BEFORE THE POLLUTION CONTROL HEARINGS BOARD
STATE OF WASHINGTON

AIRPORT COMMUNITIES COALITION, Appellant, v. STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY; and PORT OF SEATTLE, Respondents.	PCHB No. 01-133 DECLARATION OF ANN KENNY

Ann Kenny, declares as follows:

1. I am over the age of 18, am competent to testify, and have personal knowledge of the facts stated herein.

2. I am an Environmental Specialist 4 employed by the Department of Ecology (Ecology) in the Northwest Regional Office (NWRO) Shorelands and Environmental Assistance Program's Permit Assistance Center. I have been employed by Ecology since 1990 and have held that position since August 1999. My duties include providing regulatory and technical assistance on large complex projects. I worked from February 1998 to July 1999 as the Northwest Regional Office's Federal Permit Coordinator reviewing projects requiring certification under § 401 of the Clean Water Act (401 Certification). Even after taking the Permit Assistance Center position, I continued to review and issue 401 Certifications. Over the

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last three and a half years, I have issued approximately 60 water quality certifications reviewing each for compliance with state aquatic resource protection laws, including state water quality standards, stormwater management provisions and wetland mitigation requirements.

3. I have a Bachelor of Arts degree in Political Science and a Masters Degree in Public Administration. I have worked in the field of environmental regulation and permitting since 1985. During the course of my employment by Ecology I have received specialized training in: wetland delineation, stream corridor management, salmon ecology, sediment management, shoreline processes and near-shore ecology, chemistry of hazardous materials, pesticide management, household hazardous waste management, enforcement training, pollution prevention, negotiation and facilitation skills, environmental law, and cross-program regulatory training. In addition, I completed 40-hour hazardous materials training.

4. In late 1997 the Department of Ecology decided to move the 401 Certification function to the agency's regional offices. I was the first regional staff person hired to do this work. The main reason for the regionalization of this function was to improve the ability of the 401 Certification reviewer to coordinate with regional programmatic staff who have expertise in particular disciplines, such as water quality, water resources, etc. I received training in 401 Certification review from Tom Luster and other Ecology staff. This included working at Ecology's headquarters in Lacey for several weeks of hands-on training.

5. The job classification for the Federal Permit Coordinator position states:

> Acts as the regional coordinator for a wide range of projects requiring permits from the U.S. Army Corps of Engineers under the Federal Clean Water Act and the Rivers and Harbors Act, U.S. Coast Guard permits under Section 9 of the Rivers and Harbors Act. . . . Reviews, analyzes, and coordinates concerns of state resource agencies, tribes, and the public on proposed projects, and conditions projects as necessary to ensure that the full range of state aquatic protection regulations are met. . . . Acts as Ecology lead staff/project manager on complex or controversial projects that require the above-referenced permits.

A key facet of 401 Certification review involves the coordination of an interdisciplinary, cross-programmatic review team. Depending on the nature of the project, the 401 Certification

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reviewer brings together staff from various programs and technical disciplines to review the project.

6. I represented the NWRO Shorelands and Water Resources Program on the reorganization team that recommended that the 401 Certification function be regionalized. In that capacity I met with the NWRO regional management team to solicit input. The management team expressed concern that the Federal Permits Unit at headquarters did not sufficiently coordinate with regional staff on projects requiring 401 Certification. When I was hired to fill the Federal Permit Coordinator position at NWRO, it was stressed to me that one of the expectations for my performance was that I work closely with technical staff within our own program and with other regional programmatic staff when developing 401 Certifications.

7. As a 401 Certification reviewer, I worked very closely with staff in other programs to develop appropriate conditions and deferred to their technical and regulatory recommendations. Technical staff always have the opportunity to provide input on draft 401 Certifications and to recommend language for inclusion in the certification. While I have a broad background in many different areas such as shoreline management, solid and hazardous waste management, etc., I do not substitute my own knowledge or opinion for that of technical staff I work with. I do use my knowledge and experience to ask questions, review material and point staff to issues requiring their review.

Port of Seattle's 401 Certification

8. Ecology's review of the Port of Seattle's (Port) Sea-Tac International Airport (STIA) Master Plan Update Improvements began sometime in 1995 or 1996. The Port filed an initial Joint Aquatic Permit Application (JARPA) to the U.S. Army Corps of Engineers (Corps) and Ecology in December, 1997. On July 20, 1998, Ecology issued a 401 Certification for the project. That certification was later withdrawn when additional wetlands that would be impacted were discovered. The Port submitted a second JARPA in September, 1999, but withdrew that application in September, 2000, shortly before the expiration of the one-year

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decision deadline imposed by the Clean Water Act. On October 25, 2000, the Port filed a new JARPA for the project with the Corps and Ecology.

9. I am Ecology's 401 Certification reviewer for the Port's Master Plan Update Improvement projects. I have been involved in reviewing the Port's proposal, including the Third Runway, since late October, 2000. Before I became the project manager for the Port's project I met with Tom Luster, who preceded me in that position, and was briefed on the status of the project. Since that time I have participated in numerous technical and coordination meetings over the past twelve months reviewing, discussing, and evaluating the Port's proposal. Many of these meetings were documented in meeting notes prepared by Floyd and Snider, Inc. I also participated as Ecology's representative in the joint Corps and Ecology public hearing held on January 26 and 27, 2001. I listened to the comments of many concerned citizens and also received written public comment on the project. I was responsible for preparing the Section 401 Certification issued on August 10, 2001, and the subsequent revision issued on September 21, 2001. Exhibit 1 is a copy of the revised 401 Certification. I have reviewed the declarations filed by the Airport Communities Coalition (ACC) filed in support of its motion for stay in this matter and I am generally familiar with its concerns.

10. In developing the 401 Certification, I received input and comments from numerous individuals including Ecology staff, consultants for the Port, consultants for ACC, and members of the public. The process involved reviewing comments and concerns raised by Ecology staff or consultants and comments received from the public, including the technical comments submitted by the ACC's consultants, to determine whether those concerns were still relevant and whether they had been adequately addressed by the Port's proposal. I developed the conditions in the 401 Certification in consultation with Ecology's experts in the particular fields involved, such as wetlands science, hydrology, stormwater management, water quality, toxics and fish biology. The 401 Certification that I authored signifies that I have reasonable assurance that the project will not violate the State of Washington's water quality laws.

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11. In its request for a stay, the ACC has placed considerable confidence in the assertions Mr. Luster makes in his declaration. Mr. Luster, however, has not been involved in this project since the end of October, 2000. Mr. Luster states in his declaration that he has "continued to maintain familiarity with the proposed project through review of various documents associated with the proposal and occasional discussions with Ecology staff involved in the 401 review". Declaration of Thomas R. Luster (Luster Dec.) at ¶ 12. It is difficult for me to determine the depth of his knowledge as he was not involved in any of the numerous technical meetings that occurred since he left the project in late October of 2000. I cannot address what information he has reviewed regarding the project, but I do know that none of the technical documents submitted by the Port pertaining to the project were provided directly to him by the Ecology, nor did he request such information from Ecology.

12. Furthermore, any conversations that I had with him regarding the project after I became project manager either focused on how Mr. Luster had addressed issues in the past (such as how he prepared for and managed the public hearing) or were in response to telephone calls from him informing me of his contacts with counsel for ACC and a state legislator. In those conversations I discussed the status of the project in very general terms. I did not provide Mr. Luster with any detailed information regarding the status of our review.

13. The ACC asserts that Ecology did not have reasonable assurance at the time it issued the 401 Certification. In support of that assertion, the ACC relies on Mr. Luster's statement of what constitutes reasonable assurance. Mr. Luster states that reasonable assurance requires that "the state must be certain at the time of certification that the proposed project will meet standards, . . ." Luster Dec. at ¶ 19. Not only is this statement directly contrary to guidance Mr. Luster developed for Ecology, it also contradicts a January 21, 2001, letter he wrote to Senator Julia Patterson responding to her request for information on the Port's 401 Certification request.

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14. As the policy lead for Ecology's 401 Certification review, Mr. Luster developed a draft 401 Certification Desk Manual for use by Ecology staff reviewing applications for 401 Certification. In discussing the "reasonable assurance" standard, Mr. Luster wrote:

> **What is "Reasonable Assurance" and How Is It Implemented?**
>
> When we issue a 401 certification, we are expected to have "reasonable assurance" that the proposed project will comply with the necessary requirements. "Reasonable assurance" is the term used in the Clean Water Act and in EPA guidance to describe the level of certainty we need to issue a 401 certification. The Pollution Control Hearings Board, in its decision in the Navy Homeport case (Friends of the Earth v. DOE, PCHB No. 87-63 [1988]), described the two-step process to arrive at "reasonable assurance".
>
> **Step 1:** Determine, through a "preponderance of evidence", that water quality standards can and will be met, and identify any areas of uncertainty.
> **Step 2:** Address the areas of uncertainty by including measures that will remove or reduce the uncertainty.
>
> In describing this process, the Board recognized that "reasonable assurance" depends in part on predicting future events, and that even with a preponderance of evidence favoring certification, there may be some remaining uncertainty. In the second step of the process, the Board stated that this remaining uncertainty can be dealt with by including monitoring requirements on the certification, to ensure that the project either meets the requirements or if it doesn't, that steps can be taken to correct the non-compliance.
>
> This standard of "reasonable assurance" is one of the primary reasons the Federal Permits Team requires thorough project review and detailed and specific 401 conditions. It also provides much of the impetus for our coordination with other technical and regulatory experts to reach a comprehensive and defensible permit decision.
>
> The "reasonable assurance" process is further described below.
> **"Reasonable Assurance" in Federal Permit Team water quality certification review:**
>
> For purposes of the Federal Permits Team 401 review, this two-step process should be used in your certification review and as a basis for your decision-making. The steps are:
>
> **Step 1:** Determine, through a preponderance of evidence, that applicable regulations can and will be met, and identify any areas of uncertainty.
>
> You should first consider whether a proposed project can meet the water quality standards and other requirements. For example, will the discharges or activities from a particular project meet the applicable criteria? If a wetland is to be filled, can the lost functions and values be adequately mitigated? Will the proposed stormwater BMPs for a project allow applicable water quality criteria

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to be met? If a proposal includes work adjacent to a salmon-bearing stream, can BMPs be included that will adequately prevent sediment runoff into the stream?

If you determine that some part of the water quality standards cannot be met, then determine what changes or mitigation elements would be required to allow the proposed project to meet the applicable standards. For example, if a proposed project would result in an increase in stream temperature above the temperature criterion, then it should also include enough mitigation elements (e.g., riparian plantings, stormwater infiltration, covered conveyance pipes, etc.) to remove that impact and reduce temperatures to an allowable level. Or, if a wetland is providing critical groundwater recharge functions or particularly valuable wildlife habitat, then the mitigation proposal should incorporate elements that adequately compensate for those losses, such as a mitigation site that provides for groundwater recharge, habitat, etc., along with adequate performance standards and other necessary elements.

After identifying whether the project can meet the applicable standards, and what measures are necessary for it to do so, also identify the remaining uncertainty or doubt about the success of the proposed project or its mitigation elements in meeting the requirements.

Step 2: If there is remaining uncertainty that some elements of the proposal may result in non-compliance, identify what elements need to be included in the certification to eliminate all or most of that uncertainty. These elements can include monitoring requirements, contingency plans, compliance inspections, etc.

Using one of the above examples, what if the 401 certification includes a requirement to plant a riparian area to reduce temperatures, and those plantings are not successful? You may want to include a 401 condition requiring that "as-builts" be sent within 30 days after planting to ensure that the necessary number and types of plantings were placed in the appropriate locations. You may also want to require the plants be watered for the first year or two to help them become established. You may include a performance measure, such as requiring all plants that don't survive the first year or two be replaced, and that after 5 years, the riparian area show 80% coverage of native species. All these types of conditions are part of getting to "reasonable assurance".

Draft Federal Permits Team Desk Manual, Version 1.01, January 24, 2000; excerpt attached hereto as Exhibit 2. Mr. Luster's statement in the attachment to his letter to Senator Patterson is consistent with the excerpt from the draft Desk Manual. A copy of Mr. Luster's letter to Senator Patterson is attached hereto as Exhibit 3. In both instances he acknowledges that "reasonable assurance" does not mean certainty. In fact, in the training I received from Mr. Luster he never indicated that Ecology must be "certain" before it can issue a 401 Certification. Rather, he explained that Ecology can and should include conditions in the 401 Certification to

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address outstanding issues posed by a project. These are the guidelines that I have applied to 401 decisions in the past and are the guidelines that I applied specifically to this project.

15. Mr. Luster's assertion that during his tenure at Ecology, under the reasonable assurance standard a 401 Certification could not issue until "the agency had reviewed and approved complete and final documents submitted by the applicant for critical project elements such as wetland delineations, wetland mitigation and monitoring plans, a description of BMPs that would be employed at the project, and the like" is simply not accurate. There are numerous instances during the time Mr. Luster was a member of the Federal Permits Unit that 401 Certifications were issued requiring the future completion and submittal of the project elements identified in his declaration. The following examples are drawn from the 401 Certifications attached to my declaration:

> Exhibit 4, Condition B2 at page 3:
>
> The applicant shall submit an evaluation of why vegetation has not been successfully established on Island #2. This information must be submitted to Ecology by November 11, 2000. Once Ecology receives this additional information, Ecology will determine which wetland mitigation plan will be implemented. If Ecology determines that the alternative mitigation plan entitled, South Cle Elum Bridge Project Proposal to Create Additional Wetlands Mitigation for Mitigation, will be implemented, **the applicant shall submit a final mitigation plan for this proposal.** This final mitigation plan will follow the, Guidelines for Preparing Freshwater Mitigation Plans and Proposals. This final alternative mitigation plan will include all portions of the mitigation plan entitled, Yakima River Water Intake Modification, Rock Drop and Utility Conduit Installation, Wetland Delineation and Mitigation, other that the Island #2 wetland mitigation portion. The final alternative mitigation plan will be submitted to Ecology within 14 days of permit issuance by the US Army Corps of Engineers. (Emphasis added.)
>
> Exhibit 5, Condition 12 at page 5:
>
> Applicant shall provide to Ecology a copy of the final maintenance plan approved by the City of Auburn's Planning and Public Works Directors, as described in Conditions 4.B and 4.C of the Ordinance.
>
> This plan shall include, but not be limited to:
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> * a planting plan for both the 3.5 acre wetland in the northwest corner of the racetrack site and the wetland buffer along the southern boundary of the racetrack site;

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* a grading plan showing constructed slopes at both the 3.5 acre wetland and along the southern boundary; and
* maintenance required for both areas.

Exhibit 6, Condition 2 (a) at page 2:

> The WDFW has identified the north side of Pioneer Ave as a section of the Deer Creek drainage that would most benefit by a vegetation enhancement effort. Refer to the enclosed letter of April 28, 1998. Such an effort would help compensate for impacts to a drainage system in which salmon may be able to establish a spawning population. The primary goal of the mitigation effort would be to increase functional channel shading. In coordination with WDFW and Ecology, the City of Puyallup shall prepare a preliminary mitigation plan for a vegetative enhancement effort and, optimally, implement the plan in connection with the channel maintenance work.

Exhibit 7, Condition 4 (a) at page 5:

> The creation, restoration and enhancement of the Newskah Creek wetland mitigation site shall be done in conformance with the "final version" of the *75% Design Level, Preliminary Restoration Plan for the Washington State Department of Corrections Stafford Creek Corrections Center, Grays Harbor County, Washington* prepared by L.C. Lee & Associates, April 24, 1998. The final version of the mitigation plan shall be completed and made available prior to the start of major (earth moving) mitigation work.

Finally, Exhibit 8 is a 401 Certification authored by Mr. Luster, where the applicant, who had not prepared a mitigation plan, was issued a 401 Certification based on discussions he had with Ecology regarding the mitigation requirements. The 401 Certification then required the applicant to submit a wetland mitigation plan for Ecology's review and approval. Exhibit 8, Condition 6 at p. 3.

16. In paragraph 35 of his declaration, Mr. Luster asserts that Ecology should have deferred approval of the 401 Certification until it receives a Final Natural Resource Mitigation Plan (NRMP) and implies because Ecology placed conditions in the 401 regarding the NRMP the agency determined that the mitigation is not adequate. That is not the case. *See* Declarations of Erik Stockdale and Katie Walter submitted with Ecology's Response to ACC's Motion for Stay. Ecology has been reviewing the Port's proposed mitigation for an extended period and the basic elements of the mitigation plan have not changed substantially over time. As discussed by Mr. Stockdale and Ms. Walter, Ecology's wetland mitigation reviewers, the

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mitigation package that the Port has proposed is substantial. The conditions placed in the 401 Certification are prescriptive and require the Port to fine tune its proposal. Those conditions do not impose new substantive requirements. Consistent with Ecology's practice, there was no reason to delay issuance of the 401 Certification pending the receipt of a final NRMP.

17. In paragraph 35 of his declaration, Mr. Luster also criticizes Ecology's decision to allow the Port to submit a conceptual mitigation plan for the 2.05 acres of temporary impacts that Ecology determined would be permanent in nature. Again, consistent with past practice, in Condition D (4) of the 401 Certification Ecology provided detailed instructions for the elements of the mitigation plan and required the Port to submit that plan by November 9, 2001. Given the prescriptive nature of the Condition D (4) and the uncomplicated nature of the mitigation required (restoration and enhancement of and existing wetland), there was no need to hold the 401 Certification pending submission of that plan.

18. Mr. Luster takes issue with the Ecology permitting the Port to request extensions on submittal deadlines. Mr. Luster's criticism is misplaced as Condition C (4) specifically requires the Port to submit all documents in a timely manner or the permit is subject to revocation. In no way has Ecology relinquished its oversight or regulatory authority by allowing the Port to request an extension of a timeline upon the presentation of an acceptable reason. Moreover, Ecology is not required to grant such a request. Ecology has a responsibility to oversee the implementation of the conditions of the 401 Certification. In recognition of that responsibility and Ecology's limited resources, the Port has committed to fund three to five professional staff at Ecology whose sole job responsibilities will be to oversee the Port's implementation of the 401 Certification. Given that level of oversight, Ecology will know if the Port has failed to submit the required documentation in a timely manner and will be able to take timely action to correct the situation including the issuance of penalties and possible revocation of the permit.

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Stormwater Management and Low Flow Mitigation

19. For purposes of developing its stormwater plan, the Port proposed the use of a continuous flow hydrologic model, which the state stormwater manual does not address. The Port, therefore, agreed to comply with the King County Surface Water Design Manual (King County Manual) which allows for use of such a model and which in general set a higher standard for compliance than the state manual in effect at that time (the revised Ecology Stormwater Manual was released on September 27, 2001). It also made sense to utilize the King County Manual since the project is located there.

20. Because the King County Manual would be used, in early 2000 Ecology contracted with King County for review of the Port's proposed Stormwater Management Plan (SMP). The contract was later amended to allow for review of the Port's Low Flow Offset Mitigation Plans. Kelly Whiting, a Senior Engineer at King County Department of Natural Resources, was my primary contact for review of the Port's Stormwater Management and Low Flow Plans.

21. The major factor leading to the Port's withdrawal of its 401 Certification application in September 2000 was due to the inadequacy of the Port's Comprehensive Stormwater Management Plan (CSMP). Through a series of facilitated meetings, Ecology scoped the changes that needed to be made to the CSMP, as well as identified other issues that required resolution. By the time Ecology issued the 401 Certification in August every single issue pertaining to the adequacy of the stormwater plan had been successfully resolved and the SMP amended to reflect those changes.

22. Prior to issuance of the 401 Certification, King County certified to Ecology that the Port's SMP satisfied the criteria and performance standards of the King County Manual. Declaration of Kelly Whiting (Whiting Dec.), Exhibit 1. In his comments on the SMP, Mr. Whiting recommended that certain conditions be added to the 401 Certification. Those recommendations were incorporated into the certification.

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23. To resolve the public's concerns regarding the Port's exceedence of state water quality standards for metals and to protect beneficial uses in local streams, Condition J (2)(a) of the 401 Certification requires the Port to perform a site specific study, such as a Water Effects Ratio Study (WERS), to establish appropriate effluent limitations for inclusion in the Port's NPDES permit. That condition prohibits the discharge of any operational stormwater from new pollution generating impervious surfaces to state waters prior to completion of the study and the inclusion of appropriate limitations and monitoring requirements in the Port's NPDES permit.

24. In his declaration, Mr. Luster contends that it is insufficient to base a 401 Certification decision on the adequacy of an NPDES permit. I disagree. Both permits address water quality. Reasonable assurance that water quality standards will be met by a particular project may be provided by the effluent limitations and other requirements established in the permitee's NPDES permit. The requirements in the Port's NPDES permit are specifically designed to protect beneficial uses in the receiving waters.

25. Mr. Luster would have the reader of his declaration believe that the 401 Certification is the only tool available to Ecology to protect water quality. To that end, in paragraph 18 he states, ". . . the 401 review and decision is critical because it is the state's sole opportunity to determine whether the proposed permanent loss of all or part of a waterbody is adequately avoided, minimized and mitigated, and whether the activities associated with construction and operation of the facility requiring certification meet water quality standards." This is an overstatement of the importance of the 401 Certification in this case. First, Ecology determined that the impacts to wetlands and other water bodies were properly identified, avoided, minimized and will be sufficiently mitigated. Second, the construction and operation of the facilities associated with this permit application are covered both by the 401 Certification and by the Port's NPDES permit. The 401 Certification is written such that it serves as the baseline for future NPDES permits. See Condition B (1)(f). Therefore, it is not

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correct to state that the 401 Certification is the only opportunity that Ecology has to regulate the project's impacts to water quality.

26. In paragraphs 22 and 23 of his declaration, Mr. Luster further asserts that "Ecology's practice has been to recognize that the CWA imposes a stricter standard of review in 401 than it does in 402 . . . . For projects such as the proposed SeaTac expansion, it is not sufficient to base a 401 decision on the adequacy of the 402 permit. For instance, if the 402 permit does not include specific effluent limitations or does not require BMPs that are known to adequately treat discharges to meet the applicable water quality criteria, then the 401 must serve to 'fill the gaps' and include conditions that address those short comings." As stated above, the 401 Certification Ecology issued on August 10, 2001 and reissued on September 21, 2001 fulfills this charge to "fill the gaps" by specifically prohibiting the discharge of operational stormwater from new runway surfaces until appropriate limitations and monitoring requirements have been established in the Port's NPDES permit.

27. Moreover, Condition J (2) of the 401 Certification specifically addresses the issue of BMPs. As stated by Mr. Whiting, the CSMP provides water quality treatment through a combination of source control and treatment BMPs. Whiting Dec., at ¶ 6, p. 3. Monitoring will determine if additional treatment BMPs are necessary. The NPDES permit will be the tool to ensure that additional treatment BMPs, if necessary, are implemented.

28. Mr. Luster asserts that "several conditions essentially state that Ecology expects water quality standards to be violated . . . ." Luster Dec., at ¶ 32. This statement and the examples that he cites, Conditions A (2)(d) and (g), completely misinterpret the intent of those conditions.

29. To fully understand Conditions A (2)(d) and (g), one must also consider Condition A (1), which provides that the water quality criteria of WAC 173-201A-030(1) and 173-201A-040 apply to this project and that temporary exceedances of the water quality standards beyond the limits of WAC 173-201A-110(3) are not permitted. However, in order to

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allow in-water work to occur, WAC 173-201A-110(3) establishes a temporary mixing zone during and immediately after necessary in-water or shoreline construction activities that result in the disturbance of in-place sediments. Condition A (2)(d) applies to in-water or shoreline constructions projects only and requires the mixing zone allowed by WAC 173-201A-110(3) to be minimized. This means that if the Port can meet the turbidity standards in an area that is smaller than that allowed by WAC 173-201A-110(3), it must do so. Condition A (2)(g) requires the Port to monitor turbidity at the boundary of the mixing zone and to either slow down work or implement additional BMPs to control turbidity.

30. Conditions A (1) and A (2) taken in their entirety are designed to give Ecology reasonable assurance that water quality standards will be met when the Port undertakes the construction projects associated with the portions of their project which require in-water or shoreline work. These projects are primarily associated with the Port's proposed mitigation including relocating Miller Creek, restoring natural shoreline along Miller Creek by removing artifacts of human occupation (rip-rap, tires, foot bridges, etc.) and the first rush of water that goes through the newly constructed Miller Creek channel. The Port will implement BMPs to minimize turbidity during these construction activities and none of these projects will have an ongoing discharge. Any discharge related to this project that does have an on-going discharge will be covered under the Port's NPDES permit. Condition A (2)(a) requires monitoring plans for the above in-water or shoreline construction projects to be submitted to Ecology for review and approval at least thirty (30) days prior to the start of construction. It also prohibits construction until the Port receives written approval of the monitoring plan from Ecology. By requiring submittal of a monitoring plan and prohibiting any work until Ecology provides written approval, this condition ensures that the in-water and shoreline projects will not adversely affect water quality.

31. Ecology required the Port to develop a Low Flow Mitigation Plan because construction of the STIA expansion projects involves installation of substantial amounts of fill

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and an increase in impervious surface area in the Walker, Miller and Des Moines Creek basins. In requiring a Low Flow Mitigation Plan, Ecology intended that the Port offset the impacts to the streams by mimicking, to the extent practicable, the pre-project hydrologic curve. In order to clearly identify the issues the low flow mitigation plan needed to address, Ecology and the Port engaged in a facilitated process similar to that of the CSMP for low flow. In that process, Ecology identified the impacts and approved a conceptual plan to mitigate for those impacts.

32. The primary concerns expressed by the ACC regarding low flow mitigation are that the Port's Low Flow Offset Mitigation Plan lacks sufficient detail and is untested. Mr. Whiting, in his review of the plan, included in his comments specific recommendations to address these issues. Whiting Dec., Exhibit 2. In drafting the 401 Certification, I included Mr. Whiting's recommendations as conditions. For example, Condition I(a) of the 401 Certification requires the Port to submit a more detailed plan that includes conceptual design drawings for the stormwater vaults, a final operations and maintenance plan, a monitoring protocol, and contingency measures to address potential shortages in the vaults. The 401 Certification also requires the Port to develop a pilot program to test one stormwater vault for performance before implementing the plan. This "bench scale" testing of the system was included in response to comments from the ACC. The ACC's contention that the Port has already exhausted contingency measures for obtaining additional water, if needed, to offset low flows in the project streams is incorrect. The Port's contingency plan could involve the purchase of water, for example, for use as mitigation.

33. Although some precise details regarding the mechanics of delivering the water to the streams had not been provided, Ecology was reasonably assured that the impacts had been appropriately identified and that the proposed mitigation was technically feasible. As described above, consistent with prior 401 Certifications, Condition I requires the Port to submit to Ecology within 45 days of receipt of the 401 Certification a final plan containing the

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elements detailed in the condition. It was not necessary to delay issuance of the 401 Certification until receipt of the plan.

34. The Port's July 2001 low flow proposal involved lining some of the filter strips in the Walker Creek basin in order to gain sufficient impervious surface in that basin to fill the vault to the level required to offset low flows in Walker Creek. Ecology staff and Mr. Whiting expressed concerns regarding the feasibility of this approach and noted that it upset some of the assumptions underlying the SMP. Concern was also raised regarding potential impacts to Wetland 44A. Whiting Dec. at ¶ 6, p. 8. Therefore, the Section 401 Certification rejected the Port's proposal in this respect and included a requirement that the additional surface water runoff needed to offset flows in Walker Creek be obtained from a 69 acre area that is not contiguous to the Walker Creek basin. The Port has agreed that this requirement is reasonable and can be readily implemented.

35. The ACC alleges that the low flow plan is inadequate because the hydrologic models fail to take into account two area of impervious surfaces: (1) areas of the Industrial Wastewater System lagoon that have been lined, and (2) areas of future business park development at the side of the proposed borrow pits. Neither of these areas are part of the Port's current proposal for which a 401 Certification was sought. Therefore, it would be inappropriate for the 401 Certification to require mitigation for low flows allegedly caused by those areas. Also the alleged future business park development in the borrow pit areas is entirely speculative and may never occur.

36. To ensure that water in the stormwater vaults used for mitigation is of adequate quality, Condition I (1)(e) requires the Port to monitor both the water in the vaults and the receiving streams and to take appropriate treatment measures depending on the results of the monitoring. In addition, Condition I of the 401 Certification incorporates several water quality design elements recommended by Mr. Whiting that were taken from the design specifications for wet vaults in King County's Surface Water Design Manual. Whiting Dec. at ¶ 6, pp. 6-7.

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37. To verify the Port's assertions that there would be no impacts to fish or other aquatic organisms in Walker, Miller, and Des Moines Creeks due to low flows, the 401 Certification requires that the Port conduct a Benthic Index of Biotic Integrity (BIBI) evaluation to determine base line conditions in those creeks and to monitor stream health changes over time. The BIBI monitoring involves looking at benthic macro-invertebrates (such as mayflies, caddis flies, clams, snails, and worms) and measuring aspects of stream biology that include taxonomic richness and composition, tolerance and intolerance, habit, reproductive strategy, feeding ecology, and population structure. Each metric describes some aspect of the community that responds to degradation. In addition to BIBI monitoring, Condition I (1)(e)(vi) of the 401 Certification requires the Port to monitor temperature, turbidity, channel morphology, substrate quality, type and amount of woody debris and other habitat features, riparian habitat cover and fish use. To further ensure that stream health will be protected, under Condition I (1)(e)(vi) the Port is required to further evaluate and monitor potential effects of changing low flow frequencies in June and July, and to implement contingencies if monitoring shows an adverse impact.

38. During review of the Port's STIA expansion proposal, I obtained a copy of the biological opinions prepared by the United States Fish and Wildlife Service and the National Marine Fisheries Service regarding impacts of the proposed projects on threatened and endangered species. I certify that attached hereto as Exhibits 9 and 10 are true and correct copies of these documents. The Services concluded that the projects "may affect" but are "not likely to adversely affect" listed species in Walker, Des Moines, and Miller Creeks.

Conclusion

39. In conclusion, this project was issued a 401 Certification because after extensive review by Ecology's technical staff it was determined that the impacts of the project both to natural resources and low flow would be fully mitigated by the unprecedented mitigation package proposed by the Port. The mitigation package, in combination with the CSMP that

meets and in many cases exceeds both Ecology's and King County's stormwater manuals, gave Ecology reasonable assurance that the project will meet water quality standards.

I declare under penalty of perjury under the laws of the state of Washington that the foregoing is true and correct.

DATED this 1st day of Oct., 2001

Ann Kenny

ANN KENNY

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ATTORNEY GENERAL OF WASHINGTON
Ecology Division
PO Box 40117
Olympia, WA 98504-0117
FAX (360) 586-6760

Ann Kenny Declaration

Exhibit 1

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
P.O. Box 47600 • Olympia, Washington 98504-7600
(360) 407-6000 • TDD Only (Hearing Impaired) (360) 407-6006

September 21, 2001

REGISTERED MAIL

Port of Seattle
Attn: Ms. Elizabeth Leavitt
17900 International Blvd., Suite 402
Seattle-Tacoma International Airport
SeaTac, WA 98188-4236

Dear Ms. Leavitt:

Re: Water Quality Certification for U.S. Army Corps of Engineers Public Notice 1996-4-02325 (Amended-1); Construction of a Third Runway and related projects at the Seattle-Tacoma International Airport (STIA) in the Miller, Walker, and Des Moines Creek watersheds and in wetlands at the Seattle-Tacoma International Airport, located within the vicinity of the city of SeaTac, King County, Washington; and in wetlands at the mitigation site in Auburn, King County, Washington.

The public notice from the U.S. Army Corps of Engineers (Corps) for proposed work has been reviewed. On behalf of the state of Washington, we certify that the work proposed in the Port of Seattle's (the Port's) revised Joint Aquatic Resource Permit Application (JARPA) dated October 25, 2000, the Corps' public notice and the Department of Ecology's (Ecology's) public notice complies with applicable provisions of Sections 301, 302, 303, 306 and 307 of the Clean Water Act, as amended, and other appropriate requirements of state law. This letter also serves as the state response to the Corps. This letter also serves as notification that Ecology has rescinded Order Number 1996-4-02325 issued on August 10, 2001 and replaced it with Order Number 1996-4-02325 (Amended-1) issued on September 21, 2001.

Pursuant to Section 307(c)(3) of the Coastal Zone Management Act of 1972 as amended, Ecology concurs with the Port's certification that this work is consistent with the approved Washington State Coastal Zone Management Program. This concurrence is based upon the Port's compliance with all applicable enforceable policies of the Coastal Zone Management Program, including Section 401 of the Federal Water Pollution Control Act.

Work authorized by this certification is limited to the work described in the October 25, 2000, JARPA, the Corp's Public Notice, and the plans submitted by the Port to Ecology for review and written approval.

