



CURRENT ENVIRONMENTAL SOLUTIONS

SITE EVALUATION FORM (SEF)
SIX PHASE HEATING (SPH) – ELECTRIC RESISTANCE HEATING (ERH)

Please fill-in all highlighted fields. When Complete, e-mail this form to:

J. Pezzullo pezzullo@cesweb.com T:(972) 262-7855
W. Heath bill@cesweb.com T:(509) 727-4276

Form fields for DATE, COMPANY, CONTACT NAME, ADDRESS, CITY, STATE, ZIP, TEL, FAX, MOBILE, and E-MAIL. Includes a green box for 'Proposal No. Assigned'.

PURPOSE OF THIS SEF and INSTRUCTIONS

The information you provide on this form will be used by CES to run a detailed numerical performance and cost model for your site. The model will evaluate the site conditions you provide and automatically access a variety of online databases to make assumptions for information you do not provide. Therefore, the more complete the form, the better the performance predictions & cost estimate.

BEFORE YOU BEGIN

The ERH model can handle up to five different types of lithology over your treatment zone together with two upper and two lower heat-loss layers for a total of nine(9) possible different soil types and contaminant distributions. Please plan on reducing your site physical and analytical data in this regard.

GUIDELINES FOR ACTUAL PROPOSAL REQUEST VERSUS FEASIBILITY STUDY

Since there is a substantial effort required both on your part to complete this form and on our part to prepare and run the model, CES reserves this form only for serious proposal and cost estimate requests. Generally CES can not devote the resources required to run the numerical model merely for technology screening or feasibility studies, and we reserve the right to request a site visit with the consultant, owner, regulators, and responsible party prior to moving ahead with our modeling efforts.

**A. GENERAL SITE INFORMATION**

1. Site Name: \_\_\_\_\_
2. Street Address: \_\_\_\_\_  
 City: \_\_\_\_\_ State: \_\_\_\_\_ Zip:\* \_\_\_\_\_  
Note: Zip is important as it is used to auto-calc mobilization & shipping distances.
3. Site Setting (Industrial, Commercial, Residential): \_\_\_\_\_
4. Remediation Drivers (Regulatory, Property Transfer, etc): \_\_\_\_\_
5. Desired Timeframe for Clean-up (# of months or years): \_\_\_\_\_
6. Type of Clean-up (voluntary, State, EPA, etc): \_\_\_\_\_
7. Is this a US Gov. Site (Superfund,DOD,DOE,Air Force,Navy, etc) ? \_\_\_\_\_
8. What are any budget restrictions? \_\_\_\_\_
9. Other technologies being evaluated? \_\_\_\_\_

**B. TREATMENT ZONE SPECIFICS**

Please attach a site map showing the treatment area(s) / plume(s).  
 Enter Length, Width or Diameter of Circle or Major Axis if More or less Oval Shaped

- 1 Treatment Area 1: Length \_\_\_\_\_ Width \_\_\_\_\_ Diameter \_\_\_\_\_ Units \_\_\_\_\_  
 Treatment Area 2: Length \_\_\_\_\_ Width \_\_\_\_\_ Diameter \_\_\_\_\_ Units \_\_\_\_\_  
 Treatment Area 3: Length \_\_\_\_\_ Width \_\_\_\_\_ Diameter \_\_\_\_\_ Units \_\_\_\_\_
- Some Sites are irregular, enter area if known ( the model will cross check this with the numbers above)
- 2 Treatment Area 1: \_\_\_\_\_ Units \_\_\_\_\_ Perimeter \_\_\_\_\_  
 Treatment Area 2: \_\_\_\_\_ Units \_\_\_\_\_ Perimeter \_\_\_\_\_  
 Treatment Area 3: \_\_\_\_\_ Units \_\_\_\_\_ Perimeter \_\_\_\_\_
- 3 Treatment Depth Interval ( to determine volume)
- Treatment Area 1: From \_\_\_\_\_ To \_\_\_\_\_ Units \_\_\_\_\_ bgs  
 Treatment Area 2: From \_\_\_\_\_ To \_\_\_\_\_ Units \_\_\_\_\_ bgs  
 Treatment Area 3: From \_\_\_\_\_ To \_\_\_\_\_ Units \_\_\_\_\_ bgs
- 4 General Shape of Treatment Area (Check One)  
 Circle: \_\_\_\_\_ Oval: \_\_\_\_\_ Rectangle: \_\_\_\_\_ Irregular: \_\_\_\_\_
- 5 Is any portion of the site beneath a building? \_\_\_\_\_ What % or Area? \_\_\_\_\_
- 6 If #4 "yes", what is the overhead clearance for drill rig access? \_\_\_\_\_
- 7 If #4 "yes", is the floor concrete? \_\_\_\_\_ Thickness: \_\_\_\_\_ Reinforced? \_\_\_\_\_
- 8 What cover material is over the site (concrete, asphalt, grass, etc?) \_\_\_\_\_

