



Clean Earth Solvent Spill: Upland Ecological Risk Assessment

To: Aaren Fiedler, LG
Voluntary Cleanup Program Site Manager
Toxics Cleanup Program
Southwest Regional Office

From: Arthur Buchan, Toxicologist
Information & Policy Section
Toxics Cleanup Program

Date: April 23, 2021

This memorandum represents a Department of Ecology recommendation regarding the Site-Specific Terrestrial Ecological Evaluation (TEE) specific to the Clean Earth Solvent Spill located along Highway 14 near Belle Center Road in Skamania County, Washington (Ecology VCP Project No. SW1726).

Determination:

It is recommended that the site would not qualify for an exclusion, and that a Simplified TEE should meet the requirements. As a result, it is recommended that a Simplified TEE as per WAC 173-340-7492 is conducted at this site as indicated in this memorandum. It is noted that a Site-Specific TEE was conducted at this site. However, it is further recommended that the Weight of Evidence Method chosen would not preclude the requirement of an environmental covenant at this site.

For questions or concerns regarding this memorandum, please contact:

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Purpose

The purpose of this memorandum is to provide a response regarding the: *Site-Specific Terrestrial Ecological Evaluation, Ecology VCP Project SW1726* (MFA, 2021) in addition to the *Completion Report for Soil Removal Action, Highway 14 Mile Post 23 Spill, Ecology VCP Project SW1726* (MFA, 2020).

TEE Comments/Recommendations

Exclusionary Criteria

No further evaluation of the TEE is required if any of the below exclusionary criteria are met at the site (Ecology 2013):

1. **Contamination below the point of compliance (340-7491(1) (a)).** This exclusion should not apply. It appears contamination is located at a shallower depth than 15 ft. bgs.
2. **Incomplete exposure pathway (340-7491(1) (b)).** This exclusion should not apply. It appears no physical barrier either currently exists (or is planned) that would eliminate exposure of plants or wildlife to the contamination.
3. **Area of contiguous undeveloped land (340-7491(1) (c)).** This exclusion should not apply. Please see Appendix A. It appears that there is greater than 1.5 acres of contiguous undeveloped land on or within 500 ft. of the site.
4. **Concentrations do not exceed natural background levels (340-7491(1) (d)).** This exclusion should not apply. Natural background is defined in MTCA as “means the concentration of hazardous substance consistently present in the environment that has not been influenced by localized human activities...” The presence of the contaminants at the site are due to the release of diesel range organics.

Discussion: It does not appear that any of the exclusionary criteria listed above would apply at this site. As a result, a Terrestrial Ecological Evaluation is required.

Simplified or Site-Specific Criteria

If the site cannot be excluded as discussed above, then a simplified or site-specific TEE is required. A site-specific TEE is required if any of the below criteria apply:

1. **Management or land use plans maintain or restore native vegetation (340-7491(2) (a) (i)).** The site is located on, or directly adjacent to, an area where management or land use plans will maintain or restore native or seminative vegetation (e.g. green-belts, protected wetland, forestlands, locally designated environmentally sensitive areas...)
 - a. It appears that this criterion does not apply. The site was mapped using WDFW (2020), Priority Habitats and Species Interactive Web Mapping Tool (Figure 1), and it appears that the priority habitat is not directly adjacent to the release (distance of app. 150 ft.) Retrieved from: <https://wdfw.wa.gov/mapping/phs/>
2. **The site is used by a threatened or endangered species (340-7491(2) (a) (ii)).** The site is used by a threatened or endangered species...
 - a. It appears this criterion does not apply.

3. **Amount of native vegetation located on the property within 500 ft. of the site (340-7491 (2) (a) (iii)).** The site is located on a property that contains at least ten acres of native vegetation within 500 feet of the site, not including vegetation beyond the property boundaries.
 - a. It appears this criterion does not apply. The site was mapped including a parcel search using WDFW (2020), Priority Habitats and Species Interactive Web Mapping Tool (Figure 1). Retrieved from: <https://wdfw.wa.gov/mapping/phs/>.
4. **Department determination (340-7491(2) (a) (iv)).** The department determines that the site may present a risk to significant wildlife populations.
 - a. It appears that this criteria does not apply. The department has not determined that the site may present a risk to significant wildlife populations.

Discussion: It does not appear that any of the above criteria would apply at this site. As a result, a Site-Specific Terrestrial Ecological Evaluation is not required at this site.

Discussion regarding the Weight of Evidence proposal:

It is interpreted that the consultant is proposing that the upland ecological evaluation meets the Weight of Evidence (WAC 173-340-7493(3) (f)) method in MTCA based on an incomplete exposure that was developed through the use of a backfilled crushed rock material. It is discussed “*The presence of a manmade subsurface biological barrier (i.e., cobble barrier) limits penetration by plant roots and burrowing animals, and limits soil turnover by soil invertebrates*”. I would agree with that assumption. However, to use that assumption would require an institutional control (environmental covenant) used to protect that barrier. It is also noted that total diesel and oil concentrations in that area exceed 10,000 ug/L.