This certification shall be withdrawn if the Corps does not issue a Section 404 permit. It shall also be withdrawn if the project is revised in such a manner or purpose that the Corps or Ecology determines the revised project must obtain new authorization and public notice. The Port will

then be required to reapply for state certification under Section 401 of the Federal Clean Water Act.
This certification is subject to the conditions contained in the enclosed Order and to the water quality and aquatic resource related conditions of the following permits and approvals:

- The Hydraulic Project Approval (HPA) be issued by the Washington State Department of Fish & Wildlife (WDFW).
- NPDES permit #WA-002465-1, issued by the Department of Ecology on February 20, 1998 and modified on May 29, 2001.
- NPDES General Stormwater Permit for Construction Activity #SO3-00491 issued by the Department of Ecology on April 4, 2001.

If you have any questions, please contact Ann Kenny at (425) 649-4310. Written comments can be sent to her at the Department of Ecology, Northwest Regional Office, 3190 160th Avenue SE, Bellevue, Washington, 98008-5452. The enclosed Order may be appealed by following the procedures described in the Order.

Sincerely,

Gordon White

Gordon White
Program Manager
Shorelands and Environmental Assistance Program

GW:AK
Enclosure
cc: Michelle Walker, Corps of Engineers
Gail Terzi, Corps of Engineers
Tony Opperman, WDFW
Tom Sibley, NMFS
Nancy Brennan-Dubbs, USFWS
Joan Cabreza, EPA
Kimberly Lockard, Airport Communities Coalition

IN THE MATTER OF GRANTING A WATER QUALITY CERTIFICATION TO:

the Port of Seattle, in accordance with 33 U.S.C. 1341 FWPCA § 401, RCW 90.48.260
and WAC 173-201A.

ORDER #1996-4-02325 (Amended -1)
Construction of a Third Runway and related projects. Components of the project include construction of a 8,500-foot-long third parallel runway with associated taxiway and navigational aids, establishment of standard runway safety areas for existing runways, relocating S. 154th Street north of the extended runway safety areas and the new third runway, development of the South Aviation Support Area and the use of on-site borrow sources for the third runway embankment.

TO: Port of Seattle
Seattle-Tacoma International Airport
Attn: Elizabeth Leavitt
17900 International Blvd., Suite 402
SeaTac, WA 98188-4236

The Port of Seattle (Port) requested a water quality certification from the state of Washington for the above-referenced project pursuant to the provisions of 33 U.S.C. 1341 (FWPCA§ 401). The request for certification was made available for public review and comment through the U.S. Army Corps of Engineer's Second Revised Public Notice No. 1996-4-02325 dated December 27, 2000, as amended by the Corps' Amendment and Erratum to the Second Revised Public Notice dated January 17, 2001. Ecology issued a 401 certification for this project on August 10, 2001. Ecology has decided to amend that certification. Accordingly, Ecology hereby rescinds Order Number 1996-4-02325 and replaces it in its entirety with Order Number 1996-4-02325 (Amended-1).

The Third Runway site and related Master Plan Update projects and on-site mitigation are located in Sections 4, 5, and 9, Township 22N, Range 4E and Sections 20, 21, 28, 29, 32, 33, Township 23 N, Range 4E in King County. Offsite mitigation will be located in Section 31, Township 22N, Range 5E in King County. The project areas, on-site mitigation and the proposed offsite mitigation are located within Water Resource Inventory Area 9. The projects covered by this Order are described in detail in the December 27, 2000 Public Notice issued by the U.S. Army Corps of Engineers, the October 25, 2000 Joint Aquatic Resource Permit Application (JARPA) and in the plans approved by Ecology as a part of this Order.

For purposes of this Order, the term "Port" shall mean Port of Seattle and its agents or contractors.

Work authorized by this Order is limited to the work described in the October 25, 2000, JARPA, as amended, unless modified by this Order or by conditions contained in other permits sought for the Master Plan Update Improvement projects.

AUTHORITIES:

In exercising authority under 33 U.S.C. 1341 and RCW 90.48.260, Ecology has investigated this application pursuant to the following:

A. Conformance with applicable water quality-based, technology-based, and toxic or pretreatment effluent limitations as provided under 33 U.S.C. Sections 1311, 1312, 1313, 1316, and 1317 (FWPCA Sections 301, 302, 303, 306, and 307);

B. Conformance with the state water quality standards as provided for in Chapter 173-201A WAC, and authorized by 33 U.S.C. 1313 and Chapter 90.48 RCW, and with other appropriate requirements of state law; and,

C. Conformance with the requirement to use all known, available and reasonable methods to prevent and control pollution of state waters as provided by RCW 90.48.010.

WATER QUALITY CERTIFICATION CONDITIONS:

In view of the foregoing and in accordance with 33 U.S.C. 1341, RCW 90.48.260 and Chapter 173-201A WAC, by this Order water quality certification is granted to the Port, subject to the following conditions:

A. Water Quality Standard Conditions:

1. Water Quality Criteria

Des Moines Creek (WA-09-2000), Miller Creek (WA-09-2005) and Walker Creek (1223370474523) are Class AA waters of the state. Certification of this proposal does not authorize the Port to exceed applicable state water quality standards (173-201A WAC) or sediment quality standards (173-204 WAC). Water quality criteria contained in WACs 173-201A-030(1) and 173-201A-040 shall apply to this project, unless otherwise authorized by Ecology. This Order does not authorize temporary exceedances of water quality standards beyond the limits established in WAC 173-201A-110(3). Furthermore, nothing in this Order shall absolve the Port from liability for contamination and any subsequent cleanup of surface waters or sediments occurring as a result of project construction or operations.

Des Moines Creek has been identified on the current FWCPA Section 303(d) list as exceeding state water quality standards for fecal coliform. This project shall not result in further exceedances of this standard.

2. Instream/Shoreline Work Monitoring Plan

a) The Port shall submit a monitoring plan for each in-water or shoreline construction project. The monitoring plan shall be submitted to Ecology for review and approval at

least thirty (30) days prior to the start of construction. No construction shall begin until the Port receives written approval of the monitoring plan from Ecology.

b) All monitoring will be reviewed for compliance with WAC 173-201A.

c) Port staff or contractors qualified to monitor for water quality compliance shall be on-site during project construction to carry out monitoring and inspect erosion and sedimentation control measures in order to ensure that water quality standards are not exceeded.

d) In the monitoring plan, the Port shall demonstrate to Ecology that any mixing zone is minimized in conformance with WAC 173-201A-100(6).

e) At a minimum, the monitoring plan shall include the measurement of turbidity and pH at an agreed point upstream of the point of in-water work or shoreline work and an agreed downstream point not to exceed 100 feet. The monitoring method shall be by a portable turbidimeter and a pH meter following the prescribed maintenance, operating, and calibration procedures in the instrument's instruction manuals. Alternatively, a grab sample can be analyzed by a laboratory accredited under the provisions of Accreditation of Environmental Laboratories, Chapter 173-50 WAC.

f) If a visual sheen is observed the Port shall sample for oil and grease.

The Minimum Detection Level (MDL) for oil and grease is 0.2 mg/L using trichlorotrifluoroethane extraction and gravimetric analysis using EPA Method 413.1. The quantitation level (QL) for oil and grease is 1.0 mg/L (5 x MDL). An equivalent method is Method 1664 using normal hexane (n-hexane) as the extraction solvent in place of 1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113; Freon-113). An equivalent method is total petroleum hydrocarbons with a MDL of 0.1 mg/L using Gas Chromatography and Flame Ionization Detector (FID) and Method WTPH-Dx Diesel (WTPH-D) from the Washington State Department of Ecology Method WTPH-D. The quantitation level (QL) for TPH-Dx is 0.5 mg/L (5 x MDL).

g) If monitoring indicates turbidity standards are not being met at the boundary of the mixing zone, measures shall immediately be taken to reduce turbidity rates, such as slowing the rate of work, placement of additional sediment curtains, etc. A field log in which the results from the turbidity sampling have been recorded shall be maintained at the project site. The field log shall be made available to Ecology staff upon request.

h) Monitoring results shall be submitted every other month to Ecology's Federal Permit Manager, SeaTac Third Runway.

B. **Permit Duration:**

1. This Order shall be valid during construction of the project. The following provisions of this Order shall be valid during long-term operation and maintenance of the project:
   a) In Condition D, Wetland, Stream and Riparian Mitigation, as follows: The mitigation areas to be protected by restrictive covenants, and the Final Natural Resource Mitigation Plan as amended, shall remain in effect in perpetuity.

   b) In Condition D(7), provisions regarding wetland, stream, and riparian mitigation monitoring and reporting shall remain in effect as specified therein.

   c) In Condition E (3), the Surface Water and Ground Water Monitoring plan shall remain in effect as specified in that plan but in no event for a duration less than eight (8) years.

   d) In Condition F (1), the plan to monitor potential contaminant transport to soil and groundwater via subsurface utility lines shall remain in effect as specified in that plan but in no event for a duration less than eight (8) years.

   e) In Condition I, Conditions for Mitigation of Low Flow Impacts, as follows: The low streamflow facilities, and the revised low streamflow plan as amended, shall remain in effect in perpetuity.

   f) In Condition J, Operational Stormwater Requirements, as follows: Those provisions of this condition, including the Comprehensive Stormwater Management Plan, that are incorporated into and superceded by any future Ecology-approved NPDES permit for the Seattle-Tacoma International Airport (STIA), shall be superceded as determined in that permit. Any conditions not incorporated into a future Ecology-approved NPDES permit for STIA shall remain in effect as provided in this condition.

2. The Port shall reapply with an updated JARPA if **seven years** elapse between the date of the issuance of this Order and completion of the project construction and/or discharge for which the federal license or permit is being sought.

3. The Port shall submit an updated application to Ecology if the information contained in the October 25, 2000 JARPA is altered by subsequent submittals to the federal agency and/or state agencies. Within 30 days of receipt of an updated application Ecology will determine if a modification to this Order is required.

4. Any future construction-related activities that could impact waters of the state at this project location, emergency or otherwise, that are not defined in the October 25, 2000 JARPA, this Order, or have not been approved in writing by Ecology, are not authorized by this Order. Such proposed actions shall be reviewed with Ecology for its written approval prior to implementation if the activity requires §401 certification or is otherwise within Ecology's statutory authorization.

C. **Notification and Reporting Requirements:**

1. Notification shall be made to Ecology's Federal Permit Manager, SeaTac Third Runway at 425-649-4310, 425-649-7098 (Fax), mail: 3190 160th Avenue SE, Bellevue, WA 98008 or by e-mail at aken461@ecy.wa.gov for the following activities:

   a) at least thirty (30) days prior to the pre-construction meeting to review environmental permits and conditions,

   b) at least ten (10) days prior to starting construction of each of the projects identified in Table A-3 (Comprehensive Stormwater Management Plan, Volume 2) and each of the mitigation sites identified in the Natural Resource Mitigation Plan, and

   c) within seven (7) days after the completion of construction of each of the projects identified in Table A-3 (Comprehensive Stormwater Management Plan, Volume 2) and each of the mitigation sites identified in the Natural Resource Mitigation Plan.

NOTE: The required notifications shall include the Port's name, project name, project location, the number of this Order, the name of contractor and any subcontractor, contact and contact's phone number.

2. The Port shall ensure that all appropriate Project Engineer(s) and the Lead Contractor(s) at the project site and/or mitigation sites have read and understand relevant conditions of this Order and all permits, approvals, and documents referenced in this Order.

   a) The Port shall provide to Ecology a signed statement, **Attachment A,** from each Project Engineer(s) and Lead Contractor(s) that they have read and understand the conditions of this Order and the above-referenced permits, plans, documents and approvals.

   b) These statements shall be provided to Ecology no less than seven (7) days before each Project Engineer or Lead contractor begins work at the project or mitigation sites.

3. All reports, plans, or other information required to be submitted by this Order shall be submitted in triplicate to Ecology's Federal Permit Manager, SeaTac Third Runway, at 3190 160th Avenue SE, Bellevue, WA 98008-5452.

4. Documents required to be submitted to Ecology for review and/or approval by this Order shall be submitted to Ecology by the time specified in this order. Failure to submit documents by the required time may result in the revocation of this Order. The Port may, on a case-by-case basis, submit a written request for an extension of the specified submittal deadline for a document. Ecology will consider the reasonableness of the

request for an extension and may grant an extension for a period of time it deems appropriate. **Ecology will provide any such extension to the Port in writing only.**

No document, report or plan required by this Order shall be deemed approved until the Port receives written verification of approval from Ecology.

D. **Wetland, Stream and Riparian Mitigation:**

1. Required Mitigation: Mitigation for this project shall be completed as described in the following documents with the following additions and clarifications:

   - the Final Natural Resource Mitigation Plan (NRMP), Master Plan Update Improvements, STIA, dated December 2000 (Parametrix, Inc.).
   - Appendixes A-E, Design Drawings, Natural Resource Mitigation Plan, STIA, dated December 2000 (Parametrix, Inc.).
   - the Revised Grading and Planting Plan for the Auburn Wetland Mitigation site dated June 28, 2001 (Parametrix, Inc.).
   - the revised NRMP performance standards found in Tables 4.2-1, 4.2-2, 5.1-7, 5.2-3, 5.2-8, 5.2-12, 5.2-16, 5.3-2, 5.3-6, and 7.7-1 received July 31, 2001 (Parametrix, Inc.).
   - the revised Borrow Site Three plan sheets and drawings dated June 2001 and received by Ecology on June 18, 2001 (Hart Crowser).

   The Port shall amend and/or clarify the documents identified in Condition D.1 as follows:

   a) The Port shall increase the duration of monitoring from ten (10) to fifteen (15) years.

   b) Table 4.2-1 of the NRMP (July 31, 2001) outlines the performance standards for vegetation cover by vegetation zone and monitoring year. A note shall be added to the table that states: "Invasive plant species cover will be monitored during all monitoring years."

   c) In addition to the non-native invasive species listed in Table 4.2-2 of the NRMP (July 31, 2001), hedge bindweed (*Convolvulus sepium),* giant knotweed *(Polygonum sachalinense)* and evergreen blackberry *(Rubus laciniatus)* shall be monitored and controlled in the mitigation sites.

   d) All performance standards addressing cover of non-native plants shall read: "Cover of non-native invasive species will be no greater than 10% in any year in newly planted or enhanced areas."

   e) Table 5.1-7 of the NRMP (July 31, 2001) states that shade cloth will be placed over the new channel. The Port shall provide a map of the location for the shade

cloth, details on how it will be installed, and a schedule of installation and removal.

f) The Port shall provide Ecology with written documentation of the implementation of any of the contingency measures and adaptive management measures set forth in the NRMP. Temporary erosion and sedimentation measures approved by Ecology shall remain in effect for all adaptive management measures or contingency measures implemented. Any problems identified throughout the mitigation sites shall be immediately corrected. Implementation of corrective actions shall be done within the confines of the contingency measures identified in the NRMP. All contingency measures shall be implemented in a manner such that they do not exceed state water quality standards.

g) The Port shall monitor hydrologic conditions of all wetlands downslope of the Third Runway embankment in the Miller, Walker and Des Moines Creek sub-basins. Hydrologic monitoring using piezometers and shallow hand dug soil pits in undisturbed wetlands downslope of the Third Runway embankment shall be conducted with sufficient frequency to determine wet season trends. The Port shall immediately begin conducting twice-monthly hydrologic monitoring during the wet season, November through May, and shall continue such monitoring for at least three (3) years after completion. Maps of sample locations and vegetation in the surrounding areas, observation of stressed vegetation, any adaptive management implemented in the surrounding areas, comparison to baseline data, and conclusions shall be documented and submitted to Ecology on a monthly basis during that period. At the end of each water year, the Port shall complete a trends analysis with proposed contingency measures identified and a schedule for completion of proposed contingency measures.

h) Existing wetland and mitigated wetland boundaries (including all areas down slope of the Third Runway embankment, Vacca farm, the borrow sites, and the Auburn mitigation site) shall be delineated at years five (5), ten (10), and fifteen (15). A licensed survey crew shall survey the wetland points established. The delineation map and comparisons to previous delineation maps shall be furnished to Ecology by December 31st for each of the years in which a delineation is conducted. If the delineation shows the wetland boundaries have decreased then additional in-basin mitigation may be required by Ecology.

i) Final performance standards for the replacement drainage channel shall read: "Construct the replacement channel to convey all storm events equal to or less than the 100-year, 24-hour design storm and seepage water collected by the embankment drains layer and adjacent areas." (Revised Performance Standards, Table 5.2-12 NRMP)

j) Revised Table 5.2-12 of the NRMP (July 31, 2001) proposes a performance standard that monitors the change in plant species in undisturbed wetlands, where the hydrology is being replaced through inputs from the replacement drainage channel. Emergent non-invasive plants provide a better indicator for general plant species trends over time than trees and shrubs because typically their root structures are shallower, and subsequently respond to hydrologic changes more quickly. The Port shall amend the monitoring condition in Table 5.2-12 to read: "Wetland indicator status (WIS) of the dominant noninvasive plant species shall not differ from pre-project conditions during or at the end of the monitoring period. Each vegetative strata (trees, shrubs and emergents) shall be assessed separately, and have separate conclusions. Statistically valid sampling procedures will be employed to monitor theses potential changes, in all areas where there is a potential to change the post construction hydrology (down slope of the embankment, and the borrow sites). WIS status of the vegetation will be calculated as described in the 1987 USACE or Washington State Department of Ecology delineation manuals."

k) In all areas where soil saturation is being monitored the performance standards shall include the following conditions: "Other wetlands with predominantly mineral soils shall have groundwater within the upper 10 inches from at least March to mid-April in years of normal rainfall."

l) Soils stockpiled for mitigation purposes for over one year require the reintroduction of naturally occurring microbes, prior to use in mitigation sites. This shall be accomplished through introduction of soils microbial inoculants, or through introduction of well decomposed organic matter.

m) The Port shall redevelop the sample data sheets to meet all the monitoring requirements set forth this order.

n) Auburn Mitigation Site- Emergent marsh plants shall be planted with rhizomes 12" on center (o.c.) instead of the 18" o.c. currently specified. Areas that are designated for hydroseeding that have visible surface water at the time of planting those areas shall be planted with plugs. Routine maintenance, such as, weeding, removal of non-native species, and watering, shall occur at least twice a year in all areas and more often in areas if needed. The maintenance crew shall be overseen by a wetland biologist to assist with identifying invasive species and identifying problem areas.

o) Vacca Farm Mitigation Site- Revised Table 5.1-7 of the NRMP (July 31, 2001) Final performance standards shall have a note added that reads: "Observable surface flow must be present in the created channel at all times."

p) Contingency measures and additional monitoring of the mitigation areas shall be required by Ecology if wetland monitoring reveals that vegetation establishment or wildlife use of the wetland is not sufficient to meet the success standards. Additional monitoring may be required beyond the fifteen (15) year period if mitigation success is not achieved within the fifteen (15) year monitoring period.

q) The wetland mitigation planting plan shall be field inspected by Parametrix, Inc. or another qualified wetland consulting firm during construction and planting to ensure proper installation.

r) The boundaries of the mitigation area and buffers shall be permanently marked with stakes at least every 100 feet or with construction fencing. The marking shall include signage that clearly indicates that mowing and fertilizer/pesticide applications are prohibited within mitigation areas.

s) Ecology and the U.S. Army Corps of Engineers shall be notified a minimum of three days in advance of field monitoring work by the Port. Ecology or its designee shall be allowed access to all mitigation sites for the entire monitoring period.

2. Restrictive Covenants:

The Port shall place restrictive covenants on the deeds for the following mitigation sites: Miller Creek Mitigation Area; Miller Creek/Lora Lake/Vacca Farm Wetland and Floodplain Mitigation Area; Tyee Valley Golf Course Mitigation Area; Auburn Wetland Mitigation Area; and Des Moines Creek Mitigation Area (June 28, 2001, Foster, Pepper and Shefelman). The Port shall record the restrictive covenants with King County no later than sixty (60) days after the issuance by the U.S. Army Corps of Engineers of the Section 404 required for construction of the Master Plan Update projects.

Any changes to the restrictive covenants shall require written approval by Ecology.

Violation of any term of the restrictive covenants shall be considered a violation of this Order.

3. Submittal of a Revised Mitigation Plan

The Port shall submit to Ecology for its review and written approval a revised NRMP which includes the changes or additions required by this Order for review and written approval no later than December 31, 2001. The revised NRMP shall include revised plan sheets that address the corrections required in **Attachment B**.

If, after revision of the NRMP required by this Order, the Port submits a further revised NRMP to the U.S. Army Corps of Engineers for review, the Port shall simultaneously

submit the same revised NRMP to Ecology for its review and written approval. No fill shall be placed in waters of the state until the revised NRMP submitted to the U.S. Army Corps of Engineers has been approved by Ecology.

A Final NRMP shall be prepared and submitted to Ecology within three months after a Section 404 permit has been issued by the U.S. Army Corps of Engineers.

4. Mitigation for Temporary Impacts

The December 2000 NRMP indicates that up to 2.05 acres of wetlands will be affected by the construction of temporary stormwater management ponds and other construction impacts (p. 4-8 and other). Approximately 1.25 acres will result from the construction of the stormwater ponds in the Miller Creek basin. Ecology has determined that the impacts characterized as "temporary" in the NRMP are not temporal in nature because they will last for longer than a one-year period. The agency considers these impacts to be permanent and has determined that additional in-basin mitigation is necessary in the Miller Creek basin. Additional mitigation is necessary in order to mitigate for hydrologic, water quality and general habitat impacts that will result from the "temporary" impacts. In-basin mitigation is necessary to provide a "temporal lift" of wetland water quality and general habitat functions.

In order to compensate for these unmitigated impacts in the Miller Creek basin, the Port shall prepare a mitigation plan for submittal to Ecology for its review and written approval. A conceptual plan shall be submitted to Ecology for review and written approval by November 9, 2001. Upon receipt of Ecology's written approval of the mitigation plan, the Port shall amend the NRMP to incorporate the approved mitigation plan. The plan must contain the following elements:

a) The wetland/riparian zone comprised of Wetlands A17b/c/d (Wetland A17 Complex) and "Water D" shall be added to the wetland and buffer restoration/enhancement on Miller Creek. This area is depicted in **Attachment C** titled "Wetland A17 Complex". A 100-foot buffer shall be placed to envelop this system. Wetlands A17b/c/d comprise a total of 2.64 acres and "Water D" totals 0.16 acres for a combined total of 2.80 acres (not including the buffer). The buffer shall be averaged, similar to the buffer on Miller Creek. The buffer area may include location of the airport detection system (ADS) to the extent that its footprint has been minimized to the extent practicable.

b) The plan shall use the same goals and performance standards as the NRMP approved by this Order.

c) The plan shall evaluate the feasibility of improving the hydrologic connection of the Wetland A17 Complex to Miller Creek via "Water D", including but not

limited to removing the underground pipe. If it is feasible to improve the hydrologic connection of the Wetland A17 Complex to Miller Creek via "Water D", the Port shall include a plan for improving the connection in its submittal.

d) Homes, driveways, concrete, fill, septic systems and other unsuitable material with be removed from Wetlands A17b/c/d, in a manner that meets the treatment protocol established for the Miller Creek restoration in the NRMP.

e) The plan shall develop a buffer restoration and re-vegetation plan for this area that meets the treatment protocol for the Miller Creek restoration in the NRMP. This shall include the removal of invasive species, and replanting of appropriate native species.

f) The plan shall evaluate the potential for wetland restoration, creation and enhancement within this new mitigation zone. This shall include evaluation of the reconnection of Wetlands A17b and A17c by removal of the road between them and removal of the road that separates Wetlands A17a and A17b. Ecology recognizes the need for an access road to the TRACON facility between Wetlands A17c and A17d.

g) The buffer shall be joined with the buffer on Miller Creek to the south.

h) A restrictive covenant shall be drafted for this additional mitigation area. The restrictive covenant shall be consistent with other restrictive covenants established for this project. The Port shall record the restrictive covenants with King County no later than sixty (60) days after the issuance by the U.S. Army Corps of Engineers of the Section 404 required for construction of the Master Plan Update projects.

5. Borrow Site One –

The performance standards for Borrow Site One in Table 5.3-6 of the NRMP (July 31, 2001) allow for monitoring of the wetland hydrology. The evaluation approach shall compare the shallow groundwater data collected to data collected pre-construction. Wetlands 48, B15, 32, B12, B4, and B1 shall be evaluated using this approach. The Port shall provide to Ecology bi-monthly hydrologic monitoring during the wet seasons, November through May, for at least three (3) years after completion. Maps of sample locations and vegetation in the surrounding areas, observation of stressed vegetation, any adaptive management implemented in the surrounding areas, comparison to baseline data, and conclusions shall be documented and submitted to Ecology on a monthly basis during that period. At the end of each water year the Port shall complete and submit to Ecology

a trends analysis with proposed contingency measures identified and a schedule for completion of the proposed contingency measures.

6. Borrow Site Three- The following conditions apply to Borrow Site 3:

   a) The site plan from Hart Crowser titled Post Reclamation Topographic detail Borrow Area 3 Wetland Protection Swale HNTB revision (June 15, 2001 Draft) shows a flow dispersal trench overlapping with a small portion of Wetland 29. The flow dispersal trench shall not be constructed so that it is in the wetland.

   b) The wetland protection swale shall be lined (with HDPE or other similar liner material) where necessary to minimize infiltration of captured seepage water through the bottom of the swale (as described in Hart Crowser 2000b Sea-Tac Airport Third Runway – Borrow Area 3 Preservation of Wetlands; memorandum from Michael Kenrick and Michael Bailey (Hart Crowser) to Jim Thomson (HNTB) on wetland hydrology and proposed drainage swale design (October 20, 2000)).

   c) Excess water from the stormwater overflow structure shall be diverted away from the wetland protection swale to a stormwater detention pond (as described in Hart Crowser 2000b Sea-Tac Airport Third Runway – Borrow Area 3 Preservation of Wetlands; memorandum from Michael Kenrick and Michael Bailey (Hart Crowser) to Jim Thomson (HNTB) on wetland hydrology and proposed drainage swale design (October 20, 2000)).

   d) The Port shall monitor hydrologic conditions of wetlands remaining in and adjacent to the borrow sites. Hydrologic monitoring using piezometers and shallow hand dug soil pits in undisturbed wetlands associated with Borrow Site Three shall be conducted with sufficient frequency to determine wet season trends. Special emphasis shall be given to the area near where the drainage swale discharges into Wetland 29, to provide an early indication of hydrologic duress to plants in the wetland. The Port shall provide to Ecology bi-monthly hydrologic during the wet seasons, November through May, before construction and for at least three (3) years after completion. Maps of sample locations and vegetation in the surrounding areas, observation of stressed vegetation, any adaptive management implemented in the surrounding areas, comparison to baseline data, and conclusions shall be documented and submitted to Ecology on a monthly basis during that period. At the end of each water year the Port shall complete and submit to Ecology a trends analysis with proposed contingency measures identified and a schedule for completion of the proposed contingency measures.

   e) The wetland protection swale shall be inspected and maintained at a minimum frequency of two (2) times per year. Swale maintenance shall include adjustment of flow control weir boards to provide appropriate flows to Wetland 29, and

removal of vegetation or fill in the swale which may interfere with the seepage collection and diversion functions of the swale. The weir shall be calibrated so that flow rates can be observed at any time.

f) **Increased Buffer Area**: In order to protect the hydrologic functions, and hydrology supporting Wetlands 29, 30, B5, B6, B7, and B9, all areas up slope of the wetlands within the property shall be included in the wetland buffer. Additionally, the Port shall ensure protection of hydrology to Wetlands 29, 30, B5, B6, B7, and B9 from future development. The wetland protection swale shall also be included in a restrictive covenant, with 25 foot buffers on either side of the swale. Those areas are depicted in **Attachment D (Revised)**, Borrow Area 3 Wetland Buffer. A restrictive covenant shall be drafted for this additional buffer area. The restrictive covenant shall be consistent with other restrictive covenants established for this project. The Port shall record the restrictive covenants with King County no later than sixty (60) days after the issuance by the U.S. Army Corps of Engineers of the Section 404 required for construction of the Master Plan Update projects. This condition applies only to property currently owned by the Port.

g) The performance standards in Table 5.3-6 of the NRMP (July 31, 2001) allow for monitoring of the surface water in Wetland 30. The evaluation approach states that shallow groundwater monitoring wells will be used. The evaluation approach shall be changed to provide that surface water depths are measured monthly during the period from December through April, and the monitoring results compared to pre-construction data.

7. Wetland, Stream and Riparian Mitigation Monitoring and Reporting:

a) Monitoring of all wetland mitigation sites identified in the December 2000 NRMP and the June 2001 Auburn Grading and Planting Plan, as revised below, shall be incorporated into the Final NRMP submitted to Ecology.

i) Monitoring shall be completed at least yearly for a fifteen (15) year period with initial monitoring starting after the first growing season after installation of plants. If at any point during the monitoring period the results of monitoring show that the success criteria established in the plan are not being met, Ecology may require corrective action, additional monitoring, and additional mitigation.

ii) The Port shall prepare and submit annual monitoring reports to Ecology's Federal Permit Manager, SeaTac Third Runway, Northwest Regional Office, 3190 160th Avenue SE, Bellevue, WA 98008-5452 no later than December 31st of each year following the first year of the mitigation site work. Each year's monitoring report shall include photographic documentation of the

project taken from permanent reference points. The Port shall identify and incorporate permanent reference points into the Final NRMP.

iii) As-Built Report: An as-built report documenting the final design of all wetland mitigation sites shall be prepared when the initial planting is completed. The report shall include the following:

- final site topography;
- photographs of the area taken from established permanent reference points;
- a planting plan showing species, densities, sizes, and approximate locations of plants, as well as plant sources and the time of planting;
- habitat features (snags, large woody debris, etc) and their locations;
- drawings in the report shall clearly identify the boundaries of the project;
- locations of sampling and monitoring sites; and
- any changes to the plan that occurred during construction.

The As-Built Report shall include detailed plans showing locations of all monitoring transects and locations. All vegetation sampling and analysis shall employ statistically valid sampling and analysis procedures during each of the monitoring events. Monitoring reports shall show all sampling locations, discuss trends and changes, discuss success in achieving performance standards or other implementation difficulties, provide remedies to address implementation problems, and set forth a timeline for their resolution. Supporting data and calculations shall be maintained by the contractor and made available to Ecology upon request.

iv) The As Built Report shall be sent to Ecology's Federal Permit Manager, SeaTac Third Runway within sixty (60) days of completing the mitigation site.

v) Any proposed changes to the wetland mitigation and monitoring protocol established in the NRMP and as revised by this Order, must be approved in writing by Ecology prior to implementation of any changes.

E. **Conditions for Acceptance of Fill to be used in Construction of the Third Runway and Associated Master Plan Update Improvements:**

The use of imported fill for projects for which the §404 permit was sought, e.g., Third Runway, Runway Safety Areas, South Aviation Support Area, and other appropriate Master Plan Update Improvements as determined by Ecology (Port 404 Projects) may result in impacts to wetlands or other waters of the state. To ensure compliance with measures designed to minimize potential impacts, the Port shall submit borrow site clean fill certification documentation described in the following sections to Ecology for review and

written approval prior to fill placement.

1. Fill Documentation/Fill Criteria/Fill Source

The Port shall adhere to the following conditions to ensure that the fill placed for Port 404 Projects does not contain toxic materials in toxic amounts, thereby preventing the introduction of toxic materials in toxic amounts into waters of the state which includes wetlands.

a) Documentation

No later than five (5) business days prior to accepting any fill materials for use on Port 404 Projects, the Port shall submit to Ecology's Federal Permit Manager, SeaTac Third Runway, documentation certifying that the proposed fill source meets the criteria of this Order. The documentation shall contain an environmental assessment of the fill source and shall verify that excavated soil from the proposed fill source complies with the fill criteria set forth below. Findings of the environmental assessment are subject to the review of Ecology. Ecology reserves the right to disapprove fill materials following review of the Port's supporting documentation and a determination that the fill criteria were not met. In the event of such disapproval, Ecology reserves its rights to enforce the terms of the Order and require appropriate remedial measures.

The environmental assessment shall be conducted by an environmental professional in general conformance with the American Society for Testing and Materials Standard (ASTM) E 1527-00 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, and E 1903-97 Standard Guide for Environmental Site Assessments: Phase II Environmental Site Assessment Process. At minimum, the document shall contain the following information:

i) Fill Source Description: Provide a description/location of the fill source, general characteristics of the fill source and vicinity, current use, and a site plan identifying the extent of the excavation, project schedule and the estimated quantity of fill to be transported to Port 404 Projects.

ii) Records Review: Obtain and review environmental records of the proposed fill source site and adjoining properties. In addition to the standard federal and local environmental record sources, the following Ecology environmental databases shall be reviewed:

- Confirmed & Suspected Contaminated Site Report
- No Further Action Site List
- Underground Storage Tank List
- Leaking Underground Storage Tank List
- Site Register.

