SITE HAZARD ASSESSMENT
Worksheet 1
Summary Score Sheet

SITE INFORMATION:

Cleanup Site ID: 3018

Belshaw Brothers Inc

Facility/Site ID: 97763114

1750 22nd Ave S

Seattle, King County, WA 98144

Section:	9	Latitude:	47.58741
Township:	24N	Longitude:	-122.30500
Range:	4E	Tax/Parcel ID:	1822300020, 1822300175, 1822300180, 0924049007, 3881900515, 3881900540, 3881900550, 3881900560, 7548301115, 7548301120, 7548301150

Site Scored/ranked for the August 2015 Hazardous Sites List Publication

SITE DESCRIPTION:

The Belshaw Brothers Inc site (Site) is a former donut machine factory located in Seattle, King County, Washington. The 2.68-acre property is located approximately 4,100 feet from Lake Washington, and zoned for commercial (C1-65) and lowrise residential (LR2) use.

Adjacent properties include the Penthouse Drapery Cleaners state cleanup site to the northwest (Cleanup Site ID [CSID] 3184), an auto shop and retail facility to the south, Colman Playground to the east, and single family residences to the north.

The Site is currently operated as an unused property by Snarf LLC/Brunzer LLC/Sleepy Koala LLC.

Parcels that make up the Site are currently owned by three different corporations, however these corporations are managed by the same person. The parcels associated with the Site are located surrounding the intersection of 22nd Avenue South and South Grand Street in the Mount Baker neighborhood of Seattle. The former facility consisted of a number of buildings (some now removed) where painting, welding, metal working, and machining, and assembly operations were conducted. Reportedly, coolants and solvents were used in the main building.

The Site was formerly a producer of dangerous waste.

The Site is located within the Duwamish/Diagonal CSO/SD Basin and source control area for the Lower Duwamish Waterway (LDW).

SITE BACKGROUND:

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

From	To	Operator/Tenant	Activity
	1992	Food Tec Inc	
1992	2004	Belshaw Brothers Inc	Donut machine manufacturer
2004	2014	Snarf LLC/Brunzer LLC/Sleepy Koala LLC	

SITE CONTAMINATION:

In 2002 the Belshaw Brothers Inc site was reported to Washington State Department of Ecology (Ecology) and placed on the Voluntary Cleanup Program (VCP) list with ID number NW1254.

In 1993 or 1994, an unknown quantity of diesel fuel reportedly spilled to the ground during an attempt to remove a 250-gallon underground fuel tank. Some of the diesel was removed from the excavation, however the extent of the cleanup effort is unclear. The tank was later filled with sand and replaced in the excavation, though it was

later removed (1993 or 1994). One 700-gallon heating oil underground storage tank (UST) was reportedly still located at the Site below the main building, but was closed in place.

Several Environmental Site Assessments (ESAs) were reportedly conducted at the Site in 1995, 2001, and 2002, however these reports were not available for review. Reportedly, used solvent consisting primarily of 1,1,1-trichloroethane (TCA) and oil was used to control weeds on the northeastern portion of the property, though the exact area is unknown. As part of an ESA conducted in 2002, soil borings (SB-3, SB-4, SB-7, and SB-8) were advanced near the former 250-gallon UST location, the location of the closed 700-gallon UST, and the area where solvents were used for weed control. Concentrations of diesel above the Model Toxics Control Act (MTCA) Method A cleanup level were detected in boring SB-4, near the closed UST. The soil boring located close to the area of the removed UST (SB-8) reportedly had petroleum odor, however a soil sample contained benzene, toluene, ethylbenzene, and xylenes (BTEX) below the MTCA Method A cleanup levels. This sample was not analyzed for gasoline, diesel, or oil. Groundwater collected from SB-7 reportedly contained concentrations of TCA, 1,1,1-dichloroethane (DCA), 1,1-dichloroethene (1,1-DCE), xylenes, ethylbenzene, and toluene below the MTCA Method A cleanup levels. Trichloroethene (TCE) was detected in the groundwater sample at a concentration above the MTCA Method A cleanup level.

An initial investigation was completed at the Site in 2002.

