The Boeing Company
P.O. Box 3707
Seattle, WA 98124-2207

October 26, 2012

BY EMAIL

Ms. Adrienne Dorrah
Washington Department of Ecology
Toxics Cleanup Program
P.O. Box 47600
Olympia, WA 98504-7600

Subject: Proposed Amendments to Chapter 173-204 WAC, Sediment Management Standards (SMS)

Dear Ms. Dorrah:

The Boeing Company (Boeing) appreciates the opportunity to submit comments on the Washington State Department of Ecology's (Ecology's) *Draft Sediment Management Standards (SMS) Rule Proposed Amendments*, dated August 15, 2012 (Ecology 2012b). Boeing recognizes the substantial work performed by the Agency in preparing and proposing draft rule language, and we value the opportunity to review and comment on this work.

Boeing is committed to working with Ecology and other stakeholders to ensure that meaningful progress is made in developing an effective, efficient, and sustainable means for achieving a cleaner environment and improved levels of human and environmental health.

Boeing appreciates the addition of many of the important concepts in the SMS rule amendments, as discussed in the public venues over the past few years. In particular, Boeing supports the inclusion of sediment cleanup units, the two-tier framework, sediment recovery zones, and site-specific human health and higher-trophic-level assessments.

However, there are a number of important changes that need to be made to the rule language prior to finalization. It is imperative that cost, feasibility, and net environmental benefits be included in the derivation of sediment cleanup standards. This is critical information that must be available to stakeholders and decision-makers. The sediment cleanup unit process must include settlement provisions to provide certainty and delete the hierarchy of remedial technologies to allow for site specific flexibility. In addition, it is essential that the document be amended to state that the definition of "sediment" excludes sediment in engineered storm water systems.

Comments

1. **The inclusion of the sediment cleanup unit concept is vitally important to expedite sediment cleanups (Washington Administrative Code [WAC] 173-204-500).**

Boeing strongly supports the inclusion of the sediment cleanup unit concept because it allows individual parties to move forward with remediation of a given area prior to the resolution of all concerns in a larger harbor, waterway, or bay, which can take decades to resolve. This concept will result in better and faster cleanups, consistent with Ecology's preferred toxics reduction strategy:

> …we are seeing that some regulations can lead to requiring high-cost/low-value measures that serve little purpose while carrying great expense….it is time to ask whether we can devise new approaches in Washington State that create a win-win-win for our environment, public health and our economy, by achieving better, faster reductions in toxic pollution while avoiding those high-cost/low-value scenarios.

(Sturdevant 2012). While we strongly support the sediment cleanup unit concept, we have the following concerns and requested changes:

- As part of the promulgation of the proposed amendments, it is imperative that a case study be done in conjunction with the revision of the draft guidance document (Ecology 2012a) in order to work out the important details regarding how this concept will be implemented. Without further guidance, initial participants in this process will be overly burdened with proof of concept, including the establishment of sediment unit boundaries, regional background, and allocation should recontamination occur. What level of proof will be required for a party to "demonstrate, upon department approval, that the recontamination is caused by a source or a permitted release not under the authority or responsibility of the person(s) conducting the initial cleanup?" What re-opener protection would be provided? Can Ecology require actions of others to prevent recontamination in order to protect initial participants in the process? To address these uncertainties, it is essential that a small task force be formed to conduct a thorough case study, which would then be available for review and comment. While Ecology has recognized the importance of case studies as part of the process to date, a case study that incorporates all of the critical components of process implementation has not been conducted.

- Ecology's summary of WAC 173-204-500 states that the section would address partial/final settlements and the process for settling cleanup liability, but settlements are not clearly addressed in the section. In order to accomplish Ecology's intended purpose, WAC 173-204-500 must clearly state that potentially liable persons (PLPs) who conduct remedial actions to address their contribution to contamination in a sediment cleanup unit are provided with the covenant not to sue and contribution protection authorized by the Model Toxics Control Act (MTCA). Boeing

requests that the following language be added to WAC 173-204-500 (lines 1488-1490): "Ecology will apply the sediment cleanup unit concept in concert with Chapter 70.105D RCW so that PLPs who conduct remedial action in sediment cleanup units shall obtain the covenant not to sue and contribution protection provided for in RCW 70.105D.040."

2. The two-tiered concept is a significant improvement but only if it represents a true tiering process for sediment cleanup levels (WAC 173-204-560 and -561).

Boeing supports incorporation of the two-tiered concept to establish a tiering process for sediment cleanup levels. This tiering process is needed because previous sediment cleanup levels involving excess cancer risk thresholds of $1x10^{-6}$ for individual carcinogens and $1x10^{-5}$ for multiple carcinogens and natural background were unworkable in many environments, especially near urban environments where the goals may never be reached. If appropriately applied, the tiering process should result in better and faster reductions in toxic pollution.

However, for the two-tiered concept to be effective:

- Regional background concentrations must be greater than natural background concentrations near urban areas with diffuse sources; and

- The upper tier must include a $1x10^{-4}$ excess cancer risk threshold for sites with multiple carcinogens.

In the proposed amendments, regional background is defined as "the concentration of a contaminant within a department-defined geographic area that is primarily attributable to atmospheric deposition or diffuse non-point sources not attributable to any source." (WAC 173-204-560). The trick is defining the influence of a "diffuse non-point source," such that recontamination will not occur following costly sediment remediation. The following requested revisions to the definition of regional background are essential to clarify the intent:

- WAC 173-204-200(38) (lines 389-393) "Regional background" means the concentration of a contaminant within a department-defined geographic area that is primarily attributable to diffuse ~~nonpoint~~ sources, such as atmospheric deposition or storm water, ~~not attributable to a specific source or release~~outside a depositional zone of discharge. Regional background is generally expected to be greater than or equal to natural background, and less than area background as that term is defined in WAC 173-340-200.

- WAC 173-204-560(5) (lines 2275-2279) **Regional background.** Regional background is the concentration of a contaminant within a department-defined geographic area that is primarily attributable to diffuse sources, such as atmospheric deposition or storm water, outside a depositional zone of discharge ~~diffuse nonpoint sources not attributable to any source~~. Regional background for a contaminant shall be established by the department in accordance with the requirements of this subsection.

Boeing recognizes the challenges in defining regional background in areas with large storm water inputs and encourages Ecology to provide additional case studies using real data. The single Ecology example provided to-date did not prevail when calculating a regional background concentration greater than natural background.

> Surface sediments in this Bellingham Bay background data set contain an average total PCDD/F concentration (1.62 ng/Kg TEQ) that is not statistically different from the average concentration found in a 97 station data set (BOLD+) that represents nonurban areas of greater Puget Sound (1.56 ng/Kg TEQ).

(Ecology 2011b). Furthermore, in Port Angeles, Ecology calculated a preliminary natural background that was lower than the natural background calculated from the Bold survey data. These examples are the "high-cost/low-value" scenarios that Ecology has expressly stated it wants to avoid.

Without the ability to calculate a regional background concentration high enough to address "the urban cloud" (i.e., the concentration likely to result from urban sources not addressed through a specific site cleanup and its associated source control actions), this limitation in concept will derail the two-tiered structure that is needed to move cleanup actions forward. Specifically, by allowing upper-tier cleanup levels to be set below urban background values, which are due to regional/area sources, non-compliance is virtually guaranteed within a few years due to recontamination of the clean surface. This result will discourage cleanups, and risk reduction will not occur.

