

# Aggressive Fluid Vapor Recovery

UST Permit #: \_\_\_\_\_

Release #: \_\_\_\_\_

Do not proceed unless the full extent of the contamination for the release has been delineated.

<b>I. Applicability Determination (Initial Screening)</b>	Effective	Somewhat Effective	Ineffective
<p>1. Provide a general description of the <b>intrinsic permeability (k)*</b> of soils in the area of remediation measured in cm<sup>2</sup>.</p> <p><input type="checkbox"/> Based on soil type    <input type="checkbox"/> Calculated    <input type="checkbox"/> Field/lab test</p> <p><i>Stratified soils may require special consideration in design to ensure less-permeable stratum are addressed. This should be documented</i></p>	<input type="checkbox"/> $k \geq 1 \times 10^{-8}$	<input type="checkbox"/> $1 \times 10^{-8} \geq k \geq 1 \times 10^{-11}$	<input type="checkbox"/> $k < 1 \times 10^{-11}$
<p>2. What is the general boiling point range in °C for chemicals subject to remediation at this site?</p> <p><i>For complex mixtures, select the boiling point range that is most representative of the chemicals of concern to be remediated by using this remedy.</i></p>	<input type="checkbox"/> $< 250$	<input type="checkbox"/> $\geq 250 - \leq 300$	<input type="checkbox"/> $\geq 300$
<p>3. What is the depth to groundwater in feet based on the shallowest well in area where remediation is being performed?</p> <p><i>If water-table elevation fluctuate significantly, special design provisions should be made to accommodate them.</i></p>	<input type="checkbox"/> $> 10$	<input type="checkbox"/> $\geq 3 - \leq 10$	<input type="checkbox"/> $< 3$
<p>4. What is the vapor pressure range in mm of the chemicals being remediated?</p> <p><i>For complex mixtures, select the vapor pressure range that is most representative of the chemicals of concern to be remediated by using this remedy.</i></p>	<input type="checkbox"/> $\geq 1$	<input type="checkbox"/> $> 0.5 - < 1.0$	<input type="checkbox"/> $< 0.5$
<p>5. What is the Henry's law constant** (atm) for the chemicals being remediated?</p> <p><i>For complex mixtures, select the Henry's law constant range that is most representative of the chemicals of concern to be remediated by using this remedy.</i></p>	<input type="checkbox"/> $> 150$	<input type="checkbox"/> $\geq 100 - < 150$	<input type="checkbox"/> $< 100$
<b>II. Aggressive Fluid Vapor Recovery System Design</b>			
<p>1. What is the radius of influence (ROI) in feet for the proposed extraction wells?</p> <p><i>The wells must be identified by showing the ROI on a site diagram.</i></p>	<input type="checkbox"/> $> 20$	<input type="checkbox"/> $> 5 - \leq 20$	<input type="checkbox"/> $< 5$
<p>2. Has the radius of influence (ROI) been calculated for each soil type at the site?</p> <p><i>For more complex sites with multiple treatment depth intervals and/or the need for multiple extraction wells, subsurface airflow modeling must be conducted to determine well placement.</i></p>	<input type="checkbox"/> YES		<input type="checkbox"/> NO
<p>3. Is the proposed well density appropriate, given the total area to be cleaned up and the radius of each well?</p>	<input type="checkbox"/> YES		<input type="checkbox"/> NO

\* Intrinsic permeability is a measure of the ability of soils to transmit fluids and is the single most important factor in determining the effectiveness of AFVR.

\*\* Here is a link to an EPA website with common Henry's Law Constant for various chemicals. Choose H<sub>px</sub> (partial pressure/mole fraction)  
<https://www3.epa.gov/ceampubl/learn2model/part-two/onsite/esthenry.html>

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## II. Aggressive Fluid Vapor Recovery System Design (continued)

4. Describe the system.

- Single pump system
  Dual pump system

*Identify and number the wells (on the site map) to be utilized for the AFVR.*

5. What is the proposed extraction time period for each well? \_\_\_\_\_

6. How many extractions are planned? \_\_\_\_\_

7. What is the planned frequency of extractions?

- Once
  Weekly
 Monthly
 Quarterly for \_\_\_\_\_ quarters  
 Other (specify): \_\_\_\_\_

What is the estimate of time to achieve cleanup of the site with the anticipated extraction flow rates?

\_\_\_\_\_ days

## III. Evaluation of Operation and Maintenance

For information pertaining to monitoring and operation, please refer to the current revision of the UST Quality Assurance Programmatic Plan. Information should be provided in the Corrective Action System Evaluation Reports. Additional information may be provided regarding system monitoring and operation as deemed necessary to demonstrate effectiveness.

List the monitoring and analytical parameters that are proposed for any verification sampling. *Use CAP Analytical Parameters Attachment*

Example	
Well Name	Substances
MW-1	BTEX, MTBE
MW-3	BTEX, MTBE

## IV. Site Map

Site map(s) drawn to scale illustrating the following:

- a. Location of all present and former tanks, piping and dispensers in area of release;
- b. Footprint of surface and/or subsurface soil contamination;
- c. Footprint of other structures (buildings, canopies, roads, utilities, etc.);
- d. Location of treatment system;
- e. Location of extraction wells;
- f. Location of monitoring wells that will be used for sampling;
- g. Groundwater flow direction;
- h. North arrow, bar scale, and map legend

