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WORKSHEET 1  
Draft - Summary Score Sheet

**SITE INFORMATION:**

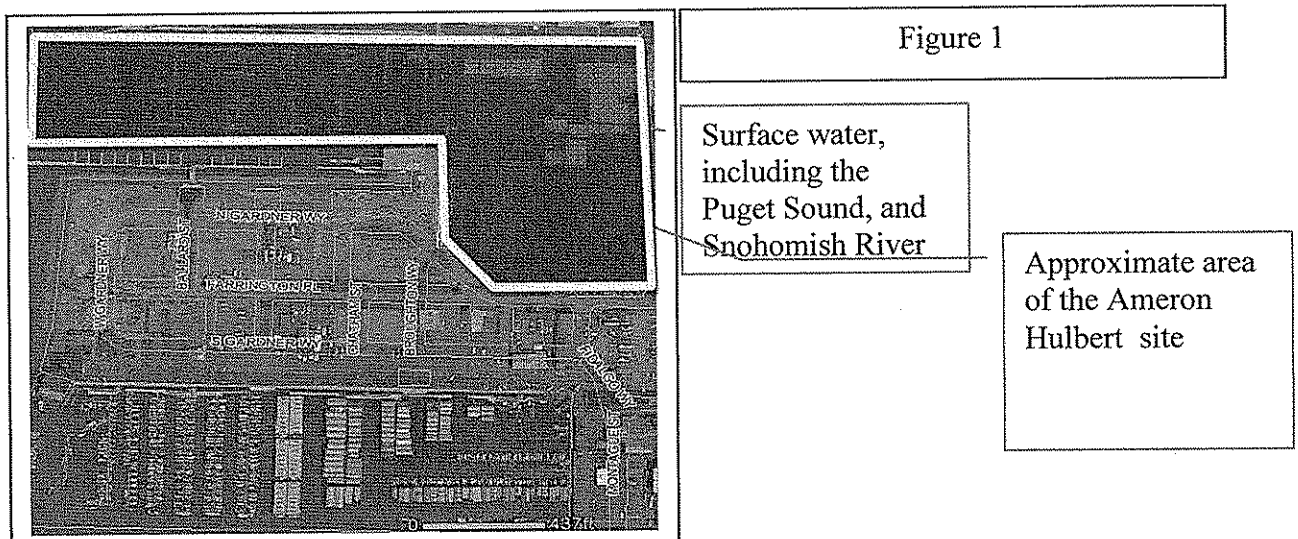
Name: North Marina Ameron Hulber  
Address: Between 11<sup>th</sup> and 13<sup>th</sup> Streets off Marine View Drive  
City: **Everett** County: **Snohomish** State: **WA** Zip: **98201**  
Section/Township/Range: **18/29N/5E**  
Latitude: **48° 0' 2.28" N** Longitude: **122° 13' 18.73" W**  
FS ID #: **8236906**

*Site scored/ranked for the August 20, 2008 update.*  
July 22, 2008

**SITE DESCRIPTION:**

The North Marina Ameron Hulbert (site) is generally located on the western side of the City of Everett on waterfront, between 11<sup>th</sup> Street and 13<sup>th</sup> streets, west of Marine View Drive. The Snohomish County tax parcel numbers associated with the site are: Lot 1; 29051800208100, 29051800208101, Lot 2; 29051800102200, 29051800102201, 29051800102202, 29051800102203, 29051800102204, lot 3; 29051800102300 and Lot 4; 29051800208200, 29051800208201. The site is flat and extends west from Marine View drive into the Snohomish River channel between the Everett mainland and Jetty Island. (See figure 1)

According to the April 13, 2004 Landau Associates (Laundau) report with the title, *Ecology Review Draft Phase II Environmental Site Assessment, North Marina Area, Port of Everett, Everett* as well as other documentation outlined in figure 2, the site historically has had commercial, industrial and marine related uses dating back to the early 1900's. The same report notes that tidelands in the area of the site were filled with material dredged from the Snohomish River to create new upland property. The report also notes that the site was filled to its current configuration between the years of 1947 and 1955. The entire north marina redevelopment (NMRD) site is approximately 65 acres. The Ameron Hulbert portion of the larger 65 acres site is generally in the northeast corner of the NMRD site.



## Background

A number of different reports have been prepared regarding property at the site and in the near vicinity. Work includes documents outlined in figure 2.

