WASHINGTON RANKING METHOD

ROUTE SCORES SUMMARY AND RANKING CALCULATION SHEET

Site name: Zwight Logging Region: CRO

City, county: Yakima, Yakima

This site was ranked on August 12, 1991, based on quintile values from 259 assessed/scored sites.

Pathway	Route Score(s)	Quintile Group number(s)
SW-HH	1.2	1
Air-HH	10.6	2
GW-HH	35.3	2
Sed-HH	–	–
SW-En	2.5	1
Air-En	36.5	5
Sed-En	–	–

Priority scores:

$\frac{4 + 4 + 1}{\frac{H^2 + 2M + L}{8}} = \frac{9}{8} = 1.1 = 2$

$\frac{25 + 2}{\frac{H^2 + 2L}{7}} = \frac{27}{7} = 3.9 = 4$

Use the matrix presented to the right, along with the two priority scores, to determine the site ranking. N/A refers to where there is no applicable pathway.

Human Health \ Environment	5	4	3	2	1	N/A
5	1	1	1	1	1	1
4	1	2	2	2	3	4
3	1	2	3	4	4	5
2	2	3	4	4	5	5
1	2	3	4	5	5	5
N/A	3	4	5	5	5	5

DRAFT / FINAL

Matrix ("bin") Ranking: 3, or _____ No Further Action

CONFIDENCE LEVEL: The relative position of this site within this bin is:

_____ almost into the next higher bin.
_____ right in the middle, unlikely to ever change.
X almost into the next lower bin.

rev. 8/91

WORKSHEET 1
SUMMARY SCORE SHEET

Site Name: Zwight Logging

Site Location: (City, County, or Section/Township/Range)

222 Keys Road
Yakima, Washington (Yakima County)
Section 20 T13N R19E W.M.

Site Description: (Include management areas, compounds of concern, and quantities)

The site consists of Zwight Logging Company office, a logging truck and diesel logging equipment storage yard, a maintenance shop, several diesel oil tanks, and a steam-cleaning wash facility. Wastewater from the cleaning facility was disposed of in an onsite drainfield from March, 1986 to June, 1987. In June, 1987 an onsite treatment system consisting primarily of a sprayfield began accepting this wastewater. In April, 1986, a neighbor alleged contamination of a well with oil and solvents six weeks after the steam cleaning operation began. Samples taken in 1986 showed oil and grease (1.8 mg/l) and surfactants (1.5 mg/l) in an onsite well and surfactants (.45 mg/l) in an off-site well. No compound-specific analyses are known to have been performed at this time. A Screening Site Inspection conducted by Ecology's PA/SI unit in May, 1990 showed no volatile organics in three off-site drinking wells, one onsite water well and two onsite monitoring wells. Soil sampling conducted at this time indicated the presence of 18 to 19 unidentified alkanes and hydrocarbons from the washpad area, but no specific compounds were quantified. Detergents containing dodecylbenzene sulfonate and glycol ether are used at the site.

Special Considerations: (Include limitations in site file data, data which cannot be accomodated in the model, but which are important in evaluating the risk associated with the site)

ROUTE SCORES:

Ground Water/Human:	31.8	Overall Rank:	3
Surface Water/Human:	1.2		
Air/Human:	8.7		
Air/Environmental:	36.5		
Surface Water/Environmental:	2.5		

WORKSHEET 2
ROUTE DOCUMENTATION

SURFACE WATER ROUTE

List substances to be considered for scoring. Source: 7

1. GLYCOL ETHER
2. DODECYLBENZENE SULFONATE
3. NAPTHALENE

Explain basis for choice of substances to be used in scoring.

THESE SUBSTANCES ARE USED ON THE SITE. THE FIRST TWO ARE CONSTITUENTS OF DETERGENTS. NAPTHALENE IS AN IMPORTANT CONSTITUENT OF DIESEL FUEL.

List management units to be considered in scoring: Source: 7

1. SPRAYFIELD
2. DRAINFIELD

Explain basis for choice of unit used in scoring.

THE DRAINFIELD WAS USED IN SCORING. THE SPRAYFIELD WAS CONSIDERED TO BE A "PERMITTED" RELEASE FOR PURPOSES OF THE SHA.

