Northwest Pulp & Paper
ASSOCIATION

VIA E-MAIL: paula.wilson@deq.idaho.gov

July 31, 2013

Paula Wilson
IDEQ State Office Attorney General's Office
1410 N. Hilton
Boise, ID 83706

RE: Docket No. 58-0102-1201 - Negotiated Rulemaking
Boise State Presentation on July 10, 2013

Dear Ms. Wilson:

The Northwest Pulp & Paper Association (NWPPA) is a 59-year old regional trade association comprised of pulp and/or paper manufacturing facilities in Idaho, Washington and Oregon. In Idaho, Clearwater Paper is a NWPPA member. NWPPA routinely represents our members on environmental regulatory matters in state legislatures, state agency rulemakings and public policy forums. We have participated extensively in public forums and state agency rulemakings on the development of water quality standards for the last 26 years. We work with both our members and other associations/coalitions to bring science-based factual information to environmental rulemakings processes.

NWPPA staff participated in your July 10, 2013, workshop and wishes to submit our comments for your consideration on Dr. Eric Lindquist's PowerPoint presentation on sample and questionnaire design for the Idaho Department of Environmental Quality's fish consumption survey for the general population of Idaho residents.

NWPPA's overarching comment is that our Association and our members strongly support a State of Idaho–led process to determine a mean fish consumption rate for the general population of all residents of Idaho. The State-based process should be thoughtful, focused, scientifically based and true to Idaho's rulemaking process goals. NWPPA's specific comments are the same as Clearwater Paper's comments in their July 30, 2013 letter to the Negotiated Rulemaking Docket (attached). Please consider NWPPA and our members as fully supporting Clearwater's July 30, 2013 comment letter.

Thank you for the opportunity to comment on Idaho's Negotiated Rulemaking process and also to participate in your public workshops. I can be contacted at 503-844-9540 or Kathryn@nwpulpandpaper.org and Chris McCabe can be contacted at 360- 529-8638 or Chris@nwpulpandpaper.org.

Sincerely,

Kathryn VanNatta
Director of Governmental and Regulatory Affairs
Northwest Pulp and Paper Association

Attachment: Clearwater Paper July 30, 2013 Comment Letter

July 30, 2013

Clearwater Paper Corporation
601 West Riverside, Suite 1100
Spokane, WA 99201

Paula Wilson
IDEQ State Office
Attorney General's Office
1410 N. Hilton
Boise, ID 83706

RE: Comments on Idaho Fish Consumption Presentation by Boise State University

As part of a Negotiated Rulemaking regarding local and regional fish consumption, the Idaho Department of Environmental Quality (IDEQ) has granted funds to Boise State University (BSU) to conduct a fish consumption survey and characterize fish consumption rates for Idaho citizens. On July 10, 2013, Dr. Eric Lindquist, Director of the Public Policy Center at BSU, presented information on sample and questionnaire design for the fish consumption survey. This letter has been prepared in response to the request from IDEQ for comments on the presentation's content.

The comments below are intended to provide feedback to IDEQ regarding the information provided by BSU on survey study design. We begin with some general comments, followed by a set of comments that respond to information presented in specific slides. Although some of the comments provided concern particular slides, the general nature of the presentation from BSU doesn't support numerous detailed technical responses. All of our comments are generated with the goal of providing input that will assist IDEQ and the study investigators in meeting the overall goal of characterizing the distribution of typical fish consumption among all Idahoans.

Survey Instrument

The presentation provided information on survey instruments and recall periods under consideration. Use of the most appropriate survey methods is critical for developing reliable and accurate estimates of fish consumption. The choice of survey instrument and specifics on its use can be informed by scientific literature on dietary assessments, as well as by fish consumption surveys conducted elsewhere.

The two basic survey instrument types used in most fish consumption studies conducted for use in regulatory decision making are:

- 24-Hour recall surveys — The participant is asked to recall specifically what fish was eaten in the last 24 hours (typically from a pre-defined list) and how much.
- Food frequency surveys — The participant is asked to estimate the frequency with which they ate specific fish species over a specified period of time in the past (i.e., meals per day, week, or year) and the portion size of the typical meal.

The frequency and portion size are combined and averaged over a year to yield an average daily intake rate for the individual.

The information is combined across the survey respondents to determine a distribution of fish consumption rates for the population. Each of these survey methods has its strengths and weaknesses. For example:

- Food frequency surveys cover a longer period of time, so they may be able to reveal long-term patterns, but the accuracy of recall suffers over the longer period of time. Respondents are typically asked to reflect on the frequency of consumption over the last year. This accounts, to some degree, for variability of consumption patterns by season. Recall over one month, as suggested in the BSU presentation, may marginally improve accuracy, but with a corresponding loss of the ability to characterize longer-term consumption patterns.

