SITE HAZARD ASSESSMENT
Worksheet 1
Summary Score Sheet

SITE INFORMATION:

Cleanup Site ID: 11077

Yale Ave Parking Garage

Facility/Site ID: 92673819

300 310 320 Yale Ave N

Seattle, King County, WA 98109

Section:	29	Latitude:	47.62164
Township:	25N	Longitude:	-122.33023
Range:	4E	Tax/Parcel ID:	684770-0091

Site Scored/ranked for the August 2013 Hazardous Sites List Publication

SITE DESCRIPTION:

The Yale Ave Parking Garage site is a parking garage and lot located in Seattle, King County, Washington. The 0.71-acre property is located approximately 2,400 feet from Lake Union, and zoned for Seattle mixed (SM-75) use.

Adjacent properties include office buildings including PEMCO insurance and Umpqua Bank to the east, retail businesses and restaurants to the west and south, and an orthodox cathedral and apartment buildings to the north.

The site is used as a parking garage and parking lot by PEMCO insurance.

The site is located on the east side of Yale Avenue N, between Harrison Street and Thomas Street, in the South Lake Union neighborhood of Seattle, Washington.

SITE BACKGROUND:

A summary of prior operations/tenants at the subject property is presented below.

From	To	Operator/Tenant	Activity
1981	2013	PEMCO Insurance	parking garage and lot

SITE CONTAMINATION:

In 1993 the Yale Ave Parking Garage site was reported to Washington Department of Ecology and placed on the LUST list with ID number 2727.

Diesel and gasoline contamination in soil at the site was first identified in 1992, and reported to Ecology in 1993.

In November 1992 during telecommunications utility work, gasoline and diesel supply lines for a fuel dispenser located inside the parking garage were severed. The location of the line cut is 4 feet north of the northwest corner of the parking garage. Free product was observed to be pooling around the foundation footing of the parking garage at a depth of 3 feet below ground surface. The release volume was estimated to be between 500 and 800 gallons.

PAST REMEDIATION ACTIVITIES:

Approximately 50 gallons of free-phase hydrocarbons were recovered from the excavation by a vacuum truck, and sorbent pads were used to recover additional free-phase hydrocarbon product in the excavation. Subsequent excavation of contaminated soils was conducted and a PID was used to identify contaminated soil where organic vapor measurements exceeded 50 ppm. Approximately 30 cubic yards of soil were excavated and

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presumably disposed off-site. The excavation area was limited by the location of fill pipes and other underground utilities in the area. The excavation was lined with polyethylene sheeting and backfilled with clean sand. A soil gas survey was conducted to help delineate the extent of petroleum impacted soil. Based on soil gas concentrations, the estimated benzene concentration in soil was 0.07 ppb, below cleanup levels. Based on soil gas survey results, some residual contamination is present in soils northwest of the original release site, extending from the source area, beneath Yale Avenue N.

CURRENT SITE CONDITIONS:

A remedial excavation was conducted at the location of the release, however confirmation soil samples were not collected and groundwater was not investigated. Concentrations of petroleum hydrocarbons are inferred from soil vapor samples collected near and downgradient from the release location. Groundwater is expected to occur at a depth of 15-25 feet below ground surface, based on static water levels recorded at nearby sites, with groundwater flowing north-northwest toward Lake Union.

Diesel and gasoline contamination of soil is present at the site.

The approximate depth to groundwater is 15-25 feet below ground surface, with groundwater flowing to the north-northwest. Subsurface soils are sand and silt.

SPECIAL CONSIDERATIONS:

Checked boxes indicate routes applicable for WARM scoring

☐ **Surface Water**

Release occurred in the subsurface.

☑ **Air**

Detected concentrations of gasoline in soil vapor samples collected in 1993 adjacent to the release area.

☑ **Groundwater**

Diesel and gasoline hydrocarbon release occurred to shallow subsurface soil.

Remedial excavation and soil removal was conducted at the source of the initial fuel release. Further investigation was limited by the Yale Ave N right-of-way and underground utilities; however, a soil vapor survey identified residual contamination in soils northwest of the release area. The actual extent of soil and/or groundwater concentrations exceeding MTCA Method A cleanup levels is not characterized. Analytical data regarding BTEX constituents in soil was not available.