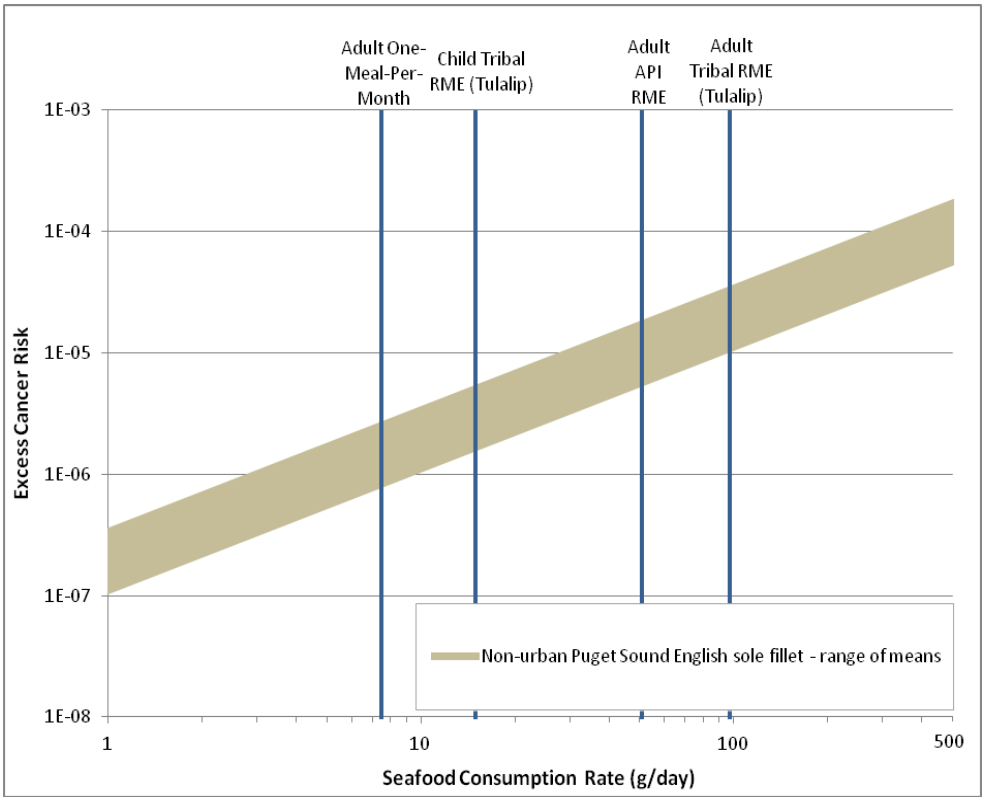
It will also be critical for regional background to be applied on a spatial basis consistent with its intended purpose. Specifically, regional background should be applied on a spatially weighted average concentration (SWAC) basis if the intent is human health, fish, or wildlife protection. These species have wider exposure areas than do single sediment sampling locations. In addition, it is important to ensure that regional background datasets encompass a range of sediment types and are not biased toward very low organic content or sandier sediment; sediment types should be reflective of the area in question.

With respect to the risk thresholds, while the tier from $1x10^{-6}$ to $1x10^{-5}$ for individual carcinogens is helpful, little progress will be made without also tiering the threshold of $1x10^{-5}$ for multiple carcinogens. The upper tier for multiple hazardous substances and/or multiple exposure pathways should be 1×10^{-4}. In addition, Ecology should consider a risk threshold tiering from 1 to 2 in the non-cancer hazard quotient for urban sites.

A $1x10^{-4}$ upper-end risk threshold is consistent with the risk range in **Comprehensive Environmental Response, Compensation, and Liability Act (**CERCLA), and would facilitate the management of sites that fall under both MTCA and CERCLA authority. CERCLA has an acceptable excess cancer risk range of $1x10^{-6}$ to $1x10^{-4}$ for all sites (upland and sediment) (40 Code of Federal Regulations [CFR] 300). Specifically, MTCA requires that cleanup levels must be at least as stringent as requirements in other applicable state and federal laws and regulations; this proposal would be consistent with that requirement. Also, the risk range would provide more case-by-case

flexibility for Ecology, which would allow cleanups to move forward more quickly because short-term goals could be established and actually met.

Target excess cancer risks typically range from $1x10^{-6}$ to $1x10^{-4}$ in various regulatory programs. Although the low end of that range is most health protective, this target is not achievable for some chemicals, particularly bioaccumulative chemicals, such as polychlorinated biphenyls (PCBs) and dioxins/furans, in most areas in Puget Sound. Given the ubiquitous nature of some of these chemicals in the environment, coupled with the range of seafood consumption rates that are being considered, even background cancer risk estimates are typically in the $1x10^{-5}$ range for individual chemicals (Figure 1), with cumulative risks often in the $1x10^{-4}$ range when multiple chemicals are considered.



Source: Adapted from Windward (2010)

Figure 1. Excess cancer risks calculated using total PCB concentrations in English sole fillet composite samples collected and from non- urban Puget Sound locations as a function of seafood consumption rate

Thus, without a true tiering in risk thresholds, the two-tier concept becomes only a tiering in background levels because the risk thresholds for carcinogens will likely not be achievable at the fish consumption rates being considered. To address this concern, Boeing requests that the text in WAC 173-204-561(3) (lines 2340-2345) be revised as follows:

> (ii) Carcinogens. For known or suspected carcinogens, sediment concentrations for which the upper bound on the estimated lifetime excess cancer risk for individual carcinogens is less than or equal to one in one hundred thousand ($1x10^{-5}$). If there are multiple carcinogens and/or

exposure pathways at the site and the total lifetime excess cancer risk for the site exceeds one in ~~one hundred~~ten thousand ($1x10^{-5}$~~4~~), then the cleanup screening levels shall be adjusted downward ~~in accordance with WAC 173-340-708 or other~~ using methods approved by the department."

3. Cleanup standard criteria should continue to be based on cost, technical feasibility, and net environmental benefit rather than technical possibility and adverse environmental impact (WAC 173-204-500 and -560).

Cost, technical feasibility, and net environmental benefit must be meaningfully included in the remedy selection process. It is essential that Ecology use the phrase "to the extent practicable" instead of "technically possible" to allow for consideration of these concepts. Without cost and feasibility as key criteria, Ecology's goal to avoid "high-cost/low-value" scenarios will not be met. Actions will be brought forth that are extravagant and not plausibly achievable, establishing requirements and raising expectations that cannot be met.

WAC 173-204-500(4) currently states: "…the department will pursue sediment cleanup decisions and cleanup standards that are as close as practicable to the sediment quality standards of WAC 173-204-320 through 173-204-340, *including the consideration of net environmental effects, cost and technical feasibility*"(emphasis added). In contrast, The language in proposed WAC 173-204-500(5)(a)(i) states: "The sediment cleanup level shall be the sediment cleanup objective and shall be adjusted upward as required based on what is *technically possible* and whether meeting the sediment cleanup objective will have an *adverse impact* on the aquatic environment, including natural resources and habitat." (Emphasis Added).

The summary on page 9 of the proposed amendments (Ecology 2012b) states that in WAC 173-204-570 "the MTCA 'disproportionate cost' and SMS 'cost effectiveness' terms and concepts have been integrated," presumably to partially address this concern. However, the text in this section does not support that statement. Concepts involving cost, practicability, and disproportionate costs are not specifically cited in the proposed amendments, except to state the preference for permanent solutions to the maximum extent practicable with reference to a remedial hierarchy that favors dredging (see comments below). These established concepts should be retained.

Accordingly, we request that Ecology revise WAC 173-204-500(5)(a)(i) (lines 1540 – 1543) to read:

The sediment cleanup level shall be the sediment cleanup objective and shall be adjusted upward as required to the extent practicable based on ~~what is technically possible and whether meeting the sediment cleanup objective will have an adverse impact on the aquatic environment, including~~ cost, feasibility, and net environmental benefit to natural resources and habitat.

4. The rule should not include a remedial hierarchy (WAC 173-204-570).

In proposed amendments to WAC 173-204-570(4), Ecology put forth a "guide" to assess the relative degree of long-term effectiveness of cleanup action alternatives. This guide is meant to serve as a replacement for the previous upland guide in WAC 173-

340-360. It is imperative that Ecology not prioritize remedies as part of the rule. Given the changing landscape of remediation technologies and the ability of predictive analyses to assess the potential for both short- and long-term impacts from subsurface contamination, the hierarchy of remedial technology should be deleted from the rule entirely.