AIR ROUTE

List substances to be considered for scoring. Source: 7

1. GLYCOL ETHER
2. DODECYLBENZENE SULFONATE
3. NAPTHALENE

Explain basis for choice of substances to be used in scoring.

THESE SUBSTANCES ARE USED ON THE SITE. THE FIRST TWO ARE CONSTITUENTS OF DETERGENTS. NAPTHALENE IS AN IMPORTANT CONSTITUENT OF DIESEL FUEL.

List management units to be considered in scoring: Source: 7

1. SPRAYFIELD
2. DRAINFIELD

Explain basis for choice of unit used in scoring.

THE DRAINFIELD WAS USED IN SCORING. THE SPRAYFIELD WAS CONSIDERED TO BE A "PERMITTED" RELEASE FOR PURPOSES OF THE SHA.

GROUND WATER ROUTE

List substances to be considered for scoring. Source: 7

1. GLYCOL ETHER
2. DODECYLBENZENE SULFONATE
3. NAPTHALENE

Explain basis for choice of substances to be used in scoring.

THESE SUBSTANCES ARE USED ON THE SITE. THE FIRST TWO ARE CONSTITUENTS OF DETERGENTS. NAPTHALENE IS AN IMPORTANT CONSTITUENT OF DIESEL FUEL.

List management units to be considered in scoring: Source: 7

1. DRAINFIELD
2. SPRAYFIELD

Explain basis for choice of unit used in scoring.

THE DRAINFIELD WAS USED IN SCORING. THE SPRAYFIELD WAS CONSIDERED TO BE A "PERMITTED" RELEASE FOR PURPOSES OF THE SHA.

WORKSHEET 3
SUBSTANCE CHARACTERISTIC WORKSHEET
FOR MULTIPLE UNIT/SUBSTANCE SITES

	Combination 1	Combination 2	Combination 3
Unit: Substance: <u>AIR ROUTE</u> Human Toxicity/Mobility Value: Environmental Toxicity/ Mobility Value: Containment Value:			
Air Human Subscore: Air Environmental Score:			
<u>SURFACE WATER ROUTE</u> Human Toxicity Value: Environmental Toxicity Value: Containment Value:			
Surface Water Human Subscore: Surface Water Environmental Subscore:			
<u>GROUND WATER ROUTE</u> Human Toxicity/Mobility Value: Containment Value:			
Ground Water Subscore:			

WORKSHEET 4
SURFACE WATER ROUTE

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

Substance	Drinking Water Std. (µg/l)	Value	Chronic Toxicity mg/kg/day	Value	Acute Toxicity mg/kg-bw	Value	Carcinogencity Potency WOE	Factor	Value
ETHANOL, 2-METHOXY 1. GLYCOL ETHER	1. X	—	1. X	—	1. 2460 LD_{50} ORAL RAT	3	1. X	—	—
2. DODECYLBENZENE SULFONATE	2. X	—	2. X	—	2. —	—	2. X	—	—
3. NAPTHALENE	3. X	—	3. .004RfD	3	3. 490 LD_{50} ORAL RAT	5	3. X	—	—
4.									
5.									
6.									

Source: 3, 4
Highest Value: 5
+2 Bonus Points?: 0
Value: 5

1.2 Environmental Toxicity

Source: 3, 4, 5 Value: 3

Substance	Acute Criteria (µg/L)	Non-human mammalian acute toxicity (mg/kg)	Value
1. GLYCOL ETHER	1.	1. 2460 LD_{50} ORAL RAT	3
2. DODECYLBENZENE SULFONATE	2. X	2. —	—
3. NAPTHALENE	3. 2300	3. 490 LD_{50} ORAL RAT	2
4.			
5.			
6.			

1.3 Substance Quantity

PAGE 9 Source: 7 Value: 7

Explain basis: DRAINFIELD SIZE UNKNOWN (SOURCE 7, PAGE 5) CONTAMINATED SOIL "AT LEAST 5,000 FT²."

2.0 MIGRATION POTENTIAL

2.1 Containment

Source: 7 Value: 0

Explain basis: DRAINFIELD. SPILL IN SUBSURFACE AT SITE.

