

Date: October 6, 2008

To: Environmental Quality Commission

From: Dick Pedersen, Director

Subject: Agenda Item G, Action Item: Oregon's Fish Consumption Rate – For Use in Setting Water Quality Standards for Toxic Pollutants
October 23, 2008 EQC Meeting

Why this is Important

The Department of Environmental Quality is asking the Environmental Quality Commission to provide direction on two questions:

1. Should DEQ conduct rulemaking to revise Oregon's human health water quality standards for toxic pollutants?
2. Should DEQ base the water quality standards for human health on a recommended fish consumption rate of 175 grams per day (g/d), or on some other fish consumption rate?

Oregonians may be exposed to toxic pollutants through the fish we eat and the water we drink. Oregon's water quality standards include criteria designed to protect human health from toxic pollutants that may occur in surface waters and accumulate in fish. A key component of the human health criteria is the fish consumption rate, which is intended to reflect how much fish people eat. Criteria based on a particular fish consumption rate will protect the health of people who eat up to that amount of fish. People who eat larger amounts of fish incur a greater risk of experiencing a health effect related to the toxic pollutants that accumulate in fish.

Department Recommendation

DEQ recommends that the EQC direct DEQ to begin a rulemaking process to:

1. Revise Oregon's toxics criteria for human health based on a fish consumption rate of 175 g/d; and
2. Propose rule language that will allow DEQ to implement the standards in NPDES permits and other Clean Water Act programs in an environmentally meaningful and cost effective manner.

DEQ further recommends that EQC state its intent to consider adoption of these rules together as two essential components of a workable water quality regulatory program for toxics.

Background Fish Consumption Rate and Water Quality Standards

DEQ's water quality standards play an important role in maintaining and restoring the environmental quality and quality of life that Oregonians value. Human health criteria are used to limit the amount of toxic pollutants that enter Oregon's waterways and accumulate in the fish and shellfish consumed by many Oregonians as a traditional and/or healthful lifestyle. The criteria help to ensure that people may eat fish and shellfish (from here forward referred to as "fish") from local waters without incurring unacceptable health risks.

In 2004, the EQC, at DEQ's recommendation, revised Oregon's toxic pollutant criteria for aquatic life and for human health by adopting EPA's 2002 recommended criteria. The 2004 human health criteria were based on a fish consumption rate of 17.5 g/d, which represents the 90th percentile of the total national population (both consumers and non-consumers). Following DEQ's 2004 revisions, Native American governments and EPA expressed concerns about Oregon's criteria. A study of four Columbia River tribes, including the Umatilla and Warm Springs tribes in Oregon (CRITFC, 1994) shows that tribal members eat much more than 17.5 g/d of fish.

Fish Consumption Rate Review Project

Recognizing that many Oregonians eat more than 17.5 g/d of fish and shellfish, DEQ has collaborated with the U.S. Environmental Protection Agency (EPA) and the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) to reconsider the fish consumption rate used as the basis for Oregon's human health water quality criteria for toxic pollutants. The recommendation before the EQC today is a joint recommendation from all three governments.

Over the last two years, the three governments have gathered information and engaged in a public process to evaluate an appropriate fish consumption rate and the potential consequences of revising Oregon's human health criteria based on that rate. DEQ, EPA and CTUIR have held seven public workshops to hear from the public on the information being evaluated and on the policy issues inherent in choosing a fish consumption rate.

DEQ formed two workgroups, the Human Health Focus Group and the Fiscal Impact and Implementation Advisory Committee. The Human Health Focus Group, made up of public health professionals and toxicologists, wrote a report summarizing the available fish consumption

data and made recommendations about the quality, appropriate use and relevance of the data for Oregon. The Human Health Focus Group report may be found in the August 2008 EQC informational report, Item O on the meeting agenda, available online (URL provided at the end of this report).

The FIIAC, which included representatives of industry, municipalities, economists and other affected parties, helped DEQ evaluate the potential economic effects of revised human health criteria in Oregon. The state Administrative Procedures Act requires agencies to consider compliance costs to businesses when developing rules. The FIIAC reviewed and commented on a draft report by Science Applications International Corporation, an EPA contractor that analyzed the costs of compliance with criteria based on a range of fish consumption rates. In addition, the Northwest Pulp and Paper Association and the Oregon Association of Clean Water Agencies provided the FIIAC an overview of information they gathered about potential costs to their members. While these reports varied in their methods of analysis and their assumptions, they were consistent in concluding that end-of-pipe treatment to meet more stringent water quality criteria would be cost prohibitive for some pollutants. The FIIAC agreed that DEQ should pursue alternative implementation options, noting that for some pollutants, existing treatment technologies have not been proven to be capable of attaining the levels that would be required. In some cases, even if effective treatment technologies are available, they would be unreasonably costly.

DEQ agrees with these conclusions and, consequently, views the implementation strategies component of the regulation as critical to a successful rulemaking effort. The FIIAC helped DEQ explore possible implementation strategies and alternatives for situations where cities and/or industry can not attain new stringent standards with current technologies or without causing severe economic hardship. DEQ is now in the process of working with EPA and stakeholders to investigate the potential strategies and determine which implementation tools DEQ will propose. See also "Key Issues" below for further discussion. A memo from the FIIAC describing its work and findings may be found in Attachment A. An executive summary of the SAIC report was included in the August 2008 EQC informational report, Item O on the meeting agenda, available online. Comments from NWPPA may be found in Attachment B.

Rulemaking Timeline

The timeline for this project is sensitive. A consent decree between Northwest Environmental Advocates and EPA requires EPA to approve or disapprove Oregon's 2004 criteria by January 15, 2009. However, if by October 30, 2008, the EQC directs DEQ to undergo rulemaking to revise the criteria, the parties may agree to extend the date for EPA action. DEQ's preference is to conduct an expedient and successful rulemaking to revise Oregon's criteria, rather than have EPA be compelled to act on the existing criteria. Revising the criteria through a rulemaking and gaining EPA approval of those criteria in a timely manner would help resolve the regulatory uncertainty that exists because EPA has not approved DEQ's 2004 criteria.

If the EQC directs DEQ to move forward with rulemaking, staff estimate it would take twelve months to develop rule language, conduct the rulemaking and public hearings process, and propose final rules to the commission for adoption. An estimated rulemaking schedule is provided in Attachment C.

For additional background information, please see the August 2008 EQC informational report, Item O on the meeting agenda, available online.

Key Issues

During the discussions and analysis regarding criteria based on a revised fish consumption rate, DEQ has identified the following key issues that it will need to address as part of a rulemaking effort:

- Choosing an appropriate fish consumption rate as the basis for Oregon's revised human health criteria for toxic pollutants; and
- Identifying environmentally meaningful and cost-effective approaches for implementing the revised criteria.

Choosing An Appropriate Fish Consumption Rate

The recommended fish consumption rate of 175 g/d represents approximately the 90th to 95th percentile of Oregon fish-consuming populations as indicated by studies of Tribes and Asians and Pacific Islanders in Oregon and Washington (Human Health Focus Group Report, 2008). 175 g/d equals 6.2 ounces per day, or approximately 23 8-ounce fish means per month.

The three governments believe 175 g/d is an appropriate fish consumption rate for the following reasons:

- This value is protective and inclusive of the vast majority of fish consumers throughout the state of Oregon, including subsistence

- consumers (those who eat fish almost every day).
- 175 g/d is the 95th percentile of known adult fish consumers from the Columbia River Inter-Tribal Fish Commission study. This study is Oregon's most relevant and reliable fish consumption survey.
- 175 g/d is well-supported by other regional studies of Pacific Northwest fish consumption. The value is in the mid-range of 90th percentile values from other relevant studies identified by the Human Health Focus Group and DEQ staff.
- The value includes salmon, a commonly consumed fish in Oregon.
- The rate is based on local data, as recommended by EPA guidance, and is in keeping with EPA's recommended national default rate for subsistence fishers of 142 grams/day.

DEQ believes that the Oregon public values having water clean enough to support moderate to high levels of fish consumption, whether for cultural, health, economic or other reasons, without incurring unacceptable health risks due to the presence of contaminants in those fish.

Please see Attachment D for supporting resolutions and letters from tribal governments in Oregon and the Northwest.

Environmentally Meaningful, Cost-Effective Implementation

A key issue associated with adopting more stringent criteria based on an increased fish consumption rate is how to implement the criteria in an environmentally meaningful, cost-effective manner. This issue is pertinent even under the DEQ's existing criteria, but more stringent criteria will likely exacerbate the problem and potentially widen the universe of affected dischargers.

In some cases, installing end-of-pipe treatment to comply with more stringent criteria could cause severe economic hardship for cities or industrial dischargers. In some circumstances, treatment technologies capable of attaining criteria may not be available (SAIC, 2008). People concerned about improving water quality and reducing risks from eating fish would like to ensure that toxic pollutants in Oregon waters are reduced as much as possible or eliminated. Therefore, a significant policy issue and component of this rulemaking is to develop implementation tools that DEQ can use to ensure that toxic pollutant control and reduction efforts occur in the most environmentally meaningful, cost-effective and equitable manner possible, without causing severe or widespread economic hardship.

DEQ and EPA are investigating implementation tools and approaches that are legally defensible under the Clean Water Act and would provide alternatives where meeting effluent limits based on the water quality standards is either infeasible or prohibitively expensive. Some of the implementation tools under consideration include: compliance schedules, toxics reduction programs, intake credits and variances. A compliance schedule gives a facility time to install the treatment or pollution reduction programs needed to meet its discharge limit. Toxics reduction programs reduce the amount of toxic pollutants entering a municipal treatment plant and, therefore, the pollutant load that must be treated or discharged. An intake credit is a means to account for pollutants in a facility's intake water when calculating effluent limits. A variance is a mechanism by which a facility can receive alternative discharge limits and requirements when limits derived from the water quality standards are not feasible to meet.

The cost estimates provided in the SAIC analysis (2008) assumed the use of some of these implementation tools in certain circumstances. For some pollutants, SAIC found that end-of-pipe treatment technologies are not likely to be capable of producing the necessary effluent concentrations on a consistent and reliable basis. In addition, where treatment could theoretically achieve these levels, the very high cost per pound of pollutant removed and issues with disposal of the residue led SAIC to conclude that they were infeasible (SAIC 2008, Exec. Summary, p.3). SAIC found that for the sample of facilities they analyzed, additional reductions would be needed to meet effluent limits for 4,4'-DDT, alpha-BHC, arsenic, mercury, bis(2-ethylhexyl) phthalate and dioxin.

The NWPPA and ACWA, in comments to the EQC and DEQ (see Attachment B for written comment submitted by NWPPA), have also urged the EQC to ensure that appropriate implementation tools are available. They point out that treatment technologies are either infeasible or cost prohibitive and that several of the pollutants likely to exceed the criteria are legacy or natural pollutants, and the portion of the load contributed by regulated dischargers is very small to none, depending on the pollutant.

In summary, information from both the SAIC report and Oregon stakeholders support the need to adopt policies on implementation alternatives and to have those tools available for use by the time new human health criteria become effective. These implementation alternatives are essential, and any rules necessary to allow their use must be part of the rulemaking effort.

