CS ID 3704

WORKSHEET 1
SUMMARY SCORE SHEET

Site Name/Location

Hardel Mutual Plywood
1210 West Bay Dr. NW
Olympia, WA 98502
Date Scored: December 2004

Thurston County, T18N/S10/R2W
Tax Parcel #: 72600200100
Ecology Facility ID: 75128579
Site Scored for the February 23, 2005 Update

Site Description

The former Hardel Mutual Plywood Site (Hardel) was used for lumber-related production from
1939 to 1996. Available records indicate that Hardel utilized the site from 1951 to 1996 for the
production of wood products. The facility ceased operations in September of 1996 following a
catastrophic fire. All buildings have since been removed, but the concrete slabs, building foundation
walls, and on-site drainage systems still remain (see attached site map).

The property occupies a seven-acre site along the western edge of Budd Inlet near Downtown
Olympia. This site is bordered by vacant land to the north, a metal fabrication facility to the south, and
a railroad right-of-way to the east. Residential areas are located upgradient from the site to the west.

In June of 2004, Stemen Environmental, Inc. conducted a Phase II Environmental Assessment at the
site. A total of thirty-four (34) subsurface soil samples and thirteen (13) groundwater samples were
collected from thirty-three (33) separate locations. Site maps, diagrams, and analytical results, are
included in the attached Phase II Report. The summary obtained from this report is listed below:

1) Heavy oil-range total petroleum hydrocarbons (TPH) at levels exceeding Ecology's Model
   Toxics Control Act (MTCA) Method A cleanup levels in subsurface soils were discovered at
   sampling locations S-9, S-10, S-12, S-15, and S-20.
2) The presence of diesel-range hydrocarbons at concentrations exceeding MTCA Method A
   cleanup levels for soil and groundwater were discovered in sample locations S-24 (soil) and S-
   26-W (groundwater).
3) Carcinogenic Polycyclic Aromatic Hydrocarbons (PAHs) were discovered in groundwater at
   concentrations exceeding MTCA Method A cleanup levels {Benzo(a)pyrene, 2.9 ppb}.
4) Carcinogenic PAHs, including Benzo(a)anthracene, Benzo(b)fluoranthene, and
   Benzo(k)fluoranthene, were discovered in groundwater at levels exceeding MTCA Method B
   cleanup levels.
5) A layer (3 inches) of separate phase hydrocarbons (SPH) was discovered at sampling locations
   S-10, S-12, and S-15.
6) The presence of TPH at levels exceeding MTCA Method A cleanup levels were discovered in
   groundwater at sample locations S-1-W, S-10-W, S-12-W, TP-3-W, TP-4-W, S-15-W).
7) RCRA metals and polychlorinated biphenyls (PCBs) were *not* detected in subsurface soil
   samples.

Currently available information indicates that all of the adversely impacted areas on the property appear to be located within the boundaries of the former commercial building's footprint. The majority of the impacted areas are covered by a concrete pad and foundation walls. Soil samples collected from the eastern perimeter of the former building location did not indicate the presence of TPH (Sample locations S-2, S-4, S-5, S-7, S-8). Soil samples collected from a test pit (Sample TP-5) located between the former building and Budd Inlet did not indicate the presence of diesel fuel, heavy oil, and mineral oil-range hydrocarbons. Furthermore, Volatile Organic Compounds (VOCs) and RCRA metals were *not* detected in a sediment sample collected from the eastern perimeter of the site, adjacent to marine waters.

ROUTE SCORES:

Surface Water/Human Health: 4.5

Surface Water/Environment: 7.8

Air/Human Health: 11.4

Air/Environmental: NS = 0

Ground Water/Human Health: 33.3

OVERALL RANK: 5

WORKSHEET 2
ROUTE DOCUMENTATION

1.   SURFACE WATER ROUTE

List those substances to be <u>considered</u> for scoring.   Source: 1,2
Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, TPH-Diesel

Explain basis for choice of substance(s) to be <u>used</u> in scoring.
According to recent analytical results, the substances listed above were discovered at concentrations exceeding MTCA cleanup standards in soil and/or groundwater.

List those management units to be <u>considered</u> for scoring. Source: 1
Contaminated soil and groundwater

Explain basis for choice of unit to be <u>used</u> in scoring.
There is no documented surface water contamination. However, the surface water route was scored based on the site's close proximity to marine waters and the potential for future contamination.