PAST REMEDIATION ACTIVITIES:

In 2003, the 700-gallon heating oil UST (previously closed in place) was excavated and removed from the Site. Petroleum-impacted soil was reportedly encountered in the excavation sidewalls and base, and additional soil was excavated both within the building and on the exterior. Approximately 340 tons of impacted soil was disposed offsite. However, due to concerns for the building's structural integrity, residual petroleum-impacted soil remained in the south sidewall of the excavation. Groundwater was not encountered during soil excavation. The excavation depth was approximately 10 feet below ground surface.

Between June 2002 and October 2003, nine soil borings (B-1, B-5, B-6, B-8, B-9, B-14, B-15, B-18, and B-19) and ten monitoring wells (MW-1, MW-5, MW-6, MW-7, MW-9 through MW-12, MW-15, and MW-16) were installed at the Site by URS. Groundwater samples were collected from five soil borings.

Concentrations of diesel were above the MTCA Method A cleanup level in soil samples collected from SB-4 and MW-15. Benzene and naphthalene were also present in soil collected from SB-4 at concentrations above their respective MTCA Method A cleanup levels.

Concentrations of volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH) (undifferentiated) were detected in groundwater samples at concentrations above MTCA Method A cleanup levels. TCE was detected in groundwater samples collected from MW-1, MW-15, SB-3, and SB-7 at concentrations above the MTCA Method A cleanup level, and 1,1-DCE was detected in MW-1, MW-15, B-9, B-19, SB-3, and SB-7 at concentrations above the MTCA Method A cleanup level. Diesel was detected in groundwater samples collected from MW-11, MW-12, MW-15, B-9, and B-18 at concentrations above the MTCA Method A cleanup level, and lube-oil range petroleum hydrocarbons were detected in groundwater samples collected from MW-11 and B-9 at concentrations above the MTCA Method A cleanup level.

The VCP application for the Site indicates diesel, gasoline, lube-oil, tetrachloroethene (PCE), benzene, toluene, ethylbenzene, 1,1-DCA, 1,1-DCE, cis-1,2-DCE, and xylenes have been detected in groundwater at concentrations above the MTCA Method A (2002) cleanup level, however the laboratory analytical reports were not available for review in Ecology's files. The application also indicated that gasoline and xylenes were detected in soil above MTCA Method A cleanup levels.

In 2004, several dual phase extraction wells were reportedly in operation at the Site, however no reports documenting these activities were available for review in Ecology's files. Reportedly, up to 18 inches of product had been measured at a location called DPE-2 (location and construction details unknown).

The Site was terminated from the VCP in 2008, likely due to inactivity.

CURRENT SITE CONDITIONS:

SITE HAZARD ASSESSMENT
Worksheet 1
Summary Score Sheet

Site notes suggest that the halogenated solvents present in Site groundwater may be migrating from an offsite source, such as the Former Penthouse Drapery site. However, the documented groundwater flow direction does not appear to support this claim. Halogenated solvents have not been detected in soil at the Site.

Residual petroleum-impacted soil and groundwater are also present at the Site at concentrations above the MTCA Method A cleanup levels. The current state of the dual phase extraction system reportedly operating in 2004 is unknown.

No information regarding groundwater at the Site after 2004 was available for review in Ecology's files.

The approximate depth to groundwater is 9 to 15 feet below ground surface, with groundwater flowing to the southwest (based on prior groundwater investigations). Subsurface soils are silty sand and sandy silt underlain by till (based on soil borings).

SPECIAL CONSIDERATIONS:

Checked boxes indicate routes applicable for Washington Ranking Method (WARM) scoring

☐ **Surface Water**

While surface spills at the Site may have occurred, limited surface soil impacts are present at the Site, and these areas of impacted soil are generally covered by asphalt. Petroleum impacts at the Site are expected to have been releases to subsurface soils.

☑ **Air**

Volatile compounds are present in Site groundwater and soils, and may be available for transport via vapor intrusion.

☑ **Groundwater**

TCE, 1,1-DCE, diesel, and gasoline are present in Site groundwater at concentrations above the MTCA Method A cleanup levels.