**EQC Action
Alternatives**

DEQ Recommendation

DEQ recommends that the EQC direct DEQ to move forward with a rulemaking process to revise the human health criteria for toxic pollutants based on a fish consumption rate of 175 g/d. In addition, DEQ recommends that the EQC direct DEQ to ensure that the necessary implementation tools are authorized by DEQ's administrative rules to allow the new criteria to be implemented in an environmentally meaningful, reasonable, and cost-effective manner, to the extent that those tools are available for use under the Clean Water Act.

This recommendation represents a policy decision to protect people in Oregon who traditionally consume large amounts of fish as well those who eat fish for health, economic or other reason, and to set a goal of attaining water quality sufficient to support frequent consumption of fish without undue risk of health effects. Criteria based on a fish consumption rate of 175 g/d would be expected to protect at least 90 to 95 percent of fish consumers in Oregon. The recommended rate includes salmon and lamprey but not marine species or shellfish based on data as analyzed by the CRITFC study. The rate also includes marine species based on the data analyzed by the Puget Sound studies, but at a lower percentile of the population (90 rather than 95%). Salmon are included because they are the primary species eaten by Oregonians and represent a potential path of exposure to toxicants.

Alternative 1

The EQC may direct DEQ not to move forward with a rulemaking at this time if EQC members feel that DEQ does not have sufficient information to support the revised fish consumption rate, or if they feel more debate is needed on that value before DEQ takes the next steps of calculating criteria and developing implementation tools.

The likely consequence of delaying the rulemaking is that EPA would act on DEQ's 2004 criteria. EPA is currently under a consent decree to approve or disapprove the 2004 criteria by January 2009. If after the October EQC meeting, EPA and Northwest Environmental Advocates conclude that DEQ is making timely progress towards revising the 2004 criteria, they may renegotiate the agreement to allow DEQ's rulemaking to occur. In this circumstance, DEQ would expect EPA to act on the new criteria rather than the 2004 criteria. If, on the other hand, DEQ does not initiate rulemaking and EPA disapproves the 2004

criteria, DEQ would be compelled to fix the deficiencies, or EPA would be required to promulgate criteria for Oregon. DEQ recommends moving ahead under a DEQ-directed rulemaking process and timeline.

Alternative 2

A second alternative available to the EQC is to direct DEQ to begin rulemaking, but to base the revised criteria on a fish consumption rate other than 175 g/d. Both the SAIC cost analysis and the Human Health Focus Group Report discussed a range of possible fish consumption rate values from 63 g/d to over 400 g/d. The differences in the rates relate primarily to which survey population is used, what percentile of that population is targeted, and whether or not salmon and/or marine fish are included in the rate.

Alternative rates could include values that do not include (or fully count) salmon and marine fish or target a different percentile of the fish-consuming population. Some States do not include salmon and marine fish in their fish consumption rates. These fish accumulate most of their contaminant body burden in ocean waters, outside the influence of the state's water quality standards and pollution controls. Salmon tend to contain lower levels of contaminants than resident fish. A fish consumption rate of 175 g/d represents the 95th percentile of the CRITFC study population. Alternative rates could target a lower percentile of this population.

Alternative 3

As a third alternative, the EQC could direct DEQ to consider adopting different fish consumption rates for different basins or water bodies that reflect local consumption patterns in those areas. DEQ does not recommend using different consumption rates for different geographic areas within the state. The reasons for this include:

- While there is data only for the Umatilla and Warm Springs Tribes in Oregon, studies from the Pacific Northwest and elsewhere show that many Tribes and other groups (i.e. Asian Americans) eat moderate to large amounts of fish. Input at public workshops indicates that there may be other groups who eat large amounts of fish as well, such as commercial or sport fishermen.

Agenda Item G, Action Item: Oregon's Fish Consumption Rate – For Use in Setting
Water Quality Standards for Toxic Pollutants

October 23, 2008 EQC Meeting

Page 9 of 9

- Nearly all the major river basins in Oregon are usual and accustomed fishing areas for an Oregon Tribe.
- People may catch fish in many locations around the state, not just in the river basin in which they live.
- Having different criteria in different basins would create complexities in the regulations and their implementation.

Attachments

- A. FIIAC memo to the Oregon EQC
- B. Comments from NWPPA
- C. Estimated rulemaking timeline
- D. Resolutions and letters of support from Oregon tribes

**Available Upon
Request**

The full SAIC cost analysis report may be found at
<http://www.deq.state.or.us/wq/standards/docs/toxics/ORToxicsComplianceCost.pdf>.

The full August 4, 2008 EQC staff report, Agenda Item O, Informational Item: Oregon's Fish Consumption Rate – For Use in Setting Water Quality Standards for Toxic Pollutants, August 21-22, 2008 EQC Meeting, may be found at
<http://www.deq.state.or.us/about/eqc/agendas/2008/2008augEQCAgenda.htm>.

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Oregon Fish Consumption Rate Project

**Fiscal Impacts and Implementation Advisory Committee
 Memo to the Oregon Environmental Quality Commission**

The purpose of this memo is to provide an overview of the convening and charge of the Fiscal Impacts and Implementation Advisory Committee (FIIAC), to summarize FIIAC discussions around costs, benefits and implementation ideas that were considered by the group, and to highlight conclusions and recommendations that culminated from this effort. Further details of the FIIAC information can be found in the Appendices that include the “FIIAC comments and response to comments on Science Applications International Corporation (SAIC) Cost of Compliance analysis” (Appendix 1) and FIIAC Meeting Summary Notes (Appendix 2).

I. OVERVIEW INFORMATION

Background

The Oregon Fish and Shellfish Consumption Rate Project, a joint project of Oregon Department of Environmental Quality (DEQ), United States Environmental Protection Agency (EPA) and the Confederated Tribes of the Umatilla Indian Reservation (CTUIR), has been evaluating options to revise Oregon’s fish consumption rate, which is one variable used to calculate water quality criteria protective of human health. This effort is anticipated to end in late 2008 when the Environmental Quality Commission (EQC) chooses a fish consumption rate for rulemaking.

By October 2008, DEQ, EPA, and CTUIR plan to present a report to the EQC on a range of options to revise the fish consumption rate, with a goal of one joint recommendation from those options. That report will include a range of proposed implementation options to be considered in implementing a revised fish consumption rate.

Ideally, for the three governments to develop feasible implementation options, the economic effects (both costs and benefits) of each option need to be understood. To that end, DEQ, EPA and CTUIR convened the FIIAC as a group of interested experts who could help to develop feasible implementation options and also provide input on the impacts such options may have on a wide range of permitted dischargers, the public, and other stakeholders throughout the state. The expertise of the group ranged from backgrounds in economics, business administration, public works, public health, water quality, and engineering. A list of FIIAC members is shown in Table 1.

Table 1: FIIAC Membership

<i>Name</i>	<i>Affiliation</i>
Deanna Conners	Oregon Dept. of Human Services (Public Health Division)
Kathleen Feehan	Confederated Tribes of the Umatilla Indian Reservation (Tribe)
Rich Garber	Association of Oregon Industries (Industry)
Sarah Kruse	Ecotrust (Economic Innovation Organization)
Kristin Lee	ECONorthwest (Economic Consulting Firm)
Eric Scott*	Confederated Tribes of the Grand Ronde (Tribe)

Susie Smith	Association of Clean Water Agencies (Municipalities)
Willie Tiffany	League of Oregon Cities (Municipalities)
Kathryn VanNatta	Northwest Pulp and Paper Association (Industry)

* Eric participated in the first four FIIAC meetings and was not able to remain on the committee through the completion of the process. Therefore he did not provide input to this FIIAC memo.

Committee's Charge

FIIAC's final Charter specified the following four charges as the focus of the group's work together:

1. Consider and possibly contribute to the Implementation Strategies Inventory that will be compiled by DEQ and used in developing implementation options for potential new human health criteria.
2. Review and comment on the Draft Fiscal Impact Analysis in accordance with ORS 183.333. The analysis will be used to develop DEQ's Statement of Need and Fiscal and Economic Impact in anticipation of a future rulemaking to raise the FCR and lower human health water quality criteria. The FIIAC will address the following questions in their review:
 - Would increasing the FCR have a fiscal and economic impact?
 - What is the extent of that fiscal and economic impact?
 - Would increasing the FCR have a significant adverse impact on small businesses?
 - What is the extent of that fiscal and economic impact to small businesses?

In addition, it is anticipated that members of this Committee will be able to provide information about the economic benefits of an increased fish consumption rate; information about economic or other benefits of an increased fish consumption rate will be provided to the EQC to help inform their final decision.

3. Discuss implementation options for multiple fish consumption rate scenarios
4. Provide any recommendations on fiscal impact and implementation strategies
 (From *FIIAC Final Charter, 1-28-08*)

II. DISCUSSION OF FISCAL IMPACTS

a. Cost Analyses

As noted above, FIIAC was asked to review and comment on a fiscal impact analysis. To broaden the views, FIIAC looked at analyses that were generated from three different perspectives: federal/state, municipalities and industry.

EPA/DEQ Analysis: Science Applications International Corporation (SAIC), an independent firm, was contracted by EPA on behalf of DEQ to develop and perform a "Cost of Compliance with Water Quality Criteria or Toxic Pollutants for Oregon Waters" analysis. This cost analysis likely will be used to develop DEQ's Statement of Need and Fiscal and Economic Impact for any formal rulemaking that may result if the EQC decides to change the Fish Consumption Rate. EPA presented the analysis and revisions of the analysis to the FIIAC. In turn, FIIAC discussed

the report and provided individual written comments to SAIC/DEQ/EPA (attached as Appendix 1). What follows is a brief summary of the highlights discussed at FIIAC meetings:

SAIC randomly selected seventeen facilities in Oregon for its analysis. The report identified baseline cost, changes that would be needed to meet new criteria, and drivers of cost. The methodology used was similar to that of the Great Lakes Initiative and work done in California. The methodology involved: choosing random samples from an identified list of potentially affected facilities; pooling all available data; applying new criteria; and costing out the required changes to meet the new criteria. The criteria used for running the analysis included criteria associated with the baseline fish consumption rate (the current rate of 17.5 grams per day) and increased fish consumptions rates of 63.2, 113, 175, 389 and 620 grams per day.

SAIC evaluated the potential cost of compliance for point source facilities. To arrive at these estimates, they evaluated the four largest facilities (four municipal facilities, one of which is dominated by flow from a pulp and paper plant) and one minor industrial (steel mill). To evaluate the potential for costs at the remaining municipal and industrial facilities within the state, SAIC selected a representative random sample of 13 major facilities and two minor facilities. SAIC calculated costs for both total and incremental (i.e., above and beyond those needed for compliance with baseline standards) annual statewide costs, both with and without the costs for inflow and infiltration (I&I) controls to reduce arsenic in municipal sewer systems. SAIC also estimated costs for a range of revised FCRs (from 17.5-620 gpd). SAIC's approach to estimating costs assumed that facilities would pursue the lowest cost means of compliance with effluent limits. The means of compliance SAIC considering in calculating facilities' actions to come into compliance included:

- Optimizing treatment processes (e.g., adding chemicals to increase flocculation or filtration efficiency) to increase pollutant removal efficiencies;
- Source control (e.g., pollution prevention program, inflow and infiltration reductions, more stringent pretreatment standards);
- Installing end-of-pipe treatment technology; and
- Alternative compliance mechanisms (e.g., site-specific criterion, TMDL, or variance).

