

CSID 3450

WORKSHEET 1  
SUMMARY SCORE SHEET

Site Name/Location (Street, City, County, Section/Township/Range, TCP ID Number):

SHA #98-04  
PORT OF VANCOUVER/(former) BUILDING 2220 (adjacent North)  
(former) SWAN MANUFACTURING COMPANY  
Vancouver, WA 98660

TCP ID: S-06-6217-000 CLARK COUNTY T2N, R1E, Sec21, NE,SW  
Tax Parcel #s 059115-040 & 059115-053

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

The former Swan Manufacturing Co. site is located approximately 1,000 feet west of the intersection of West Fourth Plain Boulevard and Kotobuki Way in Vancouver, Clark County, Washington. The Mill Plain Boulevard Extension project is currently under construction by the City of Vancouver. The former Port Building 2220 is located directly west of the Mill Plain Boulevard Extension project and has been leased to Automotive Service Inc. (ASI). The former Swan Manufacturing Co. facility was located immediately north of Building 2220.

Evidence of contamination was identified by the City of Vancouver's investigation of Port property designated for the Mill Plain Boulevard Extension project. Subsequent work by the Port evidenced that significant soil and groundwater degradation by trichloroethene (TCE) had occurred at the Site.

TCE, and tetrachloroethene (PCE) were detected in the soil above the State of Washington Model Toxics Control Act (MTCA) Method A Industrial Soil Cleanup Levels. Additionally, 1,1,-dichloroethene (DCE), and 1,1,1-trichloroethane (TCA) were also detected in the soil.<sup>1</sup>

The contaminated soil has been excavated and piled and covered on-site.<sup>2,4</sup> It will be scored as a waste pile.

TCE, PCE and cis-1,2-DCE were detected in groundwater above the State of Washington MTCA Method A Groundwater Cleanup Levels. Additionally, 1,1,1-TCA, 1,1-dichloroethane (DCA), 1,1-DCE, chloroform, and dichlorodifluoromethane were also detected in the groundwater.<sup>1</sup>

Special Considerations (Include limitations in site file data or data which cannot be accommodated in the model, but which are important in evaluating the risk associated with the site, or any other factor(s) over-riding a decision of no further action for the site):

Site is a single unit, therefore Worksheet 3 is not required.

ROUTE SCORES:

Surface Water/Human Health: 9.0  
Air/Human Health: 11.6  
Ground Water/Human Health: 68.3

Surface Water/Environ.: 9.8  
Air/Environmental: 14.6

WARMSH

OVERALL RANK: 2

7/1/98  
Sharon H. White, EHS  
S.W. WA Health Dist.

**WORKSHEET 2**  
**ROUTE DOCUMENTATION**

**1. SURFACE WATER ROUTE**

List those substances to be considered for scoring: Source: 1  
TCE, PCE, 1,1-DCE, 1,1,1-TCA

Explain basis for choice of substance(s) to be used in scoring.  
Laboratory analysis confirmed contamination in soil before excavation.

List those management units to be considered for scoring: Source: 1  
Soil pile.

Explain basis for choice of unit to be used in scoring. Source: 1,2  
All contaminated soil detected is in the soil pile.

**2. AIR ROUTE**

List those substances to be considered for scoring: Source: 1  
TCE, PCE, 1,1-DCE, 1,1,1-TCA

Explain basis for choice of substance(s) to be used in scoring.  
Laboratory analysis confirmed contamination in soil before excavation.

List those management units to be considered for scoring: Source: 1  
Soil pile.

Explain basis for choice of unit to be used in scoring. Source: 1,2  
All contaminated soil detected is in the soil pile.

**3. GROUND WATER ROUTE**

List those substances to be considered for scoring: Source: 1  
TCE PCE cis-1,2-DCE 1,1,1-TCA 1,1-DCA 1,1-DCE  
chloroform dichlorodifluoromethane.

Explain basis for choice of substance(s) to be used in scoring.  
Laboratory analysis confirmed contamination in both soil and groundwater.

List those management units to be considered for scoring: Source: 1  
Groundwater.

Explain basis for choice of unit to be used in scoring. Source: 1  
Groundwater contamination confirmed by lab analysis.

