Volume 1 of 2

FOR PUBLICATION

UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

NORTHWEST ENVIRONMENTAL ADVOCATES, *Plaintiff-Appellant,* v. NATIONAL MARINE FISHERIES SERVICE, UNITED STATES ARMY CORPS OF ENGINEERS, *Defendants-Appellees,* THE PORTS OF VANCOUVER, WOODLAND, KALAMA, LONGVIEW, PORTLAND, AND ST. HELENS, *Defendants-Intervenors-Appellees.*	No. 05-35806 D.C. No. CV-04-00666-RSM OPINION

Appeal from the United States District Court
for the Western District of Washington
Ricardo S. Martinez, District Judge, Presiding

Argued and Submitted
March 7, 2006—Seattle, Washington

Filed August 23, 2006

Before: Betty B. Fletcher, Barry G. Silverman, and
Ronald M. Gould, Circuit Judges.

Opinion by Judge Silverman;
Dissent by Judge B. Fletcher

COUNSEL

Stephen D. Mashuda, Earthjustice, Seattle, Washington, for the plaintiff-appellant.

Matthew J. Sanders, U.S. Department of Justice, Washington, D.C., for the defendants-appellees.

Beth S. Ginsberg, Stoel Rives, LLP, Seattle, Washington, for the defendants-intervenors-appellees.

OPINION

SILVERMAN, Circuit Judge:

Northwest Environmental Advocates ("NWEA") challenges the adequacy of a 2003 Final Supplemental Integrated Feasibility Report and Environmental Impact Statement prepared by the United States Army Corps of Engineers in connection with a project to deepen the Columbia River navigation channel and to propose new sites for disposal of dredged materials. NWEA argues that the Corps violated the National Environmental Policy Act ("NEPA"), 42 U.S.C. § 4321 *et seq.*, because, it claims, the Final Supplemental Integrated Feasibility Report and Environmental Impact Statement fails to take a "hard look" at the channel deepening project's various impacts. The district court saw otherwise, and held that the Corps had taken the requisite "hard look" at the particular environmental and economic factors at issue. Based

on the Corps' extensive examination of the project's cumulative, direct, and economic impacts, we agree with the district court that the Corps has taken the required hard look. We have jurisdiction pursuant to 28 U.S.C. § 1291 and affirm.[1]

I. Factual Background

A. The Channel Deepening and Dredged Material Disposal Project

The Columbia River represents a major cargo gateway to the Pacific Northwest. The current depth of the Columbia River navigation channel is 40 feet. Over the past twenty years, larger vessels with "design drafts" exceeding this 40-foot channel depth have carried an increasing share of Columbia River cargo tonnage. Because of the constraints of channel depth, these vessels must arrive "light-loaded." According to the Corps, the current 40-foot channel constrains 70 percent of vessels involved in the transpacific container trade while a 43-foot depth would constrain only 30 percent.

In 1989, Congress directed the Corps to assess the feasibility of deepening the Columbia River's 40-foot navigation channel to a maximum of 43 feet in order to enhance shipping capacity. The current channel deepening project involves deepening the channel from Columbia River Mile 3 to Mile 106.5. The project also includes various ecosystem restoration actions.[2] The "channel deepening project" also proposes three

[1]NWEA also challenges a 1998 Dredged Material and Management Plan and Supplemental Environmental Impact Statement completed for an alternative project to maintain the current channel depth. Because we hold that the 2003 Final Supplemental Integrated Feasibility Report and Environmental Impact Statement for the channel deepening project satisfied the National Environmental Policy Act, we do not reach the issue of the 1998 Dredged Material and Management Plan and Supplemental Environmental Impact Statement.

[2]The 2003 Final Supplemental Integrated Feasibility Report and Environmental Impact Statement includes a plan to use dredged material from

disposal sites to accommodate dredged material from both channel deepening and the Mouth of the Columbia River project, an independent dredging project. The first two areas are so-called Ocean Dredged Material Disposal Sites and include the Shallow Water Site,[3] a dispersive site[4] located within the littoral cell, and a Deep Water Site. The third area is the North Jetty Site, which is also dispersive and located within the littoral cell. Material dumped at the Shallow Water Site and the North Jetty Site stays in the littoral system, where it can accrete on coastlines to counteract erosion. Sediment placed at the Deep Water Site is considered "inert" because it is effectively removed from the sediment transport system.

In August 1999, the Corps released a Final Integrated Feasibility Report and Environmental Impact Statement for the Columbia River Channel Improvement Project.[5] This several-hundred-page document contains numerous analyses of the proposed project and its alternatives, affected environment,

channel deepening in restorative actions in the estuary. However, if the restoration features are not fully implemented, then the Corps will dispose of material in the ocean as described in the 1999 Final Integrated Feasibility Report and Environmental Impact Statement.

[3]The Shallow Water Site occupies an extended area that includes the former expanded Site E. The 1999 Final Integrated Feasibility Report and Environmental Impact Statement refers to the older area, Site E. However, the Environmental Protection Agency had initiated preliminary rulemaking processes to replace Site E with the Shallow Water Site at the time the Corps issued the 2003 Final Supplemental Integrated Feasibility Report and Environmental Impact Statement, and that document thus refers to the Shallow Water Site. Because these sites are materially different, this opinion will refer to either "Site E" or to the "Shallow Water Site" as appropriate.

[4]Some amount of sediment placed at dispersive sites naturally migrates out of the site and settles elsewhere, thus increasing these sites' dynamic capacity.

[5]While the Corps is the Lead Agency responsible for issuing the Final Integrated Feasibility Report and Environmental Impact Statement, the United States Environmental Protection Agency is listed as a Cooperating Agency.

environmental impact, and implementation. It also includes plans to dispose of dredged material from the Mouth of the Columbia River project and from channel deepening in the North Jetty Site, Site E, and the Deep Water Site. The U.S. Fish and Wildlife Service issued a "No Jeopardy" Biological Opinion on the project's potential impact on certain Endangered Species Act-listed wildlife and plant species. After initially finding that the project would not jeopardize salmonids protected under the Endangered Species Act, NOAA fisheries withdrew its favorable Biological Opinion, citing new information on the project's potential impact on bathymetry, river flow, and resuspension of toxins.

Following this withdrawal, the States of Washington and Oregon denied certification of the project under Section 401 of the Clean Water Act, 33 U.S.C. § 1341, and the Coastal Zone Management Act, 16 U.S.C. § 1451 *et seq*. They expressed concern over the project's effects on sediment transport and Dungeness crab as well as its consistency with existing coastal programs. Consultations with state agencies followed, and the Corps began preparing a supplemental environmental impact statement to address those concerns. As part of that process, in February 2001, the Corps, NOAA Fisheries, and the U.S. Fish and Wildlife Service hired the nonprofit Sustainable Ecosystems Institute to review the channel deepening project's potential environmental impacts. The SEI process involved project reviews by SEI staff members as well as by an independent panel of seven scientific experts. Throughout 2002, the Corps received and responded to numerous comments on the draft supplemental environmental impact statement, including comments from NWEA. Also in 2001, the Corps issued a Biological Assessment of fish and wildlife, which the subsequent Final Supplemental Integrated Feasibility Report and Environmental Impact Statement incorporates as Exhibit H. Based on the Corps' new studies, NOAA Fisheries changed its assessment of the project. In May 2002, it and the U.S. Fish and Wildlife Service issued final Biological Opinions concluding that the channel deepen-

ing project would not adversely affect Endangered Species Act-protected species.

In January 2003, the Corps issued its Final Supplemental Integrated Feasibility Report and Environmental Impact Statement ("FSEIS").[6] The document spans several hundred pages and supplements, updates, and incorporates through reference the 1999 Final Integrated Feasibility Report and Environmental Impact Statement. Among numerous additional studies, the 2003 FSEIS includes Exhibit J, which directly responds to Oregon and Washington's concerns by analyzing the impact of channel deepening on sediment transport in the Columbia River. Based on the revised and expanded analyses, Washington and Oregon withdrew their objections and certified the project.

On January 9, 2004, the Corps issued its Record of Decision approving the channel deepening project.

B. The Channel Maintenance Project

Independently of the proposed channel deepening project, the Corps operates an ongoing dredging project to maintain the current depth of the Columbia River navigation channel at 40 feet. As part of that project, the Corps released a Dredged Material Management Plan and Supplemental Impact Statement in June 1998. The purpose of the Dredged Material Management Plan and Supplemental Impact Statement is to create a 20-year disposal plan for dredged sediments and evaluate proposed changes in dredging and disposal, including shifting current disposal of dredged material to other sites. As described in the 2003 FSEIS for channel deepening, the channel maintenance project represents the "No Action Alternative" to channel deepening.

[6]Because the parties refer to this document as "FSEIS," we do as well. As with the 1999 Final Environmental Impact Statement, the 2003 FSEIS lists the Corps as the Lead Agency and the Environmental Protection Agency as a Cooperating Agency.

C. The Columbia River Littoral Cell and Other Ongoing Projects

A central concern of this appeal is the potential for various Corps projects to exacerbate coastal erosion. Historically, the Columbia River has drawn sand from inland areas and deposited it in the estuary, which in turn provided sediment to 100 miles of shoreline from Tillamook Head, Oregon to Point Grenville, Washington. This area is known as the Columbia River littoral cell. Over the past 120 years, various natural and human activities have reduced the amount of sand deposited in and throughout the littoral cell, contributing to erosion of the Oregon and Washington coasts.

In addition to the projects described above, the Corps and other agencies currently operate several other projects in and around the Columbia River. Most relevant to this appeal is the Mouth of the Columbia River ("MCR") project, which the Corps has operated since 1983. The MCR area is a 0.5-mile-wide navigation channel that runs for six miles through the entrance between the Pacific Ocean and the Columbia River. As part of the MCR project, the Corps maintains a channel depth of 55 feet by removing approximately 4.5 million cubic yards of sediment every year. The Corps has placed material dredged from the MCR in four ocean disposal sites (referred to as Sites A, B, E, and F), which the EPA designated in 1977. To accommodate more material, Sites A, B, and F were expanded in 1993, and Site E was expanded in 1997. Recent analyses reveal that the disposal sites for material dredged from the MCR project have or will soon reach capacity. As mentioned, the channel deepening project includes a proposal for three new sites—the North Jetty Site, Shallow Water Site, and Deep Water Site—to accommodate material dredged from the MCR project, as well as from the navigation channel itself.

In addition to the MCR project, the Corps has constructed several jetties at the entrance of the MCR. Furthermore, the

Corps and the Bureau of Reclamation operate a system of dams along the Columbia River known collectively as the Federal Columbia River Power System.

II. Procedural History

NWEA filed suit in district court alleging that NOAA Fisheries had violated the Endangered Species Act by failing to study adequately the impact of the Corps' dredging activities on protected salmon. Shortly thereafter, NWEA filed a first amended complaint arguing that the Corps' 2003 FSEIS and 1998 Dredged Material Management Plan and Supplemental Impact Statement did not sufficiently analyze the impacts of the deepening and maintenance projects as required by NEPA. NWEA subsequently amended its complaint two more times, arguing that the Corps was required to prepare a supplemental environmental impact statement under NEPA and challenging NOAA Fisheries' revised Biological Opinion. Because of their significant interest in the navigation channel and their role as local sponsors of the channel deepening project, the Ports of Vancouver, Woodland, Kalama, Longview, Portland, and St. Helens sought and were granted intervenor status.

Presented with cross-motions for summary judgment, the district court granted summary judgment to NOAA Fisheries, the Corps, and the Sponsor Ports, and denied summary judgment to NWEA.

Regarding the alleged NEPA violations, the district court ruled that the Corps took the requisite "hard look" at the direct and indirect effects of the channel deepening project on sediment budget, river toxicity, and salinity. *See Klamath-Siskiyou Wildlands Ctr. v. Bureau of Land Mgmt.*, 387 F.3d 989, 993 (9th Cir. 2004). The court also ruled that the channel deepening and Mouth of the Columbia River projects are not "connected actions" under 40 C.F.R. § 1508.25(a)(1) and that the environmental impact statement for the former need only

consider the latter in the context of "cumulative impact." The court struck and declined to consider the extra-record declaration of economist Ernest Niemi submitted by NWEA relating to the Corps' economic analysis. The stated purpose of Niemi's declaration was to "determine whether or not the FSEIS provides a misleading description of the Project's potential impacts." The court ruled that use of this declaration would be improper under *Asarco, Inc. v. EPA*, which held that a court may not consider extra-record evidence "to determine the correctness or wisdom of the agency's decision." 616 F.2d 1153, 1160 (9th Cir. 1980). Noting the approval of independent expert reviewers, the court upheld as proper the Corps' economic analysis.