2.   AIR ROUTE

List those substances to be <u>considered</u> for scoring.   Source: 1,2
Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, TPH-Diesel

Explain basis for choice of substance(s) to be <u>used</u> in scoring.
According to recent analytical results, the substances listed above were discovered at concentrations exceeding MTCA cleanup standards in soil and/or groundwater.

List those management units to be <u>considered</u> for scoring. Source: 1
Contaminated soil and groundwater

Explain basis for choice of unit to be <u>used</u> in scoring.
According to recent analytical results, the substances listed above were discovered at concentrations exceeding MTCA cleanup standards in soil and/or groundwater.

3.   GROUNDWATER ROUTE

List those substances to be <u>considered</u> for scoring.   Source: 1,2
Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, TPH-Diesel

Explain basis for choice of substance(s) to be <u>used</u> in scoring.
According to recent analytical results, the substances listed above were discovered at concentrations exceeding MTCA cleanup standards in soil and/or groundwater.

List those management units to be <u>considered</u> for scoring. Source: 1
Contaminated soil and groundwater

Explain basis for choice of unit to be <u>used</u> in scoring.
According to recent analytical results, the substances listed above were discovered at concentrations exceeding MTCA cleanup standards in soil and/or groundwater.

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1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

Substance	Drinking Water Standard		Acute Toxicity		Chronic Toxicity		Carcinogenicity		
	µg/L	Val.	mg/kg-bw	Val.	Mg/kg/day	Val.	WOE	PF*	Val.
1. Benzo(a)anthracene	0.2	10	ND	-	ND	-	.8	9.2	7
2. Benzo(a)pyrene	0.2	10	50 rat	10	ND	-	.8	9.6	7
3. Benzo(b)fluoranthene	0.2	10	ND	-	ND	-	.8	9.2	7
4. Benzo(k)fluoranthene	0.2	10	ND	-	ND	-	.8	9.2	7
5. TPH-Diesel	160	4	490 rat	5	0.004	3	ND	ND	-

PF*= Potency Factor

Source: 3,4

Highest Value: 10 Bonus Points? +2

Final Toxicity Value: 12

1.2 Environmental Toxicity

Substance	( ) Freshwater (X) Marine Acute Water Quality Criteria		Non-human Mammalian Acute Toxicity	
	(ug/1)	Value	(mg/kg)	Value
1. Benzo(a)anthracene	300	4	NS	-
2. Benzo(a)pyrene	300	4	NS	-
3. Benzo(b)fluoranthene	300	4	NS	-
4. Benzo(k)fluoranthene	300	4	NS	-
5. TPH-Diesel	2350	2	NS	-

Source: 3,4 **Value: 4**
(Max. =10)

1.3 Substance Quantity: 1 acre

Source: 10 **Value: 8**
(Max. =10)

2.0 MIGRATION POTENTIAL

2.1 Containment
Explain basis: Spill, discharge, or contaminated soil occurs only in the subsurface

Source: 1,4 **Value: 0**
(Max. =10)

2.2 Surface Soil Permeability
Explain basis: Paved site, directly adjacent to surface water

Source: 1,4 **Value: 7**
(Max. =7)

2.3 Total Annual Precipitation (inches)
52.18 inches total precipitation

Source: 5 **Value: 4**
(Max. =5)

2.4 Max. 2-yr/24-hr precipitation (inches): 2.5

Source: 4 **Value: 3**
(Max. =5)

| 2.5 | Flood Plain: 100 yr | Source: 7 **Value: 2** |
| | | (Max. =2) |

2.6   Terrain Slope (less than 2%)   Source: 1,4 **Value: 1**
                                                                                 (Max. =5)

3.0   TARGETS

3.1   Distance to Surface Water: less than 1,000 ft.   Source: 7 **Value: 10**
                                                                                 (Max. =10)

3.2   Population Served within 2 miles   Source: 8 **Value: 0**
        $\sqrt{pop.} = \sqrt{x} = n, \sqrt{} = 0$ (Max. =75)

3.3   Area Irrigated within 2 miles   Source: 8 **Value: 0**
                                                                                 (Max. =30)
        $0.75\sqrt{\#\ of\ acres} = n$
        $0.75\sqrt{0} = 0.75(0) = 0$

