

January 21, 2000

Russell Harding, Columbia River Coordinator  
Department of Environmental Quality  
811 S.W. Sixth Ave.  
Portland, OR 97204

Re: Clean Water Act §401 Water Quality Certification:  
Lower Columbia River Channel Deepening Proposal

Dear Russell:

Northwest Environmental Advocates (NWEA) submits these comments on the proposed §401 Certification for the Channel Deepening Project on behalf of its members, many of whom reside, work, and recreate in the Lower Columbia and Willamette Rivers, and on behalf of Audubon Society of Portland, Native Fish Society, Oregon Natural Resources Defense Council, Oregon Trout, Northwest Environmental Defense Center, American Rivers, Institute for Fisheries Resources, Pacific Coast Federation of Fishermen's Associations, Oregon Chapter of the Sierra Club, and Trout Unlimited. NWEA has worked to bring attention to and solve the environmental problems facing the Lower Columbia River since 1988, including advocating for National Estuary Program designation, co-chairing the Bi-State Lower Columbia River Water Quality Study, preventing new pollution sources to the river, publishing the educational map Columbia River: Troubled Waters, taking the public on RiverWatch educational boat tours of the Columbia and Willamette Rivers, and using legal advocacy to implement the water quality-based regulatory programs of the Clean Water Act.

It is our opinion that the Department cannot issue a §401 certification for the reasons discussed below, including that state law prohibits approval of activities that will contribute new loads into water quality limited streams, that without a TMDL the Department does not have the scientific basis to conclude that the proposed project will not cause or contribute to violations of water quality standards, that the proposed project will exacerbate fundamental anthropogenic alterations of the biotic make-up of the Lower Columbia River, and will cause and/or contribute to both short- and long-term violations of state water quality standards. The proposed project does not conform to Oregon water quality standards, Oregon's rules, or the 404(b)(1) Guidelines of the Clean Water Act.

Every agency involved in reviewing this project – the Army Corps of Engineers, the National Marine Fisheries Service (NMFS), U.S. Environmental Protection Agency, the Department itself – have been warned for some time that the estuary was of vital importance to anadromous salmon, as well as other fish, shellfish, birds, mammals and other wildlife, and that the decreasing habitat and increasing pollution there were taking a terrible toll. Twelve years ago, the Director of the Columbia River Estuary Study Taskforce (CREST) wrote Rick Applegate, Director of the Fish and Wildlife Division of the Northwest Power Planning Council expressing great concern about the paucity of

knowledge about the importance of Columbia River estuary habitats to juvenile salmon and the possibility that its carrying capacity might be a limiting factor for salmon recovery. Letter from David Fox, CREST to Rick Applegate, Northwest Power Planning Council, February 8, 1988. On December 15, Rick Applegate, now with the National Marine Fisheries Service (NMFS), explained that despite the strong warnings issued by its Northwest Fisheries Science Center and the continuing lack of information, NMFS was prepared to waive the federal Endangered Species Act restrictions on further degrading this habitat. He termed digging- first-and-studying-later, in the absence of definitive information demonstrating that the proposed project would push the estuary over the edge, a “precautionary approach.” We disagree.

Twelve years ago the warnings went unheeded by the agencies. Now there are some studies that heavily underscore the concerns expressed then. And, it is our understanding that NMFS has finally joined the Power Planning Council in requesting that the Independent Scientific Advisory Board (ISAB) review the impacts of estuarine conditions on salmon survival. Until the ISAB has completed its analysis, it is certainly premature for the Department to issue a §401 certification for this project.

## **I. Postponement of Willamette River Evaluation**

The Army Corps of Engineers takes the position that its Final Environmental Impact Statement (FEIS) applies to both the Columbia and Willamette portions of the channel deepening project despite its stated intention to postpone full evaluation of the Willamette portion pending completion of the Portland Harbor Sediment Management Plan. U.S. Army Corps of Engineers, Portland District, Integrated Feasibility Report for Channel Improvements and Environmental Impact Statement, August 1999 [hereinafter FEIS]. We do not agree that analysis of the project can be bifurcated in a way that fundamentally alters the cost-benefit analysis. The Corps has requested a §401 certification from the Department on the Columbia portion of the project only, deferring a request for the Willamette. Letter from Robert E. Willis, Army Corps of Engineers to Russell Harding, Oregon DEQ, October 14, 1999. We agree with both the Corps and the Department that it cannot issue a certification to the Willamette portion of the project in the absence of more information. However, this very same absence of information prevents the Department from issuing a certification for the Columbia portion of the project. Both the results of information gathering about the nature and extent of contamination of the Willamette and the proposed actions to remediate that contamination and/or deepen the channel in light of that information are necessary to evaluate the effect of the proposed deepening of the Columbia River, regardless of whether this project ultimately includes or excludes the Willamette River.

From its public statements, the Department does not appear to recognize the simple fact that Willamette River sediments and water do not stop at the confluence of the two rivers. Instead, the effect of activities and pollution within the Willamette flow directly into the Lower Columbia River and indirectly to the Columbia through the Multnomah Channel. The Willamette is a substantial source of Lower Columbia River pollution, even in the absence of the proposed project. See e.g., Lower Columbia River Bi-State Program, Reconnaissance Survey of the Lower Columbia River, Task 2 Data Analysis Report, March 4, 1992, at 119. There is no doubt that the Willamette River is a substantial source of the toxic contaminants that are causing violations of Oregon water quality standards in the Lower Columbia, discussed below. This is

true regardless of whether the toxins pass into the Columbia in the water column or bound to sediments. The unacceptably high levels of toxic contamination in the estuary are largely the result of upstream pollution, including from the Willamette. Information now exists that the Lower Willamette River is more contaminated than previously believed and, in fact, is contaminated sufficiently to be designated a federal Superfund site, unless the U.S. Environmental Protection Agency (EPA) finds that a State-led equivalent can meet the legal requirements of CERCLA. Regardless of whether the federal government or the State ultimately takes responsibility for addressing Lower Willamette River contamination, these sediments will have to be remediated in some way. Therefore, the Department is aware of substantial pollution loads that will, in degree depending upon the remediation approach chosen, enter the Columbia River in the near future. The proposed project must be evaluated in conjunction with these imminent new loadings of toxic pollutants, rather than in feigned ignorance of them. 40 C.F.R. §230.1(c), §230.11(g), OAR 340-041-0026(3)(a).

At the same time, the Department does not yet have sufficient information about the nature and extent of this Willamette River contamination upon which to evaluate the risk posed to Columbia River beneficial uses. See e.g., National Oceanic and Atmospheric Administration (NOAA) Preliminary Natural Resource Survey for the Lower Willamette River, September 8, 1999 at 18 [hereinafter NOAA Survey]. NOAA found that it could only make preliminary findings about the risks posed to natural resources in the Willamette River because it lacks three areas of information necessary to make a complete evaluation. Those are as follows: 1) “there is little comprehensive information regarding the areal and temporal distribution of contaminants,” 2) “there is little information about the toxicity of site-related substances to the aquatic species of interest to NOAA,” and 3) “little is known about the effects of exposure to the combination of substance that may be in the study area.” *Id.* at 18-19. Analyzing the risks to beneficial uses, including but not limited to the threatened and endangered species that are the topic of NOAA’s primary concern, is necessary in order to evaluate compliance with Oregon’s water quality standards’ requirement to support beneficial uses. For the same reasons as outlined by NOAA, the Department cannot make a determination of the risks posed by the Willamette pollutants, individually and cumulatively, on Lower Columbia River uses. However, the Department does know that some portion of those pollutants will enter the Columbia.

Whether the Willamette portion of the proposed channel deepening goes forward or not, the Department cannot now issue a certification for the Columbia portion of the project. First, if both the Willamette and the Columbia ultimately proceed together, the analysis performed by the Department on the effect of the project must evaluate both river systems together. To do otherwise is to seriously underestimate the effect of the project on the beneficial uses of both waterbodies. There are at least three ways in which this will occur: 1) bird and mammal species that use both rivers as food sources, 2) additional exposure to species that transit both rivers, and 3) additional loadings to species that use the depositional areas of the estuary or are dependent upon biota that are contaminated by depositional areas. For example, analyses of the effect of toxic contaminants on out-migrating salmonid must evaluate the duration of the exposure. Salmonids using both rivers will receive different exposures than those that do not. Studies on Puget Sound salmonid have demonstrated that use by juveniles of contaminated habitat for just three weeks causes a range of disorders including immune deficiency problems. The duration of exposure to toxic contaminants of salmonid stocks rearing in the Willamette River could be longer depending upon the status of the dredging project. The amount of biologically-available toxins in the Lower Columbia River will be increased if the Willamette River shipping channel is

also deepened. On the basis of existing information about contamination of the Willamette, including but not limited to shipping berths and turning basins, this increase would likely be significant. The additional toxic loading to the Columbia must be evaluated. Finally, species, such as birds, that use both rivers as a source of food will be affected by the two projects being done in tandem. For the same reason as the Department could not decide to analyze each five-mile segment of the Columbia River independently, pretending the project was a series of smaller activities, it also cannot pretend that the Willamette project might not be a significant contributor to Columbia River water quality impairments.

Both the §404(b)(1) Guidelines, discussed below, and the cumulative effects analysis required by §303(d)(1) of the Clean Water Act emphasize the importance of the Department taking past, present, and reasonably foreseeable future activities into account in its analysis. To segregate the evaluation of the Columbia and Willamette channel deepening projects is to seriously jeopardize the integrity of the analysis.

Likewise, even if the proposed channel deepening project for the Willamette is terminated, the Department does not have sufficient information about the effects of the sediment remediation plan on the Lower Columbia River. The Department does know that toxic contamination is significant in geographic distribution, numbers of contaminants, and levels. It does know that some form of remediation, whether removal or capping will have to be done. Any decision to remove sediments from specific sites and/or the river will result in contributions of toxic contamination to the Lower Columbia River. Any decision not to remediate will result in storm-driven contributions downstream. Any decision to cap sediments will also have an impact on beneficial uses. As the Department currently has insufficient knowledge of the nature and extent of the contamination, insufficient knowledge of the effect of this contamination on the beneficial uses – including threatened, endangered, and sensitive species – and no knowledge whatsoever of how or when Willamette sediments might be disturbed or remediated, to proceed with a determination on the channel deepening is premature. If the Department chooses to do so, it must evaluate a range of options with regard to treatment of the Willamette River in order to fully evaluate the effect of the proposed project on the Columbia River.

## **II. Application of Clean Water Act §404(b)(1) Guidelines to the Proposed Project**

The purpose of the §404(b)(1) Guidelines is to “restore and maintain the chemical, physical, and biological integrity of waters of the United States through the control of discharges of dredged or fill material.” 40 C.F.R. §230 [hereinafter “Guidelines”], 40 C.F.R. §230.1(a). Moreover, the Guidelines are intended to be consistent with policies of the Clean Water Act. 40 C.F.R. §230.1(b). As will be demonstrated below, the Corps’ proposed project does not comply with the Guidelines and therefore the Department should not issue a §401 certification to it. Of paramount concern to the Department in conducting its §401 certification evaluation should be how it can approve the proposed project as consistent with the Act’s Goals when the project will exacerbate existing violations of water quality standards including but not limited to those violations set out in Oregon’s 303(d)(1) list of water quality limited waters. The short answer is that it cannot.

Federal law requires a presumption against the discharge, placing the burden of proof on the project proponent to demonstrate compliance with the Guidelines. 40 C.F.R. §230.1(c). The Corps cannot demonstrate basic compliance with §404(b)(1) Guidelines because, as discussed

below, it has not made affirmative demonstrations on the following issues, among others: blasting techniques and timing, effects on salinity of the estuary and its effect on fish, the habitat value of the proposed disposal areas, information on the Deep Water site, smothering impacts to white sturgeon, crab, and smelts, and the effects on all beneficial uses from redistribution of toxic materials and the effect on water quality and beneficial uses. Without this information, the Corps cannot demonstrate that the discharges “will not have an unacceptable adverse impact.” *Id.* Therefore, the Department cannot issue a §401 certification. Instructively, the Northwest Fisheries Center addressed the issue of burden of proof in its recent transmittal to the National Marine Fisheries Service (NMFS): “[T]he Regional Office’s decision on the proposed channel deepening will probably turn on the issue of burden of proof. While science cannot predict with certainty the extent to which salmonid will be adversely impacted by this action, neither can science conclude with certainty that the action will not adversely impact salmon, but it can say that this is an incremental insult to a degraded system that is important in the salmonid life cycle.” Memorandum for Rick Applegate, NMFS, from John E. Stein, Northwest Fisheries Science Center, Re: Lower Columbia River Channel Deepening Project, December 2, 1999 at 1 [hereinafter “Science Center memo”]. Of course, the Regional Office’s decision turned on politics but that decision does not alter the findings of the Science Center.

Compliance with the Guidelines requires an affirmative demonstration that the proposed project will not have an unacceptable adverse impact individually or in combination with known and/or probable impacts of other activities affecting the ecosystem of concern. 40 C.F.R. §230.1(c). The Corps simply has not addressed the issue of the proposed project’s effects on the Lower Columbia River ecosystem in conjunction with any other known or probable activities. See e.g., FEIS Ex. E, §IV g at 6. As the Science Center points out, “[c]urrently, continued incremental loss of habitat and increasing ecological risks are built into the environmental assessment process. Each new channel deepening proposal, as an example, involves a new assessment that uses current conditions as the sole baseline for evaluation.” Science Center memo, Appendix 1 at 3. The Department cannot follow the Corps’ lead because the water quality-based policies of the Clean Water Act do not grandfather in pre-existing degradation with one exception. That exception is when designating beneficial uses in water quality standards states can choose to eliminate protection for existing uses, existing dating to 1975. In this case, not only has the state broadly designated uses for the Lower Columbia but the uses that are threatened with extinction today were existing in 1975 and therefore could not have been removed.

Nowhere does the Corps address the cumulative impact of this project on the Lower Columbia and the species it supports and operation of the hydroelectric dams on the Columbia and Snake Rivers. As is discussed below, the impact of the hydro system on the estuary is a known impact and therefore meets the “activities” criterion of 40 C.F.R. §230.1(c). Likewise, the Corps does not address the cumulative impact of the proposed project on species in the estuary in combination with extensive filling and diking of nearly 80 percent of the estuary’s wetlands, pollution inputs from anthropogenic activities throughout the Columbia River Basin that have affected spawning, rearing, and migration of anadromous species and contributed levels of toxic contaminants in toxic amounts to the estuary, previous channel deepening projects, and maintenance dredging. Finally, the Corps cannot make this demonstration without full knowledge of the nature and extent of toxic contamination in the Lower Willamette River and proposed remediation approaches. Despite the Corps’ arrogant finding in its Guidelines analysis that deepening the Willamette will not cause or contribute to the violations of water quality

standards, it obviously does not have any more information or insight than any other agency, including the Department, into what is now, by definition, the unknowable nature, extent, and impact of the contamination in that river. The Department should deny the §401 certification because the Corps has failed to demonstrate that this project, in tandem with others, will not have an unacceptable adverse impact on the water body.