Deleting the hierarchy is consistent with the US Environmental Protection Agency's (EPA's) *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites* (EPA 2005), which states:

> EPA's policy has been and continues to be that there is no presumptive remedy for any contaminated sediment site, regardless of the contaminant or level of risk…. project managers should evaluate each of the three potential remedy approaches (i.e., MNR, *in situ* capping, and removal through dredging or excavation) at every sediment site. Project managers should develop a conceptual site model that considers key site uncertainties. Such a model can be used within an adaptive management approach to control sources and to implement a cost-effective remedy that will achieve long-term protection while minimizing short-term impacts.

The EPA guidance also notes:

> Project managers should keep in mind that deeper contaminated sediment that is not currently bioavailable or bioaccessible, and that analyses have shown to be stable to a reasonable degree, do not necessarily contribute to site risks. In evaluating whether to leave buried contaminated sediment in place, project managers should include an analysis of several factors, including the depth to which significant populations of organisms burrow, the potential for erosion due to natural or anthropogenic (man-made) forces, the potential for contaminant movement via ground water, and the effectiveness of any institutional controls (ICs) to limit sediment disturbance.

As stated by EPA (2002, 2005), there is no presumptive remedy for sediment sites and all remedies that can meet remedial action objectives should be considered. In addition, EPA recognizes that combinations of remedial actions are likely to be the most effective way to manage site risk; in fact, dredging alone may not meet risk reduction goals depending on the site-specific conditions (e.g., location of in-water structures, uncertainty in the delineation of subsurface contamination, ability to overdredge, and presence of debris). (EPA 2005; NRC 2007). The overemphasis on dredging as a preferred remedy (included in five of the top eight remedies) is not in keeping with national guidance on sediment remediation nor does it make sense in terms of risk management.

An analysis of pre-dredging and post-dredging contaminant concentrations in surface sediments was performed using data from 26 sites by a consortium of scientists and engineers for the National Research Council (NRC). The analysis noted a wide range of outcomes: some sites showed increases in contaminant concentrations, some showed no change, and some showed decreases in contaminant concentrations. (NRC 2007). While dredging may be appropriate to remove contaminated sediments at sites where

navigational channels need to be maintained or where buried contaminated sediment deposits are likely to be subjected to erosion and transport, dredging should not be the *de facto* choice. Instead, site-specific characteristics must be carefully evaluated, including factors such as the substrate (residual contamination is likely to be greater in the presence of cobbles, boulders, or buried debris), the hydrodynamic environment, and the location of contamination relative to slopes and bedrock. (EPA 2005; NRC 2007).

In addition, although not addressed in the proposed amendments, financial assurance requirements for containment options have in the past been set at such high levels that implementation of these technologies is precluded. These requirements result in a biased outcome; alternative financial assurance options need to be explored to ensure that all suitable remedies, including containment options, can be considered.

If Ecology believes that some guidance regarding long-term effectiveness is needed, then key considerations for assessing the long-term effectiveness of active sediment remedial technologies, such as dredging, containment, and enhanced natural recovery, is more appropriate. This level of guidance would emphasize the importance of site-specific evaluation rather than present a de facto list with dredging as the preferred remedy.

It is critical that the following revisions to WAC 173-204-570(4) (lines 2920-2938) be made:

> (4) **Using permanent solutions to the maximum extent practicable.** This subsection describes the requirements for determining whether a cleanup action consists of permanent solutions to the maximum extent practicable, as required under subsection (3)(d) of this section. When making this determination, the process and criteria in WAC 173-340-360 shall be used. However, when assessing the relative degree of long-term effectiveness of cleanup action alternatives, the following <u>considerations, among others as determined by the department, shall be evaluated on a site-specific basis</u> ~~hierarchy, in descending order, shall be used as a guide~~ in place of the hierarchy in WAC 173-340-360:
>
> ~~(a) Source controls in combination with other cleanup technologies;~~
>
> ~~(b) Dredging and beneficial reuse of the sediments;~~
>
> ~~(c) Dredging and treatment to immobilize, destroy, or detoxify contaminants;~~
>
> ~~(d) In-situ treatment to immobilize, destroy, or detoxify contaminants;~~
>
> ~~(e) Dredging and disposal in an upland engineered facility that minimizes subsequent releases and exposures to contaminants;~~
>
> ~~(f) Dredging and disposal in a nearshore, in-water, confined aquatic disposal facility;~~

~~(g) Containment of contaminated sediments in-place with an engineered cap;~~

~~(h) Dredging and disposal at an open water disposal site approved by the department;~~

~~(i) Enhanced natural recovery;~~

~~(j) Monitored natural recovery; and~~

~~(k) Institutional controls and monitoring.~~

(a) the hydrodynamic environment

(b) the depth of contamination

(c) the magnitude of contamination

(d) the substrate (residual contamination is likely to be greater in the presence of cobbles, boulders, or buried debris)

(e) the location of contamination relative to slopes and bedrock

(f) the location of in-water structures

(g) the potential for subsurface contamination to be exposed through disturbance, including bioturbation

5. Limitations on monitored natural recovery must be removed to allow the flexibility to account for net environmental benefit (WAC 173-204-570).

Depending on site conditions, specific contaminants and contaminant concentrations, MNR may be an effective and permanent action, at least for portions of sediment sites. MNR should not be over-generalized as being a less "permanent" action. As written, proposed amendments to WAC 173-204-570(3)(h) suggest that monitored natural recovery (MNR) would not be allowed if it is technically possible to implement a more permanent solution, even for situations where environmental damage to habitat, particularly those that support threatened or endangered species, would be needed to secure a permanent solution. The proposed rule could be interpreted as never allowing MNR. More flexibility is needed to allow for decisions that address net environmental benefits and conform the rule to Ecology's goal to avoid "high-cost/low-value" scenarios.

The following revision is requested to WAC 173-204-570(3)(h) (lines 2906-2910):

> (h) Cleanup actions shall not rely primarily on ~~monitored natural recovery or~~ institutional controls and monitoring where it is technically possible to implement a more permanent cleanup action. Where institutional controls are used, they must comply with WAC 173-340-440 and preference shall be given to the types of institutional controls with a demonstrated ability to control exposures and ensure the integrity of the cleanup action.

6. **The restoration timeframe should begin at the completion of cleanup actions and should not require single season construction for sites with "limited contamination" (WAC 173-204-500).**

The proposed amendments state that "…the department recognizes longer restoration time frames may be necessary at sites with more extensive and widespread contamination, including sites with ubiquitous chemicals from point and nonpoint source discharges. At such sites, the department expects cleanup actions will include a combination of active and passive cleanup actions and will achieve restoration as soon as practicable following completion of the active cleanup actions." WAC 173-204-500(4)(c). Boeing agrees with this statement's acknowledgement of the disturbance associated with active remedies and the need for the restoration timeframe to commence following construction.

This concept of initiating the restoration timeframe following construction should be consistently applied throughout the rule. Boeing requests the following revisions:

- WAC 173-204-570(3)(e) (lines 2897-2900): Unless otherwise determined by the department, cleanup actions that achieve compliance with the sediment cleanup standards at a site or sediment cleanup unit within ten years from the ~~start~~ completion of the active cleanup action shall be presumed to have a reasonable restoration time frame.

- WAC 173-204-570(5)(b) (lines 2957-2962): **Time frames longer than ten years.** The department must authorize any restoration time frame longer than ten years after the ~~start~~ completion of the active cleanup action. To be authorized, the proponent must demonstrate that cleanup actions cannot practicably achieve sediment cleanup standards at the site or sediment cleanup unit within ten years ~~after the start~~ from the completion of the active cleanup action.

- WAC 173-204-590(1) (lines 3015-3018): Sediment recovery zones are necessary at sites and sediment cleanup units where the department has determined the selected cleanup actions cannot practicably achieve sediment cleanup standards within a ten year restoration time frame from the ~~start~~ completion of the active cleanup action.