- The 24-hour recall survey is likely to more accurately reflect intake during the survey period (i.e., 24 hours), but may miss daily variation on an individual level, or seasonal variation on a population level. In addition, because fish consumption-rate estimates used for regulatory decision making typically exclude non-consumers, anyone who did not happen to eat any fish type on the day preceding a 24-hour recall is treated as a non-consumer and excluded. This typically has the effect of biasing the data set toward higher consumption rates, overestimating actual fish consumption in the full population.

Although the 24-hour recall survey does not capture day-to-day variability on an individual level, on a population level, it may provide a more accurate account of the consumption rate than the food frequency survey method, because recall is more accurate for a recent, short period. This type of dietary assessment (i.e., the 24-hour recall) has been shown to accurately reflect dietary patterns.[1] However, each participant should be surveyed two or more times over multiple seasons to capture individual and seasonal variation. This approach would be consistent with the discussion provided by BSU regarding their intended survey methods. In addition, it is consistent with the Continuing Survey of Food Intakes by Individuals (CSFII), conducted annually by the U.S. Department of Agriculture (USDA), which is the basis of the fish consumption rates derived in the U.S. EPA (2002) study *Estimated Per Capita Fish Consumption in the United States*[2]. CSFII used the 24-hour recall method and administered two surveys per respondent, separated by 7 to 10 days. Two surveys provide a more accurate estimate of intake during the survey window (i.e., 24 hours) and a somewhat better probability that consumers will not be misclassified as non-consumers. However, only a 7- to 10-day period between surveys does not address seasonal variation.

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[1] Witschi, J.C. 1990. Short-term dietary recall and recording methods. In: W. Willett (ed). Nutritional epidemiology: Monographs in epidemiology and biostatistics. Oxford University Press, New York. Pp. 52−68.

[2] U.S.EPA 2002. Estimated Per Capita Fish Consumption in the United States. EPA/821/C-02/003.

Analyses indicate that retrospective diet history surveys that look back over a year or longer may be more likely to overestimate actual consumption.[3] Therefore, if used, studies using this type of study design (or interpreting results from existing studies with this design) should be validated by summing reported consumption for individual target food items, along with food groups not included in the survey, to determine whether reported intake is consistent with metabolic energy requirements.

Ideally, fish consumption estimates are developed from dietary intake data that have been generated from multiple, non-consecutive-day, 24-hour recall surveys administered to study participants over a longer period of time to capture seasonal and individual variability. A useful example of this approach is provided by Nobmann et al. (1992)[4], who conducted a study on dietary intake in Native Alaskans from 10 communities throughout Alaska. Their approach included the use of multiple 24-hour recall surveys of all food groups consumed, completed during five seasons over an 18-month period.

The BSU presentation indicates that the authors are considering administering both a 24-hour recall and a food frequency survey. In our opinion, given the limited resources available to develop and conduct the Idaho Fish Consumption survey, the State would benefit more from focusing on just one survey instrument. Based on evaluation of other fish consumption and dietary surveys, we recommend use of a 24-hour recall survey instrument, administered several times to each participant over the course of multiple seasons.

Conclusion - Survey Instrument

We recommend focusing limited resources on developing, testing, and deploying just one survey instrument. The 24-hour recall survey provides a more accurate estimate of intake during the survey window (i.e., 24 hours). The survey should be administered multiple times to each participant, separated by a sufficient amount of time to capture seasonality of intake. Multiple surveys administered to each participant will provide a better probability that consumers will not be misclassified as non-consumers. In addition, a single question of whether the participant has eaten fish of any kind over the last year will provide information for classification as a consumer or non-consumer.

Target Population

The most basic criterion for selecting a fish consumption survey or surveys for use in deriving Idaho-specific fish consumption rates is the relevance of the survey to fish consumers in Idaho. The selected study participants should be representative of the range of all fish consumers in Idaho, their fish consumption patterns, and the types of fish they harvest and consume from state waters.

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[3] Rasanen, L. 1979. Nutrition survey of Finnish rural children. VI. Methodological study comparing the 24-hour recall and the dietary history interview. Am. J. Clin. Nutr. 32(12):2560−2567.

[3] Nobmann ED, Byers T, Lanier AP, Hankin JH, Jackson MY. 1992 The diet of Alaska Native adults: 1987-1988. Am J Clin Nutr. 55(5):1024-32.

We have concerns about the goal expressed during the July 10th meeting of being able to combine data from EPA's Tribal Study with the BSU characterization of ingestion distribution for all Idaho residents, and we encourage BSU/IDEQ to develop a study that provides information regarding the consumption rates across the full distribution of Idaho residents. Development of a fish consumption distribution across the full population (including general consumers, anglers, and tribal consumers) should be the overall goal, because this will best support regulatory decision making in Idaho.

