

SITE HAZARD ASSESSMENT  
WORKSHEET 1  
Summary Score Sheet

**SITE INFORMATION:**

**Name:** 1515 Division Nursery  
**Address:** 1515 Division Street NE, Olympia, Thurston County, Washington 98502  
**Section/Township/Range:** S10 / T18N / R2W  
**Latitude/Longitude:** 47.05836, -122.92668  
**Ecology FS ID:** 2700509  
**Date Scored:** September 26, 2014

*Site assessed/ranked for the February 2015 update.*

**SITE DESCRIPTION:**

This site consists of 4.76 acres that are comprised of two tax parcels (#67400004205 and #67400004302) in an area primarily occupied by residential properties. Between 1957 and 1999 the former Garden Works Nursery operated on this site. This nursery operation included three buildings, three green houses, and a small shed. DDT was reportedly sprayed in the 1970s and diesel fuel was consistently used on site. After the nursery closed in 1999, the area was fenced off and neglected.

The site's surface water and groundwater drain east towards Budd Inlet (roughly 5,000 feet away). Surface water drains off the relatively flat property (0-3% slopes) and into Schneider Creek before entering Budd Inlet. The Soil Survey of Thurston County WA (1990) states that this property is: "underlain by a gravelly sandy loam (Ac). The unit (Ac) was developed from sandy outwash materials within layers of silt, very fine sand, and silty clay. The surface runoff is described as slow and internal drainage as low. At depths greater than 36 inches, a thin cemented layer may exist. Deeper soils are stratified and described as a very gravelly coarse sand." In March 2008, groundwater samples were obtained at 16 feet bgs.

(See attached aerial photos from 2000 and 20012. No site map available.)

**PREVIOUS INVESTIGATIONS:**

*A Limited Phase 1 Environmental Site Assessment* was completed for this property on August 30, 2002 by Geotechnical Testing Laboratory. This assessment concluded that the likelihood of contamination with agricultural chemicals or petroleum products is very possible in the immediate underlying soil of the property. Concerns stated in this report included: history of DDT and diesel use, numerous dilapidated buildings, poor agricultural chemical storage and disposal, potential for asbestos, radon gas, and/or lead paint, and the presence of an old and unmaintained well. One soil sample was taken near a drain basin on site and tested for organochlorine pesticides, in which no pesticides were detected. A sample collected from the insulation remaining on a boiler contained 5% friable asbestos.

On March 11, 2003 a buried 2,000 gallon Bunker “C” type heating oil underground storage tank on the property was removed and remedial actions were taken. These actions included removing the concrete slab, disposing of over 40 cubic yards of petroleum contaminated soils (3,400 mg/kg diesel indicated by a NWTPH-Dx/Dx Extended analysis), and sampling the excavation site. Four discrete samples were collected in the soil remaining in the floor and sidewalls of the excavation pit. Laboratory analysis results, using EPA method 8015, indicated no detectable presence of diesel fuel range, heavy oil range, and/or mineral oil range total petroleum hydrocarbons (TPH) and confirmed the successful site remediation below MTCA Method A Cleanup Levels.

Available information indicates that Department of Ecology’s Spill Response Program accessed the site sometime before 2006 and noted an approximate stain of 2ft by 10ft on the soil and very poor containment of unknown liquids.

A *Remedial Corrective Action Work Plan* was created for this site by Stemen Environmental, Inc (not dated). This report detailed the following:

- Advanced Environmental, Inc. performed an Asbestos Survey and Abatement Project in August 2006 (no further information available).
- Stemen Environmental Inc. began an on-site building demolition and solid waste cleanup project in August 2006. This work removed a substantial amount of the on-site solid wastes, including all the used tires, demolished most on-site buildings, and removed some concrete slabs. After this cleanup, 18 soils samples from selected locations were taken and analyzed to identify any organochlorine pesticide and organophosphate pesticide contamination using EPA method 8081 and 8270 (sampling location map is unavailable for this entire Work Plan). Three of these eighteen samples indicated concentrations of heptachlor epoxide exceeded MTCA Method B Cleanup Levels of 0.11mg/kg. Some samples also had detectable levels of 4,4’-DDT (at levels below the MTCA Method A Cleanup Level) and 4,4’-DDD (no corresponding MTCA Method A Cleanup Level). A composite soil sample made from the three soil samples containing heptachlor epoxide above MTCA Method A Cleanup Levels were submitted to Nautilus Environmental LLC for Dangerous Waste Characterization using the test organisms *Oncorhynchus mykiss* (rainbow trout). It was reported that the sample did not designate as dangerous or extremely hazardous waste (lab documentation not available). High sulfur levels in these soil samples might have caused a false positive of heptachlor epoxide, but was not retested using EPA method 3600B to confirm the false positive (as it was in other, later sample location, see below).
- The boilers and concrete basement floor located in the eastern part of the property were demolished and removed. Three discrete soil samples were taken after the removal and analysis using Method NWTPH-Dx/Dx-Extended and method 7420 for TPH and heavy metals detection showed no concentrations of diesel fuel, heavy oil, and/or mineral oil range TPH or lead at levels that exceed MTCA’s Method A Cleanup levels though detectable levels of diesel, oil, and lead were found.
- An on-site concrete underground containment vault was discovered and removed along with all the soils contained within it. Three distinct soil samples removed for characterization were analyzed for Organochlorine Pesticides and TPH (using EPA method 8081 and NWTPH-Dx/Dx-Extended) and contained concentrations of heptachlor epoxide at levels that exceed Method B Cleanup Levels along with low levels of 4,4’-DDE, 4,4’-DDD, and 4,4’-DDT. No diesel fuel, heavy oil, and/or mineral oil range TPH were detected. Concern was then raised about how sulfur present in soils could be causing a false positive and/or elevated levels of heptachlor epoxide, so samples were reanalyzed using EPA method 3660B. New results indicated no presence of Organochlorine pesticides at concentrations that exceed MTCA Method B Cleanup Levels (lab documentation not available). This analysis brought into question the accuracy of the heptachlor epoxide concentrations in the earlier samples, but those sample locations were not retested.

- Four discrete 6 to 12 inch bgs samples from select locations that had not previously been sampled from on site were tested for organochlorine pesticides (using EPA method 8081 and 3660B). The results reported a detectable presence of Dieldrin and 4,4'-DDT, though at levels that do not exceed Ecology's Method B Cleanup Levels along with 4,4'-DDD (lab documentation for these four samples were not available, so it is unclear if both methods were used on every sample).
- Three more boreholes at selected locations were created and soil samples were taken three feet and seven feet bgs along with a groundwater sample taken at 16 feet bgs. EPA method 8081 and 3660B reported no detectable presence of Organochlorine pesticides in the soil samples and the groundwater samples had no presence of diesel fuel, heavy oil, and/or mineral oil range TPH (lab documentation not available).
- This *Remedial Corrective Action Work Plan* proposed that more soil sample testing be conducted to clearly define the presence of Organochlorine pesticides and/or other chemicals of concern in the soils present on the site and to sample the out of service domestic well water and properly abandon it by a licensed water well driller.

**CONCLUSION:**

Previous site investigations have indicated that there is potential contamination from heptachlor epoxide, dieldrin, DDT, DDE, DDT, diesel, oil and lead. Although groundwater impacts have not been confirmed, the vertical and lateral extent of any contamination has not been fully delineated.

**SPECIAL CONSIDERATIONS:**

The following data was not found during site ranking:

- A characterization of the well water
- Sample location maps and complete lab result documentation from the *Remedial Corrective Action Work Plan*

Due to the lack of the above data, even if a contaminant of concern is believed to be a false positive (heptachlor epoxide) or only identified at concentrations below MTCA Cleanup Levels (dieldrin, DDT, DDE, DD, diesel, oil, and lead) it could not be ruled out as a significant site contaminant. This ranking focused on heptachlor epoxide, dieldrin, and DDT to represent the potential contaminants of concern found on this site.

Due to the potential contamination on this site being primarily subsurface, the surface water and air routes are not applicable for WARM scoring for this site.

**ROUTE SCORES:**

Surface Water/Human Health:	<u>NS</u>	Surface Water/Environmental:	<u>NS</u>
Air/Human Health:	<u>NS</u>	Air/Environmental:	<u>NS</u>
Groundwater/Human Health:	<u>60.9</u>		

**Overall Rank: 2**

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: 1,6  
Heptachlor epoxide, dieldrin, DDT, DDE, DDD, diesel, oil, and lead
- b. Explain basis for choice of substance(s) to be used in scoring:  
Since this property has not been thoroughly characterized, heptachlor epoxide, dieldrin, DDT, and diesel were chosen to represent the potential list of contaminants for this site.
- c. List those management units to be considered for scoring: Source: 1,4,6  
Contaminated soil
- d. Explain basis for choice of unit to be used in scoring:  
Potential release to soil