- WAC 173-204-590(2)(b) (lines 3028-3031): The areal extent of the sediment recovery zone shall extend beyond the area within the site or sediment cleanup unit where the department has determined the cleanup action cannot practicably achieve sediment cleanup standards within a ten year restoration time frame from the ~~start~~ completion of the active cleanup action.

In addition, the rule should allow for more than one construction season even for areas of limited contamination. There are a number of reasons why areas of limited contamination could take more than one construction season. Examples include limitations of in-water work periods, sequencing of overall site cleanup, coordination with iterative source control actions, control of site-specific sources, and location relative to hotspots. Furthermore, active remedies should not be

assumed. The appropriate remedy and duration at all sites should depend upon an assessment of site-specific conditions.

Boeing therefore requests that WAC 173-204-500(4)(c) (lines 1500-1502) be revised as follows:

> Restoration time frame. ~~The department expects that the sediment component of sites and sediment cleanup units with limited contamination will be restored within a single construction season using active cleanup actions such as dredging or capping. However, the~~ The department recognizes longer….

7. The derivation of human health cleanup criteria should remain flexible and site specific (WAC-173-204-561).

Boeing agrees with the decision to retain site-specific flexibility in deriving sediment cleanup levels based on protection of human health by:

- Not including a default fish consumption rate (FCR) in the Washington State SMS rule;
- Including consideration of the percent of seafood diet from the general vicinity of the site;
- Including consideration of the size of the site relative to the fish and shellfish home range; and
- Including relevant studies and best available science related to FCRs.

This policy is consistent with Ecology's goal of achieving better, faster reductions in toxics for the protection of human health by allowing key considerations based on sound science to be addressed on a site-specific basis.

In line with these concepts, it is essential that WAC 173-204-561 (lines 2350–2351) specifically state that salmon consumption is not included in FCR in the default reasonable maximum exposure (RME) scenario. Under most circumstances, site-specific cleanups will not significantly affect body burdens of bioaccumulative compounds in salmon and risks will not be further reduced. Contrary to Ecology's stated goal, including salmon consumption in the FCR will result in a "high-cost/low-value" scenario. Instead, as allowed by the proposed amendments, salmon consumption could be added to a site-specific RME if sufficient information is available to support its inclusion on a case-by-case basis.

8. NPDES process should be kept separate from MTCA/SMS (WAC-173-204-400 and Lines 28 to 34).

Regulations contained in WAC-173-204-400 that involve sediment source control may have the unintended consequence of imposing a number of SMS-related requirements in National Pollutant Discharge Elimination System (NPDES) permits, including the possibility of SMS-driven effluent limits. WAC-173-204-400 sets up a process that

could focus on a particular NPDES permittee without uniform consideration and application of source controls throughout a cleanup site or regional source issue. Therefore, SMS monitoring should be conducted only as part of an Order implemented outside NPDES permits and applied uniformly to all appropriate parties materially discharging to a cleanup site.

If monitoring requirements were added to NPDES permits, implementing new source control requirements could present a significant administrative and technical burden. Individual and general NPDES permit would require a major permit modification, with a public review period, subject to appeal. This process could be lengthy, uncertain, and cumbersome and could promote inefficient and uneven application of source control regulations and liability. Already, several recently renewed individual NPDES permits in the Lower Duwamish Waterway include SMS-related monitoring provisions for the CERCLA/MTCA site. Yet adjacent facilities subject to general NPDES permits (i.e., the industrial storm water general permit (ISGP) (Ecology 2009) and the sand and gravel general permit (Ecology 2011c)) are not required to implement similar actions. Instead, SMS regulations should be implemented evenly and concurrently as part of an Order rather than through NPDES permits.

For these reasons, Boeing requests the following change to WAC 173-204-400(6) (lines 764-774):

> (6) In establishing the need for, and the appropriate, individual permit monitoring conditions, the department shall consider multiple factors relating to the potential for a discharge to cause a violation of the applicable sediment quality standards of WAC 173-204-320 through 173-204-340 including but not limited to:
>
> (a) Discharge particulate characteristics;
>
> (b) Discharge contaminant concentrations, flow, and loading rate;
>
> (c) Existing monitoring conditions, established limits, contaminant concentrations, flow and loading rates associated with adjacent or nearby discharges to ensure consistency.
>
> (~~c~~d) Sediment chemical concentration and biological effects levels;
>
> (~~d~~e) Receiving water characteristics;
>
> (~~e~~f) The geomorphology of sediments;
>
> (~~f~~g) Cost mitigating factors such as the available resources of the discharger; and
>
> (~~g~~h) Other factors determined necessary by the department.

In addition, the following changes are requested to WAC 173-204-400(2) (lines 744-752) to make the language consistent with the language in 400(1)(c).

> (2) Permits and other authorizations of wastewater, storm water, and nonpoint source discharges to surface waters of the state of Washington under authority of Chapter 90.48 RCW shall be conditioned so that the discharge receives all known, available and reasonable methods of prevention, control, and treatment, and/or best management practices prior to discharge, as required by Chapters 90.48, 90.52, and 90.54 RCW. The department shall provide consistent guidance on the collection, analysis, and evaluation of wastewater, receiving-water, and sediment samples to meet the intent of this section using consideration of pertinent sections of the *Department of Ecology Permit Writers' Manual*, as amended, and other guidance approved by the department.

The existing storm water permit BMP process, including Ecology's associated guidance and sector-specific BMP requirements, is an accepted process for achieving sufficient treatment based on need. AKART should not be automatically applied to any and all discharges regardless of their specific nature.

9. Where appropriate, sediment impact zones (SIZ) should be used, as intended in the current rule (WAC 173-204-410)

One tool included in the current rule as well as the proposed amendments is the sediment impact zone (SIZ). These zones are authorized "where the applicable sediment quality standards of WAC 173-204-320 through 173-204-340 are exceeded due to ongoing permitted or otherwise authorized wastewater, storm water, or non-point source discharges and authorized by the department within a federal or state wastewater or storm water discharge permit, or other formal department authorization." Boeing supports this part of the rule because it avoids the "high-cost/low-value" scenarios Ecology has expressly stated. Boeing requests including a SIZ in a case study to highlight how the various tools should be used in concert with one another. For example, its use would be particularly well suited to address contaminants that are ubiquitous in urban storm water.

10. Proposed freshwater chemical and biological criteria have a number of technical issues that should be addressed prior to finalizing the rule (WAC 173-204-563).

One of the major changes to the proposed SMS amendments is the addition of freshwater sediment criteria. Boeing agrees with Ecology that it is important to streamline and standardize the management of freshwater standards; however, Boeing has several concerns related to both the proposed chemical and biological criteria, as described below.

Chemical Criteria

Marine and freshwater chemical numeric criteria were developed using different statistical models and datasets that result in disparities (if not conflicts) in the management of freshwater versus marine sediment.

- The freshwater criteria were derived using the floating percentile model (FPM) and the marine criteria were derived based on apparent effects

thresholds (AETs). The FPM provides useful screening values, but because the rate of false positives (predictions of toxicity when a sample is not toxic) tends to be high for individual chemicals, this method is less useful as a regulatory or cleanup decision tool. Application of these criteria is highly uncertain, and may result in heavy reliance on bioassays, counter to what appears to be the intent of this regulation. It is essential that the cost-benefit analysis more realistically assess the potential impact of using the FPM to derive freshwater criteria through the use of a case study example.

- Bioassays may also be required at certain locations because seven of the freshwater chemicals in Table VII have undefined cleanup screening levels (CSLs) (i.e., lead selenium, zinc, di-n-octyl phthalate, monobutyltin, tetrabutyltin and pentachlorophenol). According to WAC 173-204-563(2)(m), detections above these undefined CSLs will require the use of bioassays to make decisions regarding compliance with SMS at sites that might otherwise have been managed based on chemical criteria alone. The implications are either greater site investigation costs or greater uncertainties in evaluating remedy effectiveness, both of which can be particularly burdensome at smaller, less complex sites. It is requested that CSLs for these chemicals be further investigated and established rather than be promulgated in this undefined manner.