Records review shall also contain historical use information of the fill source and the surrounding area to help identify the likelihood of environmental contamination.

iii) Site Reconnaissance: Documentation of visits to each site that identifies current site use and site conditions to assist in identifying the likelihood of environmental contamination and/or the potential migration of hazardous substances onto the site from adjoining properties.

iv) Fill Source Sampling: Collect and analyze fill materials for the potential contaminant(s) identified in the Phase I Environmental Site Assessment. At a minimum, fill materials from each fill source shall be analyzed for the following hazardous substances

- Total Antimony
- Total Arsenic
- Total Beryllium
- Total Cadmium
- Total Chromium[1]
- Total Copper
- Total Lead
- Total Mercury
- Total Nickel
- Total Selenium
- Total Silver
- Total Thallium
- Total Zinc
- NWTPH-HCID

[1] Chromium (VI) shall be analyzed if the results of the Phase I Environmental Site Assessment show a likelihood of Chromium (VI) contamination.

For fill source characterization, the following table presents the **minimum** sampling schedule for fill sources with no likelihood of environmental contamination.

Cubic Yards of Soil	Minimum Number of Samples
<1,000	2
1,000 – 10,000	3
10,000 – 50,000	4
50,000 – 100,000	5
>100,000	6

Samples shall be collected at locations that are representative of the fill destined for Port 404 Projects.

For fill sources with suspected contamination identified by the Phase I Environmental Site Assessment or with complex site conditions, please consult with Ecology's Federal Permit Manager, SeaTac Third Runway for the appropriate sampling requirements.

b) Fill Criteria

The results of the Phase II Environmental Site Assessment sampling and testing shall be compared to the fill criteria to determine the suitability of the fill source for Port 404 Projects.

The following table establishes the fill criteria limitations for the hazardous substances identified in Section E1(a)(iv) of this Order.

Hazardous Substances	Fill Criteria **mg/kg**[2]
Antimony	16
Arsenic	20
Beryllium	0.6
Cadmium	2
Chromium[3]	42/2000
Copper	36
Lead[4]	220/250
Mercury	2
Nickel[5]	100/110
Selenium	5
Silver	5
Thallium	2
Zinc	85
Gasoline	30
Diesel[6]	460/2000
Heavy Oils	2000

2 mg/kg ≡ milligrams per kilogram

3 Fill with total chromium concentrations greater than 42 mg/kg and less than 2000 mg/kg may be placed to within six feet of the ground surface. No fill with total chromium concentrations greater than 42 mg/kg may be placed within the first six feet of the embankment. No fill with chromium (VI) concentrations greater than 19 mg/kg may be placed within the embankment.

[4] Fill with total lead concentrations greater than 220 mg/kg and less than 250 mg/kg may be placed to within six feet of the ground surface. No fill with total lead concentrations greater than 220 mg/kg may be placed within the first six feet of the embankment.

[5] Fill with total nickel concentrations greater than 100 mg/kg and less than 110 mg/kg may be placed to within six feet of the ground surface. No fill with total nickel concentrations greater than 100 mg/kg may be placed within the first six feet of the embankment.

[6] Fill with diesel range organics concentrations greater than 460 mg/kg and less than 2000 mg/kg may be placed to within six feet of the ground surface. No fill with diesel range organics concentrations greater than 460 mg/kg may be placed within the first six feet of the embankment.

For hazardous substances other than those identified in the above fill criteria table that have been identified in the Phase II Environmental Site Assessment, the Port shall consult with Ecology's Federal Permit Manager, SeaTac Third Runway for the applicable fill criteria.

As an alternative to applying the limitations listed above for the material within the top six feet of the existing ground surface and/or within the first six feet of the embankment (as noted in footnotes two through six above), the Port may construct a "drainage layer cover" (that layer immediately above the drainage layer of the embankment) that will measure at least forty (40) feet thick at the face of the embankment and will reduce in height to the east at a rate of two (2) percent. The fill criteria listed above for the first six feet of the embankment will apply to the drainage layer cover. If proposed fill (for either the drainage layer cover or the rest of the embankment or other Port 404 Projects) does not meet the fill criteria in Condition E.1.(b), the Port can demonstrate the suitability of that fill by employing a Synthetic Precipitation Leaching Procedure (SPLP), SW-846 Method 1312. SPLP testing shall conducted in accordance with the SPLP work plan, **Attachment E**, or as amended in the future. Where the Port utilizes the SPLP method to demonstrate the suitability of fill, SPLP test results shall be provided to Ecology at least ten (10) business days prior to fill placement. As per Condition E.1.(a), Ecology reserves the right to disapprove the use of fill analyzed under the SPLP method.

c) Fill Sources
Fill materials for Port 404 Projects shall be limited to the following three sources:

i) State-certified borrow pits
ii) Contractor-certified construction sites
iii) Port of Seattle-owned properties.

d) Prohibited Fill Sources
The following fill sources are prohibited for use on Port 404 Projects:

- Fill which consists in whole or in part of soils or materials that are determined to be contaminated following a Phase I or Phase II site assessment.

- Fill which consists in whole or in part of soils or materials that were previously determined to be contaminated by a Phase I or Phase II site assessment and have been treated in some manner so to be considered re-mediated soils or fill material.

2. As-Built Documentation

The Port shall provide to Ecology for review monthly summaries of:

- Names and locations of fill sources placed for the previous month
- Quantities of fill materials from these fill sources
- Locations and elevations of fill source materials placed within the Port 404 Projects.

Ecology may require additional compliance conditions and/or corrective actions upon Ecology's review of the as-built documents. The monthly summaries shall be provided to Ecology no later than fifteen (15) days following the last day of the month.

3. Post Construction Monitoring

The Port shall monitor runoff and seepage from Port 404 Projects where fill is placed for compliance with applicable Washington State surface water criteria. Ground water down-gradient from the fill area shall be monitored for compliance with applicable ground water criteria.

Within 60 days after the issuance of the 401 Water Quality Certification for the Master Plan Update Improvements, the Port shall submit to Ecology for review and written approval a Surface Water and Ground Water Monitoring Plan. The monitoring plan shall be designed to detect impacts of the fill embankment to the receiving water and to the ground water during fill placement and post fill placement. In the event monitoring detects exceedances of the water quality criteria in either surface or ground water; Ecology may revise the fill criteria and/or require corrective action.

F. **Conditions to Prevent Transport of Contaminants:**

1. All Master Plan Update Improvements and all associated utility corridors shall be constructed in a manner that will prevent the possible interception of contaminated groundwater originating from the Airport Maintenance and Operations Area or other potentially contaminated Seattle-Tacoma International Airport (STIA) areas. The Port shall submit to Ecology proposed construction BMPs to prevent interception of contaminated groundwater by utility corridors and a plan to monitor potential contaminant transport to soil and groundwater via subsurface utility lines at the STIA and submit it to Ecology for review and written approval no later than November 9,

2001. The plan shall be submitted to Ecology's Federal Permit Manager, SeaTac Third Runway.

2. The Port shall have staff trained in the detection of hazardous materials and contaminated soils or water inspect on a regular basis all areas where there is clearing and grading, or construction under way by Port contractors or employees. If hazardous materials or contaminated soils or other indications of contamination are discovered the Port shall immediately cease construction in the suspect area, secure the site and clean up the area in accordance with the Model Toxics Control Act (MTCA), Chapter 70.105d RCW, the Hazardous Waste Management Act, Chapter 70.105 RCW, and with generally accepted best management practices.

3. The Port shall administer and periodically update the contaminant database and contaminant maps and figures for the STIA. The database shall be updated as new information is received. The maps and figures shall be updated annually and delivered to Ecology's Federal Permit Manager, SeaTac Third Runway in a report of findings for review. Maps and figures shall be similar to the maps and figures shown in the Port's "Analysis of Preferential Ground Water Flow Paths Relative to Proposed Third Runway," dated June 21, 2001.

4. The Port shall collect all new environmental data generated by construction activities, cleanup actions, or any other environmental investigations of soil and groundwater throughout the STIA. The information shall be used to update the contaminant database. The Port, airport tenants, and other entities conducting environmental investigations shall continue to provide reports of ongoing cleanup actions and any new contamination discovered to Ecology as required by the MTCA.

G. **Dam Safety Requirements:**

1. All facilities identified in Table 3-1 of the Comprehensive Stormwater Management Plan (CSMP) that meet the requirements of Chapter 173-175 WAC (Dam Safety Regulations) shall obtain a Dam Safety Permit from Ecology prior to commencement of construction. If any stormwater facilities identified in the CSMP change during final design such that they meet the requirements of Chapter 173-175 WAC, those facilities shall obtain a Dam Safety Permit from Ecology prior to commencement of construction.

H. **Conditions for Upland Construction Activities:**

1. During construction the Port shall comply with all stormwater requirements within the National Pollutant Discharge Elimination System (NPDES) Permit No. WA-002465-1 as modified on May 29, 2001 for this project.

2. The project shall be clearly marked/staked prior to construction. Clearing limits, travel corridors and stockpile sites shall be clearly marked. Sensitive areas to be protected from disturbance shall be delineated and marked with brightly colored construction fence, so as to be clearly visible to equipment operators. All project staff shall be trained to recognize construction fencing that identifies sensitive areas boundaries (wetlands, streams, riparian corridors, buffers, etc.). Equipment shall enter and operate only within the delineated clearing limits, corridors and stockpile areas.

3. The Port shall follow and implement all specifications for erosion and sediment control specified in the Stormwater Pollution Prevention Plan (SWPPP) and/or Erosion and Sediment Control (ESC) plan as required in the NPDES permit. The erosion control devices shall be in place before starting construction and shall be maintained, so as to be effective throughout construction.

4. Stormwater Detention for New Outfalls: Any new diversion ditch or channel, pond, trap, impoundment or other detention or retention BMP constructed at the site for treatment of stormwater shall be designed, constructed, and maintained to contain and provide treatment for the peak flow for the ten (10)-year 24 hour precipitation event estimated from data published by the National Oceanic and Atmospheric Administration.

5. The Port shall periodically inspect and maintain all erosion control structures. Inspections shall be conducted no less than every seven (7) days from the start of the project to final site stabilization. Daily inspections of sedimentation ponds shall occur during wet seasons. Additional inspections shall be conducted after rainfall events greater than 0.5 inches per 24-hour period, to ensure erosion control measures are in working condition. These inspections shall be conducted within 24 hours after the event. Any damaged structures shall be repaired immediately. If it is determined during the inspection that additional measures are needed to control stormwater and erosion, such measures shall be implemented immediately. Inspections shall be documented in writing and shall be available for Ecology's review upon request.

6. Wash water containing oils, grease, or other hazardous materials resulting from wash down of equipment or working areas shall not be discharged into state waters except as authorized by an NPDES permit or state waste discharge permit.

7. Machinery and equipment used during construction shall be serviced, fueled, and maintained on uplands in order to prevent contamination to surface waters.

8. Grading/Construction in Borrow Areas: The depth of the excavation at the borrow areas shall be limited to a depth ten (10) feet above the maximum seasonal groundwater table. The maximum seasonal ground water table shall be determined by

the monitoring wells on Port property. Depth of excavation and maximum seasonal ground water elevations shall be submitted annually to Ecology's Federal Permit Manager, SeaTac Third Runway.

I. Conditions for Mitigation of Low Flow Impacts:

1. Ecology has reviewed and approved the December 2000 Low Streamflow Analysis and the Summer Low Flow Impact Offset Facility Proposal dated July 23, 2001. In order to ensure clarity, within 45 days of receipt of this Order the Port shall submit a revised plan integrating the Low Streamflow Analysis and Summer Low Flow Impact Offset Facility Proposal into a single document that addresses the following issues:

   a) General:

      i) The revised plan shall be stamped by a licensed professional civil engineer.
      ii) All supporting documents shall be clearly labeled and included in a technical appendix and/or on one clearly labeled CDROM. Only those files which directly correspond to results presented in the report should be included.
      iii) The plan shall include a specific section discussing the accuracy of the calibration in predicting low flows at upper stream gauges, and a statement of adequacy of the calibrations for the purpose of low flow simulation.
      iv) Revised conceptual drawings for reserve storage vaults shall be submitted that include any changes required by this Order and that include details on how constant discharge will be maintained in reservoirs with variable hydraulic head pressures. Reserve vault inlets and outlets shall be configured so that water is added/discharged from the middle of the reserve storage depth in order to avoid disturbing sediments and/or floatables that could be present in the reserve vault. In order to ensure that reserve water is well aerated, reserve storage vaults shall include open ventilation consistent with King County Surface Water Design Manual wetvaults. Mechanical aeration shall be provided if grating is not feasible. Conceptual drawings shall include detail on reserve water outfalls. Where feasible, outfalls shall discharge directly to wetlands that are adjacent (in hydrologic continuity) to streams rather than directly to streams.
      v) A final Operations and Maintenance Plan shall be included in the revised plan. The Operations and Maintenance plan section of the report shall require the release of any water remaining in the reserve vaults during the month of November or until substantial rains occur. The Operations and Maintenance Plan shall address management of accumulated sediments in reserve storage vaults. All accumulated sediments shall be disposed of in

an appropriate upland disposal site.

vi) The revised plan shall include a monitoring protocol to determine whether placement of the Third Runway embankment fill and other fill used for Master Plan Update Improvements meets fill specifications for type of material, meets specifications for compaction rates, and meets assumption for infiltration rates.

vii) The revised plan shall include contingency measures to offset reduced recharge in the event the Third Runway embankment fill and other fill used for Master Plan Update Improvements does not meet performance standards for infiltration rates.

viii) The revised plan shall include information demonstrating that low flow mitigation (vault releases) can be conveyed to streams without being lost to soil.

ix) The Port shall develop a pilot program to test one reserve stormwater vault for performance. The Port shall include a proposal for a pilot in the revised plan. The pilot shall be completed within three years after receipt of the Section 404 permit from the U.S. Army Corps of Engineers.

x) The revised plan shall identify and analyze all direct or indirect impacts to wetlands as a result of low flow impacts and the proposed low flow mitigation. The revised plan shall contain contingencies to mitigate for impacts to wetlands if wetland impacts are identified as a result of monitoring.

b) Des Moines Creek-

i) The revised plan shall provide data comparing the existing simulation of low flows against the Tyee Golf Course weir gauge data. The Port shall provide representative hydrographs, associated discussion and statement of adequacy of the calibration for simulating low flows.

ii) SDS3 vault design (sheet C141) indicates that not all inlet pipes are tributary to the reserve storage vault. The revised plan shall factor into the vault filling calculations the effects of having a reduced tributary area.

iii) SDS4 vault design (sheet 139) shall be reconfigured to show the vault inlet pipe at a lower elevation. A note similar to the one found on exhibit C131 should be included here. The Port shall evaluate the feasibility of providing reserve storage only in the SDS3 vault.

c) Walker Creek-

i) In place of the Port's proposal to line 3.5 acres of filter strip within the SDW2 subbasin, the Port's revised plan shall provide that low flow mitigation water for Walker Creek will be obtained from the collection of winter runoff from the 69 acres of impervious surface being added in the

Walker Creek non-contiguous groundwater basin. Reserve stormwater collected from this area may be stored in either the proposed 15-acre foot vault in Walker Creek or in the SDS3 vault. If, within thirty (30) days of receiving this order, the Port submits to Ecology information demonstrating that another feasible and implementable alternative exists, Ecology will review the alternative and consider amending this Order to allow implementation of the alternative.

ii) The current proposal for Walker Creek assumes no contribution from the Third Runway embankment fill. If the revised plan includes a reinstatement of the Third Runway embankment model, the area of the fill embankment tributary to Walker Creek shall be verified and modeled accordingly.

d) Miller Creek-

i) The revised plan shall verify whether the 1991 impact number is 0.11cfs or 0.12cfs. Unless shown otherwise, Ecology shall presume that 0.12cfs is the correct number.

ii) The revised plan shall include the correct "Low Flow Miller 91-94.xls" file and back-up data that produce a future 1991 7-day low flow of 0.67cfs shall be included on CDROM.

iii) The revised plan shall include documentation that clarifies whether the existing (1994) condition 1991 low flow is 0.784cfs as was used in electronic files or 0.79cfs as was presented in the July 23, 2001 memorandum.

iv) The revised plan shall correct the impervious acreage figures provided for the new North Employees Parking Lot (NEPL) vault to reflect 26.29 acres of impervious (Miller 2006 HSPF model), rather than 32.31 acres.

v) The Port shall evaluate orifice sizing and determine whether a change in orifice size and/or a reduction in the number of reserve stormwater vaults is warranted. The revised plan shall evaluate vault locations for feasibility and special design considerations (e.g., upstream spill control, oil controls, downstream compost filters, etc.) to ensure that reserve stormwater from the NEPL and cargo vaults will receive adequate treatment to ensure water quality.

vi) The revised plan shall include BMPs developed to ensure infiltration into the Third Runway embankment rather than into the Third Runway embankment conveyance system.

vii) The revised plan shall include revised Grading and Drainage sheets 129 and 130. The revised sheets shall clarify the flow in the collection swales.

viii) Revised conceptual drawings, and supporting analysis, shall be submitted with the revised plan that address water quality concerns for the NEPL and Cargo reserve storage areas.

e) Monitoring and Reporting Requirements: The revised plan shall develop a comprehensive monitoring protocol that, at a minimum, addresses the following elements:

i) Collection of stream gage data and an evaluation/correlation to expected flow rates established by the model.
ii) Water quality sampling and reporting. Water quality shall be tested at vault outflow and instream at a point 100 feet downstream of the outflow.
iii) Metering of water from vaults.
iv) Infiltration rate sampling and monitoring to evaluate performance of the fill.
v) Contingency if water quality in vaults does not meet water quality criteria (e.g., additional treatment, other source, flocculation, coalescing oil water separator, etc.).
vi) Instream biologic monitoring shall occur in Des Moines, Miller and Walker Creeks to assess the impacts of the Port's low flow offset proposal. The Port shall develop an instream monitoring protocol that shall at a minimum include the following elements:

- Existing low-flow conditions of Des Moines, Miller and Walker Creek will be evaluated by conducting Benthic Index of Biotic Integrity (BIBI) monitoring (Karr and Chu 1999). Monitoring shall occur four times per year and shall continue through year five (5) after construction and then yearly until completion of the fifteen (15)-year monitoring period. In addition to the BIBI monitoring required above, the Port shall develop a that monitors at a minimum temperature, turbidity, channel morphology, substrate quality, type and amount of large woody debris and other habitat features, riparian habitat cover and fish use. Representative stream channel cross-sections shall be utilized. Information must be synthesized to determine how these elements may be impacting overall stream health.

- Mitigation during the proposed period appears to effect low flow frequencies during June and July. Monitoring shall specifically address potential adverse impacts to fish or aquatic biota during June and July. If monitoring shows an adverse effect during this time period the Port shall implement contingencies to address the impact (such as providing additional mitigation water during June and July).

J. Operational Stormwater Requirements:

1. Approved Stormwater Plan: The Comprehensive Stormwater Management Plan (CSMP), Volumes 1 through 4, December 2000 as revised by the July 2001 Replacement pages is the approved stormwater management plan for this project. It shall be implemented in its entirety. No changes to the CSMP

shall be made without prior review and written approval from Ecology.

a) The Port shall provide Ecology with draft proposed changes to the Plan no later than 60 days prior to the date it seeks to implement a change to the .

b) The Port shall implement the project in accordance with the schedule provided in Table A-3 (July 2001). Any changes to the schedule must be reviewed and approved in advance by Ecology. The Port shall provide Ecology with a draft revised schedule no later than 60 days prior to the date it seeks to implement the change to the schedule. The following facilities/projects listed in Table A-3 (July 2001) do not yet have approved stormwater treatment facilities, proposed: expansion of NEPL to 6000 stalls, additional taxiway exits on 16L/34R, additional expansion of main parking garage, additional expansion of NEPL, expansion of North Unit parking structure, SR 509 extension/South Access, ASDE, and NAVAIDS. If the Port decides to build any of these facilities/projects the Port must submit conceptual drawings that meet the performance standards of the CSMP to Ecology no later than sixty (60) days prior to the date it seeks to commence construction.

c) Retrofitting of stormwater management facilities at the STIA shall occur at a rate commensurate with the construction of new impervious surface at the STIA. For every ten (10) percent of new impervious surface added at the project site, the Port must demonstrate that twenty (20) percent of retrofitting has occurred unless demonstrated that a twenty (20) percent rate isn't feasible. The Port shall document the implementation of retrofitting in quarterly progress reports. The Port shall develop and submit for review and written approval a schedule of construction of stormwater management facilities within 60 days after receipt of the Section 404 permit from the U.S. Army Corps of Engineers. Where the project schedule in the Stormwater Management Plan (including Table A-3) conflicts with this condition, the Port and Ecology shall discuss an appropriate retrofit schedule.

d) Nothing in this Order shall be deemed to prohibit continued participation by the Port in planning efforts to establish regional detention facilities for Des Moines or Miller Creek. The Port may request to amend this Order and the Comprehensive Stormwater Management Plan if it decides to route stormwater to future regional detention facilities and it is demonstrated that under future build-out conditions the combination of on-site and regional flow controls will achieve the performance goals of the CSMP and the corresponding basin plan. If the Port decides to participate in future regional detention facilities, the Port shall submit documentation to Ecology that substantiates that Regional Detention Facilities will be constructed and that

the Port may legally route stormwater to a RDF before Ecology will allow a change to the CSMP.

2. Discharge of operational stormwater to state receiving waters:

a) No stormwater generated by operation of new pollution generating impervious surfaces of projects for which the §404 permit was sought (excluding surfaces not to be included in the airport NPDES permit, e.g., South 154th Street which is a City of SeaTac facility) shall be discharged to state receiving waters until a site specific study, e.g., a Water Effects Ratio Study (WERS), has been completed and approved by Ecology and appropriate limitations and monitoring requirements have been established in the Port's NPDES permit. The study may use existing impervious surfaces as a surrogate for future new impervious surfaces, and it shall be submitted to Ecology for review and written approval. The Port shall consult with Ecology's Northwest Regional Office Water Quality Program's SeaTac NPDES Manager to determine an appropriate time for submittal of the study.

b) All stormwater discharges from the project shall be in compliance with state of Washington surface water quality standards (Chapter 173-201A WAC), sediment management standards (Chapter 173-204 WAC) and ground water quality standards (Chapter 173-200 WAC).

c) The Port shall design, construct, operate, and maintain stormwater treatment facilities to ensure that discharges shall not result in exceedances of state water quality criteria in receiving waters. Ecology may require changes to the approved CSMP as a part of future NDPES permits.

d) If monitoring indicates a need for additional BMPs, the Port may propose other BMPs for stormwater treatment if it can be demonstrated that they will result in stormwater discharges that meet the state water quality standards. Any proposed changes are subject to review and written approval by Ecology.

e) The Port shall submit the final stormwater treatment and flow control facility designs to Ecology for review and written approval 60 days prior to the start of construction of the facilities. During final design the Port shall evaluate the likelihood that stormwater facilities will intercept groundwater and make modifications to the designs so as to either prevent the interception of groundwater or increase facility sizing to accommodate the groundwater. If facility sizes increase the Port shall evaluate potential impacts to wetlands and other waters of the state and whether the increase facility size triggers Dam Safety requirements under Chapter 173-175 WAC.

f) Within 180 days of issuance of this Order the Port shall submit to Ecology for review and written approval a Stormwater Facilities Operation and Maintenance Plan which addresses maintenance and operation of all STIA stormwater facilities approved by this Order. For the purpose of meeting this condition the Port may submit other existing documents or updates of other existing documents that meet this requirement. The Port shall identify methods to prevent overtopping of stormwater facilities and the Industrial Wastewater Treatment System to streams during design storm events.

K. Construction Stormwater Limitations and Monitoring Requirements:

1. Stormwater Pollution Prevention Plans shall be prepared in conformity with the Construction Stormwater/Dewatering requirements the NPDES permit.

2. Limitations

Stormwater discharges shall not cause a visible change in turbidity, color, or cause a visible oil sheen in the receiving water from any stormwater detention or retention pond.

3. Stormwater Monitoring Schedule for Construction Stormwater Discharges

The Port shall monitor each stormwater outfall discharge according to the following schedule:

a) Turbidity and pH:

i) The Port shall monitor turbidity and pH in any surface water discharge from construction sites within 24 hours after any storm event of greater than 0.5 inches of rain per 24-hour period. The storm events shall be measured by an on-site rain gauge. The monitoring method shall be by a portable turbidimeter and a pH meter following the maintenance, operating and calibration procedures in the instrument's instruction manual. Alternatively, a grab sample shall be analyzed by a laboratory accredited under the provisions of Accreditation of Environmental Laboratories, Chapter 173-50 WAC.

ii) During each rain event the turbidimeter and pH meter shall also be used for the measurement of turbidity and pH upstream of the point of discharge to the receiving water and downstream of the thorough mixing of the discharge and the receiving water.

b) Oil, Grease and Temperature:

i) The Port shall sample for oil, grease and temperature as follows:

Parameter	Units	Sample Point[1]	Minimum Sampling Frequency	Sample Type
Oil and Grease	Mg/l	Point of Discharge	When visible sheen observed	grab
Temperature	^{0}C	Upstream[2] and downstream at the edge of the mixing zone (no greater than 100 feet)	Weekly[3]	grab

[1]Samples shall be collected from the outfall or an on-line stormwater drain access point nearest the outfall terminus.

[2] Background temperature measured at a point or points unaffected by the discharge and representative of the highest ambient water temperature in the vicinity of the discharge.

[3] During the months of July, August, and September

ii) Sampling method for Oil and Grease: The MDL for oil and grease is 0.2 mg/L using trichlorotrifluoroethane extraction and gravimetric analysis using EPA Method 413.1. The quantitation level (QL) for oil and grease is 1.0 mg/L (5 x MDL). An equivalent method is Method 1664 using normal hexane (n-hexane) as the extraction solvent in place of 1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113; Freon-113). An equivalent method is total petroleum hydrocarbons with a MDL of 0.1 mg/L using Gas Chromatography and Flame Ionization Detector (FID) and Method WTPH-Dx Diesel (WTPH-D) from the Washington State Department of Ecology Method WTPH-D. The quantitation level (QL) for TPH-Dx is 0.5 mg/L (5 x MDL).

c. If monitoring indicates a need for additional BMPs, the Port may propose other BMPs for stormwater treatment if it can be demonstrated that they will result in stormwater discharges that meet the state water quality standards. Any proposed changes are subject to review and written approval by Ecology.

4. Stormwater Detention for New Outfalls

Any new diversion ditch or channel, pond, trap, impoundment or other detention or retention BMP constructed at the site for treatment of stormwater shall be designed, constructed, and maintained to contain and provide treatment for the peak flow for the ten (10) year 24 hour precipitation event estimated from data published by the National Oceanic and Atmospheric Administration.

5. Vehicle Trackout
Vehicles shall be cleaned of mud, rock, and other material before entering a paved public highway so that tracking of sediment onto the highway does not occur.

6. Reporting - Construction stormwater
Monitoring results for construction stormwater discharges shall be submitted every other month to Ecology's Federal Permit Manager, SeaTac Third Runway. Monitoring shall be reviewed for compliance with WAC 173-201A.

7. The Port shall document the use of any additives in the treatment of discharge water. Documentation shall identify the additives used, their commercial source, the material safety data sheet, and the appropriate application rate. The Port shall retain this information on-site or within reasonable access to the site and make it immediately available, upon request, to Ecology.

   Additives to enhance solids settling before discharge to surface water must be applied according to the manufacturer's recommended dose. In addition, only additives of low toxicity to aquatic organisms, an LC_{50} equal to or greater than 100 mg/l, shall be used. The use of additives to enhance settling before discharge to surface water will not be allowed if the toxicity to aquatic organisms is not known.

8. In addition to the above, the Port shall submit a monitoring plan for stormwater and construction dewatering discharges from all construction projects including grading and construction of the Auburn mitigation site. The monitoring plan shall be submitted to Ecology for review and written approval at least thirty (30) days prior to the start of construction.

L. **Emergency/Contingency Requirements:**

1. The Port shall develop a spill prevention and containment plan for all aspects of this project, and shall have spill cleanup materials available on site.

2. Any work that is out of compliance with the provisions of this Order, causes distress death of fish, or any discharge of oil, fuel, or chemicals into state waters, or onto land with a potential for entry into state waters, is prohibited. If these occur, the Port shall immediately take the following actions:

   a) Cease operations at the location of the violation.

   b) Assess the cause of the water quality problem and take appropriate measures to correct the problem and/or prevent further environmental damage.

   c) Notify Ecology of the failure to comply. Spill events shall be reported immediately to Ecology's 24-Hour Spill Response Team at 425-649-7000, and

within 24 hours of other events contact Ecology's Federal Permit Manager, SeaTac Third Runway at 425-649-4310.

d) Submit a detailed written report to Ecology within five days that describes the nature of the event, corrective action taken and/or planned, steps to be taken to prevent a recurrence, results of any samples taken, and any other pertinent information.

Compliance with these requirements does not relieve the Port from responsibility to maintain continuous compliance with the terms and conditions of this Order or the resulting liability from failure to comply.

3. In the event of finding distressed, dying or dead fish, the Port shall collect fish specimens and water samples in the affected area, within the first hour of the event. These samples shall be held in refrigeration or on ice until the Port is instructed by Ecology on their disposition. Ecology may require analyses of these samples before allowing the work to resume.

4. In the event of a discharge of oil, fuel, or chemicals into state waters, or onto land with a potential for entry into state waters, containment and cleanup efforts shall begin immediately and be completed as soon as possible, taking precedence over normal work. Cleanup shall include proper disposal of any spilled material and used cleanup materials.

5. Fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc., shall be checked regularly for drips or leaks, and shall be maintained and stored properly to prevent spills into state waters.

6. If at any time during work the Port finds buried chemical containers, such as drums, or any unusual conditions indicating disposal of chemicals, the Port shall immediately notify the Ecology's NWRO Regional Spill Response Office at 425-649-7000.

M. **General Conditions:**

1. This Order does not authorize direct, indirect, permanent, or temporary impacts to waters of the state or related aquatic resources, except as specifically provided for in conditions of this Order.

2. This Order does not exempt and is conditional upon compliance with other statutes and codes administered by federal, state, and local agencies.

3. Ecology retains continuing jurisdiction to make modifications hereto through supplemental Order, if it appears necessary to further protect the public interest.

4. The Port shall have a designee on-site, or on-call and readily accessible to the site, at all times while construction activities are occurring that may affect the quality of ground and surface waters of the state, including all periods of construction activities.

5. The Port's designee shall have adequate authority to ensure proper implementation of the Erosion and Sediment Control (ESC) Plan, as well as immediate corrective actions necessary because of changing field conditions. If the Port's designee issues a directive necessary to implement a portion of the ESC Plan or to prevent pollution to waters of the state, all personnel on site, including the construction contractor and the contractor's employees, shall immediately comply with this directive.

6. The Port shall provide access to the project site and all mitigation sites by Ecology or WDFW personnel for site inspections, monitoring, necessary data collection, or to ensure that conditions of this Order are being met.

7. Copies of this Order and all related permits, approvals, and documents shall be kept on the project site and readily available for reference by the project managers, construction managers and foremen, other employees and contractors of the Port, and state agency personnel.

8. The Port shall comply with all provisions of any Hydraulic Project Approval issued by the Washington Department of Fish and Wildlife. Work in or near the water that may affect fish migration, spawning, or rearing shall cease immediately upon a determination by WDFW that fisheries resources may be adversely affected.

N. **Violations of the Order:**

Any person who fails to comply with any provision of this Order shall be liable for a penalty of up to ten thousand dollars ($10,000) per violation for each day of continuing noncompliance. Violations of this Order shall be addressed in accordance with the requirements of RCW 90.42 and RCW 43.21B. Upon Ecology's determination that the Port is violating any condition of this Order, it shall serve notice of the violation to the Port by registered mail.

O. **Appeal process:**

Any person aggrieved by this Order may obtain review thereof by appeal. The Port can appeal up to 30 days after receipt of the permit, and all others can appeal up to 30 days from the postmarked date of the permit. The appeal must be sent to the Washington Pollution Control Hearings Board, PO Box 40903, Olympia, WA 98504-0903. Concurrently, a copy of the appeal must be sent to the Department of Ecology, Northwest Regional Office, Shorelands and Environmental Assistance Program, Attn: Ann Kenny,

3190 160th Avenue SE, Bellevue, WA 98008-5452. These procedures are consistent with the provisions of Chapter 43.21B RCW and the rules and regulations adopted thereunder.

