SITE HAZARD ASSESSMENT
Worksheet 1
Summary Score Sheet

SITE INFORMATION:

Cleanup Site ID: 8876

Mobil 99BLV

Facility/Site ID: 36214799

1500 145th Pl SE

Bellevue, King County, WA 98007

Section:	3	Latitude:	47.59672
Township:	24N	Longitude:	-122.14962
Range:	05E	Tax/Parcel ID:	0324059162

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

SITE DESCRIPTION:

The Mobil 99BLV site is a former gas station located in Bellevue, King County, Washington. The 1.85-acre property is located approximately 3500 feet from Richards Creek (a tributary to Kelsey Creek), and zoned for neighborhood business (NB) use.

Adjacent properties are a mix of residential and neighborhood commercial businesses. Residential homes on Lake Hills Blvd are present to the north, and an apartment complex is located to the west across 145th Place SE. A QFC grocery store is present immediately east of the site, and Sandhu's Shell gas station and convenience store is located south of the site across SE 16th Street.

The site is currently operated as a strip mall by Joanne H Bledsoe.

The site has been redeveloped with a parking lot shared between the strip mall at the north end of the parcel and the QFC store to the east. The strip mall has several small stores and restaurants including Papa Murphy's Pizza, Tokyo Stop Teriyaki, La Tienda, and Action Small Appliance Sales. The strip mall building was originally constructed in 1959 and is not part of the former Mobil station.

The site is located at the northeast corner of 145th Place SE and SE 16th Street in Bellevue, Washington.

SITE BACKGROUND:

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

From	To	Operator/Tenant	Activity
1965	1972		gasoline service station

SITE CONTAMINATION:

In 1992 the Mobil 99BLV site was reported to Washington Department of Ecology and placed on the LUST list with ID number 2070.

Site investigation activities conducted in 1991 and 1992 identified concentrations of benzene and gasoline range hydrocarbons above MTCA Method A cleanup levels in soils up to 34 feet below ground surface. Borings extended to a depth of 39.5 feet below ground surface, and groundwater was not encountered. Groundwater was later encountered in borings up to 50 feet below ground surface, and BTEX and gasoline range hydrocarbons were detected in groundwater.

Further site characterization was conducted in Fall 1994 to evaluate the lateral extent of contaminated soil and groundwater. The site was operated as a gasoline service station between the mid 1960s and 1972. There is no documentation of LUST closure or tank removal activities at the site.

PAST REMEDIATION ACTIVITIES:

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In February 1994 a vapor extraction system was installed, and air effluent was treated using a catalytic oxidizer. An additional vapor extraction well was installed in Fall 1994. The vapor extraction system operated with a catalytic oxidizer through November 1995, after which the system was modified with a regenerative blower and no off-gas treatment. Pneumatic fracturing was conducted in three vadose zone wells during 1995 to enhance vapor extraction. In 1996, ORC was introduced twice into two wells. The vapor extraction system was shut down in March 1997 after removing approximately 825 pounds of petroleum hydrocarbons.

The vapor extraction system was operated again, beginning in Fall 1994, and presumably has run intermittently with a number of changes made to the system. In 2005, three additional vapor extraction wells (SVE-5 through SVE-7) and one new groundwater monitoring well were installed. In 2007, one additional groundwater monitoring well and three air sparge wells were installed at the site.

Between August 1995 and February 2012 groundwater monitoring activities were conducted on a quarterly, and later semi-annual basis. The most recent groundwater monitoring report in Ecology's files is dated February 2012. Through 4th quarter 2011, the vapor extraction system had recovered approximately 967 pounds of hydrocarbons, and concentrations of lead, xylenes, gasoline, and/or diesel exceeding MTCA Method A cleanup levels were reported in groundwater samples from six monitored wells.

CURRENT SITE CONDITIONS:

A soil vapor extraction system is currently present and assumed to be operating at the site. Groundwater monitoring and sampling results from 2012 indicate groundwater contamination is present at the site, with concentrations of lead, gasoline, diesel and xylenes exceeding MTCA Method A cleanup levels. The site is a former Mobil gas station, and has been redeveloped as a shopping center with the parking lot over the former station, tank, and dispenser areas.

Lead, gasoline, diesel and BTEX constituent contamination is present in groundwater, and presumably soil and soil vapor at the site.

The approximate depth to groundwater is 50 feet below ground surface, with groundwater flowing to the west. Subsurface soils are poorly graded sand with silt.

SPECIAL CONSIDERATIONS:

Checked boxes indicate routes applicable for WARM scoring

☐ **Surface Water**

Release is present in the subsurface.

☑ **Air**

Release of gasoline and diesel in the subsurface.