- Additional issues of consistency between management of freshwater and marine sediments include normalization and decision thresholds. The marine criteria for non-polar organic compounds are carbon normalized, whereas the freshwater criteria for these compounds are not. This creates an inconsistency in how data are evaluated, particularly in estuarine environments. Both marine and freshwater standards should use the same organic carbon (OC) basis for normalization.

- Chemicals regulated in both freshwater and marine sediments are managed at different decision thresholds, creating the potential for recontamination or violation of the SMS in estuarine environments where both freshwater and marine sediments exist. As an example, if up to 3,200 mg/kg zinc is allowed in freshwater sediments, but only up to 450 mg/kg zinc is allowed in marine sediments, sediment transport processes alone may contribute to exceedances downstream in estuarine systems. Thus, additional guidance regarding how decisions would be made in estuarine systems is needed, perhaps through the use of a case study.

- Furthermore, defining freshwater versus marine environments is problematic and deserves additional guidance. Freshwater sediments are defined as sediments with pore water $\leq$ 0.5 parts per thousand (ppt) salinity (WAC-173-204-200(20), Line 302). However, the water quality standards (WQS) apply marine water quality criteria (WQC) where water column salinity is > 1 ppt (WAC-173-201A-260(3)). It is possible that overlying water could be subject to a marine WQS while sediments could be defined as freshwater, or vice versa. It is critical that the proposed

amendments clarify how temporal variability and water stratification in estuarine systems factor into this classification for sediments.

Boeing requests the following chemical parameters be removed from Table VII or revised as indicated below:

- **Butyltins** should not be included in freshwater criteria. These chemicals are not typically detected or analyzed for in freshwater sediments. Furthermore, given the fact that these compounds are rarely analyzed in freshwater sediment, it is likely that the dataset used in the development of these criteria was limited relative to other analytes and therefore much more uncertain.
- **Sulfides and ammonia** should not be included in freshwater criteria. These chemicals tend to form as a function of sediment geochemical conditions (sediment oxygenation, pH, biodegradation, organic material, etc). While there can be toxicity associated with the presence of these chemicals, they typically do not have anthropogenic sources.
- **Total petroleum hydrocarbons (TPH)** should not be regulated in sediment as proposed. These mixtures can have wide ranging chemical makeup and toxicities due to weathering, source type and other factors. Therefore, it is requested that the TPH standard be removed from the freshwater standards. Effects from the toxic components of TPH are already addressed by the total PAH criterion.
- The **silver** sediment cleanup objective in Table VII should be changed from 0.57 mg/kg to 0.58 mg/kg because 0.58 mg/kg is the value reported in Ecology (2011a).

Biological Criteria

- The freshwater sediment cleanup objective (SCO) and CSL biological criteria (Table VIII) are based on test responses relative to control sediments, not reference sediments, due, in part, to the difficulties in identifying freshwater reference locations. This contrasts with the evaluation of marine sediments that require use of a reference sediment when determining compliance. Comparison to controls is problematic for several reasons. Control sediment is typically formulated by laboratories to provide the best outcome for control performance. OC content tends to be higher in control sediment, which may skew growth results higher in controls than in test sediments. Also, control sediments do not reflect the natural variability and heterogeneity in freshwater sediments. Consequently, biological criteria based on control samples may erroneously identify an adverse effect. Therefore, it is essential that Ecology identify reference sites for freshwater sediments. Absent a suitable reference sediment bioassay, Ecology should allow for more flexibility in decision making.

- Bioassays based on longer-term exposures, such as the 28-day amphipod test, do not necessarily equate to greater protection. These longer duration tests be listed as an option and not mandatory. Longer-term bioassays are

also subject to a number of confounding factors. As an example, the presence of predatory oligochaetes in field-collected sediment can influence the growth results in the amphipod *Hyalella* tests. In addition, studies have found that longer duration tests may not be as reliable in predicting toxicity. Side-by-side comparisons of 10-day and 20-day *Chironomus* tests have shown similar results. Longer-term tests are more expensive and have greater variability in response, making interpretation more difficult. Consequently, the costs of longer duration tests do not justify the limited additional information provided.

- Given the requirements to use two species, three endpoints, one chronic test, and one sublethal endpoint from the tests listed in Table IX, there are really only two options that are available: 10-day *Hyalella* and 20-day *Chironomus* or 28-day *Hyalella* and 10-day *Chironomus*. The proposed rule should be revised to acknowledge this current limitation and clarify the actual options for testing.

- The proposed rule needs to incorporate a consistent decision rule regarding significance of a biological test result. Currently, text and tables are inconsistent in the probability threshold used to determine significant differences between test and reference samples ($p = 0.05$ versus $p < 0.05$ versus $p \leq 0.05$). It is requested that the same decision rule used in marine bioassays be incorporated for freshwater bioassays ($p \leq x$).

- And finally, analysis of pH, alkalinity, hardness and temperature is required in an overlying site water sample for freshwater sediment bioassays (WAC 173-204-563(3)(f), line 2727). However marine sediment bioassays (WAC 173-204-562(3)) do not have this same requirement. It is not clear how the sample water quality data would be interpreted in concert with the sediment bioassay. A justification for this analysis should be provided or this requirement should be deleted.

11. The sediment recovery zone (SRZ) is a useful concept, but its context should be better defined (WAC 173-204-590).

The inclusion of sediment recovery zones in the proposed amendments is a very positive step. These areas are defined when "cleanup actions cannot practicably achieve sediment cleanup standards at the site or sediment cleanup unit within 10 years after the start of the cleanup action." Note that consistent with comments on the restoration timeframe, the 10-year period should commence following the cleanup action.

Also, it should be clarified in the proposed amendments whether establishment of a SRZ would allow for the issuance of a final cleanup action plan. Boeing requests the following revision:

> WAC 173-204-590(2)(e) (lines 3036 – 3039): The department shall describe the sediment recovery zone in the cleanup action plan<u>, whether it be a final or interim plan,</u> or other decision document prepared under WAC 173-204-3038.

12. The cost-benefit analysis is overly optimistic (Ecology 2012e).

Based on our experience, this document provides an overly optimistic view of the impacts of the proposed SMS amendments on all parties based on several unrealistic assumptions. Boeing requests that the cost-benefit analysis be significantly revised to realistically evaluate:

- The process time and investigative costs needed to derive regional background and how this determination would be funded whether at the State level, which Boeing recommends, by individual parties in a region or sediment cleanup unit, or otherwise;
- The scope and duration of source control (i.e., monitoring and containment or removal actions) by all affected parties and for all material sources in an area as an element of any remedy;
- The likelihood of additional freshwater sites being identified and the associated analytical and bioassay costs associated with those additional sites; and
- Impacts of removal of cost as a consideration in setting cleanup standards, which may lead to selection of remedies with disproportionate cost and limited risk reduction benefit.

A key benefit identified in the report is that remediation and settling of disputed site clean ups will be expedited. This expediency is then translated into higher property values and easier property transactions. Given the new freshwater SMS, the incorporation of human health and higher-trophic-level risk considerations, the ambiguity for how background will be established, and removal of cost as consideration in setting cleanup standards, this outcome seems highly unlikely.

Another overly optimistic assertion in the cost-benefit analysis is that site boundaries may be reduced, thus reducing site characterization, clean up, and monitoring costs. The example provided assumes that natural and regional background is different for dioxin, leading to cost savings. However, as discussed earlier, in the one case (Bellingham Bay) where regional background for dioxins/furans was calculated, it was deemed to be essentially the same as natural background (Ecology 2011b). In such cases, there would be no savings under the SMS amendments as currently drafted. Further, in cases where regional background is to be used as a cleanup standard, the course for determination of regional background is unclear and may be lengthy and expensive. Additional case studies and process delineation (e.g., who would evaluate regional background and how would this determination be funded) are needed.