Dated September 21, 2001 at Olympia, Washington.

Gordon White

Gordon White, Program Manager
Shorelands and Environmental Assistance Program

Attachment A: Contractor Statement

PROJECT: Port of Seattle Third Runway & Master Plan Update Projects

I have read the Water Quality Certification/Coastal Zone Consistency Determination/Section 401 Permit (Order #1996-4-02325) and the National Pollutant Discharge Elimination System (NPDES) Permit for the above referenced project and, to the best of my ability, understand the requirements of those permits as they relate to those portions of the work that are being conducted under my supervision.

Name (Signature)

Name (Printed)

Title

Company or Organization

Attachment B: NRMP Plan Set Revisions

Appendix A – Miller Creek Relocation and Floodplain Enhancement

Sheet C3: Note 13. Provide revised sheet showing design of irrigation system and discuss irrigation plan in NRMP (timing, amounts of water, etc.).

Sheet C4: Provide revised sheet C4 showing no work in streams. Provide revised Grading plan C-129 showing no work in streams.

Sheet C7: Provide revised sheet with note detailing how woody debris will be anchored using cable or hemp.

On the swale section provide revised sheet showing that swale area will be seeded.

Sheet C-8: Provide revised sheet that shows steel anchors for all the logs in the stream channel with note that hemp rope anchors are expected to remain in place for 3-5 years.

Sheet TE1: Provide revised sheet with note on how the ditches will be blocked to prevent sediment migration.

Provide schedule or table that shows the sequence in which the different elements of the mitigation will be installed. (This applies to the Auburn site as well.)

Sheet L2: Revise sheet to show how young plants will be protected from sun exposure until they are well enough established to withstand exposure to the sun.

Revise Note 6 to state that except where needed to protect roots of conifers, care must be taken not to seed mulch collars.

Revise sheet to remove staking notes and details from sheet.

Appendix B – Miller Creek In-stream and Buffer Enhancements

Sheet C3: Revise sheet to show construction access points and add a note to the plans to minimize wetland and stream impacts. Provide note detailing how access points will be restored.

Sheet C4: Note 5. Add note to see sheet TE2 and add more details detailing how the channel will be de-watered during re-grading.

Sheet C5: Provide revised sheet if log orientation at 42+00 changes.

Note 2. Provide revised sheet with note. Discuss disposal of solid wastes in text of NRMP or in an Appendix. Provide information on how hazardous materials will be managed if discovered during the course of constructing the mitigation site.

Sheet C7: Provide revised sheet with note that details how project areas will be accessed. Also provide details on how access locations will be restored after the work has been completed.

Sheet C8: On Section 2, the coir lift is shown on the section but is not present on the plan. Provide revised sheet.

On Section 3, the logs on the plan view are not present on the section. Provide revised sheet.

On Section 5, the log shown on the plan view is not present on the section. The coir lift shown on the section is not shown on the plan. Provide revised sheet.

On Section 6, the log shown on the plan view is not present on the section. Provide revised sheet.

Sheet C9: In typical detail of coir fabric lifts, develop a specification for the quantity of willow cutting. Provide revised sheet.

Sheet C10: Provide revised sheet and include note on sheet that indicates that the geotextile fabric will be biodegradable. If this is discussed in text, then text must become part of final plan set.

Sheets TE1-TE4: Provide revised sheets adding note in notes section that states that equipment should not be driven in the streambed except where necessary to complete construction.

Sheet TE2: Provide revised sheet showing details for stream diversion structure and flow dispersion structure.

Provide revised sheet showing detail for the flexible by-pass pipe. Note that pipe should not be trenched in.

Indicate on plan sheet direction of sump discharge water with note that it is pumped to a treatment pond. Provide specific pond. Provide revised sheet.

Sheet TE5: On the live stake detail, specify the density of staking (inches on center). Provide revised sheet.

Sheet L1.1: Provide revised sheet with note that says that if S. 157th Place is determined not to be needed for access purposes it will be revegetated.

Sheet L2: Provide revised sheet with note that says that if S. 160th Street is not needed for access it will be revegetated.

Sheet L3: It is unclear how much of this area will be cleared. Provide revised sheet with correct cross-hatching in wetland.

Sheet L5: Clarify why some of Wetland R11 shown as revegetated and others are not. Provide revised sheet with note indicating that the Corps of Engineers is requiring that the sewer easement will not be revegetated.

Provide revised sheet correcting hatching error for the replacement drainage channels buffer areas that will be graded. This area should be in darker (cleared and revegetated areas) hatch.

Sheet L5.1: Provide revised sheet with note that says that if 8th Avenue South is not needed for access it will be revegetated.

Sheet L5.2: Provide revised sheet with note indicating that any irrigation installed in the field shall be shown on the As-Built Report.

Sheet L6: Areas that are cleared and revegetated should be planted at a higher density than enhancement areas. Densities or quantities should be stated on the plan.
A performance standard of 280 trees per acre is proposed for the buffer. In cases where some forest vegetation is present, the Port shall supplement the existing trees with enhancement plantings to achieve this density. Clarify in NRMP how survival monitoring will be performed in these areas to differentiate these two types of areas.

Provide revised plan detail/notes to allow for use of phased planting in areas that lack suitable shade or soil moisture. Discuss in text of NRMP.

On tree planting and staking detail, the plan needs to state when the stakes will be removed. If it is determined that staking is not necessary then remove the stake details. Provide revised sheet.

Sheet P2: Provide revised sheet showing approximate locations of the sandbags and the abutments to be removed. Provide note on TESC controls that will be in place for the timber removal in order to minimize sediment mobilization.

Appendix D – Replacement Drainage Channels and Restoration of Temporarily Impacted Wetlands

Sheet C3: Clarify how hydrologic support will be provided to Wetland 11 and Wetland 9 after construction.

Sheet C5: Provide revised plan sheet with details regarding flow spreaders and spalls.

Sheet C6: Provide revised sheet clarifying whether the dark hatched area in the vicinity of Wetlands R9a, R10, R11, A10, and A11 will be graded and revegetated.

Sheet C7: Show how will water get to Wetland 44a if the TESC channel is removed.

Show flow monitoring locations on the stormwater management plan.

Sheet C8: Clarify how the drainage channel discharge structure controls flow to the wetland. Address how often these structures will be monitored and how modifications be made if a problem is identified. Provide information in note on revised sheet.

Sheet L1: Provide revised sheet to allow for phased planting to provide shading for western red cedar and the western hemlock.

Appendix E – Auburn Wetland Mitigation

Sheet C5: Provide revised sheet with note saying that if hummocks remain in place options for removing reed canary grass will be evaluated.

The Sheet C6 grading plan shows proposed contours for re-grading the SW portion of the mitigation site. These contours do not continue onto Sheet C5. Provide revise sheet.

Sheet C8: Provide revised sheet with a note added to the plans to include culverts at the low spots if needed to eliminate ponding.

On Section 3, design to ensure the perforated pipes do not sink into the substrate and become blocked.

Sheet TE1: There is no discussion on dewatering except in the NRMP text on page 7-50. Sheet C2 (Appendix E) shows the discharge point located along a ditch, which is slated to be recontoured. Provide revised sheet with additional details to manage potential erosion and amend text in NRMP if necessary.

If it is determined that Area 1 should have a sedimentation pond submit revised sheet showing the pond.

Page 7-47 of the text discusses major construction activities limited to a period from October 31 to March 31 to avoid winter bald eagles. Provide revised sheet correcting error regarding construction window to avoid winter bald eagles.

Sheets L7 and L8: Provide revised sheets to show plant pattern layout areas for each phase.

Sheet L9: Provide revised sheet with a note added to the plans so that ponded areas or areas that are anticipated to be ponded shortly after planting will be planted with plugs representative of the seed mix specified. Add Hydro seeding specifications.

Revised Auburn Grading Plan (June 28, 2001):

1. The revised grading plan (June 28, 2001) shows a culvert in the northwest corner of the site in the proposed new drainage swale. The culvert will pass flows under the site access path. The drawing shows this culvert approximately 60 feet long, passing under a path that is only approximately 15 feet wide. This culvert should be no longer than is necessary to pass the water under this pathway.

2. The revised grading plan (June 28, 2001) shows a culvert in the south central portion of the mitigation site. This culvert appears to be mis-located. It appears that the culvert should be shown in the wetland directly east of the shown location, where the wetland passes under the

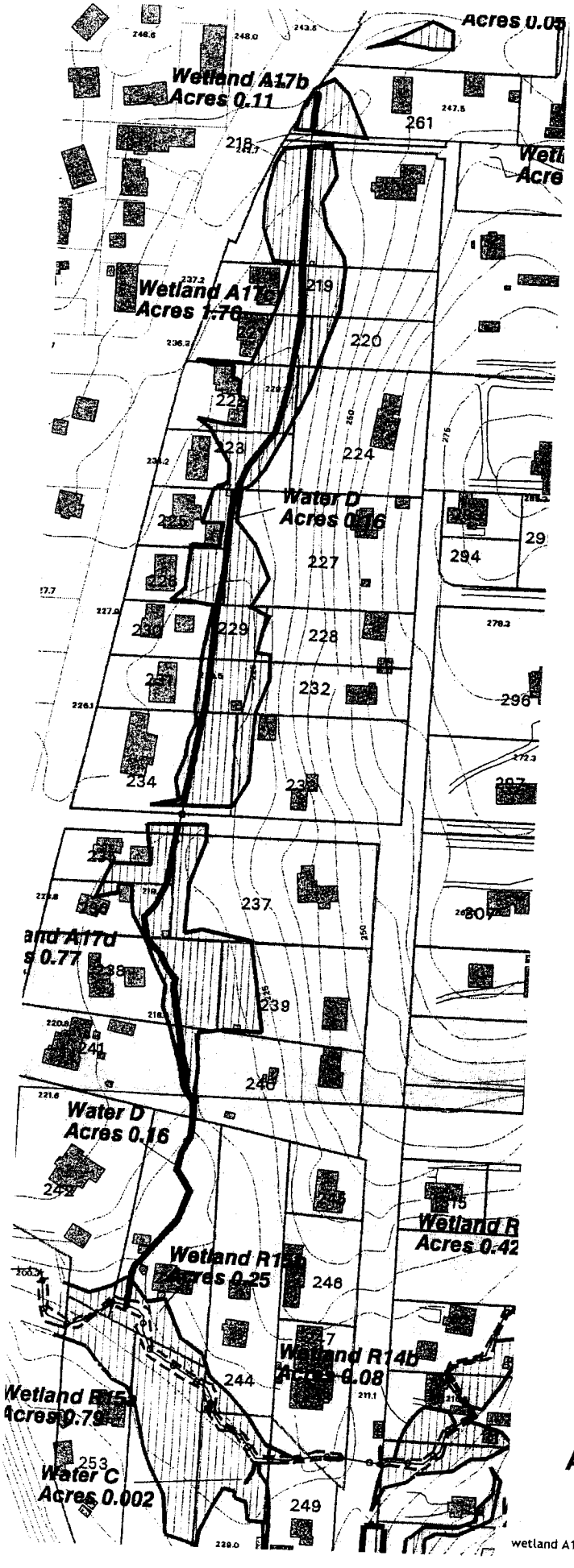
proposed maintenance path. This culvert should be no longer than is necessary to pass the water under this pathway.

3. Two additional culverts need to be shown along the new drainage swale where the water outlets the southwestern basin, under the maintenance pathway.

4. Culverts should be placed during construction under the paths/roads in all areas where there is a potential for impounding water. A note should be added on the construction documents.

5. Provide revised grading plan that addresses items 1 through 4 above.

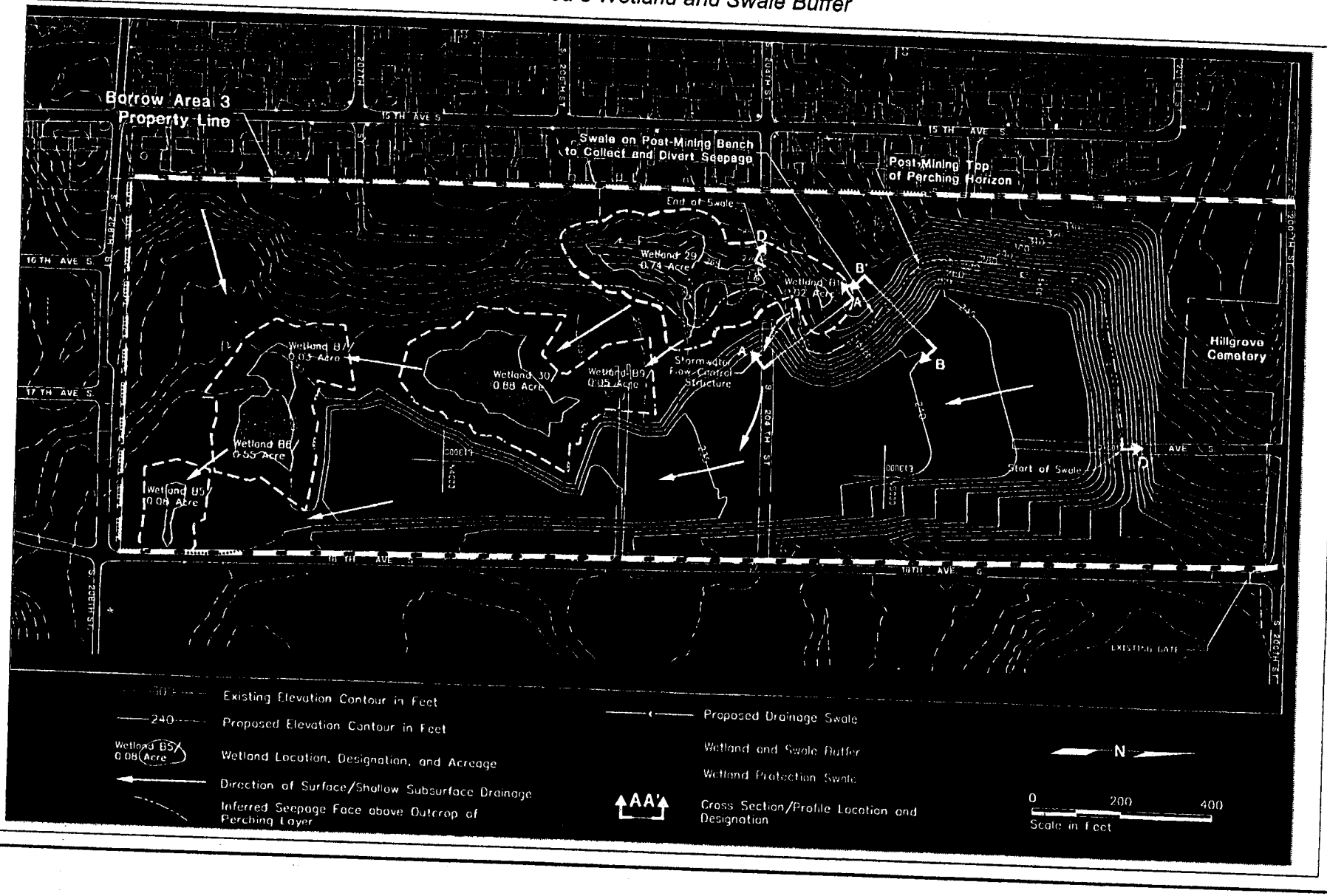
Attachment C
1996-4-02325
(Amended-1)
September 21, 2001
Wetland A17 Complex



AR 007481

ATTACHMENT D

Borrow Area 3 Wetland and Swale Buffer



Attachment E

SECTION 401 CERTIFICATION SYNTHETIC PRECIPITATION LEACHING PROCEDURE WORK PLAN

This Work Plan provides an alternative methodology for meeting the fill suitability criteria found in Section E.1(b) of the Department of Ecology's Water Quality Certification #1996-4-02325 (the "Certification")issued to the Port of Seattle ("Port"). This Work Plan describes procedures for use of the Synthetic Precipitation Leaching Procedure ("SPLP") to determine the suitability of fill for the Port's third runway embankment and other Port projects for which the fill criteria of the Certification are applicable (defined in the Certification as "Port 404 Projects").

I. Summary of Requirements

Requirements applicable to the Port include those of the Certification and also those contained in the U.S. Fish and Wildlife Service's ("FWS") May 22, 2001 biological opinion ("BO") (FWS Reference Number 1-3-00-F-1420). The Ecology Certification and the FWS BO both have screening level criteria for Port 404 Projects, including the third runway embankment (the "Embankment"), as well as special screening criteria that apply to a zone of material above the drainage layer at the bottom of the embankment. Special criteria for this zone (referred to as the "drainage layer cover" in the BO and in this document) are applicable to a zone that is 40 ft thick at the face of the embankment and reduces in height to the east at a rate of 2 percent until it meets the drainage layer at the existing ground surface to the east.

Table 1 shows the soil criteria that have been developed for the third runway embankment by FWS and Port 404 Projects by Ecology. Ecology's Certification specifies soil criteria for 14 metals and TPH (column 5 – the last column on the right). In addition, the Certification soil criteria for chromium, lead, nickel, and diesel in the drainage layer cover of the Embankment are more stringent than for the rest of the Embankment and other Port 404 Projects (column 2). The FWS BO specifies soil criteria for the drainage layer cover as shown in column 3 for the RCRA 8 metals. Because the FWS and Ecology soil criteria differ, the Port will use the most stringent criteria of the two for the drainage layer cover (shown in column 4) and for the remainder of the Embankment (shown in column 5).

Because metals are naturally occurring, they have widespread concentration variability throughout the Pacific Northwest. Many of the soil criteria in Table 1 are at Puget Sound background concentrations calculated at the 90th percentile. Thus, by definition a constituent, even at a naturally-occurring, unaltered concentration will fail these criteria10% of the time. When testing is done for multiple constituents, the probability that naturally-occurring concentrations will disqualify a fill source rises. For fill constituents that do not meet the screening criteria of the Certification and BO, fill acceptability can be demonstrated using the SPLP test procedure.

In accordance with the BO, upper bounds are established for constituent concentrations that cannot be accepted even following a successful SPLP test (referred to in this document as "upper bound limits"). For the drainage layer cover, the upper bound limits are set in the BO at applicable MTCA Method A standards. However, Method A values were not available for barium, selenium and silver. As a result, the upper bound limit for barium was backcalculated using the MTCA three phase partitioning approach (WAC 173-340-747) and selenium and silver soil criteria were set at the PQL. Upper bound limits for the drainage layer cover and the remainder of the Embankment are incorporated into this Work Plan to avoid any potential inconsistency with the BO. As such, any material that is unacceptable for the Embankment under the BO is also unacceptable for the Embankment under this Work Plan and the Certification.

At proposed fill sources for which sampling is required in accordance with the Certification, the appropriate number of samples of proposed fill material (per Certification requirements) will be collected and analyzed for the constituents listed in Condition E.1(b). Constituent concentrations will be compared to the lower screening criteria in Condition E.1(b) and in the BO for the drainage layer cover (Table, 1, column 4) or for the rest of the embankment (Table 1, column 5). If the screening criteria are not exceeded, fill from that source will be considered suitable for placement in the appropriate portion of the embankment, or on other Port 404 Projects. If the screening criteria are exceeded, but the upper bound limits are not exceeded, the Port must demonstrate fill suitability by employing the SPLP testing protocol discussed below prior to accepting fill from that source.

II. SPLP Testing Protocol

The purpose of the SPLP is to evaluate the potential for metals and organic constituents to mobilize and move through soils in fluid form. The SPLP is an accepted laboratory leaching test, as discussed in WAC 173-340-747(7). The SPLP will be conducted in

accordance with the procedures contained in SW-846 Method 1312. In the SPLP, fluid representing acid rain is passed through a soil sample and the liquid is collected and analyzed.

SPLP testing will be conducted and the results will be evaluated relative to the applicable ambient water quality criteria of WAC 173-201A as discussed below. In the event that SPLP results consistently show that criteria for specific metals are not exceeded across a range of sites and soil conditions, the Port may elect to submit such information to Ecology for its review as evidence that the Port may discontinue the requirement to implement SPLP for specific metals. Upon approval by Ecology, the Port may then adopt the applicable upper bound limit, or some intermediate figure as determined by Ecology, as its new soil screening criterion for that constituent.

Use of SPLP to demonstrate fill acceptability will require sampling of the material proposed as imported fill. At a minimum, one SPLP sample will be collected for each original sample that exceeds the screening criteria. This sample will be representative of the area where the original sample indicating an exceedence of the screening criteria was collected. The SPLP will only be conducted for the specific chemical constituent that exceeds the criteria.

III. Screening Procedure

Results from the SPLP will be compared to freshwater ambient water quality criteria according to guidelines outlined in WAC 173-201A-040 (adjusted for PQLs). As an initial screening tool, the constituent concentrations as determined from the SPLP will be divided by a dilution factor of 20. The default dilution factor of 20 was established by Ecology for use in the Three Phase Partitioning Model (WAC 173-747). This dilution factor represents a very conservative estimate because it accounts only for the dilution that occurs between the pore water at the spot in the embankment where the constituent exceeded water quality criteria, and ground water in the saturated zone directly below, without accounting for attenuation processes. The actual dilution factor, first from a specific point in the embankment through the underlying drainage layer and then transport to Miller Creek, is much greater. If the adjusted SPLP results are equal to or below the freshwater ambient water quality criteria, the material will be considered suitable for placement in the embankment (including the drainage layer cover, provided applicable upper bound limits were not exceeded for any constituents in the initial soil test prior to SPLP use). If adjusted SPLP results are above freshwater ambient water quality criteria, the material will be rejected and will not be considered suitable for placement at any location within the embankment.

Water Quality Certification # 1996-4-02325 (Amended-1)
September 21, 2001
Attachment E/SPLP Workplan Table 1

Table 1

Criteria for Drainage layer cover and other Port 404 Projects.

Constituent	Ecology special criteria for drainage layer cover (mg/kg)	FWS drainage layer cover criteria (mg/kg)	Final drainage layer cover criteria (most conservative of FWS and Ecology values) (mg/kg)	Ecology criteria for remainder of embankment and other Port 404 Projects (mg/kg)
Antimony		NA	16	16
Arsenic		7	7	20
Barium		12,000	12,000	NA
Beryllium		NA	0.6	0.6
Cadmium		1	1	2
Chromium	42	48	42	2000
Copper		NA	36	36
Lead	220	24	24	250
Mercury		0.07	0.07	2
Nickel	100	NA	48	110
Selenium		5	5	5
Silver		5	5	5
Thallium		NA	2	2
Zinc		NA	85	85
Gasoline		NA	30	30
Diesel	460	NA	460	2000
Heavy Oils		NA	2000	2000

Ann Kenny Declaration

Exhibit 2

Chapter 4: Substantive and Technical Guidance for Reviewing Proposed Projects

The Role of SEPA

[to be added]

Overview of State Water Quality Standards

[to be added]

What is "Reasonable Assurance" and How Is It Implemented?

When we issue a 401 certification, we are expected to have "reasonable assurance" that the proposed project will comply with the necessary requirements. "Reasonable assurance" is the term used in the Clean Water Act and in EPA guidance to describe the level of certainty we need to issue a 401 certification. The Pollution Control Hearings Board, in its decision in the Navy Homeport case (Friends of the Earth v. DOE, PCHB No. 87-63 [1988]), described the two-step process to arrive at "reasonable assurance".

- **Step 1:** Determine, through a "preponderance of evidence", that water quality standards can and will be met, and identify any areas of uncertainty.
- **Step 2:** Address the areas of uncertainty by including measures that will remove or reduce the uncertainty.

In describing this process, the Board recognized that "reasonable assurance" depends in part on predicting future events, and that even with a preponderance of evidence favoring certification, there may be some remaining uncertainty. In the second step of the process, the Board stated that this remaining uncertainty can be dealt with by including monitoring requirements on the certification, to ensure that the project either meets the requirements or if it doesn't, that steps can be taken to correct the non-compliance.

This standard of "reasonable assurance" is one of the primary reasons the Federal Permits Team requires thorough project review and detailed and specific 401 conditions. It also provides much of the impetus for our coordination with other technical and regulatory experts to reach a comprehensive and defensible permit decision.

The "reasonable assurance" process is further described below.

"Reasonable Assurance" in Federal Permit Team water quality certification review:

For purposes of the Federal Permits Team 401 review, this two-step process should be used in your certification review and as a basis for your decision-making. The steps are:

Step 1: Determine, through a preponderance of evidence, that applicable regulations can and will be met, and identify any areas of uncertainty.

You should first consider whether a proposed project can meet the water quality standards and other requirements. For example, will the discharges or activities from a particular project meet the applicable criteria? If a wetland is to be filled, can the lost functions and values be adequately mitigated? Will the proposed stormwater BMPs for a project allow applicable water quality critieria to be met? If a proposal includes work adjacent to a salmon-bearing stream, can BMPs be included that will adequately prevent sediment runoff into the stream?

If you determine that some part of the water quality standards cannot be met, then determine what changes or mitigation elements would be required to allow the proposed project to meet the applicable standards. For example, if a proposed project would result in an increase in stream temperature above the temperature criterion, then it should also include enough mitigation elements (e.g., riparian plantings, stormwater infiltration, covered conveyance pipes, etc.) to remove that impact and reduce temperatures to an allowable level. Or, if a wetland is providing critical groundwater recharge functions or particularly valuable wildlife habitat, then the mitigation proposal should incorporate elements that adequately compensate for those losses, such as a mitigation site that provides for groundwater recharge, habitat, etc., along with adequate performance standards and other necessary elements.

After identifying whether the project can meet the applicable standards, and what measures are necessary for it to do so, also identify the remaining uncertainty or doubt about the success of the proposed project or its mitigation elements in meeting the requirements.

Step 2: If there is remaining uncertainty that some elements of the proposal may result in non-compliance, identify what elements need to be included in the certification to eliminate all or most of that uncertainty. These elements can include monitoring requirements, contingency plans, compliance inspections, etc.

Using one of the above examples, what if the 401 certification includes a requirement to plant a riparian area to reduce temperatures, and those plantings are not successful? You may want to include a 401 condition requiring that "as-builts" be sent within 30 days after planting to ensure that the necessary number and types of plantings were placed in the appropriate locations. You may also want to require the plants be watered for the first

year or two to help them become established. You may include a performance measure, such as requiring all plants that don't survive the first year or two be replaced, and that after 5 years, the riparian area show 80% coverage of native species. All these types of conditions are part of getting to "reasonable assurance".

There may be some cases in which a proposed project can meet the requirements, but the applicant is not willing or is unable to do what it takes to meet them. In these cases, determine if there are other methods available that provide the elements or mitigation necessary to meet the standards and that the applicant is willing to do. If the applicant is not willing to do what is necessary, we have two options – deny the 401, or issue the 401 with the necessary conditions. In the latter example, the applicant would have to either comply with the 401 conditions or appeal the 401 decision.

Antidegradation

"Antidegradation" is a basic principle of the water quality standards requiring that existing beneficial uses be maintained and that degradation of water quality not be allowed if it would interfere with those beneficial uses (173-201A-070 WAC). Antidegradation is one of Ecology's most protective "tools" and our primary means to require mitigation for the loss of wetlands or other waterbodies.

Characteristic Uses

One of the most important aspects of 401 review is determining whether a proposed project will affect the characteristic uses of a wetland or waterbody. 173-201A WAC includes a number of specific characteristic uses for each classification of waterbody. For example, with regard to salmon use, the specified characteristic uses of Class AA waterbodies include salmonid migration, rearing, spawning, and harvesting, but the specified uses of Class B waterbodies include just salmonid migration, rearing, and harvesting. Refer to 173-201A-030 WAC for the list of characteristic uses specifically covered under each waterbody classification. For wetlands, characteristic uses include those listed above as well as those listed in 173-201A-060(10).

The listed uses under each classification is not a complete list of characteristic uses. Each classification includes the phrase, "characteristic uses shall include, but not be limited to..." Most waterbodies have recognized uses that are not included in the list, or have uses that must be maintained in order for the listed uses to be maintained. For example, maintaining a population of stream macroinvertebrates is not a listed characteristic use, but may be essential in maintaining fish habitat. This example is also reflected in the toxics criteria (173-201A-040 WAC), where levels have been set to protect the most sensitive aquatic biota, which are often macroinvertebrates or other organisms.

Ann Kenny Declaration

Exhibit 3

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
P.O. Box 47600 • Olympia, Washington 98504-7600
(360) 407-6000 • TDD Only (Hearing Impaired) (360) 407-6006

January 21, 2001

Honorable Julia Patterson
Washington State Senate
422 John A. Cherberg Building
P.O. Box 40433
Olympia, WA 98504-0433

Dear Senator Patterson:

Thank you for your letter of congratulations last week. I am looking forward to the challenges of my new position in California, though I know I will miss serving the state of Washington. It has been a privilege to work on such challenging issues over the years, and I've appreciated the opportunity to help make a difference in protecting the state's waterbodies.

I am also providing this letter in response to your request for information on Ecology's review of the proposed SeaTac expansion under Section 401 of the federal Clean Water Act. Please excuse the lateness of my response, as I have been busy completing all my other work at Ecology. I've included with this letter a brief assessment of my view of the issues – due to several time constraints, it is not complete, but it does focus on what I believe are some of the primary issues to be resolved in the project review.

In all fairness, I must include two caveats with this letter. First, this assessment reflects my own views of the issues based on my work over the past several years to develop a defensible 401 decision. It may not fully reflect the views of others at Ecology. Second, some of the information I've used in my assessment may not be up to date, since I am not aware of all the changes that have occurred with the Port's proposal or Ecology's review since I was taken off the project in October. I recommend you contact Ann Kenny at Ecology's Northwest Regional Office (425-649-4310) for the most up-to-date information on Ecology's review.

Also, as you point out in your letter, with my new position in California, I will not be as available to Ann as had been anticipated when she was assigned to the 401 review; however, I will make myself available by phone or e-mail if necessary and as various questions arise.

Again, thank you for your kind wishes, and thank you for your interest in Ecology's work.

Sincerely,

Tom Luster

Tom Luster

Cc: Ecology: Tom Fitzsimmons
Bill Alkire
Gordon White
Ray Hellwig
Paula Ehlers
Ann Kenny

ISSUES RELATED TO ECOLOGY'S SECTION 401 WATER QUALITY CERTIFICATION REVIEW OF THE PROPOSED SEATAC AIRPORT EXPANSION

General Issues: background on the review process –

- Requirements for 401 certification:
  - "Reasonable assurance"
  - Interaction of Sections 401 and 402 of the federal Clean Water Act

Specific Issues Related to Aquatic resource Protection: to be resolved as part of Ecology's 401 review –

- Determine direct, indirect, and cumulative impacts and identify necessary mitigation
- Determine compliance with other associated aquatic resource-related regulations
- Determine standards for "clean fill" material
- Develop an acceptable stormwater plan
- Develop an acceptable streamflow augmentation plan
- Develop an acceptable wetland impacts and mitigation

GENERAL ISSUES:

My primary job duty has been to ensure that our 401 decisions result in clean water. For most proposed projects, this means looking at the full range of known or anticipated impacts associated with the construction and operation of a project, reviewing those impacts against the water quality standards, and determining if the standards will be met and what permit conditions are needed to ensure they are met.

With regards to the proposed SeaTac expansion, the intent of my review throughout the process was to develop a fully defensible 401 decision to ensure that applicable water quality regulations would be met.

Requirements for 401 certification:

The basic requirement of Ecology's review has remained the same throughout the history of this proposed project – to determine whether the proposal will meet the state's water quality standards. The three main questions to be answered with regards to meeting the standards are:

- Will the proposed discharges (construction and operational) meet antidegradation requirements (i.e., no further degradation in the waterbody, and no degradation below a certain level)?
- Will these discharges allow beneficial uses (such as fishing, recreation, water supply, etc.) to be met in the affected waterbodies?
- Will they meet the applicable numeric and narrative water quality criteria?

The federal Clean Water Act and the state water quality standards are structured to apply both to discharges and to the waterbodies being discharged to. Ecology's obligation under the regulations is to review proposed projects to ensure both that the contaminant levels in a proposed discharge meet the water quality standards and that the receiving waterbody is meeting the standards. Essentially, the mechanisms of the Clean Water Act (i.e., permit review under Sections 401 and 402) are intended to result in meeting the goals of the Act (i.e., fishable and swimmable waters, the elimination of toxic discharges, etc.).

"Reasonable Assurance": Review under Section 401 requires Ecology to have "reasonable assurance" that the water quality standards will be met. "Reasonable assurance" is a term of law meaning we must have a "preponderance of evidence" showing that the proposed actions will meet the standards. In addition, "reasonable assurance" recognizes that there is some uncertainty with the decision, given that the proposed actions will occur sometime in the future and cannot be fully predicted. Therefore, once we have the necessary "preponderance of evidence" showing that standards will be met, we can then include conditions that address the remaining areas of uncertainty – for example, conditions can be added to the 401 permit that require monitoring, compliance inspections, review and approval of any design changes, etc.