### Figure 2

Information presented below related to Investigation Areas G, I, J, and M and contaminants found in site media were identified from the following reports:

- *Supplemental Environmental Review, Hulbert Mill Company Property, 1105 13th Street, Everett, WA.* Prepared by Earth Consultants Inc. (ECI) for Mr. William Hulbert (January 17, 1990).
- *Phase I ESA and Phase I Environmental Audit, Business on Thirty Acres, Northwest Corner Of 13th Street and Marine View Drive, Everett, Washington.* Prepared by Kleinfelder, Inc. (Kleinfelder) for Anderson Hunter, a law firm representing the Port of Everett (May 29, 1991).
- *Phase 2 ESA, Hulbert Mill Property, Everett, WA.* Prepared by ECI for Mr. William Hulbert (February 7, 1992).
- *Phase I ESA. North Marina Redevelopment Project.* Prepared by Landau Associates for the Port of Everett (November 28, 2001).
- *Phase II ESA. North Marina Area. Port of Everett. Everett, Washington.* Prepared by Landau Associates for the Port of Everett (April 13, 2004).
- *Ecology Review Draft Data Gaps Investigation. North Marina Redevelopment Site. Everett, Washington.* Prepared by Landau Associates for the Port of Everett (May 13, 2005).
- *Ameron International Leasehold Environmental Investigation of Oil Affected Area, Port of Everett, Washington.* Prepared by Landau Associates for the Port of Everett (June 20, 2005).
- *Ecology Review Draft Report Supplemental Data Gaps Investigation. North Marina Redevelopment Site. Everett, Washington.* Prepared by Landau Associates for the Port of Everett (February 28, 2006).
- *Cleanup Action Plan North Marina Redevelopment Site. Everett, Washington.* Prepared by Landau Associates for the Port of Everett (September 25, 2006).
- *Cleanup Action Plan Addendum, Port of Everett, Washington.* Prepared by Landau Associates for the Port of Everett (September 25, 2006).

According to the July 6, 2007 Landau report, the larger NMRD site has been organized into 13 subareas (Areas A-M.) The Ameron Hulbert portion is comprised of areas G, I, J, and M. This Site Hazard Assessment includes review of the aforementioned parcels for subareas G, I, J and M.

A letter dated November 26, 2008, from Ecology to Mr. Paul, Vannini, Ameron International, regarding a reported release of hazardous substances and Potentially liability..., summarizes the contaminants of concern in various media at the site and the specific reports which document the release. This letter and other documentation outlined in figure 2, formed the basis to the following contaminants and routes to be considered for this Site Hazard Assessment.

#### **Documented Soil Contamination:**

1992 ECI Phase 2 ESA finds contaminants exceeding Model Toxics Cleanup Act (MTCA) Method A/Method B soil clean up levels are:

Total Petroleum Hydrocarbons, antimony, arsenic, cadmium, chromium and lead.

Landau Investigations (2003 – 2006) confirm contaminants that exceed MTCA clean up levels include: Total Petroleum Hydrocarbons, antimony, arsenic, cadmium, chromium and lead. Landau also confirmed the following contaminants to be above their respective MTCA Method A/Method B ground water cleanup levels:

Arsenic, copper, zinc, lead, diesel-range petroleum hydrocarbons, oil range hydrocarbons, and cPAHs.

#### **Documented Ground Water Contamination:**

The 1992 ECI Phase 2 ESA - As reported by ECI reported arsenic, mercury, nickel and thallium higher than clean up levels.

The Landau Investigations (2003-2006) reports arsenic, vinyl chloride and bis(2(ethylhexyl)phalate above cleanup levels.

Sediment contamination has also been documented, but will not be considered in this SHA.

It is unclear what, over the course of time, caused the contamination at the site. Landau points to general industrial use, spills, leaks and poor containment throughout the history of the site.

The site is currently undergoing a formal clean up. Potentially liable parties (PLPs) have been identified. The next steps of the process, as outlined in a January 4, 2008, letter from Ecology's Tim Nord to the Port of Everett's Jerry Heller and other PLPs are: Remedial Investigation and Feasibility Study, an Interim Action if found to be necessary, and a Clean up Action Plan. Of course, subsequent to these actions the clean up will occur in conjunction, where possible, the redevelopment of the property.

#### **Surface Water and Groundwater Features**

The site is surrounded on the north, west and south sides by waters of the Puget Sound and the Snohomish River channel which drains to Port Gardner Bay. The site is an artificial, rectangular shaped peninsula created by fill. Generally, from any portion of the site, surface water features are never more than approximately 1000 feet to the west, southwest or northwest.