**WORKSHEET 4**  
**SURFACE WATER ROUTE**

**1.0 SUBSTANCE CHARACTERISTICS**

**1.1 Human Toxicity**

Substance	Drinking Water Standard		Acute Toxicity		Chronic Toxicity		Carcinogenicity		
	(ug/l)	Val.	(mg/kg-bw)	Val.	(mg/kg/day)	Val.	WOE	PF*	Val.
1. (196) TCE	5	8	2402	3	----	ND	B2	0.011	4
2. (184) PCE	5	8	800	5	0.01	3	B2	0.051	4
3. (85) 1,1-DCE	7	8	200	5	0.009	3	C	0.6	3
4. (194) 1,1,1-TCA	200	4	10300	1	0.09	1	--	---	ND
5.									
6.									

\*Potency Factor Source: 3  
Highest Value: 8  
(Max.=10)  
+2 Bonus Points? 2  
**Final Toxicity Value 10**  
(Max.=12)

**1.2 Environmental Toxicity**

Substance	<input checked="" type="checkbox"/> Freshwater <input type="checkbox"/> Marine		Non-human Mammalian		Source: <u>3</u>	Value: <u>2</u> (Max.=10)
	Acute Water Quality Criteria (ug/l)	Value	Acute Toxicity (mg/kg)	Value		
1. (196) TCE	45000	2				
2. (184) PCE	5280	2				
3. (85) 1,1-DCE	11600	2				
4. (194) 1,1,1-TCA	18000	2				
5.						
6.						

**1.3 Substance Quantity:** Unknown Source: 1 Value: 1  
(Max.=10)  
**Explain basis:** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**WORKSHEET 4 (CONTINUED)**  
**SURFACE WATER ROUTE**

**2.0 MIGRATION POTENTIAL**

- 2.1 Containment Source: 4 Value: 4  
 Explain basis: Waste Pile located outside: (Max.=10)  
Run on / run off controls present.  
Semi-maintained.  
Not engineered.
- 2.2 Surface Soil Permeability: Hillsboro loam--Medium Source: 5 Value: 3  
 (Max.=7)
- 2.3 Total Annual Precipitation: 46.62 inches Source: 6 Value: 3  
 (Max.=5)
- 2.4 Max. 2-Yr/24-hour Precipitation: 2.0-2.5 inches Source: 7 Value: 3  
 (Max.=5)
- 2.5 Flood Plain: In 100 year flood plain. Source: 8 Value: 2  
 (Max.=2)
- 2.6 Terrain Slope: ≤ 2 % Source: 1 Value: 1  
 (Max.=5)

**3.0 TARGETS**

- 3.1 Distance to Surface Water: ≈ 2450 feet Source: 1 Value: 7  
 (Max.=10)
- 3.2 Population Served within 2 miles (See WARM Scoring  
 Manual Regarding Direction):  $\sqrt{\text{pop.}} = \sqrt{0} = 0$  Source: 9 Value: 0  
 (Max.=75)
- 3.3 Area Irrigated within 2 miles  $0.75\sqrt{\text{no. acres}}$   
 (Refer to note in 3.2.):  $0.75\sqrt{XX} = 0.75(X.X) = X.X$  Source: 9 Value: 0  
 (Max.=30)
- 3.4 Distance to Nearest Fishery Resource: ≈ 2450 feet Source: 1 Value: 9  
 (Max.=12)
- 3.5 Distance to, and Name(s) of, Nearest Sensitive  
 Environment(s) ≈2450 feet, Columbia River. Source: 1 Value: 9  
 (Max.=12)

**4.0 RELEASE**

- Explain basis for scoring a release to surface  
 water: None observed or documented. Source: 4 Value: 0  
 (Max.=5)

Scores  
 Surface Water, Human Health: 9.0  
 Surface Water, Env. Health: 9.8

**WORKSHEET 5**  
**AIR ROUTE**

**1.0 SUBSTANCE CHARACTERISTICS**

1.1 Introduction (WARM Scoring Manual) - Please review before scoring

1.2 Human Toxicity

Substance	Air Standard		Acute Toxicity		Chronic Toxicity		Carcinogenicity		
	(ug/m <sup>3</sup> )	Val.	(mg/m <sup>3</sup> )	Val.	(mg/kg/day)	Val.	WOE	PF*	Val.
1.(196) TCE	0.8	10	15583	3	---	ND	B2	0.017	4
2.(184) PCE	1.1	9	---	ND	---	ND	B2	---	ND
3.(85) 1,1-DCE	---	ND	25177	3	---	ND	C	1.2	4
4.(194) 1,1,1-TCA	6327	1	98208	3	0.3	1	--	---	ND
5.									
6.									