Other compounds (benzene, toluene, ethylbenzene, xylenes, 1,1-DCA, and cis-1,2-DCE) were listed as confirmed above the MTCA Method A/B cleanup level in the VCP application for this Site, but laboratory results were not available for review for these compounds. These compounds were not scored on worksheets 5 and 6.

ROUTE SCORES:

Surface Water/ Human Health:		Surface Water/ Environment:	
Air/ Human Health:	47.3	Air/ Environment:	1.6
Groundwater/ Human Health:	37.3		

Overall Rank: 3

REFERENCES:

1 Belshaw Bros., Inc., 1994, Letter Re: Diesel spill on July 18, 1994. September 2, 1994.

2 Ecology Water Resources Explorer, accessed September 2014. https://fortress.wa.gov/ecy/waterresources/map/WaterResourcesExplorer.aspx

3 King County GIS Center iMAP application, Property Information, Groundwater Program, and Sensitive Areas mapsets. Accessed September 2014. http://www.kingcounty.gov/operations/GIS/Maps/iMAP.aspx

4 METRO, 1994, Letter Re: telephone conversation August 16, 1994. August 16, 1994

5 Missouri Census Data Center, Circular Area Profiles - 2010 census data around a point location. http://mcdc.missouri.edu/websas/caps10c.html. Accessed September 2014.

6 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

7 Sato, Brian, 2004, Notes Re: Belshaw Site Visit. July 20, 2004.

8 Sato, Brian, 2004, Notes Re: Meeting with Patti Thompson and David Rabvogel. July 12, 2004.

9 Science Applications International Corporation, 2009, Lower Duwamish Waterway Early Action Area 1 Duwamish/Diagonal Way (RM 0.1 to 0.9 East) Summary of Existing Information and Identification of Data Gaps for the Duwamish/Diagonal CSO/SD Basin. Prepared for Washington State Department of Ecology. August 2009.

10 URS, 2002, Voluntary Cleanup Program Application to Request Assistance.

11 URS, 2004, UST Site Assessment and Voluntary Cleanup, Belshaw Brothers, Inc. Main/Assembly Buildings 1750 22nd Avenue South Seattle, Washington. Prepared for Davis Wright Tremaine. April 19, 2004.

12 WARM Scoring Manual

13 WARM Toxicological Database

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

15 Washington State Department of Ecology, 2002, ERTS #526498. June 11, 2002.

SITE HAZARD ASSESSMENT
Worksheet 2
Route Documentation

Cleanup Site ID: 3018 Belshaw Brothers Inc

Facility/Site ID: 97763114

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:

Benzene, 1,1-DCE, TCE

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

Prior detection in Site soil or groundwater at concentrations above the MTCA Method A cleanup level; diesel and naphthalene are not expected to impact the air route due to low volatility

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:

Diesel, 1,1-DCE, TCE, gasoline

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

Prior detection in Site groundwater at concentrations above the 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:

Prior detection in groundwater

Worksheet 5

Air Route

CSID: 3018 **Site Name:** Belshaw Brothers Inc

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
Benzene	10	3	X	5
1,1-Dichloroethylene	X	3	X	4
Trichloroethylene	10	3	X	4

Highest Value 10

Bonus Points? 2

Toxicity Value 12

1.3 Mobility

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

Mobility Value 4

1.4 Final Human Health Toxicity/Mobility Matrix Value **HH Final Matrix Value** 24

1.5 Environmental Toxicity/Mobility

Substance	Non-human Mammalian Inhalation Toxicity (mg/m3)	Acute Value	Mobility Value	Table A-7 Matrix Value
Benzene	31947	3	4	6
1,1-Dichloroethylene	25177	3	4	6
Trichloroethylene	15583	3	4	6

Env. Final Matrix Value 6

1.6 Substance Quantity

Amount: Approximately 15,000 square feet

Basis: Estimated extent of impacted area

Substance Quantity Value 6

Worksheet 5

Air Route

CSID: 3018 **Site Name:** Belshaw Brothers Inc

2.0 Migration Potential

2.1 Containment Containment Value: 5

Explain Basis: At least 2 feet of soil cover, but no known operating vapor collection system