Uncertainties exist around actual use of some of the approaches included in the SAIC analysis. That said, while some of these approaches have not been commonly used in Oregon, SAIC assumed approaches were available where allowed by Oregon law.

SAIC estimated the annual costs to comply with baseline standards could range from \$3.62 to \$29.7 million dollars if I&I costs are included (\$3.62 to \$3.92 million if I&I costs are not included). In calculating the annual costs to comply with any newly proposed standards, SAIC estimated the total annual costs, statewide, would range from \$75,000 to \$1.82 million, with the low end representing costs attributable to revised standards based on a 63.2 gram per day fish consumption rate without I&I costs and the high end representing revised standards based on a fish consumption rate of 620 grams per day including costs associated with I&I. Because these costs are based on an extrapolation of costs estimated for the sample facilities, costs are not expressed on a per million gallon day basis, rather, they are expressed as a total statewide annual cost.

In evaluating the available data, SAIC concluded that reductions in effluent concentrations would be needed for at least six pollutants to meet baseline criteria: 4,4'-DDT, alpha BHC, arsenic, bis(2-ethylhexyl) phthalate, dioxin, mercury. Additional reduction efforts under revised criteria would also likely be needed for three of those pollutants: Arsenic, bis(2-ethylhexyl) phthalate, mercury

In calculating these costs, SAIC found that many of the actions facilities would need to take to comply with the baseline standards would also result in compliance with the revised standards. As a result, they found that the majority of the costs are associated with meeting the current, baseline standards. However, as noted above, they found there will be some additional costs associated with standards based on a higher fish consumption rate.

For some of the pollutants (e.g. mercury, arsenic) that SAIC concluded would most likely need additional reduction efforts, treatment technologies have not yet been proven to treat to those levels anywhere in the U.S. As a result, SAIC assumed that permittees would pursue alternative compliance mechanisms (e.g., variances) when permit limits are unable to be met. (It should be noted that these types of compliance tools are currently not in use in Oregon). SAIC estimates that one-time expenditures associated with variance applications could range from \$1.43 million to \$7.05 million (total statewide) under the baseline; incremental variance-related expenditures could range from \$0.59 million to \$2.68 million (total statewide) under revised criteria.

For additional information, SAIC included a summary of estimated costs for reverse osmosis, if that treatment were to be used at a facility. SAIC estimated the annual cost of reverse osmosis (capital plus O & M) to range from \$7.1 million to \$56.7 million per facility, depending on the wastewater treatment flows within the facility.

With regard to nonpoint sources and stormwater, the SAIC report provides some information regarding potential controls and associated unit costs, where available. For minor and indirect dischargers, the report notes that costs are highly uncertain based on limited or no data. The one exception to this conclusion is mercury due to its ubiquitous nature. The report notes that mercury is likely to be a pollutant of concern for minor municipal dischargers, and estimates that annual statewide compliance costs could range from \$0.8 million to \$3.9 million for revised mercury standards based on a 620 grams per day fish consumption rate.

For the report as a whole, SAIC noted several uncertainties in its analysis associated with data limitations, potential pollutant load reductions achievable, and how dischargers would respond to potential revised requirements and permit conditions. For the facilities analyzed, data were not available for all pollutants for all sample facilities, resulting in an inability to assess whether facilities were currently in compliance with the baseline standards. In addition, many of the revised criteria, regardless of the fish consumption rate used as the basis, are below method quantification level. As a result, there may not be measurable or quantifiable load reductions from point sources. As a result of these uncertainties, the estimated costs may be either higher or lower than those estimated by SAIC.

[FIIAC Member Comments on the SAIC Cost of Compliance Analysis](#)

FIIAC members provided two rounds of comments on the SAIC analysis. These comments were provided by individual members or their organizations. Generally, these comments fell into the following categories:

- uncertainty about cost estimates;
- lack of overall government costs and accurate wastewater treatment costs;
- lack of thorough discussion of economic benefits, including potential avoided costs;
- significant questions and issues regarding costs associated with inflow and infiltration (I&I) and pollution prevention (P2);
- uncertainty and feasibility issues around the reliance on variances and other non-traditional regulatory approaches in a litigious region: Oregon and EPA Region 10;
- additional costs identified by members that were missing from the analysis;
- the importance of distinguishing between baseline costs (at 17.5 gpd) versus cost to comply with revised standards;
- lack of clarity/discrepancies in baseline information;
- questions about how representative the facility samples were for Oregon;
- lack of analysis on small business impacts; and
- suggested revisions to data formatting.

Many of the comments submitted by FIIAC members were addressed by SAIC in the subsequent draft. FIIAC plans to do a review of the most recent draft of the analysis but, due to extenuating circumstances, including a delay in the release of the second draft, no consensus conclusions have been stated by the group at the time of this memo.

Industry Analysis: the Northwest Pulp and Paper Association (NWPPA) and the Association of Oregon Industries (AOI) representatives shared information with FIIAC from a CH2MHill cost analysis report that was developed beginning in 2006. This report found that, similar to the SAIC analysis, metals are a driver for detection and, therefore, cost. Mercury and arsenic, both of which can be naturally occurring elements, showed highest detection levels. The summary information shared with the FIIAC included effluent data at NWPPA sites and the estimated costs for end-of-pipe controls and removal technology methods that could be or are used to address them.

At the June 27 public workshop, NWPPA presented summary information from its second cost study done by HDR Inc. This study was based on a fish consumption rate range of 63-389 grams/day. NWPPA emphasized that (per DEQ's information) most point sources do not yet have permits incorporating the current criteria based on 17.5 grams/day. The HDR analysis studied various wastewater treatment options and the advantages and disadvantages to using each. Four mill effluents were used to analyze capital costs for each treatment technology based on 175 grams/day. For a mid-sized Oregon mill discharging 19 million gallons per day, iron coprecipitation was estimated at \$25 million, nanofiltration was estimated at \$67 million and reverse osmosis was estimated at \$79 million. Annual operating and maintenance costs estimated for iron coprecipitation was \$20 million, nanofiltration was \$6.7 million and reverse osmosis was \$7.4 million. Finally, annualized costs were estimated, over a 10-year period, for iron coprecipitation at \$24 million, for nanofiltration at \$16 million, and at \$19 million for reverse

osmosis. These estimated costs were compared to current yearly operation and maintenance costs for wastewater treatment, which were estimated to be approximately \$3 million.

Municipalities' Analysis: The Association of Clean Water Agencies (ACWA) also shared summary information with FIIAC about the estimated costs to municipalities of implementing a higher fish consumption rate in Oregon. Again, metals and organic chemicals were of highest concern and, as a result, ACWA suggested that effective implementation and management should focus on pretreatment programs and pollution prevention.

ACWA estimated that capital costs for micro-filtration and reverse osmosis technologies to address metals would cost between \$2.5 million and \$3.5 million per million gallons per day, assuming some portion of the final effluent to be blended prior to discharge. Without blending, capital costs were estimated at about \$6 million to \$15 million per million gallons per day. Based on these cost estimates, the ACWA information showed a combined capital cost range of \$2.3-\$3.3 billion for all of the four largest wastewater treatment systems in Oregon, including Portland, Clean Water Services, Eugene/Springfield and Corvallis. At the time of this memo, ACWA had committed to analyzing these broad costs to show what this would mean to ratepayers, and planned to provide that information to DEQ as soon as it is available. ACWA did note that operating costs to comply with an increased fish consumption rate would be significant, and those costs would include substantial energy consumption, chemical usage, ongoing operating and maintenance and disposal of briny sludges.

FIIAC Member Comments on the Industry and Municipalities Cost of Compliance Analyses

FIIAC heard presentations on the cost analyses noted above, but did not have the opportunity to analyze either of these analyses to the same extent that it reviewed the SAIC analysis. Summary information was shared and discussed at two FIIAC meetings and at the June 27 public workshop. Information about baseline assumptions, underlying data, calculations, or methodologies of these analyses were not made available nor were they a part of FIIAC discussions. As such, most FIIAC members noted that the industry and municipal cost analyses were not able to differentiate between the costs associated with current baseline criteria compliance as opposed to costs to comply with future criteria based on a potential increase in the fish consumption rate. It also was not possible to identify different costs associated with the different potential future fish consumption rates. As a result of this and time constraints related to this process, FIIAC was unable to reach any consensus conclusions about the analyses themselves or overall costs that will be associated with an increase in Oregon's fish consumption rate.

b. Benefits Discussions

As noted above, DEQ did not have the time or funding to research and do a quantitative analysis of the direct and indirect potential benefits of increased fish consumption rates. Because of this, members of the FIIAC worked together to provide initial information about the potential benefits of an increased fish consumption rate and also shared ideas for how DEQ could best reflect potential benefits within the time and fiscal constraints of this process (see attached "Potential Economic Benefits from an Increased Fish Consumption Rate").

FIIAC was provided with information from FIIAC members, the Oregon Environmental Council and DEQ relative to benefits. FIIAC members generally agreed that a fiscal impact assessment, by definition, should consider both costs and benefits. However, no specific consensus conclusions or recommendations related to benefits have come from FIIAC at this point. FIIAC members shared economic principles in FIIAC meetings, at the June 27 public workshop and shared here for the EQC:

- Environmental protection entails both costs and benefits and there are multiple ways that a healthy environment provides economic value.
- Costs may be easier to quantify than benefits, and benefits are equally important to understanding overall impacts.
- Costs and benefits can be distributed differently across public, business, and society at large and have different impacts on different groups.
- When either costs or benefits are “external” to the decision, the economic signals are distorted.
- Benefits from a revised FCR would likely not be limited to fish consumers only. A key outcome of a revised FCR that actually resulted in achieving more stringent water quality criteria would be a reduction in toxic contamination in waterways and an overall improvement in water quality.

Based on information shared with the group about economic benefits analysis, FIIAC members worked together to provide examples of the kinds of potential benefits that might result from setting a fish consumption rate and meeting water quality standards. The list of potential benefits was generated by the group and shared during the public workshop (see Table 2):

Table 2: Potential Benefits of Raising the Fish Consumption Rate and Meeting the Standards

<i>Benefit</i>	<i>Examples</i>
Human Health	Safe drinking water; avoided costs from environmentally attributable diseases; reduced risk for those who do eat fish; recreational – reduced risk from water contact
Environmental	Water reuse opportunities from cleaner effluent; business—cleaner intake water for downstream industries; ecosystem health; tourism; amenity/aesthetic/property values; avoided costs to industries and utilities; fewer contaminants; fishing – tribal, commercial, recreational and subsistence; improve other species in the food chain: birds,

	etc.;
	higher quality water supply
Cultural	Enable religious/ceremonial activities; children; healthy fish – icon of the Northwest and local, sustainable food options

Potential Benefits of Specific Implementation Strategies

<i>Strategy</i>	<i>Potential Benefits</i>
Toxic Reductions	Reduced human health impacts; innovative possibilities used to reach more efficient systems when not fearful of litigation stemming from strict liability regulatory framework; costs of litigation reduced; reduced O&M; reduced hazardous waste removal costs; reduced energy costs and associated emissions
Stormwater Control	Co-benefits for toxics reductions and control of other important stressors that affect fish health such as sedimentation and warm water temperatures
Infiltration and Inflow (I&I)*	Reduce quantity of water and toxics entering plant, reducing operating costs

(* It should be noted that ACWA agencies are already engaged in I&I programs and do not agree that an incremental increase in I&I will result in toxics reduction and question the efficacy of additional increases in I&I rehab work since 100% I&I removal is currently not possible.)