**WORKSHEET 6**  
Groundwater Route

**1.0 SUBSTANCE CHARACTERISTICS**

<b>1.2 Human Toxicity</b>										
Substance	Drinking Water Standard (µg/L)	Value	Acute Toxicity (mg/ kg-bw)	Value	Chronic Toxicity (mg/kg/day)	Value	Carcinogenicity		Value	
							WOE	PF*		
1	Heptachlor epoxide	0.2	10	15 (rat)	10	X	X	B2	9.1*.8 =7.28	7
2	Dieldrin	X	X	38.3 (rat)	10	0.00005	10	B2	16*.8 =12.8	9
3	DDT	X	X	87 (rat)	8	0.0005	8	B2	0.34*.8 =0.272	5
4	Diesel	20	4	490	5	.004	3	--	--	--

Source: 5, 6  
**Highest Value: 10**  
 (Max = 10)  
 Plus 2 Bonus Points? Yes  
**Final Toxicity Value: 12**  
 (Max = 12)

<b>1.2 Mobility (use numbers to refer to above listed substances)</b>	
Cations/Anions [Coefficient of Aqueous Migration (K)]	OR Solubility (mg/L)
1=	1= Heptachlor epoxide = 0.35 = 0
2=	2= Dieldrin = 0.2 = 0
3=	3= DDT = 0.005 = 0
	4= Diesel = 30. = 1

Source: 5, 6  
**Value: 1**  
 (Max = 3)

<b>1.3 Substance Quantity (volume):</b>	
<b>Explain basis:</b> Quantity unknown, use default value = 1	Source:1,6 <b>Value:4</b> (Max=10)

**2.0 MIGRATION POTENTIAL**

		<b>Source</b>	<b>Value</b>
<b>2.1</b>	<b>Containment (explain basis):</b> Contamination in soil with no run-on/runoff control. Scored as landfill: No liner (3), no cover (2), no collection system (2), free/bulk liquids documented (3).	1, 4, 6	<b>10</b> (Max = 10)
<b>2.2</b>	<b>Net precipitation:</b> 38.58inch – 11.74inches = 26.84inches	7, 8, 6	<b>3</b> (Max = 5)
<b>2.3</b>	<b>Subsurface hydraulic conductivity:</b> Gravely sandy loam, silt loam	4, 9, 6	<b>3</b> (Max = 4)
<b>2.4</b>	<b>Vertical depth to groundwater:</b> 16 feet	1, 6	<b>8</b> (Max = 8)

**3.0 TARGETS**

		<b>Source</b>	<b>Value</b>
<b>3.1</b>	<b>Groundwater usage:</b> Private supply, but alternate sources available with minimum hookup requirements.	9, 6	<b>4</b> (Max = 10)
<b>3.2</b>	<b>Distance to nearest drinking water well:</b> Well on site	1,4, 6	<b>5</b> (Max = 5)
<b>3.3</b>	<b>Population served within 2 miles:</b> more than 10,000	9, 6	<b>100</b> (Max = 100)
<b>3.4</b>	<b>Area irrigated by (groundwater) wells within 2 miles:</b> $.75\sqrt{(165)}=9.6$	10, 6	<b>10</b> (Max = 50)

**4.0 RELEASE**

		<b>Source</b>	<b>Value</b>
	<b>Explain basis for scoring a release to groundwater:</b> No documented release	1, 6	<b>0</b> (Max = 5)

**SOURCES USED IN SCORING**

1. Stemen Environmental, Inc., *Remedial Corrective Action Work Plan for Former Nursery Site Located at 1515 Division Street NW, Olympia, Washington*. VCP#SW0866, March 2008.
2. Thurston County Health Department, *Initial Investigation Field Report: ERTS#533562 & 54224*, January 2006.
3. Stemen Environmental, Inc., *Tank Removal and Independent Remedial Action Report: Commercial Property 1515 Division Street NW Olympia, Washington*, May 2004.
4. Geotechnical Testing Laboratory, *Limited Level 1 Environmental Site Assessment: 1515 NW Division Street Olympia, Washington*, August 2002.
5. Washington Department of Ecology, *Toxicology Database for Use in Washington Ranking Method Scoring*, January 1992.
6. Washington Department of Ecology, *WARM Scoring Manual*, April 1992.
7. Western Regional Climate Center, Precipitation data from the Olympia, Washington Airport, June 1948 to March 2013. (<http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?wa6114>)
8. Table 16-Estimated Evapotranspiration, E.M. 2462, p42, for Thurston County Airport.
9. Thurston County Geodata Center, Roads and Transportation Division, October 2013.
10. Washington Department of Ecology, Water Resources Program, Water Right Tracking System (WRTS), October 2012.

# 1515 Division Nursery (2012 Aerial)



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## LEGEND

- |                 |              |
|-----------------|--------------|
| Major Roads     | Flood Zones  |
| Roads           | Water Bodies |
| Streams         | Zoning       |
| Contours        | Cities       |
| Wetlands        | Parcels      |
| Wetland Buffers |              |

# 1515 Division Nursery (2000 Aerial)



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