According to Ecology well logs from resource protection well constructed within the site boundary, groundwater exists at approximately 12-25 feet below ground surface.

### Ground and Surface Water Uses

Ecology well logs did not indicate any domestic drinking water wells within two miles of the site. Review of the Washington State Water Rights Application and Tracking System (WRATS) revealed no groundwater use for irrigation within two miles of the site. The City of Everett supplies the site, the surrounding businesses and residential properties to the east with public water. The City of Everett's water source is piped from Lake Chaplain.

### Summary/Recommendations

Contamination of soils and groundwater is well documented. MTCA clean up levels for both soils and groundwater have been exceeded for a number of different compounds and elements. For this reason, the Health District recommends that the site be scored and ranked under the Washington Ranking Method.

**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):**

None.

### ROUTE SCORES:

Surface Water/Human Health: 19.4 4      Surface Water/Environmental.: 63.5 5  
Air/Human Health: 38.0 5      Air/Environmental: 29.4 4  
Groundwater/Human Health: 39.5 3

**OVERALL RANK: 1**

WORKSHEET 2  
Route Documentation

1. SURFACE WATER ROUTE

- a. List those substances to be considered for scoring:

Source: 1

**Arsenic, antimony, cadmium, chromium lead, copper, mercury, zinc, diesel range petroleum hydrocarbons, oil range petroleum hydrocarbons, and cPAHs (score as benzo(a) pyrene)**

- b. Explain basis for choice of substance(s) to be used in scoring.

**Analytical results from soil sampling indicate the presence of arsenic, antimony, cadmium, chromium lead, copper, mercury, zinc, diesel range petroleum hydrocarbons, oil range petroleum hydrocarbons, and cPAHs (score as benzo(a) pyrene) at concentrations which exceed current Method A and or B cleanup levels.**

- c. List those management units to be considered for scoring:

Source 1

**Subsurface soils, surface soils, ground water**

- d. Explain basis for choice of unit to be used in scoring:

**Discharges caused soil contamination Spills occurred in the surface with unknown run-on and run-off controls.**

2. AIR ROUTE

- a. List those substances to be considered for scoring:

Source: 1

**Arsenic, antimony, cadmium, chromium lead, copper, mercury, zinc, diesel range petroleum hydrocarbons, oil range petroleum hydrocarbons, and cPAHs (score as benzo(a) pyrene)**

- b. Explain basis for choice of substance(s) to be used in scoring:

**Analytical results from soil sampling indicate the presence of arsenic, antimony, cadmium, chromium lead, copper, mercury, zinc, diesel range petroleum hydrocarbons, oil range petroleum hydrocarbons, and cPAHs (score as benzo(a) pyrene) at concentrations which exceed current Method A and or B cleanup levels.**

- List those management units to be considered for scoring:

Source: 1

**Subsurface soils, surface soils, ground water**

- c. Explain basis for choice of unit to be used in scoring:

**Spills/discharges caused soil contamination Spills occurred in surface with no cover and no vapor collection.**

3. **GROUNDWATER ROUTE**

- a. List those substances to be considered for scoring:

Source: 1

**Arsenic, mercury, nickel, thallium, vinylchloride and bis2(ethylhexyl)phalate** Explain basis for choice of substance(s) to be used in scoring:

**Analytical results from soil sampling indicate the presence of Arsenic, mercury, nickel, thallium, vinylchloride and bis2(ethylhexyl)phalate at concentrations which exceed current Method A and or B cleanup levels.**

- b. List those management units to be considered for scoring:

Source: 1

**Subsurface soils, surface soils, ground water**

- c. Explain basis for choice of unit to be used in scoring:

**Spills/discharges caused soil contamination Documented impacts to groundwater.**

**WORKSHEET 4**  
Surface Water Route

**1.0 SUBSTANCE CHARACTERISTICS**

<b>1.1 Human Toxicity</b>										
Substance	Drinking Water Standard (µg/L)	Value	Acute Toxicity (mg/kg-bw)	Value	Chronic Toxicity (mg/kg/day)	Value	Carcinogenicity		Value	
							WOE	PF*		
1	Arsenic	10	8	763	5	.001	5	A	1.75	7
2	Antimony	3	8	7(rat)	10	.0004	5	ND	ND	
3	Cadmium	5	8	225	5	.0005	5	B1	ND	X
4	Lead	5	8	ND	X	.001	10	B2	ND	X
5	Copper	1300	2	ND	X	.037	1	ND	ND	X
6	Mercury	2	8	ND	X	.0003	5	ND	ND	x
7	Zinc	4000	2	ND	X	.2	1	ND	ND	X
8	TPH Diesel	500	5	490	5	.0004	3	ND	ND	X
9	TPH Oil	ND	x	ND	x	2	1	ND	ND	X
10	Benzo[a]pyrene	.2	10	50	10	ND	ND	B2	12	7

