



STATE OF WASHINGTON  
**DEPARTMENT OF ECOLOGY**

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September 19, 2024

Eric Rapp  
Director Environmental Compliance  
JELD-WEN, Inc  
500 JELD-WEN Road  
Craigsville, WV 26205

**Re: Wood waste characterization at the Jeld Wen site:**

**Site Name:** Jeld Wen  
**Site Address:** 300 W Marine View Dr, Everett, Snohomish County, WA 98201-1030  
**Cleanup Site ID:** 4402  
**Facility Site ID:** 2757  
**Agreed Order No.** DE 5095

Dear Eric Rapp:

Ecology has received draft wood waste characterization data via email on August 26, 2024. That characterization work was conducted in response to requests from Ecology, including within a letter dated December 1, 2023.

As you are aware, Ecology personnel were onsite during a portion of the wood waste sampling and sieving efforts. We have performed an analysis of these data, along with total volatile solids (TVS) and total organic carbon (TOC) data, summarized as follows. TVS and TOC analyses are defined as follows:

*TVS analysis is a laboratory test that measures the concentration of organic solids in samples. The test is based on the idea that the organic portion of solids will burn, while the inorganic portion will remain as an incombustible residue.*

*TOC is measured using a TOC analyzer, which oxidizes organic compounds in a sample to carbon dioxide (CO<sub>2</sub>) and then measures the amount of CO<sub>2</sub> produced. The oxidation method used depends on the concentration and nature of the TOC being measured.*

Wood sieving data was obtained by wet sieving of sediment samples to separate out the wood component of the sediments. The volumetric percentage of wood waste was determined by dividing the volume of sieved wood materials by the total volume of the sample. Ecology notes that the quantitation of wood waste by volume has some uncertainties due to potentially missing very small wood fragments within the finest screened fraction (less than one

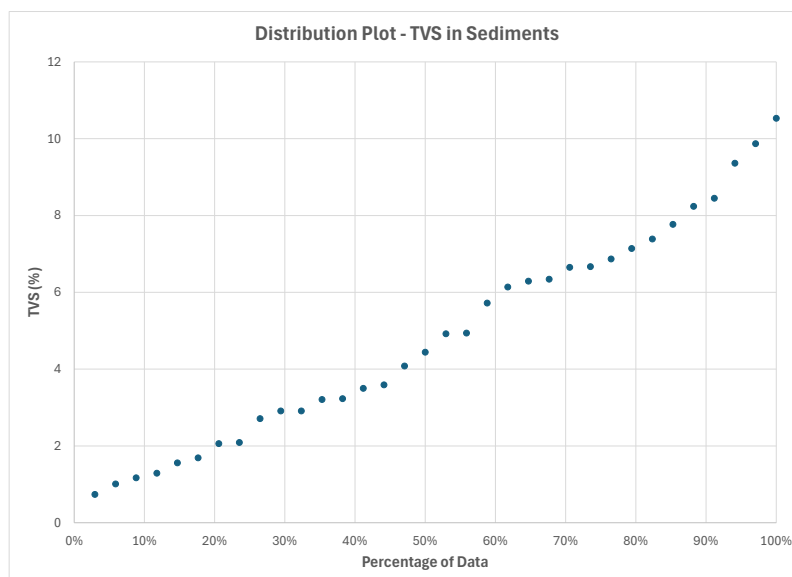
millimeter). However, Ecology has concluded based on field observations that any missed wood waste in this finest fraction is expected to be generally insignificant. The following are summary statistics from the provided data:

	Wood (%)	TVS (%)	TOC (%)	TVS/Wood	TOC/TVS
n	13	34	34	--	--
Minimum	1	0.74	0.289	74%	39%
25%	4	3.22	1.78	81%	55%
Median	11	4.68	2.25	43%	48%
Mean	10	4.87	2.64	49%	54%
75%	13	6.82	3.79	52%	56%
Maximum	21	10.53	7.48	50%	71%

