

SITE HAZARD ASSESSMENT

WORKSHEET 1

Summary Score Sheet

SITE INFORMATION:

Site Name: Holts Quick Check Market

Address: 400 N Pacific Ave, Kelso

Ecology Facility Site ID No.: 87376683

Section/Township/Range: 08 N/ 02 W/ 27 WM

Latitude: 46.14719 Longitude: -122.91030

Site scored/ranked for the August 2014 update

Today's date: March 26, 2014

SITE DESCRIPTION:

The subject site consists of a square-shaped 0.24 acre parcel designated as "Food Mart" in an area of Kelso zoned for residential and commercial uses. The site lies 56 feet above mean sea level. The Cowlitz River, a salmon-bearing river, lies approximately 670 feet west of the subject site. Cowlitz Way and Pacific Avenue North provide the southern and western boundaries for the subject property, respectively. The plume may extend beyond the property boundaries. A fueling station has operated at the site since 1960. Currently the site houses a fueling station and convenience store. The site is almost entirely paved.

In June of 1993, Northwest Envirocon completed a Hydrocarbon Identification Report to document the existence of contaminated soil within the backfill of three on-site underground storage tanks (USTs). A soil sample was collected from each of the four corners of the tank nest. The soil sample results returned below the detection limits for gasoline and benzene, toluene, ethyl benzene, and xylene (BTEX).

In April of 1997, AGI Technologies completed a Subsurface Investigation to define the limits of soil contamination discovered during system upgrades. Twelve soil borings were completed to 16-24 feet below ground surface (bgs). A total of 20 soil samples and six groundwater samples, collected from the 12 soil borings, were analyzed for gasoline and BTEX concentrations. The soil sample results returned with gasoline and BTEX above their respective MTCA Method A Cleanup Levels. The groundwater sample results returned with gasoline and benzene above their MTCA Method A Cleanup Levels.

In September of 1997, EMCON completed a Phase II Site Investigation Report to further characterize the extent of hydrocarbon-impacted soil and groundwater at the site. Four soil borings were completed to depths between 27.5 and 30.5 feet bgs. Soil samples were collected at 2.5 foot intervals from the soil borings, starting at 4 feet bgs. Each boring was developed into a monitoring well. Groundwater samples were collected from each monitoring well. The soil sample results returned with gasoline, benzene, ethylbenzene, and xylene above their respective MTCA Method A Cleanup Levels. The groundwater samples returned with gasoline and benzene above their respective MTCA Method A Cleanup Levels.

In November of 1997, EMCON completed an Additional Phase II Site Investigation, Second Quarter Groundwater Sampling, and Soil Vapor Extraction Pilot Test Report. Two soil borings were completed off-site to depths of 31 feet bgs. Soil samples collected from the borings were analyzed for gasoline, diesel, lead, and BTEX. The soil sample results returned with gasoline and benzene above their respective MTCA Method A Cleanup Levels. The borings were converted into off-site monitoring wells to determine if groundwater contamination extended offsite. A round of groundwater monitoring, for the new wells and the existing wells, was completed. The groundwater samples collected from the wells were analyzed for gasoline, diesel, lead, and BTEX. The groundwater sample results returned with gasoline, benzene, and lead contamination above their respective MTCA Method A Cleanup Levels. EMCON believed the water sample from off-site monitoring well, MW-6, resulted from off-site contamination of perched groundwater and was not indicative of the groundwater plume sampled in the other five monitoring wells.

In December of 1997, EMCON completed a Phase I Environmental Assessment Report to identify past and present activities on or near the subject site, identify evidence of petroleum releases, and create an outline of historic property use.

In April of 1998, EMCON completed a Quarterly Groundwater Sampling Report. The groundwater sample results showed remaining gasoline, benzene, and lead contamination above their respective MTCA Method A Cleanup Levels.

In May of 2006, the Washington State Department of Ecology (Ecology) terminated this site's enrollment in the Voluntary Cleanup Program (VCP).

In March of 2007, Farallon completed a Site Closure Report. A biosparging system was installed in 2003 as a means of raising the dissolved oxygen levels in the groundwater to enhance natural biodegradation processes. The biosparging system ceased operation in September 2005, when Farallon completed in-situ chemical oxidation remediation with sodium persulfate. Approximately 200 gallons of 5% sodium persulfate catalyzed with 10% hydrogen peroxide was injected into the monitoring wells. An additional 50 gallons of activated sodium persulfate solution was injected into the biosparge system. Four consecutive quarter groundwater sampling events occurred after the injection. The groundwater monitoring showed that clean groundwater limits had been achieved in all monitoring wells, except off-site monitoring well MW-6.

