To: Smith, Madelyn (Madelyn.Smith@epa.state.oh.us)[Madelyn.Smith@epa.state.oh.us]; Brett.Fishwild@CH2M.com[Brett.Fishwild@CH2M.com]
From: Patterson, Leslie
Sent: Tue 4/29/2014 6:41:05 PM
Subject: RE: 038443: South Dayton Dump & Landfill - Background Comparison Discussion

Brett & Maddie,

Let's add this to our discussion topics for Thursday.

Leslie Patterson

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From: Loney, Adam [mailto:aloney@craworld.com]
Sent: Tuesday, April 29, 2014 7:59 AM
To: Patterson, Leslie; Smith, Madelyn (Madelyn.Smith@epa.state.oh.us); Brett.Fishwild@CH2M.com
Cc: Chan, Valerie
Subject: 038443: South Dayton Dump & Landfill - Background Comparison Discussion

Leslie, Maddie, and Brent,

As we discussed on last Thursday's call, the following summarizes our proposed approach for the use of background soil, sediment, and surface water data.

The purpose and methods for attributing contamination to an off-Site source may be different than those for making comparisons to background. CRA will factor in the possibility of widespread contamination, naturally-occurring parameters; and ubiquitous anthropogenic contaminants, etc. prior to making a determination. The comparisons to background for soil, sediment, surface water, and groundwater will differ.

The constituents that will be included for background comparisons are metals and PAHs for soils; and all analyzed parameters for surface water and sediment. Metals may be naturally occurring and may, therefore, be present in shallow soils and at depth. Metals and PAH contamination may be due to regional atmospheric deposition from industrial and coal-burning activity in the broader surrounding area of the Site and any such anthropogenic impacts would primarily be expected in the upper layers of soil. Accordingly, CRA will collect soil/fill samples from 0-2 ft bgs and compare the analytical data to background soil/fill sample data from the same depth for metals and PAHs. CRA will collect soil/fill samples from 2-15 ft bgs and compare the analytical data to background sample data from the same depth for metals. For surface water and sediment, comparison will be made to background for all analyzed parameters as concentrations upstream may be due to a variety of natural and anthropogenic sources and may be regional or localized in nature. The primary goal of the comparison to background for surface water and sediment is to determine whether the Site is contributing additional contamination to surface water and sediment.

Background reference soil sampling locations will be identified in areas outside a reasonable zone of potential influence (via surface runoff or substantial airborne dust deposition) for the Site and based on areas that have had little or no industrial impact (i.e. Carillon Park to the east and the cemetery to the north). The two additional background locations outlined in Figure 3.5, (i.e. northern part of Parcel 3264 and the area to the west of the site, adjacent to the GMR) are areas that have no known history of industrial use or dumping. A review of historical aerial photographs compiled in Remedial Investigation Report: Operable Unit 1 (CRA, 2010) indicates that Parcel 3264 was undeveloped and possibly used for agriculture from the 1950s to the 1970s, before becoming heavily forested in the late 1980s. There is no visual evidence in the aerial photographs that landfilling or excavation activities from the SSDL to the north or industrial activities from companies to the south encroached onto Parcel 3264. CRA will cease sampling activities if potential contaminants and/or non-native fill material are identified at any of the background sampling locations.

Any naturally occurring parameter that is detected in samples at concentrations greater than its respective USEPA RSLs and/or applicable screening level criteria will be evaluated in the HHRA, i.e., background concentrations will not be used to screen out chemicals of potential

concern. As part of the risk characterization, potential risk from naturally occurring parameters such as arsenic may be estimated through a risk assessment using analytical data from background media samples. The background risk determination will be used to qualify the risk estimates for COPCs identified in Site media where applicable. Background data will be used for comparisons to Site samples, and will also be used for risk assessment, and the differences between the two approaches is illustrated in the following example. In the case where arsenic concentrations are greater than soil screening levels, then arsenic would be identified as a COPC. A comparison of Site sample data to typical background levels may indicate the concentrations of arsenic in Site soils are within the typical background levels, yet the risk due to exposure to arsenic contaminated soil will still be evaluated in the HHRA as it is a COPC with concentrations greater than screening levels. An evaluation of any naturally occurring parameters that contribute greater than 5 percent of the cumulative cancer risk will include a calculation of the risk level based on the background levels to determine what level of risk the background levels are contributing to the overall risk for the Site.

Background concentrations may be used to determine appropriate remedial criteria for COPCs that are shown to be present at concentrations that exceed applicable risk levels. The intent of the background assessment is to allow for a distinction to be made between background and Site-related contamination (this distinction applies to native soils, sediment, and surface water but does not apply to fill and waste material) and to allow for the establishment of appropriate remedial criteria that reduce the risks to human health and ecological receptors without creating a situation where remediation is required to concentrations that are less than those in surrounding soils, sediment, or surface water.

For groundwater, the goal is primarily to determine whether there are off-Site sources of contamination that are contributing to on-Site or down gradient contamination to ensure that the remedial approach is appropriate, e.g. on-Site containment via pump and treat may not be the most appropriate remedial strategy if there is an upgradient source.

Please let me know if you have any questions or concerns with the approach outlined above. I'm available all day today and tomorrow to discuss if you'd like and can be reached via cell at 519-502-2897.

Thanks, Adam

Adam Loney, P. Eng.

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