SITE HAZARD ASSESSMENT

WORKSHEET 1

Summary Score Sheet

SITE INFORMATION:

Site Name Jefferson County Quilcene Shop Site
Address: 101 Rogers Street
Ecology Facility Site ID No.: 52447879
Section/Township/Range: Sec 27 N 02 W24

Latitude: 47.82146 Longitude: --122.87561
Parcel 937200702
Site scored/ranked for the August 2014 update
Today's date: April 4, 2014

SITE DESCRIPTION:

Jefferson County Public Works (JCPW) shop is used to store construction equipment for road work and contained a fueling station. In 1993, JCPW removed one 2000-gallon diesel and one 550-gallon gasoline tank. During the removal, contractors observed staining and hydrocarbon odors in and around the diesel tank fill lines. Contractors collected 17 soil samples as detailed below:

Sample Number	Sample Location	Analysis	Results
8693-01	Stockpiled soil—gas tank	WTPH-G	< 1ppm
8693-02	Underneath gas tank	WTPH-G	< 1ppm
8693-03	South Wall Gas Tank	WTPH-G BTEX	6 ppm <.02
8693-04	West Wall Gas Tank	WTPH-G	< 1ppm
8693-05	East Wall Gas Tank	WTPH-G	< 1ppm
8693-06	North Wall Gas Tank	WTPH-G	< 1ppm
8693-07	Overburden Under Shed	WTPH-D HCID	**37,000 ppm** Motor Oil
8693-08	Stock piled soil Diesel Tank	WTPH-D HCID	**13,000 ppm** Diesel 2
8693-09	North Wall—Diesel	WTPH-D	1,500 ppm
8693-10	Underneath Diesel Tank	WTPH-D	80 ppm
8693-11	South Wall Diesel Tank	WTPH-D	<50 ppm
8693-12	East Wall Diesel Tank	WTPH-D	50 ppm

8693-13	West Wall Diesel Tank	WTPH-D	50 ppm
8693-14	Stockpiled over excavated soil	WTPH-D	12,0000 ppm
8993S1	Stockpile over excavation	WTPH-D	9,5000 ppm
8993 B1	Bottom Composite over excavation	HCID BTEX	5,600 ppm No high levels
81093water	Water from bottom of excavation	N/A	N/A Not analyzed
81093	Clay at bottom of excavation	HCID	25 ppm diesel

Contaminated soils were treated on-site to below MTCA levels and then reused on two construction projects known as Otto Street and Tog Road improvements or disposed of off-site at a permitted facility. JCPW constructed a Solid Phase Treatment cell in September 1993. The treatment cell was approximately 100 feet wide by 200 feet long. Between September and December 1993 the soils were treated on-site to below MTCA levels with the exception of approximately a twenty-five foot area on the south side wall of the excavation which contained 5,900 mg/kg WTPH-D. These contaminated soils were left in place.

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):

In scoring this site, I limited the contaminants to TPH, as prior sampling did not detect any releases of gasoline.

ROUTE SCORES:

Surface Water/Human Health:
Surface Water/Environmental.:
Air/Human Health:
Air/Environmental:
Groundwater/Human Health: 15.7

OVERALL RANK: 5

WORKSHEET 2
Route Documentation

1. **SURFACE WATER ROUTE NOT SCORED**
   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 NOT SCORED**
   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: 9
      TPH diesel
   b. Explain basis for choice of substance(s) to be used in scoring:
      Known diesel contamination left in place.
   c. List those management units to be considered for scoring: Source: 9
      Underground storage tanks
   d. Explain basis for choice of unit to be used in scoring:

Confirmed contamination left in place.

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	Not scored									
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 Contamination left in place** **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)*√ # 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)

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 ($\mu g/m^3$)	Value	Acute Toxicity (mg/m^3)	Value	Chronic Toxicity (mg/kg/day)	Value	Carcinogenicity		Value
								WOE	PF*	
1										
2	Not scored									
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/m^3)**	**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)

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	TPH-Diesel	160	4	490	5	0.004	3	--	--	--
2						--	--			
3										
4										
5										
6										

* *Potency Factor*

Source: 1

Highest Value: 4

(Max = 10)

Plus 2 Bonus Points? 0

Final Toxicity Value: 4

(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= 3.00E+01 = 1
2=	2=
3=	3 =
4=	4=
5=	5=
6=	6=

Source: 1

Value: 2

(Max = 3)

1.3 Substance Quantity:

Explain basis: ~~:~~: Estimated area of wall contamination was 25 foot long, three feet tall, and one foot deep, approximately 8 cubic yards. This is based on the remaining contamination on the wall.	Source:9 **Value:~~3~~ 1** (Max=10)

2.0 MIGRATION POTENTIAL

		Source	Value
2.1	**Containment (explain basis):** Scored as a landfill with no liner, an engineered cover without ponding, with unknown maintenance, no known collection system, and with disposal of free/bulk liquids.	9	**6** (Max = 10)
2.2	**Net precipitation:** 51.61 mean annual	2	**5** (Max = 5)
2.3	**Subsurface hydraulic conductivity:** Hoodsport, sandy, gravelly loam	7	**4** (Max = 4)
2.4	**Vertical depth to groundwater:** 10-12 feet bgs	9	**8**

2.0 TARGETS

		Source	Value
3.1	**Groundwater usage: Public supply with alternate sources available.**	4	**4** (Max = 10)
3.2	**Distance to nearest drinking water well:** Approximately 204 feet	6	**5** (Max = 5)
3.3	**Population served within 2 miles: 1023 residents**	8	**32** (Max = 100)
3.4	**Area irrigated by (groundwater) wells within 2 miles: (0.75)*√ 216.5**	6	**11** (Max = 50)

3.0 RELEASE

	Source	Value
Explain basis for scoring a release to groundwater: The contamination was in the subsurface soil and could effect groundwater.	9	**0** (Max = 5)

Sources Used in Scoring

1	Washington State Department of Ecology, Washington Ranking Method (WARM) Scoring Manual April 1992 and Toxicology Data Base for Use in the Washington Ranking Method January 1992.
2	Climate Summary for Quilcene, WA., Western Regional Climate Center, http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?wa1414 downloaded 8-10-11
3	Isopluvials of 2-Yr. 24 Hr. Precipitation in Tenths of an Inch, NOAA Atlas 2, Volume IX, U.S. Department of Agriculture, Soil Conservation Service, Engineering Division, http://www.wrcc.dri.edu/pcpnfreq/wa2y24h.gif, downloaded 3-7-11
4	Jefferson County On-Line GIS system for Jefferson County Environmental Health Information (Arcview 10)
5	Sentry Internet Database of Water Wells, Washington State Department of Health https://fortress.wa.gov/doh/eh/portal/odw/si/FindWaterSystem.aspx
6	Water Right Tracking System, Washington State Department of Ecology. https://fortress.wa.gov/ecy/wrx/wrtssp1/wrtsmain.aspx?xpage=intro&xnavigate=clear
7	Soil Survey of Jefferson County, Washington; U.S. Department of Agriculture http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm, Natural Resource Conservation Service,
8	Well Logs Data, Department of Ecology
9	Remediation report, Pacific Environmental Services, May 5, 1994.
10	Ecology Coastal Atlas https://fortress.wa.gov/ecy/coastalatlas/tools/map.aspx?ZoomOptions=County|