Regarding the alleged Endangered Species Act violations, the court ruled that NOAA Fisheries could justify its No Jeopardy determination concerning salmonids because the project would improve the estuary's environmental baseline and have minimal impact on Endangered Species Act-listed species. The court further held that NOAA Fisheries' baseline analysis was not arbitrary and capricious because the agency "fully evaluated the environmental baseline and the effects of the action when added to that baseline." The rulings on the Endangered Species Act claims are not challenged on appeal.

III. Standard of Review

We review de novo a district court's grant or denial of summary judgment. *Ground Zero Ctr. for Non-Violent Action v. U.S. Dep't of Navy*, 383 F.3d 1082, 1086 (9th Cir. 2004). De novo review of the district court judgment means that we must " 'view the case from the same position as the district court.' " *Ka Makani O Kohala Ohana Inc. v. Water Supply*, 295 F.3d 955, 959 (9th Cir. 2002) (*quoting Sierra Club v. Babbitt*, 65 F.3d 1502, 1507 (9th Cir. 1995)). Pursuant to the Administrative Procedure Act, a court may set aside the decision of an administrative agency such as the Corps only if it is "arbitrary, capricious, an abuse of discretion, or otherwise

not in accordance with law." 5 U.S.C. § 706(2)(A); *see Nat'l Wildlife Fed'n v. Army Corps of Eng'rs*, 384 F.3d 1163, 1170 (9th Cir. 2004). We previously have held:

> An agency's action is arbitrary and capricious if the agency fails to consider an important aspect of a problem, if the agency offers an explanation for the decision that is contrary to the evidence, if the agency's decision is so implausible that it could not be ascribed to a difference in view or be the product of agency expertise, or if the agency's decision is contrary to the governing law.

Lands Council v. Powell, 395 F.3d 1019, 1026 (9th Cir. 2005) (internal citations omitted). We review an environmental impact statement "to determine whether it contains 'a reasonably thorough discussion of the significant aspects of the probable environmental consequences' " of a particular project. *City of Carmel-By-The-Sea v. U.S. Dep't of Transp.*, 123 F.3d 1142, 1150 (9th Cir. 1997) (*quoting Idaho Conservation League v. Mumma*, 956 F.2d 1508, 1519 (9th Cir. 1992)). Alternatively phrased, we review agency decisions to ensure that "the agency has taken a 'hard look' at the potential environmental consequences of the proposed action." *Klamath-Siskiyou*, 387 F.3d at 993 (*quoting Churchill County v. Norton*, 276 F.3d 1060, 1072 (9th Cir. 2001)). In so doing, while we carefully scrutinize an agency's actions under NEPA, we must "be mindful to defer to agency expertise, particularly with respect to scientific matters within the purview of the agency." *Klamath-Siskiyou*, 387 F.3d at 993; *see Anderson v. Evans*, 371 F.3d 475, 489 (9th Cir. 2004).

We review a district court's decision to exclude extra-record evidence for abuse of discretion. *Sw. Ctr. for Biological Diversity v. U.S. Forest Serv.*, 100 F.3d 1443, 1447 (9th Cir. 1996).

IV. Analysis

A. Waiver

As a preliminary matter, we reject the Corps' and the Sponsor Ports' arguments that NWEA somehow waived its challenge to the Dredged Material Management Plan and Supplemental Impact Statement or that it is moot. The district court addressed the Dredged Material Management Plan and Supplemental Impact Statement in its summary judgment order and NWEA refers to this document throughout its brief. Furthermore, the channel deepening project does not necessarily supersede the channel maintenance project or render challenge to it moot; if the Corps does not pursue channel deepening, it is presently slated to pursue channel maintenance as the "No Action Alternative."

Likewise, the record clearly indicates that NWEA raised the issue of deep water disposal in the context of cumulative impact both in the administrative proceedings and the district court. Therefore, NWEA has not waived these objections and we review them on the merits.

B. Cumulative Impact on Coastal Erosion

We reject NWEA's principal claim that the Corps violated NEPA by failing to take a hard look at the cumulative impact on coastal erosion of removing significant amounts of sand from the littoral region. The Corps conducted numerous analyses spanning two environmental impact statements to address the problem of coastal erosion. The Corps responded to concerns from interested parties with additional studies and with those concerns in mind structured its disposal plan to minimize coastal erosion. The Corps took the requisite hard look at this issue.

[1] As we have repeatedly held, NEPA imposes procedural requirements on agencies and does not mandate substantive

outcomes. *Natural Res. Def. Council v. U.S. Forest Serv.*, 421 F.3d 797, 811 (9th Cir. 2005); *see Klamath-Siskiyou*, 387 F.3d at 993; *Dep't of Transp. v. Pub. Citizen*, 541 U.S. 752, 756-57 (2004); *Vt. Yankee Nuclear Power Corp. v. Natural Res. Def. Council*, 435 U.S. 519, 558 (1978). For "major Federal actions significantly affecting the quality of the human environment," 42 U.S.C. § 4332(C), NEPA requires an agency to prepare an environmental impact statement. *Klamath-Siskiyou*, 387 F.3d at 993. An environmental impact statement "shall provide full and fair discussion of significant environmental impacts and shall inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment." 40 C.F.R. § 1502.1.

[2] Pursuant to 40 C.F.R. § 1508.25(c)(3), an environmental impact statement must consider a proposed project's "cumulative impact," which 40 C.F.R. § 1508.7 defines as:

> the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

We have held that an environmental impact statement must "catalogue adequately past projects in the area" and provide a "useful analysis of the cumulative impact of past, present, and future projects." *City of Carmel-By-The-Sea*, 123 F.3d at 1160; *see Lands Council*, 395 F.3d at 1027.

[3] Given this framework, we agree with the district court that the Corps' cumulative impact analysis satisfied NEPA's "hard look" requirement. NWEA's main concern is that the cumulative impact of the channel deepening and Mouth of the

Columbia River projects, including the former's plans for disposal of dredged sediment at the Deep Water Site, will remove a significant amount of sand from the littoral system. This in turn will exacerbate the estuary's function as a "sand sink" that draws sand away from shorelines, thus accelerating coastal erosion. Within this model, the Corps adequately addressed the two mechanisms that could potentially lead to sediment loss. First, the Corps considered direct sediment loss from disposing of sand in the Deep Water Site, which lies outside of the littoral system. The Corps recognized that unfettered use of the Deep Water Site would have adverse environmental consequences, and structured its plans to minimize disposal there. Second, the Corps examined whether deepening the navigation channel may change river hydraulics, thus altering the rate of sediment flow within the river and to the estuary. The Corps concluded that channel deepening would not have this effect.

Consistent with 40 C.F.R. § 1508.7, the Corps' analyses considered not just the channel deepening project, but also its relationship with other projects. The FSEIS states:

> Although the Congress has authorized the channel improvement project and the MCR project as two separate projects, the Corps and . . . [the Environmental Protection Agency] have, where appropriate, coordinated the review of relevant impacts. For example, the 1999 IFR/EIS reviews the long-term disposal plan and its impacts for both the channel improvement and MCR.

i. Potential Direct Sediment Loss from Deepwater Disposal of Dredged Material

a. Potential Direct Sediment Loss from the MCR Project

In challenging the Corps' actions, NWEA misplaces its focus on the 2004 FSEIS and fails to consider the Corps' extensive treatment of deepwater disposal in the 1999 Final Integrated Feasibility Report and Environmental Impact Statement. As the 1999 document demonstrates, the Corps was clearly aware of the environmental ramifications of disposing of *all* of the dredged sediment from the MCR project in the Deep Water Site.[7] That document states:

> If the deepwater site is used as intended (4.5 mcy [million cubic yards] of MCR sand placed per year for 50 yrs), the implications on the littoral sediment budget at MCR and adjacent coastal areas could be profound. The removal of 225 mcy of sand from MCR (via dredging) and subsequent placement at the "deepwater" site would be equivalent to removing the above and below portions of Peacock spit. The result of such a mass removal of littoral sand would likely be adverse: Local and possible regional coastal erosion may result. The stability of MCR jetties may be reduced due to increased toe scour, resulting from such a littoral sediment deficit.

[7]Because the MCR project involves a significantly greater volume of dredged material potentially available for ocean disposal than channel deepening and maintenance (225 million cubic yards versus 37 million cubic yards), Appendix H focuses on the ramifications of deepwater disposal of material from the MCR project. The Corps later modified the channel deepening project to reduce overall dredging as well as the amount of channel deepening sediment to be placed in ocean sites. The 2003 FSEIS, and in particular Exhibit J, extensively examines the impact of removing material from channel deepening and maintenance from the littoral cell, and concludes that it is negligible.

As this statement reveals, the Corps was fully aware of the potential erosion effects entailed by deepwater disposal. Acting upon this knowledge, the Corps evaluated potential sites and structured its plans to minimize such disposal.

In weighing numerous options for ocean disposal of dredged material, the Corps consistently considered the potential for coastal erosion due to sediment loss. In evaluating ten candidate sites for ocean disposal, the Corps gave "great weight" to the assumption that "[n]earshore sites have the greatest potential to keep material in the littoral zone." Based on its analysis, the Corps ultimately recommended Site E, the North Site, and the South Site (these latter two sites ultimately became the Deep Water Site) for EPA designation as Ocean Dredged Material Disposal Sites. The Corps further proposed disposing of material at the North Jetty Site, a non-ocean site which lies within the littoral region.

Recognizing that the "quantity of dredged material that will be placed in proposed Site E and the North Jetty Site is uncertain due to the dynamics of the sites," the Corps proposed a Deep Water Site that could accommodate excess dredge spoils. The Corps conducted a "conflict matrix" analysis comparing disposal at Site E and the Deep Water Site. Ultimately, it concluded that the benefits of limited dumping at Site E, which would preserve that site's dispersive nature and prevent wave amplification due to mounding, outweighed the costs of placing some amount of sediment at the Deep Water Site. As we have held before, our role is not to substitute our "judgment for that of the agency concerning the wisdom or prudence of a proposed action. Once satisfied that a proposing agency has taken a 'hard look' at a decision's environmental consequences, the review is at an end." *State of Cal. v. Block*, 690 F.2d 753, 761 (9th Cir. 1982). Here, it is not our province to assess the wisdom of placing some amount of sediment in the Deep Water Site. Our role is simply to ensure that the Corps considered all relevant factors—including the potential

for such disposal to exacerbate erosion—in arriving at its decision. The Corps clearly did so.

[4] The Corps not only *considered* sediment loss, it conscientiously structured its disposal plan to minimize it as much as possible. Exhibit H to Appendix H of the 1999 Final Integrated Feasibility Report and Environmental Impact Statement presents a Management and Monitoring Plan which identifies five objectives, one of which emphasizes keeping sand within the littoral system and counteracting erosion. Consistent with the Corps' finding that placing dredged material at water depths shallower than 60 feet maximizes its dispersion back into the littoral environment, the Plan requires disposal of dredged material at Site E and the North Jetty Site first, with the Deep Water Site representing a non-preferred last option. While the Final Integrated Feasibility Report and Environmental Impact Statement states elsewhere that the "intended" use of the Deep Water Site is to accommodate all 225 million cubic yards ("mcy") of dredged material, that term is a misnomer. As the Management and Monitoring Plan reveals, the Corps must first exhaust the dynamic capacity of Site E and the North Jetty Site before placing any sediment in the Deep Water Site, which will ultimately contain far less than 225 mcy of sediment.

Accordingly, in denigrating the Corps' analyses, NWEA exaggerates the maximum amount of sediment that the Corps will place in the Deep Water Site. The most conservative estimate of the long-term dispersive capacity of Site E and the North Jetty Site is 2 mcy per year, meaning that the Corps will only have to place 2.5 mcy per year in the Deep Water Site.[8] Other estimates of the dispersive capacity of Site E and

[8]This figure appears in the 1999 Final Integrated Feasibility Report and Environmental Impact Statement and includes the dispersive capacity of Site E. Presumably, the dispersive capacity of the Shallow Water Site is even greater than that of Site E because of the Shallow Water Site's larger area.

the North Jetty Site are much higher, and the Final Integrated Feasibility Report and Environmental Impact Statement states that "it is possible that the majority (and perhaps all) of the average annual volume of material could be placed in the North Jetty Site and Site E." It is illustrative in this regard that between 1973 and 1997, continual use of Site E had not resulted in any persistent mounding. While the Final Integrated Feasibility Report and Environmental Impact Statement as well as the FSEIS propose authorization to dispose of all of the MCR dredged material at the Deep Water Site, the Corps clearly presents this option only for "contingency planning purposes" and as representing a "worst case" scenario. The Corps has never planned to place all of the material from the MCR project in the Deep Water Site.