Interaction of 401 and 402: Another key point in Ecology's review on this particular project is the interaction of two different sections of the Clean Water Act. The proposed SeaTac expansion requires approvals under both Section 401 of the Act (water quality certification) and Section 402 of the Act (NPDES discharge permits). While these sections of the Act are both meant to ensure compliance with water quality standards, they take a different approach that must be rectified when a proposal requires approvals under each.

The Clean Water Act includes different requirements for permit review under Sections 401 and 402. The essential difference is that Section 401(d) establishes that a certification must include all necessary effluent limitations to ensure standards are met, and Section 402(a) allows a permit to either include those limitations or other appropriate measures that will eventually lead to the standards being met.

Ecology has recognized this difference by drafting a policy between its Water Quality Program, which implements Section 402, and its Shorelands and Environmental Assistance Program, which implements Section 401. This policy establishes a review process for proposed projects requiring both permits. Key language of this policy includes the following:

> "When a project's discharges are covered by an Individual 402 Permit, and the project is in compliance with that permit as determined by the Water Quality Program, the 401 Certification will require compliance with the Individual 402 Permit as adequate for compliance with the water quality standards, however additional 401 Certification conditions may be necessary to address compliance for stormwater and other water quality impacts or project areas not covered by the 402 Permit."

...and:

> "For projects that have not yet obtained a required 402 Permit, the 401 Certification will be held in abeyance for a maximum period of one year, or denied without prejudice until the 402 Permit is received. A 401 Certification can not be approved if a required 402 Permit has not yet been received because reasonable assurance that the standards will be met can not be determined on a proposed future permit."

This difference is also recognized in Ecology's draft Stormwater Management Manual (from Section 1.9.8):

> "For projects that require a fill or dredge permit under Section 404 of the Clean Water Act, Ecology must certify to the permitting agency, the U.S. Army Corps of Engineers, that the proposed project will not violate water quality standards. In order to make such a determination, Ecology may do a more specific review of the potential impacts of a stormwater discharge from the construction phase of the project and from the completed project. As a result of that review, Ecology may condition its certification to require:
>
> - Application of the minimum requirements and BMPs in this manual; or
> - Application of more stringent requirements."

In essence, when a proposed project requires approval under both Section 401 and Section 402, Ecology must base its 401 decision on whether it has "reasonable assurance" that the 402-regulated activities are meeting the 401 requirement that all applicable effluent limitations be met.

SPECIFIC ISSUES RELATED TO AQUATIC RESOURCE PROTECTION:

As of last October, when I was moved to other duties, none of the following aquatic resource-related issues had been fully resolved for purposes of 401 certification. We were awaiting further information from the Port on many of these issues and were anticipating receipt of public comments during the public comment period that started several weeks ago.

Determine the direct, indirect, and cumulative impacts of the proposal, and identify necessary mitigation:

Ecology's review of this proposed project changed a number of times over the past several years as new information became available about various aspects of the projects. One of the largest areas of change was in determining the extent of the direct, indirect and cumulative impacts associated with the proposed SeaTac expansion.

As of last October, Ecology had not yet determined the full or final extent of project-related impacts. Some examples include:

- Auburn wetland mitigation site: the Port had recently informed us that new information about the proposed Auburn wetland site showed existing wetlands at the site were more extensive than originally determined. This had the potential to change the amount and type of wetland mitigation that would be required for the anticipated wetland impacts.

- Proposed South Access Road and expansion of State Route 509: we had not yet fully determined the relationship between these proposed projects and the airport expansion, and had not determined the full extent of wetland impacts due to the proposed road projects.

- Proposed expansion of Industrial Waste System Lagoon #3: the proposed expansion of IWS Lagoon #3 will result in about 10 acres of additional impervious surface being added just north of Wetland 28. This indirect hydrologic impact had not yet been evaluated. In addition, Appendix D of the 1998 Lagoon #3 Expansion Hydrologic Report identifies several deficiencies in the current lagoon that must be corrected as part of the expansion, including reconstructing the eastern containment dike and relocating stormwater piping in the ravine to the east of the lagoon. The area immediately east of the lagoon consists largely of wetlands that have so far been described elsewhere in Port documents as not being impacted by the Port expansion project. This may result in additional direct impacts that have not yet been addressed, and may require additional approvals from Ecology in the form of dam safety permits.

- Ongoing impacts to Northwest Ponds (the "De-icing Study"): the Port's report on de-icing submitted to Ecology last year identified several impacts to waters of the state that have not yet been addressed through either the 401 review or the 402 permitting process. These include the apparent use of the Northwest Ponds as a de facto but unapproved mixing zone for several contaminants (i.e., low dissolved oxygen levels, high metals concentrations) at levels beyond the water quality criteria.

  Ecology provided comments to the Port on this initial report, and is expecting a supplemental report sometime in the near future that addresses these comments. These impacts should be evaluated and mitigated through the 401 review process if they are not first addressed through a modification to the NPDES permit. Options include improved source control or stormwater treatment BMPs, or additional mitigation to make up for any loss of wetland functions in the Northwest Ponds due to this ongoing, unapproved impact.

Determine compliance with other associated aquatic resource-related regulations:

Ecology had received comments this past fall regarding the Federal Aviation Administration's (FAA) and Port's compliance with requirements of the National Environmental Policy Act (NEPA). Ecology does not implement this federal law, but the outcome of the FAA's determination could affect the Port's compliance with the State Environmental Policy Act (SEPA), which is a required part of Ecology's review. If there are required changes to NEPA that result in necessary changes to existing SEPA documents, then Ecology must wait until those SEPA changes are completed before making its 401 decision.

In addition, Ecology was expecting comments on whether the Port's current proposal as described in the Corps/Ecology Public Notice for 401 review was in compliance with the requirements of the Governor's certification letter to the FAA several years ago. We were awaiting the final project description to determine whether it met requirements of the Clean Air Act and the Agreed Order for cleanup activities, as described in the Governor's letter.

Determine standards for "clean fill" material:

Ecology had not yet completed its evaluation of what types of material were and were not acceptable to use as clean fill in the airport expansion project. Our evaluation was based on ensuring that fill material would allow groundwater to move through the material to emerge as surface water and not exceed surface water quality standards

Development of an acceptable stormwater plan:

Adequacy of stormwater treatment: at the time of my review, I did not yet have reasonable assurance that the Port's proposed stormwater discharges would meet the applicable water quality criteria; in fact, the documentation I was aware of showed that several criteria would be exceeded. The literature available on the subject of stormwater Best Management Practices (BMPs) showed that the BMPs being proposed by the Port were not adequate to treat stormwater discharges to levels below the criteria for several metals and for fecal coliform. In addition, the Port's annual monitoring reports and recent Discharge Monitoring Reports (DMRs) showed that stormwater discharges to Des Moines and Miller Creeks often had concentrations of several contaminants above the water quality criteria.

The first proposed stormwater management plan submitted by the Port as part of Ecology's 401 review in 1998 included essentially the same BMPs that were being used at the airport at that time and were resulting in the above-noted exceedances. Ecology did a "reasonable potential analysis" based on the known discharges and the modeled effectiveness of those BMPs and determined that they were not effective enough to adequately treat the Port's stormwater discharges to meet several acute water quality criteria. As a result, Ecology's original 401 issued in 1998 required the Port to "double-up" on its BMPs in order to provide more treatment. That original stormwater plan and 401 certification were withdrawn shortly after the 401 was issued, based on new information about wetland impacts. Ecology, however, did consider the stormwater requirements of that 401 as the "baseline" for any future 401s that might be issued.

When the Port submitted its next proposed stormwater plan, Ecology contracted with King County to provide additional expertise to review the Port's proposal. Over the past year or so, Ecology and the County have been working with the Port to ensure first that their proposed stormwater management plan met the minimum requirements of the Ecology and King County stormwater manuals, and then to determine what additional measures might be needed to ensure the stormwater discharges would meet water quality standards.

As of October of this year, the proposed stormwater plan under review included only the minimum BMPs required under the King County stormwater manual (which are similar to what is in place at the airport now) and did not include all the BMPs required under Ecology's previous certification. I had anticipated that any additional source control or treatment requirements would be evaluated after the County had determined the proposed plan met the minimum technical requirements of the two manuals. This delay in the additional evaluation was due to the likelihood that the County's review would result in additional stormwater detention above what is currently in place at the airport. This additional detention was likely to provide some additional treatment before stormwater flows were discharged to the local creeks.

This anticipated evaluation for additional treatment requirements was important for reaching a defensible 401 decision for several reasons:

- the new and expanded stormwater discharges anticipated from the proposed project are similar to those currently being discharged from the Port; therefore, the effectiveness of the existing BMPs and the resulting water quality exceedances are likely to be similar.
- the state's water quality standards do not allow a compliance schedule for new discharges. Because Ecology must at the time of its 401 decision have "reasonable assurance" that the standards would be met, there must be some measures taken to improve the performance of the existing BMPs.
- a recent Ninth Circuit Court decision (Defenders of Wildlife v. Browner) suggested that stormwater discharges associated with industrial NPDES permits (such as the one held by the Port) were subject to water quality based standards (i.e., numeric water quality criteria). The Court's decision included the following:

> "As is apparent, Congress expressly required industrial storm-water discharges to comply with the requirements of 33 U.S.C. S 1311. See 33 U.S.C. S 1342(p)(3)(A) ("Permits for discharges associated with industrial activity shall meet all applicable provisions of this section and section 1311 of this title.") (emphasis added). By incorporation, then, industrial storm-water discharges "shall . . . achiev[e] . . . any more stringent limitation, including those necessary to meet water quality standards, treatment standards or schedules of compliance, established pursuant to any State law or regulation (under authority preserved by section 1370 of this title)." 33 U.S.C. S 1311(b)(1)(C) (emphasis added); see also Sally A. Longroy, The Regulation of Storm Water Runoff and its Impact on Aviation, 58 J. Air. L. & Com. 555, 565-66 (1993) ("Congress further singled out industrial storm water dischargers, all of which are on the

> high-priority schedule, and requires them to satisfy all provisions of section 301 of the CWA [33 U.S.C. S 1311]. . . . Section 301 further mandates that NPDES permits include requirements that receiving waters meet water quality based standards.") (emphasis added). In other words, industrial discharges must comply strictly with state water-quality standards."

Without fully incorporating the above factors into the review, I was concerned that we would not have a fully defensible 401 decision.

Development of an acceptable streamflow augmentation plan:

During Ecology's 401 review, the Port provided documentation showing that the fill placed for the South Aviation Support Area (SASA) and the impervious surface associated with that development would diminish stream flows in Des Moines Creek to some degree. Ecology had also reviewed the Des Moines Creek Basin Plan, which had been prepared by King County, the Port, and several local jurisdictions, which showed that the creek experienced a number of problems due to existing development in the watershed and would likely experience increased problems due to proposed or expected future development. Among the problems were some violations of water quality standards caused in part by low summer streamflows.

Given this documentation, we informed the Port that part of their proposed mitigation package had to include an acceptable form of streamflow augmentation to prevent and minimize existing and anticipated impacts to the creek. As part of Ecology's 401 approval, the Port had to provide a confirmed source of flow augmentation water and a confirmed treatment system, if necessary, to ensure that the augmentation water met water quality standards.

At the time of my review, the Port had proposed several possible sources of water and a conceptual treatment system, but they had not yet been developed to the level of certainty that provided me with reasonable assurance that the standards would be met.

Ann Kenny Declaration

Exhibit 4

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

15 West Yakima Avenue, Suite 200 • Yakima, Washington 98902-3452 • (509) 575-2490

November 7, 2000
REGISTERED MAIL

Jim Leonhard
City of Cle Elum
119 West First Street
Cle Elum WA 98922

Dear Mr. Leonhard:

RE: Order # 2000-4-01255 -- Water Quality Certification for City of Cle Elum
South Cle Elum Bridge Project

The request for certification for proposed work in and adjacent to the Yakima River has been reviewed. On behalf of the State of Washington, we certify that the proposed work, as conditioned by the enclosed Order, will comply with applicable provisions of Sections 301, 302, 303, 306 and 307 of the Clean Water Act, as amended, and other appropriate requirements of State law. This letter also serves as the State response to the Corps of Engineers.

This certification is subject to the conditions contained in the enclosed Order. If you have any questions, please contact Randall Doneen at (509) 457-7125. Written comments can be sent to him at the Department of Ecology, 15 W. Yakima Avenue, Suite 200, Yakima WA 98902 or at rdon461@ecy.wa.gov. The enclosed Order may be appealed by following the procedures described in the Order.

Sincerely,

G. Thomas Tebb, Section Manager
Central and Eastern Regional Offices
Shorelands and Environmental Assistance Program

GTT:RD:gh
001101
Enclosure

cc: Corps of Engineers – Debbie Knaub
U.S. EPA – Steve Roy
WDFW – Brent Renfrow
Jeffrey Louman - Huibregtse, Louman Associates, Inc.

AR 007502

FILE COPY

IN THE MATTER OF GRANTING A WATER QUALITY CERTIFICATION TO:
The City of Cle Elum
in accordance with 33 U.S.C. 1341
FWPCA § 401, RCW 90.48.260
and WAC 173-201A

ORDER # 2000-4-01255

project description:
Construct a full river span rock grade control weir, and simultaneously a utility conduit in the Yakima River.

TO: The City of Cle Elum
119 West First Street
Cle Elum WA 98922

On October 5, 2000, a public notice for a proposed water quality certification from the State of Washington was distributed for the above-referenced project pursuant to the provisions of 33 U.S.C. 1341 (FWPCA§ 401). The proposed project entails the construction of a rock grade control weir and utility conduit that spans the entire Yakima River directly downstream from the South Cle Elum bridge SE¼ Section 27, Township 20 N., Range 15 E.W.M. The City of Cle Elum proposes this work as a portion of a larger water system improvement project and an emergency project to protect the stability of the South Cle Elum bridge. While collecting field data for the water system improvement project the project engineer identified a scour problem associated with one of the pier footings of the South Cle Elum bridge. The scour associated with the pier had progressed to such a degree that the project engineer felt one more high flow event could cause erosion around the pier footing that would threaten the stability of the bridge. Kittitas County, The City of Cle Elum and the Town of South Cle Elum declared the scour threatening the stability of the bridge an emergency. The proposed rock grade control weir and associated utility conduit was identified as the best possible solution to address the bridge scour emergency. The project consists of 2,700 cubic yards of fill for the rock grade control weir and fill of scour zone beneath the proposed utility conduit. The placement of the rock grade control weir and utility conduit will also involve excavation of 3,500 cubic yards of river gravel and sand.

AUTHORITIES:

In exercising authority under 33 U.S.C. 1341, 16 U.S.C. 1456, and RCW 90.48.260, Ecology has investigated this application pursuant to the following:

1. Conformance with applicable water quality-based, technology-based, and toxic or pretreatment effluent limitations as provided under 33 U.S.C. Sections 1311, 1312, 1313, 1316, and 1317 (FWPCA Sections 301, 303, 306 and 307);

2. Conformance with the state water quality standards as provided for in Chapter 173-201A WAC authorized by 33 U.S.C. 1313 and by Chapter 90.48 RCW, and with other appropriate requirements of state law; and

3. Conformance with the provision of using all known, available and reasonable methods to prevent and control pollution of state waters as required by RCW 90.48.010.

CONDITIONS OF ORDER #2000-4-01255 AND WATER QUALITY CERTIFICATION:

In view of the foregoing and in accordance with 33 U.S.C. 1341, 90.48.260 RCW and Chapter 173-201A WAC, water quality certification is granted to the City of Cle Elum subject to the following conditions:

A. No Impairment of Water Quality:

A1. Yakima River WRIA # 39 are Class A waters of the state. Certification of this proposal does not authorize the City of Cle Elum to exceed applicable state water quality standards (173-201A WAC) or sediment quality standards (173-204 WAC). Water quality criteria contained in 173-201A-030(1) WAC and 173-201A-040 WAC shall apply to this project, unless otherwise authorized by Ecology. This Order does not authorize temporary exceedances of water quality standards beyond the limits established in 173-201A-110(3). Furthermore, nothing in this certification shall absolve the City of Cle Elum from liability for contamination and any subsequent cleanup of surface waters or sediments occurring as a result of project construction or operations.

The Yakima River has been identified on the current 303(d) list as exceeding state water quality standards for 4,4'-DDE, Cadmium, Copper, DDT and Mercury. This proposed project shall not result in further exceedances of this standard.

Temporary Modification of Water Quality Standards:

Except as specifically authorized by this Order, all applicable provisions of 173-201A WAC shall be met.

Dilution Zone: A temporary dilution zone shall be established extending 300 feet down current from the in-water construction area of the North Channel. A temporary dilution zone shall be established extending 100 feet down current from the in-water construction area of the South Channel. This dilution zone is established to allow only temporary exceedances of turbidity criteria during and immediately after project construction.

Water Quality Criteria: This project is subject to Class A water quality criteria contained in 173-201A WAC, except as modified as follows:

* Turbidity: The Class A water quality criterion for turbidity [no more than 5 NTU over background when background is 50 NTU or less, or no more than 10 percent

over background when background is greater than 50 NTU] is waived only within the dilution zone specified above.

Toxic conditions resulting in distressed or dying fish (including dissolved oxygen levels below 5.0 mg/L) are not allowed. If these conditions exist, construction shall cease immediately and the applicant or the contractor shall contact Ecology's Spill Response Office at (509) 456-2926.

Monitoring: During and immediately after project construction, the applicant or contractor shall visibly monitor the area for distressed or dying fish. After placement of drop structure on the north shoreline of island #1, but before completing construction of drop structure across the island, the project engineer shall observe flow patterns below drop structure. Consult with Washington State Department of Fish and Wildlife and Washington State Department of Ecology before continuing construction of drop structure. If through this consultation it is determined that fisheries are properly protected work may continue. If through this consultation it is determined that fisheries are not properly protected additional measures to prevent negative impacts from construction activities shall be incorporated. Additional measures may include but not be limited to further diversion of water away from sensitive fisheries areas or further isolation of construction activities from flowing water. If water quality exceedances are observed outside the dilution zone, in-water work shall cease immediately and the applicant or the contractor shall contact Ecology's Spill Response Office at (509) 456-2926 and Permit Assistance Center at (509) 457-7125.

B. Project Mitigation:

B1. Impacts to aquatic resources shall be mitigated through measures described in the following documents, except as modified by this Order:

- Water Intake Structure Modifications on the Cle Elum and Yakima Rivers Biological Assessment, prepared by Pentec Environmental and dated October 24, 2000.
- Yakima River Intake Modification, Rock Drop and Utility Conduit Installation, Wetland Delineation and Mitigation, prepared by Entrix, dated November 2, 2000.
- South Cle Elum Bridge Project Proposal to Create Additional Wetlands for Mitigation, prepared by Geomax, dated November 3, 2000.

B2. In addition to conditions contained in the above-referenced documents, the following requirements shall be conditions for all mitigation sites:

- The applicant shall submit an evaluation of why vegetation has not been successfully established on Island #2. This information must be submitted to Ecology by November 11, 2000. Once Ecology receives this additional information, Ecology will determine which wetland mitigation plan will be implemented. If Ecology determines that the alternative mitigation plan entitled, South Cle Elum Bridge Project Proposal to

Create Additional Wetlands for Mitigation, will be implemented, the applicant will submit a final mitigation plan for this proposal. This final mitigation plan will follow the, Guidelines for Preparing Freshwater Mitigation Plans and Proposals. This final alternative mitigation plan will include all portions of the mitigation plan entitled, Yakima River Water Intake Modification, Rock Drop and Utility Conduit Installation, Wetland Delineation and Mitigation, other than the Island #2 wetland mitigation portion. The final alternative mitigation plan will be submitted to Ecology for approval within 14 days of permit issuance by the US Army Corps of Engineers.

- The applicant and/or their agents will initiate a site visit with Ecology by July of 2001 to determine if mitigation has been successful. If mitigation is determined to not meet performance standards, a contingency plan will be prepared and submitted to Ecology by August 15, 2001. The contingency plan, when approved will be implemented on site by October 31, 2001.

- "As-Built" Report: an "as-built" report shall be prepared, and two copies shall be sent to Ecology's Central Regional Office, 15 West Yakima Ave., Suite 200, Yakima WA 98902. The "as-built" report shall include the following:

  - site topography (both plan view and elevations).
  - photographs of the site taken from established permanent reference points. Permanent reference points shall be established so that topographic and vegetative conditions in the project area can be monitored.
  - a planting plan showing species, densities, sizes, and approximate locations of plants, as well as plant sources and the time of planting.
  - any habitat features (e.g., large woody debris, boulders, etc.) installed and their locations.
  - any changes to the approved design that occurred during construction.

  The "as-built" report shall be submitted within 60 days of completing the initial planting at the project, and in no case later than December 31, 2001.

- Monitoring Reports: monitoring reports shall be prepared during Years 1, 3 and 5 after project construction, and two copies of each shall be sent to Ecology's Central Regional Office, 15 West Yakima Ave., Suite 200, Yakima WA 98902. The monitoring reports shall include descriptions of the elements included in the "as-built" report, and shall also include the following:

  - topography: changes on the project site due to erosion, accretion, deposition, etc. These changes shall be documented in plan drawings and through photographs taken at the permanent reference points.
  - vegetation: species composition on site, and the approximate percent cover of native species and of invasive or non-native species.

- A statement of whether or not success measures are being met. If not, what is being done to meet success measures.

  The Year 1 monitoring report shall be submitted no later than December 31, 2002, The Year 3 monitoring report shall be submitted no later than December 31, 2004, and the Year 5 monitoring report shall be submitted no later than December 31, 2006.

- New Vegetation: all new plant materials shall be appropriate native plant species and shall be from appropriate local genotypes.

- Performance Standard and Contingency Plan: if the results of monitoring at Year 5 show that the site does not have at least 80% coverage or survival of native vegetation, additional monitoring and/or mitigation may be required. Any proposed changes to the mitigation plan or monitoring requirements require further approval by Ecology.

C. Construction:

C1. Construction Stormwater and Erosion Control:

C1a. Work in or near waters of the state shall be done so as to minimize turbidity, erosion, and other water quality impacts. Construction stormwater, sediment and erosion control Best Management Practices suitable to prevent exceedances of state water quality standards (*e.g.*, hay bales, detention areas, filter fences, etc.), shall be in place before starting clearing, filling, and grading work at the impact sites.

C1b. Prior to clearing and grading in wetlands, the adjacent wetlands shall be protected from construction impacts. Construction fencing or flagging (using brightly colored tape at no less than twenty-five foot (25') intervals) of the existing wetlands and stream channels to be protected shall be completed prior to clearing. All project staff shall be trained to recognize construction fencing or flagging that identifies wetland boundaries. Equipment shall not be moved into or operated in wetlands or stream channels that are not authorized to be filled.

C2. During clearing and filling at the various project sites, the City of Cle Elum shall take all necessary measures to minimize the alteration or disturbance of existing wetland and upland vegetation.

C3. All construction debris shall be properly disposed of on land so that it cannot enter a waterway or cause water quality degradation to state waters. Retention areas or swales shall be used to prevent discharging of water from construction debris placement areas.

Excavation buckets and dump trucks shall be operated to prevent discharging sediment ladden waters in the Yakima River below the rock grade control structure.

C4. Wash water containing oils, grease, or other hazardous materials resulting from wash down of equipment or working areas shall be contained for proper disposal, and shall not be discharged into state waters or storm drains.

C5. The City of Cle Elum shall provide written notice to Ecology's Randall Doneen within 14 days after completion of construction at each project site and mitigation site.

C6. Clean Fill Criteria: The City of Cle Elum shall ensure that fill placed for the proposed project does not contain toxic materials in toxic amounts.

D. Emergency/Contingency Measures:

D1. In the event the City of Cle Elum is unable to comply with any of the permit terms and conditions due to any cause, the City of Cle Elum shall:

- Immediately take action to stop, contain, and clean up unauthorized discharges or otherwise stop the violation and correct the problem.
- Notify Ecology of the failure to comply. Spill events shall be reported immediately to Ecology's 24-Hour Spill Response Team at (509) 575-2490, and within 24 hours to Ecology's Randall Doneen at (509) 457-7125.
- Submit a detailed written report to Ecology within five days that describes the nature of the violation, corrective action taken and/or planned, steps to be taken to prevent a recurrence, results of any samples taken, and any other pertinent information.

Compliance with this condition does not relieve The City of Cle Elum from responsibility to maintain continuous compliance with the terms and conditions of this Order or the resulting liability from failure to comply.

D2. Fuel hoses oil drums, oil or fuel transfer valves and fittings, etc., shall be checked regularly for drips or leaks, and shall be maintained and stored properly to prevent spills into state waters. No refueling of equipment shall occur over, or within 50 feet of creeks or wetlands.

E. General Conditions:

E1. This certification does not exempt and is provisional upon compliance with other statutes and codes administered by federal, state, and local agencies.

All conditions in the following permits, approvals, and documents are incorporated herein and are specific conditions of this Order:

- HPA log number: 00-E1904-01, issued on November 3, 2000
- Kittitas County Planning Department Shoreline Substantial Development Permit Exemption, dated October 10, 2000
- City of Cle Elum Shoreline Substantial Development Permit Exemption, dated November 1, 2000.

The project has been exempted from a shoreline substantial development permit pursuant to WAC 173-27-040 (2d) Emergency construction necessary to protect property from damage by the elements. Developments with new protective structures constructed under this exemption are required to obtain a permit upon abatement of the emergency situation.

E2. The City of Cle Elum will be out of compliance with this certification if the project is constructed and/or operated in a manner not consistent with the project description contained in the Public Notice for certification, or as otherwise approved by Ecology. Additional mitigation measures may be required through other local, state, or federal requirements.

E3. The City of Cle Elum will be out of compliance with this certification and must reapply with an updated application if five years elapse between the date of the issuance of this certification and the beginning of construction and/or discharge for which the federal license or permit is being sought.

E4. The City of Cle Elum will be out of compliance with this certification and must reapply with an updated application if the information contained in the Public Notice is voided by subsequent submittals to the federal agency. Any future action at this project location, emergency or otherwise, that is not defined in the public notice, or has not been approved by Ecology, is not authorized by this Order. All future actions shall be coordinated with Ecology for approval prior to implementation of such action.

E5. Copies of this Order shall be kept on the job site and readily available for reference by Ecology personnel, the construction superintendent, construction managers and foremen, and state and local government inspectors.

To avoid violations or non-compliance with this Order, The City of Cle Elum shall ensure that project managers, construction superintendents, and other responsible parties have read and understand relevant aspects of this Order, the HPA, and any subsequent revisions or Ecology-approved plans.
The City of Cle Elum shall provide to Ecology a signed statement from each project manager and construction superintendent working at the project and mitigation sites that they have read and understand the conditions of the above-referenced permits, plans, and approvals.

E6. The City of Cle Elum shall provide access to the project site and all mitigation sites upon request by Ecology personnel for site inspections, monitoring, necessary data collection, or to ensure that conditions of this Order are being met.

E7. Nothing in this Order waives Ecology's authority to issue additional orders if Ecology determines further actions are necessary to implement the water quality laws of the state. Further, Ecology retains continuing jurisdiction to make modifications hereto through supplemental order, if additional impacts due to project construction or operation are identified (*e.g.*, violations of water quality standards, downstream erosion, etc.), or if additional conditions are necessary to further protect the public interest.

E8. Liability: Any person who fails to comply with any provision of this Order shall be liable for a penalty of up to ten thousand dollars $10,000) per violation for each day of continuing noncompliance.

Appeal Process:

Any person aggrieved by this Order may obtain review thereof by appeal, within thirty (30) days of receipt of this Order, to the Washington Pollution Control Hearings Board, P.O. Box 40903, Olympia, WA 98504-0903. Concurrently, a copy of the appeal must be sent to the Department of Ecology, Enforcement Section, P.O. Box 47600, Olympia, WA 98504-7600. These procedures are consistent with the provisions of Chapter 43.21B RCW and the rules and regulations adopted thereunder.

Dated November 7, 2000 at Yakima, Washington.

G. Thomas Tebb, Section Manager
Central and Eastern Regional Offices
Shorelands and Environmental Assistance Program
Department of Ecology

GTT:RD:gh
001101a

DEBBIE KNAUB
US ARMY CORPS OF ENGINEERS
PO BOX 2829
CHELAN WA 98816-2829

STEVE ROY
US EPA REGION 10
1600 SIXTH AVENUE
SEATTLE WA 98101

BRENT RENFROW
WA DEPARTMENT OF FISH AND WILDLIFE
ELLENSBURG DISTRICT OFFICE
201 N PEARL ST
ELLENSBURG WA 98926-3326

JEFF LOUMAN
HUIBREGTSE LOUMAN ASSOCIATES INC
801 NORTH 39TH AVE
YAKIMA WA 98902

Ann Kenny Declaration

Exhibit 5

17 acres

CERTIFIED MAIL

March 16, 1995

Northwest Racing Associates dba Auburn Racing
1820 West Valley Highway North, #100
Auburn, WA 98001

Dear Applicant:

Enclosed is Order No. 92-4-01417. All correspondence relating to this document should be directed to Tom Luster, Environmental Review and Sediment Section, Department of Ecology, P.O. Box 47703, Olympia, WA 98504-7703. If you have any questions concerning the content of this Order, please contact Tom Luster at (360) 407-6918.

Sincerely,

Keith E. Phillips, Supervisor
Environmental Review and Sediment Section

KEP:tl

Enclosures: -- Order #94-4-01417 w/Attachment #1 -- Water Quality Certification conditions
-- State Response letter

cc: Corps of Engineers -- Jonathan Freedman
U.S. EPA, Seattle -- Gary Voerman
U.S. Fish & Wildlife Service -- Dennis Carlson
Muckleshoot Tribe -- Rod Malcolm
Friends of the Earth -- Dave Ortman
City of Auburn -- Chris Thorn
WA Dept. of Ecology, Wetlands Section -- Mark Bentley
WA Dept. of Ecology, Northwest Regional Office -- Mike Rundlett
WA Dept. of Fish and Wildlife -- Phil Schneider

March 16, 1995

District Engineer
Department of the Army
Seattle District, Corps of Engineers
P.O. Box 3755
Seattle, Washington 98124

ATTN: Tom Mueller, Chief
Regulatory Branch

RE: Corps Public Notice No. 92-4-01417 -- Filling wetlands to construct a horse racing facility, in Auburn, King County, Washington.

Dear Sir:

Your public notice for a permit from the U.S. Army Corps of Engineers for proposed work in navigable water has been reviewed. On behalf of the state of Washington, we have no objections to the issuance of a Corps of Engineers permit under Section 404 of the Clean Water Act, provided the conditions of the enclosed Order are included as conditions of the Corps permit.

Pursuant to Section 307(c)(3) of the Coastal Zone Management Act of 1972 as amended, we concur with the applicant's determination that this activity or work is consistent with the approved Washington State Coastal Zone Management Program.

Please note this letter does not exempt the applicant from compliance with other requirements of federal, state and local agencies. If you have questions, please contact Tom Luster of my staff at (360) 407-6918.

Sincerely,

Keith E. Phillips, Supervisor
Environmental Review and Sediment Section

KEP:tl

cc: Applicant -- Northwest Racing Associates dba Auburn Racing
WA Dept. of Ecology, Shorelands

IN THE MATTER OF GRANTING	)	
A WATER QUALITY CERTIFICATION TO	)	**ORDER**
Northwest Racing Associates	)	**No. 92-4-01417**
dba Auburn Racing	)	Filling wetlands to construct
in accordance with 33 U.S.C. 1341	)	a horse racing facility, in
[FWPCA § 401], RCW 90.48.260	)	Auburn, King County, Washington.
and WAC 173-201A	)	

TO: Northwest Racing Associates dba Auburn Racing

On August 20, 1993, the Washington Department of Ecology (Ecology) issued a public notice on behalf of Auburn Racing (Applicant) for issuance of certification as required under the provisions of 33 U.S.C. 1341 (FWPCA § 401) pursuant to application for a Section 404 permit from the U.S. Army Corps of Engineers. The proposed project entails filling 17.4 acres of wetlands to construct a horse racing facility and use of an additional 3.5 acres of wetlands for regional stormwater detention near Mill Creek, in the city of Auburn, King County, Washington. The proposed project also includes compensatory mitigation of 56.5 acres of wetland creation, restoration, and enhancement at a site approximately one-half mile south of the project location.

In exercising its authority under 33 U.S.C. 1341 and RCW 90.48.260, Ecology has investigated this application pursuant to the following:

1. Conformance with applicable water quality-based, technology-based, and toxic or pretreatment effluent limitations as provided under 33 U.S.C. Sections 1311, 1312, 1313, 1316, and 1317 (FWPCA Sections 301, 302, 303, 306, and 307).