\*Potency Factor

Source: 1, 2

**Highest Value: 10**

(Max = 10)

**Plus 2 Bonus Points? 2**

**Final Toxicity Value: 12**

(Max = 12)

<b>1.2 Environmental Toxicity ( ) Freshwater (x) Marine</b>					
Substance	Acute Water Quality Criteria		Non-Human Mammalian Acute Toxicity		
	(µg/L)	Value	(mg/kg)	Value	
1	Arsenic	69	7	763r	5
2	Antimony	ND	ND	7r	10
3	Cadmium	43	6	225r	5
4	Lead	140	4	ND	ND
5	Copper	2.9	8	ND	ND
6	Mercury	2.1	8	ND	ND
7	Zinc	95	6	ND	ND

8	TPH Diesel	2350	2	490r	5
9	TPH Oil	ND	ND	ND	ND
10	Benzo[a]pyrene	300	4	50r	10

Source: 1, 2  
**Highest Value: 10**  
(Max = 10)

<b>1.3 Substance Quantity (aerial extent)</b>	
Explain Basis: approximately 20,000yd <sup>3</sup> (Landau, 2007)	Source: <u>1, 3</u> <b>Value: <u>5</u></b> (Max = 10)

## 2.0 MIGRATION POTENTIAL

		Source	Value
2.1	<b>Containment:</b> Management unit scored as a spills/discharges/contaminated soil occur in the surface and in the subsurface.  <b>Explain basis:</b> Spill occurred in the surface with unknown run on and runoff controls .	1, 3	<b>10</b> (Max = 10)
2.2	<b>Surface Soil Permeability:</b> Snohomish Silt Till – well graded sands, silt loam	11	<b>3</b> (Max = 7)
2.3	<b>Total Annual Precipitation:</b> average annual precipitation for Mt. Vernon WSO AP, WA = 32.30 in	3	<b>3</b> (Max = 5)
2.4	<b>Max 2yr/24hr Precipitation:</b> 1.5 inches to 2.0 inches	4	<b>2</b> (Max = 5)
2.5	<b>Flood Plain:</b> not in a flood plain	13	<b>0</b> (Max = 2)
2.6	<b>Terrain Slope:</b> = 0-2% to Puget Sound	13	<b>1</b> (Max = 5)

## 3.0 TARGETS

		Source	Value
3.1	<b>Distance to Surface Water:</b> < 500 feet Puget Sound / Snohomish River	13	<b>10</b> (Max = 10)
3.2	<b>Population Served within 2 miles (see WARM Scoring Manual Regarding Direction):</b> $\sqrt{0} = 0$	6, 7	<b>0</b> (Max = 75)
3.3	<b>Area Irrigated by surface water within 2 miles:</b> $(0.75)^{\sqrt{\# \text{ acres}}} = 0.75 * \sqrt{0} = 0$	6	<b>0</b> (Max = 30)
3.4	<b>Distance to Nearest Fishery Resource:</b> <500 feet to the Puget Sound/Snohomish river	13	<b>12</b> (Max = 12)
3.5	<b>Distance to, and Name(s) of, Nearest Sensitive Environment(s):</b>	13	<b>12</b>



wetland > 500 feet to the Puget Sound and Snohomish River	(Max = 12)
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**4.0 RELEASE**

Explain Basis: No documented release	Source: <u>1, 3</u> Value: <b>0</b> (Max = 5)
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**WORKSHEET 5**  
Air Route

**1.0 SUBSTANCE CHARACTERISTICS**

**1.1. Introduction**

<b>1.2 Human Toxicity</b>										
	Substance	Air Standard (µg/m <sup>3</sup> )	Value	Acute Toxicity (mg/ m <sup>3</sup> )	Value	Chronic Toxicity (mg/kg/day)	Value	Carcinogenicity		Value
								WO E	PF*	
1	Arsenic	.00023	10	ND	X	ND	X	A	50	9
2	Antimony	1.7	9	ND	X	ND	ND	ND	ND	ND
3	Cadmium	.00056	10	25	10	ND	X	B1	6.1	6
4	Lead	.5	10	ND	X	ND	X	B2	ND	X
5	Copper	3.3	9	ND	X	ND	X	ND	ND	X
6	Mercury	.3	10	ND	X	8.5E-5	8	ND	ND	X
7	Zinc	ND	X	ND	X	ND	X	ND	ND	X
8	TPH Diesel	166.5	4	ND	X	ND	X	ND	ND	X
9	TPH Oil	ND	X	ND	X	ND	X	ND	ND	X
10	Benzo[a]pyrene	.0006	10	ND	X	ND	X	B2	ND	X