Because of how the Corps has structured its disposal plans, it is not reasonably probable that it will use the entire capacity of the Deep Water Site. This calls into question whether NEPA even requires the Corps to analyze the environmental effects of placing all 225 mcy of sediment in the Deep Water Site. *See California v. Block*, 690 F.2d 753, 761 (9th Cir. 1982) (holding that an environmental impact statement must contain "a reasonably thorough discussion of the significant aspects of the *probable* environmental consequences" of a proposed action) (*quoting Trout Unlimited, Inc. v. Morton*, 509 F.2d 1276, 1283 (9th Cir. 1974)) (emphasis added). Nevertheless, as discussed above, the Corps did take a hard look at this remote possibility, and recognized the "profound" implications of using the entire authorized capacity of the Deep Water Site. Consequently, the Corps took the additional step of acting upon this knowledge to ensure that it will dispose of an amount nowhere near 225 mcy at that site.

Strict regulations governing ocean disposal ensure that the Corps will not dispose of all 225 mcy of sediment in the Deep Water Site. The 1999 Final Integrated Feasibility Report and Environmental Impact Statement proposes designating two Ocean Dredged Material Disposal Sites, Site E (later, the

Shallow Water Site) and the Deep Water Site. However, the EPA maintains final authority to designate these sites for ocean dumping. *See* 33 U.S.C. § 1412. As part of this process, sites must have a management and monitoring plan which defines and limits dumping practices allowed there. *See* 40 C.F.R. § 228.3. As discussed, the Management and Monitoring Plan for the channel deepening project, which is part of the 1999 Final Integrated Feasibility Report and Environmental Impact Statement, clearly establishes that the Corps will dispose of dredged material in the littoral sites first, reserving the Deep Water Site only for excess spoils. Here, the Corps' "preference" for disposing in the littoral system is much more than that term implies. Because the Management and Monitoring Plan establishes that the Corps will dispose of material in the littoral system first, deviation from that practice may lead to de-designation of the Deep Water Site. Furthermore, the Plan itself outlines several options for potentially altering disposal practices based upon an ongoing review of environmental impact: operational changes, changes in site location, and discontinuing disposal at a particular site. Thus, in addition to establishing a plan to minimize sediment loss, the Final Integrated Feasibility Report and Environmental Impact Statement proposes a plan to monitor, alter, and perhaps even terminate dumping at the Deep Water Site in order to minimize negative environmental impacts.

Further demonstrating the Corps' hard look, in addition to present and future plans to mitigate sediment loss, the Corps has changed past disposal practices to maintain the maximum amount of sediment within the littoral cell. In 1997, the Corps temporarily expanded Site E because of its "high dispersion rate" and the potential for dredged material placed there to be "re-introduced into the littoral environment of the Washington coast." This move arose in part from a request by the Washington Department of Ecology in order to retard erosion of coastal beaches.

The record clearly reveals that the Corps considered the potential for coastal erosion due to sediment loss. The Corps

even structured disposal plans to minimize this possibility as much as possible. We thus hold that the Corps took a hard look at the effects of removing MCR sediment from the littoral system.

b. Potential Direct Sediment Loss from the Channel Deepening Project

Similarly, the 2003 FSEIS took a hard look at the effects of removing sediment from *channel deepening*, and concluded that such practice would not diminish sediment availability in the littoral cell. Further undermining NWEA's concerns, between the 1999 Final Integrated Feasibility Report and Environmental Impact Statement and the 2003 FSEIS, the Corps altered the proposed project, reducing both the volume of proposed dredging as well as the amount of material from channel deepening slated for ocean disposal. As reflected in the 2003 FSEIS, the Corps concluded that, as altered, the channel deepening project simply would not remove enough sediment to make an environmental difference. Construction and 20 years of maintenance of the proposed 43-foot navigation channel would remove an estimated 70 mcy of sand from the Columbia River and place it in upland disposal sites. Approximately 40 mcy of dredged sand would be disposed of back along the navigation channel or in ecosystem restoration sites in the estuary. Critically, the analysis reveals that the *volume of sand removed by dredging would not reduce the available sand supply in the riverbed*. The FSEIS concludes:

> [T]he removal of sand from the river will not alter sediment transport to the estuary (Exhibit J). The volume to be dredged over the life of the project is only a tiny fraction of the total volume of sand in the riverbed. In addition, transport potential, rather than sand supply, is the limiting factor in sediment supply to the estuary.

SER 295. Ultimately, by considering the disposal of material dredged from both the MCR and the navigation channel, the Corps took a hard look at the effects of directly removing sediment from the littoral cell through operation of the channel deepening project.

ii. Potential Sediment Loss from Changes in River Hydraulics and Sediment Transport Rates

The Corps also took a hard look at the second mechanism by which channel deepening could potentially reduce sediment availability in the estuary: changes to river hydraulics and sediment transport rates. Exhibit J to the 2003 FSEIS thoroughly analyzes this dynamic and concludes that channel deepening will have no appreciable impact on sediment transport. The Corps prepared Exhibit J in direct response to concerns from Washington and Oregon in 2000 regarding sediment transport. Thus throughout numerous years of study, the Corps did not simply stake out a position and attempt to defend it; consistent with the dictates of a "hard look," the Corps remained open to input from stakeholders and conducted new analyses to address their concerns. *See Friends of the Payette v. Horseshoe Bend Hydroelectric Co.*, 988 F.2d 989, 995 (9th Cir. 1993).

[5] As a threshold matter, Exhibit J scrupulously considers the cumulative impact of the channel deepening project on sediment availability in conjunction with other projects, including the MCR project, jetties, and the Federal Columbia River Power System. The FSEIS reveals that river flow rate mediated by the Federal Columbia River Power System dams —not any past or future dredging in the navigation channel— is the overwhelming driver of changes to sediment availability in the estuary: "The reduction in the Columbia River's net sand discharge to the MCR since the early 1900's is related to lower Columbia River flood discharges and not the navigation channel or the MCR jetties." Regarding the MCR jetties, the FSEIS notes that they have had some impact on sediment

availability, by reducing sand movement from the MCR into Baker Bay and across Clatsop Spit into the south channel and by causing a large discharge of sand from the MCR to the ocean. However, Exhibit J repeatedly underscores the reality that "[d]eepening will not reduce the available sand supply and the expected hydraulic changes [from channel deepening] are too small to measurably alter sand transport or erosion/accretion in the river or estuary." Ultimately, "deepening the navigation channel in the river and estuary will not alter the sand transport through the MCR nor the sediment budget of the littoral cell." The independent Sustainable Ecosystems Institute expert panel subsequently affirmed the Corps' extensive sedimentation analyses. As a further indication of the comprehensiveness of the Corps' studies, Washington and Oregon withdrew their objections and certified the project upon considering the new analyses.

* * *

NWEA cites *Klamath-Siskiyou Wildlands Ctr. v. Bureau of Land Mgmt.*, 387 F.3d 989, 993 (9th Cir. 2004), to support its contention that the Corps' cumulative impact analyses are deficient. That case, however, is clearly distinguishable. In *Klamath-Siskiyou*, the Bureau of Land Management had divided an original timber-sale project into four component timber sales, preparing environmental assessments for two of them. 387 F.3d at 991-92. Upon challenge, we held that the two environmental assessments were "legally insufficient" because they "do not sufficiently identify or discuss the incremental impact that can be expected from each successive timber sale, or how those individual impacts might combine or synergistically interact with each other to affect the . . . environment." 387 F.3d at 997. *Klamath-Siskiyou* involved one integrated project that was divided into four sub-projects, each of which the BLM independently analyzed, thus obscuring the cumulative impact of successive, related actions. Our situation is quite different. Here, the 1999 Final Integrated Feasibility Report and Environmental Impact Statement and

the 2003 FSEIS take a "hard look" at the cumulative impact of the channel deepening and dredged material disposal project over an extended period of time and in conjunction with the Mouth of the Columbia River, Federal Columbia River Power System, and other related projects along the Columbia River. As noted, the 1999 Final Integrated Feasibility Report and Environmental Impact Statement demonstrates the Corps' awareness of the "profound" implications of disposing of all 225 mcy of material dredged from the MCR at the Deep Water Site. The Corps' hard look at the problem of coastal erosion is further evidenced by its decision to act upon that knowledge and structure its plan to minimize deepwater disposal.

In conducting and refining these analyses, the Corps has not acted alone. While not dispositive, we have found it "significant" when other governmental agencies responsible for environmental protection have sanctioned a particular project's environmental analyses. *See Friends of the Payette*, 988 F.2d at 995. Here, the Environmental Protection Agency acted as a Cooperating Agency on both environmental impact statements and validated their findings. As mentioned, the Corps responded to the concerns of Washington and Oregon by providing additional analyses, and they have both certified the project.

[6] NEPA requires not that an agency engage in the most exhaustive environmental analysis theoretically possible, but that it take a "hard look" at relevant factors. The Corps has done so, and even took the additional step of altering disposal plans to minimize sediment loss. Through study, restudy, submission to review by independent experts, and modification of plans, the Corps has taken a hard look at the cumulative impact of the channel deepening project, including disposal of dredged material, on sediment availability and coastal erosion.[9]

[9]NWEA also argues that the Corps should have considered the channel deepening and MCR projects as "connected actions," and thus jointly

C. Cumulative Impact Along with Past and Future Actions

We also reject NWEA's contention that the Corps failed to evaluate the cumulative impact of the channel deepening project in light of past and future actions. *See Lands Council*, 395 F.3d at 1027 ("Cumulative effects analysis requires the Final Environmental Impact Statement to analyze the impact of a proposed project in light of that project's interaction with the effects of past, current, and reasonably foreseeable future projects.").

i. Cumulative Impact, Along with Past Actions, On Salinity

[7] NWEA argues that the FSEIS does not adequately analyze the cumulative effects of salinity increases from past projects, notably the MCR project. We disagree. Because the FSEIS concludes that the channel deepening project will have virtually no effect on salinity, detailed cataloguing of past projects' impact on salinity would not have "informed analysis about alternatives presented for the current project," and was unnecessary. *Id*.

Contrary to NWEA's assessment, the Corps' extensive analyses of the channel deepening project's impact on salinity did indeed include data encompassing past projects. *See infra*, Part IV.D.ii. The Corps' analyses included historical data regarding salinity intrusion dating back to the 1980s. The

evaluated both in the FSEIS. *See* 40 C.F.R. § 1508.25(a)(1) (stating that connected actions fall within the required scope of an environmental impact statement). In its summary judgment order, the district court ruled that the channel deepening and MCR projects are not connected actions, and that joint evaluation of the two was only required to the extent that they had a cumulative impact on the environment. NWEA does *not* appeal the district court's ruling that the two projects are not connected actions, and instead focuses its arguments on the FSEIS' cumulative impact analysis.

FSEIS references the salinity analysis in the 1983 environmental impact statement for the MCR project, which anticipated that the MCR project would yield minor salinity increases in the estuary. The Corps also stated during the comment period prior to issuing the FSEIS that the "description of existing conditions includes the cumulative impact of historic actions." The Sustainable Ecosystems Institute panel agreed, stating that "the baseline for evaluating information should be the current conditions or state of the physical and biological components and relationships of the lower Columbia River ecosystems." Critically, numerous present-day studies cited in the FSEIS reveal that the channel deepening project will have little or no impact on salinity intrusion.

NWEA relies on *Lands Council*, which states that "the Environmental Impact Statement must give a sufficiently detailed catalogue of past, present, and future projects, and provide adequate analysis about how these projects, and differences between the projects, are thought to have impacted the environment." 395 F.3d at 1028. *Lands Council* held as insufficient an environmental impact statement that had "no discussion of the environmental impact from past [timber harvesting] projects on an individual basis, *which might have informed analysis* about alternatives presented for the current project." *Id*. at 1027 (emphasis added). Cataloguing past logging projects' environmental impact would serve the purpose of promoting "an informed assessment of environmental considerations and policy choices by the public and agency personnel upon review of the Final Environmental Impact Statement." *Id*. at 1028. Here, however, numerous studies in the FSEIS demonstrate that the channel deepening project would have virtually no effect on salinity. Therefore, in this case, cataloguing past projects' effects on salinity would not have informed assessments about the project and its alternatives, and the FSEIS' analysis of this topic was sufficient.

ii. Cumulative Impact, Along with MCR Jetties and Upstream Dams, on Sediment Transport

We reject NWEA's argument that the Corps did not adequately consider the channel deepening project's cumulative effect on sediment transport in light of existing MCR jetties and upstream dams. One of the explicit objectives of Exhibit J was to address "the impact of jetty construction and flow regulation on sediment transport." In cataloguing the effects of MCR jetties, the Corps recognizes that

> [t]he MCR jetties reduced the sand transport from the MCR into Baker Bay and across Clatsop Spit into the south channel caused by ocean waves. However, the jetties caused a large discharge from the MCR and vicinity, to the ocean. The sand eroded from the inlet and south flank of the inlet following jetty construction has deposited in the outer delta, on Peacock Spit, and the shorelines along Long Beach, Washington, and Clatsop Plains, Oregon.