2. Conformance with the state water quality standards as provided for in Chapter 173-201A WAC authorized by 33 U.S.C. 1313 and by Chapter 90.48 RCW, and with other appropriate requirements of state law.

3. Conformance with the provision of using all known, available and reasonable methods to prevent and control pollution of state waters as required by RCW 90.48.010.

In view of the foregoing and in accordance with 33 U.S.C. 1341, 90.48.260 RCW and Chapter 173-201A WAC, IT IS ORDERED THAT:

1) Certification under the provisions of 33 U.S.C. 1341 is granted to Applicant subject to the conditions contained in Attachment #1 of this Order.

2) This certification does not exempt and is provisional upon compliance with other statutes and codes administered by federal, state, and local agencies.

3) This certification will cease to be valid if the project is constructed and/or operated in a manner not consistent with the project description contained in the Public Notice for certification.

4) This certification will cease to be valid and the applicant must reapply with an updated application if five years elapse between the date of the issuance of this certification and

the beginning of construction and/or discharge for which the federal license or permit is being sought.

5) This Order does not allow state water quality standards to be exceeded. Any project construction or operation that will result in exceedances of state water quality standards in Mill Creek shall require additional approval for temporary exceedances of those standards through an amendment to this Order. The applicant shall contact Ecology (Tom Luster at (360) 407-6918) at least 30 days before the proposed start of in-water construction to obtain state approval.

6) This Order includes conditions provided by the Washington Department of Fish and Wildlife (WDFW), but an Hydraulic Project Approval (HPA) has not yet been issued for this project, pending completion of final construction drawings. The applicant shall obtain an HPA within 60 days of issuance of this Order, or shall apply for an extension to meet this condition of this Order.

Copies of this Order shall be kept on the job site and readily available for reference by Corps of Engineers personnel, the construction superintendent, construction managers and foremen, and state and local government inspectors.

Ecology retains continuing jurisdiction to make modifications hereto through supplemental order, if it appears necessary to further protect the public interest.

Any person who fails to comply with any provision of this Order shall be liable for a penalty of up to ten thousand dollars per violation for each day of continuing noncompliance.

Any person aggrieved by this Order may obtain review thereof by appeal, within thirty (30) days of receipt of this Order, to the Washington Pollution Control Hearings Board, P.O. Box 40903, Olympia, Washington, 98504-0903. Concurrently, a copy of the appeal must be sent to the Department of Ecology, Enforcement Section, P.O. Box 47600, Olympia, Washington, 98504-7600. These procedures are consistent with the provisions of Chapter 43.21B RCW and the rules and regulations adopted thereunder.

DATED _____ at Lacey, Washington

_____

Keith E. Phillips, Supervisor
Environmental Review and Sediment Section
Department of Ecology
State of Washington

ORDER NO. 92-4-01417
Certification for Northwest Racing Associates dba Auburn Racing

ATTACHMENT #1 -- Water Quality Certification conditions:

General:

1) Conditions and descriptions regarding aquatic protection contained in the following documents shall be considered conditions of this Order, except as modified by subsequent conditions below:

Final Environmental Impact Statement (FEIS), January 1995, U.S. Army Corps of Engineers (Corps).

National Pollutant Discharge Elimination System and State Waste Discharge Baseline General Permit for Storm Water Discharges Associated with Industrial Activities #SO3-001439 (NPDES Permit) -- issued November 18, 1992.

City of Auburn Ordinance #4689 (Ordinance) -- applicable Ordinance conditions and descriptions include the following:

* #1A: Grading, Drainage, Erosion, Sedimentation Control Plan (GDESCP) and Storm Drainage Plan
* #1B: Construction scheduling and appropriate Best Management Practices (BMPs)
* #3A: Storm Drainage Plan
* #3D: Comprehensive Drainage Plan improvements
* #3E: Stormwater Management System
* #3F: Stormwater Pollution Prevention Plan (SWPPP)
* #3G: Water Quality Monitoring Plan
* #4A: Wetland Mitigation Plan
* #4B: Wetland Maintenance Plan for the regional stormwater detention facility in the northwest corner of the project site
* #4C: Wetland Buffer for the south end of the project site
* #11A: Animal Waste Management Plan

2) This certification is issued with the understanding that no significant changes from project descriptions contained in the above-referenced documents are anticipated in the project design or operations. If significant changes are proposed, or if the Corps issues an additional public notice for the project, this certification may be revised or withdrawn.

3) Water quality standards pertaining to Mill Creek (Class A) shall apply to this project

unless approval for temporary exceedances of state water quality standards is issued by Ecology for in-water construction at the off-site mitigation area. Applicant shall notify Ecology's Tom Luster at (360) 407-6918 at least 30 days in advance of proposed work that might result in exceedances of water quality standards. Any such work will require a revision to this Order.

4) Certification of this project does not authorize the applicant to exceed any applicable State water quality standards (WAC 173-201A) or sediment quality standards (WAC 173-204) above those levels permitted through a subsequent approval for temporary exceedances of state water quality standards described in Condition #3 above. Furthermore, nothing in this certification shall absolve the applicant from liability for contamination and subsequent cleanup of surface waters or sediments as a result of construction or operation of this project.

5) This certification is valid for project construction for a period of no longer than 5 years (through March 15, 2000). Project construction occurring after that date will require an extension or re-certification of this project. Additional conditions may be added to this certification at any time, or certification may be withdrawn, if project construction or operation results in detrimental effects to the waters of the state.

This project shall require further review and approval by Ecology if construction is slated to occur beyond the time limits of this Order or beyond the time limits of any approval for temporary exceedances of state water quality standards issued subsequent to this Order.

General Construction --

6) Project construction shall comply with conditions of the NPDES Permit and the GDESCP submitted to the City of Auburn.

7) Applicant shall provide to Ecology a copy of the construction schedule as described in Condition 4.A.7 of the Ordinance.

8) Stormwater detention and treatment materials (e.g., straw bales, filter fences, etc.) suitable to prevent exceedances of state water quality standards shall be in place before starting clearing, filling, and grading work.

9) All construction debris shall be properly disposed of on land so that it cannot enter the wetlands or cause water quality degradation to state waters.

10) Wash water containing oils, grease, or other hazardous materials resulting from wash down of equipment or working areas shall not be discharged into state waters except as authorized by an NPDES or state waste discharge permit.

11) Care shall be taken to prevent any petroleum products, chemicals, or other toxic or deleterious materials (e.g., hydraulic fluid, cement, sediments, sediment-laden water, etc.)

from entering Mill Creek or other waters of the state. If an oil sheen or distressed or dying fish are observed in the project vicinity, the operator shall cease immediately and notify Ecology of such conditions. Contact Ecology's Northwest Regional Spill Response Office at (206) 649-7000.

Wetland Mitigation:

On-Site Wetland Mitigation --

12) Applicant shall provide to Ecology a copy of the final maintenance plan approved by the City of Auburn's Planning and Public Works Directors, as described in Conditions 4.B and 4.C of the Ordinance.

This plan shall include, but not be limited to:

* a planting plan for both the 3.5 acre wetland in the northwest corner of the racetrack site and the wetland buffer along the southern boundary of the racetrack site;
* a grading plan showing constructed slopes at both the 3.5 acre wetland and along the southern boundary; and,
* maintenance required for both areas.

13) An as-built description of the 3.5 acre wetland area and the southern boundary of the racetrack site shall be included in the as-built report described in Condition #17 below.

14) A solid fence at least 6 feet high shall be constructed along the entire southern boundary of the racetrack site east of the south vehicle entrance to minimize impacts to the adjoining wetlands. A buffer of native vegetation shall be planted to provide a screen between the south vehicle entrance and the adjacent wetlands.

Off-Site Wetland Mitigation --

15) The Final Wetland Mitigation Plan for the Auburn Thoroughbred Racetrack Project, Auburn, Washington (the Plan), published in January 1995 as Appendix B3 of the FEIS shall be considered a condition of this certification, except as modified by conditions of this Order. The plan provides a total of 56.5 acres of wetland creation, restoration, and enhancement to mitigate for the filling of 17.4 acres of wetlands.

The mitigation site, known as the Thormod property, is approximately one-half mile south of the project site, and will include, at completion of the mitigation work and 15-year monitoring period, 5.9 acres of open-water wetlands, 4.1 acres of aquatic bed wetlands, 17.7 acres of emergent wetlands, and 28.8 acres of scrub-shrub/forested wetlands.

Work shall be accomplished per plans and specifications included in the Plan, except as

modified by conditions of this Order or conditions of subsequent revised Orders or HPAs. Final construction plans and drawings shall be approved by WDFW through issuance of an HPA. A copy of these plans and drawings shall be available at the site during construction.

16) Applicant shall provide to Ecology a copy of the deed restriction or conservation easement granted to the City of Auburn, as described in Condition 4.A.10 of the Ordinance. This shall be sent within 60 days of issuance of the Corps Section 404 permit.

17) Applicant shall provide to Ecology a copy of the as-built survey as described in Section XI.A.2 of the Plan.

18) During construction, the new channel shall be isolated from the flowing stream by barriers or plugs at both the upstream and downstream ends of the new channel. These barriers shall be substantial enough to prevent flood flows from entering the new channel during construction.

19) Before water is diverted into the permanent new channel, approved fish habitat components, streambed materials, and bank protection to prevent erosion shall be in place. Fish habitat components and bank protection material shall be installed to withstand the 100-year peak flows.

20) The angle of the structure used to divert the stream into the new channel shall allow a smooth transition of stream flow to prevent significant erosion.

21) All fish shall be captured and safely moved from the construction area. Proper capture and transportation equipment shall be available at the construction site. Captured fish shall be immediately and safely moved to free-flowing water downstream of the site. (The applicant may request information and assistance from WDFW on proper fish capture and transfer techniques and equipment.)

22) The fish habitat log structures at the mitigation site shall be fir, cedar or other approved coniferous species. Structures shall be replaced as they deteriorate to the point of not providing intended habitat values.

23) The side channels shall be graded so there is a positive drainage to the main channel of Mill Creek with no pits or potholes.

24) Every effort shall be made during all phases of this project to ensure that silt-laden water is not allowed to enter the stream. This may require the use of straw bales, filter fabric, temporary sediment ponds, check dams of pea gravel-filled burlap bags or other material, and immediate mulching of exposed areas. Any techniques used to prevent erosion shall be inspected and maintained throughout project construction.

25) Water removed from within the work area shall be routed to an area above the Ordinary

High Water Mark (OHWM) to allow removal of sediment and other contaminants before being discharged to the stream.

26) Construction shall cease during high flows if the flows prevent erosion control methods from working properly.

27) The bridge structure shall be placed in a manner that minimizes damage to the streambed and banks.

28) Curbs or wheel guards shall be located so as to control and prevent dirt, debris, or other materials from entering the stream.

29) Approach material shall be structurally stable and shall be composed of material that if eroded in the stream will not be detrimental to fish life.

30) Within seven calendar days of project completion, all disturbed areas shall be protected from erosion using vegetation or other appropriate means.

Off-Site Wetland Mitigation Monitoring and Reporting --

31) To determine the success of mitigation site elements listed as Performance Standards in Section IV-D of the Plan, monitoring shall be done as described in Section VIII and Tables 7 & 8 of the Plan, with the following clarifications and modifications:

Water Quality -- Samples shall be taken in the main channel of Mill Creek at the upstream and downstream boundaries of the mitigation site.

Vegetation -- the quantitative sampling for vegetation types and percent cover shall include specific descriptions of the location and areal extent of all plants or plant communities listed in the Performance Standards of Section IV-D of the Plan (*Phalaris* sp., *Nuphar* and *Carex* community types, etc.) so that conformance with Performance Standards can be determined.

Habitat Attributes -- the sampling for habitat features shall include specific descriptions of the type, location, and size of features listed in the Performance Standards of Section IV-D of the Plan (logs, rootwads, shaded back channels, brush piles, etc.). At least one site visit shall occur in February - March of each monitoring year to determine the location, depth, and areal extent of any ponds on the mitigation site to determine the presence of spawning and breeding habitat for herpetofauna.

Reports describing the above monitoring events shall be provided to Ecology within 60 days of each sampling event.

32) Stormwater management shall comply with conditions of the NPDES Permit, with the GDESCP to be submitted to, and approved by, the City of Auburn Public Works Director, and with the stormwater pollution prevention plan (SWPPP) required in the Ordinance. A copy of the approved GDESCP and SWPPP shall be provided to Ecology within 30 days of approval by the City.

33) The stormwater management system shall be designed as described in the Ordinance and the FEIS, except as modified by this Order.

34) Stormwater facilities shall be inspected and maintained at least twice each year. All material removed from the stormwater system shall be disposed of in an approved upland location.

Monitoring and Reporting Requirements for Stormwater --

35) Stormwater runoff shall be monitored to determine the success of stormwater treatment systems. Water quality monitoring shall be done for the first five years of track operation, and shall occur at least quarterly during storm events or during active runoff into the racetrack's treatment system. If, during or after the five year initial monitoring effort, results of monitoring show a pattern of exceedances of state water quality standards, additional monitoring may be required.

Sampling and testing shall be done in accordance with 40 CFR and Puget Sound Estuary Protocols, U.S. EPA's NPDES Storm Water Sampling Guidance Document (EPA 833-B-92-001), or equivalent.

Water quality samples shall be tested for the following parameters:

* dissolved oxygen
* biological oxygen demand
* temperature
* fecal coliform
* turbidity
* pH
* hardness
* flow volume
* Total Suspended Solids
* Total Petroleum Hydrocarbons
* total phosphorus
* ammonia
* nitrates
* metals (cadmium, chromium, copper, lead, nickel, zinc)

Samples shall be taken at the following locations:

* Detention System #1 -- samples shall be collected at a point before stormwater from the site mixes with off-site stormwater (e.g., the stormline at the 29th Street N.W. ditch).

* Detention System #2 -- samples shall be collected at a point before stormwater

from the site mixes with off-site stormwater (e.g., the control structure at the northwest corner of the project site).

* Detention System #3 -- this system is designed for zero off-site discharge from February to October each year, and for discharge to Detention System #2's biofiltration swale from November to January, if necessary. This system is meant to provide irrigation water to the racetrack infield during the dry season. Samples shall be collected at least once during the November - January period each year when stormwater from System #3 is discharging to System #2's biolfiltration swale, and shall be taken at the same sampling point used for System #2.

Any discharges from Detention System #3 during February - October of any year shall be routed to a sanitary sewer line, as described on page 2-16 of the FEIS.

Results from the stormwater sampling and analysis shall be sent to Ecology's Tom Luster within 30 days of each sampling event.

Operations and Maintenance:

36) Operations and maintenance at the racetrack facility shall comply with the conditions of the NPDES Permit. Applicant shall provide the training, equipment, and resources necessary to implement Best Management Practices.

Oil and Hazardous Substance Spill Prevention --

37) Fuel tanks on the project site (e.g, two 1000-gallon fuel tanks located near the maintenance building, as described on page 2-7 of the FEIS) shall be located in areas bermed or otherwise constructed to contain all fuel that may be released during a spill.

38) A spill prevention and response plan shall be prepared by the applicant to ensure that spills of oil, fuel or other hazardous materials are prevented, or if they occur are cleaned up quickly and properly. The plan shall include training necessary for project staff and users. The plan shall be provided to Ecology for review and approval at least 60 days before racetrack operations begin.

Wetland Mitigation Plan (the Plan), Appendix B3 of the FEIS -- applicable conditions and descriptions consist of the document in its entirety.

Detailed Storm Drainage Narrative, Auburn Thoroughbred Racetrack, Auburn Washington, Appendix C of the FEIS -- applicable conditions consist of the document in its entirety.

Settlement Agreement with District Council of Carpenters (the Agreement), Appendix I of the FEIS -- applicable conditions include Articles II, III, and IV of the Agreement.

Wetland Trust Fund --

*) The applicant has entered into an agreement with the District Council of Carpenters to establish the Mill Creek Drainage Basin Wetland Trust Fund (the Settlement listed in Condition 1 of this Order). Because the Agreement serves to partially mitigate water quality and wetland impacts of the project, and because it is a part of the applicant's preferred alternative, conditions of the Agreement related to aquatic protection shall be considered conditions of this Order.

Wetland monitoring data and reports provided to, or prepared by, the wetland mitigation monitoring oversight committee shall be submitted to Ecology to assess the implementation and success of the project's wetland mitigation plan. These data and reports may be used by Ecology to modify mitigation plan requirements if results show non-compliance with the plan's objectives.

Donation of the off-site mitigation area and a sum of $50,000 to the Trust Fund for use in acquiring, maintaining, restoring, and protecting wetlands in the Mill Creek drainage basin shall occur no later than 30 days after the start of operations at the racetrack facility.

Decisions by the Trust Fund Board of Directors or the Oversight Committee to modify any conditions of the wetland mitigation plan shall require the approval of Ecology and subsequent modification of this Order.

Ann Kenny Declaration

Exhibit 6

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
P.O. Box 47600 • Olympia, Washington 98504-7600
(360) 407-6000 • TDD Only (Hearing Impaired) (360) 407-6006

CERTIFIED MAIL

June 3, 1998

Ms. Darla Wise
City of Puyallup
1100 – 39th Ave SE
Puyallup, WA 98374

RE: Water Quality Certification
Corps Public Notice 98-4-00072
NWP#31 – Maintenance excavation of Deer Creek drainage channels.

Dear Ms. Wise:

The above-referenced public notice for proposed work in waters of the state has been reviewed in accordance with all pertinent rules and regulations. On behalf of the State of Washington, we certify that the work proposed in the public notice complies with applicable provisions of Sections 301, 302, 303, 306 and 307 of the Clean Water Act, as amended, and other appropriate requirements of State law. This letter also serves as the State response to the Corps of Engineers.

Pursuant to Section 307(c)(3) of the Coastal Zone Management Act of 1972, as amended, Ecology concurs with the applicant's determination that the proposed work is consistent with the approved Coastal Zone Management Program of Washington State.

This certification is subject to the conditions contained in the enclosed Order and may be applealed by following the procedures described in the Order. If you have any questions concerning the content of the Order, please contact Rick Vining at (360) 407-6944.

Sincerely,

Paula Ehlers

Paula Ehlers, Supervisor
Environmental Coordination Section
Shorelands and Environmental Assistance Program

cc: Corps of Engineers – Jack Gossett
SWRO – Ann Boeholt
WDFW – Don Nauer

In The Matter of Granting a Water Quality Certification to: the City of Puyallup **in Accordance with 33 U.S.C. 1341 [FWPCA § 401], RCW 90.48.260, and WAC 173-201A.**	))))))	**Order No. 98-4-00072** Excavate about 5,500 feet of Deer Creek drainage channels, at Puyallup.

TO: Ms. Darla Wise
City of Puyallup

On April 3, 1998, the Washington Department of Ecology (Ecology) issued a public notice for the purpose of processing a water quality certification for the above referenced project as required under the provisions of 33 U.S.C. 1341 (FWPCA § 401). This action was taken pursuant to the application for a Section 404 permit from the Seattle District Corps of Engineers. The Corps approved the project under Nationwide Permit #31 by letter dated February 13, 1998.

The proposed project involves the excavation of approximately 250 cubic yards of silty sediment from the Deer Creek drainage located within the City of Puyallup. Approximately 5,500 feet of the drainage channel network will be impacted by the removal of sediment and vegetation by means of a land-based track hoe. The City of Puyallup did not propose any mitigation measures (avoidance, minimization, or compensation) as a means to enhance the ecological functions of the creek system. Correspondence from the Department of Fish and Wildlife noted that "coho spawning has been documented upstream from about the 10th block on 25th Street to the 27th Street culvert" (SEPA comment letter of 15/15/97).

Permits/Approvals:

1. SEPA - DNS by City of Puyallup, 12/26/97.
2. SMA permit – not applicable.
3. HPA Permit - approved by WDFW, 5/1/97.

Water quality related provisions of the HPA permit are considered conditions of this water quality certification.

In exercising its authority under 33 U.S.C. 1341 and RCW 90.48.260, Ecology has investigated this application pursuant to the following:

1. Conformance with applicable water quality-based, technology-based, and toxic or pretreatment effluent limitations as provided under 33 U.S.C. Sections 1311, 1312, 1313, 1316, and 1317 (FWPCA Sections 301, 302, 303, 306, and 307).

2. Conformance with the state water quality standards as provided for in Chapter 173-201A WAC authorized by 33 U.S.C. 1313 and by Chapter 90.48 RCW, and with other appropriate requirements of state law.

3. Conformance with the provision of using all known, available and reasonable methods to prevent and control pollution of state waters as required by RCW 90.48.010.

In view of the foregoing and in accordance with 33 U.S.C. 1341, 90.48.260 RCW and Chapter 173-201A WAC, certification is granted to the City of Puyallup subject to the following conditions:

1. Construction. All excavated material shall be properly disposed of at an approved upland site so that it cannot enter adjacent wetlands or cause water quality degradation to surface waters of the state.

2. Mitigation.

a) The WDFW has identified the north side of Pioneer Ave as a section of the Deer Creek drainage that would most benefit by a vegetation enhancement effort. Refer to the enclosed letter of April 28, 1998. Such an effort would help compensate for impacts to a drainage system in which salmon may be able to establish a spawning population. The primary goal of the mitigation effort would be to increase functional channel shading. In coordination with WDFW and Ecology, the City of Puyallup shall prepare a preliminary mitigation plan for a vegetative enhancement effort and, optimally, implement the plan in connection with the channel maintenance work.

b) An as-built (with photos) and three yearly monitoring reports shall be submitted to the Department of Fish and Wildlife detailing the success of the revegetation effort and any measures taken to address deficiencies that may arise. Send the reports to: Don Nauer, WDFW Region 7 Office, 600 Captol Way North, Olympia, WA 98501-1091

c) As also noted by WDFW, the long-term solution to the flooding and erosion problems in the Deer Creek drainage is increased watershed management in the smaller up-slope tributaries and the valley floor bottomlands which discharge to the drainage basin. We are aware that the City has made some progress in this regard but is still faced with many obstacles. For this reason, we are approving this certification on a year-to-year basis so that the need for continued channel maintenance can be evaluated in light of the progress of watershed management and the potential development of a spawning population of salmon. Thus this certification will cease to be valid after July 1, 1999 but may be extended by the department at the request of the City.

3. Modification to the Water Quality Standards.

a) This project falls under the provisions of General Order No. DE 97WQ-007 (enclosed) which specifies procedures and best management practices to be followed to minimize water quality effects of the proposed work. Water quality parameters that may be exceeded and applicable dilution zones are provided for in the order.

4. General Conditions.

a) This certification does not exempt and is provisional upon compliance with other statutes and codes administered by federal, state, and local agencies.

b) This certification will cease to be valid if the project is constructed and/or operated in a manner not consistent with the project description contained in the Public Notice for certification.

c) This certification will cease to be valid and the applicant must reapply with an updated application if the information contained in the Public Notice is voided by subsequent submittals to the federal agency.

d) Copies of this Order shall be kept on the job site and readily available for reference by Corps of Engineers personnel, the construction superintendent, construction managers and foremen, and state and local government inspectors.

e) Ecology retains continuing jurisdiction to make modifications hereto through supplemental order, if it appears necessary to further protect the public interest.

Any person who fails to comply with any provision of this Order shall be liable for a penalty of up to ten thousand dollars per violation for each day of continuing noncompliance.

Any person aggrieved by this Order may obtain review thereof by appeal, within thirty (30) days of receipt of this Order, to the Washington Pollution Control Hearings Board, P.O. Box 40903, Olympia, Washington, 98504-0903. Concurrently, a copy of the appeal must be sent to the Department of Ecology, Enforcement Section, P.O. Box 47600, Olympia, Washington, 98504-7600. These procedures are consistent with the provisions of Chapter 43.21B RCW and the rules and regulations adopted thereunder.

DATED 6·5·98 at Lacey, Washington

Paula Ehlers

Paula Ehlers, Supervisor
Environmental Coordination Section
Shorelands and Environmental Assistance Program
Department of Ecology

ENCLOSURE 1

State of Washington
DEPARTMENT OF FISH AND WILDLIFE

Mailing Address: 600 Capitol Way N • Olympia, WA 98501-1091 • (360) 902-2200, TDD (360) 902-2207
Main Office Location: Natural Resources Building • 1111 Washington Street SE • Olympia, WA

April 28, 1998

Rick Vining
Department of Ecology
P.O. Box 47703
Olympia, Washington 98504-7703

RE: Environmental Checklist No. : 97-31-026; Deer Creek Sediment and Vegetation Removal, Annual Maintenance, Hydraulic Project Application No. 00-D1745-02

Dear Mr. Vining:

As requested, I have included copies of some of WDFW's previous responses relating to this and other sediment management projects proposed by the City of Puyallup. I have also included a revised map submitted by the City which I just received today, showing the actual locations for sediment and vegetation removal following some negotiation to refine the scope of activities.

The last matter we discussed involves revegetation. On the revised map you will see one of the "project work areas" which is located on the north side of Pioneer Avenue. This is the only stream/drainage ditch segment where vegetation enhancement could be expected to provide vegetation control and that which is contained within City right of way. This is the area that I have tried to negotiate with the City for additional plantings within their street planting strip to increase functional channel shading. As you can see, along 25th, the stream is road adjacent and is oriented north-south. Everything above 12th Ave. is private property except the ditch section running east-west which the presence of vegetation currently provides some water quality treatment. At any rate, the Pioneer stretch seems to be the only real gain for riparian enhancement in my mind. The existing ornamental trees in the planting strip are for aesthetics only and provide no real functional shade. It is in this segment, along Pioneer and west from the 25th intersection that functional shade should be established to help restore flow and reduce subsequent sediment aggradation. Willow plantings would probably suffice at a reasonable density to create shading and also accommodate any safety concerns for the street and railroad. If you can support this position it will help out.

One final issue is the segment on the map in purple shows the stream flow in the City's concept. However, the stream flow does not want to flow through this relocated segment as it must make a 90 degree turn to do so. Consequently, it flows to the north and under Pioneer where it then heads west. I am considering this alignment as the real stream flow (stream channel) and will allow dredging of the channel to the 1994 project plan configuration as a last chance to demonstrate that the creek will persist in the channel as it does now and not in the engineered configuration.

I hope this makes sense. If you have any questions please call me at (253) 863-7979. Thanks for your interest and help on this matter.

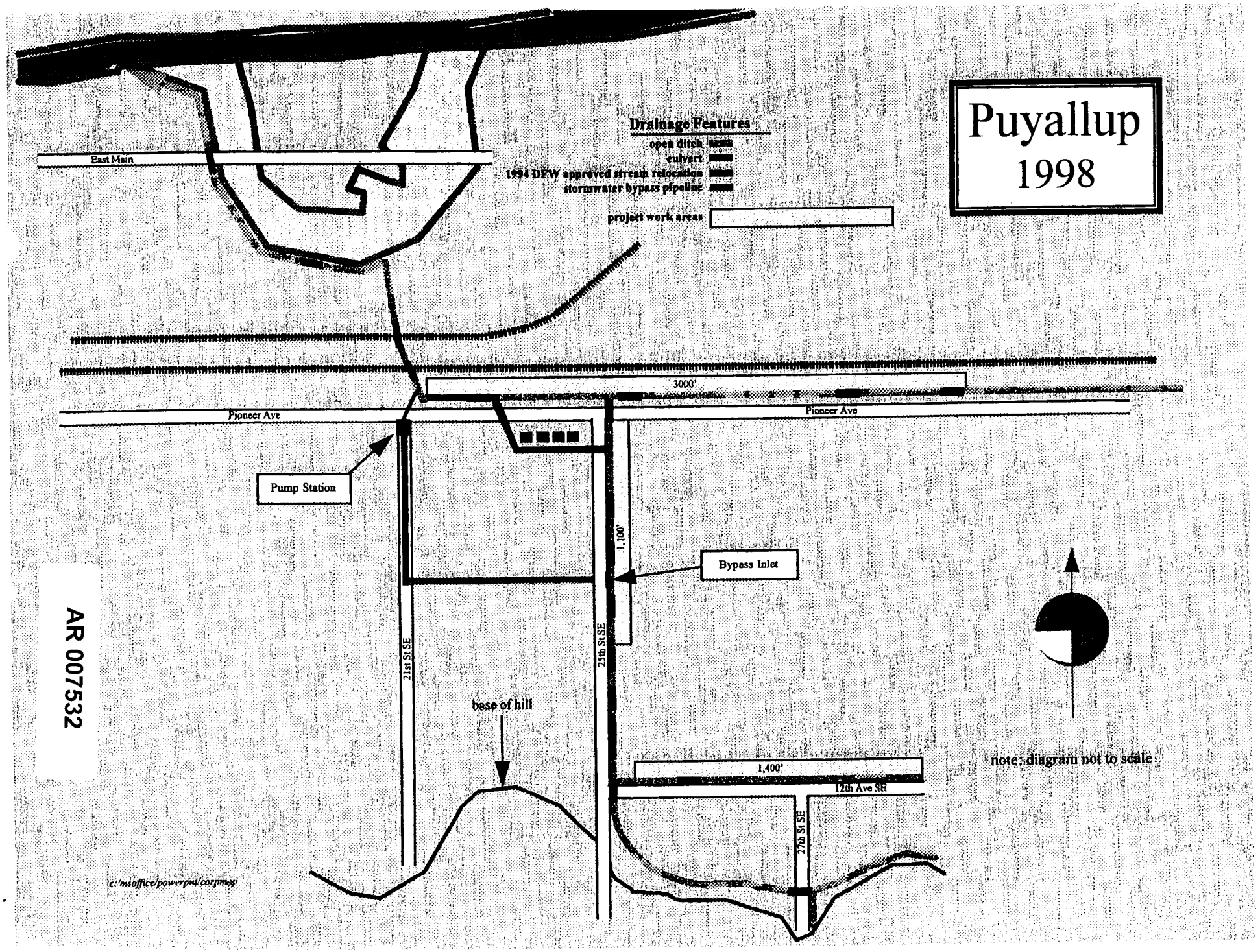
Sincerely,

Don Nauer
Area Habitat Biologist/Region 7

DN:ini

Enclosures

cc; Steve Keller
Dave Rings


Puyallup
1998
Drainage Features
open ditch
culvert
1994 DEW approved stream relocation
stormwater bypass pipeline
project work areas
East Main
3000'
Pioneer Ave
Pioneer Ave
Pump Station
1,100'
Bypass Inlet
21st St SE
25th St SE
base of hill
1,400'
12th Ave SE
27th St SE
note: diagram not to scale
c:\msoffice\powerpnt\corpmap

AR 007532

ENCLOSURE 2

TO APPLICANT ONLY

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

P.O. Box 47600 • Olympia, Washington 98504-7600
(360) 407-6000 • TDD Only (Hearing Impaired) (360) 407-6006

DEPARTMENT OF ECOLOGY

IN THE MATTER OF THE REQUEST FOR A SHORT-TERM MODIFICATION OF WATER QUALITY STANDARDS FOR CONDUCTING WORK UNDER THE CORPS OF ENGINEERS NATIONWIDE PERMIT PROGRAM	)))))	**ORDER NO. DE 97WQ-007 FEBRUARY 24, 1997**

TO: Applicants Using the Corps of Engineers Nationwide Permit Program effective February 13, 1997

This Administrative Order is for use only by applicants conducting work through an approved Corps of Engineers Nationwide Permit (NWP) effective February 13, 1997. NWP applicants are required to comply with the conditions of this Order to meet the requirements of the State Water Quality Standards (WAC 173-201A) any time work occurring in wetlands or other waters of the state may unavoidably result in an exceedance of the State Water Quality Standards. NWP applicants whose projects will result in exceedances of the State Water Quality Standards beyond those permitted by this Order shall contact the appropriate Regional Office of the Department of Ecology (Ecology) to obtain any necessary Individual Short-Term Modification of Water Quality Standards that may be required.

Central Region	(509) 575-2490
Eastern Region	(509) 456-2926
Northwest Region	(206) 649-7000
Southwest Region	(360) 407-6300

To comply with this Order, NWP applicants shall meet the following conditions:

CONDITIONS FOR USE OF THIS ORDER

1. NWP applicants shall comply with all conditions of this Order for every project where work is occurring that results in an exceedance of the State's Water Quality Standards WAC 173-201A.

2. NWP applicants shall also comply with all regional, general, and state 401 conditions listed within the Corps of Engineers Special Public Notice for Nationwide Permits, February, 1997. Use of this Order shall be limited to work permitted by the NWP Program only.

3. This Order does not relieve NWP applicants from complying with all requirements of any applicable Municipal Storm Water Permit or any Baseline General Storm Water Permit for Construction Activity.

