clothing such as that made of E.I. DuPont Tychem®, products or equivalent is recommended based on degree of exposure.

Note: The resistance of specific material may vary from product to product as well as with degree of exposure. Consult manufacturer specifications for further information.

RESPIRATORY PROTECTION
A NIOSH-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited. Refer to OSHA 29 CFR 1910.134, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection and limitations.

Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.

9. PHYSICAL and CHEMICAL PROPERTIES

APPEARANCE
A translucent, straw-colored or light yellow liquid
ODOR
A strong, characteristic aromatic hydrocarbon odor. Oxygenated gasoline with MTBE and/or TAME may have a sweet, ether-like odor and is detectable at a lower concentration than non-oxygenated gasoline.

ODOR THRESHOLD

<table>
<thead>
<tr>
<th></th>
<th>Odor Detection</th>
<th>Odor Recognition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-oxygenated gasoline</td>
<td>0.5 - 0.6 ppm</td>
<td>0.8 - 1.1 ppm</td>
</tr>
<tr>
<td>Gasoline with 15% MTBE</td>
<td>0.2 - 0.3 ppm</td>
<td>0.4 - 0.7 ppm</td>
</tr>
<tr>
<td>Gasoline with 15% TAME</td>
<td>0.1 ppm</td>
<td>0.2 ppm</td>
</tr>
</tbody>
</table>

BASIC PHYSICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiling Range</td>
<td>85 to 437 °F (39 to 200 °C)</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>6.4 - 15 RVP @ 100 °F (38 °C) (275-475 mm Hg @ 68 °F (20 °C)</td>
</tr>
<tr>
<td>Vapor Density (air = 1)</td>
<td>AP 3 to 4</td>
</tr>
<tr>
<td>Specific Gravity (H₂O = 1)</td>
<td>0.70 – 0.78</td>
</tr>
<tr>
<td>Evaporation Rate (n-butyl acetate = 1)</td>
<td>10-11</td>
</tr>
<tr>
<td>Percent Volatiles</td>
<td>100 %</td>
</tr>
<tr>
<td>Solubility (H₂O)</td>
<td>Non-oxygenated gasoline - negligible (&lt; 0.1% @ 77 °F). Gasoline with 15% MTBE - slight (0.1 - 3% @ 77 °F); ethanol is readily soluble in water</td>
</tr>
</tbody>
</table>

10. STABILITY and REACTIVITY

STABILITY: Stable. Hazardous polymerization will not occur.

CONDITIONS TO AVOID
Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources

INCOMPATIBLE MATERIALS
Keep away from strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS
Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke). Contact with nitric and sulfuric acids will form nitrocresols that can decompose violently.

11. TOXICOLOGICAL PROPERTIES

ACUTE TOXICITY
Acute Dermal LD50 (rabbits): > 5 ml/kg
Primary dermal irritation (rabbits): slightly irritating
Guinea pig sensitization: negative

Acute Oral LD50 (rat): 18.75 ml/kg
Draize eye irritation (rabbits): non-irritating

CHRONIC EFFECTS AND CARCINOGENICITY
Carcinogenicity: OSHA: NO IARC: YES - 2B NTP: NO ACGIH: YES (A3)

IARC has determined that gasoline and gasoline exhaust are possibly carcinogenic in humans. Inhalation exposure to completely vaporized unleaded gasoline caused kidney cancers in male rats and liver tumors in female mice. The U.S. EPA has determined that the male kidney tumors are species-specific and are irrelevant for human health risk assessment. The significance of the tumors seen in female mice is not known. Exposure to light hydrocarbons in the same boiling range as this product has been associated in animal studies with effects to the central and peripheral nervous systems, liver, and kidneys. The significance of these animal models to predict similar human response to gasoline is uncertain.

This product contains benzene. Human health studies indicate that prolonged and/or repeated overexposure to benzene may cause damage to the blood-forming system (particularly bone marrow), and serious blood disorders such as aplastic anemia and leukemia. Benzene is listed as a human carcinogen by the NTP, IARC, OSHA and ACGIH.
This product may contain methyl tertiary butyl ether (MTBE): animal and human health effects studies indicate that MTBE may cause eye, skin, and respiratory tract irritation, central nervous system depression and neurotoxicity. MTBE is classified as an animal carcinogen (A3) by the ACGIH.

