

Response to Comments

**Potlatch Corporation - Lewiston Mill
(NPDES Permit No. ID0001163)**



U.S. Environmental Protection Agency
Region 10

March 8, 2005

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I. Introduction

On December 15, 1999, the Environmental Protection Agency, Region 10 (EPA) proposed to reissue the National Pollutant Discharge Elimination System (NPDES) permit number ID0001163 for Potlatch Corporation. The comment period on the proposed reissuance began on December 15, 1999, and was scheduled to end on February 15, 2000. A public hearing was held in Lewiston, Idaho on January 25, 2000. Because of the large number of requests for copies of the draft permit received at the hearing, EPA extended the public comment period until March 16, 2000. EPA received numerous comments during the comment period and at the hearing.

On June 16, 2003, EPA re-opened the public comment period to take comments on changes made to the draft permit based on new information collected since the 1999 public comment period. This comment period ended on July 21, 2003. No public hearings were held during this comment period. This document provides a summary of the substantive comments received during both public comment periods and the responses to those comments.

II. Actions and New Information After the Public Comment Period

A. Endangered Species Act (ESA) Consultation

On November 1, 2000, EPA entered into formal consultation under 50 CFR 402.14(c) with the National Oceanic and Atmospheric Administration (NOAA) Fisheries (formerly named the National Marine Fisheries Service) and U.S. Fish and Wildlife Service (USFWS) regarding endangered species in the vicinity of the discharge point. As EPA's designated nonfederal representative under 50 CFR 402.08, Potlatch prepared a draft biological assessment (BA), assessing the effects of reissuance of the NPDES permit on bull trout, Snake River spring/summer chinook salmon, Snake River fall chinook salmon, Snake River sockeye salmon, Snake River Basin steelhead, Westslope cutthroat trout, and bald eagle. Potlatch submitted the draft BA to EPA on September 1, 2000, and EPA made some revisions to the draft before submitting the final BA to USFWS and NMFS.

In March, 2003, NOAA Fisheries and USFWS submitted discussion draft biological opinions to EPA (NOAA, 2003 and USFWS, 2003). Based on these documents, EPA realized that NOAA Fisheries and USFWS did not have all the information regarding this discharge necessary to adequately determine a biological opinion. Additionally, EPA proposed some changes to the permit in June 2003. Therefore, EPA resubmitted a biological evaluation on December 1, 2003, that included all new information regarding this discharge since 2000.

On April 2, 2004, NOAA Fisheries' Biological Opinion concluded that the proposed action is not likely to jeopardize the continued existence of ESA listed species and all currently designated ESA critical habitat for Snake River sockeye salmon, Snake River fall and spring/summer Chinook salmon, Snake River steelhead. In its Biological Opinion submitted to EPA on March 5, 2004, USFWS concurred with EPA's determination that reissuance of the permit is not likely to affect Ute ladies-tresses, is likely to adversely affect the bull trout and bald eagle, and is likely to adversely modify bull trout proposed critical habitat.

Reasonable and prudent measures

As required by section 7 of the ESA, NOAA Fisheries and USFWS included Incidental Take Statements and a description of reasonable and prudent measures with nondiscretionary terms and conditions that are necessary to avoid or minimize the impact of incidental take associated with this action. Table 1 lists the reasonable and prudent measures and associated terms and conditions that have been incorporated into EPA's final action.

B. Essential Fish Habitat Determinations

Under the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA, PL-104-267), NOAA Fisheries designated Essential Fish Habitat for coho and chinook salmon in the Snake and Clearwater Rivers. On April 2, 2003, NOAA Fisheries concurred with EPA's determination that the action may adversely affect designated EFH for Chinook salmon and that the conservation recommendations in the BE will avoid, minimize, mitigate, or otherwise offset adverse effects on EFH resulting from the proposed action.

C. State of Idaho Clean Water Act Section 401 Certification

On February 15, 2005, the State of Idaho issued a final Clean Water Act Section 401 certification that the conditions in the permit ensure compliance with Idaho water quality standards. Stipulations of the certification have been incorporated into the final permit.

Table 1. ESA Requirements

Reasonable and Prudent Measure	Term and Condition of Incidental Take Statements
<p>Minimize the likelihood of take resulting from loading of all forms of oxygen demanding substances and nutrients into the Lower Granite Reservoir and the lower Snake River.</p>	<p>Implement Conservation Measures #9 and #10 from EPA’s 2003 BE, Potlatch Temperature Reduction Measures and Potlatch TSS Reduction Measures.</p> <p>Before the next NPDES permit cycle, the EPA shall use all appropriate authorities to cause a TMDL(s) to be prepared for DO in the lower Snake River up to and including the Lower Granite Reservoir. This TMDL shall address all sources from both Idaho and Washington. EPA shall annually provide NOAA Fisheries with a status report on TMDL development.</p>
<p>Minimize the impact of take resulting from outfall 001 suspended solids and associated effluent contaminants</p>	<p>Implement Conservation Measure #10 from EPA’s 2003 BE, Reduce TSS by 25%.</p>
<p>Better define the potential for take resulting from Potlatch’s effluent below outfall 001 including from ASB seepage to the Clearwater River and Lower Granite Reservoir.</p>	<p>Implement the Monitoring and Assessment Plan. Provide annual report to NOAA Fisheries by January 15 each year. Update the Monitoring and Assessment Plan (conservation measure #12) to include:</p> <ul style="list-style-type: none"> (1) NOAA Opinion Appendix 6 Addendum to the monitoring and assessment plan (2) Measurement of the amount and concentration of contaminants that reach the groundwater from the ASB and eventually flow into either the Clearwater or Snake Rivers. Evaluate bioaccumulation risks to listed salmonids through sediment or food chain influences wherever ASB flows reach these rivers. (3) Monitoring of COD and BOD to determine Potlatch-caused effects to the seasonally low DO levels in Lower Granite Reservoir and the lower Snake River. EPA shall use best available models to predict effects of BOD and COD on listed salmonids. <p>The EPA and Potlatch shall minimize take of listed salmonids during monitoring by requiring that all collection of fish specimens is done according to NOAA Fisheries approved fish residue, salvage, and relocation methods described in the NOAA BO Appendix 7. Any listed salmonids killed during the monitoring process must be adequately preserved and reported to NOAA Fisheries via fax or phone call within one day after a fish is killed. An annual report of take from monitoring must be provided to NOAA Fisheries by January 15 each year.</p>
<p>Develop a monitoring plan to further characterize the effects that the action will likely have on bull trout.</p>	<p>Implement Conservation Measures #1 through #11 from EPA’s 2003 biological evaluation and the Monitoring and Assessment Plan (conservation measure #12).</p>

III. Response to Comments Received on Draft Permits

A. Temperature

1. *Comment:*

Several commentors stated that the temperature increase in the Snake River caused by Potlatch's discharge is so small that it is not appropriate to require further controls on Potlatch's effluent to achieve compliance with the limit in the draft permit.

Several commentors cited Potlatch's mixing zone study as justification for allowing Potlatch to continue discharging at 92°F (33°C), the temperature limit in the 1992 permit. The study was interpreted variously as showing a 1.8°F increase within 50 feet of the diffuser (based on a dilution of 485:1), a 0.06°F increase within 350 feet, a 0.5° increase 400 feet downstream, a 0.5°C increase 200 feet downstream, a 0.37°C increase 376 feet downstream, and a "non-detectable change" at an unspecified location. One commentor stated that, "If it is decided that Potlatch must lower their effluent temperature, a drop of one degree would be enough to offset any adverse effects on river temperatures according to studies."

Potlatch cited its mixing zone study, in which it used the EPA model QUAL2E calibrated with data from two dive surveys to determine the contribution of the Potlatch discharge to the temperature of the Snake River. The predicted change in river temperature from the Potlatch discharge for typical July conditions is 0.06°F (0.03°C). For comparison purposes, simulations of temperature for July 1990 show temperature changes of 0.2° to 0.5°F within a day due to weather. The heat introduced to the river by the Potlatch discharge is 0.0054×10^{11} calories per second. In contrast, the heat flux in the river (i.e., the amount of heat as calories passing through the river cross section per unit of time) upstream of the Potlatch diffuser is 1.235×10^{11} calories per second. In other words, the heat flux from the river upstream of the diffuser is almost 230 times greater than the heat input from the Potlatch discharge. The Potlatch discharge contributes negligibly to the temperature and caloric load of the Snake River.

Response:

The issue raised by this comment is, in fact, whether a temperature limit is required for the discharge and, if so, what that limit should be. The determination of whether a water quality-based limit is needed and the establishment of that limit is based on federal regulations at 40 CFR 122.44(d)(1).

EPA's current thermal analysis of Potlatch's effluent discharge through outfall 001 (USEPA, 2005) shows that there is reasonable potential for this discharge to cause or contribute to an exceedance of the water quality standard for temperature. Therefore, under 40 CFR 122.44(d)(1)(i), an effluent limitation for temperature is required in the permit.

Under 40 CFR 122.44(d)(1)(vii), once it is determined that an effluent limit is necessary, that limit must ensure compliance with the applicable water quality standards. From

October through June, EPA has determined that an effluent limitation of 33°C is necessary to protect water quality in the Snake River. Based on Idaho's Clean Water Act (CWA) Section 401 certification of this permit, this effluent limitation is also necessary for compliance with the anti-backsliding provisions in Section 303(d)(4) of the CWA.

The 1999 draft permit proposed that summer (July through September) effluent limitations of criteria end-of-pipe were necessary since the water temperature upstream of the discharge exceeds criteria. However, EPA has re-assessed this effluent limitation in the Temperature Assessment (USEPA, 2005) by evaluating whether or not the receiving water body had the assimilative capacity to accept the thermal loading from this discharge.

Since the 1999 and 2003 draft permits were prepared, EPA has approved a revision of the Idaho water quality standards, which states that when numeric water quality criteria are exceeded solely due to natural background conditions, the natural background conditions become the criteria (IDAPA 58.01.02.200.09). Natural background conditions are defined as the conditions that would exist in a water body without human sources of pollution in the watershed. The water quality standard at IDAPA 58.01.02.401.a.v explains how natural background conditions are to be considered for temperature, by stating that when the numeric temperature criteria are exceeded upstream of the discharge due to natural background conditions, wastewater must not raise the receiving water temperatures by more than 0.3 degrees C. EPA has used several methods (Cope, 2004, 2005) to show that water temperatures in an undeveloped or natural Snake River would exceed Idaho's daily average temperature criterion of 19°C more than 99% of the time in July and August, and more than 26% of the time in September.

EPA used a calibrated CORMIX mixing zone model to determine if the discharge would cause or contribute to water quality standards violations in the States of Idaho and Washington, and to determine consistency with Idaho's mixing zone policy and the thermal plume recommendations in the *EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards* (USEPA, 2003a, hereafter referred to as the Temperature Guidance). Idaho's mixing zone policy and EPA's thermal plume recommendations are summarized below:

Idaho Mixing Zone Policy Restrictions (IDAPA 58.01.02.060.01):

- The mixing zone may receive wastewater through a submerged pipe, conduit or diffuser.
- The mixing zone is to be located so it does not cause unreasonable interference with or danger to existing beneficial uses.
- Multiple mixing zones can be established for a single discharge, each being specific for one or more pollutants contained within the discharged wastewater.
- Mixing zones in flowing receiving waters¹ are to be limited to the following:

¹ Although Potlatch's point of discharge is in the upper end of Lower Granite Reservoir, the State of Idaho has determined the receiving waters are flowing waters and that water quality criteria for streams and rivers and the mixing zone policy for flowing receiving waters apply at the point of discharge.

- The cumulative width of adjacent mixing zones when measured across the receiving water is not to exceed fifty percent (50%) of the total width of the receiving water at that point
- The width of a mixing zone is not to exceed twenty-five percent (25%) of the stream width or three hundred (300) meters plus the horizontal length of the diffuser as measured perpendicularly to the stream flow, whichever is less
- The mixing zone is not to include more than twenty-five percent (25%) of the volume of the stream flow

EPA Region 10 Temperature Guidance Recommendations²

- The maximum temperature within the plume after 2 seconds of plume travel from the point of discharge does not exceed 32°C.
- The thermal plume does not result in more than 5 percent of the Snake River channel cross-section above 25°C.
- The thermal plume does not result in more than 25 percent of the Snake River channel cross section above 21°C. When the Snake River channel exceeds 21°C, the thermal plume does not increase more than 75 percent of the Snake River channel cross-section above ambient conditions by a measurable amount (i.e. <0.3°C).³

Other Restrictions:

- A discharge in compliance with the effluent limits in the final permit will not cause more than a 0.3°C increase in the temperature of the Snake River at the edge of the zone of initial dilution (ZID).⁴

The modeling has shown that, with minor summer temperature reductions from the Potlatch discharge, the Snake River does have the assimilative capacity to accept the heat load from Potlatch's discharge. The final effluent limits necessary to achieve all of the above plume restrictions are 32°C in July and 31°C in August and September.

Compliance with these final effluent limits will ensure that:

- The discharge will not cause lethal effects or thermal shock to aquatic life.
- The impact of the thermal plume is restricted such that there is adequate migratory passage for migratory aquatic life.

² In a letter dated February 5, 2004, the State of Idaho indicated that it would consider the thermal plume recommendations from the EPA Region 10 Temperature Guidance when sizing temperature mixing zones. In its Section 401 certification of this permit, the State confirmed that it used these recommendations to size the temperature mixing zone for the Potlatch discharge.

³ For the purposes of this analysis, EPA is considering any temperature change of less than 0.3°C to be immeasurable, because this is the approximate precision of data-logging thermistors at room temperature, according to IDEQ guidance (Mebane, 2003).

⁴ The model shows that the ZID extends for a distance of 45 meters downstream of the diffuser. The mixing zone was restricted to the ZID to ensure that the mixing zone does not cause unreasonable interference with or danger to the existing beneficial uses of the Snake River, particularly to prevent jeopardizing the continued existence and minimizing potential take of ESA listed and threatened salmonids.

- The receiving water has the capacity to assimilate the heat from the discharge such that there is no more than a 0.3°C difference between the ambient temperature and the downstream river temperature at the edge of the ZID.
- The discharge will not cause or contribute to an exceedance of the Washington water quality standard at the state border with Washington.⁵

EPA has completed formal consultation with NOAA Fisheries and the US Fish and Wildlife service regarding the issuance of this permit. In its biological evaluation issued on December 1, 2003, EPA determined that a discharge from the Potlatch facility in compliance with the effluent limits in the final permit will not jeopardize the continued existence of ESA listed and threatened species in the vicinity of the discharge. Adverse affects from the heated discharge are expected to be minimal, and will be mitigated by the conservation measures in Table 1 of this document (Page 3).

Additionally, the Potlatch Corporation has voluntarily committed to a conservation measure under the Endangered Species Act (ESA) consultation with NOAA Fisheries and USFWS to reduce the thermal loading of their discharge. This conservation measure includes three heat recovery projects within the plant that are expected to reduce the amount of heat discharged to the waste water treatment system, and flow augmentation of up to seven million gallons per day (7 mgd) Clearwater River water in the summer months that is expected to reduce the exposure temperatures to fish (10 feet downstream of the outfall 001 diffuser) in the range from 21 to 24°C. These conservation measures will further reduce the impact of the thermal discharge on listed species.

2. Comment:

One commentator stated that EPA has an obligation to investigate, quantify, and determine the effects of Potlatch's heat input. This is especially true today, as we face the extinction of several Idaho fisheries including native salmon, steelhead, sturgeon and bull trout. The Potlatch mill should be required to put water back into the river at the exact same temperature at which they removed it. When warmer water is collected from the river, permit slightly warmer effluent. But in the winter, make them refrigerate their waste water to match the river's natural temperature.

Response:

As explained in the response to Comment #1 of this section, EPA has investigated, quantified, and determined the effects of Potlatch's heat input to the Snake River. The potential effects of Potlatch's heat input to the Snake River have also been documented in the biological evaluation prepared by EPA and submitted to NOAA Fisheries and the USFWS on December 1, 2003. In cooperation with the Services, EPA has determined that the heat input from Potlatch's discharge will not jeopardize the continued existence

⁵ Because the mixing zone is limited to the ZID, which extends only 45 meters downstream of the diffuser, the discharge will not have a measurable effect on the temperature of the Snake River at the Idaho-Washington state line, which is 191 meters downstream of the diffuser.

of any listed species. This analysis can be extrapolated to all fish species that reside or pass through the area of this discharge. As discussed in the response to Comment #1 of this section, the Potlatch Corporation has voluntarily committed to conservation measures under the Endangered Species Act (ESA) consultation with NOAA Fisheries and USFWS to reduce the thermal loading of their discharge.

With some exceptions (for example, to meet more stringent technology-based effluent limits), the Clean Water Act and its implementing regulations do not authorize EPA to impose permit conditions that are more stringent than necessary to meet State water quality standards. Conversely, the Agency is not authorized to issue permits with limits that are not stringent enough to meet water quality standards.

3. *Comment:*

One commentator noted that Potlatch's effluent pipe runs along the Clearwater River bed for almost three miles before it ends at the confluence of the Clearwater and Snake Rivers. The diffusion bar for this effluent pipe is actually in the center of the confluence of the Snake and Clearwater Rivers. The greatest temperature difference between the effluent pipe and its surroundings is at its entry point into the Clearwater River. Laws of physics say that the rate of heat loss increases exponentially with the temperature difference between the surfaces in contact. Therefore, the majority of the heat is lost from the effluent pipe before it even reaches the diffusion bar almost three miles away. Ultimately, the Potlatch mill appears to be literally using the Clearwater River to refrigerate its effluent water.

Response:

Potlatch measures the discharge temperature where the effluent leaves the ASB (treatment pond) prior to the effluent pipe entering the Clearwater River. Compliance with the effluent limits is determined using the measurements taken at this point at not at the end of the effluent pipe. Therefore, Potlatch does not “benefit” from any cooling of the effluent that may occur between the temperature measurement location and the end of the effluent pipe.

4. *Comment:*

Several commentators expressed concern that species that had been common prior to the decision to use flows from Dworshak Dam to cool the Snake River system (for example, bass, eels, freshwater mussels, crayfish, suckers, squawfish, carp, bluegill, snails, and all types of minnows) are no longer plentiful. One commentator stated that since the start of cold water releases from Dworshak, the Clearwater River downstream from Orofino has been sterilized of all types of fish life, including steelhead. Another commentator noted that moss and other natural plant/animal fish habitat has been destroyed by the cold water flushes. The Snake must not be managed for the benefit of steelhead and salmon only. It should be managed as a whole river system.

Response:

The issue raised by this comment is whether the State's designation of the Snake River for cold water biota (and the subsequent decision to use Dworshak Dam flows to cool the river) is appropriate. This response will address both the issue of whether the standard is appropriate and whether EPA can change a designation through issuance of an NPDES permit.

EPA does not agree with the commentors that the Snake and Clearwater Rivers should be considered warm water habitat. Prior to the construction of the impoundments, the Clearwater River supported a native cold water fish community, which included the full complement of aquatic vegetation, insects, invertebrates and fish. Many of the species these commentors mention are in fact non-native warm water species that thrive in rivers that are simple in structure and warm in temperature. They colonized the Snake and Clearwater Rivers after temperatures were increased due to construction of the dams. Maintaining these warm-water species may be incompatible with recovery of native, listed salmonids.

EPA cannot change the standard itself through issuance of an NPDES permit, nor can it change the management strategy currently employed for the Dworshak Dam. The Federal regulation at 40 CFR 122.44 requires that NPDES permits implement the water quality standards adopted by the State. Changes to the standards must be adopted through the process outlined in the State standards and approved by EPA before they can be used to develop permit limits. Additionally, changes to standards are subject to consultation under Section 7 of the Endangered Species Act.

5. *Comment:*

Several commentors stated that natural temperatures in the Snake and Clearwater Rivers exceed the criteria. In the summer months the River leaves the deserts of south Idaho warmer than 68°F (20°C). The Selway River runs through the wilderness area and is totally uninfluenced by man until it flows out near Selway Falls. It also runs warmer than 68°F in low water years during the hot days of the summer. This river is coming out of the high mountains and is as natural as any river in the country. It is unrealistic to expect industry to cool the water to the point that it will meet the criteria.

Response:

As stated in the response to Comment #1 of this section, Idaho's water quality standards contain a provision to establish "natural background" as the criterion (IDAPA 58.01.02.200.09) when the natural background conditions violate the otherwise applicable numeric criteria. Section 401.a.v of the water quality standards further clarifies how the natural background criterion is to be implemented for temperature. Evaluation of the existing water temperature against the natural background temperature requires knowledge or estimates of natural water temperature without human impacts.

As stated in the response to Comment #1 of this section, EPA has used several methods (Cope, 2004, 2005) to show that water temperatures in an undeveloped or natural Snake

River would exceed Idaho's daily average temperature criterion of 19°C more than 99% of the time in July and August, and more than 26% of the time in September. Therefore, EPA has developed effluent limitations for the Potlatch Mill discharge in these months based on the natural background criterion. For the rest of the year, the natural temperature is below the 19°C numeric criterion for cold water biota, so the numeric criterion applies.

6. Comment:

Several commentors were concerned that the temperature criteria used to develop the permit limits were not protective of salmonids.

Response:

EPA has consulted with NOAA Fisheries on the protection of salmonids with respect to the temperature of the Potlatch discharge. NOAA Fisheries determined in its biological opinion submitted on April 2, 2004 that a discharge in compliance with the effluent limits in the final permit is likely to adversely affect threatened and endangered salmonids in the receiving waters, but that those adverse effects would be minimal and will be mitigated by the conservation measures that Potlatch is to implement. EPA has published guidance (USEPA, 2003a) for criteria and mixing zone sizing that are protective of salmonids. As stated in the response to Comment #1 of this section, EPA has used the thermal plume recommendations from the Temperature Guidance (as required by Idaho's Section 401 certification of this permit) and the Idaho mixing zone policy to ensure that a discharge in compliance with the effluent limits will not cause lethality, thermal shock, or migration blockage for salmonids.

EPA cannot change the state's water quality criteria through the issuance of a permit; such a change to the standards must be conducted through EPA's approval of the state's water quality standards and is subject to consultation under Section 7 of the Endangered Species Act.

7. Comment

The Idaho DEQ expressed the following concerns with the 1999 draft summer temperature effluent limitations. These temperature limitations are based upon Idaho and Washington criteria. DEQ believes that Idaho's temperature criteria set forth in the Water Quality Standards does not take into account the biological and physical diversity that exists in Idaho or natural climatic conditions, and as a result, the criteria may not accurately reflect conditions that fully support designated and existing uses.

In the 1998 Idaho DEQ document entitled "The Dilemma of Applying Uniform Temperature Criteria in a Diverse Environment: An Issue Analysis" there are numerous examples of Idaho watersheds where water quality monitoring indicates water temperature criteria in the standards are exceeded, yet corresponding data indicate the presence of viable, self-sustaining assemblages of cold water aquatic life. One of the conclusions of this report is current water temperature criteria for Idaho does not appear to be working well since they do not comport with biological reality in many instances.

This same temperature criteria dilemma may or may not apply to the Snake River at Lewiston, Idaho. A comprehensive assessment of the status of the designated beneficial uses and sources of temperature input in the Clearwater and Snake River arms of Lower Granite Reservoir should be accomplished to ensure application of the state numeric temperature standard is necessary and appropriate.

DEQ is concerned that the temperature criteria reflected as summer effluent limitations in the Potlatch permit may be more stringent than necessary to fully support designated and existing uses.

Response:

The effluent limits in the final permit are not more stringent than necessary to ensure compliance with the temperature water quality standards in Idaho and Washington. EPA cannot change the criteria through the issuance of the permit; such a change to the standards must be conducted through EPA's approval of the state's water quality standards and is subject to consultation under Section 7 of the Endangered Species Act.

As discussed in response to Comment #1 of this section, EPA has re-assessed the summer temperature effluent limitations (USEPA, 2005) by evaluating whether or not the receiving water body had the assimilative capacity to accept the thermal loading from this discharge, in light of the recently-approved natural background provisions of the Idaho water quality standards. CORMIX mixing zone modeling has shown that, with minor summer temperature reductions from the Potlatch discharge, the Snake River does have the assimilative capacity to accept the heat load from Potlatch's discharge. The final summer effluent limits of 32°C in July and 31°C in August and September are consistent with EPA's recommendations for minimizing the impacts of thermal plumes on salmonids, and with IDEQ's water quality standards (including the natural background provisions), mixing zone policy and guidance. Further, Potlatch's discharge will not cause or contribute to an exceedance of the Washington water quality standard at the state border with Washington.

8. *Comment:*

Several commentors cited Section 401 of *Idaho's Water Quality Standards and Wastewater Treatment Requirements* (IDAPA 58.01.02.401) to support the contention that a mixing zone is appropriate for temperature for Potlatch's discharge. The regulation states that the level of treatment necessary is that needed to achieve the requirements in Sections 200 through 300, unless specific exemptions apply; otherwise the requirements described in Section 401.03.a-c apply. Specifically for temperature, the rule specifies that the discharge must not affect the water outside of the mixing zone so that:

- i. The temperature of the receiving water or of downstream waters will interfere with designated beneficial uses.
- ii. Daily and seasonal temperature cycles characteristic of the water body are not maintained.

iii. If the water is designated cold water biota or salmonid spawning, the induced temperature variation is more than plus one ($+1^{\circ}\text{C}$).

These criteria are specifically structured in a manner that contemplates a mixing zone. Clearly, the Idaho policy and EPA guidance allow DEQ to analyze each specific situation and determine if a mixing zone is applicable based on this evaluation. When doing this evaluation, it is clear that Idaho's rules recognize that accommodations must be made for naturally occurring conditions that raise the temperature of water bodies.

Response:

Section 401 of the Idaho water quality standards is applicable to this discharge, although not in the same way that the commentors suggest. On July 20th, 2004 EPA approved a revision to Idaho's Water Quality Standards, which allows for the consideration of natural background conditions when the natural temperature of a water body is higher than the criteria. The applicable standards appear in sections 200.09 and 401.a.v of the Idaho water quality standards. Section 200.09 states that if the natural conditions in a waterbody are of lower quality than the otherwise applicable numeric criteria, the natural condition becomes the applicable criterion. Section 401.a.v states that if the natural temperature of the waterbody is higher than the numeric water quality criterion, wastewater may not increase the receiving water temperatures by more than 0.3°C , and that Section 401.a.iv (which is item iii of the commenter's list) does not apply.

The natural temperature of the Snake river is consistently above the numeric daily average criterion of 19°C only during the months of July, August and September. As such, the numeric cold water biota criteria in IDAPA 58.01.02.250.02.b apply during the rest of the year. These criteria result in more stringent effluent limits than the wastewater treatment requirements of Section 401.03.a.i through iv referenced by the commenter

9. *Comment:*

Several commentors stated that Idaho's mixing zone policy allows the Department to analyze each specific situation and determine the applicability of a mixing zone based on a scientific appraisal. Thus, Idaho clearly has the authority and the flexibility to grant a mixing zone for temperature for this discharge.

Response:

A mixing zone may not cause or contribute to exceedances of water quality criteria outside of the mixing zone. For most parameters that are mass-based (e.g., metals), it is physically impossible for the discharge to exceed the criteria and not contribute to an exceedance of water quality standards at the edge of the mixing zone in an impaired waterbody. Under these circumstances, the only way to ensure that the discharge is not causing or contributing to an exceedance of the criteria, as required by 40 CFR 122.44(d)(1)(vii)(A), is for the effluent to meet the criteria at the point of discharge.

However, temperature is a thermal loading and as long as an adequate temperature analysis of the biological, chemical and physical affects of the discharge show that the

receiving water body has the assimilative capacity such that a mixing zone does not cause or contribute to exceedances of the water quality standard, a mixing zone may be applied. Idaho's water quality standards allow for a 0.3°C increase above natural conditions when temperature criteria are exceeded due to natural background conditions. EPA and Idaho DEQ have jointly conducted this analysis and agree that it is appropriate to apply a mixing zone for temperature to this discharge.

10. Comment:

Section 58.01.02.080.04 of Idaho's water quality standards recognizes that ambient air temperatures can affect water temperatures. Thus, when the air temperature is considered to be in the top ten percent of the warmest days of the year, water temperatures are not considered a violation if they exceed the standard because the water body is being influenced by naturally "warm" conditions.

Response:

Section 080.04 of the State water quality standards states:

“Exceeding the temperature criteria in Section 250 will not be considered a water quality standard violation when the air temperature exceeds the ninetieth percentile of the seven (7) day average daily maximum air temperature calculated in yearly series over the historic record measured at the nearest weather reporting station.”

This regulation outlines the State's enforcement discretion with respect to exceedances of water quality standards. It says that the State will not consider an exceedance of the temperature criteria to be a violation of its water quality standards under certain circumstances. As such, it is an implementation policy and not a water quality standard under 40 CFR 131.2(i) and does not change the underlying criteria.

Federal regulations at 40 CFR 122.44(d)(1)(i) require that limits be included in permits for pollutants that ". . . are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard . . ." This requirement applies regardless of whether the excursion is considered a violation of State law, subject to enforcement or citizen suit.

11. Comment:

Several commentors expressed concern that EPA had misapplied Washington State standards in developing Potlatch's effluent temperature limit. EPA is either incorrectly applying Washington's standard or creating an altogether new standard. EPA cannot create new standards without complying with the Administrative Procedures Act. EPA's interpretation of the standard should be consistent with Washington's (*Draft Guidance on Application of Temperature Standards in TMDLs*, Butkus and Hicks).

The state of Washington rules for the temperature criteria specifically give allowable increases water temperature (0.3°C) due to point sources and non-point sources.

Additionally, EPA did not consider natural conditions in determining the temperature limit, which Washington's rules specifically allow. The Fact Sheet does not provide adequate support to show that temperature is influenced by other than natural conditions. There is significant scientific debate over the causes of temperature exceedances on the Snake (National Wildlife Federation, et al, v US Army Corps of Engineers - US District Court of Oregon No. 99-442-FR).

The standards must be applied at the Washington border, not at the point of the Potlatch discharge. Moreover, the standard for determining whether Washington's water quality standards have been met at the border is whether Potlatch's discharge results in an actual detectable or measurable change in the temperature at the border. Furthermore, Washington does not apply its water quality standard for temperature at the point of discharge; it is applied with a mixing zone.

In its draft 401 certification, Idaho DEQ commented that the summer temperature effluent limitation in the permit may be made less stringent without violating the requirements of State Water Quality Standards. The most stringent temperature criterion in the Idaho Water Quality Standards is the cold water biota criterion of 22°C. The permit, however, contains an end of pipe limitation based upon the state of Washington's criteria of 20°C. The state of Idaho requested that the temperature effluent limitation in the draft 1999 permit for the period from June 15 to September 30 be modified from an instantaneous maximum temperature limit of 20°C to an instantaneous maximum temperature limit of 22°C, which is consistent with the Idaho standard. In addition, there is no indication that the 22°C temperature effluent limitation will violate the 20°C water temperature standard in the state of Washington.

Response:

In *Arkansas v. Oklahoma* (503 U.S. 91, 1992), the Supreme Court upheld EPA's authority to require that NPDES permits be conditioned to ensure that the permitted discharge will not cause or contribute to an exceedance of the downstream state's water quality standards. In addition, the Court deferred to EPA's determination that downstream State standards would only be violated if the discharge caused an "actually detectable or measurable change in water quality." As discussed in response to comment #1, EPA has re-assessed the summer temperature effluent limitations (USEPA, 2005) by evaluating whether or not the receiving water body had the assimilative capacity to accept the thermal loading from this discharge. The results show that, with minor summer temperature reductions from the Potlatch discharge, the Snake River does have the assimilative capacity to accept the heat load from Potlatch's discharge, and the discharge will not cause or contribute to an exceedance of the water quality standard at the state border with Washington. The final summer effluent limitations are 32°C in July and 31°C in August and September.

12. Comment:

Several commentors stated that more stringent temperature limits are required to meet Idaho's water quality standards (19°C as a daily average).

Response:

As discussed in response to Comment #1 of this section, EPA has re-assessed the summer temperature effluent limitations (USEPA, 2005) by evaluating whether or not the receiving water body had the assimilative capacity to accept the thermal loading from this discharge. The revised analysis also considers the new provision of Idaho's water quality standards which addresses violations of numeric criteria due to natural background conditions. The final summer effluent limitations are 32°C in July and 31°C in August and September. Note that the definition of "daily discharge" in part VI of the permit states that the daily discharge is the average measurement of the pollutant over the day. For temperature, where monitoring is continuous, the "maximum daily limit" is the maximum allowable daily average temperature.

13. Comment:

One commentor stated that Section 58.01.02.070.08 of Idaho's water quality standards allows the Director of DEQ to waive or raise the temperature criteria as they pertain to a specific water body. This provision of the rule recognizes that temperatures in water bodies may naturally vary from the defined standard. This section allows the Director to raise the water temperature criteria for specific water bodies based on a finding that aquatic life will be fully supported at a higher temperature.

Response:

While it is true that the Director of DEQ has the authority to change the temperature criteria for a specific water body, no change has been made or proposed to the temperature criteria for the Snake River in the vicinity of Potlatch's discharge. The State water quality standards outline the process that must be followed for such a change to be adopted.

Under Section 58.01.02.070.08, waiver or modification of the temperature criteria must be based on a finding that the designated aquatic life use is not an existing use or that the use would be fully supported at a higher temperature. Before this determination is made, the public must be provided notice and opportunity to comment and a technical support document supporting the modification must be made available. In addition, such a modification constitutes a change to State standards that must be approved by EPA and is subject to consultation under Section 7 of the Endangered Species Act.

EPA cannot change the standard itself through issuance of an NPDES permit. The Federal regulations at 40 CFR 122.44 require that NPDES permits implement the water quality standards adopted by the State. However, as stated in the response to Comment #1 of this section, EPA has re-assessed the summer temperature effluent limits by evaluating whether or not the receiving water body had the assimilative capacity to accept the thermal loading from this discharge. The final summer effluent limitations are 32°C in July and 31°C in August and September.

14. Comment:

One commentator stated that it seems that outside of the June 15 through September 30 window, the discharge temperature violates Washington's standards.

Response:

As discussed in response to Comment #1 of this section, EPA has re-assessed the summer temperature effluent limitations (USEPA, 2005) by evaluating whether or not the receiving water body had the assimilative capacity to accept the thermal loading from this discharge. The results show that with minor summer temperature reductions, Potlatch's discharge will not cause or contribute to an exceedance of the Washington water quality standard at the state border with Washington. The final summer effluent limitations are 32°C in July and 31°C in August and September.

15. Comment:

EPA received many comments on the effect of Dworshak Dam on the temperature and other parameters in the Snake River. Many commentators stated that consideration of Potlatch's temperature impacts must not include water from Dworshak, since operation of the dam is not under the control of EPA or Potlatch. Since September 1990 attempts have been made to reduce Snake River reservoir temperatures by releasing water from Dworshak Dam. Releases of cold water of up to 14,000 cubic feet per second (cfs) have been made to improve fish migration and survival. Releases of hot water to the same reservoir only make this very limited supply of cold water less effective. Conversely, one commentator stated that the permit should consider the cooling effects of the releases from Dworshak. Finally, one commentator stated that the present temperature at Dworshak is "probably greater than 68°F" and therefore contributes to increased temperature in the Snake River.

Response:

In determining whether the criteria were exceeded downstream from Potlatch's discharge, EPA used the critical flow (i.e., 7Q10) based on the flow record from January 1, 1973 through December 31, 2002 and estimates of the River temperatures at these critical flows using the EPA RBM10 model calibrated with actual Clearwater River and Snake River data.

EPA's analysis of the effects of the heated discharge considers the unique mixing behavior of the Snake and Clearwater Rivers. Information collected by Potlatch (1997 through 2003) and Cook et al. (2003) indicate that the Snake River and the Clearwater River do not mix at the confluence and may take several miles to completely mix. The data indicate that the two rivers are completely mixed by Snake River Mile 131 (Chief Timothy Park, Silcott Island). The two basic modes of mixing include vertical stratification (the situation in which the cooler, denser Clearwater River water flows in the bottom of the river while the warmer, less dense Snake River water flows on top) and horizontal stratification (the rivers do not mix but flow side by side). In its Temperature

Assessment, EPA determined that the horizontally stratified flow regime is the critical condition. In this regime, the effluent is discharged to the portion of the Snake River that contains warm water from the Snake River, so the flow from the Clearwater River was not considered.

16. Comment:

One commentor expressed confusion regarding the origin of the 68°F standard and asked if the standard is being imposed as a result of the lawsuit.

Response:

The 68°F (20°C) criterion can be found in Washington's water quality standards (Chapter 173-201A, Washington Administrative Code). This water quality standard is not applied at the point of discharge in the final permit. Because it is the downstream state's water quality standard, EPA has used a mixing zone model (CORMIX) to determine if the discharge would have the reasonable potential to cause or contribute to an exceedance the Washington standard at the state line. The results of the modeling have shown that a discharge in compliance with the effluent limits in the final permit would not cause or contribute to such an exceedance.

The lawsuit referenced by the commentor is *The Lands Council, et al. v. EPA, et al.* C99-1287C (D.W.WA, 1999). Neither the standard nor the permit limit was proposed as a result of this lawsuit. The lawsuit deals with consultation under Section 7 of the Endangered Species Act for Potlatch's NPDES permit, not with state water quality standards or permit effluent limits.

17. Comment:

Many commentors were concerned about multi-media and economic impacts caused by the requirement for Potlatch to cool its effluent to 68°F. In particular, DEQ commented:

“Assuming that achieving this effluent limitation will require cooling or refrigeration treatment technology, it is imperative for EPA to account for any increased environmental risk that this draft NPDES permit might cause to air, water, or land resources. Will implementation of this draft NPDES permit increase pollutant concentrations during the cooling process? Will the draft permit require additional environmental permitting or generate hazardous materials which will require treatment, storage or disposal? The EPA needs to assure the state of Idaho and the Potlatch Corporation that this draft permit accounts for all potential multimedia effects and addresses pollutant source control in a holistic manner. Transferring a pollutant or environmental risk from one medium to another without adequate analysis and accountability is unacceptable.”