3.0 Targets

3.1 Nearest Population Population Distance Value: 10

Less than 200 feet to the nearest dwelling

3.2 Distance to and name of nearest sensitive environments Sensitive Environment Value: 7

Approximately 300 feet to Colman Playground

3.3 Population within 0.5 miles Population Value: 74

5,476 population

4.0 Release Release to Air Value: 0

Explain basis for scoring a release to air:

No confirmed release to 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}	180
REL_A = Release to Air	REL_A	0
TAR_{AH} = Nearest Population + Population within 1/2 mile	TAR_{AH}	84.0
	AIR_H	47.3

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}	72
REL_A = Release to Air	REL_A	0
TAR_{AE} = Nearest Sensitive Environment	TAR_{AE}	7.0
	AIR_E	1.6

Worksheet 6

Groundwater Route

CSID: 3018 **Site Name:** Belshaw Brothers Inc

1.0 Substance Characteristics

1.1 Human Toxicity

Substance	Drinking Water Standard Value	Acute Toxicity Value	Chronic Toxicity Value	Carcinogenicity Value
Diesel	4	5	3	X
1,1-DCE	8	5	3	3
TCE	8	3	X	4
Gasoline	8	3	X	5

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: Approximately 1,400 cubic yards

Basis: Estimated volume of impacted area

Substance Quantity Value 4

2.0 Migration Potential

2.1 Containment Containment Value 10

Explain Basis: Release/spill to soil and/or groundwater

2.2 Net Precipitation >10 to 20 inches Net Precipitation Value 2

2.3 Subsurface Hydraulic Conductivity Conductivity Value 3

Silty sand and sandy silt

2.4 Vertical Depth to Groundwater 9 feet

Confirmed release: Yes Depth to Aquifer Value 8

3.0 Targets

3.1 Groundwater Usage Aquifer Use Value 4

Private supply, but alternate sources available with minimum hookup requirements

3.2 Distance to Nearest Drinking Water Well 3,500 feet

Well Distance Value 2

3.3 Population Served within 2 Miles Population Served Value 2

3 people

Worksheet 6

Groundwater Route

CSID: 3018 **Site Name:** Belshaw Brothers Inc

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

5 acres

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}	180
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}	9.4
	GW_H	37.3

Washington Ranking Method

Route Scores Summary and Ranking Calculation Sheet

Site Name: Belshaw Brothers Inc **CSID:** 3018

Site Address: 1750 22nd Avenue South **FSID:** 97763114

HUMAN HEALTH ROUTE SCORES

Enter Human Health Route Scores for all Applicable Routes:

Pathway	Route Score	Quintile Group
Surface Water	ns	0
Air	47.3	5
Groundwater	37.3	3

H=	5
M=	3
L=	0

$$\frac{H^2 + 2M + L}{8} = \frac{25 + 6 + 0}{8}$$

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	1.6	2

H=	2
L=	0

$$\frac{H^2 + 2L}{7} = \frac{4 + 0}{7}$$

Environment Priority Bin Score: **1**

rounded up to next whole number

Comments/Notes:

FINAL MATRIX RANKING **3**

FOR REFERENCE:

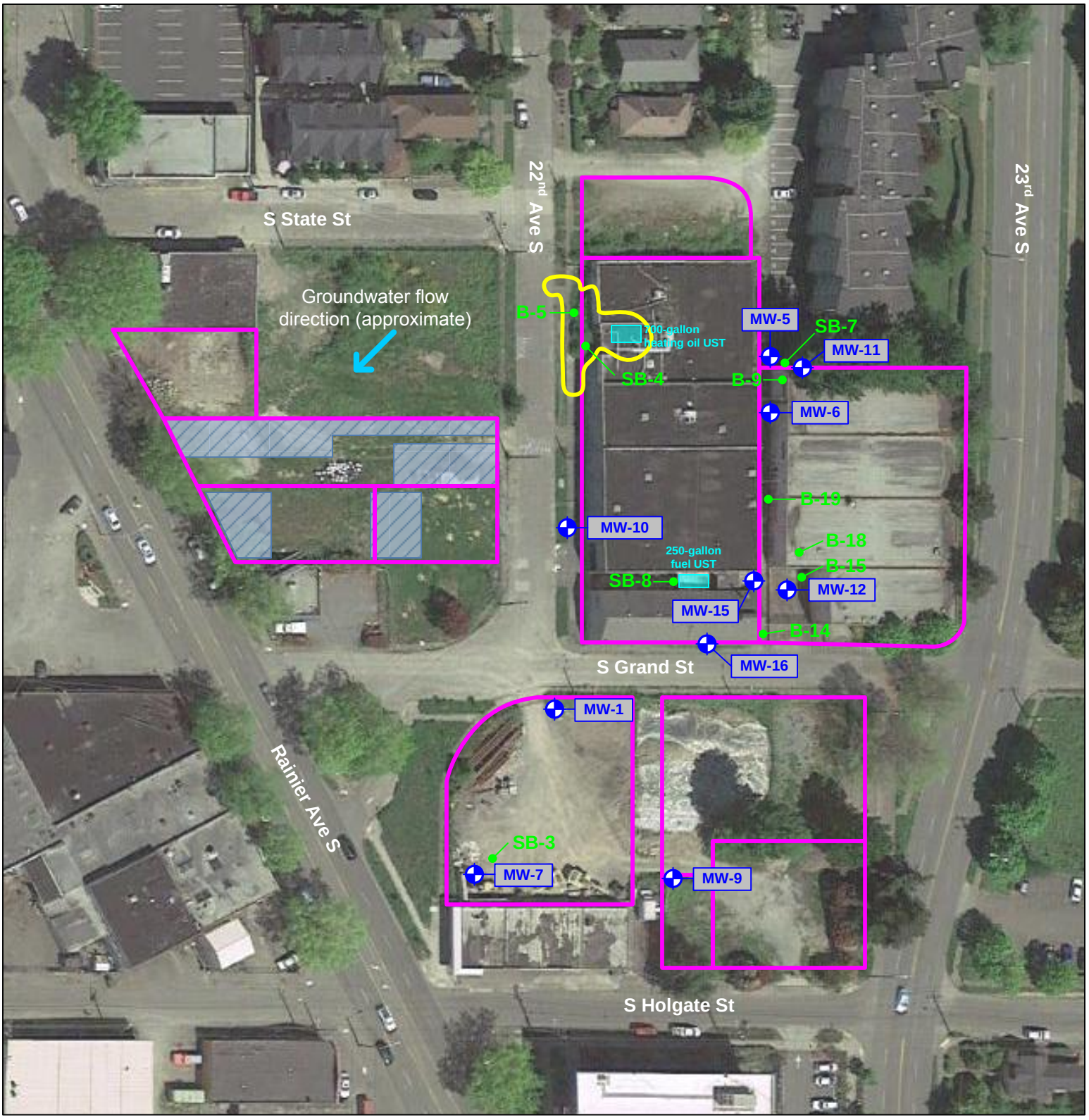
Final WARM Bin Ranking Matrix

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 2015 Values

Quintile	Human Health Surface Water	Air	Ground Water	Environment Surface Water	Air
5	>= 30.7	>= 37.6	>= 51.6	>= 50.9	>= 29.9
4	>= 23.1	>= 23.8	>= 40.9	>= 31.2	>= 22.5
3	>= 14.1	>= 15.5	>= 33.2	>= 23.6	>= 14.0
2	>= 7.0	>= 8.5	>= 23.5	>= 11.0	>= 1.6
1	<= 6.9	<= 8.4	<= 23.4	<= 10.9	<= 1.5

Quintile value associated with each route score entered above



Legend:

- Property location (approximate)
- Excavation area (approximate)
- Former building location (approximate)
- Former UST location (approximate)
- Monitoring well (approximate)
- Soil sample (approximate)

Notes:

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

N

Belshaw Brothers Inc
1750 22nd Ave S
Seattle, WA 98144

DEPARTMENT OF ECOLOGY
State of Washington

Site Overview Map

CSID 3018
CSID3018.vsd

Site Hazardous Assessment is a First Step

Under the Model Toxics Control Act, one of the first steps in the process for cleaning up a hazardous waste site is a Site Hazard Assessment (SHA). During a site hazard assessment, the Department of Ecology collects environmental data about a site to determine the type and extent of contamination. If further action is needed, Ecology ranks the site using the Washington Ranking Method (WARM) and places it on the *Hazardous Sites List*.