Furthermore, the Corps explains that the MCR jetties have "caused a large amount of sediment to accrete in the littoral zone north and south of the entrance" to the Columbia River. Regarding upstream dams, the Corps emphasizes that their control over flood discharges has significantly impacted sediment flow. Flood discharges, caused by dams, directly affect transport capacity and account for the vast bulk of historical changes in sediment budget.

[8] Upon extensively cataloguing these past effects, the FSEIS concludes that the channel deepening project's incremental contribution to altering sediment flow would be negligible. As Exhibit J states, "[T]he reduction in the Columbia River's net sand discharge to the MCR since the early 1900's is related to lower Columbia River flood discharges and not the navigation channel or the MCR jetties." The Corps thus concludes that, after completion of the channel deepening

project, "there is not likely to be a detectable change in the sediment budget or sand transport within the Columbia River." We thus hold that the Corps properly considered the cumulative impact of the proposed project with MCR jetties and upstream dams.

iii. Cumulative Impact Along with Future Actions

[9] Contrary to NWEA's assertion, the Corps adequately addressed foreseeable future impacts, particularly from ongoing operation of the MCR project. Regarding such future impacts, this court has held that "[g]eneral statements about 'possible' effects and 'some risk' do not constitute a 'hard look' absent a justification regarding why more definitive information could not be provided." *Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372, 1380 (9th Cir. 1998) (citation omitted). As discussed above, it is precisely because the Corps was aware of the negative implications of disposing of 20 years' worth of MCR dredgings at the Deep Water Site that it developed a Management and Monitoring Plan to prioritize disposal of dredged sediment at the Shallow Water Site and North Jetty Site. Furthermore, the MCR project has operated consistently since 1983 and "[t]here is no plan to deepen or otherwise change the . . . MCR project at this time." The Corps took a hard look at the anticipated disposal of 4.5 mcy of dredged sediment per year from the MCR project and planned appropriately to minimize coastal erosion.

D. Direct Impacts

i. Direct Impact on River Toxicity

We further reject NWEA's argument that the Corps' analysis of the effects of channel deepening on toxicity is deficient because it failed to test areas outside the navigation channel for toxins. As a preliminary matter, the Corps' 2001 Biological Assessment contradicts the premise underlying NWEA's criticism, for it finds that "[n]earshore sediments are expected

to be unaffected by dredging activities associated with this project."[10] Evaluating nearshore sediments would thus have little bearing on the channel deepening project's impact on river toxicity, since dredging is not expected to disturb these sediments. The Corps did acknowledge that a limited amount of side-slope adjustment would occur over the course of five to ten years in five discrete locations along the river because these areas have received previously dredged material. Because dredged material is clean sand, however, contaminant sampling in these areas was unnecessary because this sediment would not have contributed to river toxicity.

[10] Nevertheless, as explained in response to NWEA's comments on the draft FSEIS, the Corps did test for toxins outside of the navigation channel. Specifically, tests conducted pursuant to the Dredge Material Evaluation Framework concluded that "[n]o established level of concern was exceeded in any of the 23 samples tested" for metals, polycyclic aromatic hydrocarbons, and pesticide/polychlorinated biphenyls, including two samples from outside the navigation channel. The Biological Assessment notes that risks from shoreline sediments were higher than that of channel sediments, and were higher upstream than in the lower Columbia River. However, it concludes that "[t]he potential for cumulative risks appears negligible because all contaminants posed negligible risks." The FSEIS ultimately concludes that "while historic actions have resulted in localized sediment contamination in some parts of the larger project area (i.e., outside of the areas to be dredged), the channel improvement project is not expected to make an incremental contribution to sediment quality degradation." It is significant to note that the independent Sustainable Ecosystems Institute panel validated these analyses by concluding that "contamination was essentially a non-issue, even if suspended on fine sediments, and especially

[10]The 2001 Biological Assessment appears in Exhibit H of the 2003 FSEIS.

with regard to channel deepening where the sediments are known to be relatively clean."

ii. Direct Impact on Salinity

[11] NWEA fails in its argument that the Corps did not take a hard look at the channel deepening project's direct effects on estuary salinity because it did not employ appropriate analytic tools. For the 1999 Final Integrated Feasibility Report and Environmental Impact Statement, the Corps analyzed salinity by utilizing the so-called WES RMA-10 methodology. While NWEA argues that this model is outdated, it offers no evidence that the passage of time has decreased its effectiveness; this model has been "successfully applied" to study estuaries in Cape Fear River, NC; San Francisco Bay; and Galveston, TX. The Corps' analysis concluded that "[n]o significant biological impact would result from salinity changes predicted for the proposed channel deepening." A second study prompted by the Sustainable Ecosystems Institute panel updated the first model to accommodate concerns about low flow conditions and again concluded that "the channel deepening actions will have little to no impact on salinity intrusions." In a third study, commissioned for the 2003 FSEIS, the Oregon Health and Sciences University/Oregon Graduate Institute employed a different modeling technology and again concluded that channel deepening would produce insignificant changes in salinity intrusion. As with the previous WES RMA-10 study, the Sustainable Ecosystems Institute panel reviewed the OHSU/OGI study and confirmed the results. While NWEA challenges the validity of the new OHSU/OGI model, it provides no cogent challenge to the validity of the WES RMA-10 model, which led to similar findings and has been effectively applied in a multitude of contexts.

As a final attack on the salinity analysis, NWEA argues that the Corps used outdated bathymetric data in its model, thus falling below NEPA standards. *See Lands Council*, 395 F.3d at 1031 (holding that outdated data may render an analy-

sis inadequate under NEPA). NWEA contends that bank-to-bank bathymetric surveys are necessary to produce the requisite data, and that the Corps last conducted one in 1958. However, NWEA does not demonstrate why bank-to-bank surveys are necessary. Furthermore, the Corps has conducted annual cross-line surveys over the entire length of the project area and surveyed most of the shallow-water areas of the estuary more recently around 1980.

E. Economic Impacts

[12] We also reject NWEA's challenge to the Corps' economic analysis. We have recognized that "[i]naccurate economic information may defeat the purpose of an . . . [environmental impact statement] by 'impairing the agency's consideration of the adverse environmental effects' and by 'skewing the public's evaluation' of the proposed agency action." *Natural Res. Def. Council*, 421 F.3d at 81 (*quoting Hughes River Watershed Conservancy v. Glickman*, 81 F.3d 437, 446-48 (4th Cir. 1996)). However, the Corps' extensive economic analyses in both the 1999 Final Integrated Feasibility Report and Environmental Impact Statement and the 2003 FSEIS satisfy NEPA's requirements.

NWEA first argues that the Corps violated NEPA because "[t]he Corps' refusal to consider the cumulative connected, direct impacts of all related dredging and disposal projects and to assess the full impacts of the deepening project . . . caused the agency to ignore substantial project costs and ways of avoiding those costs." These allegations merely represent an attempt to refashion substantive criticisms of the Corps' considerations of cumulative impacts into arguments about faulty cost analysis. Given that the Corps took a hard look at these substantive issues, these challenges have already been addressed.

[13] We reject the contention that the Corps failed to adequately consider costs associated with jetty deterioration and

coastal erosion. Since the Corps' analyses reasonably concluded that the channel deepening project would not exacerbate jetty deterioration or coastal erosion, excluding these items from the anticipated costs of the project was appropriate.

[14] The Corps adequately considered potential declines in shipping traffic. For example, Exhibit M of the FSEIS assumes that "the Columbia River loses containerized cargo market share to Puget Sound ports." The 2003 FSEIS presents a much more conservative market capture rate for the Port of Portland than had the 1999 Final Integrated Feasibility Report and Environmental Impact Statement. Furthermore, an independent technical review of the benefits and costs analysis in the draft FSEIS stated that the assumptions and overall conclusions of the benefits analysis were "reasonable" and that "data were generally used properly in the overall analysis."

NWEA does not provide any clear authority for its argument that the Corps is required to categorize benefits as accruing to domestic or foreign entities. *See* 33 U.S.C. § 2282(a) (requiring merely that an agency "describe, with reasonable certainty, the economic, environmental, and social benefits and detriments" of a proposed plan). Indeed, agency guidelines cited by both the Corps and NWEA state that calculations of national economic development should include shipments involving foreign origins and destinations. *See* Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies, Mar. 10, 1983, at 62, *available at* http://www.iwr.usace.army.mil/iwr/pdf/p&g.pdf (last visited Feb. 23, 2006) ("Guidelines"). These guidelines require the Corps to include benefits accruing to foreign flag vessels and do not require segregation of foreign and domestic benefits in analyses of national economic development.

We reject NWEA's argument that the Corps should have engaged in a multi-port analysis to assess whether any gains

from the channel deepening project would come at the expense of other domestic ports. An Economic Technical Review panel, convened by the Corps, examined the Corps' economic analysis and concluded that "*the results of a 'multi-port analysis' would be unlikely to tip the cost-benefit scales*." (emphasis in original). In any event, the Corps' statement that a multi-port analysis would likely result in *higher* projected benefits appears reasonable. When defining the "economic study area" for a proposed navigation improvement project, an agency should, when appropriate, include nearby, existing harbors which may experience a decrease in traffic after the proposed improvement. Guidelines 62. However, in calculating the economic benefits of the proposed project, the agency should consider the *aggregate* reduction in shipping costs across the entire economic study area. Thus, the fact that an efficiency-enhancing improvement may draw traffic away from less efficient harbors actually contributes to, rather than subtracts from, the anticipated benefits of that improvement. Accordingly, "Cost reduction benefits sufficient to divert traffic from established distribution patterns and trade routes are navigation project *benefits*." Guidelines 62 (emphasis added). Ultimately, NWEA has not demonstrated that the absence of a multi-port analysis renders the Corps' analysis arbitrary and capricious.

The Corps hired two independent panels of experts to review, respectively, the costs and benefits contained in its economic analyses. Both panels concluded that the Corps' analyses were reasonable. Based on our independent examination of the record, we likewise find that the Corps' economic analyses satisfied NEPA's requirements.

F. Exclusion of the Niemi Declaration

[15] Finally, we hold that the district court did not abuse its discretion by striking the declaration of economist Ernest Niemi. Niemi stated in his declaration that he prepared it at NWEA's request to "determine whether or not the FSEIS pro-

vides a misleading description of the Project's potential economic impacts." Quoting *Asarco, Inc. v. EPA*, 616 F.2d 1153, 1160 (9th Cir. 1980), the district court struck the declaration because "consideration of extra-record evidence 'to determine the correctness . . . [or] wisdom of the agency's decision is not permitted.' " The district court acted well within its discretion to do so.

We have held that review of agency action under NEPA is limited to the administrative record and may only be expanded beyond the record to explain agency decisions. *Friends of the Payette*, 988 F.2d at 997; *see Love v. Thomas*, 858 F.2d 1347, 1356 (9th Cir. 1988). Accordingly, administrative review disfavors consideration of extra-record evidence. *Florida Power & Light Co. v. Lorion*, 470 U.S. 729, 743 (1985) (" '[T]he focal point for judicial review should be the administrative record already in existence, not some new record made initially in the reviewing court.' ") (*quoting Camp v. Pitts*, 411 U.S. 138, 142 (1973)). Here, the administrative record is adequate to explain the Corps' decisions and reveals that the agency has taken a hard look at all pertinent factors.

We have previously carved out a discrete set of narrow exceptions to the general rule against extra-record evidence, none of which are applicable in this case. As we held in *Lands Council*:

> In limited circumstances, district courts are permitted to admit extra-record evidence: (1) if admission is necessary to determine "whether the agency has considered all relevant factors and has explained its decision," (2) if "the agency has relied on documents not in the record," (3) "when supplementing the record is necessary to explain technical terms or complex subject matter," or (4) "when plaintiffs make a showing of agency bad faith."

Lands Council, 395 F.3d at 1030 (*quoting Sw. Ctr. for Biological Diversity*, 100 F.3d at 1450). Here, as mentioned, the record reveals that the Corps considered all relevant factors and provides an adequate basis for explaining the Corps' decisions. NWEA has not demonstrated that the Niemi declaration was the sole source of any vital information without which judicial review was "straitjacketed." *See Asarco*, 616 F.2d at 1160. Furthermore, NWEA does not allege that the Corps relied on documents outside the record or that it acted in bad faith. Finally, the Niemi declaration and its attachments address fairly straightforward economic aspects of the Corps' analysis, not technical and scientific analyses that might require further explanation. Given the failure of NWEA to establish any exception to the general rule against allowing extra-record evidence, it was not an abuse of discretion for the district court to strike Niemi's declaration. *See Sw. Ctr. for Biological Diversity*, 100 F.3d at 1447.