Given the discussions and input from FIIAC members, the following caveats relative to both lists of potential benefits are noted:

- point sources are likely a small component of all contaminant sources at a statewide scale;
- this is a list of categories of expected results for achieving water quality standards – and it is unknown what outcomes will actually result from this effort; and
- this is not an exhaustive, definitive or predictive list.

FIIAC heard from one of its members that, generally, an implementation strategy that achieves the same pollutant reduction at a lower cost may have higher net benefits and that some of the alternative approaches considered by FIIAC may produce additional benefits that are not yet known. The distribution of costs and benefits across affected stakeholders may differ across implementation strategies.

The FIIAC did not examine specific costs and benefits associated with any of the alternative strategies, but there was general consensus that some of the alternative implementation strategies

may produce higher net benefits than end-of-pipe treatment alone. The amount and type of benefits depend on the extent to which a higher fish consumption rate actually reduces pollutant levels. Strategies that reduce pollutants more quickly, achieve more pollutant reductions and/or have a greater certainty of achieving reductions will have higher benefits. Finally, both benefits and costs need to be considered to best understand the overall economic effects of a revised fish consumption rate and for optimal economic outcomes to be achieved in Oregon.

c. General Comments about FIIAC Fiscal Impact Discussions and Areas for Future Refinements

This memo would not be complete without noting that funding from EPA supported the SAIC analysis of the estimated costs associated with changing Oregon's fish consumption rate. Costs for studies related to industry and municipalities were born by those entities. However, funds were not available to support an analysis of potential benefits associated with an increased fish consumption rate during this process. Instead, CTUIR and two FIIAC members provided assistance for researching studies on the economic benefits of water quality improvements and toxics reduction programs. FIIAC members themselves undertook the remainder of the analysis presented above. FIIAC's discussion of impacts to small businesses was limited by the fact that NWPPA and AOI were the only industry representatives at the table and there was neither time nor data in this stage of the process for DEQ or others to do a more in-depth analysis of the potential economic impacts to other small businesses beyond ongoing outreach efforts. Several FIIAC members pointed out that small businesses that discharge to pretreatment systems under industrial user permits had not been fully quantified or identified, nor had they been included in the SAIC, NWPPA or ACWA cost reports--in discussion or analysis. That said, DEQ committed to continue outreach efforts to other potentially affected industry interests, and expects more engagement to occur after an EQC decision is made on this issue, especially if DEQ begins its rulemaking process in 2009.

III. DISCUSSION OF IMPLEMENTATION STRATEGIES

At the request of DEQ, EPA and CTUIR, the FIIAC developed and refined a list of potential compliance implementation strategies in an Implementation Matrix over the course of several FIIAC meetings (see attached "Implementation Matrix"). The matrix includes a series of possible implementation approaches and some of the potential advantages, disadvantages, relative costs, regulatory status and outcomes associated with them. Most FIIAC members agreed that the matrix should be viewed as a fairly comprehensive list of ideas that DEQ should consider now and in the future in order to implement a new fish consumption rate. Some members felt strongly that regulatory certainty and legal assurances must be provided by DEQ and EPA in order for the 'non-traditional' options to be considered viable prior to moving forward with implementation of a revised fish consumption rate. While most FIIAC members agreed it is important to be realistic about the feasibility of implementing new approaches in the near term (i.e. three to five years), due to legal uncertainties and uncertainties about funding to support new measures, they also suggested that *all* potential ideas should be put forth for further examination and perhaps future use.

From the matrix, the FIIAC began to formulate ideas around options that lead to a 'comprehensive approach to toxics reduction'. Some members felt that the primary focus of such an option should be on the major human health based contaminants of concern, and then move on to Reasonable Potential Analysis problems in individual permits. Toxics reduction options might include several of the individual approaches listed in the matrix. FIIAC members agreed that, to take a comprehensive approach, a compliance schedule will likely be needed in order to move into the other regulatory compliance tools under the Clean Water Act. Some FIIAC members noted that none of the regulatory compliance tools are currently being used in Oregon permits although they may be in use in other parts of the country. Some FIIAC members also shared the hope that compliance schedules *will* be used as a tool in the future, and suggest that a decision is needed soon about the feasibility of using this tool in Oregon: to be a realistic tool, any such decision should be properly documented to provide credibility and certainty to potential users of the tool. It should be noted that some FIIAC members expressed concern that moving forward without legal assurances for the creative tools and options included in the matrix would have unknown and worrisome consequences for permittees.

FIIAC explored the broader matrix via a "Path to Compliance Matrix." Three alternative pathways to compliance were discussed:

- 1) Technology-based advanced treatment to meet effluent limits based on the revised standards. Compliance schedules would be needed, as well as "pass-through" credits (also known as intake credits) and variances.
- 2) A toxics reduction program plus 'best conventional treatment.' Compliance schedules would be used, coupled with a toxics reduction program and best conventional treatment in the first permit cycle. Then, if met, continue with a compliance schedule or, if not met, consider additional pollution prevention and or reduction approaches, look at other tools such as variances, use attainability analyses (UAA), pass-through credit, and/or offsets/trading.
- 3) Use of a water quality benchmark in the first permit cycle. The objective for this would be to provide less legal liability for the permittee than using a numeric limit in the permit. The same tools might be used for the first permit cycle, then the second cycle could use a compliance schedule, variance, pass through credits, UAA and/or offsets/trading.

FIIAC members were leaning towards the second approach, yet some members noted that the details of the approach still need to be fleshed out before they are comfortable supporting it. Those who had concerns noted that permit holders must comply with the Clean Water Act. The current strict liability emphasis of statutes in Oregon requires end-of pipe treatment and, without regulatory off-ramps, permit holders will be required to install yet unproven treatment technology. Yet, in general, the FIIAC had concerns about relying solely on current end-of-pipe treatment technologies to achieve effluent limits (first approach), due to feasibility issues. Some FIIAC members were interested in the benchmark approach for the first permit cycle as it is similar to the mechanism that has been used in the stormwater permitting program, and it would provide permittees the time and opportunities to determine what technologies and programs will and won't work to achieve compliance. Other FIIAC members expressed concerns about setting a benchmark rather than a numeric effluent limitation based on water quality standards in the third approach as it reduces the enforcement mechanisms that would otherwise be available. Additional options proposed for consideration by NWPPA and AOI are included on page 3 of

the Implementation Matrix: *De minimus* and Bifurcated criteria. To aid understanding of the above approaches, DEQ developed a flow chart that demonstrates how a permittee might apply some of the suggested compliance strategies (see attached “DEQ Implementation Flow Chart”).

The Implementation Matrix provides analysis of the technical, legal, political and economic feasibility of the various implementation options. Some FIIAC members felt these concerns will need to be addressed prior to the option being employed by DEQ.

IV. BRIEF SUMMARY OF ANSWERS TO FIIAC CHARTER QUESTIONS

The following bullets summarize responses to the questions specified in the FIIAC Charter, at the time of writing this memo:

- Would increasing the FCR have a fiscal and economic impact? **Yes**
- What is the extent of that fiscal and economic impact? **Uncertain, and, need to consider both costs and benefits.**
- Would increasing the FCR have a significant adverse impact on small businesses? **Not known at this time.**
- What is the extent of that fiscal and economic impact to small businesses? **More information needs to be gathered to answer this question.**

V. CONCLUSIONS AND RECOMMENDATIONS

At this time, the FIIAC has reached no consensus on the anticipated costs or benefits of a revised FCR. A broad range of information was shared with the FIIAC over the course of six months of work together that led the group to draw some general conclusions. The degree of uncertainties and limitations such as varying perspectives on the assumptions imbedded in each of the cost analyses, lack of funds to support a comprehensive benefits analysis, and a lack of cost and benefits analysis for the specific and various alternative implementation strategies the group discussed, affected the FIIAC's ability to draw strong conclusions or provide consensus recommendations to the EQC at this time.

Still, there are some statements the FIIAC can make for the EQC to contemplate when considering whether or not to increase Oregon's fish consumption rate:

- It will take time for municipalities, industry and others to comply with water quality standards that would result from a higher fish consumption rate, and the amount of time needed is likely to vary based on the FCR and implementation strategy chosen.
- Based on the cost analyses provided for this effort, a higher fish consumption rate and resulting water quality criteria will have increased costs associated with it. This is especially true if permit holders are limited to installing end-of pipe treatment technology to meet more stringent water quality standards. The level of costs depends on the implementation strategies available.
- Benefits will be accrued from meeting a water quality standard (and the level of those benefits depends on the degree to which pollution reduction is achieved).

- Traditional technology treatments that would be needed to meet more stringent water quality standards if only an end-of-pipe approach is used have not yet been proven to be effective. Therefore, innovative regulatory approaches, beyond installing end-of-pipe treatment technologies, are needed to help attain the standard. Because many of the tools that might be utilized to implement an innovative regulatory approach have never been used in Oregon, it is hoped that a decision to allow appropriate use of compliance schedules is made soon.
- The state should set an approvable standard that protects all fish consumers in Oregon, and the implementation approach to achieve that standard should be:
 - innovative;
 - comprehensive;
 - able to be implemented;
 - cost effective;
 - integrated across point-source and non-point source boundaries; and
 - provide for reasonable legal assurances/safety net.
- The broader state-wide focus to achieve good water quality should be on pollution prevention and toxics reduction measures.

This memo is respectfully submitted to the EQC by DS Consulting on behalf of the Fiscal Impacts and Implementation Advisory Committee
August 13, 2008.

**Northwest Pulp and Paper Association
Fish Consumption Rate
OR EQC Meeting at Hermiston: August 22, 2008**

Chair Blosser and Commissioners:

The following constitutes the comments of the Northwest Pulp and Paper Association (NWPPA) at the August EQC meeting regarding the effort underway to increase the fish consumption rate used to set Oregon water quality standards. NWPPA looks forward to learning what the EQC will propose at its October meeting and we look forward to continuing our participation in the process.

NWPPA has participated for the past two years in the process to consider a revised fish consumption rate and presented comments to the EQC last October. During the intervening year, all parties have come to understand this issue in more depth. NWPPA also commissioned additional work to better answer questions regarding potential impact to our industry. Throughout the past year, most of the focus has been on *what* the rate should be with the result that 175 grams per day has been selected for further consideration. Only recently has the discussion turned to *how* the new rate will be implemented. Consequently NWPPA key points and concerns remain essentially the same as last year:

- NWPPA recognizes the higher fish consumption of Native Americans.
- NWPPA supports an approach that would target first those pollutants that account for the greatest risk to the fish consuming population.
- An across the board revision of the Oregon water quality standards may do little to reduce actual risk because: (a) the primary use of such revised water quality standards will be to generate new applicable requirements in NPDES permits; and (b) the pollutants that account for the greatest risk tend to be legacy pollutants that are not typically allowed in NPDES permitted discharges.
- NWPPA is concerned that across the board revision of water quality standards without genuine and effective implementation measures to avoid unintended consequences will trigger the need for mills to spend prohibitive sums attempting to remove trace contaminants that play a minor, if any, role in reducing actual risk to humans.
- Existing technology is not capable of treating to the very low levels that would result.