Potlatch commented that cooling its effluent would require some type of cooling tower followed by a chiller (refrigeration facility). Such a treatment process creates additional environmental problems, such as the hazards of handling ammonia, increased energy consumption (at least 13 megawatts), air pollution caused by generation of electricity

Other commentors referred to an increased energy consumption of 10 megawatts, a cost of \$25 million, and air impacts caused by fog from the cooling towers. EPA should quantify the benefit before imposing the cost.

Response:

The commentors are referencing the 20°C (68°F) summer effluent limit proposed in the 1999 draft permit. As discussed in the response to Comment #1 of this section, EPA has since re-evaluated the temperature limits (USEPA 2005) and found that the 20°C limit was not appropriate in light of EPA's 2005 Temperature Assessment and Idaho's revised water quality standards, which allow for consideration of natural background conditions. The final temperature effluent limits are 33°C from October through June, 32°C in July, and 31°C in August and September.

Section 301(b)(1)(c) of the Clean Water Act and 40 CFR 122.44(d) require that NPDES permits include limits that result in compliance with applicable water quality standards. The Act and the regulations do not allow cost or multi-media impacts to be considered in individual permit actions, except through variances or waivers under state water quality standards. For example, paragraphs 58.01.02.260.01.b.iii and vi of Idaho's water quality standards authorize variances based on multi-media impacts and cost, respectively.

Paragraph 58.01.02.260.01.c. of Idaho's standards requires dischargers who are requesting variances to submit documentation to DEQ indicating that treatment more advanced than that required to meet technology-based effluent limitations and alternative effluent control strategies have been evaluated. May 11, 2001, Potlatch submitted a request for a variance but did not include any documentation showing that engineering studies have been conducted to investigate alternative control strategies or substantiate the figures for the technologies that have been proposed (chillers and cooling towers). The State must approve a variance request and submit it to EPA for approval. As part of its approval, the State must evaluate the cost and/or the multi-media impacts. On August 29, 2001, the State denied the variance request submitted by the Potlatch Corporation. Because the final temperature effluent limits are only slightly more stringent than the current limits, EPA does not anticipate that achieving compliance with these limits will result in significant multimedia effects or unreasonable cost to the permittee. The final permit includes a two-year compliance schedule for the final summer temperature limits.

18. Comment:

Several commentors were concerned that Potlatch's discharge could create a "thermal block" in the River. EPA must determine whether the heated mixing zone creates a thermal barrier that stalls the upstream migration of salmonids, or causes other morbidities or increased risk to salmonids. The Potlatch discharge into the slackwater, by its nature, creates a very broad heated mixing zone: the ideal conditions for such a thermal barrier. If adults or smolts were able to seek colder water at depth, it would be possible to avoid the migration barriers. However, there is very little temperature stratification in the reservoirs that would make this feasible.

Conversely, other commentors cited modeling conducted by Potlatch that shows that the discharge presents no thermal "block" in the river. Field data supports this conclusion. There is no large area of the river that has significantly elevated temperatures. Graphical representations of the plume make it very clear that the plume does not form any type of thermal barrier that might impede fish movement. Elevated temperatures exist for less than 50 feet from the diffuser and are only on the bottom of the river for the width of the diffuser. The discharge does not occupy the entire width and cross section of the River.

Response:

EPA has seen no evidence of a "thermal block" created by Potlatch's discharge. On the contrary, the modeling cited in the comment shows that the discharge occupies less than 25 percent of the width of the River at the edge of the mixing zone. This is confirmed by more recent modeling conducted by the EPA (USEPA, 2005), as discussed in the response to Comment #1 of this section.

The Snake River is fairly well mixed in the few miles downstream from the confluence of the Clearwater and Snake Rivers. However, vertical temperature stratification has been observed at the confluence of the Snake and Clearwater rivers (i.e. at the point of the Potlatch discharge) at times when the temperature of the Clearwater river is much lower than that of the Snake. In addition, EPA does not agree with the characterization of the discharge location as slack water. Data collected by Potlatch during the summers of 1997 through 1999 show a minimum current speed of 0.51 feet per second immediately downstream from the discharge.

19. Comment:

Several commentors expressed concern regarding the effects of temperature on salmonids in the Snake and Clearwater Rivers. If the 68°F summer temperature standard is not adequate to protect fish, then measures must be taken to further cool the outflow. If Potlatch can not produce information in a timely manner demonstrating its outflow does not harm fish, it should be required to cool the water before exploring its other options.

Temperatures above 20°C are lethal to salmonids residing in such high temperatures without refugia. No studies of the direct effects of the discharge with its 1/4 mile long mixing zone at the mill's diffuser in the confluence of the Snake and Clearwater Rivers upon resident or migratory aquatic species were cited or referenced in the permit and accompanying Fact Sheet.

Conversely, Potlatch's comments cited a study done in 1969-1971 by Falter to assess the relationship of the mill's discharge to adult steelhead trout behavior in the Snake River near Lewiston. Potlatch stated that the study concluded the following:

- They were unable to relate steelhead behavior to pollution inputs.
- Above confluence steelhead behavior is not significantly different than below confluence behavior.
- One of the favored rest areas for migrating fish was near an area that had the highest concentrations of Kraft effluent (as measured by the Pearl-Benson Indexes).

- Kraft mill effluent diluted rapidly to a level where resulting Snake River temperatures and water quality showed no apparent blockage or gross atypical migrational behavior.
- Temperature increases from Kraft effluent entering the river at temperatures above 30°C were usually undetectable.

Response:

As discussed previously, EPA does not have the authority under the Clean Water Act to revise State water quality standards in the context of an individual permit action. The proper mechanism for addressing the adequacy of water quality standards is through the State standards adoption process.

The Endangered Species Act requires the Agency to ensure that the permit does not jeopardize the continued existence of listed species. EPA has consulted with USFWS and NOAA Fisheries on the effects of Potlatch's discharge on bull trout, Snake River sockeye salmon, Snake River fall and spring/summer Chinook salmon, and Snake River steelhead. In the 2003 biological evaluation EPA prepared for NOAA Fisheries and USFWS for consultation on these species, EPA did discuss all available studies pertinent to this discharge and fully evaluated the temperature effects of the discharge from outfall 001. EPA determined that a discharge in compliance with the temperature limits in the permit are likely to adversely affect Snake River sockeye salmon, Snake River summer Chinook salmon, Snake River fall Chinook salmon, and Snake River steelhead. In their Biological Opinions, NOAA Fisheries and USFWS have determined that the discharge, even during the period of the compliance schedule, will not jeopardize the continued existence of the species.

20. *Comment:*

One commentator noted that during the 1999-2000 fall/spring seasons, steelhead numbers in the Clearwater were extremely low even though a "near normal" run came over Lower Granite and into the Snake, Salmon, and Grand Ronde Rivers. The commentator's data come from "noting fishing success/failures during the entire season on the Clearwater River." The commentator has fished for Steelhead on the Clearwater River in Idaho for 15 years and kept daily logs of conditions and activity. Additionally, the commentator noted that over the years, the Steelhead runs arrive in Idaho a little later and the water temperatures are a little higher virtually every year.

Response:

While daily logs kept by one individual may be accurate, this type of anecdotal information is not conclusive evidence that steelhead runs are lower than usual. The commentator provides no information regarding where on the Clearwater River the observations were made, how many observations were made, or other information that could be used to interpret the observations. In addition, even if the observations are accurate, they provide no information regarding the cause of the low returns of steelhead,

or actions that may be taken with regard to the Potlatch permit to increase steelhead returns.

21. Comment:

One commentor stated that 92°F is an optimal temperature for cold water fish muscle speed to enable feeding and avoidance of predators.

Response:

The commentor provided no data or studies to support this assertion. Furthermore, EPA is aware of no such studies. Even if this was correct, EPA must establish effluent limits in NPDES permits which ensure compliance with approved water quality standards.

22. Comment:

One commentor asked why June 15 through September 30 was selected as the period during which the summer temperature limit is in effect and if EPA had evaluated the presence of anadromous fish in the river at other times. Does EPA have fish ladder counts at Lower Granite showing peak periods of upstream migration?

Response:

As discussed in the 1999 Fact Sheet, EPA based the June 15 through September 30 temperature effluent limit on data that shows the Snake River above the discharge frequently exceeds the temperature criteria whereas other times of the year the Snake River is below the temperature criteria.

The Clean Water Act requires that NPDES permits ensure compliance with the State water quality standards. Idaho's temperature criteria for the protection of cold water biota apply throughout the year, regardless of the presence or absence of salmonids. Therefore, the presence of anadromous fish was not specifically evaluated in developing the limits in the draft permit.

As part of the consultation under Section 7 of the Endangered Species Act, the migration of anadromous fish was considered when evaluating potential impacts of the discharge on listed species. EPA used fish ladder count data at Lower Granite Reservoir from the Columbia River Data Access in Real Time database (DART), as well as other data identified in Chapter V of the biological evaluation for this discharge to determine salmonid presence and abundance.

23. Comment:

Several commentors questioned the data that were used to determine that the Snake River upstream from the discharge exceeded the criteria. One commentor asked where exactly the river temperatures were taken, at what depth, what time of day and for how long. Another commentor noted that the data failed to account for the removal of 40 million gallons per day of cold, clean water from the Clearwater River.

In its draft certification under Section 401 of the Clean Water Act, the State requested a thorough and in-depth analysis of the temperature data, monitoring locations, quality assurance, application of Idaho's temperature criteria (e.g., 22°C), etc. EPA findings (p. 8 Fact Sheet) also indicate that historical water temperature data show that it is likely that the temperature exceeded the criteria during short periods in the summer prior to any human-caused influences. What is the basis for this statement and how do these naturally occurring exceedances factor into these proposed temperature effluent limitations?

Response:

In establishing the temperature limits in the draft permit, EPA relied on two different sources of data. One source is data that was collected between 1975 and 1995 by the US Geological Survey (USGS) at two of its stream gauging stations: the Spalding on the Clearwater River (#13342500) and the Anatone on the Snake River (#13334300). These data were retrieved from the USGS website and do not have any quality assurance (QA), or depth information associated with them. Data from these gages were combined to provide an estimate of temperatures at the confluence of the two rivers. Where the data were incomplete, EPA used modeling to supplement the record.

In addition to USGS data, EPA used data collected by Potlatch during the summers of 1997 through 2003. These data were collected at various times during the day at several depths across specific cross sections of the river. The depths and cross-sectional data were averaged to give one data point per station per sampling event. The 1992 permit required that Potlatch use appropriate QA in collecting and analyzing the data. A thorough and in-depth analysis of this data is discussed in each annual monitoring report submitted by Potlatch to EPA. The data shows that from June through September, the Snake River exceeds the numeric criteria for temperature.

As stated in the response to Comment #1 of this section, Idaho's water quality standards address the situation in which numeric water quality criteria are exceeded due to natural background conditions (IDAPA 58.01.02.200.09). When this is the case, the natural background conditions become the criteria. Evaluation of existing water temperature against the natural background standard requires knowledge or estimates of natural water temperature before human impacts. Both temperature observations and the computer modeled temperature simulations provide estimates of water temperature. Since there are information gaps and uncertainties associated with both the observations and the simulations, both are used to gain an understanding of the free flowing and impounded temperature regimes and the relative importance of dams, point sources and tributaries in altering the natural regime of the rivers. EPA has used several methods (Cope, 2004, 2005) to show that water temperatures in an undeveloped or natural Snake River would exceed Idaho's daily average temperature criterion of 19°C more than 99% of the time in July and August, and more than 26% of the time in September.

As discussed in response to Comment #1 of this section, EPA has re-assessed the summer temperature effluent limitations (USEPA, 2005) by evaluating whether or not the receiving water body had the assimilative capacity to accept the thermal loading from this discharge. The results show that with minor summer temperature reductions, Potlatch's

discharge will not cause or contribute to an exceedance of Idaho's water quality standards at the edge of a small mixing zone. The discharge will not cause or contribute to violations of the Washington water quality standard at the state border with Washington. The final summer effluent limitations are 32°C in July and 31°C in August and September.

24. Comment:

One commentor had several questions regarding the values that were used as input to the mixing zone model. The commentor asked what effluent volume was used in the model, was that volume measured or estimated, and whether the permit includes a flow limit. The commentor also asked what the maximum effluent temperature is, what depth the discharge is, whether there is a diffuser, what shape the plume is, and what are upstream and downstream temperatures at average and minimum flow?

Response:

An effluent flow of 40 mgd (62 cubic feet per second) was used in the model to determine the appropriate effluent limitations. EPA had Potlatch conduct a study of their effluent flow capacities in August 2003. The results show that the maximum flow that this system can deliver is 44.6 mgd, although in October 2002 Potlatch ran the system at maximum capacity and only achieved a flow rate of 39.58 mgd. Therefore, for the final permit EPA has rounded this figure and used a flow rate of 40 mgd to determine effluent limitations. No flow limit was incorporated into the draft permit; however, the permit contains loading limits (in lb/day or mg/day) that are calculated based on the maximum effluent flow used to model the dilution.

The maximum effluent temperature reported by Potlatch is 35.2°C (95.4°F). Potlatch discharges at a depth of 9.14 meters below the water surface through a diffuser with 72 active ports. The upstream Snake River temperatures vary throughout the year, so a different upstream temperature was used in the model for each month. The downstream Snake River temperatures at average and minimum flows are either the same as the upstream temperatures or slightly cooler due to Dworshak Dam releases to the Clearwater River.

As the effluent exits the diffuser, the effluent plume resembles 72 small tornadoes with a convex curve (see Figure 1). As the plumes rise and spread, the individual plumes form a plane at a distance of approximately 7 feet downstream of the diffuser that continues to rise to the surface of the water body. The plume reaches the surface of the water body at approximately 34 meters downstream of the diffuser. At this point, the plume is about 3.5 meters thick and 80 meters wide (see Figure 2). The plume will continue to spread (see Figure 3) until it covers the entire width of the Snake River channel. As the cooler water from the Clearwater River also mixes with the Snake River, the plume will be further cooled until an equilibrium temperature is achieved.

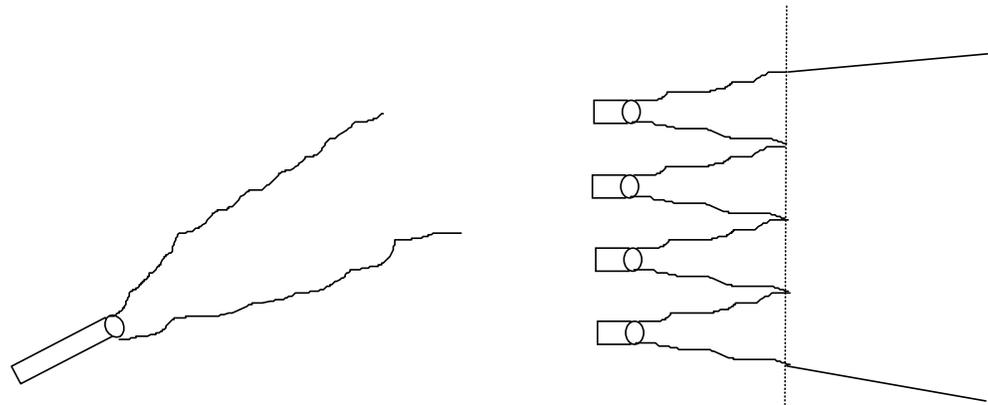


Figure 1. Discharge Plume from Individual Ports

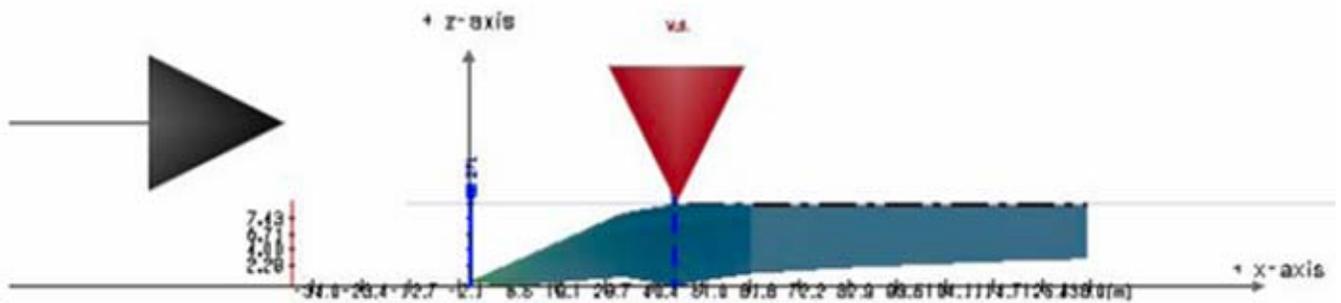


Figure 2. Potlatch Discharge Plume (side view)

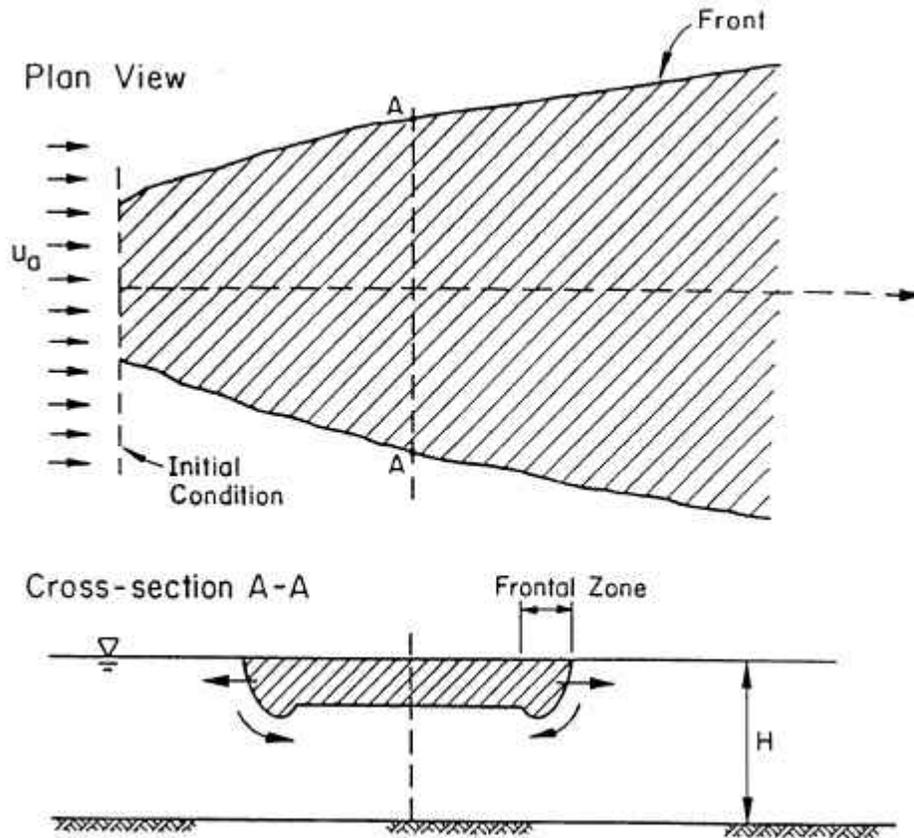


Figure 3. Plume Buoyant Spreading

25. Comment:

In its draft certification under Section 401 of the Clean Water Act, DEQ indicated its willingness to consider an application for a variance from the Water Quality Standards pursuant to IDAPA 58.01.02.260, the development of site-specific criteria pursuant to IDAPA 58.01.02.275, or pollutant trading pursuant to IDAPA 58.01.02.054.06. The State is aware that the Potlatch Corporation will likely submit an application to the state of Idaho for a variance to the cold water biota temperature criterion in the Idaho Water Quality Standards. If a variance application is approved by the state of Idaho, EPA and others, it is unclear how the permit would be reopened and modified to reflect the variance. How would a potential variance from water temperature standard affect this NPDES permit and in particular, how would it affect a compliance schedule? Would the anti-backsliding provision apply to a variance which was approved after the NPDES permit was finalized? The information provided on page C-19 of the 1999 Fact Sheet does not address how a successful variance will affect a final permit.

Response:

On May 11, 2001, Potlatch submitted a request for a variance. On August 29, 2001, the State denied the variance request submitted by the Potlatch Corporation.

If Potlatch were to request a variance and it was adopted by the State and approved by EPA (subsequent to consultation under the ESA) after the effective date of the permit, it could be used as the basis for a permit modification request by Potlatch. At the time the modification was requested, EPA could reopen the permit to incorporate limits based upon the variance. This requires a public comment period prior to including the variance in the permit.

If Potlatch did not need a compliance schedule to achieve compliance with a modified limit based on the variance, the current compliance schedule in the permit would be removed and the modified limit would be effective upon the effective date of the modification. If, however, Potlatch needed time to comply with the modified limit, the State could authorize a schedule as part of its 401 certification. Such a schedule could only extend until the expiration date of the permit.

If the permit were modified prior to the end of the five-year compliance schedule, anti-backsliding would not apply because the final effluent limit was never imposed on the facility. However, if a variance is not in effect prior to the expiration of the existing compliance schedule, it would be more difficult to establish a less stringent permit limit. For the permit to contain a less stringent limit, the wasteload allocation would have to meet one of the exceptions to the anti-backsliding requirements in Section 303(d)(4) of the Act.

Any modification to the permit would have to be evaluated to ensure that it did not result in an exceedance of Washington's water quality standards at the Washington/Idaho border. Such a modification would also have to be consulted on under the ESA, although if the variance were already consulted on, that process should be significantly streamlined.

26. Comment:

Several commentors cited variance and/or site-specific criteria provisions in Idaho's water quality standards. Specifically, Section 58.01.02.275 provides procedures for establishing site-specific water quality criteria (e.g., when natural adaptive processes have enabled a viable, balanced resident aquatic community to exist in waters where natural background levels of a pollutant exceed the water quality criterion). Site-specific criteria may also provide a basis to modify the temperature limits in the permit. Additionally, Section 58.01.02.260 provides for variances from water quality standards. There are various reasons why a variance could be granted, including:

- i. Naturally occurring pollutant concentrations prevent the attainment of the standard; or
- ii. Natural, ephemeral, intermittent, or low flow conditions or water levels prevent the attainment of the standard; or

iii. Physical conditions related to the natural features of the water body, unrelated to water quality, preclude attainment of the standard.

Conversely, several commentors requested that EPA reject any variance request because EPA will not be able to ensure compliance with Washington's water quality standards if a variance from Idaho's standards is granted. In addition, given the sensitivity of threatened and endangered salmon and steelhead to temperature, granting a variance would be inconsistent with both EPA's duties to preserve and protect treaty-reserved resources and the ESA.

Response:

EPA agrees that the State has the authority to adopt site-specific criteria and variances. Section 58.01.02.275 outlines the procedure that must be followed to adopt a site-specific criterion. Like a variance, adoption of a site-specific criterion is a change to the State water quality standards, which must be approved by EPA and consulted on under the ESA. If the State adopts and EPA approves a site-specific criterion or variance for temperature, Potlatch may use that as a basis to request a permit modification. The process for modification based on a site-specific criterion would be the same as that for modification based on a variance. Any issue brought up during the public comment period regarding incorporation of a site-specific criterion or variance into a permit would be addressed at the time such a permit modification was issued.

EPA does not agree that downstream State standards must be considered when approving a variance. A variance, in and of itself, does not have any impact on the downstream State because it does not authorize a discharge. It is when the variance is incorporated into a permit that downstream State standards must be considered. EPA cannot speculate whether such a variance would be inconsistent with the Endangered Species Act or EPA's trust responsibilities to consult with federally recognized tribes. If Potlatch submits a variance request and the variance is adopted by the State and submitted to EPA for approval or disapproval, EPA will address ESA concerns in both acting on the variance and, if the variance is approved, issuing a permit that implements the variance. EPA will also consult with any tribe that requests consultation with EPA over this action.

27. Comment:

Potlatch commented that the special nature of thermal discharges is recognized by the Clean Water Act (CWA). Section 316(a) of the CWA gives the Administrator of EPA the authority to impose alternative effluent limitations for the control of the thermal component of any discharge.

Thermal discharge effluent limitations or standards established in permits may be less stringent than those required by applicable standards and limitations if the discharger demonstrates to the satisfaction of the director that such effluent limitations are more stringent than necessary to assure the protection and propagation of a balanced,

indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge is made.

Response:

EPA agrees that dischargers may request variances for thermal discharges under Section 316(a) of the CWA. As noted in Potlatch's comment, however, the discharger must demonstrate that the limits are more stringent than necessary to assure the protection and propagation of a balanced, indigenous population. Potlatch has submitted no request for a 316(a) variance, nor has it requested alternate temperature limits or made the showing that those limits would support a balanced, indigenous population. If Potlatch were to make such request, EPA would evaluate it and, if appropriate, modify the permit to incorporate the waiver. As with other permit modifications, consultation under Section 7 of the ESA would be required.

28. *Comment:*

Several commentors stated that a variance from Idaho's water quality standards would have no impact on EPA's duty to ensure compliance with Washington's water quality standards. Therefore, a variance is not approvable under the CWA or the ESA.

Response:

As discussed in response to comment #26 of this section, approval of a variance does not require consideration of downstream State standards. That consideration would be addressed during modification or reissuance of the permit to implement the variance.

With regard to consistency with the ESA, if Potlatch requests a variance and the State approves it, EPA must consult with NOAA Fisheries and USFWS prior to its approval of the variance. This ensures that approval of the variance is not inconsistent with the ESA.

29. *Comment:*

As part of its draft certification under Section 401 of the CWA, the state of Idaho commented that, given the state's concerns, the five-year compliance schedule authorized by this certification for the temperature limit is appropriate.

Conversely, several commentors disagreed with the allowance of a five-year compliance schedule and suggested that one or two years was an adequate amount of time for Potlatch to come into compliance with the temperature limit in its permit.

Response:

The Clean Water Act allows states to authorize compliance schedules as part of their 401 certifications when allowed under state law. The appropriate forum to challenge authorization or duration of a compliance schedule is through the State administrative process.

30. Comment:

Many commentors stated that EPA and/or the State should adopt a basin-wide approach to controlling temperature in the Snake River. A TMDL was suggested as a mechanism to address other point sources that contribute heat to the Snake River and the cooling effects of releases from Dworshak Dam. One commentor suggested that a better approach would be to work toward lowering the total flow being discharged and using Potlatch money for directly beneficial project such as streamside habitat restoration.

One commentor stated that issuing the permit contravenes emerging policies of the state of Washington for its TMDL program. The commentor cited HB 2171, a bill before the Washington legislature that advocates the use of “good science” in establishing TMDLs and “flexibility in achieving water quality standards”.

In its draft 401 certification, Idaho DEQ noted that the Snake River at Lewiston, Idaho is listed as water quality limited for water temperature by the state of Washington, Department of Ecology (DOE). A total daily maximum load (TMDL) is scheduled to be prepared by the DOE in the near future. Since the submittal of this draft 401 certification, the state of Idaho has listed this reach of the Snake River as water quality limited. Idaho DEQ feels that it is very important that TMDLs be completed prior to issuing stringent limitations on point sources such as Potlatch’s discharge.

For the past three years, Idaho has been preparing TMDLs on a court-mandated schedule. An NPDES permit issued after the completion of a TMDL allows for a waste load allocation which can be accounted for within the context of all nonpoint sources and point source contributions to the river segment in question. The reissuance of any NPDES permit in the state of Idaho, especially a permit of this significance and magnitude, needs to be properly planned and sequenced with a pollutant-specific TMDL.

The Idaho Water Quality Standards (IDAPA 58.01.02.054.06) allows for consideration of a pollutant trading process to meet the goal of restoring water quality limited waterbodies to meet water quality standards. Idaho DEQ, EPA and others are applying pollutant trading to resolving water quality problems in southern Idaho and it would be important to consider this option as a TMDL and the NPDES permit processes move forward.

In addition, implementation of stringent effluent limitations for NPDES permits in Idaho based upon existing ambient water quality problems should be properly sequenced and based upon a pollutant-specific TMDL analysis. See Idaho Water Quality Standards, IDAPA 58.01.02.054. To date, a TMDL for the Snake River at Lewiston, Idaho has been prepared for water temperature which provides allocations to both point and nonpoint sources of thermal pollution. Idaho DEQ is concerned the summer temperature limits in the 1999 draft Potlatch permit may be more stringent than necessary.

Response:

EPA agrees that a TMDL is an important mechanism to address temperature concerns. EPA is working with the States, Tribes, and other federal agencies to develop a temperature TMDL for the Columbia River basin. However, EPA does not agree that it

is appropriate to wait until a TMDL has been completed before issuing Potlatch's permit, especially in light of the fact that the proposed TMDL only accounts for far-field effects of the discharge and does not take into account near-field effects. If any pollutant trading were to occur under the TMDL, the final discharge limit based on the trade must not affect the Washington water quality standards at the border, nor could it cause near-field effects which would interfere with the beneficial uses of the Snake River.

Because HB 2171 did not pass, it does not provide a clear statement that the state of Washington intends to follow the directions in the proposal.

31. Comment:

One commentator noted that EPA should not put the temperature limit in the permit until it has used available data to develop a coordinated regional approach (ecoregion approach) to temperature standards.

Response:

To address the issue of temperature in a more holistic manner, EPA, the states of Idaho, Washington, and Oregon, several Tribes, USFWS and NOAA Fisheries have evaluated temperature to determine appropriate criteria for the region, including the states of Idaho, Oregon and Washington. EPA has published guidance (USEPA, 2003a) for criteria that are protective of salmonids. The state of Idaho has not adopted these criteria nor has it proposed to adopt these criteria. EPA cannot change the criteria through the issuance of the permit; such a change to the standards must be conducted through EPA's approval of the state's water quality standards and is subject to consultation under Section 7 of the Endangered Species Act. EPA does not believe that it is appropriate to delay issuance of the permit until this process is completed.

32. Comment:

One commentator asked why Idaho's water has more impact on EPA's decision than water that runs the length of the borders of eastern Oregon or the Columbia River system.

Response:

In developing the permit, EPA focused on Idaho's waters because the discharge is to waters of the state of Idaho. Therefore, Idaho's water quality standards must be met in the near field (at the point of discharge or at the edge of a mixing zone), and the State of Idaho has the authority to issue a CWA Section 401 certification, in which the State can authorize mixing zones and compliance schedules. However, EPA must also consider Washington waters downstream of the discharge to the extent necessary to ensure that the discharge does not result in an exceedance of Washington's standards.

The reach of the Snake River which runs the length of the border of eastern Oregon is upstream of the discharge and cannot be affected by it. The Columbia river confluence is over 130 river miles downstream of the discharge.

33. Comment:

One commentator compared the temperature limits with various other provisions in the draft permit. All Best Management Practices (BMPs) must be developed "according to best engineering practices and must be implemented in a manner that takes into account the specific circumstances at Potlatch mill." We could paraphrase this to put more burden on the EPA, saying, "All EPA permits must be developed according to best engineering practices and must be implemented in a manner that takes into account the specific circumstances in the Clearwater and Snake Rivers." The commentator stated that there was no evidence to prove the sixty-eight degree effluent takes into account circumstances of the Clearwater and Snake Rivers.

Section six, item twenty, states, "Method Detection Limit (MDL) means the minimum concentration of an analyte that can be measured and reported with ninety-nine percent confidence," and then it goes on. The need for a sixty-eight degree Fahrenheit limit is not supported with a ninety-eight (sic) percent confidence. Third, item twenty-three in section six, states "The NOEC is the highest tested concentration of effluent to which organisms are exposed that causes no observable adverse effect." There's no scientific evidence showing that the existing effluent causes observable adverse effects to the fish. Fourth, in section five, item D, "When the permittee becomes aware that they fail to submit any relevant facts in a permit application, it shall promptly submit the omitted facts or corrected information." The facts supporting adverse effects of existing effluent water from Potlatch, specifically the temperatures, have been omitted.

Response:

The points made by these comments are that EPA must: 1) consider site-specific conditions when establishing permit limits, 2) consider technology when establishing permit limits, and 3) be able to show with a high degree of certainty that a pollutant is causing adverse effects before it can establish limits on that pollutant.

Permits must include limits that ensure compliance with State water quality standards. EPA is not authorized to change state water quality standards by issuance of an NPDES permit. However, the permit does take into account site-specific conditions in considering background concentrations of pollutants when developing limits. Furthermore, the CWA does not allow consideration of technology when establishing water quality-based limits. Such considerations can be addressed through the variance process discussed in response to Comment #25 of this section.

With regard to the contention that an effect must be proven before limits can be established, the NPDES program is a preventive program. It is designed to prevent effects. Waiting until an effect occurred would mean that the receiving water would have to be damaged before EPA could take action.

34. Comment:

One commentator stated that they supported EPA's recognition that Potlatch's thermal discharge is not adversely affecting water quality in Idaho or downstream. EPA's recent Regional Temperature Guidance further supports the finding that Potlatch's discharge is not adversely affecting endangered salmonids. However, they believe that the additional temperature limits proposed for July, August and September are not justified. If EPA had applied standard permitting methodologies and worst case conditions (7Q10 flows for those months), the Agency would have concluded no additional temperature limits for the summer months are necessary.

Response:

EPA did use the 7Q10 flows for the months of July, August, and September and determined that more stringent effluent limitations than those in the 1992 permit were necessary for these months. Please see the response to Comment #1 of this section for a more complete description of the analysis of Potlatch's heated discharge.

35. Comment:

One commentator stated that the analysis of temperature is based on several flawed assumptions. One is that the Idaho natural background temperature standard will be approved and another is that the natural background temperature regime of the Snake River can be determined from existing data.

With regard to the first flaw, the commentator states that EPA cannot assume that they will approve Idaho's proposed natural background standard prior to issuance of this permit. Pursuant to ESA Section 7(d), 16 U.S.C. Section 1536(d), EPA cannot approve and implement Idaho's revised water quality standard without completing Section 7 consultation with NOAA Fisheries and USFWS. EPA cannot lawfully presume that such consultation will result in no changes to the proposed standard. In sum, EPA's approval of Idaho's new water quality standard is by no means certain. EPA is required to use existing Idaho water quality standards in the draft Potlatch NPDES Permit.

The commentator further states that even if the proposed temperature standard can be used, EPA cannot adequately determine the natural temperature regime of the Snake River using existing data, specifically if and when the river exceeded 19°C before human influence. The commentator concluded that actual river conditions and their relation to final water quality standards must govern EPA's analysis and EPA must strictly apply Idaho's current temperature standard as an end-of-pipe limit for those parts of the year when the cumulative heating of the Snake River causes the receiving water to exceed 19°C.

Response:

On July 20, 2004, EPA approved Idaho's natural background temperature criteria and they became effective for Clean Water Act purposes on that date. The approval is subject

to ESA consultation with NOAA Fisheries and USFWS. However, EPA has consulted with both Services with respect to the temperature limits that were derived from this criterion. EPA has included all terms and conditions from the Services' incidental take statements relating to temperature into the final permit. Therefore, EPA may apply the natural background temperature criteria to the Potlatch Mill discharge. If ESA consultation on the natural conditions provision in the Idaho Water Quality Standards results in a change to the standards, EPA has the authority to modify the permit accordingly.

Evaluation of existing water temperature against the natural background standard requires knowledge or estimates of natural water temperature without human impacts. Both temperature observations and the temperature simulations provide estimates of water temperature. Since there are information gaps and uncertainties associated with both the observations and the simulations, both are used to gain an understanding of the free flowing and impounded temperature regimes and the relative importance of dams, point sources and tributaries in altering the natural regime of the rivers. EPA has estimated the natural conditions of the Snake River near Lewiston using three different analyses. The first is a screening level analysis of the entire Snake River from the headwaters to Lewiston, the second uses measured temperatures above and below the Brownlee Dam with adjustments made for the Salmon River that was used in the Hells Canyon TMDL, and the third is the Hells Canyon RBM10 model. EPA has used several methods (Cope, 2004, 2005) to show that water temperatures in an undeveloped or natural Snake River would exceed Idaho's daily average temperature criterion of 19°C more than 99% of the time in July and August, and more than 26% of the time in September. In other months, the natural temperatures are consistently below the 19°C criterion.

36. Comment:

One commentator stated that it has been clearly demonstrated that the Clearwater River flow is subducted beneath the Snake River flow during times when the two rivers are thermally dissimilar. When the two flows are thermally similar, the two rivers flow in a horizontal stratification. EPA has failed to apply these conditions to the interim permit limit for net heat and must remove the Clearwater River flow from the heat discharge rate calculation in Table 2, Footnote 4 of the proposed permit.

Response:

The state of Idaho allows compliance schedules for point source discharges which allow a discharger to phase-in, over time, compliance with water quality-based effluent limitations when new limitations are in the permit for the first time. The State determines the appropriate interim limits as a requirement of their final 401 certification under the Clean Water Act. Interim effluent limits must be as stringent as the limits in the previous permit. EPA has set the interim limits for temperature equal to the previous permit limits for a period of two years from the effective date of the permit as required by Idaho's 401 certification of this permit.

37. Comment:

One commentator stated that the re-issuance of a NPDES permit that allows the release of very large quantities (62 cfs) of hot water (92°F or 33°C) during the summer months into the temperature impaired Snake River does not meet the water quality standards requirement to “enhance the quality of water” as stated in 40 CFR 130.3.

Response:

While the quantity of the Potlatch discharge seems large, it is less than one percent of the lowest flow of the Snake River and an even smaller fraction of the flow into the Lower Granite Reservoir because of the additional flows from the Clearwater River. The 2005 Temperature Assessment prepared by EPA shows that the thermal effects from the Potlatch Mill discharge do not measurably affect the temperature of the Snake River as a whole. There is a small mixing zone upstream of the Idaho-Washington border where a portion of the river is impacted by the discharge. The final summer effluent limits are 32°C in July, and 31°C in August and September, which are more stringent than the 33°C limit referenced by the commentator.