Assessing the Potential Hazard

A site hazard assessment provides preliminary data regarding the potential hazard of a site. The main purpose of a site hazard assessment is to provide sufficient sampling data and other information to:

- Confirm or rule out contamination
- Identify the hazardous substance(s)
- Identify environmental characteristics associated with the site
- Evaluate the potential threats to human health and the environment

In addition, the site hazard assessment provides enough information to allow Ecology to rank the site's potential hazard relative to other sites on the *Hazardous Sites List*. This helps Ecology determine which sites should be worked on first. It is important to note that a hazard assessment is not intended to be a detailed site study or assessment of the health risk posed by a site.

Is a Site Hazard Assessment Always Necessary?

No, for a variety of reasons, a site hazard assessment may not always be necessary at a site. For example, sites doing independent cleanups and requesting Ecology consultation under the voluntary cleanup program would not normally need a site hazard assessment. In general, Ecology will conduct a site hazard assessment on sites that are anticipated to require significant future staff resources, since the assessment helps in setting workload priorities.

What Information Is Needed To Accurately Assess a Site?

Although a site hazard assessment is not intended to be a detailed site characterization, it includes sampling results from various locations on and around the site, site observations, maps and historical information. Specifically, a site hazard assessment should include:

1. Evidence confirming a release or threatened release of a hazardous substance.
2. Identification of the hazardous substances and their location, including what was or may be released and, if applicable, what products of decomposition, recombination or chemical reaction are currently present at the site.
3. A description of the facilities containing the substances and their condition.
4. Consideration of surface water run-on or run-off and the possibility of contaminants seeping through the surface and contaminating ground water.

5. Characterization of sub-surface and ground water, including the depth to ground water and distance to nearby wells, bodies of surface water and drinking water supplies.
6. An evaluation of human population, food crops, recreation areas, sensitive environments, irrigated areas and aquatic resources.
7. Any other factors which may be significant in estimating exposure of sensitive environments to hazardous waste.

What Happens After the Hazard Assessment?

The environmental information collected through the site hazard assessment process is used to "score" the primary exposure routes through which contaminants could pose a risk to human health and the environment. These include surface water, air and ground water. Each exposure route is then evaluated to determine the relative risk at each site and the final ranking for each site. Sites are ranked on a scale of 1 to 5 using the Washington Ranking Method, with a ranking of 1 representing the highest level of potential risk and 5 the lowest. The rankings represent an estimation of the potential threat posed by a site compared to all other assessed/ranked sites in the state.

Ecology will provide results from the site hazard assessment to site owners, operators and other potentially liable persons. If the department determines, after the assessment, that no further action is required at the site, it will notify the public through Ecology's *Site Register*.

How Can I Get More Information?

If you are interested in finding out more about a specific site or to find out which sites in your area will be assessed in the near future, call the regional office in which the site is located:

Central Region (*Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima*)	15 West Yakima Ave, Suite 200 Yakima WA 98902-3452	509/575-2490
Eastern Region (*Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman)*	N. 4601 Monroe, Suite 100 Spokane WA 99205-1295	509/329-3400
Northwest Region *(Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom*)	3190 160th Ave SE Bellevue WA 98008-5452	425/649-7000
Southwest Region (*Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Lewis, Mason, Pacific, Pierce, Skamania, Thurston, Wahkiakum*)	P O Box 47775 Olympia WA 98504-7775	360/407-6300

For additional information on the Site Hazard Assessment/WARM Ranking process, or to receive the Site Register, contact: Department of Ecology, Toxics Cleanup Program, P. O. Box 47600, Olympia WA 98504-7600. Or call 360/407-7170 or visit the Ecology website at: www.ecy.wa.gov and click on *Programs* then *Toxics Cleanup*. For information on the cleanup process and cleanup definitions, visit this site: http://www.ecy.wa.gov/programs/tcp/cu_support/cu_process__steps_defns.htm

This focus sheet is intended to help the user understand the Model Toxics Control Act (MTCA) Cleanup Regulation, Chapter 173-340 WAC. It does not establish or modify regulatory requirements.

