

How Clean is Clean?

DEP Guidance on
Petroleum Site Cleanup

DEP Guidance Documents

Procedural Guidelines for Establishing
Action Levels and Remediation Goals for
the Remediation of Oil Contaminated Soil
and Groundwater in Maine
AKA **Decision Tree**

Effective February 1, 1995
Amended October 1, 1998
Revised March 13, 2000

DEP Guidance Documents

Remedial Action Guidelines for
Contaminated Soil

Decision Tree Cleanup Goals

- Stringent
- Intermediate
- Baseline 2
- Baseline 1

Stringent Sites

- <2000 feet to public water supply well or intake
- Wellhead protection zone
- No public water system >1000 feet upgradient and >2000 feet downgradient with clay site exception

Intermediate Sites Public Water Service

- Potential impacts to future aquifers
- Potential vapor impacts to confined spaces
- Potential impacts to surface waters

Aquifers

- Sand and gravel deposits
- Sand and gravel aquifers
- Bedrock aquifers

Vapors

- Underground utilities
- Residences
- Businesses

Surface Water

Potential groundwater discharge to surface water

Baseline 2 Sites *Public water service*

- >1000 feet upgradient and >2000 feet downgradient have public water service and no drinking water wells
- No vapor-sensitive receptors
- Non-attainment zone
- Silt and clay site exemption to Intermediate

Non-Attainment Zones

An area from which groundwater will not be withdrawn for human use because of environmental and/or institutional factors

Non-Attainment Dense development

- Urban or heavily developed area of dense commercial or industrial land uses
- Dense residential (1/2 acre lots or less) with subsurface waste water disposal
- The area 2000 feet downgradient and 1000 feet upgradient must be served by public water, no private drinking water supply wells are located within 1000 feet, and
- Not within 2000 feet of a public water supply well or within the wellhead protection zone

***Non-Attainment
Prohibited Groundwater Use***

Local or State laws or regulations prohibit human consumption of the area's ground water because of poor natural water quality, prior documented pollution or high potential for pollution due to past or present land uses.

***Non-Attainment
Contaminated Groundwater***

Groundwater in the area is unfit for human consumption due to the presence of contaminants other than oil.

***Silt and Clay Exemption
Coastal Maine***

- The area 2000 feet downgradient and 1000 feet upgradient must be served by public water , no private drinking water supply wells are located within 1000 feet
- More than 10 feet of silt or clay
- Flat groundwater gradient
- Water table does not drop below base of silt or clay

Baseline 1

- Characteristics of Baseline 2, and
- Industrial area

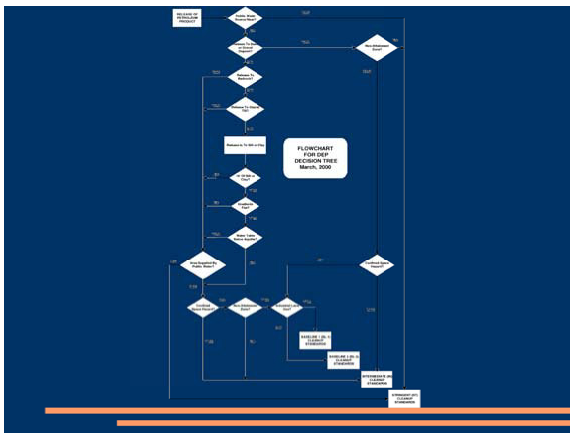
Decision Tree – Soil Cleanup Goals

Cleanup Goal	Gasoline		Fuel Oil & Kerosene	
	PID PPM	Lab mg/Kg	PID PPM	Lab mg/Kg
Stringent	NA	5	NA	10
Intermediate	NA	5	NA	10
Baseline 2	500-1000	50	200-400	100
Baseline 1	Saturated	NA	Saturated	NA

Decision Tree – Groundwater Goals

Cleanup Goal	Free Product Removal	Fuel Oil & Kerosene	Gasoline	MTBE	Benzene
Stringent	Yes	50	50	35	5
Intermediate	Yes	NA	NA	NA	NA
Baseline 2					
Baseline 1					

All concentrations in micrograms per liter (µg/L), which is equivalent to parts per billion



HYDROCARBON SPILL DECISION TREE		
go to	If Yes, go to	If No, go to
1. Is a public water supply well or intake located within 2000 feet of the leak or discharge site, or is the site located within a wellhead protection or recharge zone of a public water supply well?	1A	2
2. Is the leak or discharge site located in or over a sand and gravel deposit?	2A	2
2A. Is the entire area, within a 2000 foot radius of the leak or discharge site, a non-attainment zone?	2B	12
2B. Is there potential for vapor problems within buildings or for a confined space fire or explosion hazard?	13	11A
3. Was the release directly into bedrock or is the bedrock groundwater system contaminated?	2	4
4. Was the release directly into a glacial till deposit?	2	5
5. Was the release into a silt or clay deposit?	2	N/A
6. Is there at least 10 feet of silt and/or clay between the contaminated zone and underlying more permeable surficial deposits (such as glacial till or sand and gravel) or bedrock?	2	2
7. Are the area's gradients approximately horizontal (topographic gradient flat or groundwater gradient $\leq 1\%$)?	2	2
8. Does the seasonal low of the water table fall below the top of the underlying aquifer (sand and gravel deposit or bedrock)? If unknown, the answer is yes.	2	10
9. Is the area within 2000 feet downgradient or 1000 feet upgradient served by a public water supply? (If there are any private wells within this area, answer "No").	10	12
10. Is there potential for vapor problems within buildings or for a confined space explosion hazard?	13	11
11. Is the entire area, within a 2000 foot radius of the leak or discharge site, a non-attainment zone?	11A	11
11A. Is the site now or in the past been in a predominantly industrial land use?	11A	11B

***Remedial Action Guidelines
for Contaminated Soil***

Chemical	Residential	Adult Worker	Groundwater Protection
Benzene	5	10	0.03
Toluene	2390	3190	12
Ethylbenzene	1670	2210	13
Xylenes	10,000	10,000	190
Napthalene	245	325	84

Concentrations in milligrams per kilogram (mg/Kg)