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AGFC Follow-up Response to ExxonMobil Comment #1

The statement that, "The USEPA 2003 guidance specifically defines the TU calculation for 34 PAHs" is inaccurate. The rationale for including the 34 PAHs (USEPA 2003) is driven by the fact that these are the most commonly tested PAHs in the U.S. EPA EMAP program, and does not imply that calculations must be restricted to those 34 PAHs. Furthermore, the guidance document also states that, "*At a minimum, the definition of total PAHs for this ESB requires quantification of the 34 PAHs analyzed by the U.S. EPA as part of the EMAP and REMAP programs.*" Thus, the use of 34 PAHs in ESB calculations is a minimum.

The minimum of 34 PAHs was part of a negotiated agreement that considered the costs of the full-suite analysis of PAHs in the EMAP and REMAP programs. On page 6-13 in USEPA (2003), it states:

> This pragmatic definition is required because databases from sediment monitoring programs that have measured a greater number of PAHs are rare, methodologies for quantification of greater than the 34 PAHs are not standard, and the use of fewer than 34 PAHs may greatly underestimate the total toxicological contribution of the PAH mixtures.

During oil spill assessments, the full-suite of PAHs are regularly analyzed (their measurements are no longer "rare" but is standard practice) and should be used in toxicity assessments. See for example the OSAT (Operational Science Advisory Team) 2 report for the Deepwater Horizon, the Kalamazoo River spill NEBA by USEPA, and papers by Bejarano and Michel (2010) and Barron et al. (2004)[1]. Otherwise, potential toxicity is understated. Therefore, AGFC still expects use of all PAHs measured in the calculation of the TU.

In ExxonMobil's discussion on the role of black carbon and the 2-carbon model, it should be noted on page 1-3 in USEPA (2012), there is another source of concern about calculating TUs for samples containing fresh or weathered oil:

> "This document focuses on black carbon as an important alternate sedimentary phase. However, other phases may be present in sediments including incompletely degraded petroleum (Jonker et al., 2003). The effects of petroleum and other non-aqueous phase liquids (NAPLs) on contaminant bioavailability are not considered in this document due to

[1] Bejarano, A.C. and J. Michel. 2010. Large-scale risk assessment of polycyclic aromatic hydrocarbons in shoreline sediments from Saudi Arabia: Environmental legacy after twelve years of the Gulf War Oil Spill. Environmental Pollution 158:1561-1569.

Barron, M.G., Carls, M.G., Heintz, R., Rice, S.D., 2004. Evaluation of fish early lifestage toxicity models of chronic embryonic exposures to complex polycyclic aromatic hydrocarbon mixtures. J. Toxicol. Sci. 78, 60–67.

the lack of approaches, at this time, for accurately addressing their effects." Accordingly, additional discussion of this issue is warranted.

AGFC Follow-up Response to ExxonMobil Comment #2

As the principal state agency that owns and manages the Craig D. Campbell Lake Conway Reservoir in the public trust, Arkansas Game and Fish Commission believes it is important for all our stakeholders to understand the extent to which oil contamination from the spill has been, and continues to be, present in the environment. Lake Conway is an important local fishery and public recreational resource. Public concerns regarding the water quality of the main lake and the health/safety aspects of the fisheries resource in the lake remain high. Fingerprinting analysis provides a database from which conclusions can be derived regarding the extent and depth source oil has impacted both the Dawson Cove area and the main body of Lake Conway. The essential data is already available from the PAH analysis and could easily be extracted and reported on for each sample location, including background sample locations. Therefore, AGFC requests comprehensive reporting of fingerprinting analysis for all collected sediment and soil samples.

AGFC Follow-up Response to ExxonMobil Comment #3

AGFC reviewed the additional text. Although it provides some additional information, the quality of the observations are obviously inferior to the SPI method. The description of biota in the cores was particularly limited. AGFC notes that 3 out of 4 of the background samples had red worm-like organisms present, whereas only 2 of the 12 near Dawson Cove had worms present. Shostell and Williams (2007) found the benthic community of Lake Conway to be composed of 23 individual taxa across 11 orders, with Tubificidae having the greatest abundance in the 2002 samples.

However, no data presented in the DARSP Report indicates that any significant sedimentation of the main body of Lake Conway occurred as the result of the response actions associated with the oil spill. Initial response actions by AGFC, followed by actions of ExxonMobil, prevented further migration of the spill and essentially confined the cove from the main body of Lake Conway during critical mechanical removals of oil product from the Dawson Cove area. Water sample analysis, which has been on-going since the spill, as well as the completed and continuing soil and sediment sample analysis, provides no indication of unusual or widespread sedimentation of the lake proper. It is not likely the use of the SPI method would provide any additional substantive data regarding the ecological impacts of the oil spill and subsequent emergency response actions within the main body of the lake. AGFC does not intend to pursue additional sampling of the main body of the lake using the SPI method.