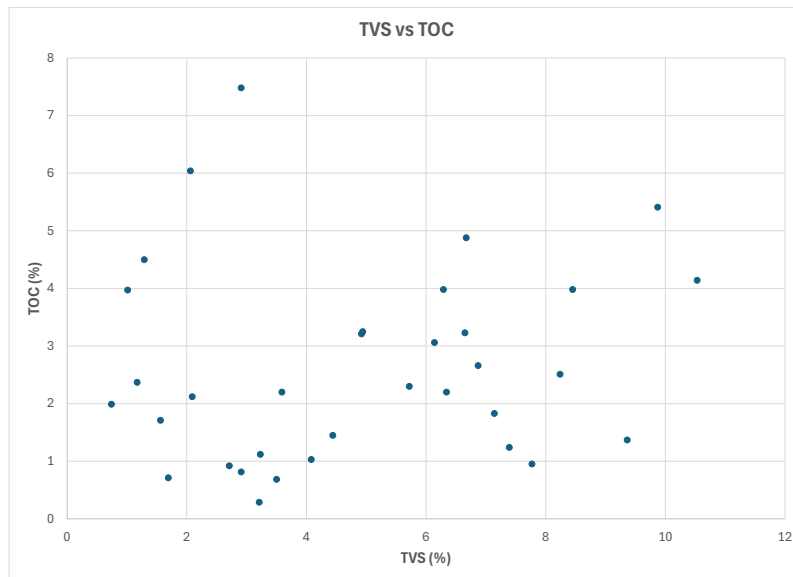
The summary statistics were based on using the highest wood percentage value at each of the 13 sampled locations (3 of the 13 locations had more than one sample collected) and all data from the TVS sampling (presented in tables within the final PDRI Step 2 Work Plan). The summary statistics show the following:

- The mean and median wood sieving values (10% and 11%, respectively) are indicative of a normal data distribution (mean and median values are the same for a normal data distribution).
- The maximum value of 21% was below the action level of 25% presented within the Cleanup Action Plan.
- TVS values were roughly half of the wood sieving values, and TOC values were roughly half of the TVS values.

The normality of the distribution of the wood waste in sediments data is also supported by the distribution of the TVS data:



The summary statistics ratios of TVS to TOC suggested a possible relationship between these constituents. Therefore, the relationship of TVS and TOC data were examined through scatter plot analysis:



This scatter plot shows no apparent correlations between TVS and TOC, which is not entirely surprising since these analyses use different methods to assess carbon in sediment and since TOC analysis uses a relatively small aliquot of sample material that could significantly bias results in a heterogeneous media.

### **Conclusions Regarding Wood Waste in Sediment at the Site**

None of the wood sieving results exceeded the criteria of 25% established in the Cleanup Action Plan. The sieving characterization focused on wood waste in the upper portion of the sediments throughout the Site. **Ecology has concluded that the TVS and wood sieving percentage data sufficiently characterize the shallow sediments throughout the Site, and no further characterization of wood waste in shallow sediments appears to be warranted at this time.**

In selected areas where excavation of sediments will take place during the Site cleanup work, deeper wood waste, especially the potential presence of buried logs, could be of potential concern. Test pitting has been previously discussed and was also suggested in our December 1, 2023 letter:

#### ***Step 2 Test Pits***

*Our senior sediments experts also concurred with the importance of test pitting to assess the constructability impacts of large woody debris as well as to refine the Site conceptual model. Since log rafting took place throughout the area, the likelihood of encountering logs within the Site sediments is not insignificant. Tools such as ground penetrating radar (GPR) can also be used to map large woody materials.*

Although limited wood waste was found during the coring work, Ecology notes that some test pitting could be warranted prior to proceeding with design or implementation of the excavation elements of the Cleanup Action Plan, in case buried logs are present locally that could have implications during sediment excavation work.

### **Closing**

Ecology appreciates the efforts by the Jeld Wen team to address the concerns regarding wood waste in sediments. We are all encouraged by the results to date.

We look forward to receipt of your Step 2 PRDI data, and we expect that those data should fully define the extent of contamination in sediments prior to moving on to remedial design.

Sincerely,



Frank P. Winslow, LHG  
Toxics Cleanup Program  
Headquarters Cleanup Section

cc: Erik Gerking, Port of Everett  
Nathan Soccorsy, Anchor QEA, LLC  
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