EPA agrees with the commentator that the purpose of the water quality standards is to protect public health or welfare, enhance the quality of water and serve the purposes of the Clean Water Act. The state of Idaho has developed water quality standards for the Snake River to meet this purpose. These standards include designated uses for the Snake River and criteria adopted to protect them, including temperature. EPA has developed water quality-based effluent limitations for temperature based on the state’s water quality standards and the state of Idaho has certified that the effluent limitation comply with their water quality standards.

38. Comment:

One commentator stated that EPA inaccurately concludes that it has set effluent limits to protect the waterbody. The lack of mixing of the Snake River with the Clearwater River is a significant new insight to the temperature stress applied to salmonids in the mixing zone downstream of Potlatch. This makes the analysis of low flows of the Snake River at Anatone all the more important. In the 1999 EPA fact sheet, the allowed temperature was 33°C and the effluent limit was 40 mgd. The 2003 EPA fact sheet specified 33°C as a temperature limit and 42.5 mgd as the effluent flow limit. Given that even a greater heated discharge is allowed now, it is hard to imagine how the new analysis is taking the thermal stratification into account at all. This statement about the refinements made in the effluent limits appear all the more erroneous in light of the NOAA Fisheries claim that effluent releases of up to 100 cfs (64.5 mgd) instead of the 62.5 cfs (40.3 mgd) permitted would be likely (NOAA, 2003).

Response:

EPA agrees that there has been some confusion about what the correct maximum flow rate from the Potlatch Mill discharge really is. EPA had Potlatch conduct a study of their

effluent flow capacities in August 2003. The results show that the maximum flow that this system can deliver is 44.6 mgd, although in October 2002 Potlatch ran the system at maximum capacity and only achieved a flow rate of 39.58 mgd. Therefore, for the final permit EPA has used a flow rate of 40 mgd to determine effluent limitations. NOAA Fisheries statements regarding the flows of the Potlatch Mill discharge in their 2003 discussion draft biological opinion were erroneous and EPA clarified the flow rates in their December 2003 biological evaluation.

The Temperature Assessment (USEPA, 2005), which explains the basis for the temperature limits in the final permit, explains how EPA has considered the fact that the Snake and Clearwater rivers do not mix at the confluence in evaluating the effects of Potlatch's heated discharge. EPA concluded that the thermal discharge exerts its greatest impact when the rivers are horizontally stratified (i.e. the two rivers do not mix but flow side by side). This flow condition occurs when the temperatures and flow rates of the Snake and Clearwater rivers are comparable. EPA has determined that the effluent limits in the final permit are protective of the beneficial uses of the receiving water under these critical conditions.

39. Comment:

One commentor stated that available water temperature data indicate that Snake River maximum temperatures far exceed standards and are so high that impairment of adult and juvenile salmonids is likely. Low flows mean slow travel times and greater exposure to these extremes. Heated effluent added to this scenario means that cumulative stresses to salmonids are likely. EPA appears to conduct its analysis on the basis of average temperatures and thereby minimizes the biological impact.

Response:

EPA has consulted with USFWS and NOAA Fisheries on the effects of Potlatch's discharge on threatened and endangered salmonids. In the 2003 biological evaluation EPA prepared for NOAA Fisheries and USFWS for consultation on these species, EPA fully evaluated the temperature effects of the discharge from outfall 001. In their Biological Opinions, NOAA Fisheries and USFWS have determined that the discharge, even during the compliance schedule period, will not jeopardize the continued existence of the species.

EPA did not use average temperatures in evaluating the effect of Potlatch's heated discharge and establishing effluent limits. In the Temperature Assessment (USEPA, 2005) EPA used the 95th percentile upstream temperatures from October through June, and an assumed natural condition temperature of 19°C from July through September. EPA used the maximum discharge flow rate of 62 CFS and the 7Q10 low flow rate in the receiving water. EPA has determined that the effluent limits in the final permit are protective of the beneficial uses of the receiving water under these critical conditions.

40. Comment:

One commentator stated that water quality standards must still be met despite EPA's attempt to have a de minimis increase of 0.3°C as its only standard. Even when technology-based treatment is applied, the water quality limits must still be met. The problem with Potlatch discharge of large volumes of heated water into the Snake River is that during prolonged periods in summer months, water temperatures exceed both the Idaho and Washington State standards. These temperatures exceed the known lethal limits of adult chinook and significantly increase the risks of lethal warm water diseases. In addition, the temperatures create highly unfavorable rearing conditions for juveniles and emigrating smolts. Permitting of additional heat loads to a river already significantly exceeding standards is a serious risk factor to listed salmon species. The allowance of acute and chronic mixing zones where temperatures become elevated above the temperatures that already exceed standards is counter to efforts with the Region (e.g., those of NOAA Fisheries) to achieve a reduction in Snake River water temperatures. Much of the cold water released from Dworshak Reservoir to improve fall chinook migration temperatures is directly compromised by the warm releases from Potlatch. Dworshak Reservoir water releases to the Snake are intended as a means to protect both adult and smolt migration survival, not act as a mitigation for hot water effluent. The commentator asks how much is actually lost.

Response:

The temperature limitations in the Potlatch Mill permit are water quality-based effluent limits, not technology-based limits. EPA used Idaho water quality standards within the State of Idaho and Washington water quality standards at the border of Idaho and Washington to ensure that the Potlatch Mill discharge did not cause or contribute to exceedances of the water quality standards for temperature of the Snake River in either State. The Idaho water quality standards at IDAPA 58.01.02.401.a.v expressly allow the 0.3°C increase when the numeric temperature criteria are exceeded due to natural background conditions. EPA has used several methods (Cope, 2004, 2005) to show that water temperatures in an undeveloped or natural Snake River would exceed Idaho's daily average temperature criterion of 19°C more than 99% of the time in July and August, and more than 26% of the time in September. For the balance of the year, the 19°C daily average numeric criterion applies.

EPA agrees that the temperature of the Snake River upstream of outfall 001 typically exceeds the numeric water quality standards for Idaho and Washington in the summer months and often exceeds 21°C, which can impede migration of adult salmon and steelhead. Thus, in the summer months, the baseline conditions for salmon and steelhead are stressful even if the Potlatch discharge did not exist. However, the discharge at the final permit limits would not cause instantaneous lethality to salmonids. For the months of July, August, and September, the effluent limit is at or below 32°C, so there will be no exposure time to lethal temperatures above 32°C.

Additionally, Salmon and steelhead will not experience thermal shock from the discharge at the final permit limits. The distance downstream of the diffuser where the temperature is estimated to be above 25°C is less than one meter (e.g., 0.37 meters in July and August) and the total cross-sectional area of the plume that is above 25°C is less than one percent of the river (e.g., 0.4% in July, August, and September). Further, at approximately 5 meters downstream the velocity of the effluent drops below 5 ft/s. As stated in the Biological Evaluation submitted on December 1, 2003, because the maximum swimming speed of salmon and steelhead is 5 ft/s or less, it is a safe assumption that the fish will not be exposed to temperatures within 5 feet of the diffuser because they will not be able to swim into the plume when the plume velocity is higher than their maximum swim speed. However, it is improbable that the fish would be exposed to temperatures within 10 feet of the diffuser because they would tend to avoid the currents created by the jet action of the plume.

Within 55 feet (16.8 meters) of the diffuser the temperature of the thermal plume is approximately 1°C above the ambient temperature. During the months of July, August, and September, the temperature of the plume has returned to near ambient upstream temperatures (i.e., 0.3°C above ambient) within 148 feet (45 meters) downstream of the discharge. The total cross-sectional area of the river within the plume that experiences a measurable increase in temperature is between 18% and 24.5% in July, August, and September. Because the Potlatch discharge results in some portion of the river with a slight increase in temperature as described above and that the river baseline condition is already stressful for salmon and steelhead, EPA concluded that the Potlatch temperature effluent limits is likely to adversely affect salmon and steelhead during the months of July, August, and September. However, the contribution of the Potlatch discharge to the adverse effects associated with elevated temperatures in the Snake River is small.

Both NOAA Fisheries and USFWS concurred with EPA's analysis and determined that the proposed permit limitations would not jeopardize the existence of threatened and endangered salmonids in their biological opinions issued on April 2, 2004 and March 5, 2004, respectively.

41. Comment:

One commentor stated that EPA abandons its charge to meet the goals of the Clean Water Act by accepting degraded water quality as a natural background conditions and permitting further temperature increases. There is very little way that addition of large volumes of hot water to a waterbody exceeding water temperature standards by a significant amount can be considered to improve or maintain the physical and biological integrity of the Nation's waters as required in Section 101(a) of the Clean Water Act.

Despite the acknowledgement that Snake River temperatures are elevated due to human causes in the reservoir system and upstream, EPA and Idaho both are in favor of simply calling the ambient temperatures the natural background. In this case, temperature standards are irrelevant according to state rules and temperature increases of 0.3°C in the far field are allowed. EPA has not identified clearly what it considers to be the natural

background temperature. It has also not stated in clear terms that it is accepting all existing cumulative effects to the water temperature regime in the Snake River above Potlatch as a natural background. But the effect of the language in the permit is that EPA takes the ambient conditions as the natural background. This conclusion is not credible. Numerous references are made elsewhere to the highly perturbed condition of the Snake River water temperatures.

By taking an average pulp production value based on a 5-year production history, it is very likely that this production estimate is significantly lower than many monthly average or weekly average values. This could mean that very high discharges might occur in some weeks. If there is no limit to a daily or weekly heated discharge volume (NOAA Fisheries Draft Biological Opinion) there is a significant probability that on warm days, the temperature at the edge of the fixed mixing zones would be exceeded. Mixing zones are assigned based on an expected set of discharge volume, discharge temperature, river discharge rate, and river temperature. With large variations in heated discharge volume, it is not possible to meet the temperature objective at the edge of a fixed mixing zone. It is also meaningless in terms of biological protection to allow mixing zones to expand to whatever size is necessary so that a 0.3°C temperature increase is estimated for that point. This can allow a significant area of stream to be warmed to temperatures between the ambient + 0.3°C (where ambient is often equal to the standard + 5-7°C) and 33°C.

Response:

EPA has not assumed that the existing ambient conditions of the Snake River are natural background conditions. Evaluation of existing water temperature against the natural background standard requires knowledge or estimates of natural water temperature without human impacts.

Both temperature observations and the temperature simulations provide estimates of water temperature. Since there are information gaps and uncertainties associated with both the observations and the simulations, both are used to gain an understanding of the free flowing and impounded temperature regimes and the relative importance of dams, point sources and tributaries in altering the natural regime of the rivers. EPA has used several methods (Cope, 2004, 2005) to show that water temperatures in an undeveloped or natural Snake River would exceed Idaho's daily average temperature criterion of 19°C more than 99% of the time in July and August, and more than 26% of the time in September.

EPA agrees with the commentor that the addition of large volumes of hot water to a waterbody exceeding water temperature standards by a significant amount cannot be considered to improve the physical and biological integrity of the Snake River as required in Section 101(a) of the Clean Water Act. However, the effluent limitations established by EPA ensure that the heated discharge from the Potlatch Mill is not causing or contributing to violations of the Idaho water quality standards. Therefore the effluent limits maintain the physical and biological integrity of the Snake River. As stated in the response to Comment #37 of this section, the effluent flow rate from the Potlatch facility

is not large when compared to the river flow rate. The flow from the Potlatch discharge is less than one percent of the lowest flow of the Snake River and an even smaller fraction of the total flow into the Lower Granite Reservoir because of the additional flows from the Clearwater River.

EPA uses average production rates to calculate technology-based effluent limits based on EPA-promulgated effluent limit guidelines (in this case from 40 CFR part 430), not water-quality based effluent limits. Since the effluent limit guidelines are expressed as pounds of pollutant per 1,000 pounds of product, the use of the average production rate results in more stringent technology-based effluent limits than would the use of a maximum or upper percentile production rate.

When calculating water quality based effluent limits based on a mixing zone, EPA considers critical conditions for both effluent and receiving water flow rate. That is, a low receiving water flow rate (7Q10) and a maximum effluent flow rate. As stated in the response to Comment #24 of this section, the effluent flow rate used in the mixing zone calculations was 62 CFS, which is the maximum flow that Potlatch's treatment system is able to discharge. This ensures a low probability that the dilution available in the receiving water will be less than that calculated in the mixing zone analysis. The temperature mixing zone was further restricted based on the following criteria:

- The maximum temperature within the plume after 2 seconds of plume travel from the point of discharge does not exceed 32°C.
- The thermal plume does not result in more than 5 percent of the Snake River channel cross-section above 25°C.
- The thermal plume does not result in more than 25 percent of the Snake River channel cross-section above 21°C. When the Snake River channel exceeds 21°C, the thermal plume does not increase more than 25 percent of the Snake River channel cross-section above ambient conditions by a measurable amount (e.g., less than 0.3°C).
- The thermal plume does not impact the water quality (i.e., less than 19°C or less than 0.3°C when natural background conditions apply) 191 meters downstream from the diffuser.
- The thermal plume does not impact more than 25% of the stream with, nor does it extend beyond the zone of initial dilution (ZID).

42. Comment:

One commentor stated that it is unclear what EPA takes to be its recommended temperature increase for the Snake River – the 0.25°C from its Regional Guidance, the 0.3°C specified in the permit, or the $t=34/(T+9)$ value from the Washington water quality standards. Also, Idaho has had a mean temperature of 19°C as a Snake River standard, but the perturbation from cumulative upstream effects causes frequent violations, which EPA is willing to ignore. What happens when the standard is a mean of 19°C and the observed mean is 23°C? –simply allow additional 0.3°C increases?

An allowance for temperature increases of 0.3°C as well as for increases of $t=34/(T+9)$ creates a conflict. The latter allowable temperature increase would be 1.0°C when the receiving water temperature is already 25°C or greater. The Snake River upstream of the Potlatch discharge is frequently at 25°C. The EPA Regional Guidance is for no increases greater than 0.25°C. Which criterion is intended to take precedence when there is a conflict?

Response:

The allowable temperature increase is 0.3°C, and is taken directly from the Idaho water quality standards, at IDAPA 58.01.02.401.a.v. If the numeric temperature criteria are exceeded due to natural background conditions, which is the case in July, August and September, the natural condition becomes the criterion under IDAPA 58.01.02.200.09, and effluent discharges must not raise the temperature in the receiving water by more than 0.3°C, as required by IDAPA 58.01.02.401.a.v.

If, in the commentor's example, the observed maximum daily mean is 23°C, then EPA would have to determine if the discharge will cause or contribute to this exceedance. This will be highly dependent upon the flow of the receiving water in relation to the flow of the discharge and the temperature of the discharge. The determination is not a simple task of using a steady-state mass-based calculation. Models should be used with the best data available for calibration in order to obtain the most accurate results. Because the model is based on exponential decay it will never reach zero.

The Region 10 Temperature Guidance (USEPA, 2003a) recommends that the effluent plume should not cause more than a de minimis increase in the river temperature and gives 0.25°C as an example of a de minimis increase. However, because this discharge is to waters of the State of Idaho, EPA has allowed a 0.3°C increase, in order to be consistent with Idaho's water quality standards and guidance. Note that this is not the only criterion that EPA uses to determine reasonable potential. The size and shape of the mixing zone are also factors.

EPA disagrees with the commentor that the receiving water temperature is 25°C or greater. Modeling shows that the maximum daily average Snake River temperature was 24.3°C. The 95th percentile temperature for July is 21.1°C. The commentor provided no justification that the Snake River upstream of the Potlatch discharge is frequently at 25°C.

43. Comment:

One commentor stated that the EPA Regional Temperature Guidance does nothing to prevent thermal shock to salmonids. Thermal shock is a change in temperature of such magnitude that impaired physiological functioning or behavior ensue. Specifying a constant temperature does not address thermal shock. The commentor also questions why these conditions would apply only to a 7Q10 flow. It is vital to avoid thermal shock under all flow conditions and ambient temperatures (both winter and summer). The ΔT

should be $\leq 8^{\circ}\text{C}$ and the maximum effluent temperature should be held to $\leq 32^{\circ}\text{C}$ with ≤ 2 seconds exposure. Also, there needs to be assurance that the exposure zone to the mixed effluent will descend in temperature rapidly from 32°C to ambient. The mixing zone should be monitored using a regular grid pattern to determine a spatial average temperature to ensure that it meets the temperature assigned to this zone (this 5% of the flow width).

Response:

The purpose of the public comment period for this NPDES permit is to allow for comment on the conditions in the permit. Commenting on the EPA Regional Temperature Guidance is beyond the purview of this permit action. However, because the effluent limitations in the permit are consistent with the recommendations in the temperature guidance, EPA will respond to the use of the Regional Temperature Guidance in this permit.

The Temperature Guidance does address thermal shock by recommending that only a small percentage (e.g. less than 5%) of the cross-sectional area of a river be allowed to exceed 25°C , in order to prevent thermal shock. The final effluent limitations have been established to ensure that this plume restriction is met so that thermal shock to salmonids does not occur. EPA has evaluated this discharge with respect to thermal shock in its Biological Evaluation submitted to NOAA Fisheries and the USFWS on December 1, 2003. (USEPA, 2003b). Both NOAA Fisheries and USFWS concurred with EPA's analysis in biological opinions dated April 2, 2004 and March 5, 2004, respectively. The Services determined that a discharge in compliance with the final temperature effluent limitations would not jeopardize the continued existence of threatened and endangered salmonids.

The 7Q10 flow is the lowest 7-day average flow expected to occur once every 10 years. This flow rate is commonly used as a critical "design flow" condition when calculating water quality-based effluent limits, because an effluent's effect on a flowing receiving water is greater at low flows. Effluent limits that are protective of water quality at the 7Q10 flow rate will be protective at higher flows as well, and flow rates lower than the 7Q10, by definition, occur very rarely.

EPA does not believe that it is necessary to require Potlatch to monitor the mixing zone using a regular grid pattern to determine a spatial average temperature to ensure that it meets the temperature assigned to this zone. Potlatch has already conducted two mixing zone studies of their discharge that EPA used to calibrate its model.

44. Comment:

One commentor stated that the EPA Regional Temperature Guidance recognizes numerous sources of impairment to salmonids in thermal plumes but does not ensure that exposure time to temperatures as high as 33°C can be managed in flows that resist mixing. EPA also declines to estimate the level of "harvest" of salmonid populations

caused by total exposure to the plume and the fish predators in Lower Granite Reservoir, but merely states that beneficial uses will be protected. Among the recommendations is to limit temperatures in the ZID to 32°C. Unfortunately, Potlatch seeks to increase this to 33°C.

Response:

Commenting on the EPA Regional Temperature Guidance is beyond the purview of this document; however, because EPA has used the recommendations in the temperature guidance to calculate the effluent limitations in the permit, EPA will respond to the use of the Regional Temperature Guidance in this permit. The EPA Regional Temperature Guidance recommends that the maximum temperature within the plume after 2 seconds of plume travel from the point of discharge does not exceed 32°C. For the months of July, August, and September, the effluent limit is at or below 32°C, so there will be no exposure time to temperatures above 32°C.

From October through June, the Potlatch Mill is allowed to discharge effluent up to 33°C; therefore, at the point of discharge the effluent is at this temperature. However, the plume is less than 32°C within 0.05 meters (approximately 2 inches) and less than 25°C within 0.5 meters (approximately 20 inches) of the point of discharge. As stated in the Biological Evaluation submitted on December 1, 2003, the effluent velocity does not drop to 5 ft/s until it is approximately five feet downstream of the point of discharge, but the maximum swimming speed of salmon and steelhead is 5 ft/s or less. Therefore, it is a safe assumption that the fish will not be exposed to the temperature conditions observed within 5 feet of the diffuser because they will not be able to swim into the plume when the plume velocity is higher than their maximum swim speed. However, it is improbable that the fish would be exposed to temperatures within 10 feet of the diffuser because they would tend to avoid the currents created by the jet action of the plume.

45. Comment:

One commentator stated that Potlatch should be required to monitor survival of caged salmonids held at various positions and residence times in the plume, followed by subsequent exposure to temperatures at the edge of the mixing zone. Subsequent survival to 24-96 hours should also be monitored after passage through the plume. These tests should also include survival in the presence of predators post thermal shock. Predator densities should be monitored in the vicinity of diffusers and downstream and a program undertaken to remove predators downstream from the diffusers. In addition, Potlatch should be required to monitor its thermal plume characteristics (spatial distribution of temperature) over the entire plume area relative to the upstream conditions. Daily or seasonal variations in position of the plume and temperature distribution that do not conform to permitted conditions should result in modification of discharge on a real-time basis.

Response:

Both the EPA 2003 Biological Evaluation and the NOAA 2004 Biological Opinion on the Potlatch NPDES permit renewal conclude that the length of time both returning adult salmonid migrants and outmigrating juvenile salmonids are exposed to the elevated temperatures in the mixing zone of the Potlatch effluent is minimal. For outmigrating smolts, the NOAA 2004 Biological Opinion estimated that smolts would be exposed to the mixing zone for between 20 seconds to 2 minutes. Mixing zone modeling shows that, within 3 meters of the diffusers, the increase in temperature during the late winter to early summer period is no more than 1°C above ambient temperature, with most of the mixing zone experiencing no more than a 0.3°C increase in temperature above ambient.

For returning adults, the NOAA 2004 Biological Opinion concludes that returning adults pass through the Snake-Clearwater confluence area quickly, and that the areas with elevated temperatures are easily avoided by the returning adults. Also, the size of the mixing zone where the temperature increase will exceed 5°C above ambient is less than 1% of the cross sectional area of the Snake River, while the area with temperature increases of 0.1-0.03°C above ambient is only 5500 m². The small size of the mixing zone relative to the entire width of the Snake River ensures that many migrating adult and juvenile salmon will not be exposed to elevated temperatures at all. EPA believes that the short duration of exposure to waters with a 1°C or less increase in temperature above ambient does not indicate a significant level of stress to migrating salmonids, and does not warrant the caged salmonid monitoring proposed in the comment.

In the final permit, Potlatch is required to monitor temperature in their effluent continuously and the receiving water during the first and second years of the permit from July 1 through October 31. Under the Clean Water Act, EPA has no authority to require the permittee to remove predators from the area of the.

The mixing zone analysis for temperature assumed critical conditions for both the effluent and receiving water, in order to establish a very high probability that the effluent limits will be protective under actual conditions. The analysis accounts for seasonal variability. Because the effluent limits are based on an analysis of the discharge's effects at critical conditions, EPA does not agree that it is necessary to modify the discharge limits on a real-time basis. Further, it would be very difficult to determine compliance with an effluent limit that was modified on a real-time basis.

46. Comment:

One commentor stated that although thermal shock studies indicate impairment from exposure to heated effluent in terms of direct thermal death and susceptibility to predation, the conditions presented in the Snake River are unique. Salmon smolts are acclimated to temperatures very near their incipient lethal temperatures, exposed to thermal shocks, and returned to near incipient lethal temperatures. The impact of this exposure may be greater than estimated from past studies in which fish return to desirable recovery temperatures.

Response:

The thermal impact from the Potlatch Mill discharge to salmon smolts was discussed in the Biological Evaluation EPA sent to NOAA Fisheries and USFWS on December 1, 2003, and is also discussed in the NOAA (2004) Biological Opinion on the Potlatch NPDES permit renewal. Pages 62-66 of the NOAA (2004) Biological Opinion discuss the relative thermal tolerance of juvenile and adult salmonids, and conclude that juvenile salmonids have lethal tolerances 2-3°C higher than those of adult fish. As discussed in our response to Comment #45 of this section, EPA believes that the extremely short duration exposure of outmigrating smolts to elevated temperatures in the mixing zone, combined with the presence of the large portion of the river that is unimpacted by changes in temperature due to the Potlatch effluent, provides indication that the effluent is unlikely to cause significant thermal stress on the smolts.

47. Comment:

One commentor stated that temperature limits of 33°C and 32°C applied only in the months of June and July, and August and September, respectively, are too high to be protective of cold water biota. The draft NPDES permit specifies temperature limits for only four months of the year, which is not appropriate for a river that is on Washington State's 303(d) list. In addition, the proposed limits are higher than appropriate for these waters. Temperature changes affect fish migration and for salmonids, a higher temperature affects metabolism, growth rate and disease resistance.

Idaho has set a maximum temperature of 22°C (maximum) and 19°C (daily average) and Washington specifies 20°C. These proposed temperature limits assume the mixing zone is an adequate approach and that the discharge rate will not change. However, heated effluent will tend to float at the top of the Snake River, so the mass of receiving water available for mixing will be much less than EPA has assumed, and therefore the effluent will not fully mix as suggested in the 2003 Temperature Assessment.

Response:

The state of Idaho has certified under Section 401 of the Clean Water Act that this permit is protective of all uses of the Snake River, including cold water biota. The draft permit had temperature effluent limits for all months of the year, not just four as claimed by the commentor. The limits in the draft permit were 33°C maximum daily from October through June, 32°C maximum daily in July, 31°C maximum daily in August, and 30°C maximum daily in September. The effluent limit for September has been changed to 31°C in the final permit. As stated in the response to Comment #1 of this section, the final effluent limits are derived from and compliant with the Idaho water quality standards, and a discharge in compliance with these effluent limits will not cause lethality, thermal shock, or migration blockage to salmonids, nor will it measurably increase the temperature of the water body as a whole.

The mixing zone analyses for temperature and other pollutants does assume that the discharge rate will not change, but EPA believes this assumption is valid. EPA had Potlatch conduct a study of their effluent flow capacities in August 2003. The results show that the maximum flow that this system can deliver is 44.6 mgd, although in October 2002 Potlatch ran the system at maximum capacity and only achieved a flow rate of 39.58 mgd. Therefore, the discharge flow rate could not be greater than 39.58 mgd without Potlatch making changes to its outfall system, even if they were to increase production. EPA rounded this figure to 40 mgd for the purpose of the mixing zone analyses.

The commentor is correct that once the thermal plume of the discharge reaches the surface of the receiving water body, there is less mass of the receiving water to mix with the heated discharge. However, the model EPA has used for the Temperature Assessment accounts for this; thus, the estimations of the rapidity and completeness of the mixing are accurate.

48. Comment:

One commentor stated that there are no limits on the discharge rate from Potlatch if the production were to increase and the volume of high temperature water increases. The temperature limit should at least include a heat limit (as in the 1992 permit) or an instantaneous maximum temperature limit of 20°C, as proposed in the prior draft permit. Background temperatures of receiving waters during summer already approach or exceed lethal conditions for listed salmonids before receiving heated water from the mill's discharge.

Response:

EPA had Potlatch conduct a study of their effluent flow capacities in August 2003. The results show that the maximum flow that this system can deliver is 44.6 mgd, although in October 2002 Potlatch ran the system at maximum capacity and only achieved a flow rate of 39.58 mgd. Therefore, the discharge flow rate could not be greater than 39.58 mgd without Potlatch making changes to its outfall system, even if they were to increase production. When EPA evaluated the effect of the discharge on the receiving water, the maximum effluent flow rate was rounded up to 40 mgd. Since the effluent limits are based upon the maximum effluent flow rate paired with a low receiving water flow (7Q10), EPA believes that an additional heat load limit is not necessary.

As discussed in the Temperature Assessment (USEPA, 2005), the heat load limit from the 1992 permit allows higher end-of-pipe effluent temperatures than allowed under the final permit. The temperature effluent limits in the final permit are therefore more stringent than the heat load limit in the 1992 permit. There is no basis for including an instantaneous maximum temperature limit of 20°C. It is inappropriate to apply a downstream state's standards end-of-pipe. However, EPA has ensured that a discharge in compliance with the effluent limits will not cause or contribute to an exceedance of Washington's water quality standards at the Idaho-Washington border.

EPA disagrees with the commentor that background receiving water concentrations already approach or exceed lethal conditions for listed salmonids. The 95th percentile low flow temperatures in July, August and September are 21.1, 21.6 and 20.8°C, respectively. While stressful to listed salmonids, these temperatures will not cause lethality.

B. Chlorinated Compounds

1. Comment:

A number of commentors stated that the effluent limitation for adsorbable organic halides (AOX) derived from the Cluster Rule is not sufficiently protective of public health. The commentors believe this is an environmental justice issue that EPA cannot ignore, particularly in light of Executive Order #12898.

Organochlorines resist treatment and persist in the fatty tissues of humans and wildlife exposed to these chemicals. When metabolized during pregnancy or lactation, they can wreak havoc on developing offspring, or help to initiate cancer in several different bodily systems. Some organochlorines are known to be endocrine disruptors, upsetting the natural balance of hormones in the human body.

Commentors cited a study done by the Northwest Pulp and Paper Association (Beak Consultants, 1989) that found that Columbia Basin sport fishers consume 36.48 grams of fish per day. The Columbia River Inter-Tribal Fish Commission's study of Tribal fish consumption was also cited. That study showed that the average consumption (including people who ate no fish) is 58.7 grams per day of fish, with an average rate for fish consumers only of 63.2 grams per day, and more than 170 grams per day for the top five percent of consumers. A 1994 Columbia River Intertribal Fish Commission (CRITFC) study showed that fish consumption rates were as high as 972 g/day among tribal members in the Columbia River Basin and other studies indicate subsistence consumption rates of over 1,000 g/day. Finally, several commentors noted that the Washington Department of Ecology is considering setting a default fish consumption rate at 175 grams per day per person.

The Nez Perce Tribe recognized that EPA has addressed fish consumption and toxics in the Cluster Rule, 40 CFR Part 430. However, EPA's trust responsibility to the Tribe requires EPA to protect treaty-reserved fishery resources, many of which are currently listed as threatened or endangered under the Endangered Species Act, and to protect Tribal health. As part of this responsibility, EPA must take a more careful look at whether the effluent limitations derived from the Cluster Rule are sufficiently protective of Tribal resources and health.

As part of its comments, Potlatch submitted an analysis of risk posed by organochlorines in Potlatch's discharge for consumers of various amounts of fish, up to 22.8 grams per day, a figure that represents 17.7 percent of the 95th percentile consumption for the Nez

Perce Tribe (129 grams per day). This analysis concluded that the limits in the draft permit were protective of human health for all consumption levels assessed.

Response:

Executive Order 12898 and EPA's trust responsibilities to the Tribes do not create any independent regulatory authority, however they do require that EPA fully implement the Clean Water Act. EPA evaluated the technology-based limits in the Cluster Rule (40 CFR Part 430) to ensure that they comply with the requirements of Section 301(b)(1)(c) of the Act, which states that effluent limits must be stringent enough to ensure compliance with the State's water quality standards. EPA also evaluated the risk of the organochlorine effluent limits on subsistence fishers. Please see Appendix C of the 2003 Fact Sheet for a discussion of the technology-based effluent limits used in the permit.

As a point of clarification, it is important to note that, where a state has numeric criteria for a pollutant, EPA must use those criteria to assess compliance with Section 301(b)(1)(c). In the case of organochlorines, Idaho has numeric human health criteria for chloroform, 2,4,6-trichlorophenol, pentachlorophenol, and 2,3,7,8-TCDD. EPA determined that the effluent limits in the Cluster Rule were stringent enough to meet Idaho's numeric criteria for these pollutants. If the technology-based limits had not been stringent enough to meet these criteria, the State's numeric criteria would have been used in establishing more stringent water quality-based effluent limits.

The limits for 2,3,7,8-TCDD for the final effluent (as opposed to those applied at internal compliance points) in the draft permits were water quality-based effluent limits consistent with the facility's wasteload allocation in the 1991 dioxin TMDL for this watershed. The limits for 2,3,7,8 TCDD for the final effluent in the final permit are more stringent than those in the draft permits. The limits were reduced in order to prevent the discharge from causing or contributing to a violation of Washington's water quality standard for dioxin at the State line.

Because there are subsistence fishers who fish in waters downstream of the discharge⁶, EPA included the water quality based limits for dioxin and the technology-based effluent limits for other compounds in its own risk evaluation to determine whether the limits in the permit were protective of subsistence fishers. For each organochlorine limit in the final permit, EPA evaluated the cancer and non-cancer risk to human health posed by consumption of fish exposed to these pollutants at levels authorized by Potlatch's permit.

In conducting the risk evaluation, EPA used the human health methodology in EPA's 1997 *Water Quality Criteria Methodology Revisions: human health (Interim Draft)*, using a cancer risk level of one-in-one-million (10^{-6}) and a fish consumption rate of 63.2 grams/day for adults who eat fish. This fish consumption is the average consumption rate

⁶ The Nez Perce Tribe's reservation is located upstream of the discharge, but subsistence fishers from this Tribe fish in waters downstream of the discharge. The Confederated Tribes of the Umatilla Indian Reservation's (CTUIR) reservation is located on the Umatilla River in Oregon, but subsistence fishers from the CTUIR fish in waters downstream of this discharge.

for adults who eat fish as reported in *A Fish Consumption Survey of Umatilla, Nez Perce, Yakama, and Warm Springs Tribes of the Columbia River Basin* (CRITFC, 1994). As a conservative measure, the calculation assumes that all fish consumed are maximally contaminated.

Cancer risk was evaluated for chloroform, 2,4,6-trichlorophenol, pentachlorophenol, and 2,3,7,8-TCDD/TCDF (dioxins/furans). For dioxins/furans, EPA used the toxicity equivalents (TEQ) method to evaluate a combined TCDF/TCDD cancer risk. Cancer slope factors do not exist for other organochlorides, so the cancer risk could not be calculated for other organochlorides. Non-cancer risk was evaluated for all organochlorides subject to technology-based effluent limits except dioxins/furans⁷.

EPA's risk evaluation indicates that the risk of additional cancer in humans from consumption of 63.2 grams/day of maximally contaminated fish ranges from 1×10^{-11} for 2,4,6-trichlorophenol to 4×10^{-6} for dioxins/furans. Most of these risks are less than 1×10^{-6} , the risk value used to establish water quality standards in Idaho, Washington, and Oregon. The estimated combined incremental cancer risk for dioxin and furan (2,3,7,8 TCDD and TCDF) is somewhat greater than 1×10^{-6} . However, the estimated risk is within the range of incremental cancer risk levels considered acceptable by EPA and States, which, according to the *Final Water Quality Guidance for the Great Lakes System*, is typically between 1×10^{-6} to 1×10^{-4} (60 FR 15366, March 23, 1995). In its *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health* (EPA-822-B-00-004), EPA states that water quality criteria may be based on a risk level of 10^{-5} if the risk to more highly exposed populations, such as subsistence fishers, does not exceed 10^{-4} (Page 1-12). Also, as stated above, a discharge in compliance with the effluent limits will not cause or contribute to violations of the numeric human health criteria for dioxin in Washington or outside of a small mixing zone in Idaho.

The assumption that all fish consumed are maximally contaminated results in an overestimate of the effects of the discharge. Therefore, the final permit requires Potlatch to perform a bioaccumulation study for dioxin and furan, in order to determine if Potlatch's discharge of dioxin and furan does, in fact, result in concentrations of dioxin and furan in fish tissue which will cause an unacceptable health risk to subsistence fishers.

Estimates of non-cancer effects are not expressed as probabilities like cancer risks. The non-cancer evaluation is based on a "hazard quotient". This is the ratio of the level of exposure to the compound (the expected intake) divided by the "reference dose," (RfD) which is the level of exposure below which it is unlikely that any adverse health effects would occur, even in the most sensitive population (e.g. children). If the hazard quotient is greater than unity (1), there is a potential of noncancer effects. The hazard quotients

⁷ The following organochlorides were evaluated for non-cancer risk: AOX, chloroform, trichlorosyringol, 3,4,5-trichlorocatechol, 3,4,6-trichlorocatechol, 3,4,5-trichloroguaiacol, 3,4,6-trichloroguaiacol, 4,5,6-trichloroguaiacol, 2,4,6-trichlorophenol, tetrachlorocatechol, tetrachloroguaiacol, 2,3,4,6-tetrachlorophenol, and pentachlorophenol

for all compounds evaluated ranged from 0.0000006 for 2,4,5, trichlorophenol to 0.2 for AOX. Because the hazard quotients for all compounds evaluated are less than unity, EPA does not expect that the concentrations of organochlorines in fish tissue will cause non-cancer effects at a consumption rate of 63.2 grams/day.

Where there are no numeric criteria, 40 CFR 122.44(d)(1)(vi) requires that the narrative standard be interpreted to determine whether limits are needed and what those limits should be. The Idaho water quality standards state that, when numeric human health criteria do not exist for a particular pollutant, criteria may be derived using a fish consumption rate of 6.5 grams per day and a cancer risk level of 10^{-6} (IDAPA 58.01.02.210.05.b). Because a discharge in compliance with technology-based effluent limits will not cause cancer or non-cancer effects for any compound for which numeric criteria do not exist at the much higher fish consumption rate used for the risk assessment, the effluent limits certainly will be protective of at the lower fish consumption rate stipulated in the Idaho water quality standards as well.

In addition, as part of its biological evaluation, EPA evaluated the risks posed by organochlorines at the levels authorized in the Potlatch permit to threatened and endangered salmonids (see table VII-35 on page VII-231 of the biological evaluation). EPA concluded in the biological evaluation submitted to NOAA Fisheries and USFWS on December 1, 2003 under Section 7 of the ESA that the organochlorines in Potlatch's discharge were likely to adversely affect threatened and endangered species. This conclusion was based on a review of available literature and studies, in some cases using surrogate pollutants where there were no available data. NOAA Fisheries and USFWS concurred with this finding in their biological opinions issued on April 2, 2004 and March 5, 2004, respectively and included terms and conditions to ensure only authorized take of ESA species occurs.

2. Comment:

The Nez Perce Tribe noted that in the response to the Tribe's comment on the last permit EPA stated that they planned to review the dioxin criterion to determine which assumptions, if any, should be modified to consider Tribal health risks. EPA must stick to this promise.