- By including the full population of Idaho residents in the IDEQ study, tribal members of the Idaho population will be represented, and the data set would allow a comparison against data collected by EPA.
- Including the full population in the IDEQ study will provide the appropriate information for regulatory decision making and derivation of ambient water quality criteria. Recently, considerable effort has been expended in developing methods that allow the use of probabilistic methods in the derivation of water quality criteria. These methods provide technical approaches to using the full body of available information on the parameters considered in the derivation of water quality criteria, and thus allow more meaningful analyses for regulatory decision making. Fish consumption rates that represent the full Idaho population are necessary for incorporation of probabilistic methods in the development of water quality criteria, so it is important that the BSU/IDEQ study provide that information for the process. The distribution of consumption rates across the full Idaho population would also provide the necessary data to derive water quality criteria using deterministic methods, should IDEQ choose that approach.

Reliance on the EPA study to provide data for tribal fish consumption rates risks losing the ability to characterize the full distribution of fish consumption rates in Idaho. The two studies will inevitably differ in survey methods and conduct. Based on previous tribal fish consumption studies conducted in the Pacific Northwest in which EPA has participated, the EPA study will employ much larger resources, likely will sample a much larger proportion of the target population, will use in-person survey administration, and probably will use tribal members to administer the surveys. All of these factors differ from the planned approach in the BSU/IDEQ survey, and would produce incomparable data and severely limit the ability to combine the data sets to derive a comprehensive fish consumption distribution.

Conclusion - Target Population

We recommend administering the fish consumption survey to a sample of all Idaho residents, consistent with development of a fish consumption distribution for the full population (including general consumers, anglers, and tribal consumers). Reliance on the EPA study for data on tribal fish consumption risks losing the ability to characterize the full distribution of fish consumption patterns in Idaho, because the differences in survey methods and administration between the two studies will likely limit the ability to combine the resulting data sets.

Goal is to Understand Long-Term Average Fish Consumption

The concern regarding risk of chemical exposures from fish ingestion focuses primarily on risks that might result from life-long exposure. Fish consumption intake rates that are used for calculating water quality criteria must therefore represent an average intake over a long time period, as long as a lifetime, rather than information on short-term consumption. As the EPA stated when presenting fish consumption data based on the same methods in the Exposure Factors Handbook, "…[I]t should be noted that the distribution of average daily intake rates generated using short-term data (e.g., 2-day) does not necessarily reflect the long-term distribution of average daily intake rates. The distributions generated from short-term and long-term data will differ to the extent that each individual's intake varies from day to day."[5] Such factors as these regarding the use of the study data should be considered and should inform the study design.

Specific Comments on Presentation Slides

In this section, we comment on specific slides that were presented at the meeting held on July 10, 2013. We understand that the presentation provided a preliminary indication of plans to date. It is our hope that further opportunity for comment will be available in the future as additional details are developed. Our comments reflect questions that arose during our review of the presentation slides.

Slide 1

We are pleased to see a study planned to characterize an Idaho-specific population and support the use of local professionals in developing and conducting the study. We encourage the project leaders and sponsors to ensure that the study effort includes appropriate input from statistical and nutrition research specialists, particularly those with experience in fish consumption and dietary intake study design, because there are many nuances in conducting dietary studies.

Slide 3

The stated goal of including market fish should be explained or reconsidered. The data from this study will be used to derive AWQC values, and therefore should be focused on characterizing locally-caught fish.

Discussion of suppressed consumption: what are the details of this? Potentially, this would require a very specific and focused study design that is not consistent with the goals of the current effort. Given the limited resources available to conduct the fish consumption survey, it would be more appropriate to focus resources on the primary target of characterizing consumption rates for locally-caught fish.

We agree with the target of characterizing mean, or typical, consumption by individual study participants. Results will then provide information regarding the distribution of mean daily consumption across the population.

Slide 4

We look forward to seeing more details regarding the specifics of the study design.

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[5] U.S. EPA. 2011. Exposure Factors Handbook. U.S. Environmental Protection Agency.

Discussion at the meeting mentioned collecting data four times per year, but lacked clarity regarding whether to interview different people or interview the same persons four times each. We recommend interviewing the same persons several times per year, because this will provide a better understanding of long-term ingestion rates and the influence of individual variability. Use of different people over time would combine variability over time with variability among individuals. Including several interviews of the same individual is also more consistent with previous studies.

Slide 5

We look forward to seeing the sampling strategy once details are developed.

We highly recommend that BSU/IDEQ include a pilot study in the project development, because initial surveys frequently identify areas of ambiguity that can be addressed prior to implementing the full study.