Source: 3

\*Potency Factor

Highest Value: 10  
(Max.=10)

+2 Bonus Points? 2

Final Toxicity Value: 12  
(Max.=12)

1.3 Mobility (Use numbers to refer to above listed substances)

1.3.1 Gaseous Mobility

Vapor Pressure(s) (mmHg): 1= 58 ; 2= 18 ; Source: 3

3= 600 ; 4= 120 ; 5= ; 6= Value: 4  
(Max.=4)

1.3.2 Particulate Mobility

Soil type: \_\_\_\_\_ NA Source: -

Erodibility: \_\_\_\_\_ NA Value: NA

Climatic Factor: \_\_\_\_\_ NA (Max.=4)

1.4 Highest Human Health Toxicity/Mobility Matrix Value (from

Table A-7) equals **Final Matrix Value: 24**  
(Max.=24)

1.5 Environmental Toxicity/Mobility

Source: 3,10,11

Substance	Non-human Mammalian Acute			(Table A-7)		
	Inhal.	Toxicity (mg/m <sup>3</sup> )	Value	Mobility (mmHg)	Value	Matrix Value
1.(196) TCE	546	(rat/hamster)	8	58	4	16
2.(184) PCE	-----		ND	18	4	ND
3.(85) 1,1-DCE	25177	(rat)	3	600	4	6
4.(194) 1,1,1-TCA	98208	(rat)	3	120	4	6
5.						

Highest Environmental Toxicity/Mobility Matrix Value

(From Table A-7) equals **Final Matrix Value: 16**  
(Max.=24)

WORKSHEET 5 (CONTINUED)  
AIR ROUTE

1.6 Substance Quantity: Unknown Source: 1 Value: 1  
Explain basis: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

2.0 MIGRATION POTENTIAL

2.1 Containment: Waste pile outdoors with intact, Source: 4 Value: 2  
maintained cover. \_\_\_\_\_  
\_\_\_\_\_

3.0 TARGETS

3.1 Nearest Population: ≈ 640 feet Source: 1,12 Value: 10  
(Max.=10)

3.2 Distance to, and Name(s) of, Nearest Sensitive Environment(s): \_\_\_\_\_ Source: 13 Value: 6  
\_\_\_\_\_ (Max.=7)  
≈ 1703 ft. Fruit Valley Park  
≈ 4215 ft. Vancouver Lake Area  
≈ 7324 ft. State Game Land

3.3 Population within 0.5 miles: √pop.=√ 1029 = 32.07 Source: 12 Value: 32  
(343 blds. x 3) \_\_\_\_\_ (Max.=75)

4.0 RELEASE

Explain basis for scoring a release to air: \_\_\_\_\_ Source: 1,4 Value: 0  
None observed or documented. \_\_\_\_\_ (Max.=5)  
\_\_\_\_\_  
\_\_\_\_\_

Scores  
Air, Human Health: 11.6  
Air, Env. Health: 14.6

**WORKSHEET 6  
GROUND WATER ROUTE**

**1.0 SUBSTANCE CHARACTERISTICS**

1.1 Human Toxicity

Substance	Drinking Water Standard		Acute Toxicity		Chronic Toxicity		Carcinogenicity		
	(ug/l)	Val.	(mg/kg-bw)	Val.	(mg/kg/day)	Val.	WOE	PF*	Val.
1.(196) TCE	5	8	2402	3	----	ND	B2	0.011	4
2.(184) PCE	5	8	800	5	0.01	3	B2	0.051	4
3.(85) 1,1-DCE	7	8	200	5	0.009	3	C	0.6	3
4.(194) 1,1,1-TCA	200	4	10300	1	0.09	1	--	---	ND
5.									
6.									