NWPPA remains committed to the process of working on implementation measures as this work goes forward and offers some suggestions at the conclusion of these remarks.

Sincerely,
Llewellyn Matthews,

Executive Director, NWPPA

**Northwest Pulp and Paper Association
 Specific Comments
 Fish Consumption Rate
 OR EQC Meeting at Hermiston
 August 22, 2008**

- I. Water quality standards derived using a fish consumption factor of 175 grams per day will be the most stringent state-wide standard in the nation and will produce some anomalous comparisons to drinking water and background levels.**

The current proposal to set the fish consumption rate at 175 grams per day is 10 times more stringent than the current rate used in Oregon water quality standards and more than 5 times more stringent than the highest rate used anywhere in the country as a state-wide standard. Clearly Oregon is proceeding far beyond what other states have required.

To provide perspective, the following chart compares the resulting water quality standards based on the proposed fish consumption rate to National Drinking Water Standards and the range of existing water quality upstream of mills.

Comparison of Drinking Water Standards and Proposed Oregon Water Quality Criteria

Constituent	HH WQC (ppb) FCR=175 g/day	National Drinking Water Standard (ppb)	Range of Water Quality Upstream of Mills (ppb)
Arsenic	0.0041	50	0.27 – 0.90
Beryllium	0.0031	4	0.005 - <0.1
Cadmium	0.185	5	<0.1 – 0.128
Iron	-	300	-
Mercury	0.0054	2	0.00089 – 0.0051
PCB's	0.0000064	0.5	-

A few of these constituents warrant additional comment:

Arsenic: Arsenic in Oregon rivers is primarily due to our geologic make-up and volcanic history. Oregon levels are comparable to other states in the PNW. For example, arsenic in Washington rivers ranges from 0.1 to 1 part per billion (ppb). Ocean water is typically 1.7 ppb. It is fair to say arsenic levels are quite likely similar today as they have been in the geologic past prior to the arrival of either salmon or people.

Pulp and paper mills have traces of arsenic in discharges due to levels already in intake water and because the wood chips we use come from trees grown regionally. We do not add it or use it in the process.

Treatment of effluent to remove arsenic to these very low levels will accomplish very little, if anything, in terms of reducing risk of fish consumption. There are several reasons. All flows from NPDES permitted discharges are tiny compared to the surface waters, and any effort to reduce *below* background levels would be quickly lost in the larger background levels of the receiving waters. Secondly, salmon will spend most of their lifecycle in the oceans with even higher levels of naturally occurring arsenic than fresh waters.

PCBs: Pulp and paper mills may have traces of PCBs due primarily to ink in recycled paper. These papers typically have been printed with inks with trace PCBs levels that are allowed under other federal standards.

With the new ultra-low detection methods, we can expect that many sources will find traces of PCBs. However, all dischargers combined account for 1-2% of the loading identified in an earlier Bi-State study. PCB levels in fish are primarily due to legacy issues, and past disposal practices rather than current discharges. Again, costly treatment requirements for NPDES permitted dischargers triggered by revised water quality standards will not significantly reduce the risk associated with this contaminant.

Trace Earth Metals: An across the board revision of the water quality standards will also result in very stringent requirements for other naturally occurring trace metals that have not been associated with risks of consuming fish.

NWPPA wishes to emphasize that the risks associated with consuming fish are primarily: naturally occurring earth metals such as arsenic; legacy pollutants such as PCBs; banned substances such as DDT and breakdown products; and substances that have been successfully addressed (dioxin from pulp and paper mills were virtually eliminated 10 years ago).

Recommendation: NWPPA recommends that DEQ undertake an effort to better understand the loading characteristics of currently permitted dischargers and how this compares to compounds that pose the greatest risk to fish consumers. This analysis is needed to better understand what will be accomplished in terms of reducing actual risk.

II. Does technology exist to treat to these very low levels and at what cost?

NWPPA was requested to provide more specific cost information after an initial “rough order of magnitude” cost analysis indicated that costs to pulp and paper mills could be quite high.

HDR Engineering of Boise completed a study for NWPPA on the fiscal impact of increasing the Fish Consumption Rate. They analyzed the January 2008 report by Science Applications International Corporation (SAIC report) and evaluated actions industry would have to take to comply, and costs to meet the more stringent water quality standards. The HDR analysis for pulp and paper mills differed from the SAIC report in one key respect. Pulp and paper assumes that any revised water quality standard will result in numeric limits applicable through NPDES permits. SAIC found similar ranges of cost of technology but assumed that for various reasons, variances or exemptions would be used to avoid high costs. It needs to be emphasized that SAIC assumed regulatory relief would be found by using regulatory tools, which are not generally available, or in use in Oregon.

HDR verified the water quality criteria to be met, determined if the proposed technologies would meet the new limits and developed an opinion of probable costs for implementing and operating these technologies. Because several of the proposed technologies have not been tested, or advanced beyond bench-scale testing, there is considerable uncertainty about the full-scale applicability of some of the technologies.

The study found that our industry would have problems primarily in meeting the proposed criteria for arsenic (a naturally occurring earth metal) and for trace amounts of PCBs from recycled paper. HDR examined technology assumptions in a mill-specific context. In other words, they looked at how each affected mill might apply the technologies to achieve the proposed standard. The chart below summarizes the capital, operations and maintenance, and annualized costs HDR calculated for four representative mills:

Mill A – Bleached Kraft Process;

Mill B – Unbleached Kraft Process;

Mill C – Thermomechanical Pulping/Deink Process; and

Mill D – Bleached Kraft Process.

Summary of Capital, O&M and Annualized Costs¹

		<i>Mill A</i>	<i>Mill B</i>	<i>Mill C</i>	<i>Mill D</i>
<i>Capital Costs</i>	Iron Coprecipitation	\$31,000,000	\$25,000,000	\$19,000,000	\$34,000,000
	Nanofiltration	\$91,000,000	\$67,000,000	\$41,000,000	\$101,000,000
	Reverse Osmosis	\$107,000,000	\$79,000,000	\$48,000,000	\$119,000,000
<i>Annual O&M Cost</i>	Iron Coprecipitation	\$28,000,000	\$20,000,000	\$11,000,000	\$31,000,000
	Nanofiltration	\$9,500,000	\$6,700,000	\$3,900,000	\$10,500,000
	Reverse Osmosis	\$10,500,000	\$7,400,000	\$4,300,000	\$11,700,000
<i>Annualized Costs (10 yrs, 7%)</i>	Iron Coprecipitation	\$32,000,000	\$24,000,000	\$14,000,000	\$36,000,000
	Nanofiltration	\$22,000,000	\$16,000,000	\$10,000,000	\$25,000,000
	Reverse Osmosis	\$26,000,000	\$19,000,000	\$11,000,000	\$29,000,000

According to the HDR report, the costs simply to install technology to meet the proposed standards are significant – exceeding \$500 million. Annual costs to operate these technologies would add \$30 to \$90 million to mill operating costs. More troubling, HDR’s report concludes that, while costs are significant, there is no certainty currently that revised standards could be met using existing technology.²

¹ Costs shown in the chart are for four of the eight large mills located in Oregon.

² HDR completed a literature review of treatment technologies to determine which, if any, technologies can reliably meet the revised HHWQC at higher FCRs. The literature review showed that most published results for constituent removal are related to higher untreated constituent concentrations and technologies for achieving less stringent effluent criteria. These less-stringent effluent criteria (including drinking water standards) are orders of magnitude greater than HHWQC for this study. As a result, little research has been conducted investigating constituent removal technologies to extremely low levels. Therefore, published literature does not support or deny that more stringent HHWQC can be met using currently available technologies. Technologies suggested for meeting low-level constituents (mostly for metals) included iron coprecipitation, granular activated carbon, ion exchange, nanofiltration and reverse osmosis. Further evaluation of the technologies showed that iron coprecipitation, nanofiltration and reverse osmosis would have the best possibility of meeting HHWQC at increased FCRs and were then evaluated for cost, according to HDR.

III. Recommendations for Implementation Measures

NWPPA appreciates and supports the initial work to identify a suite of implementation measures.

NWPPA believes it will take a concerted effort to develop these and will support those that meet the following criteria:

- Result in meaningful reduction in contaminants associated with risk to fish consumers;
- Avoid anomalous results such as requirements to treat to tens to hundreds of times lower than background; and
- Are cost effective.

NWPPA offers the following recommendations:

Option A: Benchmarks

- EQC consider using the revised fish consumption rate to establish benchmarks for review of effluents.

Option B: Bifurcated Standards

- EQC could consider a bi-furcated (two-pronged) approach whereby only certain criteria are revised for contaminants of greatest concern. For example, it would not be meaningful to revise the criteria for certain naturally occurring earth metals.

Option C: Two-phased Approach

- EQC could work first on revising the Oregon water quality standards to incorporate meaningful implementation measures such: pass-through credits, de minimus exemptions, variances and economic relief. At the same time the benchmark approach could be in place.
- A second phase would look at what has been accomplished, what remains to be accomplished and if needed, revision of the water quality criteria to reflect the higher fish consumption rate.

Thank-you for your consideration

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HDR Report to the NWPPA: “Increasing the Fish Consumption Rate: Report of Fiscal Impact to Select Northwest Pulp & Paper Mills”



HDR Engineering, Inc.
412 E. Parkcenter Blvd., Suite 100
Boise, ID 83706

EXECUTIVE SUMMARY

The Oregon Department of Environmental Quality (ODEQ), United States Environmental Protection Agency (EPA) and Confederated Tribes of the Umatilla Indian Reservation (CTUIR) are planning to make human health water quality criteria (HHWQC) more stringent. This change is due to indications by CTUIR that some of its members consume fish at a greater fish consumption rate (FCR) than the FCR that HHWQC are currently based on. If the FCR used for establishing HHWQC is increased, HHWQC will correspondingly become more stringent.

The initiative to determine the need and justification for the more stringent WQC is referred to as the Oregon Fish and Shellfish Consumption Rate Project and was started by ODEQ, EPA and CTUIR. As part of the project, the ODEQ commissioned Science Applications International Corporation (SAIC) to prepare a report evaluating necessary actions and costs to meet more stringent WQC. SAIC completed this report in January 2008 and it is named *Cost of Compliance with Water Quality Criteria for Toxic Pollutants for Oregon Waters*. It is the opinion of several point source dischargers that the SAIC report did not fully capture costs associated with achieving statewide compliance with revised HHWQC and the costs presented were significantly underestimated. In addition, the report did not sufficiently address the ability of currently available technology to meet the new HHWQC particularly when the HHWQC is below analytical method detection limits.

The purpose of this study and report is to verify the HHWQC that must be met, determine if proposed technologies will meet the limits, and develop an opinion of probable cost for implementing and operating these technologies. Since several of the proposed technologies have not been tested or advanced beyond bench-scale testing, there is much uncertainty in the full-scale applicability of some of the technologies. Therefore, bench testing, pilot-plant testing and/or full-scale demonstrations would be needed to verify with greater accuracy the actual achievable effluent quality for these technologies.

This report develops an opinion of fiscal impacts to the Oregon pulp and paper industry due to more stringent HHWQC from increased FCR. The following report methodology was used to determine these impacts:

1. Collection and review of treated wastewater effluent data from four different pulp and paper mills.
2. Determination of current HHWQC and potentially more stringent HHWQC due to increased FCR; these criteria were then compared with mill final effluent data.