2.2 Surface Soil Permeability: HIGH. SAND, GRAVEL

PAGE 7 Source: 7 Value: 1

2.3 Total Annual Precipitation: 7.2 INCHES

Source: 2 Value: 1

2.4 Maximum 2-Year 24-Hr Precipitation: .8 TO 1 INCH

Source: 10 Value: 1

2.5 Flood Plain: LOCATED IN 100 YR FLOOD PLAIN (PROTECTED BY LEVEE)

Source: 7, 8 Value: 2

2.6 Terrain Slope: ESTIMATE $\left[\frac{1030-1020}{16,000}\right][100] = .06\%$

Source: 9 Value: 1

3.0 TARGETS

3.1 Distance to Surface Water: 3600 FEET (POND) Source: 9 Value: 4

3.2 Population Served within 2 miles: 0 Source: 11,12 Value: 0

3.3 Area Irrigated by Sources within 2 miles: 20 ACRES, .75 $\sqrt{20}$ Source: 11 Value: 3

3.4 Distance to Fishery Resource: 16,000 FEET (YAKIMA RIVER) Source: 9 Value: 0

3.5 Distance to Sensitive Environment: .3 MILE 1600 FEET PAGE 8 Source: 7 Value: 9

List: WETLANDS .3 MILE

YAKIMA SPORTSMEN STATE PARK .5 MILE

4.0 RELEASE

Explain basis: NONE DOCUMENTED Source: 7 Value: 0

WORKSHEET 5
AIR ROUTE

1.0 SUBSTANCE CHARACTERISTICS

1.1 Introduction - please review before scoring

1.2 Human Toxicity

Substance	Air Std. µg/m³	Value	Chronic Toxicity mg/kg/day	Value	Acute Toxicity $\frac{m^3}{mg/kg\text{-}bw}$	Value	Carcinogenicity WOE	Potency Factor	Value
1. GLYCOL ETHER	1. X	—	X	—	1. 1500 PPM LC_{50} RAT = 4757	5	X	—	—
2. DODECYL BENZENE SULFONATE	2. X	—	X	—	2. X	—	X	—	—
3. NAPTHALENE	3. 166.5	4	X	—	3. X	—	X	—	—
4.									
5.									
6.									

Source: 3, 4, 6
Highest Value: 5
+2 Bonus Points?: 0
Toxicity Value: 5

1.3 Mobility

1.3.1 Gaseous Mobility

Vapor Pressure: 1. X 2. X 3. .092 mm Hg @ 25°C Source: 3

Value: 1. X 2. X 3. 3

1.3.2 Particulate Mobility

Soil Type: _____ Source: ___

Erodibility: _____

Climatic Factor: _____

Particulate Mobility Potential Value: _____

1.4 Final Human Health Toxicity/Mobility Matrix: TOXICITY - 5
MOBILITY - 3 Value: 8

1.5 Environmental Toxicity/Mobility

Substance	Non-human mammalian Acute Toxicity	Value	Mobility	Value
1. GLYCOL ETHER	1. 1500 PPM = 4757	5		3
2. DODECYLBENZENE SULFONATE	2. X	—		
3. NAPTHALENE	3. X	—		
4.				
5.				
6.				

Environmental Toxicity Mobility Matrix: Source: 3,4 Value: 8

1.6 Substance Quantity: AT LEAST 5000 FT²

PAGE 9 Source: 7 Value: 5

2.0 MIGRATION POTENTIAL

2.1 Containment: SPILL IN SUBSURFACE WITH NO VAPOR RECOVERY. Source: 7 Value: 6

3.0 TARGETS

3.1 Nearest Population: .02 MILE PAGE 8 Source: 7 Value: 10

3.2 Nearest Sensitive Environment: 1000 FEET Source: 7,9 Value: 10

List: YAKIMA RIVER

3.3 Population within 1/2 mile: 379 PAGE 8 Source: 7 Value: 19

4.0 RELEASE: NONE DOCUMENTED PAGE 8 Source: 7 Value: 0

WORKSHEET 6
GROUND WATER ROUTE

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

Substance	Drinking Water Std. µg/l	Value	Chronic Toxicity mg/kg/day	Value	Acute Toxicity mg/kg-bw	Value	Carcinogenicity WOE	Potency Factor	Value
1. GLYCOL ETHER	1, X	—	1, X	—	1 2460 LD_{50} ORAL RAT	3	1. X	—	—
2. DODECYL BENZENE SULFONATE	2, X	—	2. X	—	2 X	—	2. X	—	—
3. NAPTHALENE	3, X	—	3, 1004 BPD ORAL	3	3. 490 LD_{50} ORAL RAT	5	3 X	—	—
4.									
5.									
6.									

