LWG
LOWER WILLAMETTE GROUP

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October 8, 2009

Chip Humphrey
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U.S. Environmental Protection Agency, Region 10
805 SW Broadway, Suite 500
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Re: Submittal of Draft Baseline Human Health Risk Assessment (Lower Willamette River, Portland Harbor Superfund Site, USEPA Docket No: CERCLA-10-2001-0240)

Chip and Eric:

The Lower Willamette Group (LWG) submitted the draft Baseline Human Health Risk Assessment (BHHRA) for the Portland Harbor Superfund site (Site) to the EPA on September 23, 2009. While recognizing that the draft BHHRA represents an important milestone for the Portland Harbor remedial investigation/feasibility study (RI/FS), the LWG continues to believe that the estimates of human health risks presented for the Site are overly conservative.

The LWG developed the draft BHHRA under the direction and oversight of EPA's risk assessors and managers and EPA's partners. As envisioned by EPA, the draft BHHRA carries the explicit understanding that conservative assumptions should be used to prevent underestimation of potential human exposures and resulting risks. While many of the assumptions on their own are highly conservative in nature, when used in combination with each other, their conservatism is dramatically compounded.[1] This compounding conservatism present in the BHHRA ultimately needs to be considered by EPA in its evaluation of the "reasonable maximum exposure"(RME) [2] used to establish a basis for health protectiveness and risk management at Superfund sites.

However, as acknowledged by both EPA and the LWG, risk management needs will require that the conservative bias in the BHHRA results be considered in evaluating the protectiveness and practicability of remedial alternatives. Importantly, as the LWG and EPA continue to progress into the FS, the predicted risks will need to be viewed in light of risk management goals for the

[1] Compounding conservatism in risk assessment attributable to conservative assumptions is well established in the literature (e.g., Burmaster, E.B., and R. H. Harris. 1993. The magnitude of compounding conservatisms in Superfund risk assessments. Risk Anal 13(2): 131-134.

[2] The 1991 OSWER directive (Directive 9285.6-03, dated March 25, 1991) states "The goal of RME is to combine upper-bound and mid-range exposure factors…so that the result represents an exposure scenario that is both protective and reasonable, not the worst possible case."

Site, public participation and a clear understanding of what can practically be achieved during the remediation.

To this end, the LWG has prepared this letter to document the underlying conservative assumptions directed for use by EPA in the BHHRA. Provided below is a bulleted list of conservative assumptions of particular note that were used at the direction or requirement of EPA in the BHHRA.

- **Fish and Shellfish Tissue Ingestion Rates and Exposure Assumptions.** At the direction or requirement of EPA, the BHHRA incorporated:

  - Fish and shellfish tissue ingestion rates that represented only high end estimates of tissue ingestion and lacked site-specific tissue consumption information, because EPA would not allow a site-specific consumption survey to be done for the Site.
  - Assumptions of a small area for exclusive collection of fish or shellfish consumed
  - Assumption that individuals catch and consume fish and shellfish from the Site and only from the Site throughout the entire course of their lifetime.
  - Assumption that fish and shellfish tissue diets consist exclusively of a single species
  - Assumptions that do not account for cooking and preparation methods of fish and shellfish tissue.
  - Assumption that the combined rate for consumption of estuarine/freshwater fish and shellfish is representative of freshwater shellfish consumption.

- **Clam Consumption Scenario.** It is not known to what extent shellfish consumption actually occurs within the Site, and there is no documentation of ongoing shellfish consumption by humans occurring within the Site. The LWG disagrees with the inclusion of a clam consumption scenario in the draft BHHRA.

- **Diver Scenario.** The EPA directed diver scenario exposure assumptions that were based in part on limited EPA observations of wet suit divers performing environmental investigation and remedial activities – activities that are not part of a commercial diver scenario. CERCLA does not require cleanup decisions to be protective of remedial workers. The wet suit diver exposure scenario is not consistent with site-specific information for commercial divers collected by the LWG. The LWG feels that these assumptions are overly conservative and do not represent reasonable maximum exposure scenarios.

- **Hypothetical Domestic Water Use Scenario.** The EPA directed the risk evaluation of untreated surface water as a domestic water source in the BHHRA. Surface water within the Site is not currently used as a domestic water source, nor are there plans to use surface water within the Site as a domestic water source in the future. Even if surface water were to be used as a domestic water source, standard treatment common to all surface water sources would be required prior to use. The LWG feels that this is not a complete exposure pathway and disagrees with the inclusion of a domestic water use scenario in the draft BHHRA.

- **Screening of Surface Water and Transition Zone Water (TZW) against Human Health Ambient Water Quality Criteria (AWQC) for Consumption of Organisms.** The EPA required the screening of maximum detected concentrations in surface water and TZW against AWQCs to evaluate bioaccumulation potential. Risks from consumption of biota were evaluated in the BHHRA using empirical tissue data collected within the Study Area,

which provided for less uncertainty in calculated risk estimates from tissue consumption than the use of modeling tissue concentrations from surface water or TZW contributions. In addition, AWQC are not site-specific, and were not developed for application to chemical concentrations in TZW. The LWG disagrees with the screening of surface water and TZW data for potential risks from consumption of organisms when empirical site-specific data are available. The LWG also disagrees with the use of AWQC as screening values for this purpose. The LWG further disagrees with the assumption used in this analysis that the combined rate for consumption of estuarine/freshwater fish and shellfish is representative of documented [3] freshwater shellfish consumption in the United States.

- **Screening of TZW for the Hypothetical Domestic Water Use Scenario.** The EPA required the screening of TZW data against drinking water Maximum Contaminant Levels (MCLs). There are no direct human exposures to TZW, and there are no reasonable exposure scenarios for domestic water use solely from TZW. The LWG disagrees with the screening of TZW as a potential source to surface water used as a domestic water source.

- **Restriction on the Use of the Upstream Tissue Data (Collected by the LWG during Round 1) in the BHHRA**. The contribution of background sources of chemicals of concern (COCs) to fish consumption risks was not quantified in the BHHRA. The contribution of background concentrations is an important consideration in risk management decisions. The LWG disagrees with the exclusion of these data to evaluate potential risks from background tissue concentrations for the Site.

The above assumptions were used in the draft BHHRA at the direction of EPA. The LWG notes the compounding conservatism of these assumptions, and anticipates evaluating this issue further as we continue to progress with EPA in the FS process. The LWG looks forward to your review of the draft BHHRA and to our ongoing discussions of perspectives on risk presented in the draft BHHRA in order to facilitate the FS moving forward.

Sincerely,

Bob Wyatt

cc: Confederated Tribes and Bands of the Yakama Nation
Confederated Tribes of the Grand Ronde Community of Oregon
Confederated Tribes of Siletz Indians of Oregon
Confederated Tribes of the Umatilla Indian Reservation
Confederated Tribes of the Warm Springs Reservation of Oregon
Nez Perce Tribe
Oregon Department of Fish & Wildlife
United States Fish & Wildlife

[3] USEPA. 2002. Estimated Per Capita Fish Consumption in the United States. EPA-821- C- 02-003. U.S. Environmental Protection Agency, Office of Science and Technology, Washington, DC.

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