4. This Order does not relieve NWP applicants from the responsibility of meeting applicable regulations of other federal, state, and local agencies, nor does this Order authorize the discharge of pollutants to waters of the state. In addition, where projects cross Native American Indian Reservation boundaries, contact with the Tribe shall be made to address Tribal regulations. Some Tribes have developed and adopted water quality standards separate from state or federal water quality criteria.

5. If construction or maintenance work will be performed in a known or suspected contaminated site, written approval shall be obtained from Ecology Toxic Cleanup Program and submitted to the Water Quality Program of the Regional Office where the project will take place.

6. Ecology reserves the right to require Individual Short-Term Water Quality Modifications for sensitive or complex projects. When coverage under a NWP requires an individual 401 Water Quality Certification, the NWP applicant shall contact Ecology for approval, and an Individual Short-Term Water Quality Modification may be required.

7. The activities authorized under this Order must comply with all conditions contained in any Washington State Department of Fish and Wildlife (WDFW) Hydraulic Project Approval (HPA) issued for a project.

MODIFICATION TO THE WATER QUALITY STANDARDS

8. All water discharged from the project site shall meet the requirements of the State Water Quality Standards (WAC 173-201A) downstream of the dilution zone and point of compliance as established below.

   a. Dilution Zone: A temporary dilution zone shall be established as described below. The dilution zones are established to allow only temporary exceedances of applicable turbidity and dissolved oxygen criteria during and immediately after project construction.

      The dilution zone and point of compliance for projects exceeding State Water Quality Standards shall be as follows:

      1. For waters up to 10 cubic feet per second (cfs) flow at time of construction, the point of compliance shall be 100 feet downstream from project activities.

2. For waters from 10 cfs to 100 cfs flow at time of construction, the point of compliance shall be 150 feet downstream of project activities.

3. For waters above 100 cfs at the time on construction, the point of compliance shall be 250 feet downstream of project activities.

4. For projects working within lakes, ponds, marine waters or other quiescent waters, the point of compliance shall be at a radius of 150 feet from project activities.

b. Water Quality Criteria: Within the dilution zones established above, the following modifications to water quality standards shall apply. Allowable exceedances may be based on the classification of the receiving water.

1. Turbidity: The applicable criterion for turbidity in the receiving waters is waived within the dilution zone.

2. Dissolved oxygen: The applicable criterion for dissolved oxygen is waived within the dilution zone. At no time shall the dissolved oxygen level be less than 5.0 mg/L. If the natural level of dissolved oxygen is below 5.0 mg/L, then the level within the dilution zone shall not be more than 0.2 mg/L lower than the natural level.

3. pH: The applicable criterion for pH is waived within the dilution zone. At no time shall the pH level be less than 6.5 units or greater than 8.5 units. If the natural pH level is outside of that range, then the level within the dilution zone shall not vary from the natural level by more than 0.5 units.

c. There shall be no visible sheen from petroleum products in the receiving water as a result of project activities.

CONSTRUCTION

9. Turbid water generated from construction activities, including turbid dewatering water, shall not be discharged directly to waters of the state. Temporary sediment traps shall be used to allow the turbid water to settle for a minimum of two hours before discharge. The flow rate of turbid water into flowing water shall not exceed one-tenth of the natural flow rate of the water at the time of discharge.

If measures are developed to bring the turbidity levels of the discharge into compliance with Water Quality Standards with less than the required detention time, NWP applicants may implement such measures after contacting the Ecology Regional Office where the work will take place for a written or verbal approval.

10. Clean dewatering water may be discharged directly to waters of the state. The discharge outfall method shall be designed and operated so as to not cause erosion or scour in the stream channel, banks or vegetation.

11. If working in moving water, the natural flow of the affected waterbody shall be diverted around the construction site unless written approval to work in the flowing water is obtained from WDFW. Diversion may entail tightlining, coffer dams, or equivalent structures. The stream diversion system shall be designed and operated so as to not cause erosion or scour in the stream channel or banks of the waterbody.

    If using a diversion system, temporary sediment traps shall be cleaned out and the settled sediments removed from the stream channel before removing the stream diversion system and returning the stream to its natural channel. Settled sediments shall not be allowed to enter the stream.

12. Impacts to bank and shoreline vegetation shall be limited to the maximum extent possible, and replanted where destroyed or damaged.

13. Approach material to project sites shall be of clean composition and placed in a manner to prevent erosion and siltation that might result from high water and/or heavy rains. Approach material shall not be placed in wetlands or other waters of the state unless authorized by a Nationwide or Individual Corps Permit.

14. All construction debris shall be properly managed and disposed of so it cannot enter wetlands or other waters of the state and so that it does not cause degradation to state waters.

15. Unless authorized by WDFW through an approved HPA, heavy equipment shall not enter waters of the state, and shall be operated as far from the water's edge as possible.

16. Wash water containing oils, grease, or other hazardous materials resulting from wash down of equipment or working areas shall not be discharged into state waters except as authorized by an NPDES or state waste discharge permit. A separate area shall be set aside for washing vehicles and equipment so that uncontrolled or untreated discharges of wash water do not enter waters of the state.

17. All lumber treated with creosote or other protective material shall be completely dry before use in or near the waterway.

18. All concrete shall be poured in the dry or shall be poured within confined areas whose waters will not be in direct contact with surface waters. Concrete shall be allowed to cure a minimum of seven (7) days before contact with waters of the state. Fresh uncured concrete in direct contact with the water is toxic to aquatic life. Any water discharged from a confined area with curing concrete shall be discharged to upland

In view of the foregoing and in accordance with RCW 90.48.120(2):

IT IS ORDERED that the water quality criteria specified in Chapter 173-201A are modified based on the above conditions for conducting work in waters of the state. This Order is valid for a period of not more than one year after the signature date of this Order.

Ecology retains continuing jurisdiction to make modifications through supplemental order, if it appears necessary to further protect the public interest during the modification period.

Failure to comply with this Order may result in the issuance of civil penalties or other actions, whether administrative or judicial, to enforce the terms of this Order.

This Order may be appealed. Your appeal must be filed with the Pollution Control Hearings Board, P.O. Box 40903, Olympia, Washington 98504-0903 within thirty (30) days of your receipt of this Order. At the same time, your appeal must also be sent to the Department of Ecology c/o The Enforcement Officer, P.O. Box 47600, Olympia, Washington 98504-7600; and the 401 Permit Coordination Section, P.O. Box 47600, Olympia, Washington 98504-7600. Your appeal alone will not stay the effectiveness of this Order. Stay requests must be submitted in accordance with RCW 43.21B.320. These procedures are consistent with Chapter 43.21B RCW.

DATED FEBRUARY 24, 1997 at Olympia, Washington.

David Bradley, Section Supervisor
Environmental Review and Sediment Management
Washington State Department of Ecology

Ann Kenny Declaration

Exhibit 7

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
P.O. Box 47600 • Olympia, Washington 98504-7600
(360) 407-6000 • TDD Only (Hearing Impaired) (360) 407-6006

CERTIFIED MAIL

June 3, 1998

Mr. Kent Nugen
Washington State Department of Corrections
PO Box 41112
Olympia, WA 98504

RE: Water Quality Certification/Modification
Corps Public Notice 96-2-00442R
Stafford Creek Prison Facility and Utility Corridor

Dear Mr. Nugen:

The above-referenced public notice for proposed work in waters of the state has been reviewed in accordance with all pertinent rules and regulations. On behalf of the State of Washington, we certify that the work proposed in the public notice complies with applicable provisions of Sections 301, 302, 303, 306 and 307 of the Clean Water Act, as amended, and other appropriate requirements of State law. This letter also serves as the State response to the Corps of Engineers.

Pursuant to Section 307(c)(3) of the Coastal Zone Management Act of 1972, as amended, Ecology concurs with the applicant's determination that the proposed work is consistent with the approved Coastal Zone Management Program of Washington State

This certification is subject to the conditions contained in the enclosed Order and may be appealed by following the procedures described in the Order. If you have any questions concerning the content of the Order, please contact Rick Vining at (360) 407-6944.

Sincerely,

Paula Ehlers

Paula Ehlers, Supervisor
Environmental Coordination Section
Shorelands and Environmental Assistance Program

cc: Seattle Corps – Jack Kennedy
SWRO – Janet Boyd, Perry Lund, Jo Sohneronne
WDFW – Bob Burkle
FOGH
City of Aberdeen
Grays Harbor County

In the Matter of Granting a Water Quality Certification/Modification to: Department of Corrections **in accordance with 33 U.S.C. 1341 [FWPCA § 401], RCW 90.48.260 and WAC 173-201A**	))))))	**Order No. 96-2-00442R** Excavate and/or place fill in 2.0 acres of wetlands for construction of Stafford Creek Prison Facility, including road interchange and utility corridor, at Grays Harbor.

TO: Mr. Kent Nugen
Department of Corrections

On July 9, 1997 a request for water quality certification from the State of Washington was submitted for the above-referenced project pursuant to the provisions of 33 U.S.C. 1341 (FWPCA § 401). The request for certification was made available for public review and comment by inclusion in Seattle Corps Public Notice No. 96-2-00442. An Erratum to the public notice was prepared by the Corps on October 10, 1997 and mailed to some adjacent property owners who were inadvertently missed in the initial mailing of the public notice.

A Clean Water Act lawsuit and appeals of the HPA and SMA permits were initiated in early 1998 contesting several aspects of the proposed project. What resulted was a negotiated settlement in which major revisions/additions were made to the project. As a result, the lawsuits/appeals were dropped. This certification refers to several of the provisions contained in that settlement - *the Final Agreement Regarding the Stafford Creek Corrections Facility* dated April 1998. Agreed changes to the project were then incorporated by Grays Harbor County in a revised shoreline conditional use permit and by the Corps of Engineers in a revised public notice dated May 8, 1998. This certification applies to the public notice of May 8, 1998 and mitigation and monitoring plans developed in response to the Final Agreement.

The proposed project. The proposed project includes the construction of a 1,936-bed prison facility on a 210-acre parcel of land located in Grays Harbor County 6.0 miles southwest of Aberdeen. About 90 acres of the site will undergo facilities development (buildings, roads, parking, etc). Utilities to the site will be installed within the footprint of the roadbed of SR 105.

Wetland Related Impacts. The site of the proposed prison facility involves the placement of fill into five small wetlands with a total fill area of 0.24 acres. The fills are necessary for construction of the access road and prison facilities. Another 0.54 acres of wetland will be filled for construction of the turnoff interchange from SR 105 onto the prison access road.

Approximately 0.56 acres of wetlands will be permanently impacted within the utility corridor that runs parallel to and within the shoulders of SR 105. The permanent loss of roadside wetlands will result from small fill sites needed to construct pads for sewer line vents. Another 0.64 acres of wetlands will be temporarily filled for construction of drilling pads located on both sides of stream crossings.

In total, 1.98 acres of wetlands will be impacted by the project; permanent = 1.34 acres and temporary (4 months) = .64 acres. This amount of wetland fill is within the maximum acreage impact allowance (2.4 acres) stipulated in the Final Agreement. The utility lines will be

directionally drilled underneath the creeks, in lieu of trenching, which significantly reduces the potential impact to the creeks.

Proposed Mitigation. The permanent loss of wetland acreage and temporary impacts to wetland functions and values will be mitigated by: (a) restoring the 0.64 acres of wetlands temporary impacted by fill for drilling pads; and (b) restoring and enhancing a 9.9-acre parcel of land located north of SR 105 and adjacent to Newskah Creek.

Permits/Approvals:

1. SEPA – FEIS (December 1994), Final Supplemental EIS (April 1997), and an Addendum to the Final Supplemental EIS (April 20,1998) prepared for or by the Department of Corrections as the lead agency for the proposed project.

2. Shoreline Permits. The City of Aberdeen issued a shoreline conditional use permit for the installation of a natural gas pipeline under the Chehalis River by directional drilling. Grays Harbor County issued a shoreline conditional use permit for installation of three utility lines within a 4.5-mile corridor and the construction of an access interchange off of SR 105.

3. Hydraulic Project Approval permit – issued for the final revised project on May 26,1998. ***Water quality related provisions in the HPA are considered conditions of this certification.***

4. Stormwater General Permit for Construction Activity – issued by Ecology on May 21, 1997. The permit includes the preparation of a Stormwater Pollution Prevention Plan.

5. City of Aberdeen, Sewage Treatment Plant. The capacity of the plant to manage the additional loadings generated by a full prison complex has a bearing on the approval of a 401 certification for the prison facility. The issue relates to the potential exceedance of some pollutants above limits specified in the NPDES permit for discharges into Grays Harbor. Grays Harbor is currently listed under the 303d List as a water quality limited water body due to high fecal coliform counts. The wastewater treatment plant contributes to the fecal coliform load, with occasional high spikes during peak flows, but has been found to be within limits allowed under the NPDES permit since operational modifications were made at the plant in 1997.

The issue pertaining to the adequacy of the treatment plant is addressed in the Final Agreement. The City of Aberdeen has agreed to not allow the hookup from the Corrections Facility until the treatment plant and system has sufficient capacity to service the projected wastewater load from the Corrections Facility. To address the adequacy of the sewage treatment plant, the City has committed to complete (by April 15,1999) a comprehensive audit of it's plant, including "inflow and infiltration", capacity, reliability, compliance with Sewage Treatment Works Design, and treatment effectiveness. The City has committed to fund, with "fair share" funding provided by the Department of Corrections, the recommended measures indicated by the audit. The goal for

completion of recommended measures is by July 15, 2001, but must be in place by December 15, 2002. This certification is contingent upon the "no hookup provision" and the City's and Department of Correction's shared commitment to fund and implement the recommendations of the audit study in a timely manner.

In exercising its authority under 33 U.S.C. 1341 and RCW 90.48.260, Ecology has investigated this application pursuant to the following:

1. Conformance with applicable water quality-based, technology-based, and toxic or pretreatment effluent limitations as provided under 33 U.S.C. Sections 1311, 1312, 1313, 1316, and 1317 (FWPCA Sections 301, 302, 303, 306, and 307).

2. Conformance with the state water quality standards as provided for in Chapter 173-201A WAC authorized by 33 U.S.C. 1313 and by Chapter 90.48 RCW, and with other appropriate requirements of state law.

3. Conformance with the provision of using all known, available and reasonable methods to prevent and control pollution of state waters as required by RCW 90.48.010.

In view of the foregoing and in accordance with 33 U.S.C. 1341, 90.48.260 RCW and Chapter 173-201A WAC, certification is granted to the Department of Corrections subject to the following conditions:

1. Prison Site and Prison Site Access Road Construction.

a) All excess excavation or fill material and construction debris shall be properly disposed of at an approved upland site so that it cannot enter any adjacent wetlands or cause water quality degradation to surface waters of the state.

b) Proper erosion control measures shall be in place prior to construction to prevent soil from being carried into surface waters or wetlands by stormwater runoff. Measures shall include, but are not limited to, placing fabric fences and hay bales between construction areas and all surface waters or wetlands. All erosion control structures shall be inspected and maintained regularly to ensure they are in proper working order.

2. Utility Corridor Construction. The installation of pipelines in the SR 105 utility corridor and at the stream crossings shall be undertaken as generally described in Corps Public Notice No. 96-2-00442R on Sheets 1 through 13 and in the Addendum to the Final EIS dated April 20,1998. In addition, the following construction procedures and/or best management practices shall be complied with:

a) Contractor(s) shall follow and implement all specifications for erosion and sediment control specified in the contract documents. Adjustments to planned erosion and sediment control may be necessary to successfully control off-site movement of soils/material not covered under the modification to the standards (see Condition 4).

b) If dewatering is necessary, trenches shall be dewatered in such a manner that highly turbid water is not discharged directly to waters of the state, including wetlands. Temporary sediment traps shall be used to allow turbid water to settle for a minimum of two hours before discharge.

c) All staging and extra work areas, including spoil storage areas, shall be located at least 50 feet away from surface waters and wetland boundaries, where topographic conditions permit. If topographic conditions do not permit a 50-foot setback, these areas must be located at least 10 feet from the water or wetland's edge. Any deviations from the setback requirement shall be approved by the Environmental Inspector.

d) A separate handling area shall be set aside, which does not have any possibility of draining to surface waters or wetlands, for the wash out of delivery trucks and drilling and pumping equipment, and tools.

e) Hazardous materials, chemicals, fuels, or lubricating oils shall not be stored within 100 feet of any water body or wetland boundary. Extreme care shall be taken to prevent any petroleum products, fresh cement, lime, or concrete, chemicals, or other toxic or deleterious materials from entering surface waters or wetlands in any manner

f) All construction equipment should be refueled in an upland area at least 100 feet from a water body or wetland boundary

h) Fertilizers, lime, mulch, or any type of herbicide or pesticide control shall not be used in or near the wetlands without prior written approval by the appropriate state

3. Environmental Inspector. As indicated in the Final Agreement, a "third party" environmental inspector shall be retained by the City of Aberdeen to oversee the implementation of the conditions contained in this certification and in other applicable environmental permits, such as the stormwater permit and pollution prevention plan, the hydraulic project approval permit, and the shoreline substantial development permit

4. Water Quality Modification. Some of the work proposed to be undertaken for installation of the utility lines may cause water quality effects that will exceed the state water quality criteria specified in WAC 173-201A. Per Section 173-201A-110, the department may grant a Modification to the Standards to allow for exceedances of the criteria on a short-term basis when necessary to accommodate essential activities.

Waters of the state adjacent to the utility corridor are classified as Class A and thus the criteria of that class apply except as specifically modified by this order. These waters include Grays Harbor (marine) and the following freshwater streams: Chehalis River, Charley Creek, Newskah Creek, Chapin Creek, Campbell Creek, Indian Creek, Stafford Creek and an unnamed tributary located between Newskah and Chapin Creeks.

A dilution zone is authorized to allow for temporary exceedances of the Class A turbidity standard in waters immediately adjacent to locations where active utility line installation or mitigation activities are occurring. The dilution zone varies according to the flow of water: 100 feet downcurrent from the work site if flow is 10 cfs or less; 200 feet downcurrent for flows above 10 cfs to 100 cfs; and 300 feet downcurrent for flows above 100 cfs. For activities adjacent to wetlands, estuaries, marine waters and other nonflowing waters, the dilution zone is a 150-foot radius from the point of discharge or activity.

Within the dilution zone, the Class A standard for turbidity is waived. All other applicable water quality standards shall remain in effect within the dilution zone and all water quality standards are to be met outside of the authorized dilution zone.

This modification shall remain in effect for the entire duration of time necessary to install all three utility lines and to complete the major earth moving work at the Newskah Creek mitigation site. However, the waiver of turbidity within the dilution zones is intended for brief periods of time (such as a few hours or a day) and is not an authorization to exceed the turbidity standard for the entire duration of construction. In no case does the waiver authorize degradation of water quality that significantly interferes with or becomes injurious to characteristic water uses or causes long-term harm to the environment. In addition, this modification does not authorize work during closure periods specified by WDFW in the HPA permit.

4. Newskah Creek Mitigation Site.

a) The creation, restoration and enhancement of the Newskah Creek wetland mitigation site shall be done in conformance with the "final version" of the *75% Design Level, Preliminary Restoration Plan for the Washington State Department of Corrections Stafford Creek Corrections Center, Grays Harbor County, Washington* prepared by L.C. Lee & Associates, April 24, 1998. The final version of the mitigation plan shall be completed and made available prior to the start of major (earth moving) mitigation work.

b) Monitoring of the mitigation effort shall be done as specified in the *Final Monitoring Plan, Newskah Creek Riverine Ecosystem Restoration* prepared by L.C. Lee & Associates, April 24, 1998. An "as-built" and monitoring reports specified in the mitigation plan shall be submitted to the department detailing the progress of the wetland creation, restoration and enhancement efforts in meeting the goals and objectives specified in the monitoring plan. Monitoring reports should be sent to Rick Vining, PO Box 47703, Olympia, WA 98504-7703

c) As indicated in the Final Agreement, the 9.9-acre Newskah Creek mitigation site is to be preserved in perpetuity as natural wetlands and wildlife habitat by the City of Aberdeen by placing the property into a conservation easement.

5. Stormwater.

a) Certification of this project is contingent upon compliance with all applicable and appropriate BMPs for management of stormwater as specified in, but not limited to local ordinances or regulations; building permits; or enforceable stormwater management plans. A Stormwater Pollution Prevention Plan (SWPPP) was prepared for the project and submitted to Ecology on July 11, 1997. The plan includes preliminary conditions for the installation of pipelines in the utility corridor, but is subject to possible revisions once more detailed plans for the pipeline installation are completed. Water quality related provisions and pipeline installation BMPs contained in Section 5 and 6 of the plan are considered conditions of this certification.

6. General Conditions

a) Janet Boyd, Water Quality Inspector for the Southwest Regional Office of Ecology, shall be notified at (360) 407-6294 at least 24 hours prior to commencement of the initial construction at the prison site or in the utility corridor.

b) This certification does not exempt and is provisional upon compliance with other statutes and codes administered by federal, state, and local agencies.

c) This certification will cease to be valid if the project is constructed and/or operated in a manner not consistent with the project description contained in the latest Public Notice.

d) This certification shall cease to be valid if five years elapse between the date of the issuance of this certification and the start of construction and/or discharge for which the federal license or permit is being sought. However, the expiration date may be extended by the department at the request of the pemittee.

e) This certification will cease to be valid and the applicant must reapply with an updated application if the information contained in the Public Notice is voided by subsequent submittals to the federal agency.

f) Copies of this Order shall be kept on the job site and readily available for reference by Corps of Engineers personnel, the construction superintendent, construction managers and foremen, and state and local government inspectors.

g) Ecology retains continuing jurisdiction to make modifications hereto through supplemental order, if it appears necessary to further protect the public interest.

Any person who fails to comply with any provision of this Order shall be liable for a penalty of up to ten thousand dollars per violation for each day of continuing noncompliance.

Any person aggrieved by this Order may obtain review thereof by appeal. The applicant can appeal up to thirty (30) days after receipt of this Order, and all others can appeal up to 30 days from the postmarked date of this Order. The appeal must be sent to the Washington Pollution Control Hearings Board, PO Box 40903, Olympia WA 98504-0903. Concurrently, a copy of the appeal must be sent to the Department of Ecology, Enforcement Section, PO Box 47600, Olympia WA 98504-7600. These procedures are consistent with the provisions of Chapter 43.21B RCW and the rules and regulations adopted thereunder.

DATED 6/5/98 at Lacey, Washington

Paula Ehlers

Paula Ehlers, Supervisor
Environmental Coordination Section
Shorelands and Environmental Assistance Program

Ann Kenny Declaration

Exhibit 8

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
P.O. Box 47600 • Olympia, Washington 98504-7600
(206) 407-6000 • TDD Only (Hearing Impaired) (206) 407-6006

CERTIFIED MAIL

February 6, 1995

Mr. Patrick O'Hagan
2524 Evergreen Park Rd.
Grayland, WA 98547

Dear Mr. O'Hagan:

Enclosed is Order No. 92-4-00274 (enclosed as Attachment A). This Order, covering the conversion of your Bog 33 from mature forested wetland to cranberry bog, requires you to provide an acceptable mitigation plan for the proposed project and to obtain Ecology's approval of that plan before you are authorized to begin project construction. By this letter, Ecology is also providing additional written notice of approval to begin work in Bog 170, subject to the standard Nationwide Permit #34 conditions (copy enclosed as Attachment B).

Conditions contained in this Order are those described as part of the SEPA Mitigated Determination of Nonsignificance issued September 23, 1994. No work shall be done in the Bog 33 site before you receive Ecology's approval of your mitigation plan.

Coverage provided by the Corps of Engineers for both of your projects under Nationwide Permit #34 is scheduled to end on February 17, 1995. I have informed the Corps that your conformance with the conditions of this Order may require an extension of your coverage. If interested, you should contact the Corps regarding their requirements for extending your permit coverage.

Bog 33: Final approval of your proposed project in Bog 33 requires an approved wetland mitigation plan. Ecology does not generally issue water quality certification Orders for projects that do not have a final mitigation plan, and normally, your certification request would have been denied due to the lack of an approved mitigation plan. However, after discussing mitigation requirements with you, and per the request in your December 28, 1994 letter, we are issuing this Order with the understanding that you will provide an acceptable plan for Ecology's review and approval.

We have enclosed an example of an acceptable mitigation plan. Another plan may also be acceptable, as long as it a) provides protection in perpetuity of wetland functions and values similar to those associated with the two acres of forested wetlands impacted by your proposed project and b) meets other standard Ecology requirements.

The enclosed sample plan is the most minimally acceptable plan we can approve, as it provides merely for the protection of the same amount of existing forested wetland that would be converted by your Bog 33 project. The degradation of waters of the state associated with the loss of mature forested wetlands such as these generally requires a much larger mitigation ratio -- from 4:1 to 6:1 -- due to several factors, including:

* the significant loss of this wetland type through most areas of the state, including Grayland;
* the long time needed to replace the functions and values associated with this wetland type;
* the important wildlife habitat provided by this wetland type;
* the regional rarity of this type of wetland; and,
* the difficulty in creating wetlands, particularly forested wetlands.

However, we are willing to approve a lower mitigation ratio than 4:1 or 6:1 in this instance because converting the Bog 33 site to cranberry production will allow some partial wetland hydrologic and water quality functions to be maintained, and because of the predominant use of land in your project area for cranberries.

Bog 170: This letter also provides additional written notice of Ecology's approval to begin work in Bog 170 (see also the December 9, 1994 letter to you from Jo Casey, Assistant Attorney General, copy enclosed as Attachment D). You may begin work in Bog 170 at any time, but please be advised that any work done in Bog 170 is subject to all the standard conditions of Nationwide Permit #34.

If you have any questions concerning the content of this Order, please contact Tom Luster by phone at (360) 407-6918, or by mail at the Environmental Review and Sediment Section, Department of Ecology, P.O. Box 47703, Olympia, WA 98504-7703.

Sincerely,

Keith E. Phillips

Keith Phillips, Supervisor
Environmental Review and Sediment Section

KEP:tl

Enclosures:
A: Order #92-4-00274 -- Water Quality Certification, with conditions
B: Nationwide Permit #34 standard conditions
C: Sample mitigation plan
D: December 9, 1994 letter from Assistant Attorney General
E: State Response letter

cc: Corps of Engineers -- Jack Kennedy
EPA, Seattle -- Gary Voerman
USFWS -- Dennis Carlson
WDNR, Central Office -- Mary McBroom
Ecology -- Bill Leonard; Chuck Gale
Ecology, AG's -- Jo Casey, Rebecca Todd
WDFW -- Dan Guy

ATTACHMENT A

IN THE MATTER OF GRANTING A WATER QUALITY CERTIFICATION TO Patrick O'Hagan in accordance with 33 U.S.C. 1341 [FWPCA § 401], RCW 90.48.260 and WAC 173-201A	)))))))	**ORDER No. 92-4-00274** Conversion of Bog 33 forested wetland to cranberry bog, near Grayland, Grays Harbor County, Washington.

TO: Mr. Patrick O'Hagan

On September 23, 1994, the Washington Department of Ecology (Ecology) issued a public notice on behalf of Patrick O'Hagan (Applicant) for issuance of certification as required under the provisions of 33 U.S.C. 1341 (FWPCA § 401) pursuant to application for a Section 404 permit from the U.S. Army Corps of Engineers. The proposed project entails converting approximately two acres of forested wetland and one acre of scrub-shrub wetland at Bog 33 to cranberry bog, near Grayland, Grays Harbor County, Washington.

In exercising its authority under 33 U.S.C. 1341 and RCW 90.48.260, Ecology has investigated this application pursuant to the following:

1. Conformance with applicable water quality-based, technology-based, and toxic or pretreatment effluent limitations as provided under 33 U.S.C. Sections 1311, 1312, 1313, 1316, and 1317 (FWPCA Sections 301, 302, 303, 306, and 307).

2. Conformance with the state water quality standards as provided for in Chapter 173-201A WAC authorized by 33 U.S.C. 1313 and by Chapter 90.48 RCW, and with other appropriate requirements of state law.

3. Conformance with the provision of using all known, available and reasonable methods to prevent and control pollution of state waters as required by RCW 90.48.010.

In view of the foregoing and in accordance with 33 U.S.C. 1341, 90.48.260 RCW and Chapter 173-201A WAC, IT IS ORDERED THAT:

1) Certification under the provisions of 33 U.S.C. 1341 is granted to Applicant subject to the conditions contained in the attachment to this Order incorporated herein.

2) This certification does not exempt and is provisional upon compliance with other statutes and codes administered by federal, state, and local agencies.

3) This certification will cease to be valid if the project is constructed and/or operated in a manner not consistent with the project description contained in the Public Notice for certification.

4) This certification will cease to be valid and the applicant must reapply with an updated application if five years elapse between the date of the issuance of this certification and the beginning of construction and/or discharge for which the federal license or permit is being sought.

5) This certification will cease to be valid and the applicant must reapply with an updated application if the information contained in the Public Notice is voided by subsequent submittals to the federal agency.

Copies of this Order shall be kept on the job site and readily available for reference by Corps of Engineers personnel, the construction superintendent, construction managers and foremen, and state and local government inspectors.

Ecology retains continuing jurisdiction to make modifications hereto through supplemental order, if it appears necessary to further protect the public interest.

Any person who fails to comply with any provision of this Order shall be liable for a penalty of up to ten thousand dollars per violation for each day of continuing noncompliance.

Any person aggrieved by this Order may obtain review thereof by appeal, within thirty (30) days of receipt of this Order, to the Washington Pollution Control Hearings Board, P.O. Box 40903, Olympia, Washington, 98504-0903. Concurrently, a copy of the appeal must be sent to the Department of Ecology, Enforcement Section, P.O. Box 47600, Olympia, Washington, 98504-7600. These procedures are consistent with the provisions of Chapter 43.21B RCW and the rules and regulations adopted thereunder.

DATED 2/6/95 at Lacey, Washington

Keith Phillips, Supervisor
Environmental Review and Sediment Section
Department of Ecology
State of Washington

ORDER NO. 92-4-00274 -- Certification Conditions for Patrick O'Hagan (Bog 33)

General:

1) Impacts to wetlands shall be held to the minimum necessary for the proposed expansion.

2) Care shall be taken to prevent any petroleum products or other toxic or deleterious materials from entering the wetlands. If an oil sheen is observed in the project vicinity, the operator shall cease immediately and notify Ecology of such conditions. Contact Ecology's Southwest Regional Spill Response Office at (360) 407-6300.

3) Certification for construction of this project will be valid for a period of no longer than 5 years from the date of issuance. Bog expansion to be done after that date will require an extension or re-certification of this project. Additional conditions may be added to this certification at any time, or certification may be withdrawn, if project construction or operation results in detrimental effects to the waters of the state.

4) Applicant shall inform Ecology of any additional proposed conversion of wetlands for cranberry production prior to construction. Further conversions may require additional authorization from Ecology and other state and federal agencies.

5) Applicant shall accept full responsibility of all wildlife control and all wildlife damage to the expansion area. At no time shall Ecology or the Washington Department of Fish and Wildlife be held responsible for damage caused by wildlife.

6) Under the direction and approval of Ecology, the applicant shall provide mitigation to compensate for the loss of characteristic uses of approximately two acres of forested wetland known as Bog 33, in the NE 1/4 of Section 7, Township 15 North, Range 11 West. Minimum acceptable mitigation shall consist of protection in perpetuity of the habitat and wetland functions and values associated with two acres of forested wetland, along with the rights and restrictions necessary to ensure that habitat and wetland functions and values continue. Options for mitigation include a conservation easement, purchase, creation, or enhancement of forested wetlands. Acceptable mitigation ratios will vary depending on the type of protection provided.

   The applicant shall provide an acceptable agreement to Ecology within ninety days of the issuance of this Order (by May 8, 1995). The mitigation must be approved by Ecology and a copy of the necessary documentation (e.g., conservation easement agreement, deed restriction, etc.) must be provided to Ecology before project construction begins.

ATTACHMENT B: NATIONWIDE PERMIT #34 STANDARD CONDITIONS

34. **CRANBERRY PRODUCTION ACTIVITIES.** Discharges of dredged or fill material for dikes, berms, pumps, water control structures or leveling of cranberry beds associated with expansion, enhancement, or modification activities at existing cranberry production operations provided:

a. The cumulative total acreage of disturbance per cranberry production operation, including but not limited to, filling, flooding, ditching, or clearing, does not exceed 10 acres of waters of the United States, including wetlands;

b. The permittee notifies the District Engineer in accordance with the notification procedures; and

c. The activity does not result in a net loss of wetland acreage.