Summary

It is recommended for this site:

- The site would not qualify for an exclusion; and
- A simplified TEE evaluation at this site would meet the requirements of the upland ecological risk assessment.
- If it is agreed that a crushed rock barrier creates an incomplete exposure pathway, then WAC 173-340-7492(2)(b) should apply in that *To ensure that such manmade barriers are maintained, a restrictive covenant shall be required by the department under WAC 173-340-440 under a consent decree, agreed order or enforcement order, or as a condition to a written opinion regarding the adequacy of an independent remedial action under WAC 173-340-515(3) (Ecology, 2013).*

The requirements for conducting the Simplified Terrestrial Ecological Evaluation are found in WAC 173-340-7492. A copy of the screening levels for the purposes of the remedial investigation have been included in Figure 2. For the purposes of the remedial investigation, nature and extent of the contamination should be evaluated to the standard point of compliance (0 to 15 ft. bgs.). A conditional point of compliance (set at 6 ft. bgs) can be requested during the feasibility study with department approval and an environmental covenant preventing excavation of deeper soils. At the completion of the TEE, the Voluntary Cleanup Program, Terrestrial Ecological Evaluation Form should be completed, and turned into Ecology. This form can be found at: [VCP TEE Form](#).

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References

Ecology. (2013). *Model Toxics Control Act Regulation and Statute*. Chapter 173-340 WAC. Publication No. 94-06. Retrieved from:

<http://apps.leg.wa.gov/wac/default.aspx?cite=173-340> and
<https://fortress.wa.gov/ecy/publications/summarypages/9406.html>

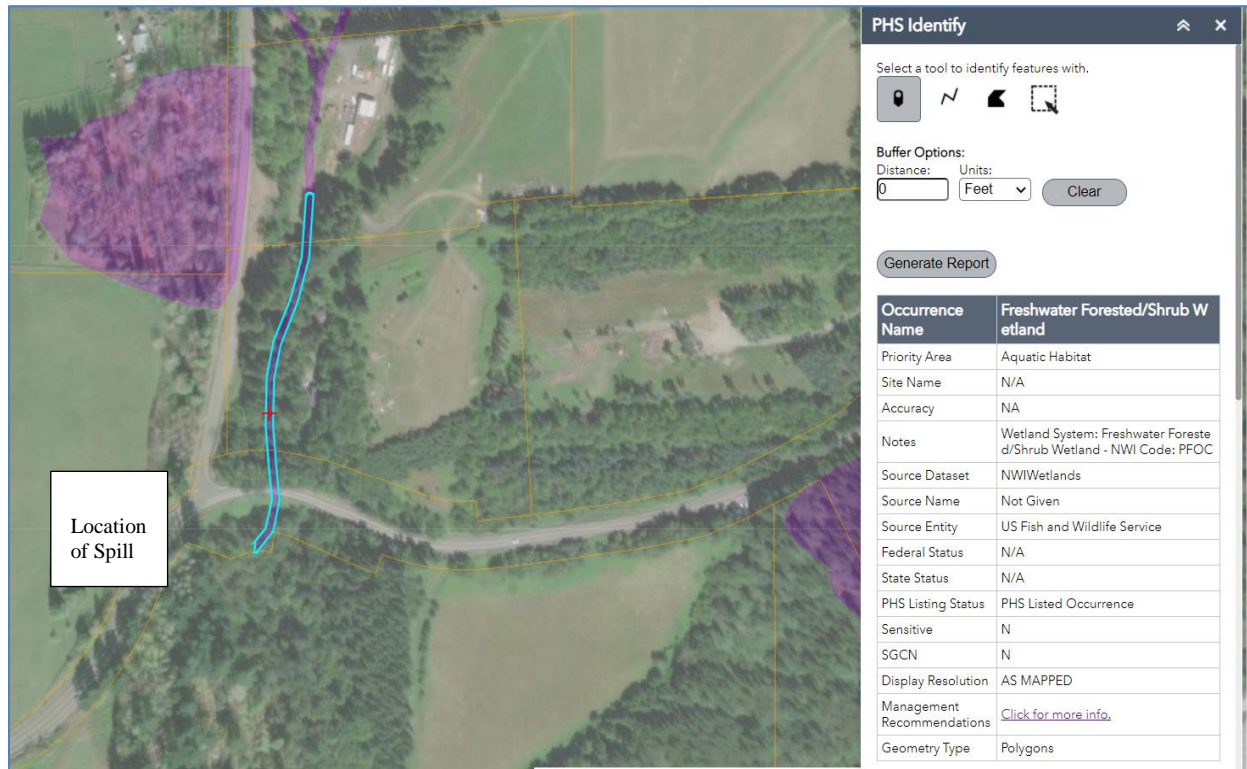
Maul Foster and Alongi, Inc. (2020). *Completion Report for Soil Removal Action, Highway 14 Mile Post 23 Spill, Ecology VCP Project SW1726*. Maul Foster and Alongi Inc. Vancouver, WA 98660.