12. ECOLOGICAL INFORMATION
Keep out of sewers, drainage areas and waterways. Report spills and releases, as applicable, under Federal and State regulations. If released, oxygenates such as ethers and alcohols will be expected to exhibit fairly high mobility in soil, and therefore may leach into groundwater. The API (www.api.org) provides a number of useful references addressing petroleum and oxygenate contamination of groundwater.

13. DISPOSAL CONSIDERATIONS
Consult federal, state and local waste regulations to determine appropriate disposal options.

14. TRANSPORTATION INFORMATION

<table>
<thead>
<tr>
<th>DOT PROPER SHIPPING NAME:</th>
<th>Gasoline</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT HAZARD CLASS and PACKING GROUP:</td>
<td>3, PG II</td>
</tr>
<tr>
<td>DOT IDENTIFICATION NUMBER:</td>
<td>UN 1203</td>
</tr>
<tr>
<td>DOT SHIPPING LABEL:</td>
<td>FLAMMABLE LIQUID</td>
</tr>
</tbody>
</table>

15. REGULATORY INFORMATION

U.S. FEDERAL, STATE, and LOCAL REGULATORY INFORMATION
This product and its constituents listed herein are on the EPA TSCA Inventory. Any spill or uncontrolled release of this product, including any substantial threat of release, may be subject to federal, state and/or local reporting requirements. This product and/or its constituents may also be subject to other federal, state, or local regulations; consult those regulations applicable to your facility/operation.

CLEAN WATER ACT (OIL SPILLS)
Any spill or release of this product to "navigable waters" (essentially any surface water, including certain wetlands) or adjoining shorelines sufficient to cause a visible sheen or deposit of a sludge or emulsion must be reported immediately to the National Response Center (1-800-424-8802) as required by U.S. Federal Law. Also contact appropriate state and local regulatory agencies as required.

CERCLA SECTION 103 and SARA SECTION 304 (RELEASE TO THE ENVIRONMENT)
The CERCLA definition of hazardous substances contains a “petroleum exclusion” clause which exempts crude oil, refined, and unrefined petroleum products and any indigenous components of such. However, other federal reporting requirements (e.g., SARA Section 304 as well as the Clean Water Act if the spill occurs on navigable waters) may still apply.

SARA SECTION 311/312 - HAZARD CLASSES

<table>
<thead>
<tr>
<th>ACUTE HEALTH</th>
<th>CHRONIC HEALTH</th>
<th>FIRE</th>
<th>SUDDEN RELEASE OF PRESSURE</th>
<th>REACTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td></td>
<td>X</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

SARA SECTION 313 - SUPPLIER NOTIFICATION
This product contains the following toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372:

<table>
<thead>
<tr>
<th>INGREDIENT NAME (CAS NUMBER)</th>
<th>CONCENTRATION WT. PERCENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzene (71-43-2)</td>
<td>0.1 to 4.9 (0.1 to 1.3 for reformulated gasoline)</td>
</tr>
<tr>
<td>Ethyl benzene (100-41-4)</td>
<td>&lt; 3</td>
</tr>
</tbody>
</table>
US EPA guidance documents (www.epa.gov/tri) for reporting Persistent Bioaccumulating Toxics (PBTs) indicate this product may contain the following deminimis levels of toxic chemicals subject to Section 313 reporting:

<table>
<thead>
<tr>
<th>INGREDIENT NAME (CAS NUMBER)</th>
<th>CONCENTRATION - Parts per million (ppm) by weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polycyclic aromatic compounds (PACs)</td>
<td>17</td>
</tr>
<tr>
<td>Benzo (g,h,i) perylene (191-24-2)</td>
<td>2.55</td>
</tr>
<tr>
<td>Lead (7439-92-1)</td>
<td>0.079</td>
</tr>
</tbody>
</table>

**CALIFORNIA PROPOSITION 65 LIST OF CHEMICALS**
This product contains the following chemicals that are included on the Proposition 65 “List of Chemicals” required by the California Safe Drinking Water and Toxic Enforcement Act of 1986:

<table>
<thead>
<tr>
<th>INGREDIENT NAME (CAS NUMBER)</th>
<th>Date Listed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzene</td>
<td>2/27/1987</td>
</tr>
<tr>
<td>Ethyl benzene</td>
<td>6/11/2004</td>
</tr>
<tr>
<td>Toluene</td>
<td>1/1/1991</td>
</tr>
</tbody>
</table>

**CANADIAN REGULATORY INFORMATION (WHMIS)**
Class B, Division 2 (Flammable Liquid)
Class D, Division 2A (Very toxic by other means) and Class D, Division 2B (Toxic by other means)

16. **OTHER INFORMATION**

<table>
<thead>
<tr>
<th>NFPA® HAZARD RATING</th>
<th>HEALTH:</th>
<th>FIRE:</th>
<th>REACTIVITY:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Slight</td>
<td>Serious</td>
<td>Minimal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HMIS® HAZARD RATING</th>
<th>HEALTH:</th>
<th>FIRE:</th>
<th>PHYSICAL:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 *</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Slight</td>
<td>Serious</td>
<td>Minimal</td>
</tr>
<tr>
<td>* CHRONIC</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SUPERSEDES MSDS DATED:** 07/01/06

**ABBREVIATIONS:**
AP = Approximately  < = Less than  > = Greater than
N/A = Not Applicable  N/D = Not Determined  ppm = parts per million

**ACRONYMS:**
ACGIH American Conference of Governmental Industrial Hygienists
AIHA American Industrial Hygiene Association
ANSI American National Standards Institute (212)642-4900
API American Petroleum Institute (202)682-8000
CERCLA Comprehensive Emergency Response, Compensation, and Liability Act
DOT U.S. Department of Transportation
[General Info: (800)467-4922]
EPA U.S. Environmental Protection Agency
HMIS Hazardous Materials Information System
IARC  International Agency For Research On Cancer
MSHA  Mine Safety and Health Administration
NFPA  National Fire Protection Association (617)770-3000
NIOSH National Institute of Occupational Safety and Health
NOIC  Notice of Intended Change (proposed change to ACGIH TLV)
NTP  National Toxicology Program
OPA  Oil Pollution Act of 1990
OSHA  U.S. Occupational Safety & Health Administration
PEL  Permissible Exposure Limit (OSHA)
RCRA  Resource Conservation and Recovery Act
REL  Recommended Exposure Limit (NIOSH)
SARA  Superfund Amendments and
SARASARA  Reauthorization Act of 1986 Title III
SCBA  Self-Contained Breathing Apparatus
SPCC  Spill Prevention, Control, and Countermeasures
STEL  Short-Term Exposure Limit (generally 15 minutes)
TLV  Threshold Limit Value (ACGIH)
TSCA  Toxic Substances Control Act
TWA  Time Weighted Average (8 hr.)
WEEL  Workplace Environmental Exposure Level (AIHA)
WHMIS  Workplace Hazardous Materials Information System (Canada)

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief, but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgment.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.
Material Safety Data Sheet
Lead MSDS

Section 1: Chemical Product and Company Identification

Product Name: Lead
Catalog Codes: SLL1291, SLL1669, SLL1081, SLL1459, SLL1834
CAS#: 7439-92-1
RTECS: OF7525000
TSCA: TSCA 8(b) inventory: Lead
CI#: Not available.
Synonym: Lead Metal, granular; Lead Metal, foil; Lead Metal, sheet; Lead Metal, shot
Chemical Name: Lead
Chemical Formula: Pb

Contact Information:
Scielab.com, Inc.
14025 Smith Rd.
Houston, Texas 77396
US Sales: 1-800-901-7247
International Sales: 1-281-441-4400
Order Online: ScienceLab.com
CHEMTREC (24HR Emergency Telephone), call: 1-800-424-9300
International CHEMTREC, call: 1-703-527-3887
For non-emergency assistance, call: 1-281-441-4400

Section 2: Composition and Information on Ingredients

Composition:

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS #</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead</td>
<td>7439-92-1</td>
<td>100</td>
</tr>
</tbody>
</table>

Toxicological Data on Ingredients: Lead LD50: Not available. LC50: Not available.