ROUTE SCORES:

Surface Water/ Human Health:		Surface Water/ Environment:	
Air/ Human Health:	41.0	Air/ Environment:	1.1
Groundwater/ Human Health:	29.1		

Overall Rank: 3

REFERENCES:

WARM Toxicological Database

WARM Scoring Manual

Washington Department of Transportation 24-hour Isopluvial Maps, January 2006 update. http://www.wsdot.wa.gov/publications/fulltext/Hydraulics/Wa24hrIspoluvials.pdf

King County GIS Center iMAP application, Property Information, Groundwater Program, and Sensitive Areas mapsets. Accessed January 2013. http://www.kingcounty.gov/operations/GIS/Maps/iMAP.aspx

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National Climatic Data Center 2011 Local Climatological Data for Seattle, Seattle Tacoma Airport. http://www1.ncdc.noaa.gov/pub/orders/IPS-90B1F39F-6CFA-4A6B-AA82-5ED1FF897CCC.pdf

Washington State Department of Health Source Water Assessment Maps. March 2011 update. https://fortress.wa.gov/doh/eh/dw/swap/maps/

Ecology Water Resources Explorer, accessed January 2013. https://fortress.wa.gov/ecy/waterresources/map/WaterResourcesExplorer.aspx

FEMA Map Service Center, accessed January 2013. https://msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView?storeId=10001&catalogId=10001&langId=-1

Missouri Census Data Center, Circular Area Profiles - 2010 census data around a point location. Http://mcdc.missouri.edu/websas/caps10c.html. Accessed February 2013

Northwest Industrial Hygiene, 1993, Soil Remediation Report for Pemco Insurance Company Yale Street Parking Garage. February 22.

SITE HAZARD ASSESSMENT
Worksheet 2
Route Documentation

Cleanup Site ID: 11077 Yale Ave Parking Garage

Facility/Site ID: 92673819

1. SURFACE WATER ROUTE

List those substances to be considered for scoring:

Not Applicable

Explain the basis for choice of substances to be used in scoring:

List those management units to be considered for scoring:

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

2. AIR ROUTE

List those substances to be considered for scoring:

Gasoline

Explain the basis for choice of substances to be used in scoring:

Residual concentrations in shallow subsurface soil.

List those management units to be considered for scoring:

Soil vapor

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

Potential for vapor transport, and confirmed presence in soil vapor.

3. GROUNDWATER ROUTE

List those substances to be considered for scoring:

Gasoline and Diesel

Explain the basis for choice of substances to be used in scoring:

Residual soil contamination in Yale Ave N right-of-way.

List those management units to be considered for scoring:

Groundwater

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

Release occurred less than 25 ft above groundwater.

Worksheet 5

Air Route

CSID: 11077 **Site Name:** Yale Ave N Parking Garage

1.0 Substance Characteristics

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

1.2 Human Toxicity

Substance	Ambient Air Standard Value	Acute Toxicity Value	Chronic Toxicity Value	Carcinogenicity Value
Gasoline (benzene)	10	3	X	5

Highest Value 10

Bonus Points? 0

Toxicity Value 10

1.3 Mobility

Gaseous Mobility	Max Value: 4	
Particulate Mobility	Soil Type:	Mobility Value 4
	Erodibility:	
	Climatic Factor:	

1.4 Final Human Health Toxicity/Mobility Matrix Value **HH Final Matrix Value** 20

1.5 Environmental Toxicity/Mobility

Substance	Non-human Mammalian Inhalation Toxicity (mg/m3)	Acute Value	Mobility Value	Table A-7 Matrix Value
gasoline (benzene)	31947	3	4	6

Env. Final Matrix Value 6

1.6 Substance Quantity

Amount: 1700 square feet

Basis: Estimated surface area of contaminated soil

Substance Quantity Value 4

Worksheet 5

Air Route

CSID: 11077 **Site Name:** Yale Ave N Parking Garage

2.0 Migration Potential

2.1 Containment Containment Value: 5

Explain Basis: Assume 2' thick cover, no vapor collection system

3.0 Targets

3.1 Nearest Population Population Distance Value: 10

Residences within 1000 feet

3.2 Distance to and name of nearest sensitive environments Sensitive Environment Value: 5

2400ft to Lake Union

3.3 Population within 0.5 miles Population Value: 75

16703 population

4.0 Release Release to Air Value: 0

Explain basis for scoring a release to air

no confirmed release

Pathway Scoring - Air Route, Human Health Pathway

$AIR_H = (SUB_{AH}*60/329)*[REL_A+(TAR_{AH}*35/85)]/24$

Where:

SUB_{AH} =(Human toxicity + 5) * (Containment + 1) + Substance Qty	SUB_{AH}	154
REL_A = Release to Air	REL_A	0
TAR_{AH} = Nearest Population + Population within 1/2 mile	TAR_{AH}	85
	AIR_H	41.0

Pathway Scoring - Air Route, Environmental Pathway

$AIR_E = (SUB_{AE}*60/329)*[REL_A+(TAR_{AE}*35/85)]/24$

Where:

SUB_{AE} =(Environmental Toxicity Value +5)*(Containment +1) +Substance Qty	SUB_{AE}	70
REL_A = Release to Air	REL_A	0
TAR_{AE} = Nearest Sensitive Environment	TAR_{AE}	5
	AIR_E	1.1

Worksheet 6

Groundwater Route

CSID: 11077 **Site Name:** Yale Ave N Parking Garage

1.0 Substance Characteristics

1.1 Human Toxicity

Substance	Drinking Water Standard Value	Acute Toxicity Value	Chronic Toxicity Value	Carcinogenicity Value
Gasoline (benzene)	8	3	X	5
Diesel	6	5	3	X

Highest Value 8

Bonus Points? +2

Toxicity Value 10

1.2 Mobility

Cations/Anions Max Value:

Solubility Max Value: 3 Mobility Value 3

1.3 Substance Quantity

Amount: 350 cubic yards of soil (or approximately 800 gallons of fuel)

Basis: Estimated volume of impacted soil remaining in-place

Substance Quantity Value 3

2.0 Migration Potential

2.1 Containment Containment Value 10

Explain Basis: Contaminated soil

2.2 Net Precipitation 10-20 inches Net Precipitation Value 2

2.3 Subsurface Hydraulic Conductivity Conductivity Value 3

silt/sand

2.4 Vertical Depth to Groundwater Depth to Aquifer Value 8

Depth to groundwater less than 25ft from contaminated soil

3.0 Targets

3.1 Groundwater Usage Aquifer Use Value 2

Irrigation and commercial/industrial

3.2 Distance to Nearest Drinking Water Well Well Distance Value 0

More than 2 miles

3.3 Population Served within 2 Miles Population Served Value 0.00

0 population (estimated)

Worksheet 6

Groundwater Route

CSID: 11077 **Site Name:** Yale Ave N Parking Garage

3.4 Area Irrigated by GW Wells within 2 miles Area Irrigated Value 4.44

35 acres

4.0 Release Release to Groundwater Value 0

Explain basis for scoring a release to groundwater:

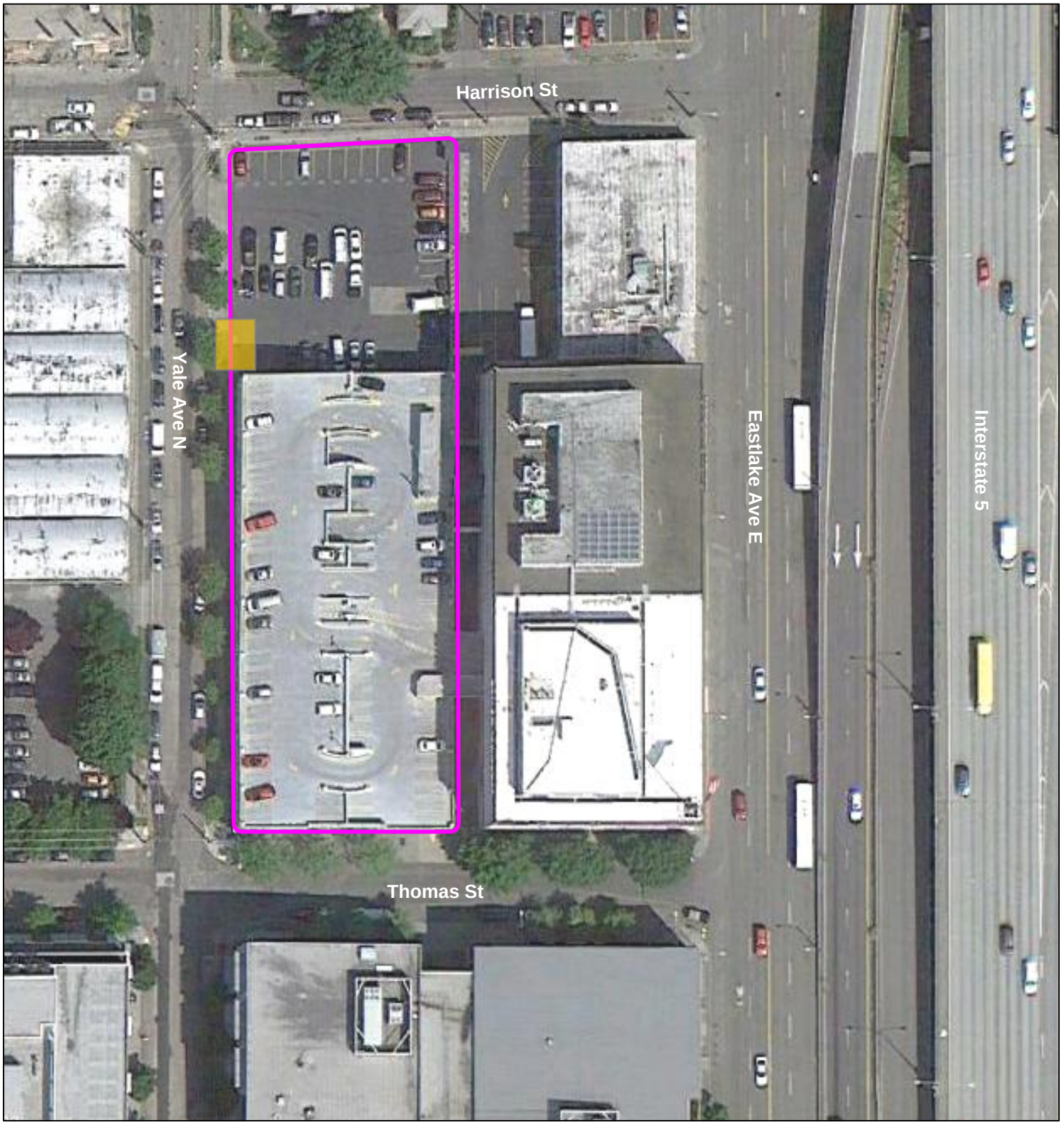
No confirmed release

Pathway Scoring - Groundwater Route, Human Health Pathway

$GW_H = (SUB_{GH}*40/208)*[(MIG_G*25/17)+REL_G+(TAR_{GH}*30/165)]/24$

Where:

SUB_{GH} =(Human toxicity + mobility + 3) * (Containment + 1) + Substance Qty	SUB_{GH}	179
MIG_G=Depth to Aquifer+Net Precip + Hydraulic Conductivity	MIG_G	13
REL_G = Release to Groundwater	REL_G	0
TAR_{GH} = Aquifer Use + Well Distance + Population Served + Area Irrigated	TAR_{GH}	6.437059837
	GW_H	29.1



Legend:

- Property location (approximate)
- Location of release and remedial excavation (approximate)

Notes:

1. All locations are approximate, and not to scale.

N

Yale Ave N Parking Garage
300, 310 & 320 Yale Avenue North
Seattle, WA 98109

DEPARTMENT OF ECOLOGY
State of Washington

Site Overview Map

CSID 11077

CSID11077.vsd

Washington Ranking Method
Route Scores Summary and Ranking Calculation Sheet

Site Name: Yale Ave N Parking Garage **CSID:** 11077

Site Address: 300 Yale Ave N **FSID:** 92673819

HUMAN HEALTH ROUTE SCORES

Enter Human Health Route Scores for all Applicable Routes:

Pathway	Route Score	Quintile Group
Surface Water	ns	0
Air	41.0	5
Groundwater	29.1	2

H=	5
M=	2
L=	0

$$\frac{H^2 + 2M + L}{8} = \frac{25 + 4 + 0}{8}$$

Human Health Priority Bin Score: **4**

rounded up to next whole number

ENVIRONMENT ROUTE SCORES

Enter Environment Route Scores for all Applicable Routes:

Pathway	Route Score	Quintile Group
Surface Water	ns	0
Air	1.1	1

H=	1
L=	0

$$\frac{H^2 + 2L}{7} = \frac{1 + 0}{7}$$

Environment Priority Bin Score: **1**

rounded up to next whole number

Comments/Notes:

FINAL MATRIX RANKING **3**

FOR REFERENCE:

Final WARM Bin Ranking Matrix

Human Health Priority	Environment Priority 5	4	3	2	1	N/A
5	1	1	1	1	1	1
4	1	2	2	2	3	2
3	1	2	3	4	4	3
2	2	3	4	4	5	3
1	2	3	4	5	5	5
N/A	3	4	5	5	5	NFA

Quintile Values for Route Scores - February 2013 Values

Quintile	Human Health: Surface Water	Human Health: Air	Human Health: Ground Water	Environment: Surface Water	Environment: Air
5	>= **27.0**	>= **32.0**	>= **50.1**	>= **47.0**	>= **32.0**
4	>= **18.5**	>= **21.1**	>= **40.4**	>= **30.3**	>= **26.1**
3	>= **12.4**	>= **13.1**	>= **31.6**	>= **21.4**	>= **21.1**
2	>= **7.5**	>= **7.1**	>= **22.4**	>= **11.0**	>= **14.6**
1	< **7.5**	< **7.1**	< **22.4**	< **11.0**	< **14.6**

Quintile value associated with each route score entered above