☑ **Groundwater**

Release of gasoline and diesel in the subsurface.

The soil vapor extraction system may still be operating at the site and mitigating the vapor intrusion pathway to ambient air. Groundwater sampling data from 4th quarter 2011 indicates lead, gasoline, diesel and xylenes are present in six groundwater monitoring wells at concentrations exceeding MTCA Method A cleanup levels.

ROUTE SCORES:

Surface Water/ Human Health:		Surface Water/ Environment:	
Air/ Human Health:	7.5	Air/ Environment:	0.3
Groundwater/ Human Health:	73.0		

Overall Rank: 3

SITE HAZARD ASSESSMENT
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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

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

Kleinfelder, 1995, Supplemental Subsurface Exploration Former Mobil Service Station #99-BLV 1500 145th Place SE, Bellevue, Washington. January 6.

Cardno ERI, 2012, Groundwater Monitoring and Remedial Status Report Former Mobil Station 99BLV 1500 145th Place SE, Bellevue, Washington. February 24.

ERI, 2007, Monitoring and Air Sparge Well Installation, Former Mobil Station 99-BLV, 1500 145th Place Southeast, Bellevue, Washington. August 31.

SITE HAZARD ASSESSMENT
Worksheet 2
Route Documentation

Cleanup Site ID: 8876 Mobil 99BLV

Facility/Site ID: 36214799

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 and xylenes

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

Present in groundwater, soil and/or soil vapor above MTCA Method A cleanup levels

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

3. GROUNDWATER ROUTE

List those substances to be considered for scoring:

Gasoline, diesel, lead and xylenes

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

Present in soil and/or groundwater above MTCA Method A cleanup levels

List those management units to be considered for scoring:

Groundwater

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

Confirmed release to groundwater

Worksheet 5

Air Route

CSID: 8876 **Site Name:** Mobil 99BLV

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
Xylene	1	3	1	X

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
xylene	21714	3	3	5

Env. Final Matrix Value 6

1.6 Substance Quantity

Amount: 1200 square feet

Basis: Estimated surface area of contaminated soil, groundwater and soil vapor

Substance Quantity Value 4

Worksheet 5

Air Route

CSID: 8876 **Site Name:** Mobil 99BLV

2.0 Migration Potential

2.1 Containment Containment Value: 0

Explain Basis: Operating vapor collection system

3.0 Targets

3.1 Nearest Population Population Distance Value: 10

230' to nearest residence

3.2 Distance to and name of nearest sensitive environments Sensitive Environment Value: 6

1600' to Woodridge Park

3.3 Population within 0.5 miles Population Value: 72

5242 population

4.0 Release Release to Air Value: 0

Explain basis for scoring a release to air

no confirmed release to ambient air

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}	29
REL_A = Release to Air	REL_A	0
TAR_{AH} = Nearest Population + Population within 1/2 mile	TAR_{AH}	82
	AIR_H	7.5

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}	15
REL_A = Release to Air	REL_A	0
TAR_{AE} = Nearest Sensitive Environment	TAR_{AE}	6
	AIR_E	0.3

Worksheet 6

Groundwater Route

CSID: 8876 **Site Name:** Mobil 99BLV

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
Lead	8	X	X	X
Xylenes	2	10	1	X

Highest Value 10

Bonus Points? 2

Toxicity Value 12

1.2 Mobility

Cations/Anions Max Value:

Solubility Max Value: 3 Mobility Value 3

1.3 Substance Quantity

Amount: 150 cubic yards of soil

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

confirmed release to groundwater

3.0 Targets

3.1 Groundwater Usage Aquifer Use Value 4

domestic, commercial/industrial, irrigation

3.2 Distance to Nearest Drinking Water Well Well Distance Value 4

less than 1/4 mile

3.3 Population Served within 2 Miles Population Served Value 100.00

141,000 population (estimated)

Worksheet 6

Groundwater Route

CSID: 8876 **Site Name:** Mobil 99BLV

3.4 Area Irrigated by GW Wells within 2 miles Area Irrigated Value 8.49

85.5

4.0 Release Release to Groundwater Value 5

Explain basis for scoring a release to groundwater:

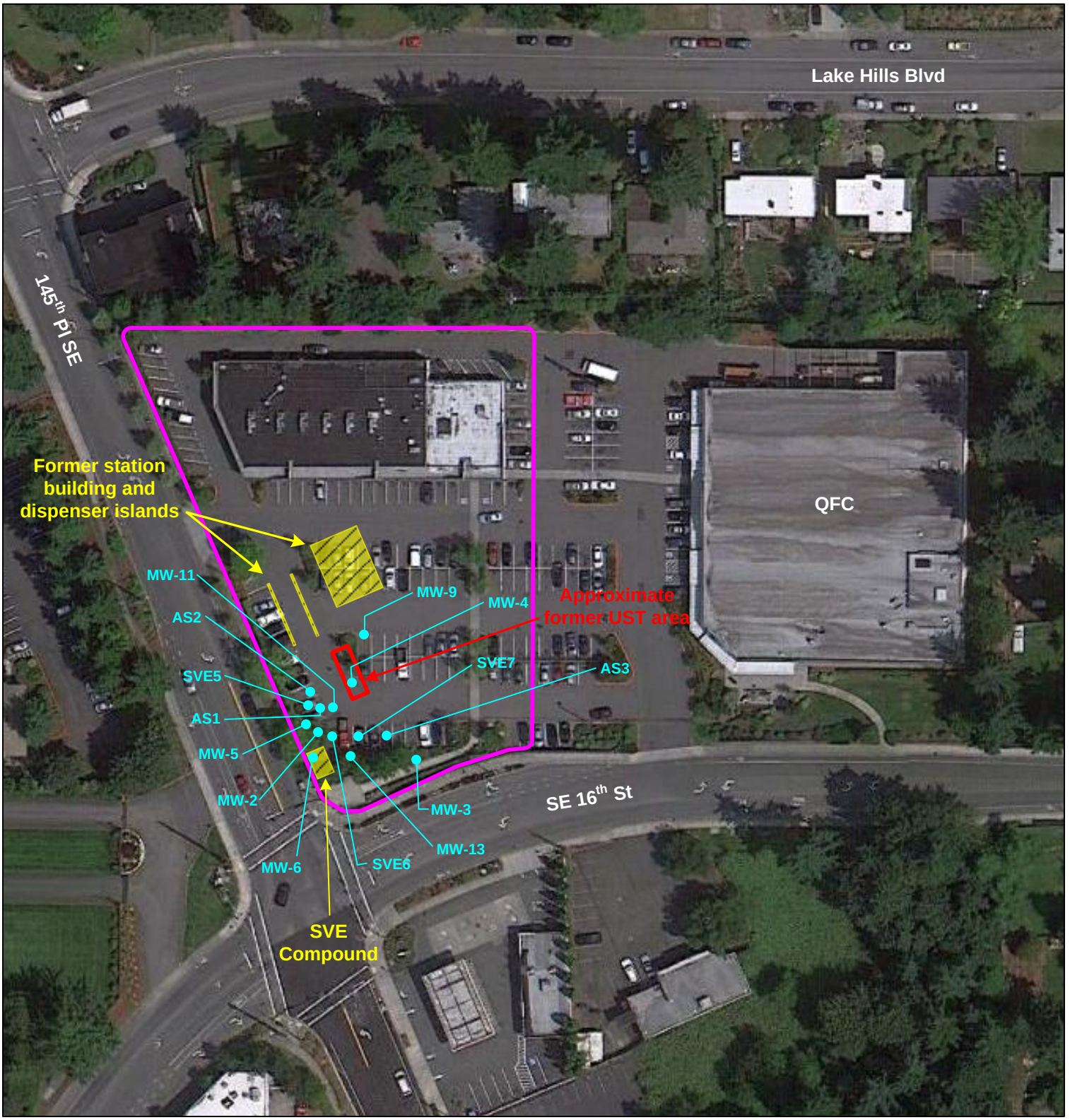
Confirmed release to groundwater

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}	201
MIG_G=Depth to Aquifer+Net Precip + Hydraulic Conductivity	MIG_G	13
REL_G = Release to Groundwater	REL_G	5
TAR_{GH} = Aquifer Use + Well Distance + Population Served + Area Irrigated	TAR_{GH}	116.4852814
	GW_H	73.0



Legend:

- Property location (approximate)
- Monitoring wells, AS & SVE points

Notes:

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

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DEPARTMENT OF ECOLOGY
State of Washington

Mobil 99BLV
1500 145th Place SE
Bellevue, WA 98007

Site Overview Map

CSID 8876

CSID8876.vsd

Washington Ranking Method
Route Scores Summary and Ranking Calculation Sheet

Site Name: Mobil 99BLV **CSID:** 8876

Site Address: 1500 145th Pl SE **FSID:** 36214799

HUMAN HEALTH ROUTE SCORES

Enter Human Health Route Scores for all Applicable Routes:

Pathway	Route Score	Quintile Group
Surface Water	ns	0
Air	7.5	2
Groundwater	73.0	5

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	0.3	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:

Groundwater score and ultimate site rank appear to be strongly influenced by the use of groundwater for municipal water supply. A functioning vapor extration/treatment system is currently in place at the site and is likely mitigating much of the potential migration of contamination.

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