Response:

In its response to comments on the 1992 permit, EPA stated that the Agency was in the process of reviewing the criteria for 2,3,7,8-TCDD to reevaluate the assumptions made in deriving the *Gold Book* criteria. This statement referred to the Dioxin Risk Assessment that was begun by EPA nationally in 1991 and is still ongoing. The reassessment examines all of the assumptions used in deriving the human health criteria for dioxin, not just assumptions related to Tribal consumption. On May 1, 2000, EPA completed the preliminary draft of *Exposure and Human Health Reassessment of 2,3,7,8-Tetrachlorodibenzo-p-Dioxin (TCDD) and Related Compounds*. Work is ongoing to finalize the assessment. Once the assessment is completed, EPA will determine whether

changes to the *Gold Book* criteria are appropriate. Such information would then be available for states to use in reassessing their human health criteria and making any necessary changes.

3. Comment:

Several commentors were concerned regarding potential effects of the discharge on other species than those listed under the Endangered Species Act. According to a study released by the Lower Columbia Bi-state Water Quality Program in February 1996, malformed otters on the Columbia River had significant levels of pesticides, dioxins, furans, heavy metals, and DDT and its derivatives detected in their systems. Furthermore, NOAA Fisheries has documented reproductive, genetic and immune system damage to Puget Sound fish from toxic chemicals, including organochlorines. Organochlorines from pulp mills and other sources have been found in Northwest sediments, crayfish, clams, dolphins, seals, sea lions, whales, fish, other wildlife species and human beings. To eliminate these risks, effluent limitations for dioxins, furans and other chlorinated pollutants (AOX) should be set at zero.

Response:

The data and studies cited by the commentors are not specific to the effects of discharges from pulp mills in general or Potlatch in particular. It is not possible to use such general information to derive effluent limitations for any particular chemical or for the discharge as a whole.

4. Comment:

Potlatch commented that the maximum reported values for 2,3,7,8-TCDD and 2,3,7,8-TCDF detected in the final effluent as presented in Table B-1 in Appendix B of the 1999 Fact Sheet are incorrect. The values shown in the table are the No. 4 Power Boiler ash settling ponds' 2,3,7,8-TCDD and 2,3,7,8-TCDF concentrations reported in the September 1997 Discharge Monitoring Report (DMR). The maximum reported 2,3,7,8-TCDD concentration in the final effluent was nondetect; the maximum reported 2,3,7,8-TCDF concentration was 4.1 picograms per liter.

Response:

The data presented in Table B-1 were taken from EPA's Permit Compliance System (PCS). As Potlatch notes, these data were incorrectly entered into PCS as final effluent data, not the No. 4 Power Boiler ash settling pond data. Based on a letter from Potlatch to EPA dated October 20, 1997, the correct concentration for 2,3,7,8-TCDD in the final effluent is nondetect.

5. Comment:

Potlatch commented that a reasonable potential analysis is not appropriate for TCDD. The Columbia River Basin, which includes the lower Snake River, has been delisted with

respect to exceeding the water quality standard for TCDD because of the implementation of the TMDL to limit discharges of TCDD to the Columbia River Basin. Waste Load Allocations (WLAs) in the TMDL were established at levels to ensure attainment of water quality standards. Therefore, if the water quality standard for TCDD were to be exceeded, Potlatch would have to exceed its long-term average WLA of 0.39 milligrams per liter (mg/l) of TCDD. In order to exceed the WLA, based on the assumptions made in the TMDL, individual samples from Potlatch's bleached effluent would have to have exceeded 10 picograms per liter (pg/l) of TCDD more than 5% of the time. The bleach effluent has been monitored monthly since April 1997. Potlatch has never exceeded its annual average or maximum daily permit limits for TCDD. The bleach effluent mass loading, which is calculated using one-half the detection limit concentration for those samples that had nondetect concentrations as required by Potlatch's current NPDES permit, has always been well below both the annual average and maximum daily permit limits.

Response:

Section 301(b)(1)(c) of the CWA requires EPA to establish limits that are protective of water quality standards, regardless of the establishment of a TMDL. EPA has re-evaluated the need for more stringent effluent limitation than those required by the WLA given to Potlatch in the 1991 TMDL for Dioxin in the Columbia River Basin (USEPA, 2004). EPA modeled the effect of the effluent limits based on the WLA, using the CORMIX mixing zone modeling software to ensure that a discharge of dioxin at these effluent limits did not cause or contribute to an exceedance of Washington's water quality standards at the border. The results indicated that more stringent effluent limitations are necessary and the permit now includes a monthly average effluent limit of 0.15 mg/day and a maximum daily effluent limit of 0.22 mg/day.

6. *Comment:*

Potlatch commented that the AOX effluent limits in the 1999 draft permit are incorrect. The corrected maximum daily AOX limit is 3,900 pounds/day (lb/day) and the corrected monthly average AOX limit is 2,500 lb/day. Similarly, the bleach plant effluent limits for chloroform should be a maximum daily loading of 28 lb/day and a monthly average loading of 17 lb/day.

Response:

EPA concurs, and has updated these limits based on more current production data. In developing the technology-based limits in the 1999 draft permit, EPA inadvertently transposed 12 months worth of data, resulting in the incorrect calculation of AOX and chloroform limits. The final permit has been corrected and contains final effluent limits for AOX of 3,950 and 2,590 lbs/day as a maximum daily limit and average monthly limit, respectively. The chloroform limits on the bleach plant effluent have been revised to 28.8 lbs/day as a maximum daily limit and 17.2 lb/day as an average monthly limit.

7. Comment:

Potlatch recommended that the following be added to section I.A.6 and Footnote #1 of Table 2 of the draft permit.

A single sample may be analyzed to determine compliance with the daily maximum effluent limitations for 2,3,7,8-TCDD (TCDD) and 2,3,7,8-TCDF (TCDF).

Alternatively, a sample volume may be collected to enable the sample to be split (duplicate analysis). Compliance with the TCDD daily maximum permit limit shall be demonstrated if the bleach plant effluent sample TCDD concentration is 10 picograms per liter (pg/l) or less, or non-detect at a detection limit of 10 pg/l or less; and the field duplicate TCDD concentration is 10 pg/l or less, or non-detect at a detection limit of 10 pg/l or less.

For a bleach plant effluent sample with a measurable TCDD concentration and a non-detect field duplicate, at a detection limit of 10 pg/l or less, the permittee is considered to comply with the permit limit if the arithmetic average of the sample and the duplicate is 10 pg/l or less. To calculate the arithmetic average, the non-detect duplicate is defined as 0 pg/l of TCDD.

In the event that the bleach plant effluent sample and/or the duplicate is non-detect at a detection limit greater than 10 pg/l, the permittee shall re-initiate a second round of sample collection and analyze for permit compliance. The original sample shall be discarded.

Similarly, compliance with the TCDF daily maximum permit limit shall be demonstrated if the bleach plant effluent sample TCDF concentration is 31.9 pg/l or less; and the field duplicate TCDF concentration is 31.9 pg/l or less.

For a bleach plant effluent sample with a measurable TCDF concentration and a measurable field duplicate, the permittee is considered to comply with the permit limit if the arithmetic average of the sample and the duplicate is 31.9 pg/l or less. For a bleach plant effluent sample with a measurable TCDF concentration and a non-detect field duplicate, the permittee is considered to comply with the permit limit if the arithmetic average of the sample and the duplicate is 31.9 pg/l or less. To calculate the arithmetic average, the non-detect duplicate is defined as 0 pg/l of TCDF.

Response:

EPA does not agree that averaging split sample results when the initial sample exceeds the limit is the appropriate method to determine compliance with the TCDD and TCDF daily maximum limits. Split samples are a means of ensuring quality control (QC) in a sampling program. Generally, a certain percentage of samples are selected to split and analyze (for example, one sample out of every ten). The percentage is chosen prior to the sampling event, not based on the results of a specific sample. Potlatch's proposal would skew the results by allowing Potlatch to have one sample that was just below the minimum level and one that exceeded the limit. These two results could be averaged, with the sample that was just below the minimum level being averaged as zero. This

effectively gives Potlatch the opportunity to exceed the permit limit without being considered in violation of the permit.

EPA also notes that Potlatch incorrectly states in its comment that the detection limit for 2,3,7,8-TCDD is 10 pg/l; this is the “minimum level” or quantitation level. This is the minimum concentration at which the amount present can actually be quantified with acceptable precision. The detection limit (or more precisely, the method detection limit) is the concentration at which the presence or absence of the pollutant can be determined with 99 percent confidence. At the detection limit, it is reasonably certain that the pollutant is present, but it is not certain what the actual concentration of the pollutant is. For TCDD, the method detection limit is 4.4 pg/l.

In addition, Potlatch incorrectly states that compliance with the permit limit for 2,3,7,8-TCDD will be demonstrated at 10 pg/l or less. The 2,3,7,8-TCDD compliance evaluation level in the permit is “less than 10 pg/l”, not “10 pg/l or less.” Therefore, if Potlatch were to submit sample results showing a concentration greater than or equal to 10 pg/l, it would be considered in violation of the limit.

EPA concurs that Potlatch must re-initiate sampling for any TCDD sample that is non-detect at a detection limit greater than 10 pg/l. For fiber line monitoring of TCDD, the final permit specifies the analytical method (EPA Method 1613) and the minimum level (10 pg/l) that must be achieved. Clearly, a detection level that exceeds the required minimum level would necessitate resampling. A result reported as non-detect at a detection limit greater than or equal to 10 pg/l would be considered in violation of the limit.

8. Comment:

Potlatch recommended that the following be added to section I.A.7. of the draft permit with respect to reporting to show compliance with the 2,3,7,8-TCDD limits. “For purposes of reporting on the DMR to show compliance with the TCDD limits, if a value is greater than the minimum level of 10 pg/L, the permittee shall report the actual value. If a value is less than the minimum level, the permittee shall report “less than {minimum level}” on the DMR. For purposes of calculating monthly or annual averages, zero may be used for values less than the minimum level.”

Potlatch makes this recommendation for the following reasons. The EPA’s evaluation of compliance with effluent limits for TCDD is based on minimum level (ML) of detection of 10 pg/L. Therefore, Potlatch believes that reporting on the DMR should be based on the ML not the method detection level (MDL).

Furthermore, Potlatch believes that the ML is the most “accurate” limit of those available. The MDL for TCDD using Method 1613 has been determined to be 4.4 pg/L. However, laboratory results are typically reported using the detection limit (DL). The DL is an estimated sample specific detection limit based on a calculation. According to 40 CFR Part 136, Appendix A, Method 1613, 17.6.1.4.1, results below the ML are to be reported “as not detected or as required by the regulatory authority.” Based on the above

discussion, Potlatch recommends the EPA uses the discretion given to it by this regulation and require that the results below the ML be reported as non-detected and zero used for values less than the minimum level for purposes of calculating monthly or annual averages.

Response:

Reporting values above the MDL is consistent with EPA Region 10's March 22, 1996, guidance for reporting for water quality-based effluent limitations. With respect to TCDD monitoring, the permit requires the bleach plant effluent to be below the ML of 10 pg/L. Requiring Potlatch to report actual values at concentrations below the minimum level will not result in noncompliance with the permit. Therefore, there is no reason to report zero for values between the MDL and the ML. Section III.B 1 of the final permit states:

If the monitoring result is greater than the method detection limit (MDL), the permittee must report the actual value on the DMR. If a value is less than the MDL, the permittee must report "less than [MDL value]" on the DMR. For the purposes of calculating monthly averages, zero may be used for values less than the MDL.

9. *Comment:*

Potlatch requested that the monitoring requirement for sample type in Table 2 of the draft permit for chloroform in the fiberline discharges be changed. According to this table, the sample type for chloroform is a 24-hour composite. In section VI of the 1999 draft permit, "24-hour composite" sample is defined as "a flow-proportioned mixture of not less than 8 discrete aliquots. Each aliquot shall be a grab sample of not less than 100 ml and shall be collected and stored in accordance with procedures prescribed in the most recent edition of *Standard Methods for the Examination of Water and Wastewater.*" Potlatch requests that the monitoring requirement be redefined for chloroform sampling for the following reasons.

At this time there is no commercially available automatic sampler on the market for collection of samples for volatile organics (chloroform). Thus, collection of samples on a flow-proportioned basis would be very difficult. Therefore, the only way to get a composite for a 24-hour period is to collect grabs periodically and composite them manually. Samples collected are chilled by passing the effluent through a stainless steel coil immersed in an ice bath. Vials must be filled without introducing air bubbles and with no headspace. The procedure for compositing is not covered in approved EPA methods for chloroform. It is best if the samples are composited by the laboratory since contamination can occur if compositing takes place where chloroform is in the air. Furthermore, it is not feasible to composite a series of grab samples without loss of volatile components.

In EPA's *Kraft Pulp Mill Compliance Assessment Guide (CAA, CWA, RCRA, and EPCRA)* it is recommended that samples to be analyzed for chloroform should be collected once every four hours and that the minimum sample volume is 40 milliliters

(ml). Based on this guidance, only 6 samples would be collected over a 24-hour period not 8 as required by the definition in the permit.

Response:

EPA agrees that it is not appropriate for Potlatch to composite chloroform samples in an automatic sampler. The intent in the 1999 draft permit was that Potlatch would either have the samples composited in the lab or would mathematically “composite” them by analyzing the samples separately and averaging the results. EPA has clarified the monitoring requirements by adding footnote 3 to Table 4, which reads, “See paragraphs I.F.2.e and I.M.2, and Table 5.” Paragraph I.F.2.e states:

Chloroform samples must be collected separately from the acid and alkaline bleach plant filtrates. Samples to be analyzed for chloroform must be collected every four hours, for 24-hours. The permittee must never collect chloroform samples using a continuous automated sampling device. The permittee must adhere to the following sampling procedures:

- (1) Samples must be cooled during collection to reduce trapped air bubbles in the sample container;
- (2) Samples must be collected as grabs (6 pairs of samples per 24 hours), 40 milliliters each from acid and alkaline stream (one set is back-up), which will be composited at the laboratory; and
- (3) Samples must not contain air bubbles.

Paragraph I.M.2 reads:

Chloroform.

- a. Samples of acid stage filtrate may require dechlorination using sodium thiosulfate. The acid stage filtrate is assumed to contain free chlorine, at least intermittently. These samples will be dechlorinated by adding a few sodium thiosulfate crystals (10 mg) to each 40-milliliter vial prior to sample collection. Document the amount of preservative added in a preservation log book.
- b. By pre-preserving the vial, rather than adding preservatives after the sample has been collected, a hermetic seal can be maintained on each vial after sample collection. Some samples to be analyzed for volatile organics will have to be poured out and collected in a new vial because they were not hermetically sealed. For this reason, plan to have extra pre-preserved vials at each sampling point, rather than taking preservatives to each sampling point.

Table 5 requires the following:

Table 5. Bleach Plant Effluent Sampling Collection Methods				
Parameter	Container	Preservative ^{Note 1}	Sample Volume	Collection Method
Chloroform	Glass vial with Teflon septum	3 granules (10 mg) Na ₂ S ₂ O ₃ per vial, 2 drops HCl per vial, 4°C	12 x 40 mL each	·Grab (2 vials every 4 hours) ·24-hour composite prepared by lab

Footnote:

1. Note: sodium thiosulfate (NA₂S₂O₃) is required only if free chlorine is present in the wastewater.

10. Comment:

One commentor asked whether EPA has done any studies on toxic chemicals in fish and marine life, the distribution or the rate of build-up and decay of organochlorines in rivers below Lewiston or general studies on organochlorines in the food chain.

Response:

EPA has not conducted any such studies specific to the Potlatch discharge or the Lewiston area, though EPA has conducted general studies on the effects of toxic chemicals to fish and marine life. Potlatch has conducted sediment studies as required by the 1992 permit to determine whether organochlorines from the mill are accumulating in sediments. The 1992 permit also required fish tissue monitoring to determine whether pollutants from the pulp mill were concentrating in fish. The studies were not done, however, because without ESA consultation on the permit as a whole, NOAA Fisheries could not issue an incidental take statement for the monitoring required under the permit. Such a statement was necessary because the process of collecting fish for tissue analysis result in the take of some endangered salmonids. EPA has completed consultation with NOAA Fisheries and USFWS on issuance of the final permit and has received an incidental take statement for the bioaccumulation monitoring. The incidental take statement will allow monitoring to proceed.

11. Comment:

One commentor asked how many lb/day of organochlorines are discharged by Potlatch. Why can't organochlorines be 100% removed from the discharge and incinerated? Why can't Potlatch use a closed-loop system?

Response:

As discussed above, the final permit establishes limits on AOX of 3,950 and 2,590 lb/day as a daily maximum and monthly average, respectively.

In separation processes, it is not possible to achieve 100 percent removal of a pollutant. Currently, the technology does not exist to remove organochlorines from pulp and paper effluents. If this was possible and the organochlorines were to be incinerated, then there would become a problem of air pollution and deposition.

EPA has developed national technology-based effluent limit guidelines for this and many other industries. The effluent limit guidelines for discharges from pulp and paper mills are found in 40 CFR part 430. Please see Appendix C of the revised (2003) Fact Sheet for a complete discussion of the technology-based effluent limits applied to this permit. In developing national technology-based guidelines, EPA established levels of discharge that were considered achievable and acceptable using the best available technology economically achievable.

12. Comment:

Some commentors stated that EPA and DEQ should investigate whether additional dioxin is being released to the air or to surface or ground water through the landfill or waste ponds. Burning black liquor in the power boiler likely produces dioxin, which Potlatch is not permitted to store in its landfill or waste ponds, nor emit to the air.

Response:

The Clean Water Act does not give EPA the authority to regulate releases to air, land, or groundwater in NPDES permits. EPA can regulate discharges to surface water through groundwater that is hydraulically connected to waters of the United States. The state of Idaho has primary authority for regulating solid and hazardous waste and emissions to groundwater and air. Idaho DEQ is actively working with Potlatch to regulate discharges from the surface impoundments to groundwater.

Black liquor is burned in a recovery furnace, which is specifically designed for the purpose, not the power boiler. EPA's National Dioxin Study (EPA-450/4-84-01 4h, September 1987) showed that black liquor recovery furnaces generate small quantities of dioxin relative to other combustion sources (for example, municipal waste incinerators).

To determine compliance with the effluent limitations, the final permit requires groundwater monitoring for 2,3,7,8-TCDD, as well as high volume/low detection limit monitoring upstream and downstream of the ASB in the Clearwater River. In addition to showing compliance with effluent limits, this requirement will provide information to determine whether dioxin is being discharged from surface impoundments at the facility.

13. Comment:

One commentor stated that chlorinated organics do not adversely impact the aquatic environment. Essentially chlorine free bleaching has shown low potential toxicity. Rainbow trout studies conducted by the National Council on Air and Stream Improvement (NCASI) show no significant differences between fish exposed to effluent

and controls - streams with dilute effluent had more biomass, fewer, larger fish, and 7-ethoxyresorufin-O-deethylase (EROD) induction was not significant at 1.5% effluent.

Response:

EPA does not agree that the chlorinated organics in Potlatch's discharge are not likely to adversely affect salmonids. As discussed in the response to Comment #1 of this section, EPA prepared a biological evaluation of the effects of chlorinated organics. Although many individual chlorinated organics were determined not likely to adversely affect salmonids, the cumulative effect of all the chlorinated organics in the discharge were determined to adversely affect salmonids. This determination was made based on a lot of unknowns in the receiving water. The Potlatch Corporation is required to conduct many studies over the next several years to assist EPA, NOAA Fisheries, and USFWS in substantiating this effect analysis or determining whether the discharge is not likely to adversely affect salmonids or likely to jeopardize the existence salmonids.

14. Comment:

Potlatch commented that the receiving water, sediment, and fish dioxin and furan monitoring and reporting requirements should not be part of the final permit for the following reasons:

- The bleach plant effluent and background concentrations in both the Clearwater and Snake Rivers are non-detectable and the estimated cost of this sampling requirement is \$435,000.
- Potlatch conducted annual sediment sampling from 1997 to 2002 and the trend analysis provided with the comment reveals a trend of decreasing dioxin and furan concentrations with distance from the diffuser. The indication of the dioxin and furan concentrations in downstream sediments are so low as to be near the detection limit and essentially within the "noise" of existing analytical methods to detect these parameters. Additionally, the data show no statistically significant changes in sediment concentrations with time between 1997 and 2002.
- It is well documented that dioxin/furan discharges decrease when pulp and paper mills decrease the use of elemental chlorine and increase the use of chlorine dioxide substitution and oxygen delignification. Potlatch has undertaken these changes in its processes in Lewiston over the past few years thus any dioxin and furan discharges in the future will be less than the already non-detectable concentrations.
- Collection of additional dioxin and furan sediment data will not further the understanding of dioxin and furan concentrations downstream of the mill or of the health of the aquatic ecosystem downstream of the diffuser.
- EPA collected sturgeon and largescale suckers from the Lower Granite Reservoir in 1997 and 1998 as part of its survey of contaminant levels in fish in the Columbia River watershed. Those data reveal that 2,3,7,8-TCDD levels in suckers and sturgeon are more than 1,000-fold and 100-fold, respectively, below EPA's allowable fish body burden of 50 ppt. Both of these are resident species that tend to be closely

associated with sediments and are expected to have higher levels of dioxins and furans than salmonids whose potential exposure is limited because they are only exposed to these parameters in the Lower Granite Reservoir during the short time they migrate through the river and because many species of adult salmonids do not feed during upstream migration. Further, salmonids do not have the close association with sediments that suckers and sturgeon do.

- The magnitude and general trends in biota-to-sediment accumulation factors (BSAFs) in Lower Granite Reservoir are similar to what EPA has reported elsewhere and because many of the congeners are non-detect in sediment and fish, BSAFs depend strongly on assumed concentrations.

Response:

EPA agrees that dioxin/furan discharges decrease when pulp and paper mills decrease the use of elemental chlorine and increase the use of chlorine dioxide substitution and oxygen delignification. However, it is still unknown whether or not the Potlatch Mill will cause or contribute to levels of dioxins and furans in fish that are unsafe for human consumption.

However, as long as Potlatch remains a source of dioxins and furans they will have to monitor potential receptors (fish and other biota) as well as sediments and water. Dioxins and furans are extremely toxic at concentrations below our detection limits. We need constant surveillance to determine if the release of these contaminants poses as threat to humans and aquatic organisms. The lack of change in sediment concentrations is a cause for concern; it indicates that decreasing the discharge is not sufficient to reduce exposure or perhaps the discharge limits should be reduced further. Gathering more data to describe the impact of dioxin and furan releases into the environment is a critical component of Potlatch's permit. These data are the basis for determining whether the continued release of dioxins and furans should be allowed.

EPA worked with the Columbia River Intertribal Fish Commission, the Nez Perce Tribe, the Yakama Nation, and the Confederated Tribes of the Umatilla to collect and analyze chemical residues in fish tissue collected throughout the Columbia River basin. This was a survey over a very large scale. The study was not designed to provide evidence for the likelihood of bioaccumulation of contaminants released from the Potlatch discharge.

The statement *EPA's allowable fish body burden of 50 ppt* is incorrect. EPA has not published any "allowable fish body burden[s]". It is inappropriate to quote allowable body burdens for Native Americans. They will make their own determination of what they consider "allowable".

There are no published data on the bioaccumulation of pollutants from the Lower Granite Reservoir. EPA has not reported BSAFs for Columbia River fish. The purpose of analysis of dioxins and furans in sediment, water, and fish tissue is to develop a BSAF. This will reduce the uncertainty associated with predicting the likelihood of risk to people and aquatic organisms from exposure to the dioxins and furans which are released from the Potlatch facility.

Therefore, EPA believes that the human health bioaccumulation monitoring is necessary to ensure that the Potlatch Mill discharge is not causing or contributing to elevated levels of dioxins and furans in fish species consumed by the local people. The Biological Opinions of both NOAA Fisheries and USFWS require high volume sampling for these compounds in the water column and sediment that the facility can use for the purposes of this study if the fish tissue samples are collected at the same time.

15. Comment:

One commentator stated that EPA has failed to adequately control AOX at concentrations necessary to protect salmonids, instead raising the AOX limit from the 1999 draft permit to account for new production data from Potlatch. The NOAA Fisheries draft Biological Opinion (March 17, 2003) substitutes an analysis of the toxicity of bleached kraft mill effluent for an analysis of the numerous compounds in AOX. EPA must reduce, not increase, AOX limits to achieve protective conditions for salmonids.

Response:

On December 1, 2003, EPA revised the Biological Evaluation for this permit and submitted it to NOAA Fisheries for consultation. This evaluation included a discussion of AOX (see Section VII.E.1.h) and the proposed effluent limitations effect on threatened and endangered salmonids. The Biological Evaluation concluded that discharge of these compounds at the maximum effluent concentration is likely to adversely affect and is likely to adversely modify the critical habitat for listed salmonids. NOAA Fisheries agreed with this assessment, but found that the action would not jeopardize the existence of threatened and endangered salmonids. The Biological Opinion by NOAA Fisheries (April 2, 2004) included terms and conditions to ensure protection of listed salmonids that EPA has incorporated into the final permit.

16. Comment:

One commentator stated that chemical contaminants have been found in the tissue of salmonids throughout the Columbia River Basin. The EPA Columbia River Fish Contamination Survey released in 2002 found chemical contaminants in every fish sampled and at levels that pose a potential health risk to the tribal members who consume those fish. These contaminants have also been shown to affect toxicity in aquatic organisms. Mill effluent discharged from the Potlatch facility contains many of these chemical contaminants. The proposed NPDES permit however, does not provide adequate assurances that aquatic species and humans will be protected from the mill effluent. The proposed permit fails in this regard with dioxin, a known human carcinogen. The primary fate of dioxin is through adsorption to sediment and bioaccumulation in aquatic or other biota. Yet the proposed permit severely underestimates the total loading to the Snake and Clearwater Rivers and impact to the aquatic biota by using dissolved dioxin to estimate effluent discharge loading. Therefore, the commentator urges EPA to consider the Fish Contamination study when it analyzes the NPDES permit.

Response:

The proposed permit requires analysis of total dioxin, not dissolved dioxin as claimed by the commentor; therefore, the proposed permit did not severely underestimate the total loading to the Snake and Clearwater Rivers.

EPA Columbia River Fish Contamination Survey released in 2002 was a survey over a very large scale. The study was not designed to provide evidence for the likelihood of bioaccumulation of contaminants released from the Potlatch discharge. This is why EPA has included the requirement for Potlatch to conduct a site-specific study for EPA to determine the effects of this discharge to humans who consume fish from this area.

17. Comment:

Several commentors stated that AOX criteria for the loading of chlorinated chemicals need to be lower.

Pulp mill effluent contains a myriad of compounds and there are many more parameters and toxic compounds that should be tested for in the effluent. The draft permit only requires that AOX and dioxin be measured and controlled in the effluent. The AOX test would not account for non-halogenated toxic organics and PBTs (e.g., pentachlorophenol, dioxins and furans) that may be present in the effluent that are deleterious to fish and human health and dioxin in the effluent is estimated based on upstream [within the plant] concentrations. Monitoring further up the process stream (internally) will not measure toxic compounds that continue to form as the wastewater is blended and treated. In addition, only one dioxin congener has been selected to represent an entire class of PBT compounds

Response:

EPA has conducted numerous studies of the pulp, paper, and paperboard industry to establish effluent limitations guidelines (ELGs) and standards reflecting the best practicable control technology currently available (BPT), best conventional pollutant control technology (BCT), and best available technology economically achievable (BAT) that would apply to this discharge. In 1993, a total of 443 specific pollutants were the subject of extensive study for the ELGs. These 443 pollutants included 124 of the 126 priority pollutants and 319 nonconventional pollutants.

Of the detected chlorinated organic compounds, 12 of the higher substituted chlorinated compounds are associated with the presence of 2,3,7,8-TCDD and 2,3,7,8-TCDF. EPA established effluent limitation guidelines for these 12 chlorinated organic compounds at the source (the bleach plant effluent) because the concentration of these chemicals is greater there than in the effluent, which can be diluted from other waste streams within the facility. Secondary treatment can generally achieve about 50% removal of these compounds.

In the effluent, essentially all of the AOX is chlorinated compounds formed during bleaching with chlorine and other chlorinated bleaching agents. Inefficient application of

chlorine-containing bleaching chemicals can generate increased levels of AOX. Statistically valid relationships between AOX and specific chlorinated organic compounds have not been established. It is unlikely that correlations for a macro constituent such as AOX, which is measured at the mg/L level, with micro constituents such as chlorinated phenolics measured at the µg/L level, can be made. However, further data gathering and more refined statistical analysis may establish relationships among AOX and certain chlorinated pollutants or groups of pollutants.

The data EPA used to develop the ELGs demonstrates a correlation between the presence of AOX and the amount of chlorinated bleaching chemical used in relation to the residual lignin in the pulp (expressed as the kappa factor). The record further shows that there is a correlation between the kappa factor and the formation of dioxin and furan. Therefore, EPA concluded that reducing AOX loadings has the effect of reducing the mass of dioxin, furan, and other chlorinated organic pollutants discharged by this industry. Minimizing AOX will usually have the effect of reducing the generation of chloroform, 2,3,7,8-TCDD, 2,3,7,8-TCDF, and chlorinated phenolic compounds. Additionally, some AOX is biodegraded during secondary treatment in the ASB.

The effluent limitations for AOX specified in the proposed permit are based on the past five years of production (technology-based limits) rather than water quality standards because there is not a specific water quality criterion for this parameter in the water quality standards for either of the affected States. Further, it is not feasible to develop one since the composition of AOX can vary greatly amongst industries and dischargers. Therefore, EPA relies on whole effluent toxicity testing to ensure protection of the narrative water quality standard for this family of toxic compounds.

Even though other dioxin and furan congeners may be present in the effluent, studies EPA conducted during the development of the ELGs (USEPA, 1993) showed that 2,3,7,8-TCDD and 2,3,7,8-TCDF were the predominant chlorinated dibenzo-p-dioxins (CDDs) and chlorinated dibenzo-p-furans (CDFs) found in pulp and paper matrices. The EPA is proposing to regulate 2,3,7,8-TCDD and 2,3,7,8-TCDF and, in so doing, will effectively minimize generation of the most toxic CDDs and CDFs.

In the final permit, EPA has required monitoring of dioxin (2,3,7,8-TCDD) in the effluent, as well as at the bleach plant. The bleach plant monitoring is to ensure compliance with the technology-based effluent guidelines and the effluent monitoring is to ensure compliance with water quality-based effluent limits.

EPA has consulted with NOAA Fisheries and USFWS with regard to the effects of this discharge to listed species, including fish species. Both services have determined that this discharge will not jeopardize the existence of species. As discussed in the response to Comment #1 of this section, EPA does not believe that the discharge limits in this permit pose an unreasonable threat to human health. The permit also includes a bioaccumulation study to determine whether or not the discharge limits may pose a threat to human health.

18. Comment:

One commentator stated that limits for the fiber lines need to be lower for compounds such as chloroform. The draft permit sets a limit of 28.2 lb/day for chloroform for each of the two fiber lines resulting in a mass loading of 56.4 lb/day to the river. This will increase the concentration of chloroform, a known carcinogen, to the river. Depending on the river flows, the incremental increase could be almost 20 µg/L greater than the concentration upstream of the discharge. The lowest concentration that causes toxicity to salmonids is 12.4 µg/L. The NPDES permit criteria for chloroform need to be lower to account for the combined discharge streams.

Response:

The 2003 draft permit required a maximum daily fiber line limit of chloroform of 28.8 lb/day and an average monthly fiberline limit of 17.2 lb/day. The equivalent chloroform maximum daily and average monthly concentrations in the effluent due to the fiberline limitations and a fiberline (14.6 mgd) to effluent (40 mgd) flow ratio of 0.365 would be 86.3 µg/L and 51.5 µg/L, respectively. EPA conducted a reasonable potential analysis for these effluent concentrations to determine if they would cause or contribute to an exceedance of state water quality standards using Idaho's criterion of 5.7 µg/L and a mixing zone that establishes a dilution of 15:1. Since there was not reasonable potential to exceed state water quality standards, a water quality-based effluent limit is not necessary.

EPA has also evaluated this pollutant with respect to salmonids (USEPA, 2003b). The analysis predicts that the toxicity benchmark (the concentration which, if not exceeded, should not pose a threat of adverse effects to salmon or their prey items from mortality, reproductive and/or growth effects, which is 12.4 µg/L) will not be exceeded beyond a distance of 1.95 meters (6.4 feet) from the diffuser. The velocity of the plume does not decrease below 5 ft/s until approximately 5 meters downstream. As stated in the Biological Evaluation submitted on December 1, 2003, because the maximum swimming speed of salmon and steelhead is 5 ft/s or less, it is a safe assumption that the fish will not be exposed to chloroform concentrations within 5 feet of the diffuser because they will not be able to swim into the plume when the plume velocity is higher than their maximum swim speed. However, it is improbable that the fish would be exposed to the plume concentrations observed within 10 meters of the diffuser because they would tend to avoid the currents created by the jet action of the plume.

The effluent limits will ensure that the water quality standard for chloroform (5.7 µg/L) is met at the edge of the mixing zone. Since the water quality standard is less than one half of the toxicity benchmark (12.4 µg/L), it is not likely that threatened or endangered salmonids would be exposed to unsafe levels of chloroform. EPA concluded in its biological evaluation that the discharge of this compound at the maximum effluent concentration may directly affect, but is not likely to adversely affect salmonid species.

19. Comment:

One commentator stated that the limits for all chlorinated compounds for the Fiber Lines should be lowered by sampling a combined waste stream. The draft NPDES permit allows the limits to be applied to each fiber line, the chip line and the sawdust line. The point of monitoring and compliance should be at least placed downstream where the two wastestreams co-mingle, and one single sample is collected to meet the Fiber Line criteria for chlorinated compounds. The criteria listed for the chlorinated compounds in Table 3 of the draft permit appear to be based on analytical detection limits and not on the protection of listed salmonids or human health. Based on NOAA Fisheries' biological opinion, these compounds and their criteria may exceed toxicity benchmark concentrations for listed salmonids. In addition, criteria should be lower to allow for antagonistic effects that often occur when multiple toxic compounds are present.

Response:

The effluent limitations for the Fiber Lines are technology-based effluent limits from the EPA effluent limit guidelines at 40 CFR 430. EPA has evaluated the end-of-pipe values resulting from the effluent limits for these compounds to determine if water quality-based effluent limitations were necessary. It was determined that 2,3,7,8-TCDD (dioxin) was the only chemical parameter for which water quality based effluent limits were necessary. The dioxin limits in the draft permits were water quality-based effluent limits consistent with the 1991 dioxin TMDL for this watershed. The dioxin limits in the final permit were further reduced in order to meet Washington's water quality standard for dioxin at the State line.

To address the uncertainty about the effect of the effluent limits on human health, EPA has required a bioaccumulation study in the final permit to determine if the proposed limits have the potential to harm human health. If the study shows that there is potential, then effluent limits will be included in the reissued permit.

The commentator is referring to the 2003 NOAA Fisheries discussion draft biological opinion in their comment. Since NOAA Fisheries provided this to EPA in early 2003, EPA has provided more information to NOAA Fisheries through a series of discussions that resulted in revisions to the biological evaluation. The revised biological evaluation was provided to NOAA Fisheries on December 1, 2003. The commentator is correct that some of the chemical parameters in the effluent may be greater than the toxicity benchmarks for salmonids and that the synergistic effect could pose adverse effects to salmonids. However, these effects are near-field effects and the NOAA Fisheries biological opinion has determined that the proposed limits will not jeopardize the existence of listed species and critical habitat. The NOAA Fisheries biological opinion provided an incidental take statement with terms and conditions which require extensive monitoring to ensure that the proposed limits are not endangering listed salmonids.

20. Comment:

One commentator stated that dioxin should be measured at the effluent and not estimated by applying a factor to upstream (internal) sampling locations. The draft NPDES permit moves the sampling locations for dioxin further upstream to internal locations. Dioxins and furans, as well as other chlorinated organic compounds, are formed unintentionally in process wastewater when chlorinated products are used. Therefore, they can continue to form as other wastewaters (the CPD landfill leachate, the No. 4 power boiler settling ponds overflow, the foul condensates, etc.) are introduced downstream of the internal monitoring points. Actual effluent monitoring for dioxin is more appropriate than this type of calculation.

Response:

EPA agrees with the commentator that monitoring of dioxin (2,3,7,8-TCDD) should be conducted in the effluent but for a different reason. Dioxins, furans, and other chlorinated organic compounds are byproducts of the bleaching process at the mill. These compounds will degrade, not continue to form, with time but it is doubtful that they will degrade much prior to discharge. The purpose for monitoring the final effluent is that there are effluent limits proposed in the permit and Section 308 of the Clean Water Act and federal regulation 40 CFR 122.44(i) requires effluent monitoring in NPDES permits to determine compliance with effluent limitations.

For the final permit, EPA has required monitoring of dioxin (2,3,7,8-TCDD) in the final effluent, as well as at the bleach plant. The monitoring at the bleach plant is to ensure compliance with the technology-based effluent guidelines and the final effluent monitoring is to ensure compliance with water quality-based effluent limits.

C. Pond Seepage**1. Comment:**

Several commentators stated that seepage from the secondary treatment aeration pond (STAP) and other surface impoundments into the ground water must stop. EPA must require Potlatch to promptly develop a seepage reduction program. Since effective "low-tech" control measures such as a pond lining system could be readily applied here, the Potlatch permit fails to apply the "best available technology economically achievable" to control discharges of toxics, or "best conventional pollutant control technology" for other pollutants. Finally, one commentator noted that, by allowing Idaho to determine whether Potlatch must develop a seepage reduction program, EPA has abdicated its responsibility to regulate discharges of pollutants to surface water.