V. Conclusion

[16] It is not the office of this court to pass upon the wisdom of an agency action or to require an agency to study a proposed action *ad infinitum*. Our role is simply to assure that the agency has taken a hard look at the proposed action. In this case, the Corps has demonstrated the hard look by performing exhaustive studies over numerous years, soliciting and accommodating input from stakeholders, and thoroughly re-analyzing areas of particular concern. The Corps considered deepwater disposal of sediment and modified its plans in order to minimize sediment loss. It studied potential changes to river hydraulics and concluded that there would be none. It analyzed salinity effects on three separate occasions using current data. It examined toxicity, both within and without the navigation channel. It assessed economic impacts using realistic measurements of the project's costs and benefits. The Corps did not simply consider the channel deepening project in isolation, but analyzed its cumulative impact in conjunction with the MCR and other projects. The Corps responded to

concerns from Oregon and Washington about sediment availability and provided additional analyses that led the states to certify the project. The Corps subjected its analyses to review by independent scientists who subsequently verified the Corps' findings. In light of all of the above, we agree with the district court that the Corps took the required hard look. The judgment of the district court is **AFFIRMED**.

Volume 2 of 2

B. FLETCHER, Circuit Judge, dissenting:

The Columbia River stretches more than 1,200 miles from its headwaters in Canada to the Pacific Ocean. It drains an enormous swath of the northwestern United States (258,000 square miles). This great river empties more water into the Pacific Ocean than any other river in North or South America. Description: Columbia River Basin, United States Geological Survey *at* http://www.vulcan.wr.usgs.gov/Volcanoes/Washington/ColumbiaRiver/description_columbia_river.html (last visited June 26, 2006). Shipping and trade are just one dimension of the Columbia River's importance to the Northwest. The Columbia River is central to the life of man, beast, and fish in the Northwest; it is a complex system defined by interdependencies.

Perhaps the most iconic of these interdependencies is that among the river, salmon, and fishermen. A healthy river is vital to endangered salmon and steelhead trout and to the fishermen who rely on these fish. Virtual World, Columbia River, The National Geographic Society *at* http://www.nationalgeographic.com/earthpulse/columbia/index_flash.html (last visited June 26, 2006). Salmon and steelhead are anadromous — they spend the first two years of their lives in fresh water, like the cool waters of the upper reaches of the Columbia. These fish then swim to sea, resting and adjusting in the critical estuary at the conjunction of fresh and salt water. After a few years in the ocean, the adult salmon and steelhead return to the fresh waters of the Columbia to reproduce, swimming upstream to the places where they were hatched. The Columbia River is vital salmon and steelhead habitat and was once teeming with these fish. Sadly, salmon and steelhead are in serious decline, decimated by obstruction of passage because of dams and destruction of habitat. In fact, this year sportfishing on the Columbia was closed until very recently because the numbers of returning fish are perilously low. *Salmon Fishing Halted on Columbia River: Concern About a Ten-fold Decrease in Chinook Populations Spurs Action*, Jeff

Barnard, Associated Press (Apr. 22, 2006). Major efforts to reverse their decline by easing the passage through dams and other measures are ongoing.

The Army Corps of Engineers proposes deepening the shipping channel that runs from the mouth of the river to its ports, including particularly Portland, from forty-feet to forty-three-feet deep. We are presented with Northwest Environmental Advocates' challenge to the Army Corps' compliance with National Environmental Policy Act (NEPA). Northwest Environmental Advocates (NWEA) argues, and I agree, that the Army Corps has failed to satisfy its obligations under NEPA to adequately study either the direct, the indirect, or the cumulative effects of channel deepening, particularly the impacts of dredging upon coastal erosion, release of toxicity, and estuary salinity, that affect both humans and salmon. In addition, the Corps' economic analysis is deeply flawed — adopting a methodology for measuring the costs and benefits associated with channel deepening that enables it to avoid consideration of economic reality and to present a far rosier picture of the economics of channel deepening than is realistic. The Corps has certainly produced an enormous record during this NEPA process; however, simply producing a record of the size presented to us in this case does not mean that the agency has answered the *correct* questions, undertaken *relevant* studies, or adopted *appropriate* methodologies. The Army Corps has not met its obligations to take a "hard look" at the direct, indirect, and cumulative impacts of deepening the Columbia River channel, and its economic analysis is obviously flawed. A serious look at the economics of the project suggests that it is like Kodiak's proposed bridge to nowhere.

My concerns in this important case are heightened by the enormity of the consequences of a wrong decision. Adequate fact-finding and thorough analysis, which are at the core of NEPA, are all-important to make sure that the Army Corps' decision in the end is the right one. The Columbia River is too

important a resource for all of us to allow its misuse. I, therefore, respectfully dissent.

In light of these serious problems, we should reverse and remand for the agency to undertake a more thorough study of the impacts of channel deepening and the associated ocean disposal site on coastal erosion; a scientifically-sound analysis of changes to toxicity and salinity in the river and estuary; and a more rigorous look at the economics of the proposed project. Too much is at stake to permit the Corps to move forward with such incomplete and inadequate information. NEPA forbids it.

I. THE CORPS' ECONOMIC ANALYSIS

I have much to criticize about the Corps' failure to consider adequately the environmental consequences of its proposed action. I will get to that. But I choose to first talk about its disgraceful attempt to justify the dollars and cents of its proposed project. This should not come as a surprise to any of us. The Corps is wont to undervalue costs and overvalue benefits so that it can get on with its mission—constructing water projects.[1]

Here, instead of objectively looking at whether the proposed project is a net economic benefit to the American economy, it has chosen a method of analysis that reaches its desired result—admitted even by it as perhaps not the best methodology—but a methodology that justifies the project. It ignores salient facts: Northwest ports (Puget Sound and Grays Harbor) can handle the freight and offer safer shorter transit—the river trip is longer (one-hundred miles from the

[1]*Cf.* Felicity Barringer, *Senate Backs New Controls for Projects by Engineers*, N.Y. TIMES, July 20, 2006, at A18 (detailing a Senate bill requiring independent panels of scientific and economic experts to evaluate potential Corps water projects); Editorial, *A Chance to Reform the Corps*, N.Y. TIMES, July 19, 2006, at A20 (praising the Senate bill and noting several studies finding that the Corps regularly inflated economic benefits and understated potential environmental costs).

bar to Portland) and fraught with hazards (the shifting bar at the mouth and shifting sand bars up river). Two-thirds of the container ship business has already left the river. The Portland Port that is up the Willamette River cannot be deepened because of pollution. No wonder the Corps declined to consider displacement of traffic from one American port to another. It insisted on including supposed benefit to foreign ships as part of the benefit. Should American taxpayers take comfort that foreign bottoms are the principal beneficiaries of any economies in the project?

What about the cost side? No analysis is made of the costs of potential devastating erosion that may result to the Washington and Oregon coastlines and the jetties.

The gravamen of Appellant's claims, with which I agree, is that the Army Corp's benefit-cost ratio of $1.66 to $1 is inaccurate because the agency has failed to consider several factors, resulting in an overstatement of the project's economic benefits and the understatement of its costs. Appellant argues: (1) that the agency understated the costs associated with the project by failing to consider environmental externalities associated with channel deepening and disposal of dredged material and (2) that the agency overstated the benefits associated with channel deepening by not distinguishing benefits to the U.S. economy from those to foreign parties, not considering declining container-ship traffic into the Columbia River, and not undertaking a multi-port analysis.

The majority agrees that "[i]naccurate economic information may defeat the purpose of an EIS by 'impairing the agency's consideration of the adverse environmental effects' and by 'skewing the public's evaluation' of the proposed agency action." *Natural Res. Def. Council v. U.S. Forest Serv.*, 421 F.3d 797, 811 (9th Cir. 2005) (quoting *Hughes River Watershed Conservancy v. Glickman*, 81 F.3d 437, 446 (4th Cir. 1996)). In *Natural Resources Defense Council*, we held that the Forest Service's inflated assessment of market demand for

timber from the Tongass National Forest "subverted NEPA's purpose of providing decision makers and the public with an accurate assessment of the information relevant to evaluate" the agency's proposed action. *Id.* at 812. A similar finding is required here: the agency's economic analysis does not provide an accurate assessment of the costs and benefits of the planned channel-deepening project because of its failure to undertake analysis that could decrease the benefit-cost ratio.

A. Costs of Deep-Water Disposal, Coastal Erosion & Mouth of the Columbia River Jetty Erosion

It is apparent that the agency's analysis of the economic costs associated with this project was insufficient. First off, because the agency did not consider the impacts from coastal erosion resulting from removing sand from the littoral system and the impacts of channel deepening on the MCR jetties, it follows that the economic analysis is similarly incomplete for failing to consider the potential costs associated with jetty and coastal erosion. In this regard, the agency's analysis of costs suffers from the same incompleteness as its analysis of the cumulative effects of deep-water disposal.

The majority notes that the FSEIS nowhere finds that the jetties at the Mouth of the Columbia River will be undermined and will require repair as a result of the channel-deepening project. That's because it did not consider the probability of erosion that would result from disposal outside the littoral system. This is the very type of issue for which Niemi's declaration should have been admitted since it pointed out factors which the agency did not consider but should have. The Corps, without analysis of facts, says that channel deepening will not undermine the jetties, but Niemi presents credible evidence to the contrary, evidence that the Corps should have considered. The correct path is to remand to the agency for a complete examination of these potential costs.

As the majority concedes, the erosion damage from the Corps' past practices has been considerable. The Corps tells

us it has changed its ways to minimize erosion from the MCR dredging and the construction of the jetties. But it tells us nowhere what steps it would take to control devastating erosion that would occur if considerable dredge material is put in the deep-sea site it has prepared to receive it. Nor has it suggested the costs that would be involved.

B. Benefits to U.S. Economy and Lack of Multi-Port Analysis

In addition to the fact that the Corps has understated costs associated with the channel deepening project, the Corps appears to have overstated the economic benefits of the channel deepening by (a) failing to adequately account for displacement of shipping and trade from one American port to another; (b) failing to consider what if any of the benefits associated with channel deepening would accrue to the U.S. economy; and (c) failing to undertake a multi-port analysis that might well show no net benefit to the U.S. economy from the channel deepening. The Corps' analysis of the economic benefits of the project, Exhibit M, explains the shipping of various commodities (wheat, corn, barley, and soybeans) from various Columbia River ports as well as the containerized shipping trade. Appellant's claim that the Corps has overstated these benefits, requires us to look closely at the Corps' analysis — are there economic factors that the Corps should have considered under NEPA? The record indicates that the answer to this question is "yes." The Corps neglected important economic realities that undermine the benefit-cost ratio it presents.

While the majority opinion is correct that Exhibit M of the FSEIS has assumed some loss of containerized trade to the ports of Puget Sound, Maj. Op. at 10098, there is evidence that this loss may be far greater than the FSEIS estimated. The Corps estimates that the channel deepening project will generate benefits of $18.8 million annually. Two-thirds of this total, $11.7 million, comes from the Corps' estimate of gain from

the containerized shipping trade. However, two of the three shipping lines that carry containerized cargo to the Port of Portland have decided that they will no longer come to Portland, reducing by 2/3 the amount of containerized cargo coming through Portland.

Consideration of this displacement of shipping from one American port to another is missing in the agency's analysis and would decrease the net benefits associated with the channel deepening. In response, Federal Appellees respond that the FSEIS' economic analysis, Exhibit M, assumed a loss of market share to Puget Sound and therefore that this issue has been accounted for.[2]

Contrary to the finding of the majority opinion, the Corps' failure to measure the net benefit to the U.S. economy from the project is wrong. The Corps asserts that it is not required to separate the benefits to foreign vessels from those to the domestic economy. However, the Guidelines, that are mandatory on the Corps, provide that "the procedure for measuring the beneficial contributions to *national* economic development (NED) associated with the deep draft navigation features

[2]The Port at Grays Harbor has recently expanded the rail loop at its grain terminal, allowing for more efficient unloading of grain. In addition, AGP, a midwestern soybean exporter, built a new terminal at the port. The economic analysis undertaken by the Corps did not consider this expansion which may cut traffic to both lower-Columbia and Puget Sound ports. Port of Grays Harbor Grain Terminal Loop Track *at* http://www.wsdot.wa.gov/Projects/Rail/grays_harbor/ (last visited June 26, 2006); *see also* http://www.portofgraysharbor.com/ (last visited June 26, 2006). The Port of Grays Harbor has the advantage of cutting short the many miles' travel in Puget Sound to the Ports of Seattle and Tacoma and the even longer journey to the ports of the Columbia (Portland, Vancouver, and Kelama).

I wonder what to make of the fact that the proposal to dredge Portland's port on the Willamette River, where its docks are located, has been postponed indefinitely because of the toxicity of the Willamette. For the foreseeable future, large ships cannot go into Portland, except lightly loaded, whether or not the Columbia is dredged. I suggest this should also be part of the economic analysis of container ship traffic.

of water resources plans and projects." Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies, March 10, 1983, *available at* http://www.iwr.usace.army.mil/iwr/pdf/p&g.pdf (last visited April 13, 2006) at 58 (emphasis added). Appellees' argument that such an analysis is not required is inconsistent with the language of these Guidelines and with the purposes of NEPA.