The cost-benefit analysis incorrectly assumes that the promulgation of freshwater SMS will not increase the number of freshwater sites identified or analyses required. The cost benefit analysis asserts there will be a net benefit because the number of required bioassays will be reduced based on sites “passing” a screening against the freshwater SMS, and therefore fewer (or no) bioassays will be required. Again, given that there will now be a set of numeric criteria to which any freshwater sediment chemistry data may be compared, it seems more likely that the number of freshwater sites will

increase. Also, because seven chemicals have unbounded freshwater CSLs (lead, selenium, zinc, di-n-octyl phthalate, monobutyltin, pentachlorophenol, tetrabutyltin), bioassays will be required whenever a CSL is exceeded. In addition, butyltins are included in the proposed freshwater SMS, but are not typically analyzed in freshwater sediment. Analyzing butyltins in freshwater sediment will increase analytical chemistry costs. Thus, the cost-benefit analysis is too optimistic considering the likelihood of an increased number of freshwater sites being identified and an increase in analytical and bioassay costs.

The cost-benefit analysis (Ecology 2012e) does not include impacts of removing cost as a consideration when setting cleanup standards or selecting cleanup actions. Section 3.5.1 notes that the "use of regional background concentrations to establish sediment cleanup standards will be limited by the proposed revisions that eliminate cost as a consideration when setting cleanup standards. Liable persons may incur costs to perform additional sampling to define regional background." Given the inclusion of human health and higher-trophic-level risk considerations, many sites may be driven to background. The final portion of the statement indicates the ambiguity associated with establishing background and acknowledges the costs, which will likely be great. Removal of cost as a consideration may lead to selection of very expensive remedies with limited or marginal risk reduction benefits. This and the cost associated with establishing background were not evidently considered in the cost benefit analysis, but should be added.

Another issue is the use of an incorrect value in the dredged material management example presented in Section 3.9.1. This analysis used the regional background dioxin/furan toxics equivalent of 11 ng/kg rather than 14.6 ng/kg provided in Section 3.5.1.2. This error may affect the results of the analysis presented, and reinforces the need for a more transparent presentation of how regional background concentrations would be derived and the associated costs estimated.

13. Contents of the work plan, RI, and FS documents should be designed to expedite the process, set clear and reasonable expectations, and optimize the efficiency and effectiveness of data collection (WAC-173-204-550).

The work plan/RI/FS process is vital to selecting an appropriate cleanup action. Therefore Boeing supports the inclusion in the work plan of a conceptual site model and the cleanup alternatives likely to be considered in the FS. Inclusion of these elements is likely to lengthen the time required to finalize the work plan, but may expedite the overall process by requiring an early focus on the likely outcome.

In addition, Boeing supports the inclusion of proposed sediment cleanup standards and sediment cleanup unit boundary in the RI, again to expedite process, but only if technical practicability is a consideration in the boundary. Consideration of practicability in setting the boundary in the RI is critical to setting realistic expectations and expediting results. The proposed biologically active zone and points of compliance should be established in the RI because these factors are risk based and need to be consistent with assumptions made in the ecological and human health risk assessments presented as part of the RI.

We recognize that requiring a recommended compliance timeframe in the RI may be difficult prior to the identification of remedial alternatives in the FS. Therefore, we recommend deferring this element to the FS by moving the following text from WAC 173-204-550(6)(d)(iii) (lines 2048-2050) to WAC 173-204-550(7)(k):

> (iii) A recommended compliance time frame for permitted contaminant sources which affect or potentially affect implementation of the timing and scope of the site cleanup action alternatives.

14. Derivation of cleanup standards for higher-trophic-level species should be site-specific and flexible (WAC-173-204-564).

Boeing supports the site-specific flexibility allowed in the derivation of sediment cleanup levels based on the protection of higher-trophic-level species, with the following cautions.

- Requiring every site to conduct an ecological risk assessment (ERA) may be overly burdensome. Site managers should have the flexibility to determine what level of analysis is necessary for especially small sites with limited contamination. Therefore, the following revision is requested to WAC 173-204-564 (lines 2793-2794): "To establish such concentrations, a site-specific ecological risk assessment meeting the requirement of this subsection ~~must~~may be ~~performed~~required, if deemed necessary by the site manager."

- Behavioral endpoints for Endangered Species Act (ESA) species should not be specified in the rule. Therefore, the following revision is requested to WAC 173-204-564 (lines 2800-2804): "(i) For higher-trophic-level species ~~protected under the Federal Endangered Species Act, Title 77 RCW, or Title 79 RCW, a minor adverse effect means a significant disruption of normal behavior patterns such as breeding, feeding, or sheltering. For all other higher trophic level species~~, minor adverse effects are effects that impair the higher-trophic-level species reproduction, growth or survival. Species protected under the Federal Endangered Species Act, Title 77 RCW or Title 79 RCW, may need special consideration."

  It is unlikely that dietary toxicity thresholds relevant to "breeding, feeding, or sheltering" are available for many chemicals. Which endpoints would be considered representative of these behaviors? If data were available, what would an appropriate threshold concentration be? In terms of ESA species, most studies were not designed to derive EC0 values (i.e., concentrations that cause a non-lethal effect in zero percent of an exposed population) with reasonable confidence. How would these behavioral endpoints be assessed in the absence of the appropriate effects data? Because these types of questions will be fundamental to all necessary site-specific risk assessments, we strongly encourage Ecology to develop specific guidance for public comment. This would provide a good foundation for all site-specific, higher-trophic-level species risk assessments. In developing such guidance, Ecology may also see that

sediment toxicity thresholds that are driven by survival, growth, and/or reproduction in sensitive benthic species directly exposed to sediments may be protective of behavioral effects in higher-trophic-level species. Similar patterns have been observed in water column exposures where behavior may be a more sensitive endpoint than survival in a fish, for example, but the associated criteria are still found to be protective because they are driven by a much more sensitive invertebrate. Evaluating these types of questions earlier will help to streamline the site-specific risk assessment process later.

- Population-level modeling (such as that implied through the consideration of population numbers and recruitment/immigration) should not be a requirement for an ERA, although these factors can be qualitatively included in the selection of receptors of concern. The text on lines 2805-2806 should be revised to state: "(ii) For the selection of receptors of concern and their exposure analysis, the species life history, feeding and reproductive strategy, population numbers, range, and the potential for recruitment/immigration of individuals to the site can be considered."

- The cleanup levels definition should be revised as follows (lines 2791 – 2793): "Sediment cleanup objectives and cleanup screening levels based on protection of higher-trophic-level species shall not be established at concentrations that do not have the potential for minor adverse effects."

- The threshold for identification of chemicals potentially affecting upper-trophic-level species should be consistent with the persistent bioaccumulative toxin (PBT) determination in WAC 173-333-320 (i.e., octanol-water partition coefficient [K_{OW}] of 5.0, not 3.5) (line 2813).

15. Site-specific tissue data should be used to identify and screen chemicals of concern in sediment during the RI/FS (WAC-173-204-560).

Comparing site-specific tissue data to background tissue data early in the RI/FS process is an improvement to the rule. When done appropriately (by comparing tissue data for specific species that will be included in the risk assessments), this comparison opens the door to incremental risk assessment, a concept embraced by EPA. Incremental risk assessment is a laudable approach because it acknowledges background risk, and thus sets reasonable expectations for site recovery following remedial actions.

On the other hand, tissue data following sediment remediation should not be used as a performance criterion. Although tissue monitoring is an effective tool to evaluate residual risk levels to inform risk communication, it should not be overstated as a measure of remedy success. Many factors can affect concentrations of chemicals in tissue. Thus, Boeing requests the following revision to WAC 173-204-560(6)(b) (lines 2301-2304):

> Use of tissue analysis. At the department's discretion, and when determined to provide appropriate protection for human health or the environment, contaminants in tissue may be used to identify and screen chemicals of concern in sediment during the remedial

investigation/feasibility study ~~and to evaluate compliance with sediment cleanup standards~~.