We suggest that the researchers consider adapting questionnaires that have been used in previous fish consumption studies. Many studies have been conducted to characterize fish consumption rates, several of which are focused on recreational anglers. Most of these are available in the open literature, and EPA's *Exposure Factors Handbook* (U.S. EPA 2011) provides a recent summary of the available information, including a specific analysis for understanding consumption from freshwater fisheries.

Slide 6

Excluding catch-and-release anglers will result in a biased data set. Catch-and-release anglers likely also consume fish, even if it is not self-caught, and therefore represent part of the Idaho fish-consuming population. If the goal of the study is to characterize consumption by licensed sportsmen, then including even anglers that do not retain or consume the fish they catch is important for understanding the distribution of consumption rates across the study population.

As mentioned above, during the presentation, there was discussion of combining data from the BSU/IDEQ study with the EPA study. This is potentially fraught with difficulties and could significantly impede the project goal of fully characterizing consumption among Idahoans. Because the full population of Idahoans will necessarily include individuals from tribal populations, data gathered from a focused study in Idaho will have points of overlap with the EPA study of tribal populations.

Slide 8

The presentation slides lacked clarity in the preliminary statistical analyses performed to date, and the implications for the study design and the size of the target population are unclear.

As stated above, we agree with the target of characterizing mean consumption per day. Collecting data on individual mean consumption will allow characterization of the distribution of daily consumption across the population. A meaningful characterization of the distribution of mean consumption rates in Idaho will provide key information for use in a probabilistic evaluation of fish consumption and AWQC derivation.

This slide states, "If the population is skewed…" It is important that researchers at BSU are familiar with the body of literature on recreational fish consumption. Studies indicate that the distribution is

unlikely to be normal, and is likely lognormal. Many studies available in the literature (and largely summarized in U.S. EPA 2011) provide a basis for anticipating the shape of the distribution of consumption rates.

Slide 9

Derivation of the numbers provided in this slide is not clear. The discussion provided doesn't appear to be consistent with stated target of 400 individuals, and also doesn't appear to include consideration of lack of participation or loss to follow-up. Also, it is unclear whether the study plans to target a 95% CI or 90% CI. These types of issues reinforce the importance of including a statistician on the project team.

Slide 10

Identifies alternatives. We look forward to documentation of the decision process.

Slide 11

Including individuals "by invitation" has a potential to bias data high, and this possibility should be considered before using an invitation method in the sampling design.

The slide appears to suggest that the data from the two survey methods (web and phone) can be combined. In fact, each of the two methods may introduce its own bias, and combining data across the two survey methods may not be appropriate.

Slide 12

We recommend simplifying the study design and balancing the value of using multiple instruments in the study with limited resources. Experience with intake studies indicates that it is better to focus on one survey instrument, because a simple study design can result in a more robust data set than that generated using multiple methods.

Slide 13

It is not clear which "two study populations" are intended.

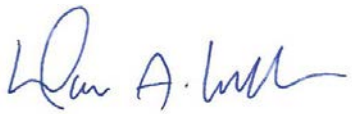
As indicated above, it is important to think through the specifics of how to "marry" the focused BSU/IDEQ survey with the larger EPA study. Too much effort to force the studies to overlap or produce results that can be combined may undermine the integrity of the BSU/IDEQ study and thus its suitability to achieve its intended goals.

Conclusions - General

Overall, it appears that the technical approaches being considered by BSU/IDEQ are consistent with the objective of determining mean fish consumption rates for the general population of Idaho. We encourage the investigators to build upon the information and methods developed by other researchers who have tackled this technical challenge. Based on our familiarity with the available literature, we would encourage IDEQ/BSU to:

- Keep the study as focused as possible, to make the best use of the available resources. Efforts to "tweak" the study to allow for combining its results with those from other studies may compromise the ability to achieved adequate statistical power with the limited resources available for the project.
- Generate data for the full population of Idaho, including non-consumers and possible high-end consumers such as frequent anglers and tribal populations. This will meet the stated goals of the effort and provide the best basis for regulatory decision making, including incorporation into probabilistic approaches for the derivation of water quality criteria.
- Utilize a survey method that relies on 24-hour recall of the survey respondents, because this method has been shown to provide more accurate population estimates of consumption due to the higher accuracy of recall for the recent past. If the same respondents are surveyed multiple times (e.g., four times over the year, as suggested in the presentation slides), the survey results will provide a good indication of individual and population variability.

We appreciate IDEQ's open process in developing an Idaho-specific fish consumption study, and understand that the information presented at the July 10, 2013, meeting reflects initial efforts. We appreciate the opportunity to provide comments at this time, and look forward to the opportunity to review study materials as the effort matures.



Marv Lewallen
Vice President – Environmental, Energy & Sustainability

C: Don Essig