Subpart B of the Guidelines establishes four conditions that must be satisfied in order to demonstrate compliance with the Guidelines. 40 C.F.R. §230.4. The first condition is that there be no practicable alternative that would have less adverse impact on the aquatic ecosystem. 40 C.F.R. §230.10(a). The Corps discusses the use of a non-structural alternative consisting of river stage forecasting that would enable ships to determine navigable channel depths based on real-time tide and river stage information. FEIS at 4-4. The Corps admits that “there have been limitations with the existing river stage forecasting system that have prevented shippers from making maximum use of the available water depths in the Columbia River.” *Id.* The Final EIS discusses the information gaps that have prevented full use of this system as well as full evaluation of the system’s benefits by the Corps. *Id.* at 4-4 - 4-6. The use of this LoadMax system is an activity not involving discharge of dredged material that qualifies as a practicable alternative. 40 C.F.R. §230.10(a)(1)(i). The Corps is not the only source of information on the potential benefits of significantly improving the LoadMax system. Dr. David Jay, of the Center for Coastal and Land-Margin Research at the Oregon Graduate Institute, states:

“\* \* \* existing forecasts are provided for a limited number of locations by a model that is not “state-of-the-art” in the area of barotropic tidal-fluvial modeling, leading to uncertainties that are likely larger than necessary. The lack of a vessel traffic system on the river may also contribute to conservative loading practices in a manner that is difficult to assess from outside of the industry. \* \* \* Once again, there is a large data base that has not been exploited. The existing surface elevation data (many years of data at numerous stations) have only analyzed in a preliminary way to understand the details of the tide-river-flow interaction (Jay and Flinchem, 1997). The existing data and the available conceptual understanding of the system should be used in developing better river stage predictions. Better forecasts should be provided and evaluated and a traffic control system should be considered seriously, before much more extensive structural alternatives are considered, particularly in light of the very large uncertainty in dredged material disposal needs associated with the project.”

Science Center memo, Appendix 2, at 22. This position is shared by the Office of the Secretary, of the U.S. Department of the Interior. See Letter from Preston Sleeper, Regional Environmental Officer, Office Of Environmental Policy and Compliance, U.S. Dept. of the Interior to Col. Robert Slusar, Corps, February 8, 1999 at 1-2.

The Corps’ analysis of LoadMax does not resolve the practicable alternatives analysis required by the Guidelines which explicitly state that alternatives analysis conducted to meet the requirements of the National Environmental Protection Act (NEPA) may not be sufficient to meet the Guidelines and therefore the Clean Water Act. 40 C.F.R. §230.10(a)(4). There is no evidence in the record that suggests this alternative is infeasible due to lack of technology and/or costs. Therefore the Corps has failed to meet the requirements of the Guidelines to demonstrate

that there is no practicable alternative that will have a less adverse impact on the ecosystem -- in this case an adverse impact on an already extremely damaged ecosystem. 40 C.F.R. §230.10(a)(2). The Department must deny certification for lack of compliance with one of the Guidelines' four mandatory conditions.

The second condition of the Guidelines is that no discharge of dredged material can be allowed if it causes or contributes to violations of water quality standards, jeopardizes the continued existence of species listed as threatened or endangered under the Endangered Species Act, or "results in likelihood of the destruction of adverse modification of a habitat" that is a critical habitat. 40 C.F.R. §230.10(b). As discussed below, the proposed project will contribute to existing violations of water quality standards and will cause violations of others and therefore does not comply with this condition of the Guidelines. 40 C.F.R. §230.10(b)(1). Moreover, the effects on the estuary will result in adverse modification of critical habitat designated pursuant to the Endangered Species Act for many threatened and endangered salmonid species, as well as the Bald eagle, as discussed below, contrary to the express requirements of the Guidelines. 40 C.F.R. §230.10(b)(3). Therefore the proposed project fails to meet the second mandatory condition that would allow legal disposal of dredged spoils in the Lower Columbia River.

The Guidelines' third condition is that no discharge of dredged material can be permitted which will "cause or contribute to significant degradation" of waters of the United States. 40 C.F.R. §230.10(c). The Department cannot assess to what degree the proposed project will contribute to significant degradation because the Corps has failed to meet the information, documentation, and analysis requirements of the Guidelines in Subparts B-G, as discussed below. 40 C.F.R. §230.10(c). The Corps' failure to analyze the baseline of degradation prevents the Department from being able to establish the incremental degradation created by the proposed project. As the Science Center has observed: "Using a historical baseline for comparison could substantially alter interpretation of the probable impacts of the deepening project on the estuary and its subsequent use by salmon." Science Center memo, Appendix 1 at 3. However, what the Department can know with certainty is that the Columbia River Estuary is already seriously degraded. See e.g., Science Center memo at 1. Therefore, as even the Corps admits that the proposed project will contribute some additional short- and long-term degradation, the Department cannot find compliance with the Guidelines' requirement that the discharge not contribute to significant degradation and must withhold the §401 certification. See, e.g., FEIS, Ex. E.

The fourth condition of the Guidelines is that no discharge shall be permitted unless potential adverse effects are minimized. 40 C.F.R. §230.10(d). The Guidelines set out possible methods to minimize these effects in Subpart H. The Corps does not provide information to assess whether it has minimized the potential adverse impacts as set out in this subpart. For example, in its plan to continue using Rice Island as a disposal site, the Corps has not addressed the issue of avoiding the "creat[ion] of habitat conducive to the development of undesirable predators." 40 C.F.R. §230.75(b). In failing to address the issue of ETM, the Corps has not avoided "changes in water current and circulation patterns which would interfere with the movement of animals," in this case the copopods upon which salmonid rely. 40 C.F.R. §230.75(a). It has not timed the discharge to "avoid spawning or migration season and other biologically critical time periods." 40 C.F.R. §230.75(e). It has not used habitat development and restoration to "minimize adverse impacts and to compensate for destroyed habitat." 40 C.F.R. §230.75(d). While we do not in general advocate for mitigation of increased habitat destruction through constructed habitat,

because it is so rarely effective in replacing natural habitat, there is no evidence that the Corps has proposed mitigation sufficient to address the habitat it proposes to continue to destroy for fish, birds, mammals, and other wildlife.

While the Corps has amended its Biological Assessment to include vague promises to restore estuary habitat, the Department has no basis upon which to analyze this proposal because there is no certainty of funding and no details about the restoration whatsoever that would identify the location of the projects and the likelihood that the proposed activities would create the habitat values that presumably are intended as mitigation. Ownership of potential habitat and even significant expenditures of resources into restoration do not guarantee the restoration of habitat values, as studies done on the Salmon River Estuary have demonstrated. The Department also will not be able to draw conclusions about when those habitat values will be put into place, as they are not restored immediately upon the taking of actions to remove dikes, etc..

The Corps' project does not meet the Guidelines, as demonstrated by the exceedingly superficial analysis presented in its seven pages. FEIS, Ex. E, Section 404(b)(1) Evaluation. As a result, basic procedures of the Guidelines have not been met. See, e.g., 40 C.F.R. §230.5(h), (i), (j), (k), (l). It is evident that, as new information has become available, the Corps has not followed the Guidelines' caution that the process of addressing them may be "iterative, with the results of one step leading to a reexamination of previous steps." 40 C.F.R. §230.5(l). New information has become available to the Corps on issues of salmon recovery, Willamette River sediment contamination, use of a Deep Water disposal site, the effect of salinity changes on the food web of the estuary, all of which are discussed in our comments. Yet there is no evidence that the Corps has revisited these issues as more information has become available. This is contrary to the Guidelines' emphasis on the "essential" nature of information and documentation. 40 C.F.R. §230.6(a). It is worth noting that it is in this context that the Guidelines reiterate its "presumption against the discharge." 40 C.F.R. §230.6(c).

The Corps' §404(b)(1) Evaluation and Findings of Compliance apply to both the Columbia and Willamette portions of the project. Ex. E at 1-7. That the Corps can claim to have met the extensive information, documentation, and analysis required by the Guidelines for the Willamette River, in light of its own observations of prematurity and NOAA's determination of insufficient information, discussed elsewhere in these comments, alone demonstrates that the Corps is giving lip service to the Guidelines. The Corps uses these seven pages to present unsubstantiated conclusions, omitting relevant information that is available to the agency (e.g., exclusion of all information on the estuarine turbidity maxima (ETM), effectiveness of tern predation mitigation, effect of toxic contamination on animal life of the estuary), while drawing conclusions based on little or no analysis. The Guidelines specifically require determination in writing of the potential short- and long-term effects of the proposed discharge of dredged material on the physical, chemical, and biological aspects of the aquatic environment. 40 C.F.R. §230.11. While the Corps may believe that it is above the law – or is the law – the Department cannot operate under such an illusion. The Department must, on the basis of the superficial and obviously flawed §404(b)(1) Evaluation and Findings alone, reject the §401 certification because the Corps has not provided the requisite information and analysis.

The Corps' determination of the effects of the project on physical substrate does not meet the requirements of the Guidelines. 40 C.F.R. §230.11(a). The Guidelines specifically require an analysis of "the nature and degree of effect" of the discharge "individually and cumulatively,"



with consideration to “any potential changes in substrate elevation and bottom contours, including changes outside the disposal site,” the “duration and physical extent of substrate changes,” and the “possible loss of environmental values,” among many other considerations. Id. Contained in two sentences, the Corps’ Findings state that the depth of sites may be raised as much as 20 feet and that there will be no significant change in physical characteristics. FEIS Ex. E at 3. This obviously does not discuss the loss of environmental values, such as the potential effect on declining populations of sturgeon, or other considerations that are required in this analysis. It does not address recently collected information that certain salmonid populations “may be shifting their vertical distribution to deeper water at night.” Science Center memo, Appendix 1 §4 at 7. It simply states an unsubstantiated conclusion.

The Corps’ determination of the effects of the project, individually and cumulatively, on water circulation and salinity does not meet the requirements of the Guidelines. 40 C.F.R. §230.11(b). The Guidelines require consideration to all water quality considerations, the “potential diversion or obstruction of flow, alterations of bottom contours, or other significant changes in the hydrologic regime.” Id. The Corps’ Findings merely conclude that the disposal will “affect minor changes in hydrologic features such as circulation patterns, downstream flows, or normal water level fluctuations” and that “channel deepening and related disposal could cause a minor concentration of flow in the main channel.” EIS Ex. E at 4. These statements do not constitute an analysis of the effects the Corps identifies nor an evaluation of the cumulative impact of the project, particularly on the ETM, discussed below. The Department must evaluate any increase in flow concentration in the main channel, no matter how minor according to the Corps, in light of the disturbing outcome of on-going research on the ETM in the Columbia and the effect it will have on temperature and other parameters. However, the Corps has not provided sufficient information in the FEIS or the §404(b)(1) Guidelines Evaluation upon which the Department can rely. In addition, the Corps, having not identified clearly the areas that it proposes to use for flow-lane and deep water disposal, cannot evaluate the effect of the discharge on the river, and therefore cannot meet the requirements of the Guidelines.

The Corps’ determination of the effects of the project on suspended particulate/turbidity does not meet the requirements of the Guidelines. 40 C.F.R. §230.11(c). The Guidelines require that the discharge be evaluated individually and cumulatively, to determine the “shape and size of the plume,” “duration of the discharge,” and the “potential for water quality standards violations,” with consideration required for “methods, volumes, location, and rate of discharge, as well as the individual and combined effects of current patters, water circulation and fluctuations, wind and wave action, and other physical factors.” Id. The Corps’ Findings are cursory and consist of the statement that there will be a “[s]hort term minor increase in turbidity” that “temporarily inhibit[s] light penetration” that nonetheless will “not violate state water quality standards.” Id. at 4. As the Corps has not identified the locations of the discharge, it cannot have included in its analysis the mandatory considerations quoted above. Therefore, the Department has nothing but the self-serving conclusions of the Corps that the discharge will not have a significant effect on the physical, chemical, and biological water quality characteristics and therefore on the beneficial uses. For example, the Corps’ analysis does not include the time of year of the discharge. The time of year relates both to the cumulative effect of many different considerations set out in the Guidelines as well as what it means to be in compliance with water quality standards. The latter includes both the quality of the river that varies by season, e.g., the river is anthropogenically and naturally more turbid in seasons of run-off and use of the river by sensitive beneficial uses that also varies by season. In the absence of this information about

when and where the discharge will take place, the Department cannot draw the same conclusion as the Corps that water quality standards will not be violated. The Department must ensure that any §401 certification issued addresses its narrative criteria and beneficial use support. In addition, the Corps has not tested all of the material that will be dredged, as discussed below. In making its Findings, the Corps is assuming that all of the dredged material will be sand. The Department must make an affirmative finding that all of the material will be sand, in order to rely upon this analysis by the Corps, a finding it cannot make in light of the possibility that some of the untested deep sediments are fine clays.

The Corps' determination of the effects of the project on introducing, relocating, or increasing contaminants does not meet the requirements of the Guidelines. 40 C.F.R. §230.11(d). The EIS notes that reproductive success for bald eagles nesting along the Oregon shore of the lower Columbia River is low. EIS at 6-41. Studies by the U.S. Fish & Wildlife Service (USF&WS) and others have demonstrated that this reproductive failure is attributable to toxic contaminants, such as DDE, PCB=s, and dioxins, the main conduit of which has been dredging. *Id.* Rather than acknowledge that deepening and disposal of more dredged material may increase the eagles= exposure to contaminants, the EIS concludes that contaminant loading is not an issue for the sandy sediments. *Id.* However, the Corps ignores its own statement that dredging may resuspend the contaminants, which then become available for uptake by bald eagles. *Id.* Since PCBs, DDE, and DDT have repeatedly been found in tissue samples of lower Columbia River fish, these contaminants exist in the sediment and will be resuspended by the proposed activity. The Corps= decision to only sample sediments to 10 inches beneath the surface, when dredging will resuspend contaminants as deep as 3 feet beneath the surface, provides little data for the Department to analyze. Regardless, significant levels of dioxins were detected throughout the lower Columbia River. EIS Appendix B at 24. To adequately show that contaminant resuspension is not a risk, the Corps must analyze larger-grained sediment and analyze to the proposed deepening depth. Simply dismissing the potential for contaminant loading on the basis of the sediment being fine to medium-grained sand does not suffice as serious consideration of the potential harm to eagles or any other affected species.