3.4   Distance to Nearest Fishery Resource   Source: 7 **Value: 12**
        (less than 1,000 ft. – Budd Inlet)   (Max. =12)

3.5   Distance to and Names of Nearest Sensitive Environments
        Wetlands – Marine less than 1,000 ft.   Source: 7 **Value: 12**
                                                                                 (Max. =12)

4.0   RELEASE
No confirmed release   Source: 1 **Value: 0**
                                                                                 (Max. =5)

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^3)	Val.	(mg/m^3)	Val.	(mg/kg/day)	Val.	WOE	PF	Val.
1. Benzo(a)anthracene	ND	-	ND	-	ND	-	ND	-	-
2. Benzo(a)pyrene	.0006	10	ND	-	ND	-	ND	-	-
3. Benzo(b)fluoranthene	ND	-	ND	-	ND	-	ND	-	-
4. Benzo(k)fluoranthene	ND	-	ND	-	ND	-	ND	-	-
5. TPH-Diesel	166.5	4	ND	-	ND	-	ND	-	-

Source:3-4 Value: 10 (Max. =10)
+2 Bonus Points? No

Final Toxicity Value: 10

1.3 Mobility

1.3.1 Gaseous Mobility
Vapor Pressures (mmHg)   Source: 3,4 **Value: 3**
1. TPH-Diesel, 8.2E-02, Value 3   (Max. =4)

1.3.2 Particulate Mobility   Source: 4, 7 **Value: 2**
Soil Type: loamy sand   (Max. =4)
Erodibility: 134
Climactic Factor: 1

1.4 Highest Human Health Toxicity/Mobility Matrix Value (from Table A-7)
Equals Final Matrix Value   Source: 3,4 **Value: 10**
Explanation: Gaseous Tox/Mob: 4/3 = 6, Particulate Tox/Mob: 10/2 = 10   (Max. =24)

1.5 Environmental Toxicity/Mobility

Non-human Mammalian Acute (Table A-7)

Substance	Inhalation Toxicity (mg/m^3)	Value	Mobility (mmHg)	Value	Matrix Value
1. Benzo(a)anthracene	ND	-	2.2E-08	1	-
2. Benzo(a)pyrene	ND	-	5.6E-09	1	-
3. Benzo(b)fluoranthene	ND	-	5.0E-07	1	-
4. Benzo(k)fluoranthene	ND	-	5.0E-07	1	-
5. TPH-Diesel	ND	-	8.2E-02	3	-

Highest Environmental Toxicity/Mobility Matrix Value (From Table A-7) equals.   Source: 3,4
Final Matrix Value: NS

1.6   Substance Quantity: 1 acre   Source:_10_ Value: _6_
                                                                              (Max. =10)

2.0   MIGRATION POTENTIAL

2.1   Containment: Uncontaminated soil cover <2 feet thick   Source:_1_ Value: _5_
                                                                              (Max. =10)

3.0   TARGETS

3.1   Nearest Population: <1000 feet   Source:_7_ Value: **10**
                                                                              (Max. =10)

3.2   Distance to and Names of Nearest Sensitive Environments
        Wetlands – Marine less than 1,000 ft.   Source:_7_ Value: _7_
                                                                              (Max. =7)

3.3   Population within 0.5 miles: Source:_7_ Value: **28**
        √pop. = √790 = 28   (Max. =75)

4.0   RELEASE
        Explain basis for scoring a release to air:
        No evidence of a release   Source:_1_ Value: _0_
                                                                              (Max. =5)

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity

Substance	Drinking Water Standard		Acute Toxicity		Chronic Toxicity		Carcinogenicity		
	(ug/m^3)	Val	(mg/kg/bw)	Val	(mg/kg/day)	Val	WOE	PF	Val
1. Benzo(a)anthracene	0.2	10	ND	-	ND	-	.8	9.2	7
2. Benzo(a)pyrene	0.2	10	50 rat	10	ND	-	.8	9.6	7
3. Benzo(b)fluoranthene	0.2	10	ND	-	ND	-	.8	9.2	7
4. Benzo(k)fluoranthene	0.2	10	ND	-	ND	-	.8	9.2	7
5. TPH-Diesel	160	4	490 rat	5	0.004	3	ND	ND	-