- 9 Are there trees that require protection from thermal treatment?
- 10 Are there subsurface utilities in the Treatment Area?  
If so, please attach a utility map.
- 11 Are there any UST's or AST's in the Treatment Area?  
If so, please attach a location map.
- 12 Any other unique features that we should know about?
- 13 About how far away from the treatment area can equipment be located?

**C. GEOLOGY & HYDROGEOLOGY**

Please attach a typical boring log and cross section if available, and complete as much information as you can.

1. Briefly describe the geological setting ( or attach brief description).

2. Depth to Groundwater(ft or m):  Gradient:  Velocity

3. Please divide your treatment zone into approximately 5 layers. They need not be equal, though very thin layers (<2 ft) can result in unpredictable model results. If you use only one or 2 layers, the same information will be used for subsequent layers until is changed.

	Top (ft bgs)	Bottom (ft bgs)	USGS Class	Vadose or Sat?	% Sand	%Silt	%Clay
UHLL1							
UHLL2							
Layer 1							
Layer 2							
Layer 3							
Layer 4							
Layer 5							
LHHL1							
LHLL2							

Note: you may provide a sieve analysis if available  
UH/LH = Upper/Lower Heat Loss Layers 1 and 2, respectively. Not Necessary to enter top and bottom. These will be calculated by the model; however, please provide lithology.

4. Porosity, Hydraulic Conductivity(K) and/or Permeability(k), Dry Density(Rho), Total Organic Carbon(TOC)

	Porosity Total	Porosity Effective	Kv (vertical)	Kh (horiz.)	kv (vertical)	kh (horiz.)	Rho lbs/cf	TOC %
UHLL1								
UHLL2								
Layer 1								
Layer 2								
Layer 3								
Layer 4								
Layer 5								
LHHL1								
LHLL2								

5. Groundwater Electrical Conductivity (in microsiemens, uS) \_\_\_\_\_  
 (This value is important. If possible, please measure or send to a lab for analysis prior to completing the form, if the electrical properties change, you may provide the detailed information for each layer below.

Layer 1	
Layer 2	
Layer 3	
Layer 4	
Layer 5	

6. Is there any perched groundwater? \_\_\_\_\_ If so, at what depth? \_\_\_\_\_

**D. CONTAMINANT INFORMATION**

1. Contaminant(s) of Concern (top 1 or 2): \_\_\_\_\_

2. Soil Concentration(s) (mg/kg, ppm)

	COC-1 MAX	COC-1 AVE	COC-1 GOAL
Layer 1			
Layer 2			
Layer 3			
Layer 4			
Layer 5			

	COC-2 MAX	COC-2 AVE	COC-2 GOAL

3. Groundwater Concentration(s) (u/L, ppb) for Saturated Zone.

	COC-1 MAX	COC-1 AVE	COC-1 GOAL
Layer 1			
Layer 2			
Layer 3			
Layer 4			
Layer 5			

	COC-2 MAX	COC-2 AVE	COC-2 GOAL

4. Is there a mixture of petroleum and chlorinated hydrocarbons? \_\_\_\_\_  
 If so, please explain briefly:  
 \_\_\_\_\_

5. Are there any low volatility hydrocarbons (e.g. fuel oil, coal tar)? \_\_\_\_\_  
 If so, please explain briefly:  
 \_\_\_\_\_

6. Is there any LNAPL, DNAPL or has there ever been? \_\_\_\_\_  
 If so, please explain briefly: (thickness, amount removed, etc):  
 \_\_\_\_\_

**E. SITE REMEDIATION HISTORY**

- 1. Have other remediation technologies been attempted?   
If so, please explain briefly(e.g. pilot tests):  

---

---
  
- 2. Is there any remediation equipment at the site that you would like for us to try and use?   
If so, please explain briefly(e.g. GW treatment system, SVE system, capacities,etc):  

---

---

**F. PERMITTING ISSUES**

- 1. Maximum allowable atmospheric discharge. (please include daily / annual limits & units)  

---

---
  
- 2. Will vapor treatment be required?  Min. Stack Height?   
If so, is there a preferable method, such as carbon, CATOX, or thermal?
  
