

**Soil/Groundwater Hydrocarbon Remediation
Form 16 (Continued)**

Biodegradation	
16. Kind of nutrients added to soil: _____ _____	17. Water flow rate: _____ acfm
18. Pump requirements: hp _____ ft ³ /min _____	19. Number of wells: ____ Recovery ____ Injection
In-situ Leaching	
20. Surfactant used: _____	21. Pump requirements: hp _____ ft ³ /min _____
22. Leachate flow rate: Design maximum: _____ acfm Average expected: _____ acfm	23. Number of monitoring wells: _____ _____
24. Describe treatment of leachate: _____ _____ _____	
Thermal Treatment	
25. Type of equipment: <input type="checkbox"/> Rotary kiln <input type="checkbox"/> Rotary drier <input type="checkbox"/> Fluidized bed <input type="checkbox"/> Low-temperature thermal stripper <input type="checkbox"/> Other _____	
26. Company performing the incineration: _____ Approval Order # _____	27. Incineration capacity (tons/hr, etc.): _____
Soil Aeration	
28. Site of Aeration: _____ _____	29. Dimensions of aerated layer: _____ length _____ width _____ depth
30. Type of soil: _____ _____	31. Method to be used to turn the soil and frequency of turning the soil: _____
Asphalt Incorporation	
32. Company using soil in asphalt: _____	33. Approval Order # _____
Groundwater Stripping	
34. Groundwater flow rate: _____ gals/min	35. Type of treatment: <input type="checkbox"/> Packet tower <input type="checkbox"/> Oil/water separator <input type="checkbox"/> Carbon adsorption <input type="checkbox"/> Other _____
36. Exhaust flow rate: _____	37. Expected concentration flow rate (grams/sec): _____
38. Stack height: _____ Stack diameter: _____ Stack gas exit temperature: _____	
39. Attach discharge monitoring plan	

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Excavation

40. Name of landfill being used: _____

Emission Controls

41. Type of control: Carbon Adsorption (Form 5) Afterburner (Form 3) Condenser (Form 7)
 Baghouse (Form 10) Wet Scrubber (Form 9) Cover
 Cyclone (Form 6) Other _____

42. Calculated emissions for this process:

PM ₁₀ _____ Lbs/hr _____ Tons/yr	PM _{2.5} _____ Lbs/hr _____ Tons/yr
NO _x _____ Lbs/hr _____ Tons/yr	SO _x _____ Lbs/hr _____ Tons/yr
CO _____ Lbs/hr _____ Tons/yr	VOC _____ Lbs/hr _____ Tons/yr
CO ₂ _____ Tons/yr	CH ₄ _____ Tons/yr
N ₂ O _____ Tons/yr	
HAPs _____ Lb s/hr (speciate) _____ Tons/yr (speciate)	

Submit calculations as an appendix. If other pollutants are emitted, include the emissions in the appendix.

Instructions Form 16 - Soil/Groundwater Hydrocarbon Remediation

- NOTE: 1. **Submit this form in conjunction with Form 1 and Form 2.**
2. Call the Division of Air Quality (DAQ) at **(801) 536-4000** if you have problems or questions in filling out this form. Ask to speak with a New Source Review engineer. We will be glad to help!

1. Indicate the location where the contamination occurred.
2. Indicate what amount of material is being handled.
3. Specify what contaminants are present in the material. List the percentage of the total contaminants each substance makes up and indicate the volatility of each substance. Indicate the maximum concentration of each contaminant in pounds per ton of material contaminated.
4. Specify where and how the remediation will be performed.
5. Specify what method of remediation will be used.
6. Attach a flow diagram and site plan to this application.
7. Indicate the horse power or the cubic feet per minute rating of the fan/blower.
8. Supply the exhaust gas flow rate at design maximum and the average expected.
9. Indicate what type of fuel will be used in the heater.
10. Indicate whether or not air flow control valves will be used.
11. State the stack height, diameter, and gas exit temperature.
12. Supply the expected concentration flow rate in grams per second.
13. Indicate whether or not pressure gauges will be used.
14. Indicate whether or not flow meters will be used.
15. Attach a plan for monitoring discharge.
16. Indicate what type of nutrients will be added to soil for biodegradation.
17. Supply the water flow rate for water biodegradation.
18. Indicate the horse power or the cubic feet per minute rating of the fan/blower.
19. Indicate the number of recovery and number of injection wells on site.
20. Indicate what surfactant is being used in the leaching process.
21. Indicate the horse power or the cubic feet per minute rating of the pump.
22. Indicate what the leachate flow rate through the system is at design maximum and average expected.
23. Supply the number of monitoring wells used.
24. Describe how the leachate will be treated after it goes through the system.
25. Indicate what type of thermal treatment equipment will be used.
26. Indicate what company will be performing the thermal treatment and what the number of their approval order is.
27. Indicate what the incineration capacity will be.
28. Indicate the location of aeration.
29. Supply the dimensions of the aerated layer.
30. Indicate what type of soil is contaminated.
31. Indicate how the soil will be turned.
32. Indicate the company using the contaminated soil in asphalt.
33. Indicate what approval order the company is operating under.
34. Flow rate of groundwater through system.
35. Type of treatment of groundwater.
36. Indicate the exhaust gas flow rate.
37. Indicate the concentration flow rate in the exhaust gas in grams/sec.
38. Supply the stack height, stack diameter, stack gas exit temperature.
39. Attach a plan for monitoring discharge.
40. Name the landfill where the excavated soil will be transported.
41. Indicate the control that will be used in the remediation. Submit the appropriate form for the control.
42. Supply calculations for all criteria pollutants and HAPs (speciate, please).