Response:

In this NPDES permit, EPA is regulating the discharge of pollutants to surface waters from the Potlatch facility. BAT and BCT effluent guidelines have been established for the pulp and paper industry at 40 CFR Part 430 (the Cluster Rule), but guidelines have

not been promulgated specifically for seepage from surface impoundments to surface water through hydraulically connected groundwater. However, by requiring Potlatch to monitor and quantify the seepage and by including the contribution of pollutants from pond seepage when determining compliance with the effluent limits, EPA has ensured that the discharge to surface water from the pond seepage will not cause or contribute to water quality standards violations. The discharge to surface water from the pond seepage is regulated to the same extent as that from outfall 001. Therefore, EPA believes that the discharge to surface water from the STAP is adequately regulated and does not agree that it is necessary to stop the seepage from the STAP to the Clearwater River.

Allowing Idaho DEQ to require a seepage reduction program is not an abdication of EPA's responsibility. As discussed above, EPA does not believe that it is necessary to prohibit discharge from the STAP to surface water in order to regulate this discharge. However, under Section 401 of the Clean Water Act, States may impose more stringent conditions, such as lining the pond, to comply with State requirements. Additionally, EPA can modify the permit in the future if new information indicates that prohibition of the seepage is necessary to comply with the Clean Water Act.

2. *Comment:*

Several commentors stated that EPA should require a complete analysis of the seepage to both the Clearwater River and the groundwater. There is no evidence to justify asserting that the effluent quality and the seepage quality are the same. The seepage will contain more toxic compounds since it seeps out of the bottom of the pond and therefore does not derive the benefit of aeration treatment. Potlatch recommended that the concentrations of pollutants in the seepage from the STAP be based on the concentrations measured in the groundwater collected from monitor wells 2, 2D, 3, 3D, and 10 and not the concentration of pollutants in the final effluent at outfall 001. This comment was based on data from Potlatch's Hydraulic Connection Study showing that concentrations of pollutants in the monitoring wells near the STAP were different from those in outfall 001.

In its draft 401 certification, Idaho DEQ asked for clarification of Section I.A.4 of the draft permit. This section provides that Potlatch shall limit and monitor discharges from the seepage from the ponds in accordance with the effluent limitations and monitoring requirements set forth in Table 1 on Page 5 of the draft permit. This language seems to indicate that the effluent limitations, including those that are concentration based, will be enforced at some compliance point in the Clearwater River related to the discharge from the seeps. From a review of the rest of the permit, however, it appears that the discharge from the seeps is only used to calculate limits and compliance with limits at outfall 001, and that control of the discharge from the seeps themselves will be regulated through the Seepage Reduction/Control Plan, if one is necessary.

Response:

EPA believes that the final effluent quality is an appropriate surrogate for the quality of the seeps from the surface impoundments at Potlatch's facility. The STAP is at the end of

the treatment train and is well-mixed, so spatial variations of pollutant concentrations within the pond will not be significant. EPA does not agree with Potlatch's assertion that monitoring wells 2, 2D, 3, 3D, and 10 are adequate to characterize the discharge from the surface impoundments at the facility.

The Hydraulic Connection Study indicates that Segment E (the eastern side of STAP, central and southern sections) has shallow ground water gradients that are poorly defined by monitoring wells and that are affected by artificial ground water control via pumping from wetland #2 back to the STAP, and pumping from Holding Basin #1 and the Corps of Engineers pond. The long-term effectiveness of ground water control in this area was not evaluated in the Hydraulic Connection Study, and therefore the degree of movement of ground water toward discharge areas within or adjacent to Segment D (the northwest corner of the STAP) is unknown. In addition, Potlatch has indicated that the Corps of Engineers Pond acts as a groundwater sink and that it is periodically pumped to the Clearwater River. In the face of uncertain flow paths from this area, inclusion of seepage from the east side of the STAP provides a more accurate estimate of discharge from the facility to the river. In addition, the inclusion of monitoring wells 1, 5, and 12 as sampling locations addresses the possibility that the Corps of Engineers pond is collecting groundwater (and thus pollutants) from the seepage from Potlatch's surface impoundments and discharging it to the Clearwater River.

The final permit changes how seepage is to be measured. As noted by commentors, the draft and final permits allow Potlatch to assume that the concentration of pollutants in the seepage was the same as the concentration of pollutants in the final effluent. As discussed above, EPA believes this is a reasonable assumption. However, the final permit also requires quarterly monitoring of the groundwater at wells 1, 2, 2D, 3, 3D, 5, 10, and 12 for five-day biochemical oxygen demand (BOD₅), total suspended solids (TSS), 2,3,7,8-TCDD, AOX, phosphorus, ammonia, nitrite and nitrate nitrogen, and chloroform. The final permit requires the permittee to add 3 mgd⁸ to the Outfall 001 effluent flow rate to account for the loading of BOD₅, 2,3,7,8-TCDD and AOX from STAP seepage. The TSS loading resulting from the 3 mgd of additional flow was not required for TSS because the soil would act as a filter and prevent much, if not all, of the TSS from reaching the surface water. EPA will review the monitoring data of the pond seepage and will revise the permit requirements if the data shows that this assumption is inaccurate.

3. *Comment:*

One commentor noted that EPA must assert regulatory authority over all discharges of pollutants from the surface impoundments. In the narrow Clearwater canyon, all water -- including "groundwater" alongside the river -- must be considered a water of the United States for Clean Water Act regulatory purposes. To the extent releases of toxics do not reach the Clearwater or Snake Rivers, EPA should evaluate whether these releases are

⁸ The 3 mgd figure was determined by seepage studies conducted by Potlatch for the state of Idaho

unlawful under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Seepage directly into the groundwater represents a threat to community health that needs to be addressed.

Another commentor stated that the percolation of effluent from the secondary treatment pond is tantamount to discharging hazardous material to groundwater. It is inappropriate for EPA to authorize discharges that are associated with RCRA activities such as those at the Potlatch facility.

Response:

The Clean Water Act definition of waters of the U.S. does not include groundwater. Therefore, EPA has no jurisdiction in NPDES permits over discharges to groundwater. However, where groundwater is hydrologically connected to surface water, the courts have found that discharges to surface water through the groundwater are subject to the requirements of the Clean Water Act. The Potlatch permit addresses this concern by explicitly regulating discharges to surface water from the STAP through groundwater that is hydrologically connected.

Several environmental investigations have been conducted at Potlatch by EPA and Idaho DEQ under CERCLA. According to a 1999 Site Status Review Report compiled for EPA by its contractors, the most recent EPA CERCLA inspection was completed in 1993. The conclusion of the inspection was that no further action under CERCLA was appropriate at that time. Additionally, Potlatch is subject to the requirements of the Resource Conservation and Recovery Act (RCRA), which is implemented in Idaho by the State. Idaho DEQ is working with Potlatch to investigate and remediate possible impacts to groundwater from the seepage.

4. Comment:

Potlatch recommended that the ash settling ponds be removed as an authorized discharge point as stated in I. and I.A.4. A dry ash system was installed and became operational in June 1999. Subsequently, Potlatch and Idaho DEQ have entered into a Consent Order that will result in a comprehensive evaluation of the soils and water around the ash ponds. These ponds now receive backwash from the influent for the mill process water.

Potlatch also believes that seepage from the ash settling ponds should be removed as a point source because, as discussed in the Hydraulic Connection Study report, the #1 Holding Basin appears to be a “groundwater sink” that receives groundwater inflow. Groundwater west of the Consumer Products Division and possibly along the entire length of the Corps dike in this direction does not interact with the Clearwater River. In fact, water level data suggest that river water seeps through the Corps dike to the site.

Response:

EPA agrees that the ash settling ponds should be removed as a discharge point. These ponds have been capped and closed under the Consent Order and there is no longer a potential source of pollutants to be discharged to the Clearwater River.

5. *Comment:*

Potlatch requested clarification regarding the volume of seepage from the STAP to the Clearwater River. In section II of Appendix B in the Fact Sheet, the seepage is listed as 0.4 mgd, in Table B-2, it is listed as 3.7 mgd, and in Figure B-1, it is shown as 3.3 mgd. Based on the results of the Hydraulic Connection Study, the seepage rate from the STAP to the River should be 0.85 mgd. The Hydraulic Connection Study report concluded that the groundwater flux method was the most accurate method and it was proposed as the basis to calculate the seepage quantity for compliance with the permit. The best estimate of the seepage quantity from the STAP to the river was 0.85 mgd using the flux method.

Response:

The June 3, 2004, Groundwater Model Report from Potlatch indicates that the groundwater seepage rates ranged between 0.6 and 4.3 mgd with an average rate of 3.0 mgd. The final permit uses 3.0 mgd for calculating the loading from the surface impoundments.

6. *Comment:*

Potlatch requested clarification of the row labeled "Total" in Table B-2 of the Fact Sheet. In addition, the discharge volume from No. 4 Power Boiler is 0.05 mgd not 0.50 mgd, as listed in Table B-2. Finally, another commentor noted that Figure B-1 shows precipitation as an outflow from the secondary treatment aeration pond when it is actually an inflow.

Response:

The row labeled "Total" represents the sum of the flows of the various wastestreams in Table B-2. The volume for the number 4 power boiler discharge in Table B-2 is listed as 0.05 mgd, not 0.5 as claimed. The value of 0.5 mgd is for the "Number 4 Power Boiler Settling Ponds". EPA obtained this value from the August 29, 1996, version of Attachment 2 of Potlatch's NPDES permit application. On January 13, 1998, Potlatch submitted a revision to Attachment 2 showing 0.5 mgd from the "No. 4 Power Boiler - Bottom Ash Water" instead of the "Number 4 Power Boiler Settling Ponds".

The error in the direction of precipitation is noted.

7. *Comment:*

One commentor stated that the proposed permit removes any limit on the total amount of effluent Potlatch may discharge. Removal of the total discharge limit renders the

provision for a mixing zone meaningless, since EPA's calculations relative to the impacts of the proposed mixing zone include volume of effluent as in input. The total effluent limit must be calculated based on assumptions utilized in the mixing zone analysis and be included as a maximum in the permit including the estimated seepage from the Secondary Treatment Aeration Pond.

Response:

EPA agrees with this comment and has required the permittee to add in the estimated contribution of the secondary treatment aeration pond to the measured contribution of outfall 001 for limited parameters. However, the mixing zone is only for the measured contribution from outfall 001 to the Snake River since the pond seepage is to the Clearwater River. EPA believes that this is appropriate because the development of the effluent limits for outfall 001 did not account for the contribution of the pond seepage in the background and the effluent limits were established to meet Washington's standards at the Idaho-Washington border. Not accounting for the pond seepage would allow for an exceedance of the Washington State standards at the border.

8. *Comment:*

One commentator stated that EPA's failure to include seepage volumes and end-of-pipe limitations from the Secondary Aeration Treatment Pond (STAP) is an abdication of EPA's duties under NPDES to regulate all point sources of pollution, whether discharged directly to surface water or through hydrologically-connected ground water. A review of studies performed by Potlatch at the request of IDEQ indicate a range of un-permitted discharges that are as high as 5.97 mgd or as low as 3.3 mgd. The permit fact sheet indicates that 400,000 gpd reach the Clearwater River.

EPA proposes to essentially ignore these seepage discharges until or unless the state of Idaho certifies an impairment of beneficial uses. The receiving water of the illegal discharge is listed by the state of Idaho as a water quality limited segment under Section 303(d) of the Clean Water Act in Idaho's 2002-2003 Integrated Report. Idaho lists that stretch of the Clearwater River for bacteria, nutrients, organics, dissolved oxygen, sediment, temperature and nitrates. Nutrients, organics, material which consumes dissolved oxygen, and nitrates are components of the STAP pond seepage. By not including permit limits for the STAP seepage, EPA, as the responsible permitting agency, is violating Idaho statute 39-3610(2) requiring "such changes in permitted discharges from point sources on the water body...deemed necessary to prohibit further impairment of the designated or existing beneficial uses." EPA must include STAP seepage as an included sum in the total effluent discharge and require an end to such discharge through STAP pond improvements.

Response:

The Clean Water Act definition of waters of the U.S. does not include groundwater. However, where groundwater is hydrologically connected to surface water, courts have

found that discharges to surface water through the groundwater are subject to the requirements of the Clean Water Act.

The Potlatch permit addresses this concern by explicitly regulating discharges to surface water through groundwater that is hydrologically connected. In the final permit, EPA has assumed that an average of 3 mgd pond seepage is discharged to the Clearwater River. EPA has assumed that the pollutant concentrations in the STAP are equal to those in the final effluent, therefore the permittee is required to add 3 mgd to their outfall 001 discharge of BOD₅, AOX and 2,3,7,8-TCDD (dioxin) to account for this loading. The TSS loading resulting from this additional flow is not a factor in determining compliance with the effluent limits because the soil would act as a filter and prevent much, if not all, of the TSS from reaching the surface water. EPA will review the monitoring data of the pond seepage and will revise the permit requirements if the data shows that these assumptions are inaccurate.

The 2002-2003 Integrated Report is only a draft that has been submitted to EPA for approval. As of the issuance date of this permit, EPA has not approved this report. Therefore, the 1998 303(d) list is still in effect. The 1998 303(d) list lists the Clearwater River in the vicinity of the discharge as impaired only for total dissolved gas. Nonetheless, EPA has regulated the discharge of pollutants from the STAP seepage in the final permit. The status of the 303(d) list is not relevant.

9. Comment:

One commentor stated that while the boiler ash settling ponds #1 through #4 of the facility are apparently no longer in use, it is not clear whether migration of pollutants from the ponds to groundwater and to the river has stopped. Monitoring for continued seepage of residual pollutants in soils below these ponds to the river should be included in the permit. Seven monitoring wells have been omitted from the monitoring program since the 1999 draft permit. All the monitoring wells included in the 1999 draft permit should be included in the final permit to completely assess impacts from the ponds to groundwater and thence to both rivers. These wells, the aquifers they are completed in, and their locations are critical to a technically sound permit.

Response:

The state of Idaho has required studies (Cascade Earth Sciences 1999, CH2MHILL 2002) to determine the effectiveness of the closure of these ponds and to determine whether migration of pollutants from the closed ponds to groundwater and to the river has stopped. As discussed in the Hydraulic Connection Study report, the #1 Holding Basin appears to be a "groundwater sink" that receives groundwater inflow. Groundwater west of the Consumer Products Division and possibly along the entire length of the Corps dike in this direction does not interact with the Clearwater River. In fact, water level data suggest that river water seeps through the Corps dike to the site. As stated in the Fact Sheet, this groundwater is not hydraulically connected to the Clearwater River, and EPA

therefore does not have the authority to require monitoring of these wells under the Clean Water Act.

10. Comment:

One commentor stated that EPA has not properly characterized the geology and provided information on the monitoring network. A full characterization of the hydrogeology of the site, including the hydraulic connection between the groundwater underlying the ponds and the river, is essential to the assessment of the conditions associated with seepage from the pond and its impacts on the river. However the permit and its supporting documents do not include this information nor do they include sufficient characterization of the quantity and quality of the seepage from the secondary treatment pond. Also missing are seasonal groundwater flow maps showing groundwater and contaminant flow direction and the effects on them caused by fluctuating groundwater and river levels. This is especially important in this area, where permeable conditions allow for direct migration of contaminants to the river. Discharge from the secondary treatment pond cannot be permitted without full characterization of this system. The permit includes seven monitoring wells but does not include a well location map, nor does it include information regarding which groundwater flow systems the wells monitor. The draft permit is technically deficient without this information.

Response:

EPA has properly characterized the geology and flow regimes of the groundwater underlying the ponds and the river. This information was too voluminous to include in the fact sheet, but the documentation providing this information should have been referenced in the fact sheet. The references are *Hydraulic Connection Study: Final Report* (Prepared for Potlatch Corporation by Cascade Earth Sciences, 1999) and *Potlatch Ash Ponds Site Investigation Report* (CH2MHILL, 2002). Copies of these studies are in the administrative record for this permit.

D. Biological Testing

1. Comment:

One commentor supported the bioaccumulation monitoring requirement in the draft permit, but stated that the permit must require Potlatch to evaluate genetic impacts of its effluent upon fish species in order to evaluate chronic toxic effects and that genetic studies be peer-reviewed and available for public comment. Additionally, the bioaccumulation monitoring results should be published in periodic reports and made available to the public.

One commentor questioned several aspects of the ambient monitoring requirements in the draft permit. The commentor stated that it was unclear why the ambient monitoring is required only in the third year and why a salmonid species is not used to assess bioaccumulation. Given the concern regarding Tribal consumption and potential effects

on ESA listed species, bioaccumulation monitoring should be conducted on a salmonid species. Finally, the commentor stated that bioaccumulation monitoring should be conducted for all toxic components of the effluent.

Response:

EPA does not agree that it is necessary or appropriate to require genetic testing of fish downstream from Potlatch at this time. The Agency does not have sufficient information regarding protocols for genetic testing or the means to link any particular effect observed in such testing with Potlatch's effluent. Furthermore, EPA knows of no studies that could be used to establish effluent limits based on the results of such testing.

With regard to the availability of bioaccumulation monitoring results, section I.J.2 and I.J.3 of the final permit outline the submission requirements for the bioaccumulation monitoring reports. All effluent data and ambient studies are public information.

The final permit requires different frequencies of ambient monitoring for different media. The water column monitoring is required during the first two years, but sediment and fish tissue monitoring are required annually. Water column monitoring is required in the first two years because the information needs to coincide with other monitoring studies required by the permit and the biological opinions of NOAA Fisheries and USFWS.

EPA agrees that a salmonid is a more appropriate species to use for bioaccumulation monitoring than other piscivores listed. Therefore, the final permit has been changed to require salmonids as a representative of the piscivore trophic level. However, EPA does not agree that all components of the effluent should be measured in fish tissue. Given the lack of toxicological information for most of the other bioaccumulative pollutants, EPA believes that measurement of TCDD and TCDF is adequate at this time.

2. *Comment:*

The Nez Perce Tribe requested that results of the bioaccumulation monitoring studies be forwarded to the Tribe.

Response:

EPA cannot require the facility submit copies of monitoring to parties other than the permitting authority (in this case, EPA) and the jurisdiction in which the discharge occurs (the state of Idaho). However, EPA will work with Potlatch and the Tribes to forward the reports to the Tribes.

3. *Comment:*

Several commentors asked why a salmonid was not used for whole effluent toxicity testing.

One commentor stated that fathead minnow are generally more durable than the salmonid species actually impacted by Potlatch discharges and testing with this species has little relevance to measuring impacts at and downstream of the Potlatch diffuser. To make the

required toxicity testing relevant to actual conditions, EPA must require Potlatch to use hatchery-bred native species, such as rainbow trout or spring/summer Chinook smolt.

Response:

It is important to use standardized protocols for effluent monitoring, including WET testing. For many parameters, the regulations at 40 CFR Part 136 set out the required type of test. For chronic whole effluent toxicity testing, EPA has not established test protocols for salmonids. EPA recognizes that the whole effluent toxicity test alone provides incomplete toxicology. Therefore, EPA has required an integrated approach that includes chemical-specific monitoring and limits, whole effluent toxicity monitoring, and bioassessments in the final permit for a more complete assessment of toxicity.

4. *Comment:*

Potlatch recommended that the requirement to use the receiving water for control and dilution water as stated in section I.C.2.c.i be removed from the permit for the following reasons. EPA's *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* (EPA-600-4-91-002) specifies that a synthetic dilution water be used for chronic toxicity testing if the objective of the test is to estimate the chronic toxicity of the effluent, "which is the primary purpose of the NPDES permit-related toxicity testing." The requirement to use receiving water as dilution water does, however, present some problems since most laboratories rear *Ceriodaphnia dubia* and carry out testing using the synthetic moderately hard water described in EPA-600-4-91-002. The use of different water for culture than is used for dilution and controls requires an additional control which increases cost, again, for no apparent reason.

Response:

Not only is toxicity testing being used to estimate the chronic toxicity of the effluent itself, it is also being used to evaluate possible additive or synergistic effects of the effluent when mixed with the receiving water. This evaluation is particularly important where there are endangered species for which potential cumulative effects of the discharge must be addressed. To determine whether the combination of effluent and receiving water is more or less toxic than the sum of the two individual toxicities, the final permit requires the use of receiving water for toxicity testing. Most laboratories will culture *Ceriodaphnia* in receiving water if it is sent to them.

5. *Comment:*

Potlatch requested clarification regarding the requirement in section I.C.2.c.i of the draft 1999 permit that water that has not met test acceptability criteria may not be used for either dilution or control. There is no way to know if the receiving water will always meet the test acceptability criteria until the test is finished. If the receiving water does not meet the minimum test acceptability criteria then the tests will have to be repeated. However, there is no language in the draft permit that specifies whether or not Potlatch

can revert back to using laboratory water as dilution water if the river water fails. One way to address this issue if Snake River water must be used as dilution water is to perform a duplicate test concentration using laboratory water as dilution water (as well as river water) at the critical chronic effluent concentration (1.8% effluent or 55 TU_c). However, this adds more costs to the tests because of the extra dilution.

Another potential problem with using the receiving water as dilution water is sporadic mortalities with the fathead minnow test. At a CH2M Hill bioassay laboratory in Wisconsin, receiving waters were used as dilution water. Naturally occurring pathogens in this water infected the fish in the static environment of the test chambers and caused the sporadic mortality. Furthermore, sporadic mortality can also be seasonal, so there are no guarantees that using the river water for dilution water will produce a valid control (e.g., minimum test acceptability for survival and/or reproduction/growth) for every test.

Response:

To determine whether the receiving water exceeds the test acceptability criteria, the lab could run a toxicity test using 100 percent receiving water and lab dilution water. This test would be cheaper than running a full toxicity test with all dilutions, and would indicate whether the receiving water is acceptable. Potlatch may use this method or may use the duplicate test method proposed in the comment.

The 1999 draft permit states that receiving water shall be used for dilution water “to the extent practicable”. If the receiving water fails the test acceptability criteria, laboratory water may be used for the test. This includes potential failures due to the presence of pathogens in Snake River water.

6. *Comment:*

Potlatch requested clarification regarding the requirement that reference toxicant tests be conducted using the same test conditions as the effluent toxicity test. Strict interpretation of this wording would suggest that reference toxicant tests also be conducted with control and dilution water from the receiving water. If this is the case it would represent a substantial extra expense, either to the permittee or the contract lab.

Response:

The purposes of reference toxicant testing are to document the performance of the laboratory over time and to identify potential sources of variability, such as health of the organisms, changes among batches of organisms, changes in lab food, or performance by different personnel. Therefore, EPA does not expect that reference toxicant tests be conducted using receiving water. If a lab is performing well on its reference toxicant tests, EPA expects that it would perform equally well using receiving water.

7. Comment:

Potlatch expressed serious concerns about the technical validity of the whole effluent toxicity test in the 1999 draft permit. The extent of the concern about the lack of, or adequacy of, precision data for EPA-600-4-91-002 methods are further highlighted by a settlement agreement between EPA and the Western Coalition of Arid States and Edison Electric Institute which requires a new round of precision testing for most of the EPA toxicity test protocols. Although the settlement agreement allows for the WET test methods currently listed by reference in 40 CFR 136 to continue to be used, it calls for a three-component re-evaluation of the methods.

Potlatch also expressed concern regarding the accelerated testing and initiation of toxicity reduction evaluation/toxicity identification evaluation (TRE/TIE) requirements if a “limit” of 55 chronic toxic units (TU_c) is exceeded. Without the benefit of the work required under the EPA settlement agreement there will remain substantial uncertainty about the validity of the toxicity test response that might trigger these requirements. Therefore, Potlatch recommends that any additional toxicity test monitoring be deferred until issuance of the next NPDES permit, when settlement agreement precision and method evaluations are complete, or that the requirement for increased monitoring or TRE/TIE activity implementation at 55 TU_c be removed from this NPDES permit.

Response:

As noted in the comment, the settlement agreement allowed the continued use of the whole effluent toxicity test methods in 40 CFR Part 136. To satisfy one of the requirements of the settlement agreement, EPA evaluated the variability of WET testing and published the results in *Understanding and Accounting for Method Variability in Whole Effluent Toxicity (WET) Applications Under the National Pollutant Discharge Elimination System Program* (EPA 833-R-00-003, June 2000). In this document, EPA concluded that the variability of promulgated WET test methods is within the range of variability experienced in other types of analyses required in NPDES permits. This document reaffirms the validity of EPA’s WET testing program.

As a point of clarification, the 55 TU_c value (15 TU_c in the final permit) is a trigger, not a limit. The difference is that exceedance of a limit is considered a violation of the permit and subjects the permittee to potential enforcement and/or citizen suit. Exceedance of the trigger only requires accelerated testing, which may be used by EPA to modify the permit or to impose toxicity limits in subsequent permits, if necessary. Therefore, the toxicity testing requirements, including the trigger, will remain in the permit. Given that Potlatch’s DMR data show that effluent toxicity to date has never exceeded 10 TU_c , EPA considers it unlikely that the effluent will exceed the trigger and that accelerated testing will be required.

8. Comment:

Potlatch requested clarification of the reference toxicant test language in the whole effluent toxicity testing requirements. As stated in sections I.C.2.c.ii and iii, the permit

requires that reference toxicant tests be conducted but provides no details with respect to which or how many reference toxicant(s) are to be used or what constitutes a reference toxicant not meeting all “test acceptability criteria as specified in the test methods manual.” The EPA toxicity test manual doesn’t provide a definitive guideline as to what constitutes a reference toxicant test failure. Guidelines for control charting are provided in the EPA methods manual which also indicates that the use of the suggested $\pm 2S$ will result in a 5% exceedance by chance alone. Does exceedance of $\pm 2S$ represent a reference toxicant test failure? The manual also suggests that highly proficient laboratories with very narrow control limits might “be unfairly penalized if a test result which falls just outside the control limits is rejected *de facto*.” The permit wording is also somewhat obscure in the requirement as stated in section I.C.2.c.iii) that “if either of the reference toxicant tests or the effluent tests do not meet all test acceptability criteria as specified in the test methods manual, the permittee must re-sample and retest within 14 days of receipt of the test results.” Is the intent here that if in the event of a reference toxicant test failure the effluent test must be repeated as well? If this interpretation is correct, then the permittee may be faced with additional effluent testing expense based on a failed reference toxicant test with undefined criteria.

Response:

The methods manuals for whole effluent toxicity testing (including the manual referenced in the final permit, *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition, EPA-821-R-02-013, October 2002) contain specific test acceptability criteria (survival and number of young for *Ceriodaphnia* and minimum weight, survival, and number of young for fathead minnow). These criteria also apply to reference toxicant tests. The manual lists sodium chloride (NaCl), potassium chloride (KCl), cadmium chloride (CdCl₂), copper sulfate (CuSO₄), sodium dodecyl sulfate (SDS), and potassium dichromate (K₂Cr₂O₇) as possible reference toxicants. The draft permits referenced the third edition of the “Short Term Methods” handbook, but the final permit has been changed to reflect the availability of the more recent guidance.

Potlatch’s interpretation of the retesting requirements is correct. If the reference toxicants fail, Potlatch must repeat the effluent toxicity tests as well. Failure of the reference toxicant test could mean that there are problems with the organisms or other problems, in which case, the effluent tests would be invalid. Based on random chance, reference toxicant tests can be expected to fall outside the control charts five percent of the time. This is not a failure of the test acceptability criteria. However, if the reference toxicant tests fall outside the control chart range more often than this, it could indicate a problem with the lab. Because it is the permittee’s responsibility to submit valid results, EPA expects that Potlatch would work with its lab to consistently provide valid results, including appropriate Quality Assurance/Quality Control.

9. Comment:

Potlatch recommended that *Selenastrum capricornutum* (green alga) be removed as a species to be tested to determine the presence of chronic toxicity. Potlatch questioned whether this test has suitable precision. EPA's manual *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms* provides no references with respect to interlaboratory variability for chronic testing with green alga. National Council of the Paper Industry for Air and Stream Improvement (NCASI) currently has a green alga test evaluation program because it is concerned about apparent sources of high variability based on the method allowing three distinctly different methods of enumerating test results. In addition, Potlatch is concerned about the potential influence effluent color may have on cell development that is unrelated to chemical responses that are implied in the "toxicity" test methods described by EPA. The green alga test has been applied only infrequently by regulatory agencies to pulp and paper mill effluents, perhaps for these same reasons.

Response:

EPA agrees that it is premature to include whole effluent toxicity testing with *Selenastrum capricornutum* in Potlatch's permit. The final permit has been modified to reflect this change.

10. Comment:

One commentor stated that WET monitoring should be started immediately and conducted monthly. The permit proposes WET testing during only the fourth year of the program. The reason for testing in only the year four is unclear. However, the net result of this approach is that there is absolutely no way for EPA to determine whether or not there are acute or chronic effects associated with the discharge. Given the already impaired condition of the Snake River and the known toxicity of Potlatch's effluent, the WET testing should be conducted and ambient conditions monitored on a periodic basis throughout the applicable time period.

Response:

As explained in the 1999 Fact Sheet, the 1992 permit required Potlatch to conduct monthly whole effluent toxicity testing using water fleas and fathead minnows. In reissuing this permit, EPA has reviewed the data generated by Potlatch to fulfill this requirement. The data show that the discharge has no reasonable potential to cause or contribute to an exceedance of State water quality standards for toxicity. Therefore, the draft permit contained no limits on whole effluent toxicity. However, because EPA believes that it is important to have current data when reissuing the permit in the future, the draft permit required Potlatch to conduct quarterly chronic whole effluent toxicity testing in the fourth year of the permit term, using water fleas and fathead minnows. These data will be analyzed to determine whether a limit should be included in future permits.

The final permit requires quarterly WET testing during the first, second and fourth years of the permit cycle. Additionally, NOAA Fisheries and the USFWS have indicated in their Biological Opinions dated April 2, 2004 and March 5, 2004, respectively that WET information is needed as part of the monitoring studies. Therefore, the permittee must also conduct WET testing when they are conducting the monitoring studies required by the terms and conditions of the Biological Opinions. (See the ESA Monitoring Plan Summary, available as Attachment A to the final permit.)

11. Comment:

Potlatch recommended that the bioaccumulation study language in section I.D.3.a be changed to the following: “The permittee shall collect fish once per year and submit them for full-congener dioxin analysis by either EPA method 1613 or 8290 or equivalent, and percent lipids.” This will avoid confusion about what “all congeners of TCDD and TCDF” means.

Response:

EPA agrees that specifying the required test method could eliminate any possible confusion. Therefore, the final permit has been changed to require Potlatch to perform a full-congener analysis for dioxins and furans by EPA method 1613. Method 8290 is not an approved method for NPDES permits; however, Potlatch can request the use of this method as an alternative test method under 40 CFR 136.4.

12. Comment:

Potlatch requested that a clause be added to section I.D.3.b that allows for the collection of fish species not named but that would represent the appropriate trophic level(s) to be collected in lieu of those named if the named species are not available at the sample site during the sample collection period. This change would address Potlatch’s concern that it may be difficult to collect a sufficient number of the fish species specified for some of the trophic levels in the bioaccumulation monitoring requirements.

Response:

EPA agrees that it is appropriate to allow the collection of different species than those named in the permit for the bioaccumulation study. Potlatch should be aware, however, that the species in the draft permit were those which Potlatch stated it would sample in its June 11, 1997, proposed bioaccumulation sampling plan. The proposed sampling plan must be changed to reflect the possibility that different species may be collected.

13. Comment:

Potlatch recommended that the requirement to collect fish annually be contingent upon obtaining the necessary permits. Due to the presence of endangered fish species in the sampling area during different times of the year, there will only be a limited period of time when sampling can take place using sampling methods that allow efficient capture

of representative fish samples. There should be no problem sampling along the shoreline at the five locations necessary with nighttime (most effective time to sample)/daytime boat electrofishing. However, this will require that Potlatch or its contractor is able to obtain a Section 7 or incidental take permit from NMFS. Potlatch's current permit required a similar bioaccumulation study be conducted. However, the plan that was submitted was never implemented due to Potlatch not being able to obtain an incidental take permit from NMFS. Without such a permit, the study will not collect the quality of data that is being sought because the sampling techniques that could be used, i.e., that would avoid the risk of injury to salmonids, are less efficient and have greater selection bias.

Response:

The reason that NMFS (NOAA Fisheries) was unable to issue an incidental take permit for the bioaccumulation study was because the underlying permit (the 1992 permit) had not been consulted on and NMFS is required to consult on the federal action as a whole, not on pieces of the action. Because the final permit has been consulted on, Potlatch will not be required to obtain a separate incidental take permit from NOAA Fisheries.

14. Comment:

Potlatch requested that the fish sampling site located within the mixing zone be removed as a fish collection site for the bioaccumulation monitoring requirement. Efficient sampling in the mixing zone is not possible.

Sampling fishes in the mixing zone in water approximately 30 feet deep will be difficult. Gill nets are about the only collection method that can sample effectively in water that deep and are not species selective. However, under present ESA restrictions, Potlatch probably would not be able to use them. If Potlatch did obtain permission to use gill nets via a permit, our activities would be probably be highly regulated resulting in sampling biases that may not be acceptable for the purposes of the study and in inefficient sample collection. It is unlikely that we could sample at low flows as these times coincide with sockeye salmon and fall Chinook migrations.

The permit requires that fish collected at each site shall include at least one of the listed species from each of the three trophic levels. Sampling smallmouth bass by gill nets is not feasible. Bass, in general, are too intelligent to go into gill nets or can generally escape. Therefore, northern pikeminnow would be the listed predator species to be targeted if gill nets were to be used but the large pikeminnow as stated previously are not very abundant in the Lower Granite pool. Plus, pikeminnow are not usually pelagic but are more shoreline oriented. Sampling either northern pikeminnow or smallmouth bass would be feasible along the shoreline using boat electrofishing, best accomplished at night. Potlatch suggests that shoreline sampling adjacent to the outfall would be a better sampling site.

Response:

EPA does not agree that sampling within the mixing zone cannot be done. As noted by Potlatch, gill nets are an efficient means to sample within the mixing zone. Discussions with Idaho Fish and Game indicate that it is possible to use gill nets without excessive fish mortality (Cochner, pers. com.). Given the size of the mixing zone, EPA realizes that the number of fish captured may be smaller than the numbers captured at other sampling locations. However, this does not preclude the need for fish sampling within the mixing zone.

15. Comment:

One commentor stated that the proposed WET testing protocol specifies taking effluent and diluting it in the laboratory based on mathematical projections of mixing in ambient waters. The commentor believes that mixing will not occur as postulated by EPA because of warmer water rising to the surface and other hydrologic features associated with the confluence of the two rivers. Therefore, less complete mixing occurs than theoretical models predict. The only true method of determining total toxic effects is in-situ testing. At a minimum, grab samples of water in the mixing zone should be used to determine toxic effects in the lab. Other methods for in-situ testing should be explored. In short, there are available methods for such testing and the permit should not be issued without including testing for ambient toxicity effects in the Snake.

Response:

EPA disagrees with the commentor that in-situ WET testing is appropriate. The commentor's assertion that less complete mixing than predicted by the mixing zone modeling will occur is incorrect. As stated in the response to the first comment in A.2 of this summary and in the Mixing Zone section of the Response to Comments, the estimates of the rapidity and completeness of the effluent's mixing with the receiving water are accurate (this is also documented in the 2005 Temperature Assessment). The buoyancy of the plume and the unique mixing behavior of the Snake and Clearwater rivers have been accounted for in the mixing zone analysis.

The estimates of the dilution achieved in the receiving water are based on critical conditions (7Q10 receiving water flow, maximum effluent flow). These worst-case conditions are used because they are unlikely to occur simultaneously, and therefore there is a low probability that the actual dilution at the edge of the mixing zone will be less than that predicted by the modeling. If WET testing were performed on a grab sample taken downstream of the discharge, it is likely that the sample will contain a smaller fraction of the Potlatch effluent than predicted by the modeling, not a larger fraction as stated by the commentor. The requirement to dilute the receiving water at the ratio predicted by the mixing zone modeling is therefore a conservative approach. As stated in the Response to Comment #4 of this section, the permittee must use receiving water for dilution, when practicable, in order to account for synergistic or additive effects of the effluent when mixed with the receiving water.

E. Mixing Zone**1. Comment:**

One commentator stated that mixing zones are not prohibited in impaired waters. Washington's water quality standards state that "water quality criteria shall not be violated outside of the boundary of a mixing zone as a result of the discharge for which the mixing zone was authorized". The commentator interpreted this statement to mean that upstream or background conditions that cause a violation of a standard at a facility's outfall is not sufficient to deny a mixing zone. Ecology's Permit Writer's Manual states: "The process of deriving effluent limits described later in this chapter will ensure the water quality standards are not exceeded past the mixing zone boundary or flow restriction."

The state of Washington has numerous permits for industrial dischargers that include mixing zones for facilities on 303(d) listed waters. Star-Kist Caribe states that EPA does not have the right to unilaterally reverse a State's interpretation of its water quality standards.

There is no legal authority to support applying water quality standards as end-of-pipe effluent standards simply because TMDLs have not yet been prepared. Federal regulations at 122.44(d)(ii) requires that dilution be considered when determining reasonable potential. The commentator cited the preamble to the promulgation of 122.44(d) (54 FR 23872, June 2, 1989), which states that most procedures for determining whether a discharge causes, has the reasonable potential to cause, or contributes to an excursion above a water quality criterion "account for dilution of the effluent in the receiving waters, after considering mixing zones if applicable, any contribution of the pollutant from upstream and nonpoint sources . . ." (Emphasis by commentator).

Response:

While Washington's policies with regard to its water quality standards are instructive, Potlatch's discharge is to Idaho's waters. Therefore, it is Idaho's water quality standards, not Washington's, that are relevant with regard to mixing zones. In any case, Washington's standards, like Idaho's standards, require that standards be met at the edge of the mixing zone.