16. Alternative analytical methods should only be required if they will be important in remedial decision making (WAC 173-204-563).

If efforts are unsuccessful to achieve both method detection limits (MDLs) and practical quantitation limits (PQLs) that are at or below the SCOs in Table VII, then a weight-of-evidence approach to assess the significance of this data quality issue must be allowed. Because the data reporting language requires that values between the MDL and PQL be reported as estimated, additional analyses should only be required if the MDL is above the cleanup value.

Additional costs are likely to be incurred in order to reach MDLs below human health criteria for many organic compounds, including pesticides and semivolatile organic compounds (SVOCs) such as polycyclic aromatic hydrocarbons (PAHs). For example, there is no analytical method to achieve the human health criteria for n-nitrosodiphenylamine. Furthermore, reducing these MDLs below human health criteria is unlikely to be cost effective because where the human health criteria are below the MDL, they are unlikely to drive remediation. Therefore, alternative methods should only be required if the analyte is likely to be important in remedial decision making and if MDLs are above SCO values.

Boeing requests the following revisions to WAC 173-204-200 (lines 373-378):

> (35) "Practical quantitation limit" means the lowest concentration that can be reliably measured within specified limits of precision, accuracy, representativeness, completeness, and comparability during routine laboratory operating conditions, using department approved methods. When the MDL~~limit~~ for an analytical method is higher than the concentrations based on protection of human health or the environment, the department may require the use of another method to lower the ~~practical quantitation limit~~MDL.

17. Certain definitions should be more specific and all definitions must be used consistently.

The definitions used throughout the SMS should be consistent. Specifically, we recommend the following changes and/or clarifications:

- **Sediment –**The definition of sediment should make it clear that SMS and reporting limits (RLs) should only be applied to bedded sediment, not suspended particulates or settled particulate matter present within engineered storm water best management practices (BMPs), engineered drainage features (e.g., bioswales, wetlands, detention/retention ponds, sediment traps, catch basins, drainage ditches), or wastewater lagoons or evaporation ponds. The SMS should encourage the use of such passive systems that remove potential source material from reaching sediment environments. Boeing requests the following revision to WAC 173-204-200 (lines 400-405):

(40) "Sediment" means particulate matter settled or present as particles on the bed or bottom of a body of water to which biota or humans may potentially be exposed, and the surface water is present in the water body for a minimum of six ~~contiguous~~ consecutive weeks on an annual basis and the sediment is located at or below the ordinary high water mark. Sediment includes particulate matter located in the biologically active zone or exposed to the water column by human activity (e.g., dredging), pore water flux, or other hydrological or natural action. Sediment does not include suspended particulates or settled particulate matter present within engineered storm water best management practices (BMPs), engineered drainage features (e.g., bioswales, wetlands, detention/retention ponds, sediment traps, catch basins, drainage ditches), or wastewater lagoons or evaporation ponds.

- **Natural background -** The definition should acknowledge other key contaminants (e.g., PAHs and mercury) that can be regionally or globally distributed. Boeing requests the following revision to WAC 173-204-200 (lines 330-340):

  (27) "Natural background" means the concentration of a hazardous substance consistently present in the environment that has not been influenced by localized human activities. For example, several metals and radionuclides naturally occur in the bedrock, sediment, and soil of Washington state due solely to the geologic processes that formed these materials and the concentration of these hazardous substances would be considered natural background. Also, low concentrations of some particularly persistent organic compounds such as polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs) and metals (such as mercury) can be found in surficial soils and sediment throughout much of the state due to global distribution of these hazardous substances. These low concentrations would be considered natural background. Similarly, concentrations of various radionuclides that are present at low concentrations throughout the state due to global distribution of fallout from bomb testing and nuclear accidents would be considered natural background.

- **SCOs and sediment quality standards (SQS) –** These terms need to be used consistently throughout the rule. Based on the definitions below from WAC 173-204-200, our understanding is that the SCO represents the lower tier (highest of PQL, risk-based threshold concentration, natural background), whereas the SQS are criteria associated with no effects to biological resources (or more specifically, benthic invertebrates).

  (42) "Sediment cleanup objective" means the goal for protection of human health and the environment and is established under the authority of chapter 70.105D RCW. The sediment cleanup objective is established in accordance with the requirements in WAC 173-204-560(3). Sediment cleanup objectives are also used to identify and assess the hazard of sites under WAC 173-204-510 and 173-204-520.

(45) "Sediment quality standard" means chemical concentration criteria, biological effects criteria, other toxic, radioactive, biological, or deleterious substances criteria, and nonanthropogenically affected sediment quality criteria which are used to identify sediments that have no adverse effects on biological resources per procedures in WAC 173-204-320 through 173-204-340.

However, in the proposed amendments, the SCO appears to be used in place of the SQS in many places. Our understanding is that SQS should be used in place of sediment cleanup objectives in these instances, as indicated in the examples below (with emphasis added).

WAC 173-204-562(2) (lines 2408-2411): **Marine sediment - Chemical criteria.** The chemical concentration criteria in Table IV establish the *sediment cleanup objectives* and cleanup screening levels chemical criteria for marine sediment. The criteria of this section shall apply to marine sediments for toxicity to the benthic community.

WAC 173-204-562(2)(a) (lines 2412-2415): The *sediment cleanup objectives* of this section establish a no adverse effects level, including no acute or chronic adverse effects, to the benthic community. Chemical concentrations at or below the *sediment cleanup objectives* correspond to sediment quality that results in no adverse effects to the benthic community.

WAC 173-204-562(d) (lines 2435-2437): The *sediment cleanup objective* chemical criteria is exceeded when the sediment chemical concentration for one or more chemicals is above the *sediment cleanup objective* in Table IV.

WAC 173-204-562(3)(a) (lines 2510-2512): The *sediment cleanup objective* biological criteria for a sampling station is exceeded when one of the biological test results is above the sediment cleanup objective as described in Table V.

Table V: Marine *sediment cleanup objectives*, cleanup screening levels, and performance standards for each biological test.

WAC 173-204-563 Sediment cleanup levels based on protection of the benthic community in freshwater sediment. (1) **Applicability.** This section defines *sediment cleanup objectives* and cleanup screening levels for contaminants based on protection of the benthic community in freshwater sediment.

WAC 173-204-563(2) (lines 2617-2620): **Freshwater sediment - Chemical criteria.** The chemical concentration criteria in Table VII establish the *sediment cleanup objectives* and cleanup screening levels chemical criteria for freshwater sediment.

WAC 173-204-563(2)(a) (lines 2621-2622): The *sediment cleanup objectives* of this section establish a no adverse effects level, including no acute or chronic adverse effects, on the benthic community.

WAC 173-204-563(2)(d) (lines 2635-2637): The *sediment cleanup objective* chemical criteria is exceeded when the sediment chemical concentration for a single chemical is above the sediment cleanup objective in Table VII.

WAC 173-204-563(3) (lines 2692 – 2694) **Freshwater sediment - Biological criteria.** The biological effects criteria in Table VIII establish the *sediment cleanup objectives* and cleanup screening levels biological criteria for freshwater sediment.

WAC 173-204-563(3)(a) The *sediment cleanup objective* biological criteria for a sampling station is exceeded when one of the biological test results is above the *sediment cleanup objective* as described in Table VIII.

- **Beneficial uses –** The definition provided for "beneficial uses" (line 242) should be revised to match the current WQS. Boeing requests the following revision to WAC 173-204-200 (lines 242-246):

  (7) "Beneficial uses" means uses designated ~~of~~to waters of the state by WAC 173-201A which include uses for aquatic life, recreation, water supply, and miscellaneous uses including harvesting, commerce and ~~agricultural, industrial~~, navigation~~al~~, boating, and aesthetics~~use for domestic, stock watering, industrial, commercial, agricultural, irrigation, mining, fish and wildlife maintenance and enhancement, recreation, generation of electric power, and preservation of environmental and aesthetic values, and all other uses compatible with the enjoyment of the public waters of the state~~.