Section 3: Hazards Identification

Potential Acute Health Effects: Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

Potential Chronic Health Effects:
Slightly hazardous in case of skin contact (permeator). CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

Section 4: First Aid Measures

Eye Contact:
Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

**Skin Contact:** Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

**Serious Skin Contact:** Not available.

**Inhalation:**
If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Serious Inhalation:** Not available.

**Ingestion:**
Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

**Serious Ingestion:** Not available.

---

**Section 5: Fire and Explosion Data**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flammability of the Product</strong></td>
<td>May be combustible at high temperature.</td>
</tr>
<tr>
<td><strong>Auto-Ignition Temperature</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Flash Points</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Flammable Limits</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Products of Combustion</strong></td>
<td>Some metallic oxides.</td>
</tr>
<tr>
<td><strong>Fire Hazards in Presence of Various Substances</strong></td>
<td>Non-flammable in presence of open flames and sparks, of shocks, of heat.</td>
</tr>
<tr>
<td><strong>Explosion Hazards in Presence of Various Substances</strong></td>
<td>Not available.</td>
</tr>
<tr>
<td><strong>Fire Fighting Media and Instructions</strong></td>
<td>SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet. Special Remarks on Fire Hazards: When heated to decomposition it emits highly toxic fumes of lead. Special Remarks on Explosion Hazards: Not available.</td>
</tr>
</tbody>
</table>

---

**Section 6: Accidental Release Measures**

**Small Spill:**
Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

**Large Spill:**
Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

---

**Section 7: Handling and Storage**

**Precautions:**
Keep locked up. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Wear suitable
protective clothing. If ingested, seek medical advice immediately and show the container or the label. Keep away from incompatibles such as oxidizing agents.

**Storage:** Keep container tightly closed. Keep container in a cool, well-ventilated area.

---

### Section 8: Exposure Controls/Personal Protection

**Engineering Controls:**
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal Protection:**
Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

**Personal Protection in Case of a Large Spill:**
Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Exposure Limits:**
TWA: 0.05 (mg/m³) from ACGIH (TLV) [United States] TWA: 0.05 (mg/m³) from OSHA (PEL) [United States] TWA: 0.03 (mg/m³) from NIOSH [United States] TWA: 0.05 (mg/m³) [Canada] Consult local authorities for acceptable exposure limits.

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### Section 9: Physical and Chemical Properties

**Physical state and appearance:** Solid. (Metal solid.)

**Odor:** Not available.

**Taste:** Not available.

**Molecular Weight:** 207.21 g/mole

**Color:** Bluish-white. Silvery. Gray

**pH (1% soln/water):** Not applicable.

**Boiling Point:** 1740°C (3164°F)

**Melting Point:** 327.43°C (621.4°F)

**Critical Temperature:** Not available.

**Specific Gravity:** 11.3 (Water = 1)

**Vapor Pressure:** Not applicable.

**Vapor Density:** Not available.

**Volutility:** Not available.

**Odor Threshold:** Not available.

**Water/Oil Dist. Coeff.:** Not available.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** Not available.

**Solubility:** Insoluble in cold water.

---

### Section 10: Stability and Reactivity Data
Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials, excess heat

Incompatibility with various substances: Reactive with oxidizing agents.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Can react vigorously with oxidizing materials. Incompatible with sodium carbide, chlorine trifluoride, trioxane + hydrogen peroxide, ammonium nitrate, sodium azide, disodium acetylide, sodium acetylide, hot concentrated nitric acid, hot concentrated hydrochloric acid, hot concentrated sulfuric acid, zirconium.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur.

---

Section 11: Toxicological Information

Routes of Entry: Absorbed through skin. Inhalation. Ingestion.

Toxicity to Animals: 
LD50: Not available. LC50: Not available.

Chronic Effects on Humans:
CARCINOGENIC EFFECTS: Classified A3 (Proven for animal.) by ACGIH, 2B (Possible for human.) by IARC. May cause damage to the following organs: blood, kidneys, central nervous system (CNS).