Appellant also argues that the Corps should have undertaken a multi-port analysis as part of its economic analysis. Such an analysis would provide insight into whether the ships that the channel-deepening project is intended to bring into Columbia River ports are already docking in another American port. If this is the case, bringing those ships to the Columbia provides no net benefit to the national economy. Such a conclusion would undermine the Corps' stated benefit-cost ratio of $1.66 benefit for each dollar spent. The NED Guidelines discussed above indicate that the agency should, as a first step, "determine the economic study area." This includes consideration of "diversion from or to adjacent competitive harbors as well as distribution via competing modes of transport. . . . there should be adequate discussion of the trade area relative to adjacent ports and any commonality that might exist." *Id.* at 62.

The Army Corps argues that its choice of methodology was a reasoned one, that choosing a methodology that did not employ a multi-port analysis did not change the outcome of the economic analysis, and therefore that not doing one cannot be arbitrary and capricious. *See* Comments on FSEIS from Colonel Richard Hobernicht, Commander, Army Corps; Robert E. Willis, Army Corps; and Judy Grigg, Port of Longview at 23 (Feb. 28, 2003) (responding to criticism that the agency did not measure whether there was a benefit passed through to the U.S. economy and did not do a multi-port analysis), *id.* at 34-35 (explaining its choice of methodology: "The Corps selected an analytical methodology that did not include a

multi-port analysis because (1) it was not required by the Principles and Guidelines; (2) the Corps concluded that such an analysis would likely result in higher project benefits than the method selected and, as a result, the substantial expense of a multi-port analysis was not fiscally justifiable; and (3) conducting such an analysis would require assumptions likely to render the outcome overly speculative."). These assertions are unsupported anywhere in the record. Although the Corps' Review Panel recommended that a multi-port analysis would have been better methodology, the Panel found that such an analysis would "*be unlikely to tip the cost-benefit scales*." Original Review Comments and Benefit Review Team Opinions on Responses at 1 (Jan. 10, 2003). That Review Panel endorsed the Corps' economic analysis without the multi-port analysis. The Corps insists that the court must defer to such a methodological choice. *Salmon River Concerned Citizens v. Robertson*, 32 F.3d 1346, 1359 (9th Cir. 1994). This argument for deference would allow the agency to end-run NEPA's obligations to do an accurate economic analysis by allowing the agency to choose a methodology that is clearly not the more appropriate and then to hide behind that choice of methodology by calling for deference to agency decision-making. This is not what NEPA envisioned. While we certainly must respect the agency's technical decisions, where those decisions enable the agency to ignore reality, we need not acquiesce.

C. **Failure to Consider Niemi Declaration**

Further, the district court erred in not fully informing itself as to what critical information the Corps did not consider. The district court abused its discretion in striking Ernest Niemi's declaration as impermissible extra-record material. Only by considering it could it know what the Corps omitted. The majority, as did the district court, relies on *Asarco, Inc. v. U.S. Envt'l. Protection Agency*, 616 F.2d 1153 (9th Cir. 1980), as the basis for its rejection. Both used the "rule" of *Asarco* as

far too blunt an instrument. The rule expressed in *Asarco* and subsequent cases is much more nuanced.

The *Asarco* court considered and weighed the several rules that govern the "judicial review of agency action." 616 F.2d at 1159. "[A]gency action must be examined by scrutinizing the administrative record at the time the agency made its decision." *Id.* However, the court recognized that:

> [I]t is both unrealistic and unwise to straitjacket the reviewing court with the administrative record. It will often be impossible, especially when highly technical matters are involved, for the court to determine whether the agency took into consideration all relevant factors unless it looks outside the record to determine what matters the agency should have considered but did not. The court cannot adequately discharge its duty to engage in a substantial inquiry if it is required to take the agency's word that it considered all relevant matters.

Id. (internal quotation marks omitted).

To reconcile these tensions, the court held the following:

> If the reviewing court *finds it necessary to go outside the administrative record*, it should consider evidence relevant to the substantive merits of the agency action only for background information . . . or for the limited purposes of ascertaining whether the agency considered all the relevant factors or fully explicated its course of conduct or grounds of decision . . . . Consideration of the evidence to determine the correctness or wisdom of the agency's decision is not permitted, even if the court has also examined the administrative record. If the court determines that the agency's course of inquiry was insufficient or inadequate, it should remand the matter to the

> agency for further consideration and not compensate for the agency's dereliction by undertaking its own inquiry into the merits.

Id. (emphasis added).

Reaffirming *Asarco* in *Love v. Thomas*, 858 F.2d 1347 (9th Cir. 1988), we stated: "The court may find it necessary to review additional material to explain the basis of the agency's action and the factors the agency considered, " and "the court may consider, particularly in highly technical areas, substantive evidence going to the merits of the agency's action where such evidence is necessary as background to determine the sufficiency of the agency's consideration." *Love*, 858 F.2d at 1356.

In this case where our task is to determine whether the agency undertook adequate fact-finding and analysis that should have been part of its NEPA compliance, the question is whether Niemi's declaration constitutes either (a) background, explanatory information or (b) substantive evidence needed to "determine the sufficiency of the agency's consideration." *Id.* If it falls into either or both of these categories, it should have been considered. Given the concern that the agency did not undertake analysis of relevant considerations, the information provided in Niemi's declaration fits quite cleanly into the second category. It is substantive evidence that demonstrates the inadequacy of the agency's inquiry, pointing out factors that the agency should have considered and did not. Had these factors been considered, substantial revisions to the agency's benefit-cost ratio of $1.66 in benefit to $1 cost well could be in order. As long as it is not employed to substitute the court's substantive determination for that of the agency, the Niemi declaration is exceedingly useful to a thorough review of the agency's economic analysis. In a highly technical area, it sheds light on the sufficiency of the analysis undertaken by the agency.

The district court appropriately cited to the *Asarco* rule but decided that the declaration had been offered to "determine whether or not the FSEIS provides a misleading description of the project's potential impacts," citing Mr. Niemi for that impermissible purpose. *Northwest Environmental Advocates v. Nat'l Marine Fisheries Serv.*, No. C04-0666RSM, at 11-12 (June 15, 2005). What matters in applying *Asarco*'s rule is not how the declarant views his extra-record testimony, but rather, for what purpose the court should make use of it. The district court was obligated to undertake a detailed review of the agency's analysis. Where the concern is whether the agency considered all relevant factors in its NEPA analysis, the failure to look outside of the record to Niemi's declaration in my view was a failure by the district court to engage in the detailed inquiry required by the Administrative Procedure Act and therefore was an abuse of discretion.

We should admit Niemi's declaration to the extent it contains evidence of the omissions and inaccuracies in the agency's analysis and find that the agency's failure to consider likely costs and its probable overstatement of the project's benefits constitutes "[i]naccurate economic information" within the meaning of *Natural Resources Defense Council.* 421 F.3d at 811.

II. CUMULATIVE EFFECTS ON COASTAL EROSION OF DEEP-WATER DISPOSAL OF SPOILS FROM THE MOUTH OF THE COLUMBIA RIVER DREDGING

A. **The Majority's Flawed Analysis of Cumulative Impacts**

The majority concludes that the Corps has adequately considered the cumulative impacts on coastal erosion of deep-water disposal of sediment dredged as part of both the Mouth of the Columbia River (MCR) Project and the channel-deepening project at issue here. It bases its determination on (1) the Corps' assurance that it has considered those cumula-

tive impacts; (2) the Corps' treatment of deep-water disposal as allowable, although the least preferred option; (3) changes made to disposal practices for the Mouth of the Columbia River Project to maximize the amount of sediment retained in the littoral cell; and (4) plans to monitor and manage sediment disposal in the future to prevent coastal erosion. Maj. Op. at 10083-88. The documents cited by the majority reveal that the Corps has proposed a deep-water disposal site large enough to receive *all* of the dredged material from both projects although the Corps alleges it would prefer to keep material in the littoral cell; that the agency plans not to employ the deep-water disposal site for a large volume of dredge disposal unless necessary. As the majority tells us, the record explains the volume the Corps expects to dispose in deep water by reference to the expected capacity of Site E and the North Jetty Site, both disposal sites within the littoral system, and the dispersion of material from those two sites. That is, the volume of dredged material that the Corps plans to place in deep-water disposal depends upon how much Site E and the North Jetty Site can accommodate in any given year. If Site E and the North Jetty Site do not disperse sediment as quickly as anticipated, a clear possibility that the Corps acknowledges, the volume of material that would be disposed in the deep-water site would increase accordingly. This demonstrates that the volume of material to be disposed in the deep-water site is uncertain, dependent upon several variables. Despite this uncertainty and the probability that the deep-water disposal scenario will not play out as it hopes, the Corps has failed to undertake broader cumulative-effects analysis that would result from dumping significant volumes of sand into a deep-water site outside the littoral cell.

The majority attempts to distinguish this case from our decision in *Klamath-Siskiyou Wildlands Center. v. Bureau of Land Management*, 387 F.3d 989 (9th Cir. 2004) that the Bureau of Land Management did not sufficiently consider the cumulative impacts of several timber sales. The majority finds central to the holding in that case the fact that a single project

was subdivided and those sub-parts were analyzed separately from one another. Maj. Op. at 10089-90. In focusing on this factor, the majority overlooks an important commonality between *Klamath-Siskiyou* and this case: the Forest Service's cumulative effects analysis looked only at the effects of the particular project at issue, failing to account for the "combined effects that can be expected as a result of undertaking [multiple timber sales] and other foreseeable projects, in addition to [the project at issue.]" *Klamath-Siskiyou*, 387 F.3d at 996. Although the majority opinion finds that the Corps' analysis did look at the cumulative impacts of deep-sea disposal of *all* material dredged from the Mouth of the Columbia River Project, what it concluded was that it would be as devastating as indeed it would. What it doesn't do is detail what the erosion would cause. Apparently, it thinks nothing could mitigate it because the record is devoid of any such analysis.

B. **The Army Corps' Analysis and Appellant's Concerns**

The Dredged Material Management Plan/Supplemental Environmental Impact Statement (DMMP/SEIS), which constitutes the no-action alternative in the Final Supplemental Environmental Impact Statement ("FSEIS" or "Final Environmental Impact Statement"), called for establishing a small deep-water disposal site for 7.7 mcy (million cubic yards) over 20 years. This plan was "intended to reduce rehandling of material that currently erodes back into the navigation channel." Columbia River Dredged Material Management Plan and Supplemental Environmental Impact Statement at 32 (June 1998). Deep-water disposal would occur outside the zone where currents would bring dredged material back into the navigation channels from whence it would ultimately have to be dredged once again.

The 1999 Final Environmental Impact Statement expanded the DMMP/SEIS proposal for deep-water disposal of dredge spoils with the continued dredging associated with the Mouth

of the Columbia River Project in mind. "Continued maintenance of the MCR project is a necessary component for the viability of not only the existing 40-foot navigation channel but also to any proposed channel improvements." Vol. I: Main Report and Exhibits, Integrated Feasibility Report for Channel Improvements and Environmental Impact Statement (FEIS) at 1-2 (Aug. 1999). The four existing ocean disposal sites for the Mouth of the Columbia River Project were determined to have "inadequate capacity." *Id.* "The timing of this long-term site selection process [for new ocean disposal sites] and the need to identify suitable ocean disposal sites for construction and long-term maintenance of proposed channel improvements further established the need to address the combined ocean disposal requirements in this document [the FSEIS]." *Id.* This language in the Final Environmental Impact Statement indicates that ocean disposal will be necessary for both the disposal of materials dredged for the Mouth of the Columbia River Project and either the maintenance of the 40-foot depth of the channel or the deepening of the channel to 43 feet "as existing estuarine disposal sites reach capacity." FEIS, Exh. H at H-3.

To deepen the channel to 43 feet, over the next thirty years, "total Project dredging quantity" will be "about 190 mcy [million cubic yards] for the Project." Biological Opinion at 12 (May 20, 2002). Without the deepening, simply maintaining the channel at 40 feet (the no-action alternative spelled out in the DMMP/SEIS) over the same time period, approximately 160 mcy would have to be dredged. *Id.* In its proposal for additional ocean disposal sites, the Corps estimated volumes of ocean disposal for both the Mouth of the Columbia River Project and the channel-deepening or channel-maintenance dredging.

MCR O&M[3]	
Annual	**50 Years**
4.5 mcy	225 mcy

[3]FEIS, Exh. H at H-6.

