SOIL VAPOR EXTRACTION

UST Permit #: _____ Release #: _____

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

I. Applicability Determination (Initial Screening)	Effective	Somewhat Effective	Ineffective
1. Provide a general description of the **intrinsic permeability (k)*** of soils at the site in the area of remediation in cm^2 . ☐ Based on soil type ☐ Calculated ☐ Field/lab test *Stratified soils may require special consideration in design to ensure less-permeable stratum are addressed. This will require documentation.*	☐ $k \geq 1x10^{-8}$	☐ $1x10^{-8} \geq k \geq 1x10^{-10}$	☐ $k < 1x10^{-10}$
2. What is the general boiling point range in °C for chemicals subject to remediation at this site? *For complex mixtures, select the boiling point range that is most representative of the chemicals of concern to be remediated by using this remedy.*	☐ < 250	☐ ≥ 250 - ≤ 300	☐ ≥ 300
3. What is the depth to groundwater based on the shallowest well in area where remediation is being performed? *Groundwater at 10' or less will require special consideration in design of the SVE system. This will require documentation.*	☐ > 10ft	☐ ≥ 3 - ≤ 10	☐ < 3ft
4. What is the moisture content (%) of soil in area of remediation? *High moisture content reduces soil permeability by restricting air flow. This is of particular concern in the capillary fringe and may require special design requirements if contaminants are within the capillary fringe.*	☐ < 30	☐ ≥ 30 - ≤ 50	☐ > 50
5. What is the vapor pressure range in mm of the chemicals being remediated? *For complex mixtures, select the vapor pressure range that is most representative of the chemicals of concern to be remediated by using this remedy.*	☐ ≥ 1	☐ < 1.0 - > 0.5	☐ < 0.5
6. What is the Henrys law constant** (atm) for the chemicals being remediated? *For complex mixtures, selec t the Henry's law constant range that is most r epresentative of the chemicals of concern to be remediated by using this remedy.*	☐ > 150	☐ < 150 - ≥ 100	☐ < 100

* *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 SVE.*

** Here is a link to an EPA website with common Henry's Law Constant for various chemicals. Choose H_{px} (partial pressure/mole fraction)

https://www3.epa.gov/ceampubl/learn2model/part-two/onsite/esthenry.html

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II.a SVE System Design	Effective	Somewhat Effective	Ineffective
1. What is the radius of influence (ROI) for the proposed extraction wells? *The wells must be identified by showing the ROI on a site diagram.*	☐ > 20 ft.	☐ > 5 ft. but ≤ 20 ft.	☐ < 5 ft.
2. Has the radius of influence (ROI) been calculated for each soil type at the site?	☐ YES		☐ NO
3. Is the proposed well density appropriate, given the total area to be cleaned up and the radius of influence for each well?	☐ YES		☐ NO
4. Is the blower selected appropriate for the site conditions?	☐ YES		☐ NO
5. Is the type of well proposed appropriate for the site conditions present?	☐ YES		☐ NO
6. Do the proposed well screen intervals match soil conditions at the site?	☐ YES		☐ NO
II.b SVE System Design			
1. Is air injection of passive inlet wells proposed?	☐ YES		☐ NO
2. Is the proposed air injection/inlet well design appropriate for this site?	☐ YES		☐ NO
3. Are proposed surface sealing materials appropriate for this site?	☐ YES		☐ NO
4. Will groundwater depression be necessary?	☐ YES		☐ NO
5. If groundwater depression is necessary, are the pumping wells correctly spread?	☐ YES		☐ NO
6. Is a vapor treatment system required?	☐ YES		☐ NO
7. If a vapor treatment system is required, is the proposed system appropriate for the contaminate concentration at the site?	☐ YES		☐ NO

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III. Evaluation of Operation and Maintenance

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

_____ days

Daily monitoring of the SVE system must be performed for the first well of operation. At a minimum, the following should be monitored: flow measurements, vacuum readings, and vapor concentrations from each extraction vent, the manifold, and the effluent stack.

Monitoring of the SVE system every two weeks is recommended, but in no case should the monitoring of flow measurements, vacuum readings, and vapor concentrations from each extraction vent, the manifold, and the effluent stack be less than monthly.

List the monitoring and analytical parameters that will be sampled quarterly as part of the CAP monitoring report.

Use the CAP Analytical Attachment Sheet.

Example

Well Name	Substance(s)
MW - 1	BTEX, MTBE
MW - 3	BTEX, MTBE

IV. Sitemap

Attach a site map to this document

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

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

CAP Analytical Parameters Attachment

Well/Sample Location	Parameters to be Monitored

Comments