Source: 3,4 Value: 10 (Max. =10)
+2 Bonus Points? 2
Final Toxicity Value: 12

1.2 Mobility

Cations/Anions

Source: Value: NS
(Max. =3)

OR Solubility
1. Benzo(a)anthracene, 5.7E-03, Value 0
2. Benzo(a)pyrene, 1.2E-03, Value 0
3. Benzo(b)fluoranthene, 1.4E-02, Value 0
4. Benzo(k)fluoranthene, 4.3-03, Value 0
5. TPH-Diesel, 3.0E+01, Value 1

Source: 3,4 Value: 1
(Max. =3)

1.3 Substance Quantity

3,000 to 5,000 cu. yards

Source: 10 Value: 4
(Max. =10)

2.0 MIGRATION POTENTIAL

2.1 Containment

Source: 1 Value: 6
(Max. =10)

Explain Basis: Contamination area capped, score as a landfill, no liner (3), low permeability cover (1), no leachate collection (2)

2.2 Net Precipitation (inches):

Source: 5 Value: 3
(Max. =5)

Nov-Apr (inches): 38.98" total precipitation, 11.74" evapotranspiration rate
38.98-11.74 = 27.24 net precip.
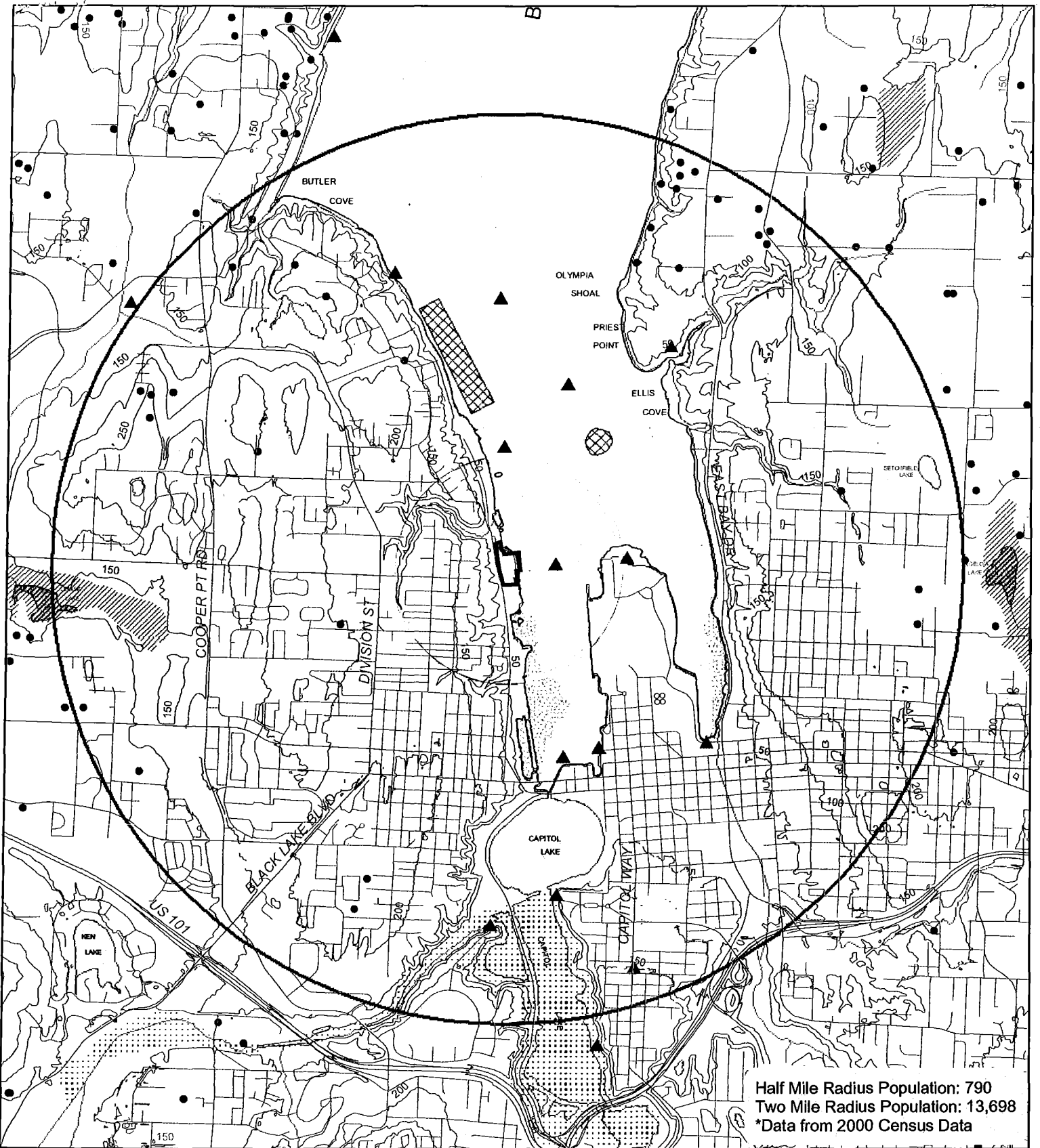
2.3 Subsurface Hydraulic Conductivity:

Source: 9 Value: 4
(Max. =4)

$1.4x10^{-3}$

2.4   Vertical Depth to Ground Water: 0-25 feet   Source:_1_ Value:_8_
                                                                              (Max. =8)

3.0   Targets

3.1   Ground Water Usage: Source:_7_ Value:_4_
                                                                              (Max. =10)
       Public supply with alternate sources available

3.2   Distance to Nearest Drinking Well (ft):   Source:_7_ Value:_2_
                                                                              (Max. =5)
       4,000 feet

3.3   Population Served within 2 miles: Source:_7_ Value:_31_
                                                                              (Max. =100)
       318 domestic wells x 3 people per well (estimated household) = 954 people
       $\sqrt{pop.} = \sqrt{954} = 30.88$

3.4   Area irrigated by Wells within 2 miles: Source:_8_ Value:_11_
                                                                              (Max. =50)
       224 acres
       $0.75\sqrt{\# \text{ of acres}} = n$
       $0.75\sqrt{224} = 0.75(14.96) = 11.22$

4.0   RELEASE   Source:_1_ Value:_5_
                                                                              (Max. =5)
       Explain basis for scoring a release to ground water: confirmed release
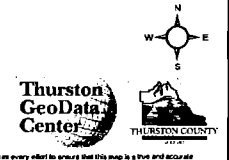

SOURCES USED IN SCORING

1. Phase II Environmental Site Assessment Report, Stemen Environmental, Inc., Paul W. Stemen, July 2004.
2. Washington State Dept. of Ecology, Cleanup Levels and Risk Calculations under the Model Toxics Control Act Cleanup Regulation (CLARK), November 2001.
3. Washington State Dept. of Ecology, Toxicology Database for Use in WARM Scoring, January 1992.
4. Washington State Dept. of Ecology, Washington Ranking Method, Scoring Manual, April 1992.
5. Washington State Dept. of Ecology website, Precipitation Maps, DAYMET U.S. Data Center, December 2004.
6. Table 16-Estimated Evapotranspiration, E.M. 2462, p42, for Thurston County Airport.
7. Thurston County Roads and Transportation Division, Geodata Center, Amy Callahan, June 2004.
8 . Washington State Dept. of Ecology, Water Right Application Tracking System (WRATS), Sheri Carroll, December 2004.
9 . Soil Survey, Thurston County Washington, USDOA, June 1990
10 . Telephone interview with Paul Stemen, Stemen Environmental, Inc., December 9, 2004.

Area Analysis
Hardell Mutual Plywood Property
1270 West Bay Drive NW
Olympia, WA
Ecology Facility Site ID #75128579

Half Mile Radius Population: 790
Two Mile Radius Population: 13,698
*Data from 2000 Census Data

Sensitive Areas & Populations (WDFW)
- Harbor Seal
- Mink
- Shorebird Concentrations
- Wood Duck
- ▲ Sensitive Population Site
- ▲ Seabird Populations
- ● Well
- ● Well (DOH)
- — 50 Foot Contour
- ☐ Parcel Boundary
- ⬭ 1/2 Mile Radius
- ⬭ 2 Mile Radius

Thurston GeoData Center
Thurston County

0   0.5   1
Miles

Map Created on 12.01.04abc

BUTLER COVE
OLYMPIA SHOAL
PRIEST POINT
ELLIS COVE
SETCHFIELD LAKE
COOPER PT RD
DIVISION ST
BLACK LAKE BLVD
US 101
KEN LAKE
CAPITOL LAKE
CAPITOL WAY