In May of 2007, Farallon completed a Final Quarter of Groundwater Monitoring Report at Ecology's request. The groundwater sample results returned below the MTCA Method A Cleanup Levels for gasoline, BTEX, and lead, except for the off-site monitoring well MW-6. MW-6 showed remaining benzene contamination above 5 ug/L, the MTCA Method A Cleanup Level for benzene in groundwater.

In June of 2007, Ecology completed a VCP opinion letter stating further action was necessary before a determination of no further action (NFA) could be granted. Ecology stated further sampling would be required at the site in the form of soil sampling and the installation of an additional well down-gradient of monitoring well MW-5. The most recent soil sample results from 1997 indicated remaining gasoline and benzene contamination above their MTCA Method A Cleanup Levels. An additional

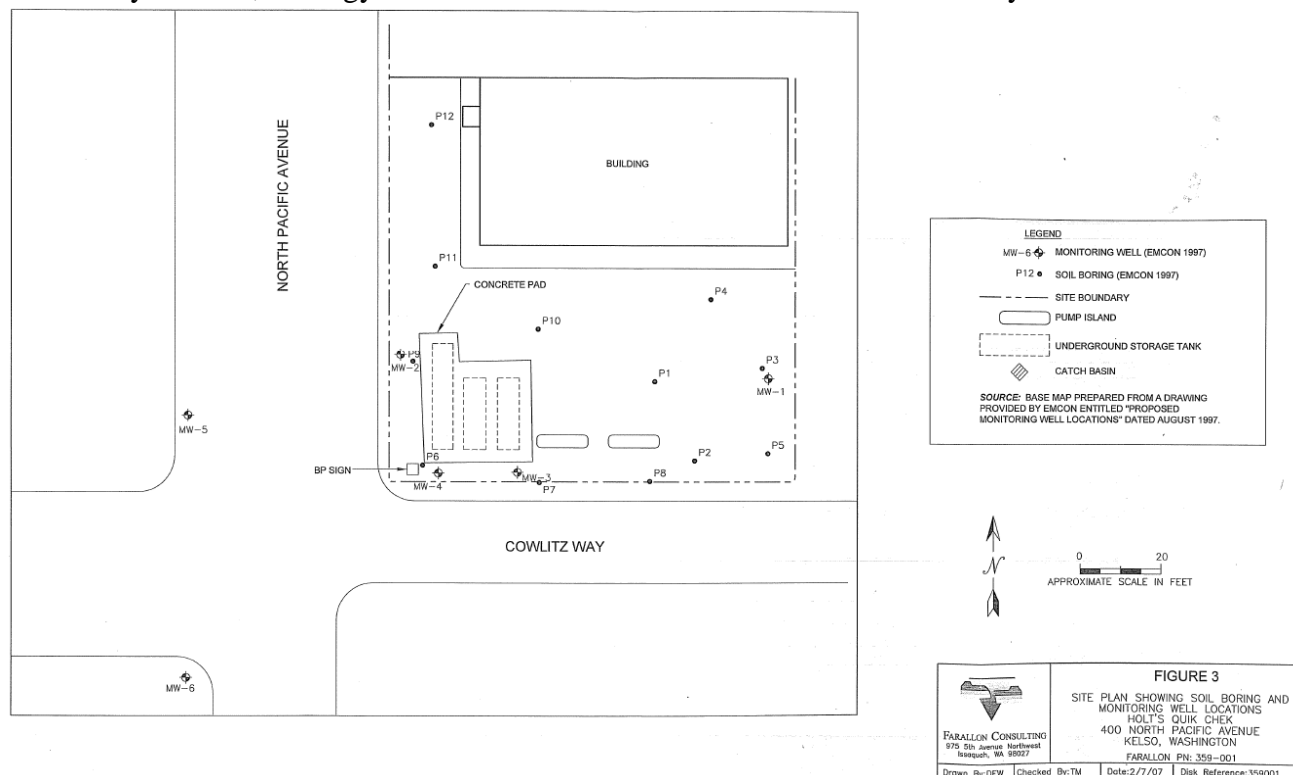
groundwater monitoring well down-gradient of MW-5 needed to be installed to determine if any groundwater contamination remained beyond MW-5.

In February of 2011, Ecology terminated the site from the VCP due to inactivity at the site.

In May of 2011, the site was re-enrolled in the VCP.

In July of 2011, Associated Environmental Group LLC (AEG) completed a Proposed Supplemental Remedial Investigation Work Plan.

In February of 2013, Ecology terminated the site from the VCP due to inactivity at the site.





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):

The scope of this Site Hazard Assessment did not include a hydrogeologic survey of the subject site and surrounding area. The groundwater contamination documented or inferred at the subject site is therefore considered to have the potential to impact any well located within the prescribed 2-mile radius and all such wells were used in the scoring process.