\*Potency Factor Source: 3  
Highest Value: 8  
(Max.=10)  
+2 Bonus Points? 2  
**Final Toxicity Value: 10**  
(Max.=12)

1.2 Mobility (Use numbers to refer to above listed substances)  
 Cations/Anions: 1= ; 2= ; 3= ; 4= ; 5= ; 6= .  
 OR Source: 3 Value: 3  
 Solubility(mg/l): 1= 1100 ; 2= 150 ; 3= 2300 ; 4= 1500 . (Max.=3)  
 Value: 3      2      3      3

1.3 Substance Quantity: unkown Source: 1 Value: 1  
 Explain basis: \_\_\_\_\_ (Max.=10)  
 \_\_\_\_\_  
 \_\_\_\_\_

**2.0 MIGRATION POTENTIAL**

2.1 Containment Source: 1 Value: 10  
 Explain basis: Confirmed groundwater contamination (Max.=10)  
by analytical results.

2.2 Net Precipitation: ≈ 23.2 inches Source: 14 Value: 3  
(Max.=5)

2.3 Subsurface Hydraulic Conductivity: >10<sup>-5</sup> to 10<sup>-3</sup> cm/sec Source: 5,7 Value: 3  
(Max.=4)

2.4 Vertical Depth to Ground Water: 0 feet Source: 1 Value: 8  
GW contamination confirmed by analytical results. (Max.=8)

WORKSHEET 6 (CONTINUED)  
GROUND WATER ROUTE

3.0 TARGETS

- 3.1 Ground Water Usage: 2 municipal wells, no alternate  
unthreatened sources available. Source: 15 Value: 9  
(Max.=10)
- 3.2 Distance to Nearest Drinking Water Well: ≈3230 ft. Source: 12,16 Value: 2  
(Port of Vancouver DW well) (Max.=5)
- 3.3 Population Served within 2 Miles: √pop.=√18.4K= >100 Source: 17 Value: 100  
(Max.=100)
- 3.4 Area Irrigated by (Groundwater) Wells  
within 2 miles: 0.75√no.acres= Source: 18 Value: 13  
0.75√287 =0.75(16.9) = 12.7 (Max.=50)
- 4.0 RELEASE  
Explain basis for scoring a release to ground Source: 1 Value: 5  
water: GW release confirmed by analytical results. (Max.=5)
- 

Score  
Ground Water, Human Health: 68.3



SOURCES USED IN SCORING

SHA #98-04

PORT OF VANCOUVER/(former) BUILDING 2220 (adjacent North)  
(former) SWAN MANUFACTURING COMPANY

Vancouver, WA 98660

TCP ID: S-06-6217-000 CLARK COUNTY T2N, R1E, Sec21, NE,SW  
Tax Parcel #s 059115-040 & 059115-053

1. Preliminary Summary of Investigation Activities at the Former Swan Manufacturing Co. Site, Port of Vancouver, U.S.A. Prepared for The Port of Vancouver by Parametrix, Inc., Portland, Oregon, April 12, 1998.
2. Heidi L. Rosenberg, Manager, Environmental Affairs, Port of Vancouver, U.S.A., personal conversation, April 30, 1998.
3. Toxicology Database for Use in Washington Ranking Method Scoring, Washington State Department of Ecology, Toxics Cleanup Program, Publication #92-37, January 1992.
4. Phase I On-site Investigation by Tom H. White, SWWHD with Heidi L. Rosenberg, Manager, Environmental Affairs, Port of Vancouver, U.S.A., May 12, 1998.
5. Clark County Soil Survey, USDA-SCS, November 1972.
6. Pat Timm, Weather Correspondent, The Columbian newspaper, Vancouver, WA, telephone messages, February 10, 1998 and May 30, 1995.
7. Scoring Manual, Washington Ranking Method (WARM) Washington State Department of Ecology, Toxics Cleanup Program, Publication #90-14, April 1990, Revised April 1992.
8. Firm Flood Insurance Rate Map, Panel # 530027-0003B, August 17, 1981.
9. Carborundum Co. (now Sohio Vancouver Electrominerals Co.) SHA (1991) Data from Public Water Supply System Listing, 2/21/89 and Washington Water Rights Information System (WRIS), Region 2, 5/10/89.
10. NIOSH Pocket Guide to Chemical Hazards, U.S. Department of Health and Human Services, National Institute for Occupational Safety and Health, June 1994.
11. Sax's Dangerous Properties of Industrial Materials, 8th Ed., vol. II, Richard J. Lewis, Sr., Van Nostrand Reinhold, 1992.
12. USGS Map, Vancouver, Wash. - Oreg., 1961, photorevised 1978.
13. Clark County Road Atlas, 1997, Department of Assessment and GIS.
14. Estimated Evapotranspiration Table, EM 2462, page 42, table 16.
15. Norm Kramm, City of Vancouver, City Water & Operations Supervisor, telephone conversation, May 27, 1998.
16. Clark Public Utilities/Clark County GIS database, accessed May 26, 1998.
17. John Rundquist, City of Vancouver, Sr. Water Engineer, telephone conversation, May 27, 1998.