\* Potency Factor

Source: 1, 3

**Highest Value: 10**

(Max = 10)

**Plus 2 Bonus Points? 2**

**Final Toxicity Value: 12**

(Max = 12)

<b>1.3 Mobility (Use numbers to refer to above listed substances)</b>				
<b>1.3.1 Gaseous Mobility</b>		<b>1.3.2 Particulate Mobility</b>		
Vapor Pressure(s) (mmHg)		Soil Type	Erodibility	Climatic Factor
1		Silty clay loam	38	1-10
2		Silty clay loam	38	1-10
3		Silty clay loam	38	1-10
4		Silty clay loam	38	1-10
5		Silty clay loam	38	1-10

6	2.0E-03=2			
7		Silty clay loam	38	1-10
8	8.2E-2=3			
9	ND			
10	5.6E-9=1			

Source: 2

Compare 10/3 = 15 vs. 12/1=3

Source: 1, 3

**Value: 3**  
(Max = 4)

**Value: 1**  
(Max = 4)

1.4 Highest Human Health Toxicity/ Mobility Matrix Value (from Table A-7)

**Final Matrix Value: 15**  
(Max = 24)

1.5 Environmental Toxicity/Mobility						
	Substance	Non-human Mammalian Inhalation Toxicity (mg/m <sup>3</sup> )	Acute Value	Mobility (mmHg)	Value	Matrix Value
1	Arsenic	--	--	ND	--	--
2	Antimony	--	--	ND	--	--
3	Cadmium	25r	10	ND	--	--
4	Lead	--	--	ND	--	--
5	Copper	--	--	ND	--	--
6	Mercury	--	--	2.0E-2=2	2	--
7	Zinc	--	--	ND	--	--
8	TPH Diesel	490r	4	8.2E-2=3	3	6
9	TPH Oil	--	--	--	--	-
10	Benzo[a]pyrene	--	--	5.6E-9=1	1	--

Highest Environmental Toxicity/Mobility Matrix Value (from Table A-7) = **Final Matrix Value: 6**  
(Max = 24)

1.6 Substance Quantity (aerial extent)	
<b>Explain Basis:</b> North Marina Ameron Hulbert is approximately 7.8-39 acres. Entire site is 65 acres and the site is between 0 and 1/2 that size.	Source: 1, 3 <b>Value: 8</b> (Max = 10)

## 2.0 MIGRATION POTENTIAL

		Source	Value
2.1	<b>Containment:</b> Spill occurred in surface with no cover and no vapor collection	1, 3	<b>10</b> (Max = 10)

## 3.0 TARGETS

		Source	Value
3.1	<b>Nearest Population:</b> less than 1000 feet to various marina facilities and the City of Everett boat launch park as well as the 10 <sup>th</sup> Street Marine Park.	3, 13	<b>10</b> (Max = 10)
3.2	<b>Distance to [and name(s) of] nearest sensitive environment(s) [fisheries excluded]:</b> Approximately 1000 feet west to 10 <sup>th</sup> Street Marine Park	13	<b>6</b> (Max = 7)
3.3	<b>Population served within 0.5 miles:2004 us census data pop/sq mile =<math>\sqrt{\text{pop.}}</math></b> = $\sqrt{1866}$ = 43.2 estimated by GIS parcel based population estimates	13	<b>43.2</b> (Max = 75)

## 4.0 RELEASE

<b>Explain Basis for scoring a release to air:</b> Not documented	Source: 1, 3 <b>Value: 0</b> (Max = 5)
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**WORKSHEET 6**  
Groundwater Route