40-foot O&M		Total 40-foot Channel
1-20 Years	**21-50 Years**	
8 mcy	12 mcy	20 mcy

Construction	43-foot O&M		Total 43-foot Channel
	1-20 Years	**21-50 Years**	
7 mcy	9 mcy	21 mcy	37 mcy

Although deep-water disposal, according to the Corps, is not the first or most preferable option, *see* FSEIS, Exh. H at H-6 ("Dredged material placed at [disposal sites closer to shore] is expected to move out of the site and feed the littoral system."), these ocean disposal sites were selected because the mouth of the Columbia River is "so dynamic." *Id.* The Corps' preferred outcome is dependent (1) upon dredge volumes to maintain both the Mouth of the Columbia River Project and the channel deepening not exceeding expectations in any given year and (2) the dredged materials put into nearshore sites eroding at the rate anticipated. If either of these expectations plays out at a different rate,[4] there will be no room for new dredge spoils to be dumped in littoral sites, *id.*, and deep-water disposal would be necessary. Another way of making this point is that, in any given year, the agency's preferred outcome, littoral disposal of dredge spoils, is dependent upon at least two factors, the uncertainty as to both of which

[4]"[T]he quantity of dredged material that will be placed in proposed Site E and the North Jetty Site is uncertain due to the dynamics of the sites. Some quantity of dredged material will likely have to be placed in the proposed Deep Water Site each year; this will result in some material being permanently lost from the littoral zone." FEIS, Exh. H at H-68.

is acknowledged by the Corps. A "single Deep Water Site was located and sized to accommodate almost a 5-year disposal capacity (225 mcy)." *Id.* at H-7.

The Army Corps simply has failed to consider cumulative impacts of the permanent removal of sand from the littoral system from both the Mouth of the Columbia River and channel-deepening or maintenance that is inevitable if there is deep-water disposal. The agency should have considered the cumulative impacts of removing at least 262 mcy (the total amount of material to be dredged from both channel deepening and ongoing MCR dredging) to the deep-water site, not just 70 mcy of sediment from channel deepening.

The Corps insists that it has considered the cumulative impacts on coastal erosion of disposing of dredged material from both the Mouth of the Columbia River Project and the channel-deepening project. In evaluating the Corps' contention, the majority focuses on two dynamics that potentially drive coastal erosion: (1) the impacts associated with disposal of sediment dredged from the MCR Project and the channel-deepening project and (2) the potential changes in sediment transport and river hydraulics caused by these two projects. The Corps and majority opinion focus on Exhibit J to the FSEIS and the 2003 FSEIS, as well as Exhibit H to the FEIS. Neither addresses NWEA's concern that the specific impacts on coastal erosion of disposing of dredged material from both the Mouth of the Columbia River Project and channel deepening in the deep-water disposal site remain unquantified and essentially unknown.

Exhibit J is the agencies' supplemental analysis in response to Oregon and Washington's initial refusal to certify the channel deepening project over concerns about sediment transport and coastal erosion. Exhibit J is simply not adequate. The Corps' analysis in Exhibit J proceeds as follows. First, the Corps considered "historic trends and changes in sediment transport in the Columbia River System" and attributed

decreased sediment transport down the Columbia River to the dams upstream. This analysis appears to be sound. It is what follows that is questionable. Next, the Corps "examined whether the channel deepening project itself would affect sediment transport." Fed. App. Br. at 25. The Corps determined, first, that dredging the channel will not reduce the sand available for transport because the surface area to be dredged is a relatively small percentage of the entire riverbed (3.5%) and, second, that because the riverbed has sand 100-400 feet deep, the amount being dredged also represents an insignificant percentage. Then the Corps determined that the channel-deepening project's impacts on the Columbia River's hydraulics are "too small to measurably alter sand transport or erosion/accretion in the river or estuary." FSEIS, Exh. J at 2-3. The Corps' conclusion: "Because the Project will neither reduce the sand available for transport nor alter the river's capacity to move sand, the Project will in turn have no impact on the erosion or accretion of coastal beaches." Fed. App. Br. at 27.

Lastly, the Corps weighed whether consideration of other actions' impacts would alter its analysis of the impacts of the channel deepening Project. This is the crucial part of the analysis. In its consideration of the cumulative impacts associated with the Mouth of the Columbia River Project's ongoing dredging, the FSEIS relies on Exhibit J's finding that "the reduction in the Columbia River's net sand discharge to the MCR since the early 1900s is related to lower Columbia River flood discharges and not the navigation channel or the MCR jetties." FSEIS at 6-72. The FSEIS finds that reduced accretion of sand in the estuary is the result of the decreased sand flow from the River, the result of upstream dams and concludes that "[e]xcluding the historic effect of the MCR jetties, navigation channel development and maintenance, including maintenance of the MCR project, has not altered the estuary's overall accretion/erosion or bedload transport patterns." *Id*. at 6-73. So far, so good. The agency's analysis might be fine,

except that its consideration of coastal erosion and sediment transport issues stops here.

Appellees point out that Exhibit J explains how the Columbia River and the currents at its mouth historically moved sand downstream and distributed that sand along Washington and Oregon's coastlines. It also describes the give-and-take of sand between the estuary and the mouth of the Columbia River. It analyzes how the construction of dams upstream, jetties downstream, and dredging the Columbia River changed these patterns. This may all be true and important to the analysis as a whole, but it does not answer the critical question. The difference between the analysis the Corps is obligated to provide and that provided in Exhibit J is as follows:

As Exhibit J explains, historically, for the most part, disposal of dredged sand largely occurred within the littoral system. Although transport patterns were being altered, that is, the way in which the sand was being moved around was changing, and although less sand was being sent downstream because of dams, *once downstream the amount of sand in the system remained fixed*. By contrast, the record indicates that near-shore and beach disposal are not a permanent solution and that ocean disposal (outside of the littoral system) will increasingly be employed. Increased ocean disposal means that, unlike in the past, the amount of sand being moved around near the mouth of the river will not remain fixed. Over 50 years, 262 mcy may be removed from the littoral system. This permanent removal of material from the littoral system is not the same as moving sand from one part of the littoral system to another. Exhibit J does not address the effect of the removal of sand from the littoral system. The agency nowhere analyzes what happens when 262 mcy is removed from the littoral system entirely, despite the fact that this is an anticipated possibility, verging on a probability.

The majority opinion accuses NWEA of relying on the 2003 FSEIS to establish its argument, when it is the 1999

FEIS that contains the relevant analysis of cumulative impacts. According to the majority, the FEIS, particularly Exhibit H, demonstrates that the Corps was "aware of" the serious impacts on coastal erosion of disposing of large quantities or all material dredged from both the Mouth of the Columbia River Project and the channel-deepening project in the planned ocean disposal site. Maj. Op. at 10082-83. To establish this, the majority references an alarming statement from the 1999 FEIS:

> If the deepwater site is used as *intended*[5] (4.5 mcy of MCR sand placed per year for 50 years), the implications on the littoral sediment budget at MCR and adjacent coastal areas could be *profound.* . . . The result of such a mass removal of littoral sand would likely be *adverse*: Local and possible regional coastal erosion may result. The stability of MCR jetties may be reduced. . . .

(emphasis added).

The majority is correct — this statement does show that the Corps "was fully aware of the potential erosion effects entailed by deepwater disposal." Maj. Op. at 10083. The agency's response, or lack thereof, to this possibility is very troubling. The majority insists that Exhibit H contains a detailed analysis of these potentially "profound" and "adverse" effects. Not so. Exhibit H provides a recital of the process that the Corps went through with other groups to narrow

[5]The majority calls use of this term a "misnomer." Maj. Op. at 10084. The majority's breezy dismissal of the Corps' use of "intended" epitomizes the problems with the majority's analysis: on the one hand the Corps tells us that extensive use of the deepwater disposal site is a "worst-case" scenario; on the other, it tells us that the "intended" use of the site will lead to "adverse" effects. Which is it? The Corps' inconsistency and the ambiguity of its plans are at the heart of what troubles me so deeply about this case, and the majority's ready dismissal of those inconsistencies is inconsistent with NEPA.

the list of potential deep-water disposal sites and to select one that the Corps would use. The majority finds that the lists of possible conflicts (harms) associated with each potential deep-water site (which the Army Corps calls "conflict matrices") provide thorough analyses of the advantages and disadvantages of each potential site. In fact, they are no more than tables and checklists. Undertaken for each of the ten potential deep-water sites, each matrix, such as it is, notes whether there is a conflict, potential conflict, no conflict, or a beneficial use for 27 specific characteristics of a site based on eleven specific factors for ocean disposal site selection specified in 40 C.F.R. § 228.6 and five general criteria for the selection of ocean disposal sites from 40 C.F.R. § 228.5. FEIS, Exh. H at H-45-55. Among the specific site characteristics being evaluated are unusual topography, physical sediment compatibility, commercial fisheries, critical habitat of threatened or endangered species, and cumulative effects. For example, the matrix for the proposed deep-water disposal site notes a potential conflict with "potential for cumulative effects," with a check in the "potential conflict" box; a note in the "comments" column indicates that use of this site could have a "[p]otential affect from crab and other fishing as well as disposal;" and a note as to the relevant regulatory factors (4 and 7 of the eleven factors[6] and c and d of the five general criteria[7]). That's it. Exhibit H does not dig deeper to quantify

[6]Factor 4 is "types and quantities of waste proposed to be disposed and proposed methods of release, including methods of packaging the waste, if any." Factor 7 is "existence and effects of present or previous discharges and dumping in the area (including cumulative effects)." FEIS, Exh. H at H-55.

[7]Criteria c states that "[i]f at any time during or after disposal site evaluation studies, it is determined that existing disposal sites presently approved on an interim basis for ocean dumping do not meet criteria for site selection set forth in Sections 228.5-228.6, the use of such sites will be terminated as soon as suitable alternative disposal sites can be designated." Criteria d states that "[t]he sizes of ocean disposal sites will be limited in order to localize, for identification and control, any immediate adverse impacts and to permit the implementation of effective monitoring and surveillance programs to prevent adverse, long-range impacts. The size, configuration, and location of any disposal site will be determined as part of the disposal site evaluation or designation study." FEIS, Exh. H at H-55.

or elaborate these effects as to any of the 27 characteristics, including "potential for cumulative effects." This is the extent of Exhibit H's analysis of the cumulative impacts on coastal erosion of disposing of large quantities or all dredged material from the Mouth of the Columbia River Project and the channel-deepening project in this deep-water site: "[p]otential affect from crab and other fishing *as well as disposal*."

We have rejected this kind of underwhelming specificity before. In *Klamath-Siskiyou*, we held that tables that did not "provide object quantification of the impacts" where the tables noted only whether a certain factor would be "unchanged," "improved," or "degraded," were inadequate under NEPA. 387 F.3d at 994. *Great Basin Mine Watch v. Hawkins*, No. 04-16125, __ F.3d ___ (9th Cir. Aug. 1, 2006), draws on *Klamath-Siskiyou*. In that case, the Bureau of Land Management's (BLM or Bureau) environmental impact statement, noted, in a statement reminiscent of the Corps' statements, that "[t]here is a potential for cumulative effects from hazardous air pollutants including compounds of arsenic, hydrogen cyanide, manganese, propylene, and acid aerosols. . . ." The extent of the Bureau's analysis was a "generic map" and "three tables that list existing and reasonably foreseeable mines." We held that the Bureau's "somewhat alarming statement was nowhere . . . supported by data broken down by mine, or even by cumulative data." *Great Basin*, No. 04-16145, slip op. at 34-35. The same could be said here of the Corps, which has told us that the "intended" use of the deep-water disposal site could result in "profound" or "adverse" coastal erosion impacts and then provides us only with checklists of factors and no data. Exhibit H does not adequately address the cumulative impacts of coastal erosion, despite the Corps' and the majority's efforts to argue that it does.

Bottom line: the majority finds that the "hard look" standard has been satisfied by the Corps' assurance that, although the FEIS and FSEIS both propose authorizing the deep-water site for disposal of *all* MCR dredge, the Corps "presents this

option only for 'contingency planning purposes' and as representing a 'worst-case' scenario." Maj. Op. at 10085 (quoting FSEIS, App. H at H-6). I strongly disagree with the majority's conclusion that the Corps discharged its obligations under NEPA by expressing its preference to dispose of dredged material at Site E and at the North Jetty Site, rather than at the deep-water site, even though substantial evidence suggests that those sites lack the required capacity. In so doing, the majority has held that, because the deep-water disposal of all materials dredged from the MCR project is a "worst-case" scenario and because the agency has revised its disposal plans and developed a management plan to minimize deep-water disposal, the agency need not detail the impacts of that scenario. By admitting it is a "worst-case" outcome, the Corps admits it is a bad solution, but nowhere tells us just how bad or if anything in the way of mitigation is possible.