- 3. Can treated water be discharged on site? (reinjection, sanitary sewer, POTW, etc)  

---

---
  
- 4. Please describe any existing permits ( air, water, etc).  

---

---
  
- 5. Will a building permit be required?
  
- 6. How about noise issues, nearby residents, local daytime/nighttime ordinances?  

---

---

**G. HEALTH & SAFETY ISSUES**

- 1. Has the site ever been the subject of an OSHA audit?   
If so, please explain briefly:  

---

---
  
- 2. At what level PPE has work taken place, and at what level shall we assume for the remediation?  

---

---

## H. INFRASTRUCTURE

1. Distance to nearest utility pole?  Pole No:

2. Type of Power on-site(1ph,3ph):  Voltage:  Amperage:

3. Utility Company Name and Tel. No:

4. Is there a potable water source?  Distance?

5. Telephone and Cable lines for fax and high-speed/broadband internet access?

6. Nearest Airport?  Distance?

7. Is there office space at the site for CES, or shall we assume we will need a trailer, etc?

8. Are there any existing monitoring wells that would require abandonment prior to an ERH remedy? Anything PVC will PVC probably require abandonment. If, so, how many and total LF?

	Total LF		Total LF
# of PVC MWs:	<input type="text"/>	# of CPVC MWs:	<input type="text"/>
# of SS MWs:	<input type="text"/>	# of Other type wells:	<input type="text"/>

Any Comments or questions about this? {e.g. Will be performed by others or CES must perform?}

## I. SOW SHARING AND ASSUMPTIONS

The following information will enable us to fine-tune the model for the most practical cost savings for the client. This may include sublicensing the ERH technology and/or allocating as much of the SOW to your company or the client as practical.

1. Is your company interested in participating in or directly handling ( if services are necessary)?:

a. Permitting(drilling,air, water)?	<input type="text"/>
b. Drilling?	<input type="text"/>
c. Utility Connection?	<input type="text"/>
d. Electric Power Costs?	<input type="text"/> [client normally pays directly]
e. Water, Tel, Internet Connection?	<input type="text"/>
f. Drill Cutting, Water, NAPL disposal?	<input type="text"/>
g. SVE System Construction?	<input type="text"/>
h. Supply SVE system?	<input type="text"/>
g. Vapor Treatment?	<input type="text"/>
i. Sampling & Analysis?	<input type="text"/>
j. Trenching, Concrete Cutting, Asphalt?	<input type="text"/>
k. Site Cap?	<input type="text"/>
l. Clearing, Grading,Site Restoration?	<input type="text"/>
m. Surveying, Utility Locating?	<input type="text"/>
n. Crane, fork truck, bobcat?	<input type="text"/>
o. Electrode & Well Abandonment?	<input type="text"/>
p. Supply & install well vaults?	<input type="text"/>
q. Security fence & grounding mats?	<input type="text"/>
r. Site Cap Materials & Installation?	<input type="text"/>
s. Thermocouple installation?	<input type="text"/>
t. O&M?	<input type="text"/>

2. Would your company be interested in a single-use license (including training) to perform this work yourselves under the guidance and supervision of CES? For example, one option is for CES to provide electrode materials & all equipment, training, supervise construction & start-up, and remote operations via internet. Your company provides the bulk of construction labor and the on-site O&M. Other options can be discussed also. If "yes", please briefly describe your firm's expertise.


3. Please provide the following cost assumptions:

a. Drilling HAS ( preferably in Cost per Linear Foot or Meter)

12 in OD		per	
10 in OD		per	
8 in. OD		per	

b. Drilling Sonic ( preferably in Cost per Linear Foot or Meter)

12 in OD		per	
10 in OD		per	
8 in. OD		per	

c. Geoprobe

	per	day
--	-----	-----

d. Electric Utility Fees:

Base Usage Fee		per	kW-hr
Demand Fees		per	kW-hr
Transmission		per	kW-hr
Generation		per	kW-hr
Taxes		per	kW-hr
Surcharges		per	kW-hr
Other		per	kW-hr
Other		per	kW-hr
Other		per	kW-hr
Other		per	kW-hr
<b>TOTAL</b>	<b>\$0.00</b>	<b>per</b>	<b>kW-hr</b>

**END OF FORM: THANK YOU FOR YOUR TIME TO COMPLETE THIS SURVEY**  
 PLEASE FAX TO (972) 262-6655 OR E-MAIL:

[PEZZULLO@CESIWEB.COM](mailto:PEZZULLO@CESIWEB.COM)  
[BILL@CESIWEB.COM](mailto:BILL@CESIWEB.COM)