SHA# 98-04  
 Port of Vancouver / former Building 2220 (adjacent North)

\*\*UPDATE\*\*UPDATE\*\*UPDATE\*\*UPDATE\*UPDATE\*\*UPDATE\*\*UPDATE\*\*UPDATE\*\*

Pathway Score Ranges

The following ranges of pathway scores are the quintile breakdowns as of July 10, 1997 based on a total of 627 assessed sites. Slight changes to any, or all, of these ranges may occur in the future when additional sites are assessed/scored, and their applicable pathway scores added to their respective master list for ranking purposes. When sites are "de-listed" from Ecology's hazardous sites list their pathway scores will also be removed from the respective master lists. This may also result in minor alterations of these ranges.

Following the scoring of an appropriate number of sites with a sediment route, a quintile breakdown of sediment pathway score ranges will be made available.

I. Human health pathway scores

<u>Quintile No.</u>	<u>Surface Water</u>	<u>Air</u>	<u>Ground Water</u>
5	>27.9	>36.2	(68.3) >56.3
4	21.6 - 27.9	22.7 - 36.2	45.6 - 56.3
3	15.4 - 21.5	15.1 - 22.6	37.3 - 45.5
2	(9.0) 7.2 - 15.3	(11.6) 8.1 - 15.0	28.7 - 37.2
1	<7.2	<8.1	<28.7

II. Environmental pathway scores

<u>Quintile No.</u>	<u>Surface Water</u>	<u>Air</u>
5	>52.8	>32.6
4	36.0 - 52.8	23.9 - 32.6
3	25.3 - 35.9	(14.6) 14.4 - 23.8
2	11.0 - 25.2	0.1 - 14.3
1	(9.8) <11.0	<0.1

WASHINGTON RANKING METHOD

ROUTE SCORES SUMMARY AND RANKING CALCULATION SHEET

Site name: P.O.V. / former Building 2220 (adjacent North) Southwest Region: CLARK  
 Street, city, county: Adjacent North of former Building 2220, Port of Vancouver COUNTY  
 Ecology TCP ID: S-00-6217-000

This site was (X) ranked, ( ) re-ranked, on \_\_\_\_\_ based on quintile values from a total of \_\_\_\_\_ assessed/scored sites.

Pathway Route Score(s) Quintile Group number(s) Priority scores:

SW-HH 9.0 2

Air-HH 11.6 2

GW-HH 68.3 5

$$H^2 + 2M + L = \frac{25 + 4 + 2}{8} = \frac{31}{8} = 3\frac{7}{8} = \textcircled{4}$$

SW-En 9.8 1

Air-En 14.6 3

$$H^2 + 2L = \frac{9 + 2}{7} = \frac{11}{7} = 1\frac{4}{7} = \textcircled{2}$$

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
4	1	2	2	2	2
3	1	2	3	4	3
2	2	3	4	4	3
1	2	3	4	5	5
N/A	3	4	5	5	N/A

DRAFT / FINAL

Matrix ("bin") Ranking: 2, 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.
- almost into the next lower bin.