Source: 3, 4
Highest Value: 5
+2 Bonus Points?: 0
Value: 5

* DATA NOT OBTAINED FOR THIS COMPOUND

1.2 Mobility

Substance: SOLUBILITY: 1. * 2. * 3. 30 mg/l 25°C
VALUES: 1, — 2, — 3, 1

Source: 3 Value: 1

1.3 Substance Quantity

Explain basis: $(5000\ FT^2)(3\ FEET)\left(\frac{1\ YD^3}{27\ FT^3}\right) = 556\ YD^3$ ASSUMED DEPTH

PAGE 9 Source: 7 Value: 3

2.0 MIGRATION POTENTIAL

2.1 Containment

Explain basis: DRAINFIELD = 10 CONTAINMENT VALUE.

Source: 7 Value: 10

2.2 Net Precipitation: NOV.-APRIL 3.3 INCHES PAGE 7 Source: 7 Value: 1

2.3 Subsurface Hydraulic Conductivity: $> 10^{-3}$ cm/sec, SAND, GRAVEL PAGE 7 Source: 7 Value: 4

2.4 Vertical Depth to Ground Water: 10-20 FEET PAGE 7 Source: 7 Value: 8

3.0 TARGETS

3.1 Ground Water Usage: PUBLIC, NO ALTERNATE Source: 12 Value: 9

3.2 Distance to Nearest Drinking Water Well: LESS THAN .25 MILE PAGE 9 Source: 7 Value: 4

3.3 Population Served with 2 miles: 4417 PUBLIC + 111 DOMESTIC $\sqrt{4528}$ Source: 11,12 Value: 67

3.4 Area Irrigated by Wells within 2 miles: 1465 ACRES .75 $\sqrt{1465}$ Source: 11 Value: 29

4.0 RELEASE

Explain basis: NONE DOCUMENTED

Source: 7 Value: 0

WORKSHEET 7
SOURCES USED IN SCORING

1. PRELIMINARY ASSESSMENT REPORT ZWIGHT LOGGING, YAKIMA, WASHINGTON ECOLOGY AND ENVIRONMENT, INC., 1988.
2. WASHINGTON CLIMATE FOR THESE COUNTIES GRANT KITTITAS KLICKITAT YAKIMA, COOPERATIVE EXTENSION SERVICE, WASHINGTON STATE UNIVERSITY.
3. WASHINGTON DEPARTMENT OF HEALTH GUIDE TO PHYSICO-CHEMICAL, TOXICOLOGICAL AND
4. REGULATORY VALUES FOR PRIORITY POLLUTANTS, MONA KIMBELL ET AL, DRAFT, JULY 1990, RTECS, NIOSH, APRIL 1987,
5. QUALITY CRITERIA FOR WATER, 1986, US EPA,
6. CONTROLS FOR NEW SOURCES OF TOXIC AIR POLLUTANTS, WAC 173-460, DRAFT, DEPT. OF ECOLOGY.
7. SCREENING SITE INSPECTION ZWIGHT LOGGING, M.J. SPENCER AND B. ROGOWSKI, OCTOBER, 1990,
8. FLOOD BOUNDARY AND FLOODWAY MAP, COMMUNITY - PANEL NO. 530217 1055.
9. YAKIMA EAST QUADRANGLE, USGS 7.5 MINUTE TOPO MAP,
10. ISOPLUVIALS OF 2-YR 24-HR PRECIPITATION IN TENTHS OF AN INCH, NOAA ATLAS 2, VOLUME IX, U.S. DEPT. OF COMMERCE,
11. RECORDED WATER RIGHTS OF THE DEPARTMENT OF ECOLOGY REGION 4, 9/16/90.
12. PUBLIC WATER SUPPLY SYSTEM LISTING, DEPT. OF HEALTH, 11/8/89.