A mixing zone may not cause or contribute to exceedances of water quality standards outside the mixing zone. For most parameters that are mass-based (e.g., metals), it is physically impossible for the discharge to exceed the criteria and not contribute to an exceedance of water quality standards at the edge of the mixing zone in an impaired waterbody. Under these circumstances, the only way to ensure that the discharge is not causing or contributing to an exceedance of the criteria, as required by 40 CFR 122.44(d)(1)(vii)(A), is for the effluent to meet the criteria at the point of discharge. Therefore, if the concentration of such a pollutant were exceeded upstream from a discharge, a mixing zone would not be applicable for that type of pollutant, even though a mixing zone may be authorized for other pollutants in the discharge.

However, temperature is a thermal loading. The heat load from the discharge can be changed to other forms of energy, and transferred through conduction, convection, or radiation to and from media other than the receiving water. As discussed in the response to Comment #1 of the “Temperature” section of this document, the natural condition water temperatures in the Snake River would be above the 19°C daily average criterion of 19°C more than 99% of the time in July and August, and more than 26% of the time in September. The Idaho water quality standards at IDAPA 58.01.02.401.a.v allow a 0.3°C increase above natural temperatures when the natural temperature exceeds the numeric criterion. An analysis of the biological, chemical and physical affects of the heated discharge shows that the receiving water body has the assimilative capacity such that a mixing zone does not cause or contribute to exceedances of the water quality standard at the edge of the mixing zone, therefore a mixing zone may be applied.

EPA’s analysis has demonstrated that a discharge in compliance with the temperature effluent limits in the final permit would meet all of the thermal plume limitations from Idaho’s mixing zone policy and EPA and IDEQ guidance for temperature mixing zones. Therefore:

- the discharge will not cause lethal effects or thermal shock to aquatic life
- the impact of the thermal plume is restricted such that there is adequate migratory passage for migratory aquatic life
- the receiving water has the capacity to assimilate the heat from the discharge such that there is less than a 0.3°C difference between the ambient temperature and the downstream river temperature at the edge of the mixing zone, as required by the natural condition provisions of the Idaho water quality standards

Because all of the thermal plume limitations are met and the temperature at the mixing zone boundary is in compliance with the allowable 0.3°C temperature increase at critical conditions, the heated discharge from the Potlatch mill will not further impair the designated uses of the Snake River. EPA agrees with the commentor’s statement that 40 CFR 122.44(d)(ii) requires that dilution be considered. The comment, however, erroneously implies that when considering dilution, the Agency must assume that the upstream water does not contain the pollutant being evaluated. As can be seen from reading the quote in its entirety, however, the Agency is required to consider “. . . any contribution of the pollutant from upstream.”

2. Comment:

Several commentors raised issues regarding the adequacy of Potlatch’s mixing zone study and questioned whether EPA could issue a permit with a mixing zone based on the study and whether the study complied with Idaho’s mixing zone regulations.

As a general concern, commentors stated that Idaho’s mixing zone regulation requires Potlatch’s “mixing zone to be located so it does not cause unreasonable interference with or danger to existing beneficial uses”. Potlatch’s studies do not demonstrate that the mixing zone poses no danger to existing beneficial uses under Idaho and Washington

law, including salmonid migration. In addition, the mixing zone study did not address the needs of threatened and endangered species.

Commentors also cited some specific flaws in the mixing zone study, including using the assumption that there is one stream of flow, not the more complex convergence of the Snake and Clearwater Rivers; assuming that the diffuser sits perpendicular to the flow of the Snake River; and failing to account for the existence or removal of the Lower Granite Dam.

The 7Q10 and 1Q10 flows are based on combined flows of Snake and Clearwater Rivers, but the Clearwater does not contribute significantly to mixing and should be discounted. Potlatch's study shows that stratification in the Clearwater and the angle of the current relative to the diffuser reduces mixing such that the maximum dilution is only about 20 to 30 (12/12/97, p7). Pulses of cold water from the Clearwater have been tracked from Lewiston to the confluence of the Columbia River. The Snake River 1Q10 is 9672 cfs and the 7Q10 is 9864 cfs. These flows must be further reduced to normalize for flow augmentation releases that have occurred since 1992. Idaho Department of Water Resources states that augmentation from Brownlee Dam during late August early September has been about 1500 cfs/year, yielding flows of 8,400 and 8,200 cfs, which give dilutions of 32:1 and 31:1.

Response:

As a point of clarification, it is the state of Idaho, not EPA, that authorizes mixing zones for NPDES permits as part of its certifications under Section 401 of the Clean Water Act. To the extent that these comments are on the State's authorization of a mixing zone for Potlatch's effluent, the State's administrative process must be used to challenge the mixing zone.

The mixing zone study submitted by Potlatch on September 16, 1998, demonstrates that the mixing zone authorized by the Idaho DEQ complies with State water quality standards. EPA has also modeled the effects of Potlatch's discharge as part of consultation with NOAA Fisheries and USFWS under the ESA. EPA's modeling addressed the flow conditions at the confluence of the Snake and Clearwater Rivers and considers the existence of Lower Granite Dam. The placement of the diffuser in the River is based on the actual design of the diffuser, not on "assumption", as alleged in the comment. The diffuser axis is rotated 48 degrees counterclockwise from the stream flow, not perpendicular to it. In addition, the possible effects of the mixing zone on listed species are addressed in the biological evaluation (USEPA, 2003b) prepared as part of the ESA consultation process with NOAA Fisheries and USFWS.

The mixing zone study is not required to address flow augmentation from Brownlee Dam. EPA cannot issue a permit with limits based on conditions that are unlikely to occur during the life of the permit. Based on the *Final Biological Opinion on Operation of the Federal Columbia River Power System* (NMFS, December 21, 2000), it is unlikely that the dams will be removed during the term of this permit. If such a decision is made,

there will be sufficient time before it would be implemented to evaluate the Potlatch permit and mixing zone and modify the permit limits, if necessary.

Idaho's water quality standards require Potlatch to demonstrate that its mixing zone does not cause unreasonable danger to existing beneficial uses, not that it poses no danger to beneficial uses. The State has concluded that Potlatch has demonstrated that the mixing zone will comply with State standards, with regard both to the size of the mixing zone and the concentration of pollutants at the edge of the mixing zone.

The data base used to calculate the 7Q10 and 1Q10 included the record from January 1, 1973 to December 31, 2002. Flow augmentation for six years of that record does not have a significant impact on the 7Q10 and 1Q10. Additionally, the commentor's suggested method of accounting for flow augmentation (subtracting the flow from Brownlee Dam) is incorrect. The 7Q10 and 1Q10 flows are calculated by taking the entire record of flow day by day. Just as it is not appropriate to calculate the combined 7Q10 by adding the 7Q10 of each River, it is not appropriate to subtract the approximate flow from Brownlee Dam. Data would have to be provided for each day, the flow for that day subtracted from the flow for the Snake River for that day, and the 7Q10 calculated based on the adjusted data set.

3. Comment:

Several commentors opposed the granting of a mixing zone, particularly for persistent bioaccumulative toxic (PBTs) chemicals. PBTs build up over time and concentrate in the food chain. In the fall of 1999, EPA announced that mixing zones for PBTs would be phased out in the Great Lakes states. The agency called on other states to follow suit. How can EPA expect states to do this, if EPA continues to write permits approving new mixing zones?

Response:

Until states' water quality standards are changed to prohibit such mixing zones, states have the authority to grant mixing zones for PBTs. The State, not EPA, authorizes mixing zones.

4. Comment:

One commentor stated that EPA and Fish and Game should develop an Environmental Impact Statement (EIS) on the mixing zone before the permit is issued because the discharge does not harm fish.

Response:

Under 40 CFR 122.29, the only time an EIS is required for an NPDES permit is for a new source. The Potlatch facility is not a new source, so an EIS is not required.

5. Comment:

One commentator stated that the analysis of the impacts of the proposed use of a mixing zone for Potlatch's discharges continues to disregard certain complicating factors making the mixing zone more threatening to salmonids than recognized by EPA in the 2003 Temperature Assessment.

First, the Temperature Assessment assumes (at page 7) that the density of the effluent and receiving water are the same, when in fact that is not true. The density of water at 15°C is 8.338 lb/gallon while water's density at 33°C is about 8.295 lb/gallon. Thus, the less dense hot effluent will tend to float atop the Snake River water during certain periods of the year (i.e., May through July) just as the colder Clearwater River tends to subduct beneath the Snake River and generally avoid mixing for miles downstream (see Temperature Assessment p. 25). NOAA Fisheries also raised concerns about the buoyancy of the effluent in the March 2003 discussion draft biological opinion for the Potlatch NPDES permit (p. 146).

Because effluent will tend to float atop the Snake River, far less mass of receiving water is actually available for mixing than EPA has assumed, and therefore the effluent will not fully mix during the timeframes suggesting in the Temperature Assessment. Most critically, migrating juvenile fish stay on the water surface, and thus are subjected to the buoyant effluent in far greater concentrations than EPA has assumed.

In short, Potlatch effluent does not mix with the speed and completeness assumed by EPA, but rather tends to collect where the fish are: at the surface (for migrating juveniles) and in the large eddy at the confluence of the two rivers (for both juveniles and adults). Under EPA's recent temperature guidance, as well as Idaho water quality standards, the mixing zone analysis must reflect these realities.

Response:

In EPA's 2003 Temperature Assessment (USEPA, 2003c), it was only assumed that the effluent density and the receiving water density are *approximately* equal for a preliminary "heat balance" screening to establish an effluent temperature. EPA then used the lower of the temperatures calculated from the heat balance or the current temperature effluent limit as input for the CORMIX model, which was used to determine the spatial characteristics of the plume. The subsequent modeling would further define whether or not even more stringent effluent limits are necessary.

In the CORMIX model, the actual effluent density and receiving water density are used to determine the fate and effects of the discharge. The commentator is correct that the heated discharge will rise through the water column since it is less dense. However, as the discharge is rising, it is also being cooled by the surrounding ambient water. The commentator is also correct that once the thermal plume of the discharge reaches the surface of the receiving water body, that there is less mass of the receiving water to mix with the heated discharge.

The model EPA has used accounts for all of this; thus, estimations of the speed and completeness of the mixing are accurate. EPA has documented the mixing zone modeling in the Biological Evaluation submitted to both NOAA Fisheries and USFWS on December 1, 2003, and both Services agreed with EPA's assessment in their final Biological Opinions issued on April 12, 2004, and March 5, 2004, respectively.

6. Comment:

One commentor stated that the river conditions are not fully mixed at the confluence as indicated by EPA and other sources. It is unclear from Idaho's draft 401 certification letter (June 18, 2003) whether Idaho has utilized the Snake River flow alone or the combined flows of the Snake and Clearwater Rivers in their mixing zone analysis. EPA must query Idaho and determine which flow Idaho has utilized. If Idaho has used the combined river flows, EPA must direct Idaho to redo their mixing zone analysis using the Snake River flow alone as measured at the Anatone, WA gauging station, with the particular river conditions present at the point of discharge.

Response:

EPA and Idaho DEQ have worked jointly on the mixing zone modeling for this permit. The mixing zone analysis accounts for the fact that the rivers do not mix at the confluence under some conditions. The flow used for the mixing zone was the appropriate critical flow (e.g., 7Q10, 1Q10, harmonic mean) of the Snake River, not the flow of the combined Snake and Clearwater rivers.

7. Comment:

Potlatch commented that EPA should incorporate a mixing zone for pH in the development of final effluent limitations should the state of Idaho authorize one in its final 401 certification under the Clean Water Act.

Response:

EPA agrees with the comment and has incorporated the mixing zone for pH authorized by the state of Idaho in its final 401 certification under the Clean Water Act in the development of the final effluent limitations.

8. Comment:

One commentor stated that the proposed criteria for the mixing zone may not be realistic. The EPA Regional Guidance for mixing zone allowable thermal increases permit up to 75% of the river width to receive the 0.3°C increase when temperature standards are already exceeded. It is unlikely that acute effects will be limited to 5% of the river width when the diffusers occupy a greater width. The 122 meter long diffuser spans roughly 25-50% of the active Snake River Channel (NOAA Fisheries Draft BiOp). This is even worse than Idaho's proposal of 25% stream width. Other proposed requirements specified an acute mixing zone equal to 25% of the 1Q10 flow (EPA 1999 Fact Sheet).

However, the current revised permit does not explicitly recommend using a percentage of the volume of the 1Q10 or 7Q10 flows as an acute mixing volume. Give the large increase in the mixing zone proposed in Regional Guidance; it appears that past recommendations were too restrictive.

The EPA Summary of Proposed Changes states that EPA Guidance specifies that plume size should be limited in various ways. The cross-sectional area of the river that can exceed 25°C is limited to 5%. The cross-sectional area that is $\geq 21^\circ\text{C}$ is limited to $< 25\%$. But if the upstream temperature is $> 21^\circ\text{C}$, the cross-sectional area subjected to a de minimis increase of 0.25°C should be $\leq 75\%$. This means that if the water upstream of Potlatch is already at 25°C , the plume can have 5% of the river cross-section at 25.3 to 33°C ; 70% can be at 25.25°C ; the remaining 25% would need to be at 25°C . Given the large volume of flow in the Snake, this is a huge allowable thermal load and if maximized would produce a significant temperature increase that would have a long travel distance downstream.

Even the Idaho standards for mixing zone size limits is up to 25% of the stream width or 15% of the stream width during the 7Q10 flow. It appears that EPA Regional Guidance simply moves the allowable stream width designated as mixing zone from 15% of the 7Q10 flow to 70% of the flow. EPA Regional Guidance allows a large width of the river to receive a thermal increase.

Response:

As a point of clarification, it is the state of Idaho, not EPA, that authorizes mixing zones for NPDES permits as part of its certifications under Section 401 of the Clean Water Act.

Idaho mixing zone policy at IDAPA 58.01.02.060.01 states that after a biological, chemical, and physical appraisal of the receiving water and the proposed discharge and after consultation with the person(s) responsible for the wastewater discharge, the Department will determine the applicability of a mixing zone and, if applicable, its size, configuration, and location. In defining a mixing zone, the Department will consider the following principles:

- The mixing zone may receive wastewater through a submerged pipe, conduit or diffuser.
- The mixing zone is to be located so it does not cause unreasonable interference with or danger to existing beneficial uses.
- When two or more individual mixing zones are needed for a single activity, the sum of the areas and volumes of the several mixing zones is not to exceed the area and volume which would be allowed for a single zone;
- Multiple mixing zones can be established for a single discharge, each being specific for one or more pollutants contained within the discharged wastewater;
- Mixing zones in flowing receiving waters are to be limited to the following:

- The cumulative width of adjacent mixing zones when measured across the receiving water is not to exceed fifty percent of the total width of the receiving water at that point;
- The width of a mixing zone is not to exceed twenty-five percent of the stream width or three hundred meters plus the horizontal length of the diffuser as measured perpendicularly to the stream flow, whichever is less;
- The mixing zone is not to include more than twenty-five percent of the volume of the stream flow.

When establishing the temperature effluent limitations for the draft 2003 permit and the final permit, EPA used Idaho's mixing zone policy and the Region 10 Temperature Guidance (USEPA, 2003a). The Temperature Guidance was used only in further restricting the thermal discharge to minimize adverse impacts to salmonids within the plume, not to allow larger mixing zones than those allowed under the Idaho water quality standards.

In the revised Temperature Assessment (USEPA, 2005), EPA evaluated two mixing scenarios for the confluence of the Snake and Clearwater rivers. Both of these were incomplete mixing scenarios. The first scenario assumed the Snake and Clearwater Rivers ran parallel (horizontally stratified) for some distance before mixing. This scenario only used the flow of the Snake River for mixing. The second assumed the Snake and Clearwater Rivers ran vertically stratified and accounted for Dworshak Dam releases to the Clearwater River. The horizontally stratified case required the maximum reduction in the Potlatch Mill discharge temperature.

The EPA mixing zone analysis included the following restrictions on the plume:

- The maximum temperature within the plume after 2 seconds of plume travel from the point of discharge does not exceed 32°C.
- The thermal plume does not result in more than 5 percent of the Snake River channel cross-section above 25°C.
- The thermal plume does not result in more than 25 percent of the Snake River channel cross section above 21°C. When the Snake River channel exceeds 21°C, the thermal plume does not increase more than 25 percent of the Snake River channel cross-section above ambient conditions by a measurable amount (i.e. <0.3°C).
- There is no measurable difference (i.e. <0.3°C) between the ambient temperature and the downstream river temperature at the edge of the zone of initial dilution (ZID), which modeling shows extends for a distance of 45 meters downstream of the outfall.

The commentors claims that the EPA Region 10 Temperature Guidance allows up to 75% of the river width to receive a de minimis increase when temperature standards are already exceeded is an oversimplification. The Temperature Guidance suggests that 75% of the *cross sectional area* of the river can receive a de minimis temperature increase *only if* the upstream temperature is greater than 21°C. The width of the Snake River at its confluence with the Clearwater River is 676 meters. In this case, the mixing zone has

been limited to 25% of the river width, as required by the Idaho water quality standards. While the diffuser occupies 36% of the active Snake River Channel, it only occupies 18% of the total Snake River width.

EPA had not claimed that the acute effects were limited to 5% of the river width. Acute effects (i.e. temperatures above 25°C) have been limited to 5% of the cross-sectional area of the Snake River. A temperature of 25°C is met within inches downstream of the diffuser, before the plumes from each individual port merge into one large plume (see Figure 1); therefore, acute effects are well below the 5% cross-sectional area restriction. However, calculating the percentage of the river width subject to acute effects using the port diameter of 3 inches and multiplying that by the 72 active ports, and dividing by the river width shows that the acute effects of the discharge would occur in less than 1% of the river width.

In the 1999 fact sheet, EPA used an acute mixing zone equal to 25% of the 1Q10 flow because it was using the steady-state heat-balance calculation to determine reasonable potential and establish mixing zones. In the final permit, EPA and IDEQ have used the CORMIX mixing zone model to determine reasonable potential and establish mixing zones. This results in dilutions ranging up to 46.7, which translates to a maximum of 2% of the 7Q10 flow. EPA used the 7Q10 flow, rather than the 1Q10 flow, for temperature because this flow best approximates the flow assumptions used to establish the criteria for temperature (average daily). EPA did use the 1Q10 flow for the analysis of the discharge with respect to threatened and endangered species and the maximum dilution (71.8) results in 14% of the 1Q10 flow, which is still far below the 25% allowed by the Idaho mixing zone policy.

F. Biochemical Oxygen Demand

1. Comment:

Several commentors were critical of the five-day biochemical oxygen demand (BOD₅) limits in the draft permit. The increased BOD₅ limits violate the anti-backsliding provisions of the Clean Water Act and EPA regulations. Because the Snake River already violates water quality standards for dissolved oxygen, EPA must draft a water quality-based effluent limitation for BOD₅ which is more stringent than the existing permit. In addition, the backsliding analysis in the Fact Sheet only analyzed Idaho's antidegradation policy. EPA must analyze BOD₅ from the perspective of the state of Washington's antidegradation policy. Finally, EPA must ensure that the effluent limitations will protect threatened and endangered species.

Response:

EPA has determined that technology-based limits for BOD₅ are adequate to ensure compliance with the water quality standards of both affected States from December through May. EPA reevaluated the technology-based limits based on production data for 1997 through 2002 submitted by Potlatch. This new data resulted in a daily maximum

limit of 55,100 lb/day and a monthly average limit of 28,800 lb/day. Because these limits are higher than the limits in the 1992 permit, EPA considered the anti-backsliding and antidegradation requirements in the Clean Water Act and its implementing regulations.

In this case, EPA does not agree that increasing the effluent limits for BOD₅ violates the anti-backsliding provisions in the Act. Under Section 303(d)(4) of the Clean Water Act, where water quality standards are attained, permit limits may be revised if such a revision is consistent with the State's antidegradation policy. As discussed in the Fact Sheets, the Snake River in the vicinity of Potlatch's discharge is in attainment for dissolved oxygen, in that it meets the Idaho water quality standards (which require that dissolved oxygen concentrations be greater than or equal to 6 mg/l). In addition, because the Snake River is a Tier 1 water, increases in pollutant loading are allowed provided that State water quality standards continue to be met. Even with the increased technology-based BOD₅ limits, Idaho's water quality standard for dissolved oxygen is met.

The federal regulation at 40 CFR 122.4(d) prohibits the issuance of an NPDES permit that does not ensure compliance with the applicable water quality standards of all affected States. EPA has reevaluated the discharge's effects on DO in Washington State using more sophisticated modeling than was used for the 1999 draft permit and information that became available during and after the initial comment period. EPA has evaluated the overall impact of Potlatch's discharge on dissolved oxygen (DO) in Washington to determine whether the technology-based effluent limits for BOD₅ are stringent enough to ensure compliance with Washington's water quality standards.

Sometimes the maximum impact of a discharge occurs in the far field, miles downstream of the discharge. EPA has determined that the maximum impact of Potlatch's discharge of BOD₅ to dissolved oxygen levels in Washington occurs in the vicinity of Lower Monumental Dam. To evaluate the effects of the discharge on DO at Lower Monumental Dam, EPA used the mathematical model described in Yearsley (1999). This model was not available at the time the 1999 draft permit was issued. Based on this model, EPA has determined that a discharge in compliance with the technology-based effluent limits in the draft permit would not cause or contribute to violations of the Washington water quality criterion of 8 mg/L dissolved oxygen from December through May.

From June through November, however, EPA determined that a discharge in compliance with the technology-based effluent limits could cause or contribute to violations of the Washington water quality standards for dissolved oxygen. Therefore, EPA calculated necessarily stringent water quality-based effluent limits for BOD₅, which apply from June through November. EPA reopened the comment period in June 2003 to take comment on this new information. The final permit contains water quality-based effluent limits equal to a daily maximum BOD₅ limit of 9,800 lb/day and a monthly average limit of 5,100 lb/day during this time frame. Because these water quality-based effluent limits are more stringent than the limits in the 1992 permit, anti-backsliding is not applicable.

By ensuring that the discharge will not cause or contribute to violations of Washington's water quality criteria for dissolved oxygen, EPA has met its obligation to the State of

Washington under the Clean Water Act and 40 CFR 122.4(d). Even if Washington's antidegradation policy is applicable in this circumstance, EPA has determined that the incremental DO impact in Washington State resulting from the increase in the technology-based effluent limits is immeasurable. In *Arkansas v. Oklahoma* (503 U.S. 91, 1992), the Supreme Court deferred to EPA's interpretation of 40 CFR 122.4(d) that the discharge would be considered to cause or contribute to a violation of downstream State standards only if the discharge caused an "actually detectable or measurable change in water quality."

The effects to listed species of increasing BOD₅ have been evaluated as part of the biological evaluation submitted to NOAA Fisheries and USFWS on December 1, 2003. In that document, EPA concluded that the overall effect of the final effluent limitations on dissolved oxygen levels may affect but is not likely to adversely affect listed salmonid species; however, during the five-year compliance schedule for the summer limits (June through November) the effluent is likely to adversely affect listed salmonid species. NOAA Fisheries and USFWS concurred with this determination.

2. Comment:

In its draft 401 certification, Idaho DEQ commented that the dissolved oxygen effluent limitation in the permit may be made less stringent without violating the requirements of state Water Quality Standards. The effluent limitation is based upon Washington's dissolved oxygen standard, which is more stringent than the Idaho Water Quality Standards. Idaho DEQ requests that the dissolved oxygen effluent limitation be modified to reflect the less stringent dissolved oxygen standard set forth in the Idaho Water Quality Standards.

Response:

The draft permit contained no effluent limitation for dissolved oxygen: EPA assumes that Idaho DEQ was referring to the BOD₅ limitation. EPA did not apply Washington standards at the point of discharge, however, effluent limits must ensure that the discharge does not cause exceedances of downstream States' water quality standards. In this case, Washington's dissolved oxygen criterion (a minimum of 8 mg/l) is more stringent than Idaho's (a minimum of 6 mg/l). Therefore, the limits in the final permit must ensure that the discharge does not cause dissolved oxygen in the Snake River to be depressed below 6 mg/L in Idaho, nor below 8 mg/l at or beyond the Washington/Idaho border.

Developing a permit limit to ensure that the discharge does not cause or contribute to an exceedance of the downstream state's standards at the state line and points downstream is not the same as applying the downstream state's standards at the point of discharge. In evaluating the effect of a discharge on downstream waters, EPA evaluates the fate of the pollutant, including decay, dilution, reoxygenation, and other factors. Applying the downstream state standard to the discharge would mean requiring that the discharge have a dissolved oxygen concentration of 8 mg/l. This approach would be inconsistent with

the Supreme Court's decision in *Arkansas v. Oklahoma* (503 U.S. 91, 1992), which requires that downstream state standards be met at the border and points downstream (as opposed to the point of discharge). Further, it would not protect downstream waters from dissolved oxygen depletion as the biochemical oxygen demand was exerted on the waterbody.

3. Comment:

Potlatch requested verification of its interpretation of the application of the permit limits for maximum daily and monthly average effluent limits for BOD₅. The limits are based on the combined river flows of the Snake and Clearwater rivers as measured at the USGS Anatone and Spaulding gauging stations, respectively. The monthly average BOD₅ will be based on the monthly average combined river flow. This is different from the 1992 permit which allowed for more than one monthly average limit. Under the draft permit, it will be necessary to track the monthly average river flow in order to determine whether the monthly average BOD₅ discharge will be in compliance with the monthly average BOD₅ limit for the river flow range in which the average monthly river flow lies. On the other hand, the maximum daily limit for BOD₅ is based on the maximum river flow for the 24-hour sample compositing period.

Response:

Potlatch's interpretation of the maximum daily and monthly average BOD₅ limits for the 1999 draft permit is correct; however, the final effluent limits are not based on the flow of the receiving water. The interim effluent limits in effect for the duration of the compliance schedule period continue to be based on the river flow.

4. Comment:

Potlatch commented that the effluent limits for total suspended solids (TSS) and the highest flow tier (greater than 22,000 cfs) for BOD₅ are incorrect. The corrected maximum daily BOD₅ limit will be 56,600 lb/day and the corrected monthly average BOD₅ Limit will be 29,500 lb/day. The corrected maximum daily TSS limit will be 98,000 lb/day and the corrected monthly average TSS Limit will be 52,600 lb/day.

Response:

EPA concurs with this comment. In developing the technology-based limits in the draft permit, EPA inadvertently transposed 12 months' worth of data, resulting in the incorrect calculation of BOD₅ and TSS limits. In addition, EPA recalculated the limits based on production data for 1997 through 2002 that Potlatch submitted. The final permit has been corrected and contains final effluent limits for BOD₅ of 55,100 lb/day and 28,800 lb/day as a daily maximum and monthly average, respectively. The TSS limits in the final permit are 94,400 lb/day and 50,600 lb/day as a daily maximum and monthly average, respectively.

5. Comment:

Potlatch and its consultants, HydroAnalysis, Inc, commented that the RBM10 model is flawed because it does not account for numerous processes that influence dissolved oxygen (DO). In particular, oxygen demand by nitrogenous compounds and net oxygen by algal photosynthesis and respiration are not included in the EPA model.

Response:

EPA disagrees with the supposition that models that do not include all the physical, chemical, or biological process influencing the simulated parameter are flawed. The degree of complexity needed in a model is dependent on the nature of the problem under analysis. In this case, the model does not include all processes that influence dissolved oxygen, but it does include the key biochemical process (deoxygenation due to bacterial decomposition) that influences the incremental change to oxygen levels in the river due to the discharge of oxygen-demanding wastes, and the characteristics of the river (e.g., flow, temperature) that affect this process.

Potlatch consultants, HydroAnalysis, Inc, are in error in claiming that EPA is not considering nitrogenous oxygen demand in its calculations. EPA's analysis employs the total BOD, which includes both carbonaceous and nitrogenous oxygen demand. HydroAnalysis also overlooks EPA's previous analysis of the BOD time series data for the river (Cope, 2002) indicating that, in EPA's judgment, separating the analysis into carbonaceous and nitrogenous BOD would not significantly change the results of the analysis.

While algae photosynthesis/respiration likely affects ambient DO levels, EPA does not believe that inclusion of this process will change the estimates of the incremental impact of Potlatch discharge. Additionally, it should also be noted that (1) algae growth/respiration is highly variable, (2) simulation of algae growth/respiration is fraught with uncertainty, and (3) the available data for this study area to support inclusion of this process is scant at best. In previous work by HydroAnalysis, comparisons between measured and simulated chlorophyll-a levels (using the QUAL2E model) do not suggest that inclusion of this process will improve DO estimates (see Figure 12 in HydroAnalysis (2002)). The report itself states that "the algal bloom seen in the field data in Figure 12 is not well duplicated by the model..."

Finally, HydroAnalysis has overlooked EPA's comparison of average simulated minimum DO levels to measured DO levels at the downstream dams (Cope(2002); Figure 6). This comparison suggests that the RBM10 model, despite its relative simplicity, is estimating reasonable minimum DO levels in the critical summer period.

6. Comment:

Potlatch commented that the RBM10 model has not been subject to peer review and thorough QA review, including review of the model code. While the original temperature model has been peer reviewed, the BOD components of the model need to

undergo peer review as well. “Software/Model Development” gets special attention in EPA data quality procedures.

Response:

The RBM10 model has been extensively documented, disseminated, peer-reviewed and tested. The modification to the model to add dissolved oxygen parameters was a minor change to the code. The main computational procedure, input file system, and database structure are the same as the temperature-only version that has undergone formal peer-review. The dissolved oxygen components are the well-known Streeter Phelps formulas, which are similar to the formulas in Potlatch’s QUAL2E model.

EPA’s peer review policy (Peer Review, Science Policy Council Handbook, EPA, 2000) states that “an application of an existing, adequately peer reviewed methodology or model to a situation that *departs significantly* from the situation it was originally designed to address is a candidate for peer review.” In this case, the “departure” from the peer-reviewed version of the model is the addition of the dissolved oxygen state variable and Streeter Phelps equations. This departure is not significant from a peer review standpoint, because there is nothing new or novel in the Streeter Phelps equations. Potlatch consultants note in their comments that the 1925 equations are “classic, though outdated”. While EPA disagrees that they are outdated, clearly an additional peer review of these equations would add little value to the quality of the model.

EPA has internally reviewed the code changes and has shared all of the computer code, files, and documentation for RBM10 with Potlatch and its consultants for their review. The detailed comments submitted by Potlatch and its modeling consultants are the result of full access to EPA’s model and the data used in this particular application.

7. *Comment:*

Potlatch commented that EPA should use the QUAL2E model instead of RBM10, because it includes influence of photosynthesis and nitrogenous oxygen demand on dissolved oxygen. If QUAL2E was used, water quality-based effluent limits would not be necessary.

Response:

See response above regarding inclusion of photosynthesis and nitrogenous oxygen demand. EPA notes that Potlatch has had water quality-based effluent limits (WQBELs) on BOD discharges in their NPDES permit for some time, and that the question is whether the previous WQBELs are adequately protective.

EPA requested and received the QUAL2E model files from Potlatch and its consultants (HydroAnalysis, Inc.) and reviewed them in response to this comment. Prior to reviewing the Potlatch work, EPA used a spreadsheet program that solves the Streeter-Phelps equations under steady-state conditions to examine whether the DO impacts estimated using RBM10 were reasonable. The spreadsheet calculations generally

affirmed the RBM10 calculations and called into question the Potlatch QUAL2E results. Upon examination of the Potlatch model, EPA found the following problems in the input files for the Potlatch model:

Point Load Treatment

This is a parameter that reduces effluent and boundary BOD concentrations, and it should be set to zero. Potlatch erroneously set it to 0.85, effectively cutting the assumed BOD discharges by 85%. This means that Potlatch's estimates of BOD impacts are actually estimates of the impact of 15% of the discharge.

Ultimate BOD at Upstream Boundary (Snake River)

The BOD at the upstream boundary of the model domain on the Snake River, upstream of the Potlatch discharge, is set at an unusually high value of 6.26 mg/l in the Potlatch model. This is higher than both the mean and maximum long term BOD of river samples collected downstream of the Potlatch discharge. This unrealistic value in the model inputs leads to unrealistically low simulated DO in the downstream reaches of the Snake River. EPA has assumed 2.0 mg/l at the Snake River boundary, and the model results using this value are in better agreement with observed DO levels at the downstream Snake River dams.

Downstream Boundary of Model

The Potlatch model extended downstream of the discharge about 80 miles (river mile 60), but the minimum dissolved oxygen occurs downstream of this point under the assumed river flow conditions of the Potlatch model. The model boundary should extend to the mouth of the Snake River to capture the location of minimum DO.

The above problems significantly affect the results of the simulations. When EPA corrected these problems, the estimated DO impacts of the Potlatch discharge were in general agreement with the estimates from EPA's spreadsheet and the RBM10 model. Therefore, EPA believes that water quality-based permit limits are needed, and it is reasonable and appropriate to use the RBM10 model to establish those limits.

8. Comment:

Potlatch commented that it is arbitrary and inequitable for EPA to use RBM10 for the Potlatch facility when Washington does not use it for its permits and EPA did not use it for the city of Lewiston discharge.

Response:

As noted above, EPA obtained similar results using three model frameworks (Streeter-Phelps spreadsheet, QUAL2E, and RBM10). EPA believes the RBM10 analysis of the Potlatch discharge is warranted. The Potlatch facility is the largest discharger of BOD in the local area. The city of Lewiston discharges a fraction of the summer BOD loading allowed under the Potlatch permit.

9. Comment:

Potlatch commented that the least-squares calculation relied upon by EPA for estimation of the BOD deoxygenation rate from sampling data is inaccurate and unrepresentative of the underlying data. EPA has disregarded Potlatch consultants' findings that the least squares method is inappropriate.

Response:

EPA disagrees that the use of the least squares method is inappropriate. The goal in estimating the deoxygenation rate of the river water is to find an estimate that best represents the available data. In this case, Potlatch has collected river samples and analyzed the exertion of BOD over time. This time series can be graphed, and a curve is fitted to the sampling data. A variety of methods can be used to fit this curve, and the least squares method is one of the most common methods in use. HydroAnalysis has claimed that, for the ambient BOD data, the least squares method is inferior to the use of two of the sampled data points in the time series to calculate a ratio and associated rate constant. EPA has attached a graphical comparison of the estimates from the two methods with measured BODs for one of the samples taken from the river (Sept. 19, 2001). The graph indicates that the least squares method provides a better representation of the shape of the measured deoxygenation curve than the ratio method.

10. Comment:

Potlatch commented that the BOD rate should not be based on the sampling data (the "bottle rate"). Instead, the rate should be calibrated (adjusted up or down) to fit the observed dissolved oxygen in the receiving water.

The value used by EPA is inappropriately high and results in predicted dissolved oxygen concentrations that are lower than will in fact occur. This results in drastic and absurd reductions in BOD limits from 30,400 lbs/day to 4,800 lbs/day on June 1.

Response:

EPA believes that all available information should be considered in model development and therefore disagrees with the proposed exclusion of BOD sampling data from consideration. In this case, the sampling data provides a direct estimate of deoxygenation of the river water.

The rate calculated from the laboratory analyses, when used in the three model frameworks, resulted in reasonable estimates of downstream dissolved oxygen in comparison with observed dissolved oxygen levels [See Figure 6 in Cope (2002)]. This comparison suggests that the deoxygenation rate used in the RBM10 model is reasonable.

While the deoxygenation rate does affect the estimated impact and resulting permit limits, the primary reason for the drastic reduction in summer permit limits is that the dissolved oxygen in the Snake River drops below 8 mg/l, at which point only a 0.2 mg/l

impact is allowed downstream of the discharge. The reduced river flows and increased river temperatures in the summer also contribute to the impact of the discharge.

11. Comment:

Potlatch commented that there is an error in EPA's calculation of the ratio of ultimate BOD to 5-day BOD of the effluent. EPA used a rate of 5.5, which does not correspond accurately to the assumed deoxygenation rate (.043/day). Potlatch calculates a ratio of 5.2. This correction would increase the permit limits from 4,800 lbs/day to 5,100 lbs/day.

Response:

EPA agrees and has corrected this rounding error. The final permit limit (5,100 lbs/day) reflects this change.

This ratio was also used to evaluate the technology-based limits. In reviewing the model assumptions, EPA noted that the technology-based limit previously evaluated (30,400 lbs/day) has been revised based on more recent production data (to 28,800 lbs/day). This new limit was used in a new simulation to assess any changes to the starting date and ending date for the water quality-based limit. The changes were minimal, so the dates in the draft permit remain unchanged.

12. Comment:

Potlatch commented that the state of Washington uses a single "critical condition" approach for determining permit limits. This is long-established practice and is straightforward, in contrast to EPA's probabilistic approach.

Response:

In many cases, the flow and water quality data available to EPA and state permitting authorities does not allow for a thorough evaluation of critical conditions through dynamic water quality simulation, and it is appropriate to estimate a single set of critical conditions. In this case, the extensive data available for this river allows for a more comprehensive evaluation of critical conditions. EPA believes that this type of evaluation should be considered. EPA's guidance on toxic pollutants (Technical Support Document for Water Quality-based Toxics Control, EPA, 1991) notes that "the use of probability distributions in place of worst-case conditions has been accepted practice for years in water resource engineering."

As noted above, EPA obtained similar results using three different model frameworks (Streeter-Phelps spreadsheet, QUAL2E, and RBM10). The spreadsheet and QUAL2E are steady-state, critical condition assessment tools.