MTCA Requires Hazardous Waste Sites be Ranked

Every hazardous waste site in Washington is unique and poses a potentially different type and level of risk to human health and the environment. The Model Toxics Control Act (MTCA) requires these sites to be ranked relative to each other to guide Ecology's use of cleanup resources. Working with the Science Advisory Board, Ecology developed a ranking system for hazardous sites known as the Washington Ranking Method (WARM).

Ecology ranks a site after the agency gathers enough information to complete a site hazard assessment (SHA). Owners and operators and any other potentially liable persons (PLPs) known to the agency are notified when their site is ranked and placed on Ecology's Hazardous Sites List. Additions to the list are announced twice each year.

What Does the Washington Ranking Method Do?

A site's potential threat to human health and the environment is estimated using the data gathered during the SHA. The WARM categorizes sites on the basis of this information. Sites are ranked on a scale of one to five, with a score of one representing the highest relative level on concern, and five the lowest.

The WARM is designed to:

- Provide a consistent, objective means of assessing sites.
- Establish a scientifically defensible method of evaluating sites.
- Maximize accuracy with minimum data.
- Provide adequate distinction between sites.

How Will the Rankings be Used?

It is important to keep in mind that hazardous site ranking is not the same as risk assessment. Rather, it is an estimation of the potential threat posed by a site relative to all other ranked sites in the state. An actual assessment of a site's health risk is determined after detailed data has been gathered through a remedial investigation.

The WARM provides a framework in which to organize and compare sites. However, it is not the only factor used to determine which sites receive priority for Ecology's resources. Other considerations include the availability of funds, the potential cost of cleanup, the level of cooperation shown by a responsible party, and public concern about a site.

How Does the Washington Ranking Method Work?

When ranking a site, Ecology considers the primary routes through which humans or the environment could be exposed to hazardous substances found on that site. These routes include air, surface water and ground water. For each "exposure route," the following information is evaluated to determine the relative risk posed by each site.

Substance Characteristics	Site Characteristics	Exposure Potential
Toxicity of substance	Migration potential	Population
Quantity of substance	Soil permeability	Sensitive environment
Mobility of substance	Average rainfall	Surface water uses (drinking water, irrigation, fisheries)
Containment	Flood plain	
	Terrain slope	
	Distance to ground water	Ground water uses

What is the Relationship Between the WARM and the Federal Hazard Ranking System?

The Federal Hazard Ranking System's purpose is to nominate hazardous waste sites with high federal scores to the National Priorities List (NPL). The federal system is used to set cleanup priorities for the Environmental Protection Agency. The WARM is not intended to duplicate the Federal Hazard Ranking System model. The purpose of WARM is to help Ecology set priorities for sites not on the federal list.

How Can I Get More Information?

For additional information on the Washington Ranking Method, contact the Department of Ecology, (360) 407-7170), Toxics Cleanup Program, P.O. box 47600, Olympia, WA 98504-7600. You may also visit the Ecology website at www.ecy.wa.gov and click on *Programs* then *Toxics Cleanup*. For information on the cleanup process and cleanup definitions visit: http://www.ecy.wa.gov/programs/tcp/cu_support/cu_process__steps_defns.htm, or for information on a specific site, please contact the appropriate regional office listed below.

Central Region (*Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima*)	15 West Yakima Ave, Suite 200 Yakima WA 98902-3452	509/575-2490
Eastern Region (*Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman)*	N. 4601 Monroe, Suite 100 Spokane WA 99205-1295	509/329-3400
Northwest Region *(Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom*)	3190 160th Ave SE Bellevue WA 98008-5452	425/649-7000
Southwest Region (*Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Lewis, Mason, Pacific, Pierce, Skamania, Thurston, Wahkiakum*)	P O Box 47775 Olympia WA 98504-7775	360/407-6300

This focus sheet is intended to help the user understand the Model Toxics Control Act (MTCA) Cleanup Regulation, Chapter 173-340 WAC. It does not establish or modify regulatory requirements.

Special accommodations: To ask about the availability of this document in a version for the visually impaired call the Toxics Cleanup Program at 360-407-7170. Persons with hearing loss, call 711 for Washington Relay Service. Persons with a speech disability, call 877-833-6341.