In the Columbia and Willamette River Sediment Quality Evaluation of the EIS, the Corps identifies contaminates in the sediment that will be dredged, moved, and stored during the project. EIS, Appendix B. Eighty-nine samples of sediments were taken along the proposed dredging sites along the Columbia and the Willamette. The Columbia River Data showed the existence of metals, pesticides, and polynuclear aromatic hydrocarbons. The Willamette River sediment contains highly toxic compounds at high levels. Sample 42 exceeded the screening levels for mercury at .87 parts per million, and sample 42D at 489 ppm of lead. Samples 23 and 24 both exceeded screening levels of tributyltin. Furthermore, known carcinogens and endocrine disrupters were found in the sediment: 9 samples exceeded screening levels for DDT, PCPs exceeded screening levels in 42C, and Dieldrin exceeded screening levels at 40A. In one sample, 24A, pesticides are exceedingly high (DDD exists at 100 ppm and DDT exists in 198 ppm.). The Corps' data demonstrates that there is reason to believe that Columbia River sediments are not benign but it has not obtained sufficient information upon which to meet the Guidelines or for the Department to issue a §401 certification.

The Corps has chosen to not conduct Tier II chemical testing of dredged material which contains less than 20% sand and finer grained material. Although the finer grained material chemically bonds better than the larger grained material, the larger grained material may still have chemical

contamination. Because of this and the possibility of larger-grained material (up to .50 mm) becoming suspended in the river with impacts similar to larger-grained materials, the Corps should chemically test all of the samples. The Corps should also test for radiation. The Hanford Nuclear Reactor site lies on the Columbia River upstream of the navigation channel. For many years, nine reactors operated at Hanford with once-through cooling; the cooling water was discharged into the river. Radioactive materials traveled down the Columbia and up as far north as Puget Sound and as far south as San Francisco Bay. There is no reason to believe that years of reactor operations did not deposit radioactive materials in the as yet undisturbed sediments of the Lower River. Any omission of testing these materials for possible radioactivity is patently irresponsible and dangerous. The Corps dismisses the need to test for radioactivity based on half-lives of radioactive material and the date Hanford ceased production. However, materials remain stored on the Hanford site and in the river. For example, cesium-137, a radioactive substance, was present in all tested samples in 1993. Lower Columbia Bi-State Water Quality Program, Reconnaissance Survey of the Lower Columbia River, v. 1, May 1993 at 3-29. To avoid resuspension of radioactive materials, the Department should require the Corps to test for radiation prior to issuing a certification.

The Corps should also perform biological testing. The EIS states the only physical and chemical analyses – but not biological – were conducted on sediment samples. EIS at 2-15. It concludes that sediment within the Columbia River navigation channel is not contaminated. Id. It also acknowledges that four sites outside of the navigation channel had excessive levels of DDT. Id. However, it does not provide the reader with a clear idea of where, specifically, the testing took place, nor how close the testing site is to the navigation channel, the likelihood of this DDT sloughing into the navigation channel or becoming resuspended from the process of dredging, or other consequential effects from dredging near a contaminated site. It does not explain how such contamination might be affected by the advance maintenance dredging 100 feet outside the navigation channel.

The Department cannot evaluate the Guidelines because the Corps only tested at a 10 inch depth. The Corps concluded that material beneath this level would not bind as well chemically as the upper material. EIS, Appendix B at 5. However, without testing to deeper levels, over two-thirds of the material to be dredged and resuspended will have gone untested. The flow of the Columbia River is large enough to suspend and transport particles as large as .10 mm, and as large as .50 mm during high flows. Reconnaissance Survey, supra, at 3-19. Thus, most of the material to be dredged could become suspended particles in the river and be dispersed throughout the river, including along the river's sloughs and wetlands. Resident and endangered species, including salmonids, depend on these areas for sustenance and cover, and could be impacted by chemicals bonded to the larger, untested materials. Because of these potential consequences, the Department cannot issue a certification based on the current testing.

The Corps' determination of the effects of the project, individually or cumulatively, on the structure and function of the aquatic ecosystem and organisms does not meet the requirements of the Guidelines. 40 C.F.R. §230.11(e). The Guidelines require evaluation of the "nature and degree of effect that the proposed discharge will have, both individually and cumulatively, on the structure and function of the aquatic ecosystem" including "effects at the proposed disposal site of potential changes in substrate characteristics and elevation, water or substrate chemistry, nutrients, currents, circulation, fluctuation, and salinity, on the recolonization and existence of indigenous aquatic organisms or communities" and "possible loss of environmental values." Id.

The Corps' Findings merely state that flowlane disposal will continue to have the same impacts as they have had in previous years, without noting what those effects are. The analysis, such as it is, does not address what contribution the flowlane disposal has had on the biotic communities of the river and therefore upon higher level food chain fish, birds, and mammals that depend upon it. Moreover, the Department is asked to rely upon the unsubstantiated conclusion that "[d]redging and disposal actions would be scheduled so that salmon migrations would not be disrupted." FEIS, Ex. E at 6. That statement, although it addresses the issue of salmon, does not establish what the Corps means by "would not be disrupted." Without more information, the Department cannot determine that the project will not affect the aquatic ecosystem. The fact that the proposed project might be an improvement in the volume of flow lane disposal over previous years is irrelevant because the on-going maintenance dredging is already causing unacceptable effects on sensitive beneficial uses, effects such as Rice Island and the change in the ETM. In contrast to the requirements of the Guidelines, the Science Center has concluded that the Corps improperly evaluates [e]ach new channel deepening proposal [with] a new assessment that uses current conditions as the sole baseline for evaluation \* \* \* [which] could substantially alter interpretation of the probable impacts." Science Center memo, Appendix 1, at 3. Therefore, the Corps does not meet the requirements of the Guidelines and the Department should deny the certification.

The Corps' determination of the disposal sites and their proposed mixing zones does not meet the requirements of the Guidelines. 40 C.F.R. §230.11(f). The Guidelines require that "[e]ach disposal site shall be specified." *Id.* Contrary to this requirement, the Corps has identified disposal sites in a vague one paragraph explanation. FEIS at 4-36. Moreover, the EIS is not consistent in the number of sites identified, naming five sites in one place and six in another. *Id.* at 4-36, 6-22. These sites would be used for 50 years; the Corps does not establish if its proposed findings address the entirety of that half century. In addition, the Corps states that it will use sites that are an exception to its general flowlane criteria of 50 to 65 feet, but it does not discuss the effects of those exceptions. *Id.* Without presenting any information on the sites, or when, where and how they will be used, the Corps concludes that "[t]he mixing zone would be limited to the smallest practicable area," "the extent and duration of mixing would be minor," and that it will be in compliance with water quality standards. FEIS, Ex. E at 6. There is no discussion of the ten mandatory factors to be addressed by the Corps and EPA with regard to determining the acceptability of the mixing zone. 40 C.F.R. §230.11(f)(2)(i)-(x).

The Corps' determination of the effects of the project on the cumulative impacts of dredged materials does not meet the requirements of the Guidelines. 40 C.F.R. §230.11(g). Although the Corps states that "[i]mpacts to recreational and commercial fisheries will occur," it also concludes that the project is "not expected to have any significant adverse cumulative impacts on the aquatic ecosystem." Ex. E at 6. This is patently insufficient, as demonstrated by the remainder of our comments, above and below. On this basis alone the Department must deny the certification.

The Corps' determination of the secondary effects of the project on the aquatic ecosystem does not meet the requirements of the Guidelines. 40 C.F.R. §230.11(h). The Corps addresses this requirement with one sentence: "The proposed action would maintain commercial navigation on the Columbia River resulting in continuing impacts to the aquatic ecosystem." Ex. E at 6. The Corps, however, by-passes any disclosure of what those continuing impacts are. There are several that come to mind: contaminated sediments, effects of temperature increases in

peripheral areas, operation of dams for transportation on the Columbia and its tributaries, the change in the ETM of the Columbia, and the use by Caspian terns of the Rice Island disposal site. The Department should reject the §401 certification because the Corps has failed to address the secondary effects in its §404(b)(1) Guidelines evaluation.

### **III. Oregon's Antidegradation Policies Prohibit the Proposed Project in Water Quality Limited Waters**

The definition of a water quality standard includes beneficial uses to be supported, numeric and narrative criteria, and an antidegradation policy. PUD No. 1 of Jefferson County v. Washington Department of Ecology 114 S. Ct. 1900, 1905 (1994). The federal regulations establish the minimum acceptable antidegradation policy. 40 C.F.R. §131.12(a). For all waters, this policy requires that “[e]xisting instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.” 40 C.F.R. §131.12(a)(1). This level of protection is considered the absolute floor of water quality. Questions and Answers on: Antidegradation, EPA Office of Water Regulations and Standards, August 1985, at 4. Existing uses are those uses that have occurred on or after November 28, 1975; they may or may not be included as designated uses in state water quality standards. 40 C.F.R. §131.3(e). Oregon’s antidegradation policy mirrors this language, requiring the protection of “all existing beneficial uses” from “point and nonpoint sources of pollution.” OAR 340-041-0026(1)(a). Pollution is broadly defined as “contamination or other alteration of the physical, chemical, or biological properties of any waters of the state, including change in temperature \* \* \* or such radioactive or other substance into any waters of the state which either by itself or in connection with any other substance present, will or can reasonably be expected to \* \* \* render such waters harmful, detrimental, or injurious to \* \* \* wildlife, fish or other aquatic life, or the habitat thereof.” OAR 340-041-0006(9). All aspects of the proposed project – the act of dredging, the result of dredging, and the disposal of dredged spoils – constitute a combination of point and nonpoint source “pollution” under state law. As discussed elsewhere in these comments, the proposed project will cause alterations to the chemical, physical, and biological properties of the Lower Columbia River that can be predicted, in combination with other forms of pollution, to render the waters unsafe for native species of fish and wildlife, and the food chains upon which they rely. Therefore, the Department is prohibited by state law from issuing a §401 certification for the proposed project because it will violate this antidegradation policy, constituting a violation of water quality standards.

Oregon’s rules also include antidegradation policy implementation that addresses pollutants: “In allowing new or increased discharged loads, the Commission or Department shall make the following findings: (C) The new or increased discharged load shall not be granted if the receiving stream is classified as being water quality limited \* \* \*.” OAR 340-041-0026(3)(a). The waterbodies into which the proposed project would discharge are segments of the Lower Columbia River that are water quality limited for the following parameters: temperature, bacteria, dissolved oxygen, pH, and toxics. 1998 Oregon §303(d)(1) List. As discussed further below, the discharge from the proposed project will increase toxic loads. Therefore, the Department is prohibited from issuing a §401 certification for the proposed activity. In addition, the Department has failed to list the Lower Columbia River for violations of water quality standards based on lack of beneficial use support and violation of narrative criteria. These violations include, but are not limited to, reproductive failure of bald eagles, probable reproductive failure of mink, toxic-induced deformities of river otter, tissue residue levels found

in a variety of animals, and the threatened and endangered status of a large number of salmonids that is linked to anthropogenic changes in the Lower Columbia River. Until the Department quantifies the pollutant loads allowable as an interpretation of its standards' narrative criteria and beneficial use support requirements that apply to these violations, it cannot make a determination of whether the proposed activity will constitute an allowable load.

In addition to the prohibition on new discharges of parameters that are water quality limited, the Department is prohibited from certifying a discharge that is related indirectly to the parameters causing the violations. OAR 30-041-0026(3)(a)(C)(i). Therefore, the discharge of sediments which are indirectly related to causing increases in temperature is prohibited. The discharge of sediments that will cause increases in temperature that will, in turn, exacerbate violations of dissolved oxygen and bacteria in peripheral areas of the river (where the uses by aquatic life and humans is greatest) is also prohibited. The discharge of sediments that are contaminated with toxic pollutants is prohibited. Sedimentation in the form of Rice Island is a pollutant directly related to adverse impacts on salmonids. The discharge of sediments to Rice Island which is causing impairment of beneficial uses is prohibited. The discharge of sediments is a pollutant parameter related to violation of beneficial use support caused by a combination of parameters. The potential for discharged sediment to alter circulation patterns that in turn increase temperature, disturb depositional areas for toxic contaminants, decrease dissolved oxygen, or alter the food chain is prohibited. From a process standpoint, the Department must make an affirmative finding that none of the proposed parameters of the discharge are related directly or indirectly to existing violations of water quality standards in order to issue the certification.

The Department has experience with applying this prohibition on new loads into water quality limited waterbodies with §402 NPDES permits. It interpreted the prohibition for suction dredge mining that is covered by a general NPDES permit. Oregon General NPDES Permit 700-J, April 9, 1997. Due to the nature of dredging, the Department initially prohibited suction dredge mining under the 700-J general permit in waterbodies where water quality standards were violated for toxic contamination and temperature but only to the extent that the activity resulted in a "measurable increase" in temperature. *Id.* To evaluate whether the activity would result in a measurable increase in temperature, the Department only included direct thermal loads contained in the discharge, discounting the indirect effects of the discharge on temperature in the receiving stream. The Department was sued and was ordered to revise the permit to be consistent with the state's antidegradation policy. Letter from the Honorable William C. Snouffer, Circuit Court of Oregon, Multnomah County, to Lore Bensel, Attorney General and Peter Frost, National Wildlife Federation re: NWF et al. v. Oregon DEQ et al., Case No. 9706-04970, September 29, 1998. The Department amended the general permit to extend the prohibition to dredging in waterbodies that violate the temperature standard. As a matter of state law, the Department must apply its antidegradation policy as a prohibition to any discharge that directly or indirectly relates to the parameters for which the water body is water quality limited. *Id.* Here, the proposed project would discharge dredged spoils into the Lower Columbia River that is water quality limited for temperature, bacteria, dissolved oxygen, pH, and toxics. 1998 Oregon §303(d)(1) List. The project, as discussed herein, will increase directly and/or indirectly the levels of toxics, temperature, dissolved oxygen, and bacteria that the Department has determined are water quality limited as well as those for which the Department has failed to make that determination notwithstanding the evidence. Therefore, the Department cannot issue the §401 certification for the proposed project.

The Department's rules also include the following antidegradation policy: "No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of [Lower Columbia Basin standards]." OAR 340-041-0205(2). Whether enforced directly as an antidegradation policy implementation rule or as a component of water quality standards, the Department must apply the rule as written. The proposed project is an activity that in combination with other activities will cause and contribute to violations of Lower Columbia River water quality standards, as discussed above and below, and therefore cannot receive a §401 certification.