**1.0 SUBSTANCE CHARACTERISTICS**

<b>1.2 Human Toxicity</b>										
Substance	Drinking Water Standard (µg/L)	Value	Acute Toxicity (mg/ kg-bw)	Value	Chronic Toxicity (mg/kg/day)	Value	Carcinogenicity		Value	
							WOE	PF*		
1	Arsenic	10	8	763	5	.001	5	A	1.75	7
2	Antimony	3	8	7(rat)	10	.0004	5	ND	ND	
3	Cadmium	5	8	225	5	.0005	5	B1	ND	X
4	Lead	5	8	ND	X	.001	10	B2	ND	X
5	Copper	1300	2	ND	X	.037	1	ND	ND	X
6	Mercury	2	8	ND	X	.0003	5	ND	ND	x
7	Zinc	4000	2	ND	X	.2	1	ND	ND	X
8	TPH Diesel	500	5	490	5	.0004	3	ND	ND	X
9	TPH Oil	ND	x	ND	x	2	1	ND	ND	X
10	Benzo[a]pyrene	.2	10	50	10	ND	ND	B2	12	7

\* Potency Factor

Source: 1, 2

**Highest Value: 10**

(Max = 10)

**Plus 2 Bonus Points? 2**

**Final Toxicity Value: 12**

(Max = 12)

<b>1.2 Mobility (use numbers to refer to above listed substances)</b>	
Cations/Anions [Coefficient of Aqueous Migration (K)]	OR Solubility (mg/L)
1= > 1.0 = 3	
2 => 1.0 = 3	
3=> 1.0 = 3	
4= 0.1-1 = 2	
5= 0.1-1 = 2	
6=> 1.0 = 3	

7 => 1.0 = 3	
8	3.0E1 = 1
9 ND	
10	1.2E-3 = 0

Source: 1, 3

**Value: 3**

(Max = 3)

<b>1.3 Substance Quantity (volume):</b>	
<p><b>Explain basis:</b> 5,000-50,000 cubic yards – Described in various sources.</p>	<p>Source: 1, 3, 8</p> <p><b>Value: 5</b></p> <p>(Max=10)</p>

## MIGRATION POTENTIAL

		Source	Value
2.1	<b>Containment (explain basis):</b> Spills to surface with unknown level of soil contamination	1, 3	<b>10</b> (Max = 10)
2.2	<b>Net precipitation:</b> 22.8" - 5.9" = 16.9"	4	<b>2</b> (Max = 5)
2.3	<b>Subsurface hydraulic conductivity:</b> sandy slit $>10^{-5}$ to $10^{-3}$ (cm/sec)	3,11	<b>3</b> (Max = 4)
2.4	<b>Vertical depth to groundwater:</b> 0-25 feet as per well logs	3, 5	<b>8</b> (Max = 8)

## 2.0 TARGETS

		Source	Value
3.1	<b>Groundwater usage:</b> Groundwater not usable	3, 6	<b>1</b> (Max = 10)
3.2	<b>Distance to nearest drinking water well:</b> <u>&gt;10,000</u> feet	3, 5, 13	<b>0</b> (Max = 5)
3.3	<b>Population served within 2 miles:</b> $\sqrt{\text{pop.}} = \sqrt{0}$	3, 7	<b>0</b> (Max = 100)
3.4	<b>Area irrigated by (groundwater) wells within 2 miles:</b> $(0.75) * \sqrt{\# \text{ acres}} = 0.75 * \sqrt{0} = 0$	3, 6	<b>0</b> (Max = 50)

## 3.0 RELEASE

		Source	Value
	<b>Explain basis for scoring a release to groundwater:</b> Documented impacts to groundwater - (Landau, 2003-2006)	1, 3, 13	<b>5</b> (Max = 5)

## SOURCES USED IN SCORING

1. Washington State Department of Ecology File on North Marina Ameron Hulbert.
2. Washington State Department of Ecology, Toxicology Database for Use in Washington Ranking Method Scoring, January 1992
3. Washington State Department of Ecology, WARM Scoring Manual, April 1992.
4. Washington Climate – Net Rainfall Table
5. Washington State Department of Ecology, Online Water Well Log database
6. Washington State Department of Ecology, Water Rights Application System (WRATS) printouts
7. Washington State Department of Health, Office of Drinking Water Sentry website printout for public water supplies
8. Western Regional Climate Center's Historical Climate Information
9. Thomas Guide, Snohomish County, 2008
10. Department Of The Interior, US Geologic Survey, Geologic Map of the Everett 7.5 Minute Quad, James P. Minard, 1985
11. Soil Conservation Service, Soil Survey of Snohomish County Area, July 1983.
12. Snohomish County Assessors/Treasurers On-line information page @ <http://198.238.192.103/propsys/Asr-Tr-PropInq/PrpInq01-Entry.asp>
13. Snohomish County GIS mapping information