Maul Foster and Alongi, Inc. (2021). *Memorandum: Site-Specific Terrestrial Ecological Evaluation. Highway 14 Milepost 23 Spill. Ecology VCP Project SW1726*. Maul Foster and Alongi Inc. Vancouver, WA 98660.

WDFW. (2020). *Priority Habitats and Species. Interactive Web Mapping Tool*. Retrieved from:
<https://wdfw.wa.gov/mapping/phs/>

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Figure 1: Location of Spill (with parcel layer) in Proximity to Washington State Department of Fish and Wildlife Priority Habitat (Freshwater Forested/Shrub Wetland).



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Figure 2: Table 749-2. Priority Contaminants of Ecological Concern for Sites that Qualify for the Simplified Terrestrial Ecological Evaluation Procedure.

173-340-900

MTCA Cleanup Regulation

Table 749-2

Priority Contaminants of Ecological Concern for Sites that Qualify for the Simplified Terrestrial Ecological Evaluation Procedure.^a

Priority contaminant	Soil concentration (mg/kg)	
	Unrestricted land use ^b	Industrial or commercial site
METALS:^c		
Antimony	See note d	See note d
Arsenic III	20 mg/kg	20 mg/kg
Arsenic V	95 mg/kg	260 mg/kg
Barium	1,250 mg/kg	1,320 mg/kg
Beryllium	25 mg/kg	See note d
Cadmium	25 mg/kg	36 mg/kg
Chromium (total)	42 mg/kg	135 mg/kg
Cobalt	See note d	See note d
Copper	100 mg/kg	550 mg/kg
Lead	220 mg/kg	220 mg/kg
Magnesium	See note d	See note d
Manganese	See note d	23,500 mg/kg
Mercury, inorganic	9 mg/kg	9 mg/kg
Mercury, organic	0.7 mg/kg	0.7 mg/kg
Molybdenum	See note d	71 mg/kg
Nickel	100 mg/kg	1,850 mg/kg
Selenium	0.8 mg/kg	0.8 mg/kg
Silver	See note d	See note d
Tin	275 mg/kg	See note d
Vanadium	26 mg/kg	See note d
Zinc	270 mg/kg	570 mg/kg
PESTICIDES:		
Aldicarb/aldicarb sulfone (total)	See note d	See note d
Aldrin	0.17 mg/kg	0.17 mg/kg
Benzene hexachloride (including lindane)	10 mg/kg	10 mg/kg
Carbofuran	See note d	See note d
Chlordane	1 mg/kg	7 mg/kg
Chlorpyrifos/chlorpyrifos-methyl (total)	See note d	See note d
DDT/DDD/DDE (total)	1 mg/kg	1 mg/kg
Dieldrin	0.17 mg/kg	0.17 mg/kg
Endosulfan	See note d	See note d
Endrin	0.4 mg/kg	0.4 mg/kg
Heptachlor/heptachlor epoxide (total)	0.6 mg/kg	0.6 mg/kg
Hexachlorobenzene	31 mg/kg	31 mg/kg
Parathion/methyl parathion (total)	See note d	See note d
Pentachlorophenol	11 mg/kg	11 mg/kg
Toxaphene	See note d	See note d

OTHER CHLORINATED ORGANICS:		
Chlorinated dibenzofurans (total)	3E-06 mg/kg	3E-06 mg/kg
Chlorinated dibenzo-p-dioxins (total)	5E-06 mg/kg	5E-06 mg/kg
Hexachlorophene	See note d	See note d
PCB mixtures (total)	2 mg/kg	2 mg/kg
Pentachlorobenzene	168 mg/kg	See note d
OTHER NONCHLORINATED ORGANICS:		
Acenaphthene	See note d	See note d
Benzo(a)pyrene	30 mg/kg	300 mg/kg
Bis (2-ethylhexyl) phthalate	See note d	See note d
Di-n-butyl phthalate	200 mg/kg	See note d
PETROLEUM:		
Gasoline Range Organics	200 mg/kg	12,000 mg/kg except that the concentration shall not exceed residual saturation at the soil surface.
Diesel Range Organics	460 mg/kg	15,000 mg/kg except that the concentration shall not exceed residual saturation at the soil surface.

Footnotes:

- Caution on misusing these chemical concentration numbers. These values have been developed for use at sites where a site-specific terrestrial ecological evaluation is not required. They are not intended to be protective of terrestrial ecological receptors at every site. Exceedances of the values in this table do not necessarily trigger requirements for cleanup action under this chapter. The table is not intended for purposes such as evaluating sludges or wastes. This list does not imply that sampling must be conducted for each of these chemicals at every site. Sampling should be conducted for those chemicals that might be present based on available information, such as current and past uses of chemicals at the site.
- Applies to any site that does not meet the definition of industrial or commercial.
- For arsenic, use the valence state most likely to be appropriate for site conditions, unless laboratory information is available. Where soil conditions alternate between saturated, anaerobic and unsaturated, aerobic states, resulting in the alternating presence of arsenic III and arsenic V, the arsenic III concentrations shall apply.
- Safe concentration has not yet been established. See WAC 173-340-7492(2)(c).

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