APPENDIX

SAMPLE TABLE FOR SAB PEER REVIEW CONSIDERATION

TABLE A-1. Application of Aquatic Tools to Inorganic Metals Assessment Levels

Tools	Ranking/ Categorization	National	Site Specific
Fate and Transport	The "Unit World" model (Section 5.3.6), is being developed and should be available for use soon.	Simple models can be considered for use in screening level assessments. Sophisticated time-variable models should be used for definitive assessments. The modeling analyses should be performed by an analyst experienced in use of models and familiar with the model structure.	Simple steady-state models are appropriate for use in screening level assessments. Judicious use of conservative assumptions may provide sufficient insight to be able to decide about the need to proceed with more detailed evaluation. Complex time-variable models should be used for definitive analyses.
Trophic Transfer and Biomagnification	Because the biomagnification of inorganic metals across 3 trophic levels in aquatic systems is rare, its use in assessments is of limited value.	Because the biomagnification of inorganic metals across 3 trophic levels in aquatic systems is rare, its use in assessments is of limited value. Consideration of trophic transfer of inorganic metals is important for consumers of organisms with elevated metal burdens.	Consideration of trophic transfer of inorganic metals is important for consumers of organisms with elevated metal burdens. While it is currently difficult to include considerations of dietary toxicity of inorganic metals in aquatic assessments, it should be considered especially for detailed evaluations.

Bioaccumulation	The current state of the science does not support the use of single value BAF/BCFs as reliable indicators of acute or chronic hazard for metal substances.	Because of the complexities associated with metal bioaccumulation, it may be most appropriate to use complex models.– For example, tissue burden to exposure regression approaches, kinetic (bioenergetic based kinetic models), pharmacokinetic (multi-compartment models) and biotic ligand models. The utility and applicability of these models will vary depending on the application (e.g., screening versus definitive risk assessment) and their state of development. In addition to the above, when possible tissue burdens, critical body residues, and direct toxicity itself may be more useful in assessing bioaccumulation than modeling and other indirect approaches. In some situations/applications, it may be scientifically valid to use the BAF/BCF model or approach in metals risk assessments, for example, in site specific assessments when it is possible to account for factors outlined in bullet 2 above. In these considerations, attention should be paid to minimizing the extrapolations (e.g., across exposure concentrations, across species) and concentration dependency. Additionally, an example of how BAF/BCF data can contribute to higher level assessments in presented in Section 3.1.1. (Wildlife dietary	Because of the complexities associated with metal bioaccumulation, it may be most appropriate to use complex models.– For example, tissue burden to exposure regression approaches, kinetic (bioenergetic based kinetic models), pharmacokinetic (multi-compartment models) and biotic ligand models. The utility and applicability of these models will vary depending on the application (e.g., screening versus definitive risk assessment) and their state of development. When possible, direct measures of tissue burdens and co-located media concentraions should be used to derive site-specific bioaccumulation relationships. In some situations/applications, it may be scientifically valid to use the BAF/BCF model or approach in metals risk assessments, for example, in site specific assessments when it is possible to account for factors outlined in bullet 2 above. In these considerations, attention should be paid to minimizing the extrapolations (e.g., across exposure concentrations, across species) and concentration dependency. Additionally, an example of how BAF/BCF data can contribute to higher level assessments in presented in Section 3.1.1. (Wildlife dietary toxicity threshold).

Ecological Effects Assessment - Water Column	Bioavailability is an essential part of all assessments. The Unit World Model (Section 5.3.6) when developed will likely be applicable to hazard-based applications	Biotic ligand modeling and FIAM type approaches may be useful to develop water quality criteria and site specific discharge and/or clean up objectives. The BLM can be used to explain variability between studies that arises because of differences in water quality. Accounting for the effect of individual water quality parameters is an approach that offers flexibility for application to specific systems or site specific locations.	FIAM and BLM approaches offer more flexibility for application to specific systems or site specific locations. Direct toxicity testing and WER approaches can be used to supplement BLM predictions in site specific assessments. The BLM is a tool for predicting acute toxicity and can be used to explain the variability between studies that arises because of differences in water quality. Accounting for the effect of individual water quality parameters is an approach that offers flexibility in terms of being adapted to specific systems or site specific locations.
Ecological Effects Assessment - Oxic Sediments	Methods not applicable to ranking.	None of the available extraction methods have been shown to be predictive of toxicity of metals in oxic sediments. Models such as EqP can be used to estimate metal concentrations in interstitial waters.	None of the available extraction methods have been shown to be predictive of toxicity of metals in oxic sediments. Site specific partition coefficients, when available, may be used to estimate metal concentrations in interstitial water. Metals may be measured directly in interstitial water and evaluated as described for anoxic sediments.

Ecological Effects Assessment - Anoxic Sediments	It is recommended that the use of SEM-AVS be focused on identifying sediments where direct toxicity to benthos is *not* expected (i.e., SEM-AVS < 0).	The SEM-AVS approach is the best available tool for screening analysis based solely on sediment chemistry. It is currently applicable to mixtures of copper, cadmium, zinc, lead, nickel, and silver. It is recommended that the use of SEM-AVS be focused on identifying sediments where direct toxicity to benthos is *not* expected (i.e., SEM-AVS < 0). A modification of the method is available to account for the presence of organic carbon within the sediment matrix.	The SEM-AVS approach is the best available tool for screening analysis based solely on sediment chemistry. It is currently applicable to mixtures of copper, cadmium, zinc, lead, nickel, and silver. It is recommended that the use of SEM-AVS be focused on identifying sediments where direct toxicity to benthos is *not* expected (i.e., SEM-AVS < 0). A modification of the method is available to account for the presence of organic carbon within the sediment matrix.