Finally, for new loadings of those pollutants the Department deems not currently violating water quality standards in the Lower Columbia River and therefore finds are high quality waters, it must make affirmative findings that "1) No other reasonable alternatives exist except to lower water quality; and 2) The action is necessary and justifiable for economic or social development benefits and outweighs the environmental costs of lowered water quality; and 3) All water quality standards will be met and beneficial uses protected." OAR 340-041-0026(1)(a)(A)(i-iii). As discussed in the discussion of the §404(b)(1) Guidelines, the Corps has not demonstrated that there is no reasonable alternative to lowering water quality. With regard to the second requirement, the Department must evaluate the socioeconomic benefits of the proposed action as the action for which certification is requested, namely deepening the Columbia River shipping channel and not deepening the Willamette River shipping channel. We doubt that the Department will be able to obtain sufficient information upon which to make this affirmative finding because the Corps has not similarly bifurcated its EIS process. In other words, the Department cannot rely upon the EIS for this determination. That, however, does not excuse the Department from its own legal requirements. Moreover, the Department cannot rely upon the Corps to make this finding; it is a Commission obligation. *Id.* In doing this analysis, the Department must include the loss of fisheries, including the loss of a cultural icon to American Indian tribes. Finally, our comments below demonstrate that the Department cannot find that standards will be met and beneficial uses protected.

#### **IV. In the Absence of a TMDL, the Department Cannot Issue the §401 Certification**

Both federal and state law require the development of a Total Maximum Daily Load (TMDL) to control activities and reduce pollution to water quality limited streams in order to restore the waterbody to water quality standards. CWA §303(d)(1)(C)&(D). Despite a succession of lawsuits, Oregon has largely failed to develop sufficient 303(d)(1) lists of impaired waters or to develop TMDLs. As a result, there are no TMDLs for the parameters and segments listed on the 1998 303(d)(1) list of impaired waters at issue for the proposed project, with one exception. The only parameter that is causing violations of water quality standards in the Lower Columbia River that is restricted pursuant to a TMDL – dioxin – is only controlled from certain point sources. In the absence of a TMDL, the Department has no basis to determine how much a particular source is entitled to contribute to a water's total loading without its causing or contributing to standards violations. Without a TMDL, the Department cannot conclude that any new source or activity will do anything but increase the degree to which water quality standards are violated. Without a TMDL, the Department has no analysis that demonstrates the degree to which multiple pollutants create a greater risk of harm to beneficial uses. Therefore, without TMDLs addressing the pollutants causing water quality standards violations in the Lower Columbia River, the Department cannot issue a §401 certification for the proposed project.

## **V. The Proposed Activity will Violate Oregon Water Quality Standards**

In addition to violating mandatory antidegradation policies discussed above, the proposed project would violate numeric and narrative criteria and the requirement to support beneficial uses. Each of those components stands alone and is independently enforceable. Jefferson County, supra; City of Klamath Falls v. Environmental Commission, 318 Or 532, 537 n.3, 870 P2d 825, 828 n. 3 (1994). If the Department finds a violation of one component, including the antidegradation policies discussed above, it must deny the certification.

### **A. The Permanent Quality of the Proposed Activity will Violate Water Quality Standards by Further Altering an Already Degraded Habitat**

The Department must evaluate the impact of the proposed project on the already degraded habitat of the Lower Columbia River. Estuaries and wetlands “provide critical nursery habitat for all juvenile salmonids migrating to the ocean and are essential to all anadromous salmonids. These critical habitats play an important role as a feeding area for juvenile salmonids and also in their acclimatization to higher salinities (Cooper and Johnson 1992). Loss of these habitats may limit food sources for juvenile salmonids.” National Marine Fisheries Service, Factors for Decline; A Supplement to the Notice of Determination for West Coast Steelhead Under the Endangered Species Act 19, August 1996 at 20 [hereinafter “Factors for Decline”]. The Lower Columbia River is “clearly an important feeding ground for salmon; the Columbia River Data Development Program (CRDDP) studies, conducted in the 1980s, showed that a majority of the resident and outmigrating salmon had food in their stomachs.” Science Center memo, supra, at 4. The Center concludes: “Channel deepening would likely reduce the availability of suitable salmon habitat. Low velocity, shallow water habitats appear to be especially important to salmon (Bottom and Kim 1990; Dawley et al. 1986), providing areas for refuge and feeding. Channel deepening has been shown to reduce the availability of shallow water and low-velocity habitats (Sherwood et al. 1990). Physical changes in the estuary would likely reduce the availability of suitable salmon habitat. The number of salmon that can be supported within the Columbia River system will be affected if critical habitat components are disturbed.” Id.

The Department cannot view the effect of the proposed activity in a vacuum, but rather must evaluate it in light of all other human activities that are causing and will cause violations of Oregon water quality standards. By changing the center of productivity in the estuary – through changes in its surface, volume, and position – the entire ecosystem has been changed. Two primary human influences have had a dramatic effect on the estuarine food web which is directly related to support of the waterbodies’ beneficial uses. First, dams operating since the 1930s have altered the flow of the river, preventing floods and evening out the flow of water year round. A full forty percent of peak flows that would normally occur in May through June has been diverted to summer, taking the high energy out of the system, allowing sediments to pile up behind the dams, and altering the organic makeup of the Lower Columbia River. The organic matter today is phytoplankton grown in the reservoirs, not that from wood marshes and wetlands.

Second, deep shipping channels carved into the river bed have diverted the nutrient-rich clouds of biota upon which salmon and other species rely. Nine years of data on the Lower Columbia River on the Estuarine Turbidity Maxima (ETM) show that this cloud of organic material has been displaced; it is now trapped within the 40 foot-deep shipping channels instead of spread out



across the river bottom. Under normal circumstances, the ocean would keep the material suspended and churning in the turbidity maxima where organisms have an opportunity to feed on it and pass it up the food web before it gets washed out to sea. The organic detritus is fed on by bacteria, which are in turn fed on by copepods, an important food source for salmon, sturgeon and other aquatic species. Simenstad, et al, 1990, Consumption processes and food web structure in the Columbia River estuary. *Prog. Oceanogr.* 25:271-298; Wissmar and Simenstad 1998, Variability of estuarine and riverine ecosystem productivity for supporting Pacific salmon; G.R. McMurray and R.J. Bailey (eds.) *Change in Pacific Northwest Coastal Ecosystems*; NOAA Coastal Ocean Program. Decision Analysis Series No. 11. Pp. 253-301. As the Science Center states, “[p]rey availability and habitat suitability within the estuary are strongly influenced by factors such as food web structure, including detrital food chains that support salmon production, the supply of nutrients and organic matter, and salinity and turbidity distributions.” Science Center memo, Appendix 1 at 4. The Center concludes: “Channel deepening may also have critical effects on the estuarine turbidity maximum (ETM) and the detrital food chains that support salmon production. Fish and invertebrate community surveys in the Columbia River estuary provide strong evidence that the feeding environment for estuarine fishes is controlled by physical processes that promotes concentration of organic matter and the maintenance of zooplankton populations within the estuary (Bottom and Jones 1990). By altering salinity conditions and locations of the ETM, where organic matter is concentrated, channel construction may alter a key process that supports estuarine food chains.” *Id.* at 5.

This combination of changes in the flow combined with the deep shipping channels have displaced this vital food source of the estuary both horizontally and vertically. This change affects the support of beneficial uses and will be exacerbated by the proposed project. The Department must evaluate the permanent nature of the activity against its regulations. The project’s likely detrimental effect on resident biological communities through alteration of the ETM will be a violation of state regulations if the Department grants the certification. OAR 340-041-0027. The proposed activities will cause, in combination with the human activities described above, further impairment of ETM, and constitute a prohibited activity in violation of standards. OAR 340-041-0205(2). The increased impairment of the ETM is also a violation of the standards requirement to support beneficial uses. OAR 340-041-0202. This is particularly true given that threatened and endangered species depend upon this food web for their existence. *See e.g.*, Science Center memo, Appendix 1 at 4-5. Finally, the worsening of the ETM constitutes the creation of “conditions that are deleterious to fish or other aquatic life” and therefore is prohibited. OAR 340-041-0205(2)(i).

The Lower Columbia River population of white sturgeon (*Acipenser transmontanus*) is considered to be the most productive in its limited range (only three river basins are known to support reproducing populations of white sturgeon, the Sacramento/San Joaquin, Columbia, and Fraser). Populations in other estuaries along the Pacific coast rely on recruitment of individuals from these three basins to maintain stable local populations. The importance of the Lower Columbia River to the overall white sturgeon population should not be understated. The Department cannot rely upon the Corps’ EIS because it does not adequately assess the ecological importance of the Lower Columbia River white sturgeon and as a result the proposed action does not protect white sturgeon from direct and indirect impacts of the project.

Flowlane disposal as proposed in the FEIS will fill deepwater habitat critical to sturgeon. The Corps states that over "twenty years, this disposal could raise more than 400 acres of the riverbed

in and around the disposal areas by as much as 20 feet \* \* \* Some of the impacted area could be between 65 and 130 feet deep." EIS at section 6.2.3.2. The potential impacts of this level of disposal are not adequately addressed nor understood. Productivity of deep-water habitats is highly variable, both temporally and spatially. The Corps states that impacts to deep-water areas in the navigation channel "are not expected to be significant since benthic habitat of the existing 40-foot deep navigation channel is generally not considered to be productive." *Id.* at section 6.6.1.2). McCabe and Tracy (1994) suggest that although "prey abundance may be low in many of the deeper areas of the lower Columbia River, the substrate in these areas is probably ideal for efficient feeding by YOY white sturgeon \* \* \* [other investigators] observed that juveniles preferred even, sandy bottoms to bottoms with stones or depressions." In addition, Durkin et al. (1981) found low densities of benthic invertebrates during a survey of the navigation channel in October but high densities during a survey in May. Durkin suggests that the "extensive utilization of estuarine food organisms indicated an interdependence of immature marine and anadromous finfish on these habitats." And that disposal activity could "smother enormous numbers of important benthic food organisms."

The Corps does not address impacts to all habitats utilized by white sturgeon. Sturgeon larvae are dependent upon river currents to carry them from incubation areas to rearing areas (Parsley, et al., 1993; McCabe and Tracy, 1994). McCabe and Tracy (1994) suggest that this wide dispersal of larvae and YOY white sturgeon is probably an important factor in maintaining a stable population in the lower Columbia River. They state that wide dispersal "allows utilization of more feeding areas and rearing habitats by larval and postlarval white sturgeon and minimizes competition for these limited resources." Moreover, sturgeon abundance and movement in the estuary has been associated with the annual run of eulachon, an important food item in late winter and early spring. A continued decline in smelt returns is likely to lead to a reciprocal decline in the abundance, condition, and growth of white sturgeon. The Corps does not address the implication of impacting eulachon on white sturgeon. The Department cannot issue §401 certification because the proposed project will cause failure to support the beneficial use of sturgeon.

**B. The Endangered Species Act Requires Application of Oregon's  
Narrative Criteria and Beneficial Use Support**

Oregon's current numeric criteria have been developed, with extremely few exceptions, to assess the "safe" level of pollutants to certain beneficial uses on a pollutant-by-pollutant basis. Nonetheless, as discussed elsewhere in these comments, these pollutants have additive and possibly synergistic effects on those uses. In addition, the "safe" level has been determined on the basis of what an ordinary population of a target species can tolerate. However, the populations of threatened and endangered, as well as candidate, species are not ordinary; they are severely depressed. As such they cannot be exposed to the same level of risk from pollutants, individually or collectively, as ordinary non-depressed populations. Specifically, the Department is required to apply the gap-filling narrative criteria and beneficial use support requirements of its water quality standards using the knowledge that the populations as a whole are more sensitive to the effects of the various pollutants. To do otherwise, in addition to violating the fundamental definition of water quality standards, is to violate the antidegradation policy which, above all, requires protection of existing uses. As discussed elsewhere, existing uses are those uses that existed in 1975; to cause or contribute to the extinction of those uses is to eliminate them contrary to the requirements of the Clean Water Act and its implementing

regulations.

The region is currently experiencing a period of poor salmon productivity, making the timing of the project particularly adverse for these sensitive beneficial uses. The Pacific Decadal Oscillation (PDO) was negative from 1944 to the early 1970s, meaning that sea areas used by Columbia River salmon were cold and productive. Dam Breaching and Salmon, Talk by Don Chapman before the Idaho Chapter, American Fisheries Society, March 4, 1999 [hereinafter Chapman Speech]. According to Chapman, [t]he PDO has been largely positive since 1977 and is expected to remain so for another several years, a harbinger of continued poor ocean survival for salmon.” *Id.* The Department must consider this background information in making its analysis of the risks that are acceptable to threatened and endangered species. The Department is obligated to pay particular attention to applying its antidegradation policy to beneficial uses that are threatened and endangered, particularly of those stocks where there are very few individuals remaining. Adding risk to the survival of a stock that is extremely close to extinction is tantamount to making an existing use one that no longer exists. Protection of existing uses is the floor beneath which water quality cannot go, as explained above. The Department is prohibited from certifying any activity or discharge that would increase the likelihood that any existing use would cease to exist on the planet forever.

The Corps does not provide sufficient information to the Department to make a determination on the direct effects of the proposed project on beneficial uses. It states that adult and juvenile salmon migrate at depths above the disposal operations and concludes that impacts to the salmon would be minimal. EIS at 6-37. However, it provides no further information substantiating this assertion. Yet a prior reference to flowlane disposal in the lower Columbia states that the area receives use by juvenile salmon, among other species, but that they would be able to “recover from [the] level of sediment deposition or to move out of the area during the disposal to avoid being impacted.” EIS at 6-22. No scientific evidence supports this assumption. Indeed, the EIS actually admits that individuals that can not move out of the way would likely be smothered. EIS at 6-23. Smothering a salmon will kill it.

In addition, the effects on salmon discussed throughout these comments, such as temperature’s effects on timing of migration, reduce genetic diversity of the species. Removing life history types reduces the ability of the species to cope with environmental changes and fluctuations. Therefore, any incremental addition of adverse effects to salmon that will affect life history types is contrary to Oregon’s water quality standards’ requirement to support beneficial uses and the antidegradation policy to protect existing uses.

The Department does not have sufficient information to make a finding that the proposed action will not cause a violation of water quality standards because it does not have sufficient information on the effect of toxic contaminants on some of the most sensitive beneficial uses, the threatened and endangered salmonids that depend upon the Lower Columbia River. See NOAA Survey, *supra*, at 18-19. If NOAA concludes that it cannot fully evaluate the individual and additive effects of multiple toxic pollutants on salmonids, the Department surely does not have a greater expertise that would allow it to do so at this time. Information on this subject is rapidly developing and the Department’s understanding is likely far behind either NOAA’s or the Science Center’s. For example, not only must the Department analyze the likely effects on the species, it must evaluate likely exposure. The Science Center has pointed out that salmon prey “feed selectively on organic-rich particles that can be present at low levels in Columbia

River sediments.” Science Center memo at 8. This means that bulk sediment contaminant concentration data do not accurately reflect the potential for species to be exposed. *Id.* The Department cannot choose to ignore this information in applying its water quality standards.