The documented contamination on this site is primarily subsurface. The Surface Water and Air routes have not been scored.

The City of Longview Water System, a water system supplied by surface water intakes in the Cowlitz River, is located within two miles of the subject site. This water system was unable to be included into the SHA scoring model due to subsurface soil contamination which is unavailable to the surface water pathway. The City of Longview Water serves a population of 40,878 residents. This water system is considered to be highly susceptible to contamination.

ROUTE SCORES:

Surface Water/Human Health: Not scored	Surface Water/Environmental.: Not scored
Air/Human Health: Not scored	Air/Environmental: Not scored
Groundwater/Human Health: 64.2 => 5	

OVERALL RANK: 2

WORKSHEET 2
Route Documentation

1. SURFACE WATER ROUTE

- a. List those substances to be considered for scoring: Source:
- b. Explain basis for choice of substance(s) to be used in scoring.
- c. List those management units to be considered for scoring: Source:
- d. Explain basis for choice of unit to be used in scoring:

2. AIR ROUTE

- a. List those substances to be considered for scoring: Source:
- b. Explain basis for choice of substance(s) to be used in scoring:
- c. List those management units to be considered for scoring: Source:
- d. Explain basis for choice of unit to be used in scoring:

3. GROUNDWATER ROUTE

- a. List those substances to be considered for scoring: Source: 1,2
TPH as gasoline (from benzene), benzene, and lead
- b. Explain basis for choice of substance(s) to be used in scoring:
TPH as gasoline and lead will be used due to their confirmed presence in groundwater and soil at the site.
- c. List those management units to be considered for scoring: Source: 1,2,3
Spills, discharges, and contaminated soil
- d. Explain basis for choice of unit to be used in scoring:

Spills, discharges, and contaminated soil will be the managements units used for scoring due to the impact caused by a leaking underground storage tank, hydraulic hoists, and discharges to a floor drain.

WORKSHEET 4
Surface Water Route

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity										
Substance		Drinking Water Standard (µg/L)	Value	Acute Toxicity (mg/ kg-bw)	Value	Chronic Toxicity (mg/kg/day)	Value	Carcinogenicity		Value
								WOE	PF*	
1										
2										
3										
4										
5										
6										

* Potency Factor

Source:

Highest Value:

(Max = 10)

Plus 2 Bonus Points?

Final Toxicity Value:

(Max = 12)

1.2 Environmental Toxicity () Freshwater () Marine					
Substance		Acute Water Quality Criteria		Non-Human Mammalian Acute Toxicity	
		(µg/L)	Value	(mg/kg)	Value
1					
2					
3					
4					
5					
6					

Source:

Highest Value:

(Max = 10)

1.3 Substance Quantity		
Explain Basis:		Source: Value: (Max = 10)

2.0 MIGRATION POTENTIAL

		Source	Value
2.1	Containment Explain basis:		— (Max = 10)
2.2	Surface Soil Permeability:		— (Max = 7)
2.3	Total Annual Precipitation:		— (Max = 5)
2.4	Max 2yr/24hr Precipitation:		— (Max = 5)
2.5	Flood Plain:		— (Max = 2)
2.6	Terrain Slope:		— (Max = 5)

3.0 TARGETS

		Source	Value
3.1	Distance to Surface Water:		— (Max = 10)
3.2	Population Served within 2 miles (see WARM Scoring Manual Regarding Direction):		— (Max = 75)
3.3	Area Irrigated by surface water within 2 miles : $(0.75)^* \sqrt{\# \text{ acres}} =$		— (Max = 30)
3.4	Distance to Nearest Fishery Resource		— (Max = 12)
3.5	Distance to, and Name(s) of, Nearest Sensitive Environment(s):		— (Max = 12)

4.0 RELEASE

Explain Basis:	Source: Value: (Max = 5)
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WORKSHEET 5

Air Route

1.0 SUBSTANCE CHARACTERISTICS

1.1 Introduction (WARM Scoring Manual) – Please review before scoring

1.2 Human Toxicity										
Substance	Air Standard ($\mu\text{g}/\text{m}^3$)	Value	Acute Toxicity (mg/m^3)	Value	Chronic Toxicity ($\text{mg}/\text{kg}/\text{day}$)	Value	Carcinogenicity		Value	
							WOE	PF*		
1										
2										
3										
4										
5										

* Potency Factor

Source:

Highest Value:

(Max = 10)

Plus 2 Bonus Points?

