

*1. Routine monitoring programs should be developed and implemented to provide the data needed to characterize exposure of sockeye salmon to aquatic contaminants in the incubation habitats, rearing habitats, and migratory habitats that are used by sockeye salmon conservation units.*

Response: Agree in part. This may not be “routine” water quality monitoring, but rather a special project. Provincial water quality monitoring programs are not normally driven by a single species and life stage in mind; they are usually applicable to all aquatic life in an area of interest where there are risks of exposure to contaminants or which represent a particular watershed of interest.

*2. Such monitoring programs should evaluate water quality, sediment quality, and fish-tissue quality on temporal and spatial scales that are relevant for assessing effects on sockeye salmon and other key indicators of environmental quality conditions.*

Response: Agree in part. Improvements to monitoring are needed to evaluate water quality and sediment quality on temporal and spatial scales of interest. However, monitoring of fish-tissue quality in fish populations that migrate may not be successful in identifying spatial trends.

*3. Such monitoring programs should address the aquatic contaminants identified in this investigation. To help focus such monitoring programs, the contaminants of concern in each area of interest have been identified (Table 8.1). Near-term priorities should include TSS and streambed substrate quality monitoring in incubation habitats, nutrient monitoring in rearing habitats, dissolved metal monitoring in all habitats, and selenium, PCB, and PCDD/PCDF monitoring in all habitats, and selenium, PCB, and PCDD/PCDF monitoring in fish tissues. It is likely that well-designed surveys will be required to identify the appropriate scale of monitoring for endocrine disrupting compounds and contaminants of emerging concern.*

Response: Agree in Part. Table 8.1 identifies every potential contaminant and does not make use of the screening process that is discussed in Technical Report 2. It makes more sense to focus on those contaminants identified as existing at concentrations which pose a potential sub-lethal risk to aquatic life (identified in section 5.5 of the report), or which pose a moderate or high risk as potential EDC (identified in section 6.2.5 of the report), or which pose an emerging or unknown risk (at least until that risk can be better understood).

A better understanding of river TSS and associated metals than is discussed in the report is needed. In particular, an inventory of metal loading to the river is needed, including that from discharges, land use and natural erosion. While the report identifies potential exceedances of water quality screening guidelines, it does not present an understanding of the sources of the metal load in the river. Also, the report does not show the clear correlation between river flow, suspended solids and solid phase metal content of the river, which is necessary to understanding the observed metal concentration in the river.

The report incorrectly identifies a water quality guideline for TSS of 25 mg/L. This is actually an arbitrary cutoff used to define "clear flow" from natural turbid flow periods. The B.C. criteria for suspended solids is based on setting a maximum induced suspended sediment concentration not to exceed a certain percentage or absolute increase over background. There are also objectives specifically for the Fraser River that deal with both clear and turbid flow periods.

*4. Ambient monitoring programs should also include direct measures of effects on sockeye salmon, such as morphology, physiology, en-route mortality, pre-spawn mortality, and egg viability.*

Response: Agree. However, this sounds like a fish health monitoring program not an ambient environmental quality monitoring program that might be part of a permit requirement or routine ambient monitoring program undertaken by the province. Ambient environmental quality monitoring is not focussed on a single species, but the results would generally apply to all aquatic biota in an area being monitored.

*5. Coordination among government agencies and regulated interests should be improved to ensure the requisite data are being collected and are compiled into a single database or multiple databases that are compatible.*

Response: Agree. This makes good sense and is something that is regularly done, but perhaps not in a way that looks at all discharges in a particular area or from a particular class of discharges at once. Doing such a review would assist in continual improvement of regulatory requirements. It would be useful though to focus efforts on those types of discharges that may contain contaminants of concern, so that the effort is focussed on those discharges that might pose a risk to salmon.

In regards to a common database, it may not be possible to develop a single database that satisfies all parties, and there may be technical impediments to providing greater access. Challenges to setting up such a database include ensuring that all data meet a minimum quality standard. At least more frequent public reporting of the data in a manner that summarizes large databases should be done. It should be noted though that there is public access to the federal/provincial trend monitoring site data, and this data is reviewed and assessed with a public report issued periodically.