In addition, the Department is well aware that some of its numeric criteria are not protective of uses under even ordinary circumstances as discussed elsewhere. These include temperature, DDT, DDE, bromoform, chlorodibromomethane, endosulfan sulfate, endrin aldehyde, methyl bromide, pyrene, ammonia, aluminum, tributyltin, among others. See Oregon Department of Environmental Quality 1999-2002 Water Quality Standards Review, Draft Workplan, December 13, 1999, at 4-5.

Columbia River smelt, eulachon (*Thaleichthys pacificus*), has experienced a precipitous decline over the past seven years. Recent levels of adult returns are a cause of extreme concern. In July 1999 a petition to list eulachon under the Endangered Species Act was submitted to the National Marine Fisheries Service. Any further activities, such as construction of the 43-foot navigation channel, that could further threaten the Columbia River eulachon must be avoided until there is a substantial rebound in eulachon returns and the causes of recent declines are more clearly understood. The Department cannot find that Oregon water quality standards are met until it finds that there is no potential adverse impact to eulachon populations by dredging operations.

**C. The Department Cannot Issue the 401 Certification Because It Will Contribute to Temperature Violations**

The Columbia and Willamette Rivers violate Oregon’s water quality standards for temperature. The river is significantly warmer than it once was. In fact, the Columbia used to freeze over in winter. Increased temperatures are the result of anthropogenic activities through the Columbia River Basin as well as the hydroelectric dams which are believed to have caused increase in the temperature of the river two to four degrees. Preferred salmonid spawning temperatures range from 10° C to 14° C, well below Oregon’s criterion of 17.8° C. Sub-lethal effects such as reproductive failure, prespawning mortality, residualization and delay of smolts, decreased competitive success, disease resistance will occur even where waters meet Oregon’s 17.8° criterion. U.S. EPA. Biological Assessment of the Revised Oregon Water Quality Standards For Dissolved Oxygen, Temperature, and pH, September 15, 1998 at 83, 85, 87, 90, 92, 93. More recent evidence indicates that 64° F (17.8° C) is at the upper range at what is protective for all salmonid life stages and may cause sublethal effects. Letter from Randall F. Smith, EPA to Michael T. Llewellyn, Oregon DEQ, July 22, 1999. For this reason, EPA has determined that Oregon’s rearing criterion of 64° F (17.8° C) is “likely to adversely affect” all species of listed threatened salmonid in Oregon, including the following stocks that use the Lower Columbia River and, in some cases, the Lower Willamette River: Snake River Spring/ Summer Chinook Salmon, Lower Columbia River Spring Chinook Salmon, Upper Willamette River Spring Chinook Salmon, Upper Columbia River Spring Chinook, Snake River Fall Chinook Salmon, Lower Columbia River Chinook Salmon, Snake River Basin Steelhead, Middle Columbia River Steelhead, Lower Columbia River Steelhead, Upper Willamette River Steelhead, Upper Columbia River Steelhead, Snake River Sockeye, and Columbia River Chum Salmon. Biological Assessment, *supra*. In addition, there is a candidate species, the Lower Columbia River/Southwest Washington Coho, and a proposed listing, Southwestern Washington/Lower Columbia River Coastal Cutthroat Trout. Endangered Species Act Status of West Coast Salmonids, September 9, 1999, [www.nwr.noaa.gov](http://www.nwr.noaa.gov). NMFS agrees that waters meeting the 64° degree criterion are likely to cause adverse effects to salmonid populations such as increased

mortality of adults, pre-hatch mortalities and developmental abnormalities, reduced disease resistance, and increased incidence of disease. Further, NMFS recognizes that the environmental baseline shows that Oregon's waters do not meet this 64° degree criterion, but instead pose temperatures that create a much higher risk to salmonid populations, particularly during the warmest days of summer. Biological and Conference Opinion: Approval of Oregon Water Quality Standards for Dissolved Oxygen, Temperature, and pH, July 7, 1999 at 15.

The current numeric criterion for the Lower Columbia River is 68° F. OAR 340-041-0205(2)(b)(A)(ii). Although this is the same criterion as Oregon adopted most recently for the Lower Willamette River, and which EPA rejected as not being adequately protective of beneficial uses, this criterion remains in place. Therefore the Department knows that this numeric criterion does not protect the beneficial uses and it must apply its narrative criteria and/or beneficial use support as "gap fillers" to meet the requirements of the Clean Water Act. Jefferson County, supra. After having determined what will be protective of the beneficial uses of the estuary, the Department must evaluate the effect of the proposed project on temperature regimes of the Columbia. Because the Columbia is water quality limited for temperature even under the inadequately-protective numeric criterion, the Department must make an affirmative finding that the direct and indirect result of the activities in the proposed project will not include an increase in thermal loads, measurable or not.

The proposed discharge and activity will involve pollutants that will directly and/or indirectly increase temperature in the Lower Columbia River. The effect of deepening the channel of the Columbia River will be to increase the flow predominance in the channel and decrease flushing and overall water volume in the peripheral areas of the river. FEIS Ex. E at 4. These are the very areas where beneficial uses affected by temperature use the river. It is also the area where increases in temperature will increase the degree of violations of bacteria and dissolved oxygen. In addition, the proposed action will increase stratification resulting in a greater persistence of warm waters even further down the river than they do now. This will be caused by decreased mixing of warm freshwater and cold saltwater. The Department cannot make a finding that the discharge of sediment is not related to temperature violations, therefore the Department must deny the certification.

### C. **Effect of Temperature on Other Water Quality Parameters**

The Lower Columbia River is water quality limited for temperature and dissolved oxygen. Oregon 1998 303(d)(1) List. Increased temperatures in the Lower Columbia River also affect other water quality parameters – conventional and toxic – and enhance the adverse effects of other parameters on the beneficial uses, particularly salmonids. Increased water temperature increases bacteria levels, a pollutant for which the Columbia is water quality limited. Concurrent violations of temperature and dissolved oxygen (DO) standards also cause increased risk to beneficial uses. Oregon Department of Environmental Quality, Final Issue Paper on Dissolved Oxygen, Appendix A-6, June 1995. Temperature also affects the uptake of toxic contaminants by uses because elevated temperatures decrease available DO in the water column. In addition, the biological demands on aquatic species increase with increasing temperatures. At lower DO levels, the amount of oxygen delivered to fish tissue decreases, restricting the ability of fish to maximize metabolic performance. Id. Low DO levels increase the acute toxicity of various toxicants such as metals and ammonia. Id. Low DO levels may compound the adverse effects of some toxicants. Alternatively, toxicants may increase sensitivity to low

levels of DO. For example, the Department has provided an example of where a toxicant that damages the gill epithelium can decrease the efficiency of oxygen uptake. Also, several toxic contaminants increase oxygen consumption due to interferences with oxidative phosphorylation of pentachlorophenol and have the potential to increase sensitivity to low DO. Id.

The U.S. Environmental Protection Agency concurs that adverse impacts of toxicants may be compounded by low DO levels or may increase sensitivity to low DO levels. U.S. EPA, Biological Assessment of the Revised Oregon Water Quality Standards for Dissolved Oxygen, Temperature, and pH, September, 1998, at 63. EPA identified three mechanisms by which low DO and a toxicant in combination cause effects: 1) Increase gill ventilation associated with low DO can increase uptake of waterborne toxics, 2) Any toxic contaminant that damages the gill epithelium and decreases efficiency of oxygen uptake will increase sensitivity to low DO, and 3) a number of toxics, such as pentachlorophenol, increase oxygen consumption due to interference with oxidative phosphorylation. Id. Therefore, when elevated temperatures – which in the Columbia are elevated above an admittedly unprotective criterion – cause depleted oxygen levels, there are additive impacts with toxic contaminants. The combination of these three pollutants, already present in the Lower Columbia, will increase from the proposed activity. Increased sediment from the proposed project will increase temperature, decrease dissolved oxygen, and increase available toxics. Increased temperatures, caused by decreased water volumes in areas peripheral to the channel, decreased flushing, and increased stratification, will increase existing violations of bacteria and dissolved oxygen. These violations of DO and bacteria take place in the peripheral areas. The temperature increases will also increase the adverse effect of the violations of these parameters and toxic levels that exceed safe levels on the beneficial uses. Oregon’s water quality rules specifically contemplate the effect of multiple pollutants and the impact of complex stressors that combined are termed “pollution.” OAR 340-041-0205(2)(p)(A). The Department must evaluate these pollution combinations and any others that cause violations of Oregon’s water quality narrative criteria and beneficial use support requirements. OAR 340-041-0205(2)(i), OAR 340-041-0202. The Department must deny the requested certification because the project will violate its rules: “No wastes shall be discharged and no activities shall be conducted which either alone or in combination with other wastes or activities will cause violation of [Lower Columbia Basin standards].” OAR 340-041-0205(2).

### **C. Toxic Parameters**

The Lower Columbia River violates Oregon’s water quality standards for the toxic contaminants PCBs, dioxins, DDE, and DDT. 1998 Oregon 303(d)(1) List Decision Matrix. In addition, the Department has identified elevated levels of toxic contaminants that it has determined do not violate state standards. Id. However, in making these determinations the Department has failed to properly apply its narrative criteria and beneficial use support requirements and has not complied with the Clean Water Act. Letter from Nina Bell, NWEA to Carol Browner, U.S. EPA, December 13, 1996. This is the subject of a lawsuit. Northwest Environmental Advocates et al. v. Browner, No. C-96-1438-WD. In addition, the Department has failed to apply its narrative criteria in evaluating the effect of toxic contaminants individually on sensitive fish and wildlife in the estuary. For example, reproductive failure in bald eagles and likely reproductive failure in mink violate the narrative criterion that “[w]aters of the state shall be of sufficient quality to support aquatic species without detrimental changes in the resident biological communities.” OAR 340-041-0027. The Department has failed also to apply its

narrative criterion and beneficial use support requirements to address the additive and/or synergistic effects of multiple toxic pollutants. This criterion requires that “[t]oxic substances shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations which may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses.” OAR 340-041-0205(2)(p)(A). The Department has not applied current scientific understanding of the effects of toxic exposure to salmonid in order to interpret its narrative criteria or beneficial use support requirements, as required by state law. OAR 340-041-0202, OAR 340-041-0205(2)(i). For these reasons, we base our discussion on pollutants that are formally listed on the 303(d)(1) list as well as other water quality standards that are violated but that the Department has yet to acknowledge.

Against this backdrop, the Corps proposes to conduct dredging and dredge spoil disposal that will increase the bioavailability of toxic contaminants in the Lower Columbia River. Sediments are a major source of hydrophobic contaminants for biota. Department of Interior letter, supra, at 2. The Science Center concludes: “Redistribution of contaminants from upriver contaminated dredge sites to shallow water, low flow sites represents a potential for bioaccumulation of toxics by outmigrating juvenile salmon that utilize these habitats. Dredging operations in the Columbia and Willamette rivers will likely result in the resuspension and redistribution of bottom sediments in the dredge area, as demonstrated in many dredge operations (Morton 1977; Hershman 1999).” Science Center memo at 7. In the public meetings conducted by the Department, staff alluded to water needing to meet water quality standards, implying that sediments and fish tissue concentrations were irrelevant. According to its own rules, the Department simply does not have the luxury of ignoring the very location where toxic contaminants are expected to be found. For example, up to 99 percent of TBT may reside in sediments. NOAA Survey, supra, at 22.

The Department is required to evaluate data on use impairment related to levels of toxic contaminants, i.e. for pollutants that are at levels posing a risk to piscivorous wildlife such as eagles, mink and otter. Some of the information available is from tissue and wildlife health studies. For example, information that “river otter in the vicinity of RM 119.5 are in a critical or almost critical category based on reference level comparisons, abnormalities noted during necropsy, and histopathological observations of individuals,” must be evaluated for compliance with water quality standards and to assess the impacts of the proposed project. The Health of the River 1990-1996, Integrated Technical Report, Tetra Tech, May 20, 1996, Figure 14, at 53 [hereinafter “Health of the River”]. This information is tied to toxic contaminants: “Concentrations of organochlorine insecticides, PCBs, and to a lesser extent PCDDs and PCDFs in the liver of river otters were highly correlated with each other and many were significantly related to baculum [penis bone] and testes size or weight.” Id. at 52. Likewise, the Department is required to use the extensive information on reproductive failures of the Bald eagle in the Lower Columbia River. The Bi-State study noted that “Historically, some individual mink contained PCB concentrations known to make adult female mink in laboratory studies incapable of producing young.” Health of the River at 52. Washington’s 1996 303(d) list includes both entries and listings for PCB-1254, arsenic, 4,4'-DDE, Dieldrin, and Bis-2-(ethylhexyl)phthalate based on the edible portions of white sturgeon tissue found in the Lower Columbia River. Both states shared the data from the Bi-State study upon which Washington’s listings are based. As mentioned above, in addition to not having sufficient information about the extent of

contamination in the estuary, the Department does not have the ability to fully evaluate the effects of this contamination. NOAA Survey, *supra*, at 18-19. However, in light of what information is available, it cannot make a finding that the proposed project will not cause violations of water quality standards for toxic pollutants.

Other information available on toxic contamination of the Lower Columbia River is on sediment contamination levels. As the Bi-State study demonstrated, toxic contaminants are present at sufficiently unsafe levels in deposition areas of the Columbia. These constitute violations of water quality standards even if the distribution of contaminants is "patchy." Science Center memo at 8. The Department must evaluate the potential for the proposed project to increase levels of toxic chemicals at those depositional locations as well as to enter the food chain of the estuary. It must also evaluate the potential for disturbance of these depositional areas due to direct project activities and/or changed circulation patterns in the estuary created by the project. For example, there are numerous locations where sediment contamination exceeds values believed to be protective of benthic organisms and wildlife. Health of the River, Figure 14, at 37. Listed are nine metals and one organic compound, Bis(2-ethylhexyl)phthalate. The document notes other contaminants of concern found in sediments as well, such as polynuclear aromatic hydrocarbons (PAH). Health of the River at 36.

The Department is obligated to use all of the information from its own studies. For example the Bi-State study found that "[r]eference levels were exceeded for aluminum, iron, cadmium, copper, lead, selenium, zinc, and silver. Copper and lead exceeded reference levels comparatively frequently, and deserve further evaluation. Additional testing is also recommended for silver and mercury. . ." Health of the River at 35. Moreover, despite findings that dissolved arsenic concentrations that "exceeded water quality criteria for the protection of human health in 15 of 16 samples collected from four sites in the Columbia River" arsenic has not been placed on the 303(d) list. The study also found that "chemicals were found in excess of reference levels, or were frequently detected in the river [include] barium, cadmium, chromium, copper, lead, mercury, and zinc." Health of the River at 38.

