Environmentally Acceptable Endpoints for Weathered/Aged (Residual) Petroleum Hydrocarbons CCME CWS Fraction F3 in Soil – Phase II

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The PHC CWS was released in May 2001, and has proved a useful tool for managing many hydrocarbon-contaminated sites. However, it is becoming apparent that the application of the PHC CWS guidelines has some significant limitations when applied to weathered and aged hydrocarbons in soil. The preferred method of managing hydrocarbon contamination at many PHC-impacted sites is to bioremediate the hydrocarbon-contaminated soil.

Typically, bioremediation is effective at reducing PHC fractions F1 and F2 below PHC CWS guideline levels, and at many sites, F4 is below guideline levels anyway. Bioremediation is usually successful at reducing F3 concentrations to a certain extent, but eventually an endpoint is reached where no further

bioremediation occurs. This may occur while F3 concentrations are still above PHC CWS guideline levels.

Studies have indicated that in some cases these residual concentrations of F3, while above PHC CWS guidelines, are actually non-toxic to plants and soil invertebrates. The current report presents additional data supporting this finding. Currently, a manager has the option to conduct site-specific toxicity testing, using a battery of test species, on biotreated soils to determine whether residual F3 concentrations are still toxic. However, site-specific toxicity testing can be an expensive and lengthy process. This project seeks to develop a more easily applicable solution to this issue.

The objective of the work presented in this report was to develop an empirical bioavailability index for weathered/aged PHC fraction F3 in soil with a view to facilitating the closure of PHCimpacted sites following bioremediation and/or natural attenuation of PHC-contaminated soil. It
is intended that this bioavailability index would be used, together with limited toxicity testing, to close PHC-impacted sites at Tier 2.

2005 Matrix and Axiom_Acceptable Endpoints for PHC Fraction F3 Presentation
2005 Axiom_ENVIRONMENTALLY ACCEPTABLE ENDPOINTS FOR F3 Presentation