SITE HAZARD ASSESSMENT
WORKSHEET 1
Summary Score Sheet

SITE INFORMATION:

Central Kitsap Waste Water
12330 Hwy 303 NE
Poulsbo, WA 98370
Kitsap County Parcel No. 112501-1-021-2006

Section/Township/Range: 25N/1E/11
Latitude: 47.67529
Longitude: -122.62872
Facility Site ID: 55114724
Cleanup Site ID: 9672

Site scored/ranked for the February 2015 Hazardous Sites List Publication

January 15, 2015

SITE DESCRIPTION:

The Central Kitsap Waste Water (CKW) site is located in unincorporated Kitsap County and is situated between the cities of Poulsbo and Bremerton. Land use in the area is predominately rural residential with nearby military establishments to the northwest. The 28 acre site is generally flat and currently operates as a large scale waste water treatment plant. The site presently includes seven structures that total 23,960 square feet. The majority of the site is paved with gravel lots; utilities include a public water supply and connections to sanitary sewer. Storm drains have been identified on site and direct runoff southwest into a nearby retention pond. See **Figure 1** for a vicinity map.

Based on historical land use and global positioning system (GPS) coordinates; properties addressed as 12330 Hwy 303 NE, 12350 Hwy 303 NE and 12351 Brownsville Highway NE have been readdressed and are combined under the same tax parcel. The site is currently addressed and operates under 12351 Brownsville Highway NE.

Owner contact information: Kitsap County Public Works
614 Division Division Street MS-27
Port Orchard, WA 98366

BACKGROUND AND HISTORY OF CONTAMINATION

December 1990, Washington Department of Ecology, Initial Investigation Report: Kitsap County Public Works (KCPW) staff discover a leaking return line connected to a 10,000 gallon diesel underground storage tank (UST) during the removal of two gasoline and one waste oil UST. See **Figure 2** for UST Location Map. Immediately following the discovery of the leak, the return line was secured to prevent further contamination and sampling of soil and water was conducted to determine extent of contamination.

March 1994, Letter of Correspondence from Kitsap County Public Works to Washington State Department of Ecology: KCPW confirm the release from a 10,000 gallon diesel UST and estimated approximately 15 gallons of diesel was discharged from the return line to the area excavated. It was also noted that no petroleum contaminated soil (PCS) left the site as it was used to backfill the excavation pit. Sampling locations and depths were not reported.

November 1990, June 1991, August 1991, April 1994, SPECTRA Laboratories, Inc., Analytical Results: Analytical results for samples collected following the discovery of the release were analyzed for soil and water. The analytical laboratory reported results above Model Toxics Control Act (MTCA) Method A cleanup levels for Benzene, Toluene, Ethyl Benzene, Total Xylenes (BTEX), Total Petroleum Hydrocarbons as gas (TPH-Gx) and diesel (TPH-Dx). Soil and water sampling conducted in 1991 and 1994 also indicate results above MTCA Method A Cleanup levels for BTEX, TPH-Gx and TPH-Dx.

Based on reporting by Washington State Department of Ecology, KCPW and analytical results, subsurface soil with BTEX, TPH-Gx, TPH-Dx above MTCA Method A Clean up Levels remain at the site. See **Table 1** & **Table 2** for a summary of soil & water sampling results above MTCA Method A Cleanup Levels.

Table 1. Central Kitsap Waste Water Summary of Soil Sampling Results

Central Kitsap Waste Water Summary of Soil Analytical Results					
Location	**Date Sampled**	**Sample Depth (feet bgs)**	**Analytical Results (ppm)**		
			TPH as Gasoline	**TPH as Diesel**	**BTEX**
A	11-21-90	-	**1063**	-	**174** / .479 / 1.57 / **15.6**
B	11-21-90	-	**978**	-	.010 / .298 / .236 / 4.20
C	11-21-90	-	**231**	-	**.080** / .398 / .905 / 7.90
D	11-21-90	-	21	-	<.01 / <.01 / <.01 / <.01
A	6-26-91	-	<20	<50	<0.3 / <0.3 / <0.3 / <0.3
B	6-26-91	-	**139**	236	**2.71** / 1.51 / 3.58 / **30.9**
C	6-26-91	-	**867**	<50	**2.46 / 24.9 / 12.8 / 86.3**
D	6-26-91	-	**269**	<50	<0.3 / **8.87** / 5.05 **/ 67.4**
E	6-26-91	-	**217**	123	**1.85** / 2.12 / 4.32 / **35.9**
F	6-26-91	-	**785**	292	**2.35** / 4.52 / 5.76 **/ 88.8**
G	6-26-91	-	61	<50	<0.3 / <0.3 / <0.3 / 2.58
CKTP 2-F	8-5-91	-	<20	-	-
#1 Dirt Boiler	4-5-94	-	-	<25	-
#2 Dirt Boiler	4-5-94	-	-	86	-
MTCA Method A Clean up Levels			**100/30**	**2000**	**0.03 / 7 / 6 / 9**

** highlighted results indicate MTCA exceedences*

Table 2. Central Kitsap Waste Water Summary of Ground Water Sampling Results

Central Kitsap Waste Water Summary of Ground Water Analytical Results					
Location	**Date Sampled**	**Sample Depth (feet bgs)**	**Analytical Results (ppb)**		
			TPH as Gasoline	**TPH as Diesel**	**BTEX**
Water Grab Sample	11-26-90	-	**126000**	-	**1388** / .218 / 333 / 968
Tank Leak	4-5-94	-	-	1046	-
MTCA Method A Clean up Levels			**800/1000**	**500**	**5 / 1000 / 700 / 1000**

** highlighted results indicate MTCA exceedences*

SHA Site Visit

In preparation for conducting a site hazard assessment (SHA) for the CKW site, a site visit was conducted by Kitsap Public Health District (KPHD) staff on July 22, 2014. The site visit was conducted to observe current conditions at the property and give KPHD staff a familiarity with the site and the surrounding area, including nearby drinking water well locations, and surface water flow directions. The property surrounding the area of concern is covered with asphalt, which limit the surface infiltration of water into soil in the areas where USTs were formerly located.