The Department must use current information on sub-lethal effects of toxic contaminants on human and wildlife health. These effects include but are not limited to: reduced immunity from disease; permanent brain damage including decreased intelligence, motor skills, memory, eye-hand coordination and increased aggressive behavior; reduced male fertility; reduced penis size, a result found in Columbia River river otter; and abnormal sexual development (e.g., missing testis) and abnormal sexual behavior, among other effects. There are numerous studies on the effects of toxic contaminants that we incorporate by reference in these comments. To meet its burden under state law, the Department has an obligation to apply the results of all of them.

Studies done in Puget Sound on the impacts of contaminated sediments on juvenile salmon demonstrate they are at risk from even a short 3-week stay in a contaminated area. Fish studied suffered from impaired migration and swimming behavior and impaired immunity from disease. The Science Center concludes there is a risk to salmon from toxic contaminants: "Exposure to contaminants found in Columbia and Willamette River sediments, particularly to PAHs and PCBs, can affect the health of threatened or endangered salmon that utilize the LCR. Short-term exposure to PAHs and PCBs in contaminated estuaries, both through diet and through the water column, reduces disease resistance and growth rates of outmigrant juvenile chinook salmon in



Puget Sound (Arkoosh et al. 1998; Casillas et al. 1995). Resuspension of these contaminants as a result of dredging would increase the risk of exposure through the water column or through contaminated prey. Reduced growth and increased disease residence reduce survival potential.” Science Center memo at 8. Male trout with feminine traits have been found in British Columbia and a recent study has found that a pesticide appears to prevent Atlantic salmon from making the transition from freshwater to saltwater fish. Even low levels of pesticides can alter swimming and migration behaviors in ways that prevent fish from reaching the ocean or returning to their spawning beds. Additionally, certain pesticides can cause abnormal sexual development, preventing fish from reproducing and pesticides can alter the aquatic environment, for example by reducing the food supply available to salmon.

The Science Center also raises concerns that the Department must resolve concerning the screening levels to assess the potential hazards of dredged sediments to salmon:

The LCRMA screening levels used to assess potential hazards of dredged sediments may not be adequate to protect salmon. Recent studies of resident marine fish (Horness et al. 1998) and juvenile chinook salmon (Arkoosh et al. 1998) show that thresholds for contaminant effects in these species are lower than predicted from the aquatic bioassays which form the basis for many sediment quality criteria. For example the current LCRMA screening level criteria for LPAHs and HPAHs are 5,200 and 12,000 ng/g, respectively, resulting in an acceptable total PAH concentration for dredged sediments of 17,000 ppb. For PCBs, according to LCRMA standards, sediments are considered acceptable for open water disposal if concentrations are between 130 and 3100 ng/g. However, alterations in growth and immune function have been reported in chinook salmon from estuarine sites with average total PAH concentrations in sediment below 17,000 ppb, and total PCB concentrations between 130 and 3100 ppb (Arkoosh et al. 1998). Recent studies by the NMFS (Horness et al. 1998) show that threshold total PAH sediment concentrations associated with biological injury in marine fish are between 1000 - 5,000 ppb range. The sensitivity of Pacific salmon to contaminant effects is similar or greater than marine fish analyzed by Horness et al. (1998), based on studies cited above.

Science Center memo at 8-9. The Department cannot apply criteria that are not protective of beneficial uses.

The Department must also deny the §401 certification for lack of information on the potential for increased toxic contamination from the project. The Corps does not believe that it must obtain the information required to assess compliance of the project with the Clean Water Act. In response to Department of the Interior comments urging an ecological risk assessment of dredging in the Willamette River, the Corps stated: “the preliminary ecological risk assessment suggested would be beyond the scope of the proposed project.” Corps of Engineers Response to Department of Interior letter, supra at 3, FEIS. Sampling of sediments has been inadequate to determine actual amounts of hazardous materials in the areas to be dredged. The Corps only sampled sediments down to 10 inches, while the preferred alternative would excavate down 3 feet. EIS, Appendix B, at 5. The Corps justifies this method of sampling because the materials beneath had larger grain size. Id. at 6. However, larger grain size does not automatically preclude the existence of hazardous materials nor does sampling the top 10 inches prove that the remainder of the sediment is not contaminated. Sampling the top layer does not factor in the

previous effects of dredging on the composition of the channel bottom when finer grained material may have been redistributed to lower levels.

Failure to chemically test samples with less than 20 % fine grain materials also prevents the Corps from adequately addressing future impacts, because the Corps does not have a clear idea of present conditions. Even though finer-grained material chemically binds better than the larger-grained material, larger-grained material may nonetheless have chemical contamination. In addition, material up to .50 mm may become suspended in the river from dredging operations. Failure to test these materials prevents the Corps from adequately assessing the possible impacts of resuspending hazardous materials into the waters. We commented on the draft EIS that the Corps has not adequately addressed the issue of resuspension. While the EIS acknowledges that turbidity in the water would increase, it makes no indication that turbidity may indicate the resuspension of toxins. Nor has the Corps assessed any potential effects of this resuspension on water quality, aquatic species, or wetland and other aquatic habitat from the flushing of these toxins down the rivers. The Science Center has made these same observations. Science Center memo at 9. Without this information, the Department cannot make the required findings pursuant to either Tier 1 or Tier 2 of the state's antidegradation policy. OAR 340-041-0026.

### **C. Contribution to Long-Term Violations of Standards**

The §401 certification requires the Department to address both the short- and long-term impacts on State water quality standards from the activity. In previous §401 certifications for dredging of the Columbia River, the Department has noted that it "does not anticipate any long term violations of state Water Quality Standards\* \* \*" Letter from Michael Llewellyn, DEQ, to Steve Stevens, Army Corps, May 26, 1997 re: permit application #96-09, at 1. That, presumably, has formed the basis for the State's determination that a §401, with conditions, could be issued for the activity despite short-term effects. That finding is also seriously flawed, in light of the violations of water quality standards caused by maintenance dredging. We urge the Department to properly apply state law in evaluation the instant request.

Although numeric criteria are developed that assess the risks posed to beneficial uses from individual pollutants, in real life pollutants have additive or synergistic effects on those uses. For this reason, Oregon's water quality rules contain the following narrative criterion: "Toxic substances shall not be introduced above natural background levels in the waters of the state in amounts, concentrations, or combinations which may be harmful, may chemically change to harmful forms in the environment, or may accumulate in sediments or bioaccumulate in aquatic life or wildlife to levels that adversely affect public health, safety, or welfare; aquatic life; wildlife; or other designated beneficial uses." OAR 340-041-0205(2)(p)(A). Narrative criteria are not academic concepts the Department can ignore when evaluating whether the proposed project meets state water quality standards. Jefferson County, supra. In the face of information that demonstrates that multiple toxic pollutants have additive or synergistic effects, the Department must make an affirmative finding that its standards and rules will be met by evaluating the risks to the uses, particularly those uses that are already suffering population declines (e.g., threatened, endangered, and sensitive species) from other non-toxic stresses such as habitat loss. The Department has this information. For example, NOAA has set out three areas where it does not have sufficient information upon which to evaluate the effects of toxic contamination on natural resources in the Lower Willamette River. NOAA Survey, supra. These three areas of insufficient information apply equally to the Department's ability to

evaluate whether the resources of the Lower Columbia River will be protected from this proposed project in the long term. The Department cannot limit its analysis to only the short- or long-term but is obligated to evaluate both.

### **C. State Rules Require a Cumulative Effects Analysis**

The Clean Water Act, and Oregon's regulations and water quality standards, require the Department to evaluate the cumulative effect on the aquatic environment from past, present, and reasonably foreseeable human activities causing pollution. A substantial amount of wetland habitat has been lost in the Lower Columbia River due to urbanization and agriculture. EIS at 6-57. Nearly all of this has occurred without any mitigation whatsoever. For example, the Port of Portland filled approximately 2,000 acres of wetlands and related habitat in Rivergate, with little or no mitigation. The proposed project itself will be extremely detrimental to the few remaining wetlands and lowlands, particularly in the Vancouver area. Such substantial loss of habitat has the potential, indeed likelihood, of impairing beneficial uses such as fish, fishing, shellfish, and shellfishing due to limitations in the estuary's carrying capacity. The Lower Columbia River also suffers from loss of benthic organisms. In 1975, the Corps noted that "[b]enthic organisms are displaced by frequent dredging which makes their former habitat unsuitable for reintroduction. It can be estimated that 10 percent of the total bottom area of the Columbia river is so affected, but the impact on the total ecosystem is difficult to quantify." 1975 EIS, at 4-3. Over twenty years later, the Department must evaluate the total impact on the ecosystem or the cumulative impact on benthic organisms. Likewise, in 1975 the Corps noted that the species to be most impacted by dredging activities would be white sturgeon. Since then, the sturgeon fishery has been limited because of declining stocks of sturgeon. EIS at 5-24. The Department must evaluate the cumulative effects of dredging operations on sturgeon populations, and the potential impacts of the proposed project, including rock blasting, on current sturgeon populations. Dungeness crab populations have been adversely affected by disposal of dredge materials onto crab habitat. EIS, Appendix H. The Department must evaluate the direct, indirect, or cumulative impacts on the crab resulting from all dredging activities. The Department must assess cumulative impacts of dredging on salmon habitat and salmon populations, in particular the declines in population resulting from stranding of juvenile salmon at beach nourishment sites, increased predation by Caspian terns at artificial islands created from past dredging disposal, and other indirect and direct impacts resulting from dredging activities.

The Department must evaluate these cumulative effects in order to make an affirmative finding that the waters of the state are "of sufficient quality to support aquatic species without detrimental changes in the resident biological communities." OAR 340-041-0027. If the Lower Columbia River is already impaired sufficiently to violate this narrative criterion, the proposed project cannot be certified as meeting Oregon's standards and rules. Water quality standards in the Columbia River are violated because the waterbody fails to support the beneficial uses including salmon, eagles, mammals, and other species including sturgeon and smelt. OAR 340-041-0205(2). If the Department cannot affirmatively demonstrate that the project will have no additional impairment of beneficial uses that are already substantially impaired and/or on the verge of extinction due to failures to prevent pollution, it cannot certify the proposed project. OAR 340-041-0202.

### **H. Exotic Species are Pollution and a Pollutant**

The Department must evaluate the effect of the proposed project on native species and other existing beneficial uses through the introduction of exotic species. Not only has the discharge of ballast water from shipping activities already contaminated the Columbia River, but the proposed project would increase the form of pollution. The beneficial uses affected by exotic species are numerous. For example, the zebra mussel's introduction into the Great Lakes has already caused \$120 million worth of damages from costly cleanups, loss of native clam and mussel beds, and monitoring efforts. David Davis, Deputy Director, Office of Water, U.S. EPA, Testimony in front of Congress, July 17, 1996, 1996 WL 10829741. The zebra mussel, a freshwater invertebrate, can attach to almost anything and gums up effluent out puts from ships, factories, or sewage treatment plants. The European green crab represents another major threat. The green crab can live in both brackish and saltwater, has no predators, reproduces quickly, and voraciously preys on other invertebrates. Green Crabs Attack, 1 Native Species Network, Issue 2, at 5 (1996). Green crabs are found in every major bay in California and are moving their way north to Oregon. The ruffe, another threat, is a small, aggressive fish native to Eurasia which has been introduced into Lake Superior, threatening introduction into the rest of the Great Lakes. It is a hearty, voracious eater, threatens native fish populations of perch, whitefish and others, through egg predation and out-competition. Ruffe: A New Threat to Our Fisheries, Sea Grant Exotic Species, [www.d.umn.edu/~seagr/exotic/ruffe.html](http://www.d.umn.edu/~seagr/exotic/ruffe.html). A Federal Task Force has estimated losses of economic value in sport and commercial fisheries in the Great Lakes at \$500 billion over the next 50 years. Gary Edwards, Assistant Director for Fisheries, U.S. Fish and Wildlife Service, Testimony before Congress, July 11, 1996, 1996 WL 10829512. Overall, these dangerous introduced species, which are almost always introduced through ballast water discharges, often have no natural predators and are able to out-compete native species. These species are merely a few examples of the current and future myriad of aquatic non-indigenous species introduced into United States bays, estuaries, and rivers through unregulated ballast water discharges which threaten our native commercial and sports fisheries. Non-indigenous introductions also result in millions being spent by local and federal agencies to eradicate the new pests and ultimately lead to extinction of local aquatic populations.

The major vector of exotic pest species introductions into new rivers and estuaries is through unregulated discharge of ballast water once a ship either enters or is preparing to enter a port. The planktonic stage of many invasive species are sucked into a ships ballast in the port of debarkation and then released into the waters of the next port of call when the ship empties its ballast in order to stay afloat in the shallower port waters. Essentially, these large ships serve as floating aquaria for potentially devastating invasive species. Ships traveling from Japan to Oregon have been measured to carry as many as 367 "distinctly identifiable taxonomic groups of plants and animals." Office of Technology Assessment, Harmful Non-indigenous Species in the United States 82 (1993). Once these planktonic organisms enter their new waters in the port where the ballast water is discharged, they grow into adults in their new home and often reproduce at incredible rates due to new food sources and few predators. As shipping increases, especially with the increased production and utilization of large-hulled ships, exotic species ballast water introductions are increased as well. For instance, 40%-100% of the organisms currently living in the San Francisco Bay estuary are exotic species. See Andrew Cohen, The Exotic Species Threat to California's Coastal Resources, Proc. Calif. and World Ocean 97 Conf., Mar. 24-27, 1997, San Diego CA. More than 200 exotic species now live in the San Francisco Bay, and estimates show that a new species establishes itself every 12-24 weeks. See Andrew Cohen, Biological Invasions of the San Francisco Bay and Delta, summary of comments USF&WS Directorate meeting, June 12, 1996. In light of this increased risk, the Department

must consider this form of pollution in evaluating the request for certification.

Congress considers the impact from invasive species introductions via ballast water to be of national significance. Currently, there is a ban on unregulated ballast water discharge in the Great Lakes. Three years ago, Congress enacted the National Invasive Species Act of 1996, which identifies a high level of risk from introduced ballast water species and seeks to deal with the problem on a national level. 16 U.S.C. § 4711 (a), (c) (1994). These guidelines recommend that all ships entering United States ports discharge their ballast water in areas beyond the exclusive economic zone. *Id.* § 4711 (c)(1)(D)(i).