Other Toxic Effects on Humans: Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: Not available.

Special Remarks on other Toxic Effects on Humans: Acute Potential: Skin: Lead metal granules or dust: May cause skin irritation by mechanical action. Lead metal foil, shot or sheets: Not likely to cause skin irritation Eyes: Lead metal granules or dust: Can irritate eyes by mechanical action. Lead metal foil, shot or sheets: No hazard. Will not cause eye irritation. Inhalation: In an industrial setting, exposure to lead mainly occurs from inhalation of dust or fumes. Lead dust or fumes: Can irritate the upper respiratory tract (nose, throat) as well as the bronchi and lungs by mechanical action. Lead dust can be absorbed through the respiratory system. However, inhaled lead does not accumulate in the lungs. All of an inhaled dose is eventually absorbed or transferred to the gastrointestinal tract. Inhalation effects of exposure to fumes or dust of inorganic lead may not develop quickly. Symptoms may include metallic taste, chest pain, decreased physical fitness, fatigue, sleep disturbance, headache, irritability, reduces memory, mood and personality changes, aching bones and muscles, constipation, abdominal pains, decreasing appetite. Inhalation of large amounts may lead to ataxia, delirium, convulsions/seizures, coma, and death. Lead metal foil, shot, or sheets: Not an inhalation hazard unless metal is heated. If metal is heated, fumes will be released. Inhalation of these fumes may cause “fume metal fever”, which is characterized by flu-like symptoms. Symptoms may include metallic taste, fever, nausea, vomiting, chills, cough, weakness, chest pain, generalized muscle pain/aches, and increased white blood cell count. Ingestion: Lead metal granules or dust: The symptoms of lead poisoning include abdominal pain or cramps (lead cholic), spasms, nausea, vomiting, headache, muscle weakness, hallucinations, distorted perceptions, "lead line" on the gums, metallic taste, loss of appetite, insomnia, dizziness and other symptoms similar to that of inhalation. Acute poisoning may result in high lead levels in the blood and urine, shock, coma and death in extreme cases. Lead metal foil, shot or sheets: Not an ingestion hazard for usual industrial handling.

Section 12: Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.
**Products of Biodegradation:**
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are less toxic than the product itself.

**Special Remarks on the Products of Biodegradation:** Not available.

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**Section 13: Disposal Considerations**

**Waste Disposal:**
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

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**Section 14: Transport Information**

**DOT Classification:** Not a DOT controlled material (United States).

**Identification:** Not applicable.

**Special Provisions for Transport:** Not applicable.

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**Section 15: Other Regulatory Information**

**Federal and State Regulations:**
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Lead
California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (female) which would require a warning under the statute: Lead
California prop. 65 (no significant risk level): Lead: 0.0005 mg/day (value)
California prop. 65: This product contains the following ingredients for which the State of California has found to cause reproductive harm (male) which would require a warning under the statute: Lead
California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Lead
California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Lead
Connecticut hazardous material survey.: Lead
Illinois toxic substances disclosure to employee act: Lead
Illinois chemical safety act: Lead
New York release reporting list: Lead
Rhode Island RTK hazardous substances: Lead
Pennsylvania RTK: Lead

**Other Regulations:**
EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

**Other Classifications:**
WHMIS (Canada): CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

**DSCL (EEC):**
R20/22- Harmful by inhalation and if swallowed. R33- Danger of cumulative effects. R61- May cause harm to the unborn child. R62- Possible risk of impaired fertility. S36/37- Wear suitable protective clothing and gloves. S44- If you feel unwell, seek medical advice (show the label when possible). S53- Avoid exposure - obtain special instructions before use.

**HMIS (U.S.A.):**
- Health Hazard: 1
- Fire Hazard: 0
- Reactivity: 0
- Personal Protection: E

**National Fire Protection Association (U.S.A.):**
- Health: 1
Flammability: 0
Reactivity: 0
Specific hazard:

Protective Equipment:
Gloves. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Safety glasses.

Section 16: Other Information

References: Not available.
Other Special Considerations: Not available.
Created: 10/10/2005 08:21 PM
Last Updated: 05/21/2013 12:00 PM

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