3. A list of candidate treatment technologies was developed for removing these constituents by reviewing studies pertinent to the Fish Consumption Project. Additional literature was reviewed as well to determine other potential treatment technologies.
4. Treatment technologies were screened for reliability and feasibility in meeting applicable HHWQC.
5. Capital and operational cost opinions were developed for the screened treatment alternatives.

Four representative mills were evaluated for this report and are summarized below. :

Mill A – Bleached Kraft Process
Mill B – Unbleached Kraft Process
Mill C – Thermomechanical Pulping/Deink Process
Mill D – Bleached Kraft Process

Data from the four mills was compiled, averaged and compared to HHWQC at increased FCRs. HHWQC at increased FCRs were calculated with the aid of a computer model spreadsheet developed by the ODEQ. The spreadsheet utilizes epidemiological data including reference doses, bioconcentration factors, carcinogen slope factors and other parameters to determine WQC for a given FCR, water intake and body weight.

The model was run at three different FCRs including 17.5 g/day, 63.2 g/day, 113 g/day and 175 g/day. Current WQC is based on a FCR of 17.5 g/day. Changes to WQC by ODEQ could be based on a FCR as high as 175 g/day. The spreadsheet model shows that current mill effluent quality may exceed some of the HHWQC at the elevated FCRs.

It is critical noting that the lowest method detection limit (MDL) for all EPA-approved analytical methods is greater than the new HHWQC for some constituents. While this report identifies potential technologies for removing these constituents, it is impossible to know for certain whether technologies actually can or cannot meet HHWQC since there is no way to accurately measure at such low concentrations at this time. Despite the inability to measure accurately to the HHWQC, it is expected that point source dischargers would still need to plan to meet HHWQC since more sensitive analytical methods could become available. Furthermore, regulating authorities would expect point source dischargers to meet WQC whether or not analytical methods could accurately detect below the WQC.

HHWQC limits at increased FCRs are extremely stringent compared to other environmental standards. HHWQC at increased FCRs should be scrutinized to compare the value of improving water quality with to the actual protection to human health. For example, revised HHWQC at increased FCRs are multiple orders of magnitude more protective than national drinking water standards. Another comparison of note is background water quality. A review of current water quality shows that many of the revised HHWQC may already be exceeded in Oregon surface waters. Therefore, the

opportunity for applying pass-through credits to point source dischargers should be considered where background constituent levels are high.

A literature review of treatment technologies was completed to determine which, if any, technologies can reliably meet the revised HHWQC at higher FCRs. The literature review showed that most published results for constituent removal are related to higher untreated constituent concentrations and technologies for achieving less stringent effluent criteria. These less stringent effluent criteria (including drinking water standards) are orders of magnitude greater than HHWQC for this study. As a result, little research has been conducted investigating constituent removal technologies to extremely low levels. Therefore, published literature does not support or deny that more stringent HHWQC can be met using currently available technologies. Technologies suggested for meeting low level constituents (mostly for metals) included iron coprecipitation, granular activated carbon, ion exchange, nanofiltration and reverse osmosis. Further evaluation of the technologies showed that iron coprecipitation, nanofiltration and reverse osmosis would have the best possibility of meeting HHWQC at increased FCRs and were then evaluated for cost.

Capital and O&M cost opinions for the four mills were evaluated for the three candidate technologies. The costs are summarized below.

Summary of Capital, O&M and Annualized Costs

		Mill A	Mill B	Mill C	Mill D
<i>Capital Costs</i>	Iron Coprecipitation	\$31,000,000	\$25,000,000	\$19,000,000	\$34,000,000
	Nanofiltration	\$91,000,000	\$67,000,000	\$41,000,000	\$101,000,000
	Reverse Osmosis	\$107,000,000	\$79,000,000	\$48,000,000	\$119,000,000
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<i>Annualized Costs (10 yrs, 7%)</i>	Iron Coprecipitation	\$32,000,000	\$24,000,000	\$14,000,000	\$36,000,000
	Nanofiltration	\$22,000,000	\$16,000,000	\$10,000,000	\$25,000,000
	Reverse Osmosis	\$26,000,000	\$19,000,000	\$11,000,000	\$29,000,000

Cost provided above represent only four of the eight large mills located in Oregon. The cost related to simply installing technology to meet revised HHWQC at increased FCRs is significant and would cost the Oregon pulp and paper industry in excess of \$500 million. In addition, annual costs to operate these technologies would cost Oregon pulp and paper mills in the range of \$30 to \$90 million annually. While costs are significant, there is no certainty at this time that revised HHWQC could be met using existing technology. Steps forward should first ensure that technologies are available for meeting more stringent HHWQC before significant capital expenditures are made.



Source: Scott Dobry Pictures

Business Indicators

- Ranked No. 19 among *Engineering News-Record's* 2007 "Top 500 Design Firms"
- Projects in all 50 states and in 60 countries
- More than 90 years of client service

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- More than 165 locations worldwide
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| ▪ Community Planning & Urban Design | ▪ Power & Energy |
| ▪ Construction Services | ▪ Program Management |
| ▪ Design-Build | ▪ Project Development |
| ▪ Economics & Finance | ▪ Science & Technology |
| ▪ Environmental | ▪ Security |
| ▪ Healthcare | ▪ Sustainable Design |
| ▪ Interior Design | ▪ Transportation |
| | ▪ Water/Wastewater |

Estimated Rulemaking Timeline

Major Task	Timeframe
<p>Develop draft proposed rule language and supporting documents</p> <p>Develop tables of criteria and proposed rule language, including any recommended implementation policies; Write or complete any documentation needed to support the proposed rules and provide an agency record.</p>	<p>October 2008 - February 2009</p>
<p>Public comment process and hearings</p> <p>Write rulemaking documents, publish notice of hearings and opportunity for comment in the Secretary of State's bulletin, mail notice to interested persons, hold hearings, and take written comment for 45 days. Inform the EQC of proposal via director's dialogue prior to public notice.</p>	<p>February - May 2009</p> <p>Public comment March 16 – May 1; Hearings April 14 – 23.</p>
<p>Respond to comments and finalize rule proposal</p> <p>Summarize public comment and hearing testimony, write responses, revise the proposed rules if appropriate, obtain internal review and review by partners (Environmental Protection Agency and Confederated Tribes of the Umatilla Indian Reservation) on final rule proposal.</p>	<p>May - July 2009</p>
<p>EQC Information Item</p> <p>Write EQC staff report; present proposed rules, a summary and response to public comments, and a summary of changes made to the proposed rules in response to public comment. Have an opportunity for questions and discussion on the criteria and proposed implementation tools.</p>	<p>July - August 2009</p>
<p>Propose rules for EQC adoption</p> <p>Write EQC staff report, including supporting documents for final proposed rules, develop presentation, and propose rules to EQC for adoption.</p>	<p>August - October 2009</p>
<p>Submit rules to EPA for approval</p> <p>File adopted rules with SOS, obtain attorney general certification on adoption, submit rule package to EPA for approval.</p>	<p>October - November 2009</p>



**CONFEDERATED TRIBES OF
COOS, LOWER UMPQUA AND SIUSLAW INDIANS**

TRIBAL GOVERNMENT OFFICES

1245 Fulton Ave. • Coos Bay, OR 97420 • (541) 888-9577 • 1-888-280-0726
General Office Fax: (541) 888-2853 • Administration Fax: (541) 888-0302

RESOLUTION NO: 07-057
Date of Passage: May 20, 2007
Subject (title): Support for an Increase in Oregon's Fish Consumption Rate

WHEREAS: This Council is the Governing Body of the Confederated Tribes of Coos, Lower Umpqua and Siuslaw Indians and is authorized to act on behalf of said Tribes;

WHEREAS: Native fish and shellfish are culturally significant to the Tribes;

WHEREAS: The Tribes have a relatively higher fish and shellfish consumption rate than Oregon's general population;

WHEREAS: Oregon's current fish consumption rate of 17.5 grams/day, which is about eight ounce meals per month, does not accurately represent tribal member fish and shellfish consumption rates.

NOW THEREFORE BE IT RESOLVED, that the Tribes support an increase in Oregon's fish consumption rate.

CERTIFICATION: On May 20, 2007, this recommendation was approved at a Regular Tribal Council Meeting held this date, and the vote was:

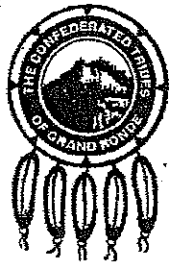
 7 FOR
 0 AGAINST
 0 ABSTAIN

Bob Garcia
Bob Garcia, Chair

Mark Ingersoll
Mark Ingersoll, Vice-Chair

CONFEDERATED TRIBES OF COOS,
LOWER UMPQUA & SIUSLAW INDIANS

Councilman



The Confederated Tribes of the Grand Ronde Community of Oregon

Tribal Council
Phone (503) 879-2301
1-800 422-0232
Fax (503) 879-5964

9615 Grand Ronde Rd
Grand Ronde, OR 97347

Resolution No. 077-08

WHEREAS, the Grand Ronde Tribal Council, pursuant to Article III, Section I of the Tribal Constitution approved November 30, 1984, by the Acting Deputy Assistant Secretary of the Interior, Indian Affairs, is empowered to exercise all legislative and executive authority not specifically vested in the General Council of the Confederated Tribes of the Grand Ronde Community of Oregon; and

WHEREAS, WHEREAS, the Tribal Council believes it is in the best interest of the Tribal membership to protect Tribal member health as well as Tribal cultural and natural resources within its Reservation, its ceded lands, and other lands of cultural interest; and

WHEREAS, Tribal member health and Tribal cultural and natural resources are affected by activities outside the Reservation; and

WHEREAS, there is toxic contamination in fish found in the Willamette and Columbia River basins, as well as in other water bodies within the Tribe's ceded lands and across Oregon; and

WHEREAS, Tribal members, like many Native Americans, consume fish at much higher rates than average Oregonians or average Americans and are therefore subject to higher levels of risk from toxic contamination in fish; and

WHEREAS, Tribal members are largely dependent upon the State of Oregon to protect their health from environmental toxins; and

WHEREAS, Oregon's 2004 revised fish consumption rate of two small meals of fish per month does not represent or protect Oregon's tribal members and should be abandoned; and

WHEREAS, the Confederated Tribes of the Umatilla Indian Reservation and the Confederated Tribes of the Warm Springs Reservation of Oregon have conducted full scientific fish consumption surveys, and the 99th percentile fish consumption rate for tribal members is 389 grams of fish per day, according to the surveys; and

WHEREAS, the Tribal Council believes fish consumption rates in fish consumption surveys by the Confederated Tribes of the Umatilla Indian Reservation and the Confederated Tribes of the Warm Springs Reservation of Oregon are adequate to represent the consumption patterns of the Tribal membership and an independent fish consumption survey of the Tribal members is not needed to increase Oregon's fish consumption rate; and

WHEREAS, the Tribal Council approved Resolution No. 058-07 in 2007 which (1) supported the Confederated Tribes of the Umatilla Indian Reservation's request that Oregon increase its fish consumption rate to protect all tribal members in Oregon, (2) supported Oregon's willingness to review and revise its fish consumption rate to protect tribal members and all other Oregonians with higher fish