In light of the new information on the threat of ballast-water-introduced exotic species and the increasing level of shipping, the Department must fully evaluate the effects of continued and increased large-hull ship entry into the Columbia River through continued maintenance and deepening of the dredged shipping channel. Nothing short of conditions that require on-ship treatment of ballast water or shore-based ballast water treatment plants that sterilize ballast water is sufficient to meet Oregon's water quality standards. These steps are necessary to prevent potential future loss of millions of dollars through destruction of commercial and sports fisheries and degradation of Oregon's natural aquatic ecosystems.

Not only does the introduction of non-native species pose significant threats to salmon, industry, and the entire Columbia and Willamette River Basins, it will also violate the anti-degradation policy. If zebra mussels become introduced to the Columbia River through ballast water discharges, they would impact nearly all of the listed beneficial uses (public domestic water supply; private domestic water supply; industrial water supply; irrigation; livestock watering; anadromous fish passage; salmonid fish rearing; salmonid fish spawning; resident fish and aquatic life; wildlife and hunting; fishing; boating; water contact recreation; aesthetic quality; hydropower; and commercial navigation and transportation). The mussels are known to pose the greatest threat to irrigation systems by cutting off flow in irrigation canal. Portland Oregonian, 1998 WL 20376390. Also, the zebra mussel could destroy salmon recovery efforts. Not only do they choke out fish species by out-competing for microscopic food sources, they can also clog fish screens and ladders. *Id.* The zebra mussels' sharp shells can also cause direct harm to salmon by scraping off the salmon scales. *Id.* Therefore, any activity which allows or encourages introduction of non-native invasive species will violate the antidegradation policy of the CWA.

Of the three most abundant copopods found in the Lower Columbia River, one is an exotic species most likely introduced by the discharge of ballast water. It is now the third most abundant in the estuary. Introduction of these species is both a pollutant and a form of pollution pursuant to state and federal regulations. In Dubois v. U.S. Dept. of Agriculture, 102 F.3d 1273 (1st Cir. 1996), the First Circuit held that discharging water from one waterbody to another (to replenish a lake after the water had been used to make snow) constituted an addition of a pollutant because the river contained different life forms than the lake into which its water was discharged. This pollution constitutes a "detrimental change in the resident biological communities" and therefore a violation of state law. OAR 340-041-0027. It also constitutes a prohibited condition that is "deleterious to fish or other aquatic life." OAR 340-041-0205(2)(i). On the basis of existing information, regardless of its inadequate and outdated 1998 303(d)(1) list, the Department must determine whether existing levels of exotic species constitute a violation of water quality

standards. The presence of exotic species constitutes a violation of water quality standards because it impairs native, existing, beneficial uses for which the law requires protection. OAR 340-041-0202. Even if the Department does not conclude that current levels of exotic species constitute a violation of state water quality standards, it must evaluate the proposed project in light of its contribution to the increased discharge of ballast water containing exotic species. This activity not only violates the provisions cited immediately above but also constitutes a violation of the prohibition on activities that cause violations of water quality standards. OAR 340-041-0205(2). The increased discharge of exotic species is directly linked to the proposed project. The Department has no basis upon which to make a determination that a technology-based approach will be in place that will prevent any further discharge that will cause and/or contribute to violations of the water quality standards and criteria mentioned above. We have attached two documents that discuss the application of the Clean Water Act to exotic species contained in ballast water discharges to assist the Department in denying the §401 certification. Brent Foster, *Pollutants Without Half-Lives: The Role of Federal Environmental Laws in Controlling Ballast Water Dischargers of Exotic Species*, 30 *Env't'l L.* (forthcoming Jan. 1999); Letter from Craig Johnston, Pacific Environmental Advocacy Center to Carol Browner, EPA, Re: Petition for repeal of 40 C.F.R. § 122.3(a), January 19, 1999.

## **I. Suspended Sediments and Turbidity**

The Corps has not provided the Department with sufficient information upon which to make a determination that the dredging operations and the disposal of dredged spoils of the proposed project will not cause a violation of water quality standards that protect beneficial uses from excess turbidity and sedimentation. First, the Department does not know the timing of the proposed operations, so it cannot make a determination of compliance with standards that protect sensitive beneficial uses. Second, if salmonid populations were high, rather than threatened or endangered, the Department could evaluate the effect according to its existing numeric criteria. However, they are not; instead the populations are at significant risk and less able to withstand any incremental adverse impacts from predation, growth, health, etc.. The Department must evaluate its narrative and beneficial use support requirements in order to apply them to threatened and endangered species. Third, as discussed above, the Corps has not provided the Department with information on the likely turbidity from the activities or the actual locations of flow-lane disposal. In the absence of information, the Department cannot conclude that the proposed project will comply with state water quality standards.

The effects of sedimentation on salmonids are well documented and include: clogging and abrasion of gills and other respiratory surfaces, providing conditions conducive to entry and persistence of disease-related organisms, inducing behavioral modifications, and altering water chemistry by the absorption of chemicals. Factors for Decline at 18. Suspended sediment and turbidity can “increase the straying rate of adult salmon, \* \* \* force juvenile salmon from preferred habitats, and impair feeding by juvenile salmon, thereby reducing growth.” Science Center memo at 6. The Lower Columbia River estuary plays an important role in the life cycle of salmonids and the important factors that affect that role are “flow rates, timing of flow, and turbidity.” Science Center memo at 3, citing Dawley et al. 1986. Prey availability and habitat suitability are also strongly affected by turbidity. *Id.* at 4. Turbidity can have non-lethal effects at “relatively low levels” that “reduce fish fitness and contribute to elevated mortality later in the life of the fish.” *Id.* at 6. In addition, the effects of increased suspended sediment loads on spawning is well documented. See e.g., Science Center memo at 6-7. The Science Center has

concluded that while the “extent of spawning by salmon in the lower Columbia River is not well known,” chum salmon do spawn at the confluence of the Grays River and “likely utilize gravel deposits at the mouths of other tributaries to the lower river.” and “Lower Columbia River fall chinook salmon also may spawn in areas that will be affected by sediment generated by the dredging.” Id. at 6.

In addition to the direct effects of turbidity on salmon, the Department must evaluate the indirect effects. Sedimentation affects bottom-dwelling organisms that make up the food chain for salmon and other estuary species. “Elevated turbidity and TSS may reduce the amount of light available for photosynthetic organisms, reducing primary production which may in turn affect biota higher up on the food chain.” Bi-State Report, Task 6 at 2-33. Increased wake in shallow areas caused by changes in shipping lane use will increase turbidity. The Department must also evaluate the additive effects of turbidity, excess temperature, low DO, and exposure to toxic chemicals and other unsafe levels of pollution in these shallow waters. As discussed elsewhere, salmon rely upon shallow water habitats.

NMFS has concluded that “[q]uantitatively, sediment has been identified as the greatest single pollutant in the nation’s waters (Barhart 1986, Poon and Garcia 1982, Ritchie 1972, U.S. Environmental Protection Agency 1988).” Factors for Decline at 17. Despite this well-known information, the Department’s list of waters violating sedimentation and turbidity is extremely short. This represents the Department’s inability to apply its own sedimentation and turbidity standards, and its lack of monitoring, rather than that there are safe levels of these pollutants in state waters. As the Department explains, “temperature is the most commonly measured parameter which causes water quality impairment, however, other parameters such as sedimentation, habitat modification, flow modification, low dissolved oxygen, abnormal pH and toxics have an impact on aquatic life.” Oregon Department of Environmental Quality, 1998 Water Quality Status Assessment Report 305(b) Report, note to Table 4-4A. As a consequence, Oregon’s list of water quality violations includes over 12,000 river miles of temperature violations but only 1,354 miles of “siltation” violations and a paltry 66 miles of turbidity violations. Id. Not surprisingly, as time goes on, the Department only adds, but does not subtract, to the list of waters that violate standards for turbidity and sedimentation. Oregon DEQ, Stream Miles Added and Removed between Oregon’s 1998 and 1994/96 303(d) Lists, Summary Report, [www.deq.state.or.us](http://www.deq.state.or.us). Does Oregon stand alone in the nation as not having an ubiquitous turbidity and sedimentation problem? No, Oregon has failed to apply its standards to assess the degree of the problem. Regardless of its on-going oversights, the Department is required to evaluate and make findings on the effect of the proposed project with regard to sedimentation and turbidity. In doing so, it must assess whether current levels are causing violations of beneficial use support, narrative, and numeric criteria. If so, the certificate must be denied. It must evaluate whether current levels in combination with other parameters are causing violations of beneficial use support and/or narrative criteria. If so, the certificate must be denied. If the answer to both of those questions is “no” the Department must evaluate whether the proposed project will cause a violation of water quality standards, including use support, criteria, and antidegradation policies. OAR 340-041-0205(2), -0202, -0205(2)(i), -0027, -0026.

## **J. Findings Required on Causing Violations of Water Quality Standards**

In addition to determinations about the potential for the proposed project to contribute to water

quality standards violations, the Department must evaluate and make findings on whether the project will cause violations for parameters not currently known to be violating water quality standards. OAR 340-041-0205(2). This includes an analysis of potential violations of numeric criteria as well as narrative criteria and beneficial use support. In the project's current configuration, the Department must analyze this in two ways. First, if the Willamette River channel is not deepened, the project will significantly increase development along the Columbia River. Second, the Department must make an alternate assumption that the Willamette will be a part of the dredging project. The Department must evaluate both of these because the project will involve one or the other and it cannot determine which. The Department cannot assume that the Willamette project is not going forward because there is no basis for that assumption. If it chooses to make this assumption, it must include an evaluation of the Willamette portion of the project in this §401 certification. Neither can it assume that the Willamette will be deepened. If it does, the Department has not been given sufficient information upon which to evaluate the §401 certification request and it must be denied. The Department has not been given sufficient information to evaluate the first scenario – substantially increased development along the Columbia River – presumably for the same reason as the Corps has not removed the Willamette project from the FEIS: the Corps still intends to complete that project. Without sufficient information, the Department must deny the certification. However, if the Department attempts to evaluate the project without adequate information, it must first project the level of expected development and the point and nonpoint source contributions that will be directly and indirectly linked to the project. These include, but are not limited to: increased spills of ships' fuel and commodities, including oil, from accidents and groundings; increased sewage and bacteria discharges to the Columbia; increased toxic loadings; increased thermal loading from river-side development; increased sedimentation from development run-off, berth maintenance, construction; and increased degradation of aquatic habitat. Increased sedimentation and thermal loadings will exacerbate violations of dissolved oxygen criteria, with an indirect effect of increasing salmonid susceptibility to toxic contaminants.

#### **H. The Discharge Will Violate Water Quality Standards Because of Timing Concerns**

The Corps proposed to conduct dredging and dredged spoils disposal year-round. U.S. Fish and Wildlife Coordination Act Recommendations and Portland District, U.S. Army Corps of Engineers

Responses, Response #1, at 1. However, the State imposes timing restrictions on activities outside the navigation channel as a matter of routine. Timing of In-Water Work to Protect Fish and Wildlife Resources, Oregon Department of Fish & Wildlife. The in-water timing for the Lower Columbia River is November 1 through February 28. *Id.* The Department must apply this timing window as a starting point for assessing whether the proposed discharge will adversely impact beneficial uses, constituting a prohibited violation of water quality standards. OAR 340-041-0205(2), -0202, -0205(2)(i), -0027. However, the ODF&W timing windows are the beginning, not the end, of the Department's analysis. The Department must make findings that these timing windows are protective of all species in the waterbody where the activities will take place including but not limited to salmonids, smelt, sturgeon, and crab, in order to comply with state water quality standards. In conducting this analysis the Department must evaluate the most current data and information on use of the river by sensitive species and those with depressed populations in particular. For example, new information suggests that "mid-river migrant yearling salmonid, particularly steelhead, may be shifting their vertical distribution to



deeper water at night.” Science Center memo, at 7. This information is contrary to current views. The Department must assure it is using the most current information concerning the estuary and severely impacted species. In addition, it must make an affirmative finding that no timing windows are necessary to protect beneficial uses for work inside the navigation channel.

### **I. The Discharge Will Violate Water Quality Standards By Creating Conditions Deleterious to Fish**

The beneficial use of salmonid in the Colombia River is not fully supported and constitutes an independent violation of water quality standards. Part of the discharge from the proposed project is an increase to Rice Island. The use of Rice Island by nesting Caspian terns that prey upon juvenile salmon is well documented, and is so egregious as to constitute a separate violation of standards. Survival of salmon is directly influenced by the abundance and distribution of predators. Science Center memo at 4. Moreover, the Department must evaluate the possibility that the proposed channel deepening project might increase the use of the waterbody near Rice Island by juvenile salmon thereby increasing predation over the current unacceptable levels. Science Center memo at 16. This analysis needs to address alterations that are permanent as well as temporary ones during construction. The Corps has not explained how the Island’s continued use will not maintain current unacceptable levels of predation or increase those levels. See, e.g., Letter from Oregon Governor John A. Kitzhaber to Policy Review Branch, Army Corps of Engineers, November 19, 1999 at 17. The dredging project may also push salinity towards Rice Island, causing an increase in consumption of salmon by terns. This effect of the proposed discharge will violate state standards, including criteria and antidegradation policies. OAR 340-041-0205(2), -0202, -0205(2)(i), -0205(2)(j). The Department cannot issue a §401 certification for a discharge that will increase already intolerable adverse effects to an aquatic species.

### **J. The Department Must Factor pH Violations into Its Analysis**

The Lower Columbia River is designated water quality limited for pH. Oregon 1998 303(d)(1) List. These violations have a direct effect on the health of aquatic species: “Parameters such as pH, turbidity, TSS, temperature, and DO have a significant effect on biota in the river, especially coldwater anadromous fish.” Lower Columbia River Bi-State Program, Reconnaissance Survey of the Lower Columbia River, Task 6, May 1992 at 2-32. pH also exacerbates the effects of other pollutants such as the “toxicity of dissolved substances in the water.” Id. at 2-33. This was recognized in the 1992-94 Triennial Review: “Values of pH outside the range in which the species evolved may result in both direct and indirect toxic effects. Direct effects result from interactions with the mechanism that moves ions across cell membranes. Indirect effects occur when pH influences the availability and toxicity of metals, ammonia, and other potentially toxic ions in the water column.” 1992-1994 Water Quality Standards Review, Department of Environmental Quality, June 1995 at ii. For example, un-ionized ammonia (NH<sub>3</sub>), as opposed to ammonium (NH<sub>4</sub><sup>+</sup>), is toxic to aquatic organisms, especially salmonids. As pH increases, so does the amount of un-ionized ammonia for a given amount of total ammonia in the water. Id., First Issue Paper: pH, at 2-14. Because Oregon’s water quality standards require an evaluation of the combination of multiple pollutants on the beneficial uses, and the Lower Columbia River is already violating standards for pH, temperature, DO, and toxics, the Department must find that the proposed discharge will not increase any of these or other indirectly related parameters in order to issue a §401 certification.