13. Comment:

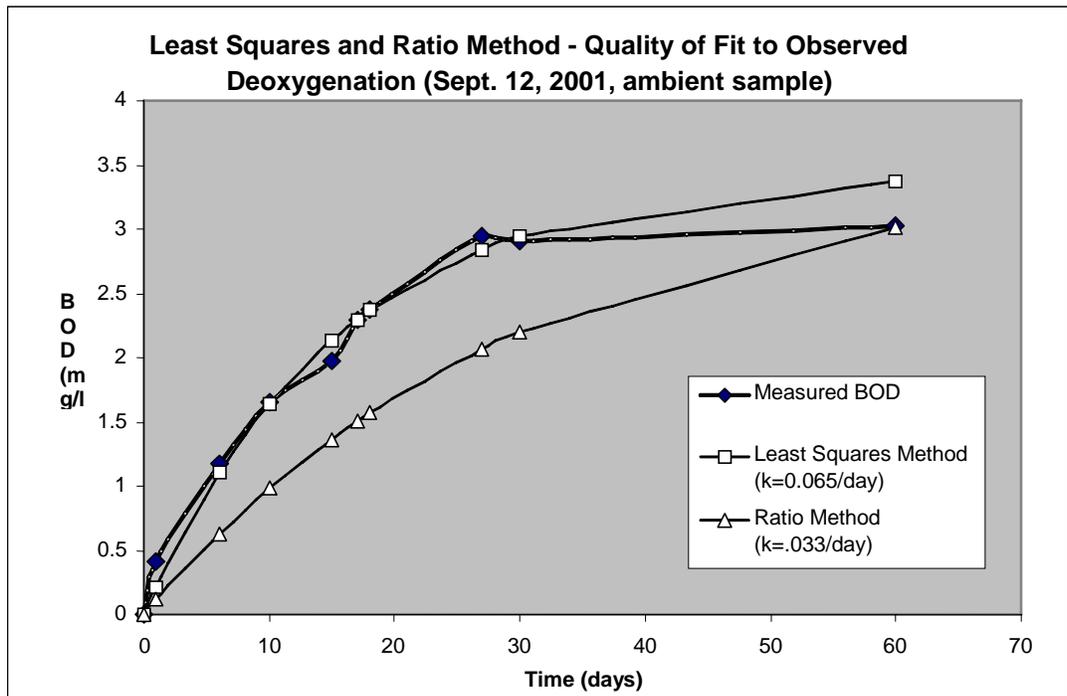
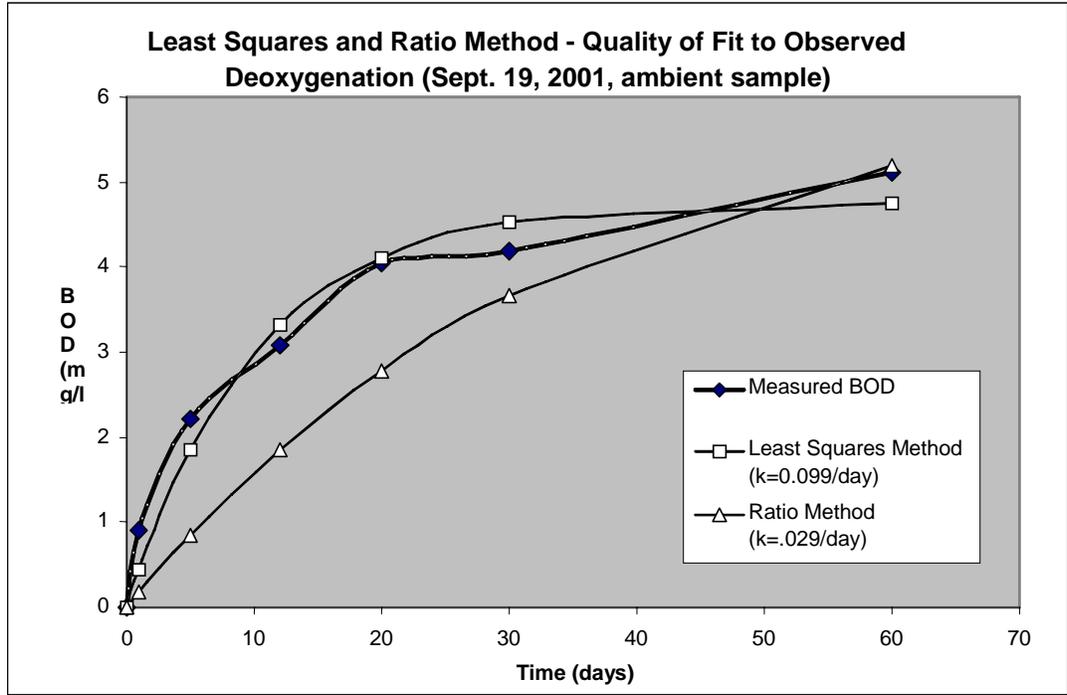
Potlatch commented that EPA calculated limits based on a stated 95% probability threshold, when it is actually a 98.5% probability threshold when one considers the entire

annual record rather than the critical summer season only. The state of Washington used a 90% probability threshold for the Spokane River.

Response:

The degree of stringency of the approach to handling variability is less simplistic than suggested by the comment. For example, while the final outputs were analyzed for the 95% probability value, the model setup incorporates other assumptions that may reduce the overall stringency of the approach. For example, EPA used the mean laboratory deoxygenation rates for the effluent and receiving water in the model rather than values on the tails of the distributions of measured data.

EPA commonly uses a 95% probability threshold in setting limits on point source discharges in Idaho. For example, in setting metals limits, EPA uses a 5% estimate for the receiving water hardness in the permit limit calculations.



14. Comment:

One commentator stated that they are concerned that Potlatch is being singled out for inequitable treatment. This is evidenced by the proposed BOD₅ limits that impose limits more stringent than the 1999 draft permit. They understand that similarly situated competitor pulp and paper mills in Washington are not required to comply with the BOD₅ limits, but with less stringent requirements. This is particularly unfair because the stated justification for the BOD₅ limits is to ensure compliance with Washington law. They believe that compliance with the new BOD₅ limits will require costly pollution control equipment. They understand that the “scientific” basis for the BOD₅ limits is not that Potlatch is actually causing dissolved oxygen problems in Washington, but based on theoretical predictions in a water quality model (RBM10) that EPA especially used for Potlatch’s permit to predict dissolved oxygen conditions downstream. EPA should have used the standard and well-established water quality modeling that was utilized by EPA in 1999 and in subsequent permitting actions. If EPA had used the appropriate model, the Agency would have concluded, as it did in 1999 and 2001, that additional BOD₅ limits are not necessary.

Response:

The summer BOD₅ effluent limitations that the commentator is referring to are water quality-based effluent limits. Water quality-based effluent limits are specific to the conditions of the waterbody in which the discharge occurs, the beneficial uses designated for that waterbody, and the criteria adopted by the states to protect those uses. Since case law (*Arkansas v. Oklahoma*, 503 U.S. 91, 1992) has established that discharges in one state cannot cause or contribute to a water quality standards violation in a downstream state’s water (i.e., a mixing zone cannot be granted in the state of Washington waters), EPA has had to establish water quality-based effluent limitations that ensure this.

As noted above, EPA obtained similar results using three model frameworks (Streeter-Phelps spreadsheet, QUAL2E, and RBM10). EPA believes the RBM10 analysis of the Potlatch discharge is warranted.

15. Comment:

One commentator stated that they strongly supported the revised BOD₅ limits and monitoring requirements for June through November; however, the five year compliance schedule fails to adequately protect endangered species forced to traverse the oxygen depleted zone until permit limits are met.

Response:

EPA has consulted with both NOAA Fisheries and USFWS regarding the requirements of the revised draft permit. Both services concluded that the requirements for BOD₅ limits, including the interim limits, would not jeopardize the existence of threatened and

endangered species. The terms and conditions of the Biological Opinions have been incorporated into the permit. The State, not EPA, authorizes compliance schedules for water quality-based effluent limits.

16. Comment:

Several commentors opposed the proposed schedule for compliance for BOD₅.

The draft permit does not require the permittee to achieve any milestones toward compliance with the permit limitations other than to report on progress toward implementation of preferred alternative(s). The permittee will have begun implementation of preferred alternative(s) before the end of year 2, yet will have another 2 years and 11 months to actually implement such alternative(s).

One commentor believes there are technological solutions available to Potlatch to decrease BOD₅ pollutants, such as filters on the discharge coupled with appropriate disposal of the collected material that can be implemented with little process change and little lead time. The proposed schedule certainly does not meet the base requirement of 40 CFR 122.47(a)(1) requiring compliance as soon as possible.

EPA has not presented any grounds, whether economic, technological, or otherwise to justify this overly generous schedule for compliance. The schedule of compliance, if any, should be two years.

Response:

The state of Idaho determines the compliance schedules for point source discharges which allow a discharger to phase-in, over time, compliance with water quality-based effluent limitations when new (or more stringent) effluent limitations are in the permit for the first time [IDAPA 58.01.02.400.03].

EPA does not have the authority to grant compliance schedules for water quality-based effluent limits unless authorized by the State in their CWA section 401 certification. The State authorizes compliance schedules through its Section 401 certifications of NPDES permits. The State determines the appropriate interim limits and the duration of the compliance schedule. Interim effluent limits must be as stringent as the limits in the previous permit. The interim limits for BOD₅ are equal to the previous effluent limits. These interim limits are effective for a period of five years from the effective date of the permit as required by Idaho's 401 certification.

The federal regulation at 40 CFR 122.47(a)(3)(ii) states that "if the time necessary for completion of any interim requirement (of a compliance schedule)...is more than 1 year and is not readily divisible into stages for completion, the permit shall specify interim dates for the submission of reports of progress toward completion of the interim requirements and indicate a projected completion date." Because the implementation of the preferred alternative is expected to take more than one year and it is not readily divisible into stages, the compliance schedule requires annual progress reports on the implementation of the preferred alternative.

17. Comment:

Several commentors stated that while they strongly support the BOD₅ limits for June through November and the monitoring requirements for this parameter, they do not support the increase in the BOD₅ limits for December through May. No reason was given for this increase, particularly since according to EPA, Potlatch has historically met its limits for this period with observed maximum values well below the effluent limits.

One commentor stated that discharges having high BOD results in lowering the dissolved oxygen concentration in the river at the outfall and in the downstream area. A low dissolved oxygen concentration results in sublethal and lethal effects to salmon and steelhead, especially where there are metals and other toxics in the water. It can also cause a migration barrier and disorientation to fish and create anoxic conditions that keep metals and organic compounds in suspension.

Response:

As explained in the revised fact sheet and in the response to Comment #1 of this section, the effluent limitations for December through May are technology-based since the technology-based limits are more stringent than the water quality-based limits that would be required for this season. The technology-based limits are determined from the "Cluster Rule" (40 CFR 430) and the previous five years of production levels at the facility. Because the technology-based effluent limits in 40 CFR Part 430 are based on production rates, which have increased since the previous permit was issued, the technology-based limits are less stringent than those in the previous permit. As explained in the response to Comment #1 of this section, these limits, though less stringent, are compliant with the anti-backsliding provisions of the Clean Water Act. Please see also Appendix C of the revised fact sheet for a detailed explanation of the technology-based limits applied to this permit.

The effects to listed species of increasing BOD₅ have been evaluated as part of the biological evaluation submitted to NOAA Fisheries and USFWS. In that document, EPA concluded that the overall effect of the final effluent limitations on dissolved oxygen levels may affect but is not likely to adversely affect listed salmonid species; however, during the five-year compliance schedule for the summer limits (June through November) the effluent is likely to adversely affect listed salmonid species. NOAA Fisheries and USFWS concurred with this determination.

G. Best Management Practices (BMPs)**1. Comment:**

Potlatch noted several areas in the BMP requirements that exceed the requirements in the Cluster Rule, 40 CFR 430.03, and should be revised to be consistent with EPA's regulatory authority. Specifically, "pollutants" should be replaced with "spent pulping liquor, soap and turpentine," sections II.B.1 and 2 should be removed as objectives of the

BMPs, and references to "other toxic substances" and "other process chemicals" should be deleted.

Response:

EPA agrees with the comment and has changed the BMP requirements in the final permit to reflect those requirements of 40 CFR 430.03.

2. *Comment:*

Potlatch requested that the Fact Sheet be changed to cite the March 1999 revision to the BMP Plan. Section VII of the Fact Sheet it states that Potlatch submitted a revised BMP Plan in December 1997. However, Potlatch submitted another revision of the BMP Plan (March 1999) which was written after the final Cluster Rule was promulgated and complies with all requirements in the April 15, 1998, version of the rule. We are presuming the March 1999 BMP Plan submittal is regarded as an addendum to this August 1997 submittal and would supercede the 1997 document.

Response:

The Fact Sheet is a final document and is not revised. However, EPA notes here that it received a revision to the BMP Plan in March 1999. To the extent that the 1999 revision does not address pollutants other than spent pulping liquor, soap, and turpentine, it may need further modification to comply with the final permit.

3. *Comment:*

Potlatch requested clarification of what is meant by “. . . other spilled or diverted substances . . .” as used in section II.E.2.b of the draft permit. The only spilled or diverted substances referenced in 40 CFR 430.03 are spent pulping liquor, soap, and turpentine.

Response:

"Other spilled or diverted substances . . . " refers to pollutants as defined in Potlatch's 1992 permit.

4. *Comment:*

Potlatch requested clarification regarding the definition of “immediate area” as it is used in the BMP requirements. The term “immediate area” is not explicitly defined in the BMP regulations nor is it included in the Definitions section of the draft permit. However, the term “immediate process area” is explicitly defined in 40 CFR 430.03. Potlatch also requests the phrase “from the immediate process areas” as stated in 40 CFR 430.03(e)(1) be included in the permit language for this section for clarification.

Response:

As it is used in the BMP language, “immediate area” means the immediate area of the spill. To clarify the meaning of “immediate area,” the final permit has been changed to read “immediate area of the spill.”

5. *Comment:*

Potlatch requested that II.F.1.c.i be removed from the permit language and be replaced with the following text from 40 CFR 430.03(h)(2)(ii): “Monitoring must be conducted at the point influent enters the wastewater treatment system.” Potlatch does not believe that EPA has the right to dictate the locations in the Potlatch wastewater treatment system where monitoring must be conducted. Furthermore, Potlatch already has in place a BMP plan that specifies the location for monitoring. Plus data has been collected from this location to establish investigative and corrective action levels.

Response:

EPA agrees that the language proposed by Potlatch is appropriate and has changed Paragraph II.F.1.c.i (Paragraph I.H.2 in the final permit) accordingly.

6. *Comment:*

Potlatch requested that the requirement to amend the BMP plan when it is found to be ineffective at preventing or minimizing the generation and potential for release of pollutants be eliminated because the language is vague.

Response:

The intent of this provision (paragraph II.G.2) is largely covered under II.G.3 of the draft permit. Therefore, this paragraph has been removed from the final permit. Paragraph II.G.3 has been renumbered to II.C.3.b in the final permit.

7. *Comment:*

Potlatch commented that the draft permit also stipulates in section II.G.3 a final review of the BMP Plan prior to permit expiration; this requirement is specific to the Potlatch NPDES permit. This section is adapted from 40 CFR 430.03(e)(2) which states that “Each mill subject to this section must complete a review and evaluation of the BMP Plan five years after the first BMP Plan is prepared and, except as provided in paragraph (e)(1) of this section, once every five years thereafter.”

Response:

EPA is unsure of the purpose of this comment. Potlatch did not specifically request a change in this condition or indicate that it was requesting clarification. Potlatch's statement is correct, however. The requirement to review the BMP prior to permit expiration is based on 40 CFR 430.03(e)(2).

H. Endangered Species Act

1. *Comment:*

One commentator stated that any claims made by Potlatch about protecting endangered fish should be rejected until there is independent, credible scientific analysis paid for by Potlatch but not done by Potlatch associates. The commentator expressed concerns regarding the quality of the draft Biological Assessment (BA) developed by Potlatch.

Response:

EPA designated Potlatch as its non-federal representative for purposes of informal consultation under Section 7 of the Endangered Species Act. As part of its responsibilities, Potlatch prepared a draft BA discussing potential effects of the discharge on threatened and endangered species.

The BA to which the commentator refers was a preliminary draft submitted to EPA October 12, 1999. The purpose of this preliminary draft was to involve NOAA Fisheries and USFWS as early in the process as possible to assist in refining the document: it was not intended to be a complete document, as evidenced by the fact that parts of the document were not included. The preliminary draft BA was reviewed and commented upon by EPA, NMFS and USFWS and was substantially revised. EPA then reviewed a final draft and made further changes before finalizing the document and submitting it to NMFS and USFWS on November 1, 2000. The BE was then further modified by EPA after receiving the draft Biological Opinions from the Services and re-submitted in final form on December 1, 2003.

EPA does not believe it is necessary to use a contractor that is not a “Potlatch associate” for development of the BA. The legal responsibility for submitting the final BA to NMFS and USFWS is EPA’s and the Agency is responsible for its quality.

2. *Comment:*

Several commentators noted that EPA has an independent obligation under Section 7 of the ESA not only to prevent jeopardy, but to affirmatively conserve these species.

Response:

Under Section 7(a)(2) of the ESA, EPA must ensure that it’s action (issuance of the Potlatch NPDES permit) is not likely jeopardize listed species or result in the destruction or adversely modify critical habitat. Under Section 7(a)(1) of the ESA EPA shall carry out programs for the conservation of listed species. Section 7(a)(1) applies broadly to all of EPA’s programs and not to one specific action.

3. *Comment:*

One commentator noted that there are a number of threatened and endangered species that are vulnerable to the effects of pollution from pulp mills including salmon, steelhead,

bald eagles and peregrine falcons. A recent study found that DNA in juvenile chinook salmon blood cells were altered after exposure to various levels of pulp mill effluent from a chlorine dioxide using pulp mill (Easton et al., 1997). In a March 1993 report done as part of its Dioxin Reassessment, EPA notes that “(t)he limited available toxicological data indicate that fish, especially salmonid sac fry, and mink are among the most sensitive animals to TCDD and related compounds.”

In a 1994 biological opinion on the effects of dioxin on Columbia River bald eagle populations, the US Fish and Wildlife service urged government agencies to “strive towards elimination of dioxin discharges to the Columbia River Basin to comply with the goal of the Clean Water Act, which is to eliminate discharges of pollutants by 1985.” The agency concluded that the proposed total maximum daily load for dioxin (TCDD) for the river would likely result in the “incidental take of bald eagles due to the detrimental effects resulting from chronic toxicity such as reduced reproductive success, and other behavioral and physiological impairments that may act to reduce the eagle's ability to survive.”

The draft Biological Assessment fails completely to assess impacts of temperature on aquatic species. The Biological Assessment must utilize the many temperature studies conducted in the Basin, such as EPA’s own study, *A Review and Synthesis of Effects of Alterations to the Water Temperature Regime on Freshwater Life Stages of Salmonids, with Special Reference to Chinook Salmon*.

To adequately assess the impacts of the effluent on aquatic species, EPA must ensure that sublethal effects of the toxic components on listed species are evaluated. This evaluation should occur for all components of the effluent, not merely those components for which EPA has established limitations or monitoring requirements. In addition, EPA must ensure that all concerns of the National Marine Fisheries Service and the U.S. Fish and Wildlife Service are addressed in a revised Biological Assessment.

Response:

This comment refers to the preliminary draft biological assessment (BA) prepared by Potlatch as a starting point in the consultation process. EPA, NMFS, and USFWS commented on that document, which was significantly revised. The final biological evaluation (BE) that was submitted to USFWS and NMFS addressed the Services’ concerns.

The EPA temperature study referenced by the commentor was used in developing the BE, as were a number of other studies on temperature. In addition, EPA considered the impacts (both lethal and sublethal) of toxic pollutants including dioxin and other aspects of the discharge. The BE assessed the impact of all components of the effluent by looking at whole effluent toxicity and using data on studies of bleach kraft mill effluent (BKME). Whole effluent toxicity testing uses surrogate species to evaluate potential sublethal effects from the effluent as a whole.

EPA and Potlatch worked jointly with NOAA Fisheries and USFWS to produce the final BE that EPA submitted to NOAA Fisheries and USFWS on December 1, 2003, to provide additional information regarding the impacts of the Potlatch discharge to threatened and endangered species. Both Services have deemed this BA complete and have issued biological opinions based on EPA's evaluation. The Services found that the discharge, as authorized in the final permit, will not jeopardize the continued existence of threatened or endangered species.

4. Comment:

One commentator noted that salmon are abundant in Alaska, the McKenzie River, and along the Pacific coast and questions whether they are only endangered on Snake River.

Response:

Specific salmon stocks on the west coast are threatened or endangered throughout large parts of their ranges. In addition to the Snake River, salmon are threatened or endangered in the Puget Sound, the Columbia River, and in Oregon and California.

5. Comment:

Potlatch commented that the Fact Sheet needs to be clarified regarding the "draft" Biological Assessment (DBA). The document provided to EPA by Potlatch was described as a preliminary draft Biological Assessment. EPA had requested a copy of the document being written to assist them with a recently filed legal complaint. The cover letter accompanying this document made it clear that the document was a work-in-progress and not a complete draft. The description of this document in the Fact Sheet needs to be changed to reflect this.

Also, the Fact Sheet states that the "draft" BA will be used as the basis for consultation with the Services. Regulations require that a completed biological assessment be submitted to the Services for review. As stated earlier, the document given to EPA on September 1, 1999 was incomplete. Thus, regulations do not allow it to be the basis of a consultation, which is implied in the Fact Sheet. The Fact Sheet needs to be modified to make it clear that a complete and final Biological Assessment will be the basis of the ESA consultation.

Response:

Page 21 of the Fact Sheet states that the BA, not the draft BA, will be used as the basis of consultation. The next sentence states that EPA will enter into consultation after addressing comments on the draft BA. In combination, these sentences were intended to convey that, once the comments on the draft BA were addressed, the BA (meaning the final BA) would be used for consultation purposes. As noted elsewhere in this Response to Comments, the Fact Sheet is a final document and is not changed to reflect comments. Changes are addressed in the Response to Comments.

6. Comment:

Potlatch stated that EPA's assertion in the Fact Sheet that "it will enter into formal consultation with the NMFS and the USFWS after addressing comments on the draft BA" has deprived Potlatch of an opportunity to address any legitimate concerns from any of the agencies with respect to the BA and the data and analyses contained within. Also, this decision has deprived Potlatch of the due process that the ESA regulations otherwise ensure. The regulations state that:

The Federal agency shall use the biological assessment in determining whether formal consultation or a conference is required. The ESA Handbook also clearly shows that a decision regarding whether a formal consultation is needed is based on an evaluation of the BA. This premature determination (on the basis of a preliminary draft and incomplete BA) deprives the agencies of the "best scientific and commercial data available or which can be obtained during the consultation." Indeed, such a determination could only reasonably be made after completion of the BA and after the Services and EPA shared any respective technical concerns about the preliminary draft BA with Potlatch. The regulations further specify that "formal consultation shall not be initiated by the Federal agency until any required biological assessment has been completed and submitted to the Director in accordance with section 402.12."

The Fact Sheet needs to state that the peregrine falcon has been removed from the federal threatened and endangered species list. The Fact Sheet should also discuss that ESA consultations have already been completed for the Columbia River 2,3,7,8-TCDD TMDL for the following species: Snake River spring/summer chinook salmon, Snake River fall chinook salmon, Snake River sockeye salmon, peregrine falcon, Columbian white-tail deer, brown pelican, marbled murrelet, Aleutian Canada goose, and bald eagles. Since some of these species are of interest in the Potlatch discharge, the administrative record should reflect what consultations have already been completed for pollutants that are of interest in this draft permit.

Response:

EPA made the assumption that formal consultation would be required on this permit based on its experience with the Columbia River dioxin TMDL and Potlatch's sampling plan for the bioaccumulation monitoring required in the permit. In the Columbia River dioxin TMDL consultation, USFWS concluded that dioxin discharges to the Columbia River resulted in incidental take of bald eagles. While it is possible that the BA could have shown that the discharge was not likely to adversely affect any listed species, EPA believed that was unlikely, as has been shown in the final BA.

As discussed in response to comment #16 of Section I, "Miscellaneous Comments," Potlatch itself noted that an incidental take permit may be required for bioaccumulation monitoring. This clearly requires a finding of "likely to adversely affect", which requires formal consultation.

Comments regarding the removal of the peregrine falcon from the endangered species list and previous consultation for the Columbia River dioxin TMDL are noted. However, while consultation has been completed on the effects of 2,3,7,8-TCDD on those species, that consultation is not adequate to discharge EPA's responsibilities under the ESA for reissuance of this permit. Potlatch's discharge contains many other pollutants that must be evaluated for their potential effect on listed species.

7. Comment:

Potlatch commented that EPA states in the Fact Sheet that any "reasonable and prudent measures" identified by the Services will be incorporated into the final permit. However, federal regulations make it clear the "reasonable and prudent measures" are limited in scope. Furthermore, the Services are only allowed to recommend discretionary conservation measures.

Potlatch believes that changes need to be made to the Fact Sheet to describe the consultation process as described in the regulations and so that Potlatch is given full due process in this regulatory arena.

Response:

The Fact Sheet is a final document that accompanies the draft permit. EPA agrees with Potlatch that, under 50 CFR 402.14(i)(2), reasonable and prudent measures "cannot alter the basic design, location, scope, duration or timing of the action and may involve only minor changes." However, this regulation specifies what NOAA Fisheries and USFWS can propose as reasonable and prudent measures and does not alter EPA's responsibility to incorporate reasonable and prudent measures in the final permit. EPA assumes that NOAA Fisheries and USFWS are aware of their responsibilities under the regulations and will propose appropriate reasonable and prudent measures. The Fact Sheet made no mention of discretionary conservation measures and whether EPA would incorporate them into the final permit, so the Agency is unsure of what point Potlatch was making with respect to this issue.

8. Comment:

Several commentors noted that EPA should stop commercial, sport, and tribal fishing, get rid of the terns, and barge and flush to restore endangered salmonids. The problem with salmon is over harvesting.

Response:

Under Section 402 of the Clean Water Act, EPA does not have the authority to undertake the actions recommended by the commentors. Under other Clean Water Act authorities, EPA is working with the public, States, Tribes, and other federal agencies to address the many problems that are contributing to the decline of salmon.

9. Comment:

Several commentors stated that there is no evidence to support a finding that Potlatch's discharge adversely affects endangered salmon. Potlatch stated that the issuance of the 2003 draft permit, with the exception of the comments provided by the company, are in full compliance with current water quality standards and NPDES Permit procedures which are designed to protect all aquatic species, including endangered salmonids. The state of Idaho's findings in its draft 401 certification that all beneficial uses, including endangered salmonids, will be protected by the Permit limits further supports Potlatch's determination. Further, EPA's Regional Temperature Guidance supported by the Services recognizes that thermal discharges, such as Potlatch's discharge, will not adversely affect endangered salmonids. Finally, the results of the whole effluent toxicity testing on Potlatch's effluent and the experimental stream studies utilizing Potlatch Bleach Kraft Mill Effluent (BKME) have all demonstrated that all other constituents in Potlatch's effluent has not and will not adversely affect sensitive aquatic species in the receiving waters.

Response:

On December 1, 2003, EPA resubmitted a revised biological evaluation that included all new information regarding this discharge since 2000. This evaluation concluded that the Potlatch Mill discharge is likely to adversely affect threatened and endangered salmonids in the action area. The Services concurred that adverse effects are likely to occur and therefore completed a Biological Opinion to complete formal consultation. NOAA Fisheries and USFWS have included terms and conditions in their Biological Opinions that have been incorporated into the final permit to minimize the adverse effects.

10. Comment:

One commentor stated that they support environmental protection efforts that are economically feasible, that provide demonstrable environmental benefits and that are equitably applied. It is not clear, nor has it been proven that one additional fish would be protected or restored by the expenditure of hundreds of thousands additional capital and operating dollars by Potlatch. This is in addition to the hundreds of millions already spent annually by federal and state agencies, the Services and others on Salmon restoration. As evidenced by recent runs, it appears that ocean conditions are the biggest single factor in restoring the salmonid population.

Response:

As discussed in the BE and BOs, the environmental baseline conditions in the Snake River are significantly degraded by human activities. The conditions and limits in the NPDES permit are necessary for compliance with the CWA and its implementing regulations and to minimize the effect of the mill's discharge on listed species, as required by the ESA. While minimizing the impact that the Potlatch discharge has on

listed species is required by the ESA, it is recognized that this action alone will not restore listed salmonids.

11. Comment:

One commentor stated that EPA must confront the importance of connectivity for bull trout between the Clearwater and Snake River systems. Bull trout are particularly sensitive to high temperatures, such that Potlatch's temperature impacts at the mixing zone and in the river downstream could prevent bull trout populations in these basins from connecting.

Response:

On December 1, 2003, EPA resubmitted a biological evaluation that included all new information regarding this discharge since 2000. In this evaluation, EPA clearly discusses the effects of the discharge, including temperature impacts at the mixing zone, for bull trout. The USFWS accepted the biological evaluation as complete and issued a biological opinion on March 5, 2004.

12. Comment:

One commentor stated that the area of the discharge's immediate impact is critical habitat for four different Snake River salmon. Temperature has been identified as an essential element of the habitat. In addition, NOAA Fisheries also has identified safe passage conditions, migration corridors, areas for growth and development to adulthood, and healthy spawning and juvenile rearing areas as essential features of critical habitat for the four different listed Snake River salmon. EPA's allowance of a mixing zone and the resultant allowable temperatures are deleterious to individuals of the ESUs (in various life stages) and also destroy the essential features of their critical habitat.

Response:

EPA performed an extensive analysis of the temperature impacts that the Potlatch discharge would have on listed salmon as part of the final BE. EPA concluded there would be some local adverse effect in the immediate area of the diffuser but that those effects would be minimal. In their Biological Opinion issued on April 2, 2004, NOAA Fisheries concurred with EPA's assessment and determined that the discharge will not jeopardize listed salmon or adversely modify their critical habitat.

13. Comment:

One commentor stated that EPA does not account for the impairment to spawning habitat and incubating eggs in the critical habitat for Snake River fall chinook downstream of the mouth of the Clearwater River.

Response:

EPA has evaluated the effects of Potlatch's discharge on critical habitat for Snake River fall chinook downstream of the mouth of the Clearwater River in the 2003 biological evaluation EPA prepared for NOAA Fisheries and USFWS for consultation on this species. In their Biological Opinion, NOAA Fisheries determined that the discharge, even during the compliance period, will not jeopardize the critical habitat for Snake River fall chinook salmon.

14. Comment:

One commentator stated that the draft permit uses only mortality as an endpoint to consider toxic effects on salmonids. In establishing limits, EPA does not consider sublethal effects on listed species. Given the presence of endangered species, sublethal effects must be considered. The commentator cites many references to the 2003 NOAA Fisheries draft biological opinion in support of their comment.

Response:

EPA has interpreted this comment to be directed toward the 2000 Biological Assessment sent to NOAA Fisheries and USFWS for consultation on this permit. On December 1, 2003, EPA resubmitted a revised biological evaluation that included all new information regarding this discharge since 2000 and clearly discusses sublethal effects on listed species. In early 2004, NOAA Fisheries determined that the information in the EPA 2003 biological evaluation was complete issued a final biological opinion that determined that the discharge will not jeopardize the continued existence of the species.

I. Miscellaneous Comments***1. Comment:***

EPA received several comments regarding the application of all known, available, and reasonable methods of prevention, control, and treatment (AKART) to Potlatch's discharge. RCW 90.54.020(3)(b) states, except as provided in RCW 90.54.020(3)(b), in the administration of the provisions of Chapter 90.48 RCW, the Director of the Department of Ecology shall, regardless of the quality of the water of the state to which wastes are discharged or proposed for discharge, and regardless of the minimum water quality standards established by the Director for said waters, require wastes to be provided with all known, available, and reasonable methods of treatment prior to their discharge or entry into waters of the state.

One commentator stated that there is evidence that the mixing zone extends into Washington State. If this is the case, then it is a legal requirement for AKART to be in place before any mixing zones are granted. Other commentators stated that, regardless of whether the mixing zone extends into Washington, EPA must apply AKART to Potlatch's discharge.

Response:

EPA does not agree that AKART would be required for a discharge in Idaho. AKART is a Washington State technology-based requirement, not a water quality standard, as can be seen from the portion of the regulation cited in the comment. The requirement that the discharge ensure compliance with downstream State water quality standards at the border does not include technology-based requirements.

The commentor submitted no evidence showing that the mixing zone extends into the state of Washington. EPA has ensured that the mixing zone for the final effluent limits does not extend into Washington's waters based on modeling, monitoring data, and Potlatch's mixing zone study, which was reviewed by the states of Idaho and Washington and EPA.

2. *Comment:*

One commentor asked why hearings weren't held in other locations whose economy is affected by declining fish runs (e.g., Washington, Oregon, or Alaska).

Response:

The scope of this action is reissuance of the NPDES permit for Potlatch Corporation, not declining fish runs. Additionally, this permit itself does not directly affect the other areas mentioned by the commentor. To the extent that issues that were considered in developing Potlatch's permit (for example, temperature, fish habitat) affect fish runs, EPA and other federal, Tribal, State, and local agencies have been involved in outreach efforts in communities impacted by these issues.

3. *Comment:*

Several commentor questioned the authorization of discharge of toxic pollutants to the Snake River. One commentor stated that water that is returned to the Snake River should be as clean as when it was first used. Others stated that Potlatch should be required to achieve a ten percent reduction of toxics discharged annually.

Response:

Section 402 of the Clean Water Act authorizes discharges of pollutants to waters of the United States under the National Pollutant Discharge Elimination System. Furthermore, the regulations implementing Section 402 (40 CFR Part 122) specify that effluent limitations must result in compliance with State water quality standards or technology-based requirements, whichever are more stringent. As discussed in the Fact Sheet, the draft permit contains a combination of technology-based and water quality-based limits to ensure that the requirements of 40 CFR Part 122 are met. Neither the Clean Water Act nor the regulations provide a basis for EPA to require more stringent limits than necessary to comply with State water quality standards and technology-based requirements.

4. Comment:

One commentator noted that there has been a severe decline in the water quality of the Snake and Clearwater rivers in my area over the last ten years. The water quality is so bad in the Lewiston/Clarkston valley, that for the last five years they have had to close their swimming beaches due to bacterial infestations of *E. coli*. This usually happens two to three times a year. There simply is not enough water flowing down the river to prevent this from happening.

Response:

There are no data indicating that discharges from Potlatch have contributed to beach closures in the Lewiston/Clarkston area. *E. coli* bacteria are an indicator of human or animal waste in the water. As discussed in the Fact Sheet, Potlatch's discharge does not contain sanitary waste, so it is unlikely to be a source of *E. coli*.

5. Comment:

EPA received many comments regarding breaching of the dams on the Snake River. Some commentators supported breaching the dams, while others did not. Some commentators requested information regarding the impacts of breaching the dams on the economy and air quality in the Lewiston/Clarkston area.

Response:

The scope of this action is reissuance of the NPDES permit for the Potlatch Corporation. While EPA has provided comments on the proposals to manage the Snake River to protect endangered species, the Agency does not have jurisdiction over the operation of the dams.

6. Comment:

One commentator stated that, according to 1997 federal Toxics Release Inventory (TRI) data, thirteen chlorine using pulp and paper mills in the Northwest (WA, OR, MT, ID) were responsible for over 2 million pounds of toxic chemical discharged to water bodies. For 1990 to 1994, the Columbia River ranked as the worst water body in the nation in terms of volumes of carcinogens, with pulp mills again primarily responsible.

Response:

EPA was unable to reproduce the 1997 TRI data and the commentator provided no source for the contention that the Columbia River is the "worst" water body in the nation. Regardless of the actual figures, however, general information of this sort does not provide a basis for imposing limits on any specific discharger. Limits must be based on technology-based requirements or water quality standards. To the extent that other point and nonpoint sources to a water body affect the assimilative capacity of that water body for a specific pollutant, those other dischargers are taken into account when developing limits. For example, the Columbia River dioxin TMDL considered 2,3,7,8-TCDD

(dioxin) discharges from all sources to the Columbia River, including Potlatch and other bleach kraft mills.

7. Comment:

One commentor stated that the reopener clause should include a reference to changes that may occur as a result of the current challenge of the Cluster Rule and any changes that may occur if regulations regarding fish consumption rates change.

Response:

The reopener clause in the permit provides adequate authority for EPA to reopen the permit. However, under 40 CFR 122.62(a)(3), changes to regulations (such as could occur as a result of the challenge to the Cluster Rule or as a result of changes to fish consumption rates used to calculate water quality standards) are only a basis for permit modification if the permittee requests the modification. EPA may not unilaterally modify a permit to address changes to regulations. Such changes can be addressed, however, upon reissuance of the permit.

8. Comment:

Potlatch disagreed with the level and scope that is required for the Quality Assurance Plan (QAP) in section I.F. of the draft permit. Section I.F. lays out very specific guidelines for development of a plan for the collection and analysis of samples in support of the permit. According to section I.F.2, Potlatch is to use two EPA documents, *Requirements for Quality Assurance Project Plans* (EPA QA/R-5) and *Guidance for Quality Assurance Project Plans* (EPA A/G-5), as the guidance documents for the preparation of the QAP.

In the introduction of EPAQA/R-5, the requirement for QAPs is referenced as being defined in EPA Order 5360.1 CHG 1, *Policy and Program Requirements for the Mandatory Agency-wide Quality System*. In EPA Order 5360.1, Section 5.d. Organizational Applicability, it states that “The authority of this Order applies only to EPA organizations except as addressed by Section 5.d(2) below.” None of the exceptions in section 5.d(2) would apply to our NPDES permit—they all refer to organizations receiving funding from EPA. Therefore, Potlatch does not believe that EPA has the statutory authority to require this level of detail in the collection and analysis of samples for the monitoring requirements of the permit.

Potlatch agrees that EPA is within their authority to require some degree of QA/QC. However, the level and scope they propose in this permit is not appropriate. Potlatch is seeking Washington Department of Ecology (WDOE) accreditation for its laboratories and is developing QA/QC procedures according to the guidelines specified by WDOE. The QA/QC plan will provide the basis for proper sample collection, sample analysis and data reporting. It will include a description of the facility, organizational structure, personnel responsibilities and the policies and procedures by which the laboratory operates.