Umpqua Molalla Rogue River Kalapuya Chastia

Resolution No. 077-08

Page 2

consumption rates, (3) strongly encouraged Oregon to adopt a fish consumption rate that is consistent with the consumption rates in the Confederated Tribes of the Umatilla Indian Reservation and Confederated Tribes of the Warm Springs Reservation fish consumption surveys and that is consistent with EPA's guidance to use local data and with EPA's guidance for rates necessary to protect subsistence fish consumers, and (4) committed Tribal Council to participating and assisting Oregon to increase its fish consumption rate in 2007 and 2008 and directed staff to participate and provide regular briefings to the Tribal Council; and

WHEREAS, the Tribal Council believes that the 99th percentile fish consumption rate of 389 grams of fish per day from the fish consumption surveys of the Confederated Tribes of the Umatilla Indian Reservation and the Confederated Tribes of the Warm Springs Reservation of Oregon is a fish consumption rate that is adequate to help protect Tribal members from the health risks associated with eating contaminated fish from Oregon waters and to help protect fish populations and ecosystem health; and

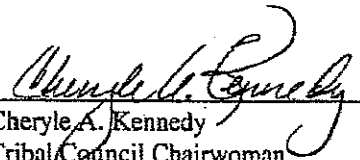
WHEREAS, the Tribal Council believes that a fish consumption rate of at least 389 grams of fish per day is consistent with EPA's guidance to use local data and with EPA's guidance for rates necessary to protect subsistence fish consumers, as well as with Oregon's duty to protect tribal members and all Oregonians; and

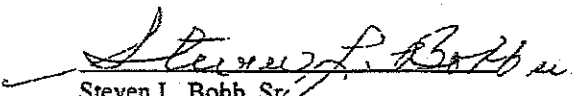
WHEREAS, the Legislative Action Committee has recommended that the Tribal Council pass a Resolution: (1) supporting a fish consumption rate of at least 389 grams per day as being adequately protective of Tribal member health and the environment, for adoption by the state of Oregon for the purpose of setting water quality standards in Oregon and (2) strongly encouraging Oregon to adopt a fish consumption rate of no less than 389 grams per day for the purpose of setting water quality standards, so that Tribal member health and the environment may be adequately protected.

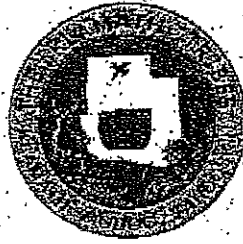
NOW THEREFORE BE IT RESOLVED, that the Tribal Council hereby supports a fish consumption rate of at least 389 grams per day as being adequately protective of Tribal member health and the environment, for adoption by the state of Oregon for the purpose of setting water quality standards in Oregon; and

BE IT FURTHER RESOLVED, that the Tribal Council strongly encourages Oregon to adopt a fish consumption rate of no less than 389 grams per day for the purpose of setting water quality standards, so that Tribal member health and the environment may be adequately protected.

CERTIFICATION: the Tribal Council of the Confederated Tribes of the Grand Ronde Community of Oregon adopted this resolution at a regularly scheduled meeting, with a quorum present as required by the Grand Ronde Constitution, held on May 07, 2008, by a vote of 5 yes, 0 no and 0 abstentions.


Cheryl A. Kennedy
Tribal Council Chairwoman


Steven L. Bobb, Sr.
Acting Tribal Council Secretary



The Klamath Tribes Tribal Council

August 19, 2008

Written statement to the EQC regarding the Oregon Fish and Shellfish Consumption Rate

Dear Chairman Blosser and Members of the Environmental Quality Commission:

Thank you for the opportunity to present the position of the Klamath Tribes on Oregon's Fish and Shellfish Consumption Rate. It is regrettable that scheduling conflicts, resulting from commitments during the Klamath Tribes Annual Restoration Celebration, prohibit attendance of a Klamath Tribal Council delegation at the meeting today. Because the Klamath Tribes are unable to attend this meeting to communicate our position on this very significant issue in person, we have asked Kathleen Feehan, Senior Policy Analyst, the Confederated Tribes of the Umatilla Indian Reservation, to present this written statement, letter, and Tribal Council Resolution in our behalf.

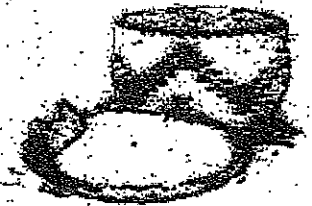
We, the people of the Klamath Tribes, the Klamath, Modoc, and Yahooskin Band of Snake Indians, commend the Confederated Tribes of the Umatilla Indian Reservation for their work and dedication to this effort to ensure protection of Native American's in our region from potential health risks associated with consuming fish and shellfish obtained from Oregon waters. We thank Kathleen for agreeing to present our position to you, and are honored that she has agreed to do so.

Respectfully,

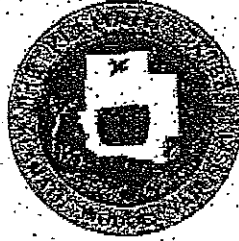
A handwritten signature in cursive script, appearing to read "Joseph Kirk".

Joseph Kirk, Chairman
The Klamath Tribes

501 Chiloquin Blvd. - P.O. Box 436 - Chiloquin, Oregon 97624
(541) 783-2219 - Fax (541) 783-3706



Item G 000036



The Klamath Tribes Tribal Council

August 19, 2008

Oregon Environment Quality Commission
Department of Environmental Quality
Water Quality Division
811 SW Sixth Avenue
Portland, OR 97204-1390

Re: Oregon Fish and Shellfish Consumption Rate

Dear Chairman Blosser and Members of the Environmental Quality Commission:

The Klamath Tribes hereby submit Klamath Tribal Council Resolution #2008-23, which states the Klamath Tribes' position on the Oregon Fish and Shellfish Consumption Rate. This resolution is presented for your consideration in adopting an increased fish and shellfish consumption rate for Oregon.

It is the position of the Klamath Tribes that Oregon's current fish consumption rate is woefully insufficient to ensure reasonable protection for Oregon's fish consumers from health risks that may be associated with consuming fish obtained from Oregon waters. It is imperative that Oregon adopt a rate sufficient to protect all Oregon's fish consumers. It is well documented that Native Americans of the Pacific Northwest, including the Klamath Tribes, are among those people groups who consume high quantities of fish obtained from the waters of Oregon. It is our position that Oregon's rate must be increased to ensure protection of the people of the Klamath Tribes. Therefore, the Klamath Tribes oppose adoption of any fish consumption rate less than 175 grams per day for Oregon. In addition, Pacific salmon must be included in the rate.

The Klamath Tribes greatly appreciate the commitment of the Environmental Quality Control Commission to protect the human health of Oregon's citizens. We thank you for the opportunity to provide input into the decision process, and ask for your full consideration of the Klamath Tribes' position to adopt an adequate rate.

Sincerely,

A handwritten signature in dark ink, appearing to read "Joseph Kirk".

Joseph Kirk, Chairman
The Klamath Tribes

Enclosure: Klamath Tribal Council Resolution #2008-23

501 Chiloquin Blvd. - P.O. Box 436 - Chiloquin, Oregon 97624
(541) 783-2219 - Fax (541) 783-3706



WHEREAS, The State of Oregon possesses regulatory authority to manage water quality affecting Treaty resources of the Klamath Tribes; and

WHEREAS, Oregon's current 17.5 grams per day fish consumption rate is unquestionably inadequate, and does not ensure protection of Klamath tribal members from health risks associated with exposure to toxins that may be contained in fish obtained from Oregon waters;

THEREFORE BE IT RESOLVED, The Klamath Tribes support the conclusion of the Human Health Focus Group that Oregon's fish consumption rate should be based on fish consumers, not on calculations that include non-fish consumers; and

THEREFORE BE IT FURTHER RESOLVED, The Klamath Tribes support the position of the Human Health Focus Group, and the other Oregon tribes, that Pacific salmon should be included in Oregon's fish consumption rate; and

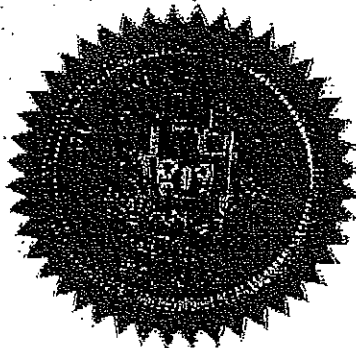
THEREFORE BE IT FINALLY RESOLVED, To ensure that the vast majority of Oregon's fish consumers, including Klamath tribal members and members from the other Oregon tribes, are provided reasonable protection from exposure to toxins that may be present in fish obtained from Oregon waters, the Klamath Tribes oppose adoption of any fish consumption rate less than 175 grams per day for Oregon.

CERTIFICATION

We, the undersigned, as Chairman and Secretary of the Klamath Tribes, do hereby certify that at a Regular Tribal Council meeting held on the 8th of MAY, 2008 where a quorum was present, the Tribal Council duly adopted this Resolution by a vote of 7 for, 0 opposed, and 1 abstaining.

By: Joe Hobbs FOR
Joseph Kirk, Chairman
The Klamath Tribes

By: Torina Case
Torina Case, Secretary
The Klamath Tribes



Resolution No. 2008 - 164
Date Approved: April 18, 2008
Subject: ODEQ Fish Consumption
Rate

SILETZ TRIBAL COUNCIL

Resolution

WHEREAS, the Siletz Tribal Council is empowered to exercise the legislative and executive authority of the Confederated Tribes of Siletz Indians of Oregon pursuant to Article IV, Section 1 of the Siletz Constitution approved June 13, 1979, by the Acting Deputy Commissioner of Indian Affairs; and

WHEREAS, fish have long been a staple of Siletz Tribal members' diets in addition to being important culturally; and

WHEREAS, the Oregon Department of Environmental Quality (ODEQ) is currently in the process of examining the assumed fish consumption rate used in setting water quality standards for the State; and

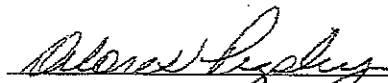
WHEREAS, various studies have been conducted over the years to look at the fish consumption rates of U.S. citizens in general and Oregon citizens and tribal members who fish the Columbia River Basin in particular; now

THEREFORE BE IT RESOLVED, that the Siletz Tribal Council hereby chooses the fish consumption rate of the Environmental Protection Agency's national study of fish consumers (248 grams of fish per person per day) as the rate that it wishes ODEQ to adopt and that that rate should include all finfish and shellfish; and

BE IT FURTHER RESOLVED, that the Tribal Council hereby authorizes the Tribal Chairman, Vice-Chairman, and General Manager to sign any documents necessary to put forward the Siletz Tribe's position on this issue.

Confederated Tribes of Siletz Indians

By



Delores Pigsley, Tribal Council Chairman

CERTIFICATION

This Resolution was adopted at a Regular Tribal Council Meeting held on April 18, 2008, at which a quorum of the Tribal Council was present, and the Resolution was adopted by a vote of 7 FOR, 0 AGAINST, and 0 ABSTAINING, the Chairman or Vice Chairman being authorized to sign the Resolution.