**K. The Department Must Evaluate the Effect of Multiple Pollutants on the Beneficial Uses**

As discussed above, the Department is required to evaluate the effect of multiple pollutants on the beneficial uses. The Columbia River is already violating numerous standards. Even the Department has recognized that multiple stressors present a greater problem to sensitive uses than individual violations: “A combination of water quality concerns is stressing aquatic life throughout Oregon and is of significant concern because of the widespread listings of salmonid species as threatened or endangered under the federal Endangered Species Act.” Oregon Department of Environmental Quality, 1998 Water Quality Status Assessment Report 305(b) Report, note to Table 4-4A. The Department also recognized this in its Triennial Review process: “Though temperature and pH are independent stressors, they covary on a seasonal and diurnal basis, and tend to provide maximal stress to an individual or population at the same time. \* \* \* While any single parameter may not prove critical, the nature of stress is generally thought to be additive.” 1992-1994 Water Quality Standards Review, Department of Environmental Quality, June 1995, First Issue Paper: pH, at 2-17. Because Oregon’s water quality standards require an evaluation of the combination of multiple pollutants on the beneficial uses, and the Lower Columbia River is already violating standards for pH, temperature, DO, and toxics, the Department must find that the proposed discharge will not increase any of these or other related parameters in order to issue a §401 certification. The Department cannot ignore its own standards and rules – and offend common sense – by treating each pollutant individually.

**L. The Department Must Find that the Discharge will Comply with a Reserve Capacity Established in the Columbia River Basin Dioxin TMDL**

Water quality in the Lower Columbia violates Oregon’s standards for dioxin. Oregon 1998 303(d)(1) List Decision Matrix. The U.S. EPA promulgated a TMDL for dioxin in the Columbia River Basin, including the Lower Columbia. U.S. EPA, Total Maximum Daily Loading (TMDL) to Limit Discharges of 2,3,7,8-TCDD (Dioxin) to the Columbia River Basin, February 25, 1991. The discharge of dredged spoils will likely increase the bioavailability of dioxin in addition to other toxic pollutants. See e.g., Science Center memo at 7. In order for the Department to issue a certification for the discharge of dredged spoils that include dioxin to the water, in light of the existence of the TMDL, it must find that a reserve capacity has been established and that “there is sufficient reserve capacity to assimilate the increased load.” OAR 340-041-0026(3)(a)(C)(ii). The Columbia Basin Dioxin TMDL, which only regulates one sector of sources of dioxin in the river, includes an allocation that is intended to include “(1) other undesignated sources, (2) an additional margin of safety to account for uncertainties in the assumptions used in developing this TMDL, and (3) future growth. *Id.* at 4-1. The TMDL states that “[a]s uncertainties are reduced, more of the reserved capacity could be allocated to new or existing sources.” *Id.* No work has been completed to reduce the uncertainties in the TMDL, therefore the Department has no basis upon which to make a finding that there is sufficient reserve capacity to assimilate the increased load and must deny the certification for the project.

**M. Blasting Will Violate State Standards**

The Corps has not provided the Department with sufficient information upon which to certify the rock blasting aspect of the proposed project. The EIS acknowledges the potential harm that

blasting may cause the salmon themselves as well as the benthic organisms upon which salmon feed. Indeed, the EIS states first that consequences to the benthic organisms are unknown, then second, that benthic organisms in the blast area will be totally wiped out. EIS at 6-21. Having acknowledged that there may be detrimental impacts from this proposed deepening, the Corps must define both the geographical extent of the blasting area and the expected population size of killed benthic organisms. Furthermore, the Corps must provide a well founded and scientifically supported estimation of the time until complete repopulation occurs, the impact on salmon if their food source is destroyed, if only temporarily, and the cumulative impacts on the habitat from the blasting. The Corps acknowledges that blasting can cause mechanical damage to fishes' internal organs. EIS at 6-20. The blasting would take place from November 1 to February 28 in the Columbia and the remainder of the year in the Willamette, which conflicts with steelhead migration. EIS at 6-21. Even though it acknowledges that the schedule would change in light of the recent listing of steelhead, it has not provided the Department with a specific timetable upon which to base its findings. More importantly, the Corps relies on a ludicrous plan to scare fish away prior to the blast. EIS at 6-21. The Department cannot rely upon baseless assurances from the Corps, particularly in light of the agency's on-going inability to scare away another species: the Caspian terns.

## **VI. Volume of the Discharge**

The Department cannot issue the §401 certification because the Corps has grossly underestimated the volume of the proposed discharge. The Science Center has concluded that "the dredged material estimates for the proposed channel deepening are unrealistically low." Science Center memo at 18. The Corps based its dredging estimates on the time period 1980-95, a period with atypically low flows, the second driest period in the last 121 years. *Id.* Therefore, EIS estimates are unreliable. *Id.* at 20. The Corps also failed to properly analyze data on sediment transport in the Lower Columbia River. *Id.* The Science Center has concluded that on this basis "dredged material production estimates for the 1980-95 period are low by a factor of ~1.8 to 3.6; i.e., that the actual sand production of a 30-50 year period similar to the last 30-50 years would be 80-260% higher than predicted by the EIS. *Id.* at 20-21. It also notes that the 1996 large dredged material volume demonstrates that a hypothesized post-1977 trend toward lower sediment supply is not supported. *Id.* In light of substantial discrepancies concerning the total volume of the proposed discharge, the Department cannot issue a §401 certification to the project.

## **VII. Required Conditions**

Oregon is required to include all requirements and limitations that are necessary under State law: "Any certification provided under this section shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply with any applicable [federal requirements] and with any other appropriate requirement of State law set forth in such certification\* \* \*" CWA §401(d). These limitations and requirements shall become a condition of the federal permit. *Id.* As we do not believe that even the most conditioned certification will all this project to meet water quality standards and state rules, our comments in this area are limited. If the Department issues a certification for the proposed project, however, it must include restrictions on the timing of activities, testing requirements, volume limitations, and other conditions required to protect beneficial uses. The Department should not issue a §401 certification leaving monitoring and

reporting requirements to be resolved later. Such requirements are integral to a finding that water quality standards and state rules will be met by the proposed project. Monitoring requirements should be established that address each and every attribute of Oregon's water quality standards and rules, including physical, chemical, and biological monitoring – both short- and long-term. Each condition established in the certification must be addressed by monitoring requirements. Likewise, reporting requirements must be tied to monitoring requirements and be such that the Department or third parties could take timely action if conditions of the certification are violated.

The Corps is out of compliance with Clatsop County Comprehensive Plan and the Oregon Coastal Program because it is using Welch Island for dredge spoil disposal, although it does not carry such designation in the Columbia River Estuary Dredged Material Management Plan (CREST, 1986). It is presently zoned as Aquatic-2 (Aquatic Conservation). The Corps' history of dumping here has caused the area to become an upland site. The Corps plans to continue dumping on Welch Island with no mitigation, despite knowing that "Columbian white-tailed deer use occurs on the site," as well as "some nesting by passerine birds. \* \* \* Placement of dredged material

would destroy the limited wildlife habitat present and reduce wildlife use to minor levels." FEIS at 6-32. The Corps' disregard for local law and ignoring of conditions in previous §401 certifications for dredging of the Lower Columbia River, e.g. the Mouth of the Columbia River for 1997, demonstrates that any certification issued by the Department for the proposed activity must be clear on its face that it is revoked if the Corps does not meet the conditions. Each condition must have monitoring and reporting requirements attached to it. The certification should also make clear that any subsequent letters from the Corps describing the Corps position do not alter the conditions of the certification. Finally, should the Department decide to issue a §401 certification to the Corps for the Columbia portion of the proposed project, we urge that it be conditioned upon completion of a §401 certification for the Willamette portion.

## **VII. Studies Are an Unacceptable Form of Mitigation**

Based on comments and correspondence of various agencies, it is clear that most, if not all, federal and state agencies may accede to the proposed project in return for exacting commitments to study issues for which insufficient data and information exist to issue conclusive findings. However, to comply with the law such studies are required in advance of the action, whether the action is to issue CZMA concurrence, §7 consultation under the Endangered Species Act, to meet the requirements of the National Environmental Policy Act (NEPA), or §401 certification. Presumably the Corps argues in its discussions with agencies, including the Department, that it cannot afford to postpone the proposed project while it is obtaining the results of needed studies. To the extent that the Corps could argue that issues have arisen recently, it would not alter the law, but it might alter agencies' perception of the law. However, even this is not the case; the Corps has been on notice for many years about concerns that required additional studies. See e.g., Letter from Merritt E. Tuttle, National Marine Fisheries Service to Colonel Charles E. Cowan, Army Corps of Engineers, September 7, 1990 at 1, 2. Nine years ago, NMFS told the Corps that "studies should be conducted to determine timing restrictions and the best blasting techniques practicable for reducing fish kills from blasting in large river systems," [studies] to address the probably increase in salinity of the estuary and its effect on important fishes," and "[studies] to better understand the habitat value of the proposed disposal areas and to determine the best ways that these habitats can be duplicated." Id. The Corps decided not to

obtain this information.

The State of Oregon recently identified the following areas that require additional studies: “to determine potential impacts to ocean resources at [the new Deep Water] site,” “project impacts to White Sturgeon and smelts \* \* \* to determine in river and estuarine impacts to these species,” Letter from Governor Kitzhaber, supra, at 1, 2. The letter specifies the need for “entrainment impacts on sturgeon mortality and disposal impacts on sturgeon rearing habitat” and “smelt adult spawning distribution or larval production/distribution sampling effort” and also notes that “the USACE will be conducted (sic) studies on sturgeon, crab, and smelt.” Id., Department of Fish and Wildlife attachment at 1, 2. With regard to ocean disposal site issues, the letter states the FEIS would have more credibility if it would “refrain from drawing conclusions about impacts without adequate supporting information,” “baseline data must be gathered to fully characterize the biological resources of the site and to identify sensitive and unique areas within the site.” Id., Attachment A at 4, 5. In fact, the letter contains an extensive discussion of the State’s fears that the Corps will rely upon studies that are not applicable to the Deep Water site and discussion of what types of studies are necessary (e.g., benthic and fish sampling, bottom sediment type, bottom configuration/characterization). Id. at 6. The letter also states that “[f]urther study [on the impact of dredged material disposal on softshell crabs] is needed and should be resumed. Id. at 10. The State raises the need for long-term studies to “differentiate between natural fluctuations [of benthic populations] and disposal impacts” at the mouth of the Columbia River. Id. at 11. Such studies would require baseline information prior to disposal activities that the FEIS states will not be done. Id. We agree with the State that these areas all require further study. In fact, if baseline information is not obtained prior to disposal activities, attempts to differentiate natural from anthropogenic impacts will be impossible. It is critical that the information identified is obtained prior to the issuance of compliance with §404(b)(1) Guidelines and state rules and water quality standards in order to be in compliance with the law.

#### **D. Duration of §401 Certification**

As the §404(b)(1) Guidelines Evaluation and Findings discuss a 50 year time frame, and the letter requesting §401 certification is silent on the duration of the certification, it must be assumed that the Department is being asked to certify that the channel deepening project in its entirety will not cause violations of water quality standards in the next 50 years. If the Department issues a §401 certification it should be contingent upon a full review and re-analysis each year.

#### **VIII. The Burden of Proof is on the Applicant**

As the applicant for §401 certification, the Corps, just as any other applicant for any permit or license, has the burden of proof. See Harris v. SAIF 292 Or 683, 690, 642 P2d 1187 (1982). (“The general rule is that the burden of proof is upon the proponent of a fact or position, the party who would be unsuccessful if no evidence were produced on either side.” citing ORS 183.450(2); See also, Salem Decorating v. Natl. Council on Comp. Ins. 116 Or App 166, 170, 840 P2d 739 (1992) rev den 315 Or 643 (1993) (same); ORS 40.115 (party who would lose if no evidence is presented has the burden of proof); ORS 40.105 (party to whom the existence of facts is essential to proving an entitlement or claim has the burden of proof); Jurgenson v. Union County Court 42 Or App 505, 510, 600 P2d 1241 (1979) (in a land use proceeding, burden of proof is always on the party seeking a change); 2 Am Jur 2d, Admin. Law §391 and Sobel v.

Board of Pharmacy 130 Or App 374, 380, 882 P2d 606 (1994), rev. den. 320 Or 588 (1995). "in an application proceeding, it is the applicant who has the burden of establishing eligibility, qualifications and fitness.")

The phrase "burden of proof" includes both the burden of presenting evidence to justify certification and the burden of persuading DEQ that certification is appropriate in this instance. See e.g. Cameron Logging v. Jones 109 Or App 391, 394, 820 P2d 8 (1991); Teledyne Wah Chang v. Energy Fac. Siting Council, 298 Or 240, 248, 692 P2d 86 (1984) and Hansen v. Oregon-Wash. R.&N. Co. 97 Or 190, 210, 188 P 963 (1920). This approach is codified into rule, by the language of OAR 340-48-020 which mandates that the applicant must provide sufficient information to show that water quality standards will not be violated. OAR 340-48-020 nicely encapsulates both the presentation and persuasion burdens, and consistent with the fundamental tenets of administrative law, places both burdens squarely on the applicant. This makes both legal and practical sense. It is the proponent proposing to reap profits from an activity which may pollute the public's water, not the public agency charged with protecting that water from pollutants or the public who has a right to clean water, who must and should bear the expense and burden of producing detailed analysis. Here, the Corps has failed to carry either of its production or persuasion burdens. This application simply does not present sufficient evidence to justify §401 certification.

## **Conclusion**

The requested §401 certification for the proposed project cannot be issued because it will cause and contribute to violations of Oregon and Washington water quality standards for beneficial use support, narrative and numeric criteria for aquatic habitat, multiple toxins, turbidity, bacteria, temperature, and exotic species and others, and violate Oregon's antidegradation policies. In addition, the Corps has faulted to meet the §404(b)(1) Guidelines, rendering it impossible for the Department to conclude that the Clean Water Act has been met.

Sincerely,

Nina Bell, Executive Director  
Northwest Environmental Advocates for

Paul Ketchum, Conservation Directors  
Audubon Society of Portland

Bill Bakke, Executive Director  
Native Fish Society

Regna Merritt, Executive Director  
Oregon Natural Resources Defense Council

Jason Miner  
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Karl Anuta, Vice President  
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Rob Masonis, Director, NW Hydropower Program  
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Lyn Mattei  
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Glen Spain  
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Jeff Curtis, Western Conservation Director  
Trout Unlimited