C. **Flaws in the Corps' Compliance and the Majority Analysis**

The majority's reasoning is inconsistent with the requirements placed on agencies by NEPA and by our case law interpreting NEPA. The "hard look" standard requires, not just that the Corps express its preference not to reach a situation in which all MCR dredge is disposed of in deep water, and develop a management and monitoring plan intended to accomplish this preference, but that the Corps analyze the impacts of such a potential outcome, even if the Corps hopes to avoid it.

Lands Council instructs that cumulative-effects analysis under NEPA "requires the Final Environmental Impact Statement to analyze the impact of a proposed project in light of that project's interaction with the effects of past, current, and *reasonably foreseeable future* projects." *Lands Council v. Powell*, 395 F.3d 1019, 1027 (9th Cir. 2005) (emphasis added) (citing 40 C.F.R. § 1508.7). It is not "appropriate to defer consideration of cumulative impacts to a future date.

NEPA requires consideration of the potential impact of an action *before* the action takes place." *Neighbors of Cuddy Mountain v. United States Forest Serv.*, 137 F.3d 1372, 1380 (9th Cir. 1998) (emphasis in original) (internal quotation marks and citation omitted). That the Army Corps has provided for deep-water disposal of all dredged material from the Mouth of the Columbia River Project (even as a "worst-case" scenario) and has sought authorization of a site with sufficient capacity for this potential outcome demonstrates that such an outcome is "reasonably foreseeable." The impacts of disposal of all dredged materials from the MCR Project and channel-deepening into the deep-water site should, therefore, have been analyzed under NEPA. The majority's assertion that because the Corps was aware of potentially adverse impacts and tried to avoid them, it need not study or quantify those impacts, is simply inconsistent with this standard.

The EIS must "include a useful analysis of the cumulative impacts of past, present and future projects. This means a discussion and an analysis in sufficient depth and detail to assist the decisionmaker in deciding whether, or how, to alter the program to lessen cumulative impacts." *Muckleshoot Indian Tribe v. United States Forest Serv.*, 177 F.3d 800, 809-10 (9th Cir. 1999) (internal quotation marks and citations omitted). In *Muckleshoot*, this court found that the agency's cumulative effects analysis "f[e]ll short" of the required "useful analysis" where the agency "merely indicat[ed] the amount of land to be exchanged, for example, and whether the land would be subject to commercial harvest, followed by an optimistic conclusion." *Churchill County v. Norton*, 276 F.3d 1060, 1080 (9th Cir. 2001) (citing *Muckleshoot*, 177 F.3d at 811). The Army Corps' analysis of the cumulative effects of deep-water disposal of MCR Project and channel-deepening dredged material is analogous to the analysis rejected by this court in *Muckleshoot.* The Corps' statement of a preference against deep-water disposal is analogous to providing this court with an "optimistic conclusion." This does not constitute a "useful analysis."

Although the majority asserts correctly that an agency need not "engage in the most exhaustive environmental analysis theoretically possible"; it just has to take a "hard look." Maj. Op. at 10090. Nonetheless, what is required to satisfy that standard must be applied in a manner consistent with the purpose of NEPA. *Klamath-Siskiyou*, 387 F.3d at 993 (citing *Churchill County*, 276 F.3d at 1072). First off, it is important to identify at *what* the agency must take a hard look. The Army Corps asks us to find that the agency's dismissal of a highly likely consequence of its proposed project, without any assessment of its consequences, satisfies the "hard look" standard. This is inconsistent with the mandate of NEPA, a statute that requires agencies "to put on the table, for the deciding agency's and for the public's view, a sufficiently detailed statement of environmental impacts and alternatives so as to permit informed decision making." *Id.* at 1027. Here, the Corps tells us that there won't be a problem. Although the agency admits the adverse consequences will be profound, it hasn't studied what will happen if the "worst-case" scenario comes to pass, the Corps asks us to trust it. That is not the standard. The Army Corps has failed to take the required "hard look" at the cumulative impacts on coastal erosion of dumping large quantities of the dredged materials from the Mouth of the Columbia River and those from channel deepening into the proposed deep-water disposal site.

NEPA analysis must include an answer to the question posed by Appellant: What would be the impact on coastal erosion if all or substantial quantities of the material dredged from the Mouth of the Columbia River Project and the channel-deepening project were disposed of in the deep-water site? NEPA requires the Corps to answer this question because it is a "reasonably foreseeable" outcome. Talking around that possible outcome, explaining why that is not the preferred outcome, planning to minimize this outcome, all the while taking steps that would bring this possibility to fruition, make clear that the Corps has not met its obligations under NEPA. We should remand for the agency to undertake further

study. Instead, the majority allows channel deepening and authorization of the deep-water disposal site to proceed, even without an understanding of the cumulative effects on coastal erosion of a "reasonably foreseeable" future project.

III. OTHER SIGNIFICANT IMPACTS OF CHANNEL DEEPENING: TOXICITY AND SALINITY

NEPA requires the Army Corps to evaluate the direct and indirect impacts of channel deepening and disposal of the dredged material, considering all "relevant factors." 40 C.F.R. §§ 1502.16, 1508.8; *Rybacheck v. U.S. Envtl. Prot. Agency*, 904 F.2d 1276, 1284 (9th Cir. 1990).

A. **Toxicity**

Northwest Environmental Advocates challenges the sufficiency of the Army Corps' analysis of the effects of channel deepening on the river's toxicity.[8] NWEA asserts that, in its analysis of the impact of channel deepening on levels of toxins in the Columbia River, the Corps failed to draw adequate samples from the sides of the riverbed, which as the channel

[8]The toxicity of the Columbia River is much in the news. The federal government recently reached a limited agreement with a Canadian mining company, Teck Cominco, that is believed to be responsible for a century's worth of pollution of the stretch of the Columbia between the Canadian border and the Grand Coulee Dam. Although the agreement requires Teck Cominco to fund a short-term study of human health and the environment of Lake Roosevelt, tribal stakeholders and the State of Washington are expressing reservations and concern that the agreement will allow Teck Cominco to walk away from what they believe is the company's obligation to pay for its pollution of the Columbia. *Pollution Study Ordered: Teck Cominco Pact Targets Fouling of Columbia*, Karen Dorn Steele, The Spokesman Review (June 3, 2006). In fact, this court just held that a lawsuit seeking to hold Teck Cominco liable under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) could proceed because, although Teck Cominco is a Canadian company, it released hazardous substances into the United States. *Pakootas v. Teck Cominco Metals, Ltd.*, No. 05-35153 (9th Cir. July 3, 2006).

is deepened may erode into the deepening channel, mobilizing whatever toxins they contain. The majority holds that there is no need to test sediments from the channel sides for two reasons: (1) because they will not be affected by dredging, and (2) because any material vulnerable to side-slope adjustment is previously-dredged material which must be toxin free. The record refutes this.

In its Biological Opinion, National Oceanic and Atmospheric Administration (NOAA) Fisheries identified the Columbia River's toxicity to be "among the highest levels measured in estuarine sites in Washington and Oregon." Biological Opinion at 36. These high levels of toxicity, just short of lethal, pose a serious threat to juvenile salmonids dependent upon the estuary, not to mention the potential adverse effects on humans and other species. The Army Corps explained the problem of "side-slope adjustment" noting that

> After the initial deepening the riverbed would begin to adjust to the new channel depth. Riverbeds adjacent to the deeper dredge cuts will degrade as bedload is deflected down the cut slope and into the navigation channel. This process will continue for 5-10 years before the side-slopes reach equilibrium with the channel hydraulics. Sand eroded from these sides will become part of the active bedload transport on the riverbed.

FSEIS, Exh. J at 9.

By this process, channel deepening may re-suspend contaminants that had been isolated in the side slopes of the riverbed. Despite this concern, the Army Corps failed to test the toxicity of a sufficient number of sediment samples taken from outside the navigation channel, analyzing primarily samples collected within the channel. The Corps, therefore, has almost no data from which to analyze the impacts of side-slope adjustment on the overall toxicity of the river during

and after channel deepening; without that data, the Corps cannot effectively analyze the impact of channel deepening not only on juvenile salmonids dependent upon the estuary, but other users of the river.

The Corps claims a database of 4,000 sediment samples from the Columbia River system. However, there are several problems with this database from the standpoint of an adequate NEPA analysis. First, only 586 of the 4000 samples have been tested for toxicity. Second, the sample set is very old. Many samples pre-date the 40-foot channel depth. Only 40 samples, taken from just 4 sites, were taken later than 2000, and none of these are from side-slope areas.[9]

Salmon runs are at perilously low levels. The last thing that salmon need is another ladder to climb, so to speak. The Corps' failure to thoroughly analyze toxicity in the side-slope sediment renders its NEPA analysis incomplete — the agency has not considered all "relevant factors" associated with the direct and indirect impacts of channel deepening on river toxicity.

B. **Salinity**

Appellant also points to the Army Corps' inadequate analysis of the impacts of channel deepening on the salinity of the Columbia River estuary. Salinity has a tremendous impact on the estuary's health. Like levels of toxins in the river, the salinity of the estuary is a matter of vital importance to the juvenile salmon which must rest and readjust in the estuary before transitioning from fresh water to salt water in the

[9]Following its assertion that side-slope sediment need not be tested, the majority holds, in the alternative, that the Corp has in fact tested side-slope sediments. It bases this holding on a pathetic sample size — *two* samples from outside the navigation channel. To hold that two samples from outside the navigation channel, when dredging is planned for more than one hundred miles of the Columbia, satisfies NEPA standards borders on the absurd.

ocean. The administrative record documents that deepening the Columbia River channel over the past century and other changes to the structure of the river have "likely caused the largest changes in salinity intrusion and density stratification" in the estuary. Salmon at River's End: The Role of the Estuary in the Decline and Recovery of Columbia River Salmon, NMFS Technical Memorandum at 99 (2001).

At issue is the accuracy of the Army Corps' models for measuring impacts of channel deepening on salinity. Contrary to the majority's assertion, NWEA does present a "cogent challenge" to the old model, the WES model, a challenge supported by the record. NOAA Fisheries warned the Corps not to use its older salinity model because of the imprecision of its measurements of salinity in the shallow areas that are favored by salmonids:

> The WES model used to evaluate change in salinity intrusion was not validated nor designed to assess impacts in the shallow, side channel habitat used by salmon. In other words, an analysis is needed of whether the model would predict current conditions to determine credibility of its ability to predict future conditions. WES was not asked to conduct such an assessment, and commented that — if such validation were needed — a new model would have to be developed.

Notes from NOAA Fisheries meeting to "Clarify Science Issues for Columbia River Channel Deepening Project," (Oct. 6, 2000).

Heeding this admonition, the Corps developed a new model for measuring salinity, the Oregon Health and Sciences University/Oregon Graduate Institute (OHSH/OGI) model. NWEA argues that the Corps rushed development of this new salinity model and used it only to evaluate the accuracy of the older model. Furthermore, the Corps appears to have

employed the new salinity model too hastily, before its accuracy had been verified. The developers of the model expressed concern about reliance on its results given the uncertainty surrounding them.[10] However, the Corps relied on the findings based on this highly uncertain new model to conclude that salinity would increase in the shallows by less than .5 ppt (parts per thousand) and that this would have no impact.

The district court apparently relied, not on evidence within the record, but upon its own Google search about the Corps' salinity model. The Corps relied upon a model admittedly fraught with uncertainty to reach its conclusion that the channel deepening would produce no adverse impact on the salmonids from salinity in the estuaries. I suggest that studies employing an older, inadequate model followed by complete reliance on an untested model does not constitute the "hard look" required by NEPA.

IV. CONCLUSION

Fundamentally, the majority takes an ostrich's head-in-the-sand approach to reviewing the agency's analysis, settling for the Corps' explanation without undertaking the required review of its decision making. It is true, we are not permitted to substitute our judgment for the reasoned decision of the agency. Neither, however, are we permitted to rubber-stamp the agency's decision of what factors must be considered and what factors need not be considered without taking a detailed look at whether the agency's reasoning is sound. Here, it is not.

[10]Uncertainty as to the accuracy and adequacy of the model is compounded by the impacts of climate change on the Pacific Ocean and Columbia River — how will now-certain rising of sea level impact salinity of the estuarine lower Columbia River? We don't know because the Corps has not considered this significant factor.

The "hard look" here went awry. The Corps, as it must, acknowledged profound consequences from erosion if large quantities of sand are removed from the littoral system. Anyone familiar with the Washington coastline has seen the devastation from past erosion (consequences the Corps admits were caused by its own past bad practices). The Corps acknowledges that it has designated a deep-water disposal site to hold huge quantities of dredge spoils, but has no plan of mitigation if that site is used for its intended purpose. Nor does the Corps analyze when and how much erosion is likely to occur—only that it will be profound and devastating. Its analysis of increased toxicity that may result from dredging is completely inadequate, as is its analysis of possible changes in salinity. Last, but certainly not least, the economic analysis is highly suspect.

My bottom line is that the Corps has substantially more work to do. Hence my dissent.