What is the Hazardous Sites List?

The Hazardous Sites List is a list of sites that have been assessed and ranked using the Washington Ranking Method (WARM). The list, which is a requirement of the Model Toxics Control Act (MTCA) Cleanup Regulation, Chapter 173-340 WAC, helps the Department of Ecology (Ecology) target where to spend cleanup funds. The list is updated twice a year.

How Are Sites Ranked?

Once Ecology receives a complaint about a piece of property or the practices of an owner or operator of a piece of property, an Ecology inspector or other delegated agency representative will go to the site and conduct an initial investigation. This involves looking at the present conditions of the site for signs of possible spills or discharges and the use and storage of hazardous waste. If Ecology determines further work is required after the initial investigation, a site hazard assessment (SHA) will be conducted. An SHA provides Ecology with basic information about a site.

Once an SHA has been conducted, Ecology then uses the WARM to estimate the potential threat the site poses if not cleaned up. Sites are ranked on a scale of one to five, with one representing the highest level of concern and five the lowest. When ranking a site, the primary exposure routes that could pose a risk to the public and the environment are taken into consideration. These are air, surface water, any release to sediments, and groundwater.

Hazard ranking is not an evaluation of the absolute risk a site poses to human health and the environment. Rather, a site's rank is relative to all other similarly assessed and ranked sites in the state. Information gathered during the SHA is used to determine the pathway scores of all applicable routes of exposure at the site

How Does a Site Get on the List?

Once a site goes through the ranking method and is ranked, it will appear on the Hazardous Sites List. Updates to the list occur at the end of February and August, twice yearly.

How Does the Site Ranking Affect Cleanup?

Ranking a site helps Ecology determine where to spend funds. However, public concern, a need for immediate response, and the availability of funding and cleanup staff also affect which sites get first priority for cleanup.

Can Site Rankings Change?

Ecology generally does not rerank sites, although a site's rank can change. Ecology may re-think a site if new or additional information is discovered that changes the site's relative health and environmental risk. The ranking system works similar to grading on a curve. The highest scoring sites are ranked as "ones" and the lowest as "fives." Thus, adding or removing sites from the list over time may also affect a site's rank.

How Does a Site Get Removed from the List?

A site may be removed from the list only if the site is cleaned up. In some cases, long-term monitoring and periodic reviews may be required to ensure the cleanup is adequate to protect the public and the environment. Ecology will provide public notice for any site it proposes to remove from the Hazardous Sites List.

Definitions

Each site on the Hazardous Sites List is categorized according to the status of the cleanup at the site. The site status categories used by Ecology are intended to give a general indication of the progress at the site. Typical categories include:

Awaiting further remedial action. This means cleanup work has not yet started at the site. Only a site hazardous assessment (SHA) has been done on the property.

Remedial action in progress. These are sites at which Ecology or the responsible party (with Ecology's oversight) has started investigations, active construction, or actual cleanup work.

Construction complete. At these sites all major cleanup work has been completed, but conformational monitoring or operation and maintenance may continue to be performed at the site.

Independent remedial action. This indicates that the site owner/operator or the responsible party has independently conducted cleanup at the site.

How Can I Get More Information?

You can receive a copy of the Hazardous Sites List by calling (360) 407-7170 or by going to Ecology's website at http://www.ecy.wa.gov/programs/tcp/sites/SiteLists.htm. For more information on a specific site, please contact the appropriate regional office listed below.

Central Region (*Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima*)	15 West Yakima Ave, Suite 200 Yakima WA 98902-3452	509/575-2490
Eastern Region (*Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman)*	N. 4601 Monroe, Suite 100 Spokane WA 99205-1295	509/329-3400
Northwest Region *(Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom*)	3190 160th Ave SE Bellevue WA 98008-5452	425/649-7000
Southwest Region (*Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Lewis, Mason, Pacific, Pierce, Skamania, Thurston, Wahkiakum*)	P O Box 47775 Olympia WA 98504-7775	360/407-6300

This focus sheet is intended to help the user understand the Model Toxics Control Act (MTCA) Cleanup Regulation, Chapter 173-340 WAC. It does not establish or modify regulatory requirements.

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