By



Tina Retasket, Tribal Council Secretary



Confederated Tribes of Siletz Indians

P.O. Box 549

Siletz, Oregon 97380

(541) 444-2532 • 1-800-922-1399 • FAX: (541) 444-2307

April 8, 2008

Siletz Tribal Council Members,

I am writing you to request your consideration of the Fish Consumption Rate values that are currently being debated by Oregon DEQ, tribes and citizens of the State. This process has come to fruition in large part due to the efforts of the Umatilla Tribe's EPA funded staff and their concerns that came about as a result of the findings in an earlier Columbia River Intertribal Fish Commission study. To be brief, this earlier study found that tribal members who fish along the Columbia River system consume salmon and other fishes at a rate of up to 389 grams per day. The current State standard is 17 grams per day. These two numbers equate to 15 and 2 meals per month, respectively. Based on this discrepancy the Umatilla Tribe and the State of Oregon began a process of debating a need for new standards.

Toxics Background

From several other federal agency studies we know two things. One is that young fish are picking up numerous toxins when they swim out the lower Willamette and Lower Columbia rivers. We know that these same salmon continue to pick up toxins while at sea. We know that toxins move upward through the food chain - bacteria and plankton pick up the chemicals, shrimp eat the plankton and bacteria, bait fish eat the shrimp and salmon eat the bait fish. We also know from our work in areas like Portland Harbor that our factories, cities and farms are polluting our rivers and oceans and that the ocean does not pollute itself. We also know that the Columbia River plume is a location where great numbers of bait fish live and grow and that great numbers of salmon utilize this area to fatten up prior to their upstream spawning migrations.

Focus of Current Debate

Oregon DEQ is struggling with two main issues in this process. The first is whether to include salmon in the overall fish consumption rating because they quote "gather a significant portion of their toxics while at sea" and DEQ is only about regulating water quality in fresh waters of the State. The second is what consumer "population" to protect. I believe they have been considering the tribal population as "unique" or different from the rest of the population and in doing so have struggled with the idea of "affording" better protection to that population and what consequences might be incurred in offering that better protection.

As part of this process, the Oregon DEQ formed two committees to review the best available science. The first was made up of human health experts - PhDs from around the area. The second is made up of economists and municipal folks. The first group has finalized their review with recommendations. The second is just getting started on their review. Regarding the Human Health committee's review, their recommendations were as follows: 1) DEQ should consider ONLY those people of the State that consume fish on a regular basis as that is the population you want to protect when setting regulations of this nature; 2) DEQ needs to include all finfish and shellfish regardless of whether they spend some time in the ocean; and 3) DEQ should use a percentile selection of 90% or higher. This last number refers to that portion of your fish eating population for which you reduce the risk of cancer, etc. For example if you have 2,665,700 folks living in Oregon and you want to reduce the risk for 90% of them you choose a 90th percentile value from your grams per day of fish eaten. That equates to 2,399,130 Oregonians. You in turn don't reduce the risk for the other 10% which is 266,570 Oregonians.

Opinions Regarding Debate

The following are my opinions based on discussions with industry folks, environmental lawyers, and tribal staff. Those folks lobbying against these "potentially" greater restrictions, which would protect more of the population, appear to be the pulp and paper industry and the municipalities up and down the Willamette. The pulp and paper industry appears to be afraid regulators will find new and high levels of heavy metals in their pipes. I am told various heavy metals are formed during the various chemical processes used in making paper. I am no expert on this topic. The municipalities are concerned that they can not deal with stricter regulation in large part because the scientific community in general has shown in the past ten years that we as citizens of the State "flush" all sorts of chemicals down our drains and we force the municipalities to clean those up with limited resources. The municipalities appear to be all for cleaning up the waters they are simply concerned with paying the economic and political price themselves. So with all this discussion comes talk of unaffordable price tags for reduced risk to citizens of the State.

What should essentially happen when this is all said and done is that if a higher standard (the amount of fish one can eat and have a reduced risk of cancer) goes in place then there becomes a "potential" to regulate "direct" source pollution (factory spill pipes) more seriously. That is to say as factories with spill pipes that flow into the Willamette relicense their facilities they might have to meet more stringent values for things like mercury, lead, arsenic, and PCBs. This would also be true of the municipal waste water treatment plants up and down our rivers and bays.

Consequences As I Understand Them

When considering manufacturing plants like the pulp and paper industry there always seems to be an argument of affordability. The only cost examples one might find are where lawsuits have resulted in changes and those changes had certain recorded costs

associated with them. The environmental attorney I spoke with told me their group has offered to drop a recent lawsuit against Georgia Pacific, for not cleaning up their arsenic outfall, if the company can show the cost will exceed at least 2% of their annual gross product. I can't speak to the accuracy of this statement but this seems like a survivable number and one that would likely offer a large sum of money to direct toward improved cleaning of toxics.

When considering the municipalities it is my belief that they simply don't want to deal with the political fallout of increased regulation. The pollution they receive comes from "non-point" sources or households and farms. To reduce that form of pollution we as citizens of the State need to stop using or dumping certain products. Fire retardants are a prime example. They are everywhere nowadays and they have deleterious effects on our babies and fish and other animals. One solution would be to not sell products containing fire retardants within our state boundaries. This of course would require legislative action. Without forcing regulation which in turn forces consequences we will never be able to change our current pollution patterns.

Lastly, an increase in regulation of toxics that are coming through our waste water treatment plants as well as from our "legacy bank account" of river sediments, would force the agencies to deal with clean up of existing toxics more quickly.

Rationale For Recommendations to Council

EPA completed a 20,000 person survey of fish consumption on a national scale. The results from this study suggested that when examining the consumer only population, on a national scale, including anadromous fish, that the 90th percentile was equal to 248 grams per day. What this means is that using this large database the EPA concluded that when you look at people who eat fish with some assumed regularity, that to protect up to 90% of those people, you need to use a consumption rate of at least 248 grams per day. It seems quite revealing to see that a national study shows these kinds of numbers without any consideration for race or culture. This supports the idea that Oregon DEQ should not assume that using numbers such as those provided by the scientifically sound Columbia River Tribal Fish Commission study is a representation of biasing the regulation toward Indian Country. That is to say, based on the national EPA study and the CRITFC study, Indian Country data and non-Indian Country data are very similar (Table 1).

Table 1. Fish consumption rates for two published studies cited in this letter.

Study	Grams per Day by Percent of Population With Reduced Risk			
	Median (50 th)	75 th	90 th	99 th
CRITFC looking at all tribal members	40	60	113	389
EPA National looking at fish consumers only	99	NA	248	519

This supports the argument that as tribal people first and Oregonians second we need to protect all fish consumers and that using both the national and regional studies suggest our rates should be somewhere significantly greater than 100 grams per day. My personal recommendation is 248 grams per day. When considering the Siletz tribal population of approximately 4000 members and the EPA study which found 28% of its sample folks consumed fish, one can complete the following calculation:

$4000 \text{ members} \times 28\% = 1120 \text{ members}$ that are likely to be fish consumers. If you apply a 90th percentile to those folks you then find that you are reducing the risk of cancer for 1008 members and not reducing the risk for 112. For this small Siletz population 112 people seems plenty risky in itself but it's a more politically acceptable number than say the 99th percentile. Applying this same calculation to the general population of Oregon results in more than 74,000 people without reduced risk of cancer.

When considering the economic costs to manufacturers, farmers, cities, home owners, etc., I would suggest the following. We keep in mind how many people in our state spend money to catch a fish out of the river or sea, to eat fish at a restaurant or to simply spend their tourism dollars in areas associated with the existence of a healthy river or bay. If we keep polluting our fish our state will eventually be viewed as polluted and less attractive. You all know what that means in dollars. I believe these considerations in the long run out weigh those of factories and cities. I also believe we can stop polluting and make money if we chose to. I would encourage you to suggest economic considerations you are familiar with if you chose to write the Oregon DEQ a letter regarding this matter.

Recommendations

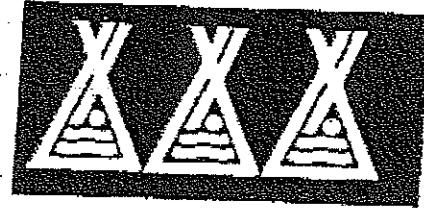
- Send DEQ a resolution covering this matter
- Focus on protecting those citizens that eat fish
- Focus on the 90th percentile or higher
- Use the EPA published study number of 248 grams per day
- Let DEQ know the economic importance of clean waters and clean fish

Sincerely,

Stan van de Wetering
Aquatic Projects Leader

THE CONFEDERATED TRIBES OF WARM SPRINGS

DEPARTMENT OF NATURAL RESOURCES
P.O. BOX C
4223 HOLLIDAY STREET
WARM SPRINGS, OREGON 97761
(541) 553-2001/2002/2003
(541) 553-1994 FAX



FAX MEMO

TO: Kathleen Feehain

FROM: Randall Richardson

CO/DEPT: _____

PHONE# 541-553 2004

PHONE#: _____

FAX #: (541) 276-0540

DATE: 8/21/08

RE: CTWS MEMO SUPPORTING 175 g/day

MESSAGE:

If you could present this for CTWS that would be great!

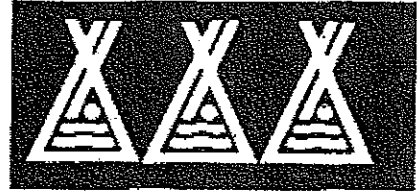
Thanks,

URGENT FOR REVIEW PLEASE COMMENT PLEASE REPLY RECYCLE

RECEIVED
8/21/08 3:40


THE CONFEDERATED TRIBES OF THE WARM SPRINGS RESERVATION OF OREGON

**NATURAL RESOURCES DEPARTMENTS
P.O. Box C, Warm Springs, Oregon 97761
Phone (541) 553-2001 — Fax (541) 553-1994**



M E M O R A N D U M

TO: EQC

FROM: Roy Spino, Chairman Water Control Board, CTWS 

DATE: August 22, 2008

SUBJECT: New Fish Consumption Rate for the State of Oregon

The Water Control Board and Tribal Environmental Office (TEO) spent a significant amount of time in 2005 and 2006 reviewing Ordinance 80, Tribal Water Quality Standards, Beneficial Uses, and Treatment Criteria as required by the Clean Water Act.

The major area of concern was the fish consumption rate used to calculate human health standards in regards to toxics. Several meetings involving EPA, the Water Control Board, and the TEO were held to better understand the topic. At the time, CTWS' fish consumption rate was 17.5 g/day. Local data suggested that this rate was considerably lower than actual fish consumption. EPA suggested the tribe use local data, if available, to develop its fish consumption rate. The Water Control Board decided to use CRITFC's 1994 Technical Report titled "A fish consumption survey of the Umatilla, Nez Perce, Yakama, and Warm Springs Tribes of the Columbia River Basin". Table 7 of this report listed several fish consumption rates and their level of protection. The Water Control Board's main concern was protecting the youth. Thus, the 170 g/day rate was used. This rate is protective of 95% of the adult population and 99+% of youth. Resolution 10,610, supporting the recommended fish consumption rate was presented to Tribal Council on March 21, 2006 and approved.

Currently the State of Oregon is reviewing their fish consumption rate. They have held a series of workshops over the last few years. The chairman of the Water Control Board and staff from the TEO has attended several of these workshops to support our newly adopted fish consumption rate. We, the Confederated Tribes of Warm Springs, support the State of Oregon in adopting a fish consumption rate of 175 g/day.

Roy Spino, Chairman Water Control Board, CTWS