- **NPDES terminology** - To avoid confusion, the terms "point" and "non-point" source should be deleted because they are generally used in the context of NPDES permits and the definitions are not provided to clarify the intent of the SMS, nor is the intent always clear when referring to these terms. Most storm water discharges are commercial, industrial, or municipal point sources subject to NPDES permits.

Therefore, the following edits are essential to clarify intent and applicability where the term "nonpoint source" is used in the proposed SMS amendments.

WAC 173-204-100(5) (lines 28- 34): Part IV, Sediment source control standards of this chapter shall be used as a basis for controlling the effects of ~~point and nonpoint source~~ discharges to sediments through the National Pollutant Discharge Elimination System (NPDES) state and federal permit program, state ~~water quality management~~ waste discharge permit programs, issuance of administrative orders or other means determined appropriate by the department. The source control

standards establish discharge sediment monitoring requirements and criteria for establishment and maintenance of sediment impact zones.

WAC 173-204-200(44) (lines 425-429): "Sediment impact zone" means an area where the applicable sediment quality standards of WAC 173-204-320 through 173-204-340 are exceeded due to ongoing permitted or otherwise authorized wastewater, storm water, or ~~nonpoint source~~ other discharges and authorized by the department within a federal or state wastewater or storm water discharge permit, or other formal department authorization.

WAC 173-204-400(2) (lines 744-748): Permits and other authorizations of wastewater, storm water, ~~and nonpoint source~~ or other discharges to surface waters of the state of Washington under authority of chapter 90.48 RCW shall be conditioned so that the discharge receives all known, available and reasonable methods of prevention, control, and treatment, and/or best management practices prior to discharge, as required by chapters 90.48, 90.52, and 90.54 RCW.

WAC 173-204-410(6)(c) (lines 861-865): Any person with a new or existing permitted storm water ~~or nonpoint source~~ discharge, which fully uses all known, available and reasonable methods of prevention, control, and treatment, and/or best management practices as stipulated by the department at the time of the person's application for a sediment impact zone, shall be required to meet the standards of WAC 173-204-400 through 173-204-420;

WAC 173-204-500(4)(c) (lines 1500-1507): Restoration time frame. ~~The department expects that the sediment component of sites and sediment cleanup units with limited contamination will be restored within a single construction season using active cleanup actions such as dredging or capping. However, t~~he department recognizes longer restoration time frames may be necessary at sites with more extensive or widespread contamination, including sites with ubiquitous chemicals from numerous regulated and unregulated ~~point and nonpoint source~~ discharges. At such sites, the department expects cleanup actions will include a combination of active and passive cleanup actions and will achieve restoration as soon as practicable following completion of the active cleanup actions.

WAC 173-204-590(2)(d) (lines 3034-3035): Best management practices shall be used for activities related to regulated ~~resulting in diffuse, nonpoint~~ discharges within the sediment recovery zone; . . .

18. The EIS is overly simplistic (Ecology 2012c).

There should be a clearer connection between the qualitative discussion of impacts in Chapter 5 and the scoring of each alternative that is conducted later in the chapter.

Qualitative discussions of impacts in Tables 5-1 through 5-4 often include both benefits and adverse impacts for the same alternative, but there is no discussion of the relative magnitude of either, leaving the reader with no clear sense of the net impact to a given resource.

19. The Draft Sediment Clean Users Manual (II) should have a formal review process because it is an important guidance document.

With the release of the *Draft Sediment Cleanup Users Manual II* (Ecology 2012a), Ecology has put forth an important guidance document. Ecology has stated (at its August 28, 2012, public meeting in Seattle) that this document is intended to be the only guidance to accompany the SMS rule. This document includes important details about many of the key concepts included in the proposed SMS amendments, including how sediment cleanup units and site boundaries should be established, how regional background should be derived and applied, and how human and ecological risks should be evaluated. Therefore, Boeing requests that this document have a formal review process, similar to the current process for the fish consumption rates technical support document (Ecology 2012d).

Conclusion

Boeing recognizes the effort the Agency put forth in preparing for the draft rule language including the Sediment Management workgroups and technical workshops. Boeing agrees with Ecology's goal to avoid "high-cost/low-value" scenarios when implementing the Sediment Management Rule. Therefore, Boeing requests that the SMS final rule language fully incorporate the above comments.

Boeing remains committed to working with Ecology and other stakeholders on these significant issues. Please do not hesitate to contact me or Will Ernst at (425) 891-7724 on this important matter.

Sincerely,

Terry Mutter
Director Enterprise Strategy
Environment, Health & Safety
The Boeing Company
PO Box 3703 MC 9U4-08
Seattle, WA 97124
(425) 237-1940
terry.m.mutter@boeing.com

Attachments: References

References

Ecology. 2009. The industrial stormwater general permit. A National Pollutant Discharge Elimination System and state waste discharge general permit for stormwater discharges associated with industrial activities. Issued 10/21/09; effective 1/1/10 to 1/1/15. Water Quality Program, Washington Department of Ecology, Olympia, WA.

Ecology. 2011a. Development of benthic SQVs for freshwater sediments in Washington, Oregon, and Idaho. Publication no. 11-09-054. Toxics Cleanup Program, Washington State Department of Ecology, Olympia, WA.

Ecology. 2011b. Polychlorinated dibenzodioxins and dibenzofurans in surface sediments of Bellingham Bay, 2010. Publ. no. 11-03-033. Environmental Assessment Program, Washington State Department of Ecology, Olympia, WA.

Ecology. 2011c. The sand and gravel general permit. NPDES general permit no. 50-0000 as modifed October 1, 2011. Washington State Department of Ecology, Olympia, WA.

Ecology. 2012a. Draft sediment cleanup users manual II. Guidance for implementing the Sediment Management Standards, Chapter 173-204 WAC. August 2012. Pub. no. 12-09-057. Toxics Cleanup Program, Washington State Department of Ecology, Olympia, WA.

Ecology. 2012b. Draft sediment management standards (SMS) rule proposed amendments. Chapter 173-204 WAC. Review version, August 15, 2012. Toxics Cleanup Program, Washington State Department of Ecology, Olympia, WA.

Ecology. 2012c. Draft sediment management standards rule revisions. Chapter 173-204 WAC. Environmental impact statement. August 2012. Publ. no. 12-09-054. Toxics Cleanup Program, Washington State Department of Ecology, Olympia, WA.

Ecology. 2012d. Fish consumption rates technical support document: A review of data and information about fish consumption in Washington. Public review draft, August 27, 2012. Version 2.0. Publ. no. 11-09-058. Toxics Cleanup Program, Washington State Department of Ecology, Olympia, WA.

Ecology. 2012e. Preliminary cost-benefit and least burdensome alterrnative analyses. Chapter 173-204 WAC. Sediment management standards. August 2012. Publ. no. 12-09-051. Toxics Cleanup Program, Washington State Department of Ecology, Olympia, WA.

EPA. 2002. Principles for managing contaminated sediment risks at hazardous waste

sites. OSWER Directive 9285.6-08. Memorandum from M. Horinko dated February 12, 2002. Office of Solid Waste and Emergency Response, US Environmental Protection Agency, Washington, DC.

EPA. 2005. Contaminated sediment remediation guidance for hazardous waste sites. OSWER 9355.0-85. EPA-540-R-05-012. US Environmental Protection Agency, Office of Solid Waste and Emergency Response Washington, DC.

NRC. 2007. Sediment dredging at Superfund megasites: assessing the effectiveness. National Research Council, National Academy Press, Washington, DC.

Sturdevant T. 2012. Letter dated July 16, 2012 to interested parties: Ecology's approach to fish consumption standards in Washington State. Director, Washington State Department of Ecology, Olympia, WA.

Windward. 2010. Lower Duwamish Waterway remedial investigation. Remedial investigation report. Final. Prepared for Lower Duwamish Waterway Group. Windward Environmental LLC, Seattle, WA.