PATHWAY SCORING

Groundwater Pathway

The groundwater contaminant route was scored as a spill or discharge from contaminated soils. Vertical depth to groundwater is approximately three feet below ground surface. Based on Soil Survey of Kitsap County Area, Washington, the soils consist of gravelly sandy loam over glacial till. The pathway was scored as contamination confirmed by analytical evidence. There appears to be few public water systems as the majority of the area is served by private drinking water wells. The site is served by public water and sanitary sewer.

SPECIAL CONSIDERATIONS:

1) Due to the significant contamination documented on-site being primarily subsurface, the surface water and air routes are not applicable for WARM scoring for this site. Thus, only the groundwater route will be scored.

ROUTE SCORES:

Surface Water/Human Health: **NS** Surface Water/Environmental: **NS**

Air/Human Health: **NS** Air/Environmental: **NS**

Groundwater/Human Health: **43.5**

OVERALL RANK: 3

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: 1,5

      TPH-Gx, TPH-Dx, BTEX

   b. Explain basis for choice of substance(s) to be used in scoring:

      These substances were detected in on-site subsurface soil and water samples associated with the site in concentrations exceeding their respective MTCA cleanup levels.

   c. List those management units to be considered for scoring: Source: 1,5

      Subsurface soil and water

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

      The contaminating substances were detected in on-site subsurface soil and water samples in concentrations exceeding their respective MTCA cleanup levels.

WORKSHEET 6
Groundwater Route

1.0 SUBSTANCE CHARACTERISTICS

1.2 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	-	ND	-	-	ND
2	TPH -Gasoline w/ Benzene	5	8	3306	3	ND	ND	A=1	0.029	5
3	Tolulene	2000	2	5000	3	0.2	1	ND	ND	-
4	Ethylbenzene	700	4	3500	3	0.1	1	ND	ND	-
5	Xylenes	10,000	2	50	10	2	1	ND	ND	-

**** Potency Factor***

Source: 1,2,5

Highest Value: 8
(Max = 10)

Plus 2 Bonus Points? 2

Final Toxicity Value: 12
(Max = 12)

1.2 Mobility (use numbers to refer to above listed substances)

Cations/Anions	OR	Solubility (mg/L)
1=		1= $3 \times 10^1 = 1$
2=		2= $1.8 \times 10^3 = 3$
3=		3= $5.4 \times 10^2 = 2$
4 =		4= $1.5 \times 10^2 = 2$
5=		5 = $2.0 \times 10^2 = 2$

Source: 5

Value: 3
(Max = 3)

1.3 Substance Quantity:

Explain basis: 15 gallons of TPH-Dx

Source: 2,6

Value: 1
(Max=10)

2.0 MIGRATION POTENTIAL

		Source	Value
2.1	**Containment (explain basis):** Contaminated area capped, scored as a landfill	4,6	**7** (Max = 10)
2.2	**Net precipitation:** 29.7”- 5.1”= 24.1”	6	**3** (Max = 5)
2.3	**Subsurface hydraulic conductivity:** gravelly sandy loam over glacial till	1,2	**4** (Max = 4)
2.4	**Vertical depth to groundwater:** 3’ based on likely depth of excavation and accounts of groundwater observations	7	**8** (Max = 8)

3.0 TARGETS

		Source	Value
3.1	**Groundwater usage:** Private supply, but alternate sources available	8,6	**4** (Max = 10)
3.2	**Distance to nearest drinking water well:** approximately 1500 feet	8	**3** (Max = 5)
3.3	**Population served within 2 miles:** 2550	8,6	**50** (Max = 100)
3.4	**Area irrigated by (groundwater) wells within 2 miles:** None	8	**0** (Max = 50)

4.0 RELEASE

	Source	Value
Explain basis for scoring a release to groundwater: Confirmed by presence of TPH-Dx, Benzene, Ethylbenzene, Xylene	1,6	**5** (Max = 5)

SOURCES

1. Initial Investigation Report, Washington State Department of Ecology, December 4, 1990
2. Letter of Correspondence: UST Notice of Confirmed Release, March 22, 1994.
3. Soil Survey of Kitsap County Area, WA, United States Department of Agriculture, Soil Conservation Service, September 1980.
4. Kitsap Public Health District site visit, Richard Bazzell, June 22, 2014
5. Washington State Department of Ecology, Toxicology Database for Use in Washington Ranking Method Scoring, January 1992
6. Washington State Department of Ecology, WARM Scoring Manual, April 1992.
7. Washington Climate – Net Rainfall Table
8. Kitsap Public Health District, Drinking Water Database, January 2014.

Figure 1. Central Kitsap Waste Water Vicinity Map

Figure 1. Underground Storage Tank Location Map