Potlatch proposes to include the items enumerated in section I.F.3. in the QA/QC plan that is being developed in preparation for the WDOE accreditation. Within 6 months of permit issuance, Potlatch will submit a QA/QC plan as outlined above to EPA.

Response:

EPA's authority to impose QA/QC requirements in NPDES permits is not limited by EPA Order 5360.1 CHG 1. As noted by Potlatch, Order 5360.1 CHG 1, applies to EPA or EPA-funded activity. The authority to impose QA plans in NPDES permits comes from the regulations at 40 CFR 122.41(e). This regulation states that proper operation and maintenance “. . . also includes adequate laboratory controls and appropriate quality assurance procedures.”

With regard to Potlatch's intent to seek accreditation from Ecology for its lab, EPA agrees that this accreditation will address a number of the QA/QC requirements in the permit. However, accreditation applies to the lab only and, as such, cannot be expected to cover such issues as sample location, timing of sample collection and other field practices that are part of the QAP, nor does it address QA procedures for samples that Potlatch may have analyzed by an outside lab, either routinely or on an emergency basis (if, for example, one of the pieces of analytical equipment breaks).

Finally, EPA wishes to clarify that the QAP is due to EPA 90 days after the effective date of the permit, not 180 days. Additionally, the permit requires the plan to be implemented within 90 days of the effective date of the permit. If the accreditation occurs after the 90-day deadline (or at any time during the term of the permit), the QAP can be modified to address accreditation as specified in II.B.5 of the permit.

9. *Comment:*

Potlatch requested that the language in Section III.A of the 1999 draft permit concerning non-routine discharge be removed from the permit. The requirement to collect a sample triggered by non-routine discharge exceeds the authority granted EPA in its regulations (40 CFR 122.41[j][4] and 122.44[i]), and is inconsistent with other regional facilities' NPDES permits. NPDES permits for James River Paper Co., the City of Boise, the City of Lewiston (draft), Weyerhaeuser, and the City of Moscow do not include language regarding non-routine discharges when taking samples for monitoring purposes. Potlatch further requests that EPA clarify what is meant by “appropriate outfall” in section III.A of the draft permit.

Response:

EPA disagrees that the requirement to collect samples of non-routine discharges exceeds its authority. This language is to ensure that any spills, bypasses, treatment plant upsets, or other non-routine events will not result in violation of the effluent limits. This language is necessary to assure compliance with the CWA and the limits of the permit and is therefore authorized by 40 CFR 122.43(a) and 122.44. Further, Section 308 of the Clean Water Act authorizes EPA to require monitoring to determine whether “. . . any

person is in violation of any such effluent limitation . . ." Monitoring during non-routine events is necessary to ensure that monitoring is representative of the discharge. It is quite possible for a non-routine discharge to cause an exceedance of a permit limit that would not be detected by routine monitoring.

EPA recognizes that there have been some permits in which this language was inadvertently omitted. The fact that it has not been included in some permits does not mean that it is not applicable in Potlatch's case. It should be noted that the permits for James River Paper Company and Weyerhaeuser are issued by delegated States and therefore would not be expected to be identical to permits issued by EPA.

10. Comment:

Potlatch commented that the provision in Section III. F. of the draft permit requiring Potlatch to retain records for five years is inconsistent with the regulations and other permits issued by Region 10. These records include, but are not limited to, calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, copies of DMRs, a copy of the NPDES permit, and records of all data used to complete the application for the permit. The length of time and the scope of the documents to be retained exceeds that allowed by EPA regulations.

According to the Cluster Rule regulations (40 CFR § 430.03[g]), each mill must maintain on its premises a complete copy of the current best management practices (BMP) Plan and records of the repairs, initial and refresher training, reports, and monitoring for a period of three years from the time they are created. Furthermore, NPDES permits for the City of Moscow, Lewiston (draft) and Boise, Idaho, and James River all have only three-year records retention requirements. There appears to be no authority to extend the records retention requirement by two years as in the case of the draft Potlatch NPDES permit, and the additional extension poses an unfair administrative burden on Potlatch.

Response:

Under 40 CFR 122.41(j)(2), the Director may extend the retention time for records "at any time." This permit requires such an extension. In the case of monitoring data, QA information, and other data used in reissuance of the permit, discarding data after three years could result in the Agency having insufficient data of known quality to make decisions regarding appropriate limits and conditions. With regard to the BMP provisions, section II.H.2 of the draft permit only requires Potlatch to maintain these records for three years.

11. Comment:

Potlatch requested additional time for submittal of the ambient monitoring reports required in part I.D. of the draft permit. For the water column monitoring report, Potlatch requested that the report be submitted with the DMR for May of the fourth year of the permit instead of with the DMR for December of the third year of the permit. For the

sediment monitoring report, Potlatch requested that the report be submitted with the June DMR of the following year rather than with the December DMR of the year in which monitoring took place. Finally, for the bioaccumulation monitoring report, Potlatch requested that the report be submitted with the May DMR of the following year rather than with the December DMR of the year in which monitoring took place.

The ambient water column monitoring is not concluded until October 15. Sediment sampling is to be conducted during periods of low flows in the Snake and Clearwater Rivers, which typically do not occur until October and may occur as late as December. For the water column and sediment sampling, there is typically a three-week lag between sample collection and receipt of the results from the lab. For the fish tissue sample analysis, there could be a three to four month turn around time between sample collection and the receipt of the laboratory reports. Once all the analytical results are received, both the field and laboratory data must be evaluated, tabulated, and presented in a report. The quantity of data collected takes time to process. Finally, the reports are subject to both internal and external reviews of the report before submittal to the agency.

Response:

EPA agrees that it is reasonable to allow additional time for submittal of the results of the ambient monitoring, given the time frames during which sampling occurs and the large volume of data that must be evaluated. However, the NOAA Fisheries and USFWS require that the information be submitted by January 15th each year. Therefore, the final permit has been changed to require annual reports for water column monitoring, sediment, bioaccumulation monitoring, and other monitoring required by the NOAA Fisheries and USFWS biological opinions to be submitted by January 10th each year.

12. Comment:

Potlatch requested that EPA reconsider the requirement for annual monitoring of ambient sediment in section I.D.2.c of the draft permit. Potlatch has not had the opportunity to review data from the sediment study that the U.S. Army Corps of Engineers (COE) conducted on the Lower Snake River which was used in preparing Appendix C – Water Quality of the Draft Lower Snake River Juvenile Salmon Migration Feasibility Report/ Environmental Impact Statement. Potlatch has submitted Freedom of Information Act (FOIA) requests for reports on this sediment study from the COE but to date has not received them. Furthermore, Potlatch collected ambient sediment data in 1999 which is currently being summarized and put into a report for the EPA. This sediment collection took place during low river flows. Because there are data on the downstream ambient sediments that has not been reviewed, ambient sediment monitoring should only be required for the first two years of the permit.

Response:

EPA has determined that it is necessary for Potlatch to conduct sediment monitoring for at least two more years to provide data that coincides with the bioaccumulation

monitoring in the permit and the monitoring required by the NOAA Fisheries and USFWS biological opinions. EPA agrees that the data collected by the COE may be a useful supplement, but it is not a substitute for data collected for the specific purpose of evaluating impacts of Potlatch's discharge.

13. Comment:

Potlatch requested that Section I.D.2.c of the draft permit be modified to allow Potlatch to forgo sediment monitoring in the event that there is no low flow period during a specific year or if a depositional site cannot be located. The requirement to conduct all ambient sediment sampling during low flow periods in depositional areas may be impossible to meet. For instance, in 1997 there were no low flows because the higher than normal snowpack increased the amount and duration of runoff. Moreover, it may prove to be difficult to find a control site on the Clearwater River upstream of the Potlatch facility that is considered depositional according to the EPA's current definition of depositional sediments (40% fines). Furthermore, depositional sites are transitory in nature on river systems like the Clearwater River. Therefore, it may not be possible to sample at the same site every year. In the event that no low flow period exists or that a depositional site cannot be located, Potlatch will notify EPA in writing of these facts and compliance with these requirements be excused.

Response:

The draft permit required that sites established in the first year of the permit be used in subsequent years *to the extent practicable* (emphasis added). If a site that was depositional in one year is not depositional in a subsequent year, Potlatch would be expected to choose a different site. While it is true that, even in high water years, there is a period in late summer/early fall where flow is lower than other times of the year, EPA agrees that when flows are exceptionally high, finding sediment depositional sites and sediment collection may be difficult. EPA recommends that Potlatch review the environmental assessment documents prepared by the U.S. Army Corps of Engineers for their proposed navigational dredging in the Snake River, as well as their environmental impact statement for the lower Snake River juvenile salmon migration feasibility report. Both of these documents contain sections that discuss and identify areas of the Snake and Clearwater Rivers that contain depositional sediments, and should be of use to Potlatch in identifying areas likely to contain depositional sediments.

14. Comment:

One commentor asked what the duration of the permit is and whether it can be terminated if studies show that there are environmental problems.

Response:

As stated in the Fact Sheet, the permit is effective for five years. If during that time, new information becomes available showing that the limits in the permit do not ensure

compliance with water quality standards, the permit can be modified or terminated if it is consistent with 40 CFR 122.62.

15. Comment:

Several commentors stated that EPA's continued reliance on technology-based effluent limits and the subsequent decision to allow increased levels of TSS based on revised production data from Potlatch flies in the face of the NOAA Fisheries draft Biological Opinion (March 17, 2003) and violates fundamental Idaho water quality standards for the protection of beneficial uses of the State's waters [IDAPA 58.01.02.050.02(a)]. Since the Services prepared their comments cited above, EPA's new mixing zone analysis revises downward the amount of flow available for dilution in the mixing zone. EPA must reduce, not increase the TSS limit.

Response:

EPA has completed formal consultation with USFWS and NOAA Fisheries on the effects of Potlatch's discharge on threatened and endangered species, including the proposed TSS limit. In the 2003 biological evaluation EPA prepared for NOAA Fisheries and USFWS for consultation on these species, EPA did discuss all available studies pertinent to this discharge and fully evaluated the TSS effects of the discharge from outfall 001. EPA determined that the TSS limits in the permit were likely to adversely affect listed species. In their Biological Opinions, NOAA Fisheries and USFWS have determined that the discharge limits will not jeopardize the continued existence of the species. The final permit does contain a requirement that Potlatch reduce TSS by 25%, determined by comparing a 12-month rolling average to the 2002 annual average discharge level within three years of the effective date of the final permit.

16. Comment:

One commentor stated that a minimum of two additional monitoring points must be established under Section I of the proposed permit to accurately assess the impact of the STAP seepage on the Clearwater River. One point should be at the point on the river immediately adjacent to the downstream end of the STAP and the other at the downstream boundary of the facility. In addition, if EPA or the State is aware of likely points at which the seepage may be entering the river, monitoring stations should be established there as well.

Response:

EPA agrees that there should be established monitoring points on the Clearwater River to accurately assess the impact of the STAP seepage on the Clearwater River, but disagrees with the commentors recommended placement of the monitoring points. EPA believes that one point should be established in the Clearwater River upstream of the STAP to establish background conditions and one point should be established downstream of the facility to account for cumulative impacts. The final permit requires this monitoring. By

performing a mass balance calculation, using the upstream and downstream concentrations of these pollutants, the contribution of STAP seepage to the Clearwater River can adequately be quantified.

17. Comment:

One commentor indicated that there is an error at page 34 of the draft permit in Section C, Monitoring Procedures. In the first sentence, “Monitoring.....” should be replaced with “The permittee...”

Response:

EPA agrees with this comment and has incorporated the change.

18. Comment:

One commentor stated that Potlatch’s releases of pollutants are not limited to effluent discharges to water. Potlatch releases significant quantities of pollution, including dioxin, into the air. Particularly considering the canyon topography of the Lewiston area and the frequent inversions that occur, much of this air pollution simply settles back into the canyon and the river itself. EPA must conduct a multimedia analysis to determine the actual quantity of dioxin and other pollutants released by Potlatch to the Snake and Clearwater Rivers, both directly and indirectly.

Response:

Section 301(a) of the Clean Water Act (CWA) prohibits the discharge of pollutants to waters of the United States except in compliance with CWA Section 402, among other sections. Section 402 authorizes the issuance of NPDES permits for direct dischargers. EPA has no legal authority to control air emissions under its permitting authority in the Clean Water Act. As to EPA authority under the Clean Air Act, the state of Idaho implements its own State Implementation Plan (SIP)-approved Prevention of Significant Deterioration (PSD) permit program for construction/modification or major/significant projects. Idaho also has the SIP-approved minor permitting program for non-PSD air quality permits. Therefore, Idaho implements its own air permit program.

19. Comment:

One commentor stated that the proposed re-issuance of the NPDES permit would result in degradation of water quality in the Snake River and not enhance the quality of water violates NEPA at 40 CFR 1500.2 and 2(a).

Response:

The National Environmental Policy Act (NEPA) only applies to new source discharges as defined by 40 CFR 122.2. The Potlatch Mill discharge is an existing source, not a new source. Therefore, NEPA does not apply to this NPDES permit.

20. Comment:

One commentor stated that since the Potlatch NPDES permit will directly impact valuable tribal treaty resources, EPA has a trust responsibility to fulfill before issuing the final permit. EPA must help protect and preserve the fish which comprise the *res* of the treaty, and as a trustee, EPA must continue to consult with the treaty tribes until it issues the final permit. The Columbia River Inter-Tribal Fish Commission (CRITFC) requested that EPA continue its ongoing consultation with their member tribe, Nez Perce Tribe, and that EPA institutes consultation with the Confederated Tribes of the Umatilla as well as the Yakama Nation and Warm Springs Tribe as those tribes request.

Response:

EPA has continued to consult with the Nez Perce Tribe throughout the re-issuance process. The Confederated Tribes of the Umatilla requested EPA consult on the reissuance of this permit on August 21, 2003, and EPA has also consulted with them. The Yakama Nation and Warm Springs Tribes did not request to consult with EPA on this action.

21. Comment:

One commentor stated that the 2003 Draft Permit indicates that river flow must be reported as the sum of the average flows of the Snake River and Clearwater River (see footnote 8 to Table 1). However, given the high level of variability and deviation from natural flow levels of Clearwater Flows due to summer releases of water from Dworshak Reservoir, it is unclear (1) how EPA calculated the 7Q10 and (2) whether compliance is based on some assumed levels of release from Dworshak of waters designed to improve water quality for salmon.

Response:

For purposes of developing effluent limitations, EPA used only the 7Q10 flows for the Snake River taken from the USGS Anatone gage. The 7Q10 is a standard statistical flow and EPA calculated it based on *EPA Technical Guidance Manual for Performing Wasteload Allocations Book VI, Design Conditions: Chapter 1 – Stream Design Flow for Steady-State Modeling*, September 29, 1986, (provided in Excel spreadsheet Flow Matrix.xls).

Compliance with effluent limitations is not based on receiving water flows; thus, it is not based on some assumed levels of release from Dworshak Dam.

22. Comment:

One commentor stated that the use of a 7Q10 flow to set effluent limits is not protective of migration during substantial parts of July-September. The unpredictable flow fluctuations of the Clearwater and Snake Rivers and the variability of percentage contribution to the combined flow produced by the Clearwater result in an inability to

regulate effluent in order to remain within the allowed temperature increment. In addition, the ability of individual days in July-September to exhibit even greater variation in the Clearwater/Snake flow ratio that found on a monthly basis among years of record indicates that substantial biological effects can occur on a daily basis.

Response:

The duration and frequency of acute criteria and chronic criteria are 1 day in 3 years and 4 days in three years, respectively. The biologically based design flows (1B3 and 4B3) are most protective of aquatic life criteria since they are of the same duration and frequency as the criteria because they are based on specific toxicological effects of a pollutant and biological recovery times from localized stresses. However, EPA has found that the hydrologically based design flows of 1Q10 and 7Q10 for the acute and chronic criteria, respectively, will, for most streams, be similar to a biologically based 1B3 and 4B3, respectively.

For the Snake River in the vicinity of this discharge, EPA has calculated both the biologically based design flows and the hydrologically based design flows (provided in Excel Spreadsheet Flow Matrix.xls) using data from 1973 to present. The results show that the 1Q10 flow is much less than the 1B3 flow and the 7Q10 flow is much less than the 4B3 flow. Therefore, in this case, the use of the hydrologically based design flows is more protective of aquatic life than the use of the biologically based design flows. Additionally, the 1Q10 flow occurs less than one percent of the time and the 7Q10 flow occurs less than five percent of the time.

EPA used only the flows from the Snake River to determine effluent limitations for the Potlatch Mill; therefore, the flows of the Clearwater River are irrelevant.

23. Comment:

One commentator stated that if it is EPA's intention to use the 7Q10 flow as a means to size the acute mixing zone, it appears that the estimation of effects was done improperly. EPA's reliance on the allowed de minimis increases as the primary temperature criterion ignores the biological effect of temperature increases in waterbodies that are far above standard. There are extensive periods in July and August across all the years of record in which Snake flows were less than the 7Q10 flow. If it is EPA's intention to estimate impacts of the heated effluent on the combined flows of the Snake and Clearwater, it appears that EPA also has assumed complete mixing. The lack of mixing that actually does occur would make biological impacts to smolts traveling in the Snake River flow greater than stated, even though the change in temperature for the Snake flow volume would not be greatly different from that of the fully mixed combined flow.

Analysis of USGS flow record for 1959 to 2001 shows that extreme low flows are very common in July and August. Even in September, flows lower than the 7Q10 are very common. This situation indicates that the critical flow value that is used for calculations of safety in exposure to the high temperatures discharged in effluents is not likely to be protective of migrating salmon and steelhead during these months. The problem with

using the 7Q10 flow as a critical flow level is that 1) being a 7-day average of daily low flows, very low flows that may occur on single days are averaged away by taking the average over 7 days, and 2) even though flows of this magnitude or lower occur in a 7 consecutive day period with 10% frequency, this occurrence can simply be clustered in July, August, and September. This is precisely the time of year when prolonged high temperatures occur.

It is also very likely that the 7Q10 was not calculated correctly by EPA or Potlatch. By using a lower value of 7Q10, a more conservative effluent discharge would be required so as not to exceed. The combination of low flows and high natural temperatures combined with the reservoir effect and hot water discharges from point sources such as Potlatch results in high risk environments for salmon and steelhead.

Response:

EPA has correctly calculated the critical flows using the EPA Technical Guidance Manual for Performing Wasteload Allocations Book VI, Design Conditions: Chapter 1 – Stream Design Flow for Steady-State Modeling, September 29, 1986, (provided in Excel spreadsheet Flow Matrix.xls). EPA used the flow years of 1973 to the present to establish the 7Q10 flows since the Dworshak Dam was operational in 1973, which changed the hydrology of the Snake River. Therefore, it would be inappropriate to use flows from 1959 to 2001 as suggested by the commenter.

The commenter's claim that EPA ignored the biological effects of temperature increases to the Snake River is incorrect. EPA has ensured that Potlatch's heated discharge will not cause lethality, thermal shock, or migration blockage to salmonids, nor will it cause or contribute to violations of Idaho's water quality standards outside of a small mixing zone. EPA assumes that the "de minimis increase" that the commenter is referring to is the 0.3°C increase allowed by Section 401.a.v of the Idaho water quality standards when numeric temperature criteria are exceeded due to natural background conditions. Because EPA's modeling has shown that the natural background temperature of the Snake River exceeds the numeric daily average criterion of 19°C during July August and September, EPA has applied the 0.3°C increase allowed by Section 401.a.v. of the Idaho Water Quality Standards. See Comment #1 of the Temperature section of this response document for further discussion. Effluent limitations in NPDES permits must be based on the standards that are in effect at the time the permit is issued. Further, in its evaluation of threatened and endangered species (USEPA, 2003b) EPA used the monthly 1Q10 flows, which approximates the first percentile flow, meaning that only one percent of monthly flows in the historical record will be less than this flow. NOAA Fisheries and USFWS stated in biological opinions dated April 2, 2004 and March 5, 2004, respectively, that the heated discharge will not jeopardize the continued existence of endangered and threatened species. Please see the Temperature section of this document for further discussion of the temperature effluent limits.

EPA did not assume complete mixing of the Snake and Clearwater River in the development of the 2003 draft permit or the final permit for near-field effects. Far-field

effects did assume complete mixing because the two rivers are fully mixed by Silcott Island approximately 9 miles downstream of the discharge.

The commentor's statement that flows less than or equal to the 7Q10 will occur ten percent of the time is incorrect. As stated in the response to Comment #22 of this section, the 7Q10 flow of the Snake River approximates the 5th percentile flow. Therefore, only five percent of the historical flow record will be less than this flow. The commentor is correct that, if an annual 7Q10 were used, these lower flows are more likely to occur during the summer. Since temperature is a seasonal problem, EPA used monthly 7Q10 flows of the Snake River, based on flow data collected at the Anatone gauge (USGS station #13334300) to determine reasonable potential and establish effluent limits in the 2003 draft permit and for the final permit. The use of monthly 7Q10s as opposed to an annual 7Q10 allows for a more realistic analysis of seasonal impact of the heated discharge, and ensures that the effluent limits are protective of water quality standards at all times.

24. Comment:

One commentor stated that discharges from the Potlatch facility will have broader range impacts on water quality as the chemical contaminants are transported downstream in the water column and via sediment movement. As written, the proposed permit includes an undefined impact to downstream aquatic habitat. Moreover, the methodology does not enable the EPA to define the downstream distance of the mixing zone. EPA should consider the following points before issuing the final permit:

- The draft permit must require the use of a salmonid species as the experimental organism when testing the toxicity of the mill effluent.
- The draft permit should distinguish between steelhead and salmon when evaluating impacts from chemical contaminant exposure.

Response:

The permit prescribes requirements that the permittee must do or cannot do in order to discharge; it does not define or evaluate impacts. However, the biological evaluation EPA prepared for NOAA Fisheries and USFWS (USEPA, 2003b) does provide this type of impact analysis.

It is important to use standardized protocols for effluent monitoring. For many parameters, the regulations at 40 CFR Part 136 set out the required type of test. For chronic whole effluent toxicity testing, EPA has not established test protocols for salmonids. EPA recognizes that the whole effluent toxicity test alone provides incomplete toxicology. Therefore, EPA has required an integrated approach that includes chemical-specific monitoring and limits controls, whole effluent toxicity monitoring, and bioassessments in the final permit for a more complete assessment of toxicity.

25. Comment:

One commentator stated that the draft permit does not comply with applicable legal requirements because it does not maintain and protect beneficial uses of the waters affected by Potlatch's discharges; it authorizes discharges that harm listed salmonids and their habitat; and the draft permit allows and authorizes discharges that further exacerbate contamination that presents unacceptable threats to human health. As a result, EPA must change the limitations and conditions in the proposed NPDES permit.

Response:

The state of Idaho has certified under Section 401 of the Clean Water Act that this discharge complies with the state's water quality standards, which are intended to maintain and protect beneficial uses of the waters affected by Potlatch's discharges. Both NOAA Fisheries and USFWS have issued final Biological Opinions issued April 2, 2004 and March 5, 2004, respectively that the permitted discharge does not jeopardize the continued existence of ESA listed species and all currently designated ESA critical habitat. EPA has made the dioxin (2,3,7,8-TCDD) effluent limitation more stringent to ensure that the Washington water quality standards were being met at the Idaho-Washington border. There is currently no information to indicate that the Potlatch Mill discharge as authorized in the final permit presents unacceptable threats to human health. The permit does require a site-specific study for EPA to determine the effects of this discharge to humans who consume fish from this area.

26. Comment:

One commentator stated that the draft permit fails to account for, monitor or set limits for compounds that are toxic, can bioaccumulate in fish and present risks to human health, especially among Native Americans who consume more fish than the average American.

Response:

The final permit contains effluent limitations for adsorbable organic halides (AOX) and 2,3,7,8, TCDD (dioxin) which EPA has determined are protective of the applicable water quality standards of both affected States. The permit requires quarterly whole effluent toxicity (WET) monitoring and monthly monitoring of the effluent for ammonia. Effluent limitations and monitoring requirements for Outfall 001 (final effluent) appear in Table 1 of the final permit. In addition to the limitations on the final effluent, the permit limits toxic pollutants in internal waste streams, such as those from the fiber lines (see Table 4 of the final permit).

The final permit also requires the permittee to monitor the receiving water for several toxic pollutants, as specified in section I.I. In addition, the final permit requires a bioaccumulation study to determine if pollutants in the Potlatch Mill discharge are causing or contributing to levels of contaminants in fish that are unsafe for human consumption. The information from the effluent and receiving water monitoring and the bioaccumulation study will be used to determine if the effluent limitations must be

further reduced in future permits, or if water quality-based effluent limitations need to be established for pollutants other than those limited in this permit.

27. Comment:

One commentor stated that metals need to be monitored and specific limits set as their criteria. According to NOAA Fisheries' Draft BiOp and the draft permit, Potlatch effluent may contain metals. A simple prohibition from using "chemical agents containing...zinc at the facility" is not sufficient to ensure that zinc is not being discharged to the river, particularly if zinc has been previously used at the facility. Several other wastestreams could be creating a source of metals as they are blended into the secondary treatment aeration pond (such as from foul condensates, No. 4 power boiler settling ponds overflow and CPD landfill leachate). In addition several other metals were previously being monitored in the sediments, presumably because they were being discharged from the facility.

Response:

EPA performed a reasonable potential analysis using metals data collected by Potlatch since 1993 and found that the Potlatch discharge has no reasonable potential to cause or contribute to an exceedance of water quality criteria for metals. Therefore, no limits for metals are included in the proposed permit.

28. Comment:

One commentor stated that the Kraft process uses sodium sulfate and sodium sulfide in its process. These compounds along with the loading of organic carbon should be monitored and criteria proposed.

Response:

In the development of the effluent guidelines (USEPA, 1993), EPA determined that sulfates and sulfides were not pollutants of concern in the final effluent because these chemicals are used in the pulping (or brownstock) process and the majority of water used in the brownstock process is recovered and reused. The process sewer receives gland/seal water from pumps and cooling water from heater exchangers. In the event that process water from the pulp mills enters the sewer, the Best Management Practices (BMP) Plan is implemented, which requires the permittee to return spilled or diverted spent pulping liquors, soap, and turpentine to the process to the maximum extent practicable as determined by the mill, recover such materials outside the process, or discharge spilled or diverted material at a rate that does not disrupt the receiving wastewater treatment system.

29. Comment:

One commentor stated that the pH should be closer to neutral and should not have periods of excursion. The draft permit allows for a pH as low as 5.5. At this pH, lethal

and sublethal effects can occur to salmon and steelhead. In addition, a low pH in combination with various other effluent parameters (such as water temperature higher than the river, toxic chemical concentrations, low dissolved oxygen and high TSS) can disorient migrating salmon and interfere with their ability to find food and cope with other stressors.

Response:

The 2003 draft permit had pH limits equivalent to Idaho's water quality criteria of 6.5 to 9.0 s.u. EPA has incorporated the mixing zone for pH authorized by the state of Idaho in its final 401 certification under the Clean Water Act in the development of the final effluent limitations. The final effluent limits are equivalent to those in the 1999 draft permit (5.5 to 9.0 s.u.). EPA consulted with USFWS and NOAA fisheries on the effects of the pH range of 5.5 to 9.0 s.u. to listed species. Since the lower end of the pH effluent range (5.5 su) is less than the lower end of the pH range for the toxicity benchmark (6.5 su), the biological evaluation dated December 1, 2003 looked at the direct effects within the mixing zone of the effluent (i.e., the area where the concentration of the plume is lower than the toxicity benchmark range) and the effects at and beyond the exposure volume boundary. It is predicted that the water column pH that is safe to threatened and endangered salmonids from direct and indirect exposure (6.5 s.u.) is met within 2.89 meters (9.5 feet) of the diffuser. The effluent velocity does not drop to below 5 ft/s until approximately 5 feet from the diffuser port. As stated in the Final Biological Evaluation submitted on December 1, 2003, because the maximum swimming speed of salmonids is 5 ft/s or less, it is a safe assumption that the fish will not be exposed to low pH within 5 feet of the diffuser because they will not be able to swim into the plume when the plume velocity is higher than their maximum swim speed. However, it is improbable that the fish would be exposed to the pH observed within 10 feet of the diffuser because they would tend to avoid the currents created by the jet action of the plume. Therefore, EPA concludes that the discharge of pH is not likely to adversely affect threatened and endangered species and not likely to adversely modify critical habitat. In their final biological opinions, both services agreed with EPA's analysis and concluded that the issuance of the permit would not jeopardize the existence to listed species.

The period of excursion for continuously monitored effluent pH is allowed under NPDES regulations at 40 CFR 401.17. The amount of time during which the pH may be outside the specified range is equal to 1% of the time during any calendar month.

30. Comment:

Several commentors stated that several parameters are being monitored without limits and some criteria should be set. These criteria include total phosphorus, ammonia, nitrite and nitrogen. These criteria can be important elements of healthy salmonid habitat. As a result, limits should be set with listed species in mind or provide clarification that any discharge of these pollutants constitutes a Clean Water Act violation.

Response:

The state of Idaho has established numeric criteria for ammonia and narrative criteria for nutrients, which include phosphorus and several forms nitrogen, including nitrate. Currently, there is no information to show that the discharge of these pollutants in the Potlatch Mill effluent has reasonable potential to cause or contribute to an exceedance of water quality standards for the pollutants named by the commenter. There is no basis to limit or prohibit the discharge of these pollutants. The final permit authorizes the discharge of these pollutants; however, should the monitoring conducted under this permit show that effluent limitations are necessary to control Potlatch's contribution of these parameters to the environment, they will be included in future permits.

In the biological evaluation EPA submitted on December 1, 2003 for ESA consultation, EPA has evaluated the effects of these compounds with respect to listed species and critical habitat. EPA concluded that the discharge of these compounds may affect, but are not likely to adversely affect listed species and is not likely to adversely modify critical habitat. Both NOAA Fisheries and USFWS concurred with EPA's analysis and determined that the proposed permit conditions, including the absence of effluent limits for ammonia and nutrients, would not jeopardize the existence of threatened and endangered salmonids or critical habitat.

31. Comment:

Several commentors expressed concern regarding the lack of internal wastestream limits on the landfill leachate. One commentor stated that the pipeline returning leachate from the landfill must meet the same limitations and monitoring requirements as the bleach plant lines. Potlatch is burning "black liquor" (spent bleaching compounds) in its power boiler - a largely uncontrolled avenue for the creation of dioxin or other organochlorines. As a result, dioxin may be present in the power boiler ash, which is now being dumped into the Potlatch landfill. Storage of dioxins or other listed hazardous wastes in the landfill may qualify Potlatch as a treatment, storage, and disposal facility under the Resource Conservation and Recovery Act (RCRA) for regulatory and enforcement purposes.

Records available at Idaho DEQ indicate that the majority of the landfill leachate originates in a groundwater removal well sited below the toe of the landfill. This well was placed in an effort to prevent further mass wasting failures at the landfill site. By its placement, it most probably creates a zone of induction for any waters leaching through the landfill proper.

Response:

There is no basis for the imposition of internal wastestream limits on the landfill leachate at this facility. The leachate from the landfill is not required to meet the same limits as the fiber lines. The effluent guidelines for the bleach plant apply only to the bleach plant

effluent, not to the landfill leachate. The landfill leachate is, however, subject to the limitations at the point of discharge (outfall 001). The leachate is commingled with process wastestreams in the secondary treatment aeration pond, so the pollutants from the leachate are included in determining compliance with the final effluent limits.

The RCRA program has been delegated to the state of Idaho. Idaho DEQ is working with Potlatch regarding management of solid and hazardous wastes at the facility.

32. Comment:

One commentor stated that average monthly calculations should not use zeros for values less than the method detection level (MDL). Footnote 1 of Table 1 indicates that water quality results below the MDL can be reported as zeroes. This approach results in lower average monthly values and is less protective of the receiving waters. Results below the MDL should be reported as half the MDL to be more protective.

Response:

The method detection limit (MDL) is defined in 40 CFR 136.2 as “the minimum concentration of an analyte (substance) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero.” In other words, at concentrations below the MDL, the analysis cannot confirm the presence or absence of the analyte in the sample. Therefore, EPA Region 10 guidance (Collins et al., 1996) states that, if the concentration of a pollutant in an effluent is less than the method detection limit (MDL), the permittee shall report “less than {MDL}” on the DMR, and shall use a value of zero for these samples for use in calculations, including calculations of monthly averages. This the use of “zero” applies only to calculation of averages.

The permittee is required to conduct high volume/low detect level sampling of their effluent by NOAA Fisheries and USFWS. This information will also be helpful to EPA to determine whether or not this methodology is adequate for this discharge.

33. Comment:

One commentor stated that more compounds should be analyzed in the sediments. The 1999 draft permit had substantially more sediment monitoring. The current proposed permit only has dioxin and furan congeners that are in EPA Method 1613. EPA has stated that the purpose of sediment monitoring is to determine bioaccumulative affects of pollutants, which only are TCDD and TCDF. TCDD and TCDF are PBTs, as is pentachlorophenol, alkyl-lead and mercury. There are many more chemicals that bioaccumulate and are not considered PBTs. More compounds, specifically those that partition to sediment, such as the above PBTs, chlorinated compounds, PAHs, phthalates, zinc and other metals, need to be monitored in the sediments.

Response:

The purpose of the sediment monitoring is to provide information for the bioaccumulative effects from the Potlatch Mill discharge to those species that may be consumed by humans. Many of the pollutants that the commentor listed, such as PAHs, phthalates and metals, are only discharged from the Potlatch Mill at background concentrations from their intake of Clearwater River water. Even though other PBTs may be in the Potlatch Mill discharge, TCDDs and TCDFs are more predominant in the discharge. If the monitoring shows that the discharge contributes to levels of these contaminants that are unsafe for fish, then more stringent effluent limits will be imposed in future permits. EPA believes that controlling TCDDs and TCDFs will also control other chlorinated PBTs in the discharge.

34. Comment:

One commentor stated that the proposed permit does not require continuous improvement. Inherent in the NPDES permitting process is the continual improvement of industrial processes to reduce pollutant discharge. This is the mission of the NPDES program. As such, reissuance of a discharge permit for the Potlatch Corporation facility should be based on past performance under the 1992 permit.

One of the important requirements of an NPDES permit, which provides a benchmark for measuring progress, is the requirement for a Toxic Reduction Evaluation Work Plan, Quality Assurance Plan and Best Management Practices Plan. Because this permit is a re-issue of the 1992 permit, the existing plans should be provided with the draft permit application to provide a basis on which the facility's past performance and pollution discharge elimination can be judged. However, these plans are not even referenced. Rather, the draft permit assumes these plans are being drafted anew. The commentor questions whether the former plans were inadequate and processes have changed. Further, the draft permit is missing a deadline for the completion of the Toxic Reduction Evaluation Work Plan, and the QAP and BMP need only be submitted 90 and 180 days after permit issuance, respectively. These are improper omissions given the importance of the permit.

Response:

Under the 1992 permit, the Potlatch Corporation was required to develop a Best Management Practices Plan, but not a Quality Assurance Plan or a Toxic Reduction Evaluation Work Plan. The 1999 fact sheet did discuss the fact that the facility had a Best Management Practices Plan; however, that plan is not consistent with the new effluent guidelines for this industry and the facility is being required to develop a new BMP Plan that is consistent with the new requirements.

The final permit requires that the TRE Work Plan be completed within 60 days of the effective date of the permit.

35. Comment:

One commentor requested that EPA conduct a detailed antidegradation analysis prior to the final permit being issued or provide the Tribe a copy of any antidegradation analysis conducted by EPA. The fact sheet contains a brief paragraph on antidegradation. To comply with antidegradation policies, EPA must conduct an analysis of the permit to determine if there is a potential for degradation. This analysis should include a determination of what the existing uses of the Snake and Clearwater Rivers are, and consequently, how those existing uses could be impacted by the Potlatch discharge.

Response:

As cited in the Idaho water quality standards [IDAPA 58.01.02.053], it is the State, not EPA, that must conduct the antidegradation analysis. The only effluent limits that would require an antidegradation analysis are TSS, BOD₅ (December through May) and AOX since all other effluent limits are either equivalent to the 1992 permit or more stringent. As stated in the response to Comment #1 in the “Biochemical Oxygen Demand” section of this document, because the receiving water is a Tier I water, increased discharges of pollutants can be allowed as long as the applicable water quality criteria continue to be met. Because the increased discharges of TSS, BOD₅ and AOX will not cause or contribute to violations of applicable water quality criteria, an antidegradation analysis is not necessary in this case.

36. Comment:

One commentor stated that the limitations for the fiber line are provided as maximum daily standards, but requires composite monitoring. The commentor is confused as to why EPA is requiring a composite sample when the applicant must comply with a daily maximum effluent limit. In taking a composite of several grab samples, there will be an averaging out of the highest recorded value. EPA should require a grab sample at a time/situation when pollution levels are highest to measure the true daily maximum. At a minimum, the sampling requirements should be sufficient to guarantee the enforceability of the permit.

Response:

While the EPA agrees that composite samples may be less concentrated than grab samples, the effluent sample results may not accurately account for all pollutants that may be discharged to the receiving water if a grab sample were specified in the permit. Grab samples can measure maximum effect only when the sample is collected during flows containing the maximum concentration of pollutants toxic. A composite sample is desirable when the material being sampled varies significantly over time either as a result of flow or quality changes.

The definition of the maximum daily limit is the highest allowable daily discharge and the definition of the daily discharge is the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for

purposes of sampling. For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the average measurement of the pollutant over the day.

Since composite samples will accurately reflect the average measurement of the pollutant over the day or the total mass of the pollutant discharged over the day, EPA believes that composite samples are appropriate for these parameters.

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