Final Toxicity Value:

(Max = 12)

1.3 Mobility (Use numbers to refer to above listed substances)				
1.3.1 Gaseous Mobility		1.3.2 Particulate Mobility		
Vapor Pressure(s) (mmHg)		Soil Type	Erodibility	Climatic Factor
1				
2				
3				

Source:

Value:

(Max = 4)

Source:

Value:

(Max = 4)

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

(Use highest of:)

Final Matrix Value:

(Max = 24)

1.5 Environmental Toxicity/Mobility –						
Substance		Non-human Mammalian Inhalation Toxicity (mg/m³)	Acute Value	Mobility (mmHg)	Value	Matrix Value
2						
6						

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

1.6 Substance Quantity	
Explain Basis:	Source: Value: (Max = 10)

2.0 MIGRATION POTENTIAL

		Source	Value
2.1	Containment:		(Max = 10)

3.0 TARGETS

		Source	Value
3.1	Nearest Population:		(Max = 10)
3.2	Distance to [and name(s) of] nearest sensitive environment(s):		(Max = 7)
3.3	Population within 0.5 miles:		(Max = 75)

4.0 RELEASE

Explain Basis for scoring a release to air:	Source: Value: (Max = 5)
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WORKSHEET 6
Groundwater Route

1.0 SUBSTANCE CHARACTERISTICS

1.1 Human Toxicity										
Substance		Drinking Water Standard (µg/L)	Value	Acute Toxicity (mg/ kg-bw)	Value	Chronic Toxicity (mg/kg/day)	Value	Carcinogenicity		Value
								WOE	PF*	
1	Lead	5	8	--	ND	--	--	--	--	ND
2	TPH as gasoline (from benzene)	5	8	3306	3	ND	ND	A	0.02 9	5
3										
4										
5										
6										

* *Potency Factor*

Source: 1,2,3

Highest Value: 8

(Max = 10)

Plus 2 Bonus Points? 2

Final Toxicity Value: 10

(Max = 12)

1.2 Mobility (use numbers to refer to above listed substances)	
Cations/Anions [Coefficient of Aqueous Migration (K)]	OR Solubility (mg/L)
1=	1= ND
2=	2= 1.80E+03 = 3
3=	3 =
4=	4=
5=	5=
6=	6=

Source: 2,3

Value: 3

(Max = 3)

1.3 Substance Quantity:

Explain basis: The substance quantity was based on the total volume of all the USTs documented to have been at the site. A value of 2,500 gallons was used for scoring.	Source: 1,2 Value: 4 (Max=10)
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2.0 MIGRATION POTENTIAL

		Source	Value
2.1	Containment (explain basis): Scored as a landfill with no liner, an impervious cover with unknown maintenance, no known collection system, and with disposal of free/bulk liquids	1,2	9 (Max = 10)
2.2	Net precipitation: 50.1-60 inches	2,4,7	5 (Max = 5)
2.3	Subsurface hydraulic conductivity: Kelso silt loam	2,7,8	2 (Max = 4)
2.4	Vertical depth to groundwater: Contamination was confirmed at the site through groundwater sample analysis.	1,2	8 (Max = 8)

2.0 TARGETS

		Source	Value
3.1	Groundwater usage: Public supply, but alternate unthreatened sources available with minimum hookup requirements	2,5,6	4 (Max = 10)
3.2	Distance to nearest drinking water well: The nearest drinking water well is located approximately 280 feet southwest of the subject site	2,6,7	5 (Max = 5)
3.3	Population served within 2 miles: Six water systems serve the residential population within two miles of the subject site. The six water systems serve a total of 12,332 residents. One of the water systems is the City of Kelso Water System. The City of Kelso Water System is served by the Ranney Water System which is comprised of a system of shallow wells installed into the riverbed of the Cowlitz River. The wells are tidally influenced and are considered to be highly susceptible to contamination.	2,5,6	100 (Max = 100)
3.4	Area irrigated by (groundwater) wells within 2 miles: (0.75)*√ Approximately 196 acres irrigated by groundwater within two miles of the subject site.	2,9,10	11 (Max = 50)

3.0 RELEASE

		Source	Value
	Explain basis for scoring a release to groundwater: Contamination was confirmed at the site through groundwater sample analysis.	1,2	5 (Max = 5)

SOURCES USED IN SCORING

1. Washington State Department of Ecology Site Hazard Assessment File/TCP file
2. Washington State Department of Ecology, WARM Scoring Manual, April 1992
3. Washington State Department of Ecology, Toxicology Database for Use in Washington Ranking Method Scoring, January 1992
4. U.S. Department of Interior Geological Survey Topographical Map
5. Washington State Department of Health, Public Water System Database
6. Washington State Department of Ecology, Water Resources Explorer
7. Cowlitz County GIS map
8. Washington State Department of Agriculture, soil maps
9. Washington State Department of Ecology Water Rights Tracking System
10. GeoCommunicator, Land Survey Information System
11. Washington State Department of Ecology Well Log Viewer
12. Model Toxics Control Act, Statue and Regulation, November 2007