This nationwide permit does not authorize any discharge of dredged or fill material related to other cranberry production activities such as warehouses, processing facilities, or parking areas. For the purposes of this nationwide permit, the cumulative total of 10 acres will be measured over the period that this nationwide permit is valid. (Section 404)

Regional Conditions - *None.*

401 Certification - *Denied. An individual 401 Certification is required from the State.*

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Mail Stop PV-11 • Olympia, Washington 98504-8711 • (206) 459-6000

April 6, 1993

District Engineer
Department of the Army
Seattle District, Corps of Engineers
P.O. Box C-3755
Seattle, Washington 98124

ATTN: Tom Mueller, Chief
Regulatory Branch

Dear Sir:

Attached are the Department of Ecology's requested changes to Nationwide Permit (NWP) conditions for NWP #14, 27, and 34.

The changes are a result of negotiations among interested state and federal resource agencies, as well as comments received during a public comment period from January 29 to February 18, 1993.

Ecology recommends that these revisions take effect immediately.

If you have questions, please contact Tom Luster of my staff at (206) 438-7493.

Sincerely,

Keith E. Phillips, Supervisor
Environmental Review and
Sediment Management Section

KEP:ttl

Attachments: revised conditions
copy of public notice

cc: U.S. EPA -- Region 10
USFWS
WA Dept. of Fisheries
WA Dept. of Wildlife
Portland Corps, Burt Paynter, Chief-Regulatory Branch
Walla Walla Corps, Paul Winborg, Chief-Operations
NPD Chief-Regulatory, John Zammit

Revisions to NWP #14 within Washington State:

401 Certification: Approved.

CZM Consistency Determination: State concurs.

Rationale for proposed revision: The proposed change is to remove the requirement for an individual water quality certification and CZM Consistency Determination for projects in tidal waters. The original denial of certification for NWP #14 projects in tidal waters occurred due to concerns that there would be insufficient review of these projects to prevent significant adverse effects to those waters. These concerns were resolved by experience gained under Regional Condition #1, which has been in place for the past year and which requires review by the Corps' District Engineer.

Revisions to NWP #27 within Washington State:

401 Certification: NWP partially denied without prejudice. An individual 401 Certification or demonstration of State waiver of such certification to the District Engineer is required from the State for the following:

a) Discharge of dredged or fill material associated with the reversion of a restored wetland to its prior condition and use.

b) Fills in waters of the U.S. adversely affecting more than 1 (one) acre.

CZM Consistency Determination: NWP partially denied without prejudice for the same limitations as 401 Certification. For those projects not meeting Regional Conditions, an individual CZM certification concurrence must be obtained from the State for projects located in counties within the coastal zone.

Rationale for proposed revision: The proposed change is to add the word "adversely" to 401 Certification condition (b). This will provide certification of fills of more than one acre that result in beneficial uses or enhancement of water or wetland functions.

Revision to Nationwide Permit #34 -- Cranberry bog expansion:

401 Certification: NWP partially denied without prejudice. An individual certification or demonstration of State waiver of such certification to the District Engineer is required unless the proposed project meets the following:

Pursuant to Section 401 of the Clean Water Act (the Act), Ecology certifies that expansion of cranberry bogs under Nationwide Permit #34 complies with applicable provisions of Sections 301, 302, 303, 306, and 307 of the Act and other appropriate requirements of State law, provided one or both of the following regional conditions are met:

1) The proposed expansion area does not include forested wetland whose trees of 8" Diameter at Breast Height (DBH) or greater provide 30% or greater of the areal canopy coverage of that wetland; no part of the proposed expansion area is within 50 feet of the Pacific County Drainage Ditch #1; and the proposed expansion area is located within the geographic area as described below:

> Beginning at the intersection of Smith Road (aka Smid and Cranberry roads) and State Route 105 and running thence south and southeast along SR 105 to the intersection of SR 105 and Smith Anderson Road; thence north to the intersection of Smith Anderson Road and Lungren Road; thence north 1320.0 feet along Smith Anderson Road; thence west 450.0 feet; thence north 1680.0 feet; thence 13 degrees west of the northerly direction approximately 11,280.0 feet to the intersection of the east section line of Section 6 and the west section line of Section 5 (Township 15 North, Range 11 West Meridian) and Smith Road; thence west on Smith Road to the point of beginning (see attached map, based on USGS maps 46124-G1-TF-024 (Grayland, Wash-revised 1984) and 46124-F1-TB-024 (North Cove, WA-revised 1984).

Rationale: Conversion of wetlands to cranberry bogs within the area described above is not expected to cause a significant degradation of valuable wetland functions. The remaining wetlands within the boundaries of the roads listed are isolated by roads, residences, and agricultural areas from natural habitat areas, and are severely impacted by ongoing human activities. Local agricultural practices have changed the hydrology to such an extent that the average groundwater in the region seems to have been lowered, and the expected vegetation common to undisturbed peat habitats is mostly absent. Locations within the boundaries identified that were assessed for their habitat value all rated relatively low. Furthermore, cranberry expansion will not result in a net loss of wetland area since hydrology, soils, and some wetland vegetation will be retained.

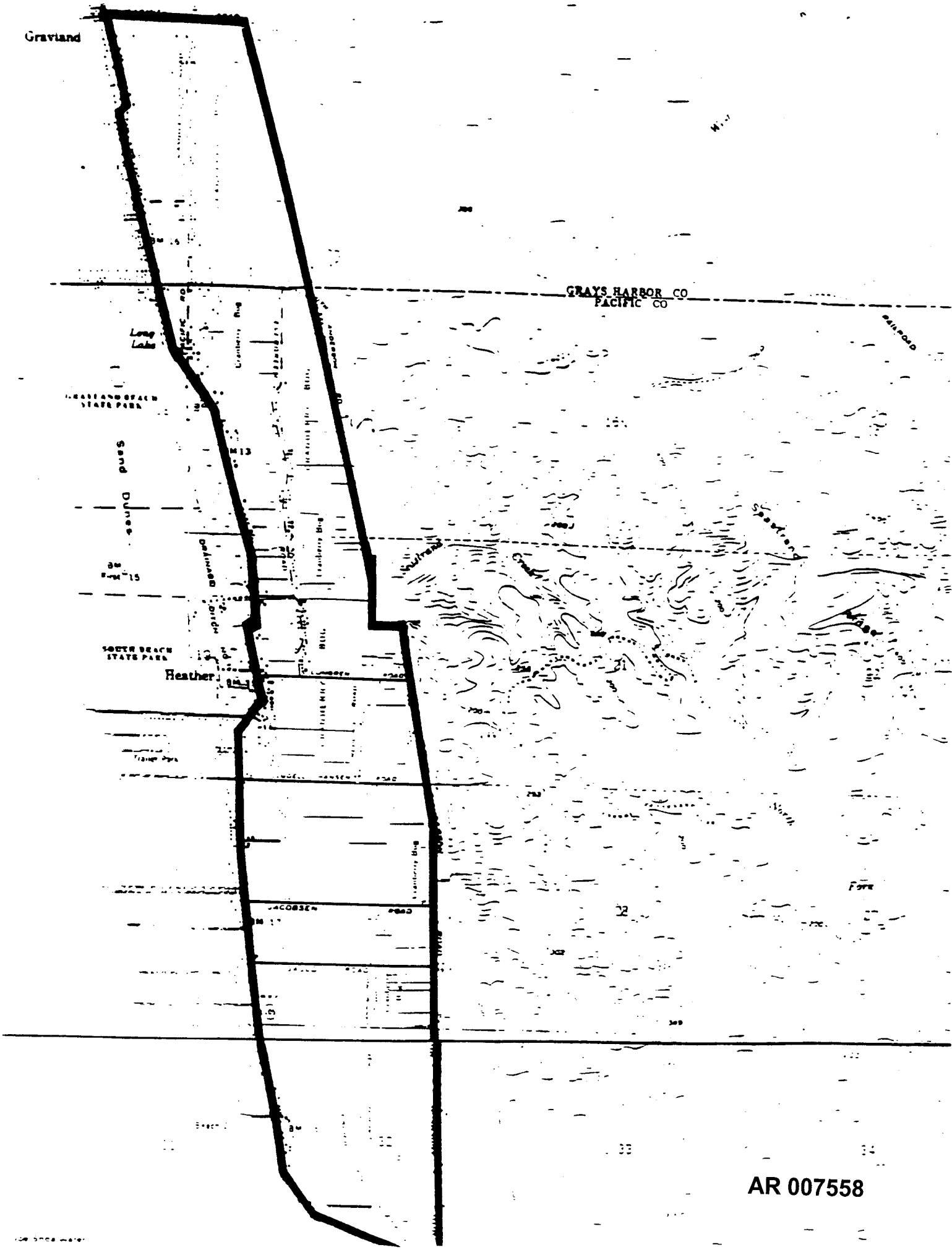
Revision to Nationwide Permit #34 -- Cranberry bog expansion (continued):

2) The proposed expansion area has previously been used for cranberry production. Ecology will verify the expansion for these areas, upon receipt of appropriate documentation that adequately demonstrates prior cranberry production in the proposed expansion area. Documentation may include one or more of the following:

a. Evidence of the presence of old dikes around the boundary of the proposed expansion (dated photographs, dated video, topographic surveys),
b. Old Aerial photographs showing cranberry bogs within the proposed expansion area,
c. Old maps drawn by registered engineers/surveyors showing the presence of cranberry bogs in the proposed expansion area, or
d. Evidence that established plants of cultivated (not native) cranberry varieties are present within the proposed expansion area.

Rationale: Conversion of wetlands that have become re-established in previously farmed bogs is not expected to cause a significant degradation of valuable wetland functions. Areas that have previously been in cranberry production in the Grayland and Long Beach areas have had their hydrology severely altered; either by ditching or berming. The ditching, berming, and development around the previously farmed areas has to some degree isolated the remaining wetlands, and reduced their value as habitat.

NOTE: Applicants that do not meet the above criteria may still apply for an individual certification. Certification will be granted by Ecology if it is determined that the proposed expansion will not cause significant degradation of wetland functions, or adequate mitigation is proposed.


Graviand
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PACIFIC CO
Long Lake
Sand Dune
Heather
JACOBSEN ROAD

AR 007558

ATTACHMENT C

Sample mitigation plan for Patrick O'Hagan:

The primary requirement of any approved wetland mitigation plan will be to protect, in perpetuity, the functions and values similar to those associated with the Bog 33 forested wetland site. This enclosure provides a sample conservation easement that meets the mitigation requirements of Ecology and the Washington Department of Fish and Wildlife (WDFW). This sample easement is not currently a condition of the provisional Order issued to Patrick O'Hagan on February 2, 1995, but this suggested agreement, if mutually agreed upon by the applicant, WDFW, and Ecology, will meet Condition #6 of the Attachment to that Order. The easement described below consists of approximately 2 acres of mature forested wetlands located in the SW 1/4 of Section 17, Township 15 North, Range 11 West.

Sample Conservation Easement between Patrick O'Hagan (Grantor) and the Washington Department of Fish and Wildlife (Grantee)

Description of Property:

Parcel 1: Commencing at a point on the north and south center line of Section 17 which is east 1941.34 feet, more or less, from a point on the easterly right of way line of the Evergreen Park County Road which is south 1654.56 feet and east 774.13 feet from the quarter corner between said Section 17 and Section 18, Township 15 North, Range 11 West of W.M. Pacific County, Washington, thence south 110.0 feet along said center line, thence west 264.00 feet, thence north 110.0 feet, thence east 264.00 feet to the point of beginning, being known as the easterly 264.00 feet of Tract 16 of Superior Valley Cranberry Tracts, per unrecorded plat thereof and situated in the Southwest quarter of said Section 17.

Parcel 2: That portion of the southwest quarter of Section 17, Township 15 North, Range 11 West of W.M., described as follows, to-wit:

Beginning at a point on the north and south center line of said Section 17 which is east 1962.88 feet from a point on the easterly right of way line of the Evergreen Park County Road which is south 1764.56 feet and east 753.91 feet from the quarter section corner between Sections 17 and 18, said township and range, thence south along said center line 110.0 feet, thence west 264.00 feet, thence north 110.0 feet, thence east 264.00 feet to the point of beginning, and being known as the easterly 264.00 feet of Tract 17 of Superior Valley Cranberry Tracts, per unrecorded plat thereof.

Parcel 3: Commencing at a point on the section line between Sections 17 and 20, south 88° 09' 14" east 781.9 feet from the corner common to Sections 17, 18, 19, and 20, Township 15 North, Range 11 West of W.M., said point being on the east right of way line of Evergreen Park County Road, thence northerly along said right of way line 698.46 feet, thence east 1998.2 feet to the point of beginning, said point being on the north and south center line of said Section 17, thence north 110.0 feet, thence west 264.00 feet, thence south 110.0 feet, thence east 264.00 feet to the point of beginning.

All of which is situated in the southwest corner of said Section 17.

Mutual Terms, Conditions, and Restrictions:

1) Purpose: It is the purpose of this easement to assure that the Property will be retained forever in its natural open space condition and to prevent any use of the Property that will significantly impair or interfere with the conservation values of the Property. Grantors, their heirs, successors or assigns intend that this easement will confine the use of the Property to such activities. The purpose of this Easement is to provide wildlife habitat and wetland functions and values in a mature forest environment.

2) Construction and Improvements:
   a) The existing water control structures (ditches) will be controlled, operated and maintained by the Grantee, its employees and/or designees.
   b) An identified large downed cedar log can be harvested by the landowner.

3) Rights of the Grantee: To accomplish the purpose of this Easement, the following rights are conveyed to the Grantee:
   a) To preserve and protect the conservation values of the Property.
   b) To enter upon the Property at reasonable times in order to monitor Grantor's his heirs', successors' or assigns' compliance with and otherwise enforce the terms of this Easement, to construct and maintain all improvements, and to monitor public recreation activities.
   c) To prevent any activity on or use of the Property that is inconsistent with the purpose of this Easement and to require restoration of such areas or features of the Property that may be damaged by any inconsistent activity or use.

4) Prohibited Uses: Any activity on, or use of the Property inconsistent with the purpose of this Easement is prohibited. Without limiting the generality of the foregoing, the following activities and uses are expressly prohibited:
   a) Subdivision and residential development.
   b) Commercial, industrial, or agricultural development and/or use.
   c) Alteration of the land surface or any vegetation.
   d) Mineral development.
   e) Waste dumps.
   f) Timber harvest (except one identified downed cedar log).

5) Reserved Rights: The Grantors reserve unto themselves, their heirs, successors and assigns, all rights accruing from their ownership of the Property, including the right to engage in or permit or invite others to engage in all uses of the Property that are not expressly prohibited herein and are not inconsistent with the purpose of this Easement.

6) Costs of Enforcement: Any costs incurred by the Grantee in enforcing the terms of this Easement against the Grantors, their heirs, successors or assigns, including without limitation, costs of the suit and attorneys' fees and any costs of restoration necessitated by the Grantors', their heirs', successors', or assigns' violation of the terms of this Easement shall be borne by the Grantors, their heirs, successors or assigns.

7) Grantee's Discretion: Enforcement of the terms of this Easement shall be at the discretion of the Grantee, and any forbearance by the Grantee to exercise its rights under this Easement in the event of any breach of any term of this Easement by the Grantors, their heirs, successors, or assigns shall not be deemed or construed to be a waiver by Grantee of such term or of any subsequent breach of the same or any other term of this Easement or any of Grantee's rights under this Easement. No delay or omission by the Grantee in the exercise of any right or remedy upon any breach by the Grantors shall impair such right or remedy or be construed as a waiver.

Dated this _____ day of _____, 1995.

GRANTOR:

_____

_____

GRANTEE:

_____

_____

Ann Kenny Declaration

Exhibit 9

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

May 31, 2001

Lowell H. Johnson
Manager, Airport Division
Federal Aviation Administration
1601 Lind Avenue S.W.
Renton, Washington 98055-4056

Re: Biological Assessment for Master Plan Update Improvements at Seattle-Tacoma International Airport (NMFS No. WSB-00-318) and Essential Fish Habitat consultation

Dear Mr. Johnson:

On June 16, 2000, the National Marine Fisheries Service (NMFS) received a Biological Assessment (BA) from the Federal Aviation Administration (FAA) on behalf of the Port of Seattle (Port). The Port is FAA's designated non-federal representative for this consultation. The BA considered numerous construction projects included in the Master Plan Update Improvements for Seattle-Tacoma International Airport (STIA). FAA requested consultation under the Endangered Species Act (Sec 7(a)(2)) for chinook salmon (*Onchorhynchus tshawytscha*). The Port is the proponent of the STIA projects but FAA provides partial funding for the action, thus creating a Federal nexus and the need for section 7 consultation. This consultation covers federal actions that are required to implement STIA projects including: 1) FAA funding of airport improvements, 2) FAA construction of a control tower and navigational aids, 3) Issuance of a 404 permit by the Corps of Engineers (COE) as required by the Federal Clean Water Act. The BA also addressed the effects of STIA projects on Essential Fish Habitat (EFH) of coastal pelagic species and West Coast groundfish as required by Section 305(b) of the Magnuson-Stevens Act. EFH for Coho salmon (*O. kisutch*), a candidate species in Puget Sound, was not considered in this consultation although an independent assessment of EFH for coho was prepared by the Port and delivered to NMFS on March 27, 2001.

The BA concludes that STIA projects "may affect," but are "not likely to adversely affect" chinook salmon and that construction and operation of the projects "may affect" but is "not likely to destroy or adversely modify" designated critical habitat. The BA also concludes that STIA projects are "not likely to adversely affect" any identified EFH for the coastal pelagic species and West Coast Groundfish.

ENDANGERED SPECIES ACT

This consultation is based upon the BA (June 2000) and supplemental information that was formally transmitted to NMFS by FAA or the Port. These submittals include: Supplement for Property Acquisition and Demolition for 34X Runway Protection Zone (September 11, 2000), Clean Water Act Section 404 Permit Application (October 30, 2000), Supplement to the BA

(December 14, 2000) as well as Sea-Tac Runway Fill Hydrology Studies Report (PGG 2000), Seattle-Tacoma Airport Master Plan Update, Low Streamflow Analysis (Earth Tech, Inc. 2000) and Comprehensive Stormwater Management Plan (Parametrix 2000) submitted in January, 2001. In addition numerous telephone conversations and e-mail messages have transmitted information between NMFS, the Port and Parametrix, the Port's environmental consultant. The final document required to initiate formal consultation, a response to concerns raised by the Fish and Wildlife Service (FWS) about potential contamination in the embankment fill, was submitted on 26 March 2001 and modified on 30 March 2001.

Scientific consultants retained by the Airport Communities Coalition (ACC) also reviewed the above documents and provided extensive comments for NMFS evaluation during the consultation process.

The NMFS concurs with the effects determination of "may affect not likely to adversely affect" freshwater or marine life stages of threatened Puget Sound chinook salmon or designated critical habitat. Additionally, construction and operation of the STIA projects are "not likely to adversely affect" EFH for coastal pelagic species or West Coast Groundfish.

Project Location and Description

Most STIA projects are located within the cities of SeaTac and Des Moines, King County, Washington (Sections 4 and 5, Township 22 North, Range 4 East, and Sections 20, 21, 28, 29, 32, and 33, Township 23 North, Range 4 East, Willamette Meridian). Off-site wetland mitigation will occur in the City of Auburn, King County, Washington (Section 31, Township 22 North, Range 5 East, Willamette Meridian).

STIA projects will develop portions of property located on and near the existing Sea-Tac airport, and provide wetland mitigation near the Green River in the City of Auburn. The principal objectives of these actions are: 1) to provide a new 8,500 foot air carrier runway, 2) to provide a 600 foot extension to an existing runway, 3) to extend runway safety areas to meet existing FAA safety standards, 4) to upgrade existing facilities at SEA-TAC airport. Construction is scheduled for completion in 2010.

STIA projects (Table 1) include: the construction of runways, taxiways, borrow areas and runway safety areas (RSAs); installation of FAA and navigation aids (e.g., the new Airport Traffic Control Tower, airport surveillance radar [ASR], and airport surface detection equipment [ASDE]); improvements to airfield buildings, terminal and air cargo areas, roads, parking, the South Aviation Support Area (SASA), stormwater management facilities and the Industrial Wastewater System (IWS) facilities; and acquisition and demolition of existing structures. Proposed actions also include the relocation of approximately a 980-foot reach of Miller Creek as well as the development of avian habitat at a mitigation site near the Green River in Auburn.

The "action area" for these actions is the locations where STIA project construction will occur and the surrounding vicinity where direct and indirect effects could reasonably be expected to occur. This includes the aquatic habitat of Miller, Walker (a tributary to Miller), Des Moines, and Gilliam creeks downstream of the airport and the associated estuaries of Miller and Des Moines Creeks. The area surrounding the Midway Sewer District outfall in Puget Sound is

considered to be part of the action area because effluent from the Industrial Wastewater System is released to the Midway Sewer District. The Auburn wetland mitigation site and vicinity, where indirect effects could reasonably occur, are also included in the action area.

Status of the Species and Critical Habitat

The NMFS assessment of the effects of an action involves the initial steps of defining the biological requirements and current status of the listed species, and evaluating the relevance of the environmental baseline to the species' current status.

The status review of west coast chinook salmon populations defined 15 Evolutionarily Significant Units (ESUs) in Washington, Oregon, Idaho, and California, including the Puget Sound ESU (Myers et al. 1998). Chinook salmon in the Puget Sound ESU have declined substantially from historic levels due to the effects of hatchery supplementation on genetic fitness of stocks, severely degraded spawning and rearing habitats throughout the area, and harvest exploitation rates exceeding 90 percent for some Puget Sound chinook stocks. Puget Sound chinook were designated as threatened in March 1999 (NMFS 1999a)

Chinook salmon from the Puget Sound region consist largely of summer and fall run stocks, with juveniles that typically migrate to the marine environment during their first year of life (Myers et al. 1998). These "ocean-type" chinook rear in freshwater a few months or less, and most of their rearing occurs in the nearshore marine environment. Generally, ocean-type chinook migrate downstream in the spring, within months after emergence, or during the summer and autumn after a brief period of rearing in fresh water (Healey 1991; Myers et al. 1998). In Puget Sound, subyearling chinook salmon smolts typically migrate near the shoreline then move offshore as they grow in size. Yearling chinook smolts, that are typically produced by spring run adults and are uncommon in the project area, would spend less time near the shoreline of Puget Sound. Chinook juveniles may reside in the Puget Sound region until at least November before migrating to the North Pacific Ocean (Hartt and Dell 1986). Mature chinook salmon return to their natal rivers predominately as three-, four- and five-year-olds.
Juvenile chinook salmon feed opportunistically in Puget Sound. They consume large zooplankton, such as euphausiids and large copepods, amphipods, juvenile shrimp, and larval fishes (e.g., herring and sandlance) (Miller et al. 1977; Fresh et al. 1979, Simenstad et al. 1982). In areas where riparian habitat is abundant near the Sound, terrestrial insects can be an important prey item for juveniles up to 75 mm or so. Larger chinook will typically consume larger prey and the proportion of fish in the diet increases with size.

Chinook salmon that are present in the action area will most likely be from either the Green/Duwamish River (for the off-site mitigation action area and Gilliam creek) or the Puyallup River (for the estuaries of Miller and Des Moines creeks) stocks. The Duwamish/Green stock is considered to be healthy (WDFW 1993). The status of the Puyallup River stock was considered to be uncertain by WDFW (1993). Population trends for each stock is reported (Myers et al 1998) to be increasing gradually (1-5%).

Critical habitat for Puget Sound chinook salmon was designated in February 2000 (NMFS 2000) and includes all Puget Sound waters, estuaries, and freshwater habitats accessible to Puget Sound chinook salmon. Due to the complex life histories of salmonid species, habitats must be available for juvenile rearing, juvenile migration corridors, growth and development to adulthood, adult migration corridors and spawning. Major river basins that support this ESU include the Nooksack, Skagit, Stillaguamish, Snohomish, Green/Duwamish, Puyallup, Nisqually, Skokomish, Dungeness, Cedar, and Elwha Rivers. Critical habitat for threatened Puget Sound chinook salmon in the Duwamish hydrologic units is limited to habitat downstream from the Howard Hansen Dam. Major bays and estuarine/marine areas providing critical habitat to this ESU include the South Sound, Hood Canal, Elliott Bay, Possession Sound, Admiralty Inlet, Saratoga Passage, Rosario Strait, Strait of Georgia, Haro Strait, and the Strait of Juan De Fuca.

No threatened Puget Sound chinook salmon occur in Miller, Walker or Des Moines Creeks. There is no documented historical usage of Miller or Walker Creeks by chinook salmon. Recent surveys confirm that coho and chum salmon spawn in Miller creek but did not observe any chinook salmon. These surveys found a general lack of clean, unembedded gravel of a suitable size for chinook spawning, and a general lack of pools and instream cover for rearing. The specific physical characteristics of the stream do not provide appropriate habitat for spawning or rearing of chinook salmon. Consequently, there is no critical habitat present in Miller or Walker Creeks upstream of the estuary.

Des Moines Creek also lacks suitable habitat for chinook salmon spawning and rearing and was not used historically by chinook. Although nearly 75,000 juvenile chinook were released in Des Moines Creek between 1990 and 1993 (Myers et al 1998), there is no documented return of adults. Because few anadromous fish are able to pass the culvert beneath Marine View Drive, adult spawners would have been concentrated in the creek's lower 0.4 mile and evident to users of Des Moines Beach Park. Coho and chum salmon as well as cutthroat and steelhead trout occur in the lower reaches of Des Moines creek.

Given these considerations, the freshwater portion of Miller and Des Moines Creeks is not critical habitat for chinook salmon. The only critical habitat in either basin is located at the estuarine mouths of each creek. These areas may provide habitat for juvenile and adult migration. During the summer of 2000, the King County Department of Natural Resources conducted a pilot study to evaluate the use of nearshore marine areas by all species of juvenile salmonids. The collected samples between June and August at eight sites including Miller Creek using beach seines. On the nearshore marine beaches near Miller Creek they obtained

approximately 0.5 fish per seine haul, lower population densities than were reported for other sites in their study area. These data suggest that the nearshore area around Miller Creek, and probably at Des Moines Creek, do not provide significant marine rearing habitat for Puget Sound chinook salmon.

The wetland mitigation site and Gilliam Creek are located in the Green/Duwamish River Basin. Development of the 482 mi^2 Green/Duwamish watershed has resulted in a variety of changes to the basin's suitability for salmonids. This development includes the diversion of Black and White rivers during the early 1900s, construction of Howard Hansen Dam (RM 64) that blocks access to significant habitat upstream, diking of the mainstem below RM 38, forest practices, agriculture, urbanization, and industrialization in the lower Duwamish River. Of the original Green/Duwamish estuary, 97 percent has been filled; 70 percent of its original flow has been diverted to other basins, and 90 percent of the original floodplain is no longer flooded on a regular basis (USEPA 2000a). The city of Tacoma diverts flows in the upper watershed for use as a municipal water supply. The middle portion of the basin remains primarily rural; however, agriculture has increased sediments and nutrients in the river, degrading water quality as well as salmon spawning and rearing habitats. The lower reaches are becoming increasingly urbanized. The tidally influenced Duwamish Waterway has been extensively dredged and channelized for maritime use by the Port of Seattle and private industry. Despite these significant anthropogenic alterations, chinook salmon and other anadromous salmonids (coho, chum, steelhead) use the Green/Duwamish for spawning, rearing and migration. The BA indicates that chinook and other salmon spawn in the Green River, within several hundred feet of the wetland mitigation site. Therefore, this portion of the Green River is critical habitat for threatened Puget Sound chinook salmon.

Gilliam Creek is a small creek that is a tributary to the Green River and discharges to the Green River in the vicinity of the city of Tukwila. This creek discharges to that part of the Green River used for migration by returning adults and outmigrating juveniles. Gilliam Creek is used primarily by resident fish because culverts limit adult salmonid access to this tributary. Gilliam creek has been impacted by development; it is extensively culverted and receives stormwater runoff that causes high peak flows and low base flows. The lack of spawning gravel and appropriate flow conditions for chinook makes it very unlikely that adult chinook salmon will use Gilliam Creek for spawning. During the winter and spring months, juvenile salmon could be rearing in the area where Gilliam Creek discharges to the Green River. One juvenile salmon observed in Gilliam creek in February 1997 was recorded s a chinook by Ryan Partee, a fisheries biologist employed by the City of Tukwila. Thatnfish apparently entered Gilliam creek because the flap gate located at the confluence of Gilliam creek and the Green River was partially open. The occurrence of chinook salmon in Gilliam Creek is a rare event. Entering Gilliam Creek may impede outmigration of juvenile salmonids and because the flap gate restricts flow and may limit return to the Green River for outmigration. Proposed restoration projects in Gilliam Creek and removal of the flap gate may increase the value of Gilliam Creek for chinook rearing habitat, although the stream will still be impacted by urban development unrelated to STIA.

The IWS outfall is located in Puget Sound 1,800 ft offshore and in 170 ft of water. This area is critical habitat and represents a migration corridor for returning adult chinook salmon. No juvenile chinook will be present at this depth.

Effects Determination

Guidance for making determinations of effects are contained in The Habitat Approach, Implementation of Section 7 of the Endangered Species Act for Actions Affecting the Habitat of Pacific Anadromous Salmonids, (NMFS 1999b). The NMFS' critical habitat analysis considers the extent to which the proposed action impairs the function of essential elements necessary for migration, spawning, incubation and rearing of the listed salmon under the existing environmental baseline.

Not likely to adversely affect (NLAA) is the appropriate conclusion when effects on listed species are expected to be discountable, or insignificant, or completely beneficial. Beneficial effects are contemporaneous positive effects without any adverse effects to the species. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs (USFWS/NMFS 1998). Discountable effects are those so extremely unlikely to occur that a reasonable person would not be able to meaningfully measure, detect or evaluate it (NMFS 1999b). This level of effect requires informal consultation, which consists of NMFS concurrence with the action agency's determination.

NMFS has related the biological requirements for listed salmonids to a number of habitat attributes, or pathways, in the Matrix of Pathways and Indicators (MPI). These pathways (Water Quality, Habitat Access, Habitat Elements, Channel Condition and Dynamics, Flow/hydrology, Watershed Conditions, Disturbance History, and Riparian Reserves) indirectly measure the baseline biological health of listed salmon populations through the health of their habitat. Specifically, each pathway is made up of a series of individual indicators (e.g. indicators for Water Quality include Temperature, Sediment, and Chemical Contamination.) that are measured or described directly (NMFS 1996). Based on the measurement or description, each indicator is classified within the properly functioning condition (PFC) framework as: 1) properly functioning, 2) at risk, or 3) not properly functioning. Properly functioning condition is defined as "the sustained presence of natural habitat forming processes in a watershed that are necessary for the long-term survival of the species through the full range of environmental variation."

The BA included MPIs for Miller Creek, the Miller Creek estuary, Des Moines Creek, the Des Moines Creek estuary and the Green River near the Auburn mitigation site. The MPI for Gilliam Creek was submitted, in response to a request from NMFS, on 2 November 2000. For Miller, DesMoines and Gilliam creeks nearly all indicators are considered to be "not properly functioning" and none were "properly functioning". Habitat conditions in the estuaries are somewhat better than upstream habitat conditions, generally being classified as "at risk" rather than "not properly functioning". However, the estuaries have been seriously altered by riprap

along the channel and filling of tidelands that limits total benthic production in the estuaries. All habitat conditions in the Green River were classified as "at risk" except for refugia which was considered to be "not properly functioning" because of lack of off channel habitat for rearing juveniles.

STIA projects will have temporary and long-term impacts to the aquatic habitat in Miller, Walker, and Des Moines Creeks. Less substantial impacts are expected to occur in Gilliam Creek, the estuaries of Miller and Des Moines Creeks, the outfall of the Midway Sewer District and in the Green River during construction of the offsite mitigation wetland. Potential impacts include changes in water quality, alterations to hydrologic conditions and alterations to wetland and stream habitats. Numerous conservation measures are proposed to reduce and minimize potential adverse impacts.

Since there are no chinook salmon, or critical habitat for chinook salmon, in Miller, Walker or Des Moines Creeks, STIA projects in these watersheds will have no direct effects to threatened Puget Sound chinook. The only potential indirect effects will occur in the estuaries of Miller and Des Moines Creeks and are expected to be insignificant or discountable. Effects of STIA projects are also insignificant or discountable for Gilliam Creek, the Midway Sewer outfall and the Green River. Consequently, NLAA is the appropriate determination for the project. The NMFS has completed a detailed evaluation of these projects in case reinitiation of consultation will be required in the future.

Water quality: Miller, Walker and Des Moines Creeks could potentially be affected by STIA projects due to construction activities and permanent additions of impervious surface that could lead to additional sediments and contaminants in stormwater runoff. Contaminants include conventional pollutants associated with urban type development, ground and aircraft de-icing activities, and discharge of effluent from the IWS system. There is also concern that contaminants from the embankment fill may leach into downstream wetlands and streams.

In Washington State protection of water quality protection is regulated by the Washington State Department of Ecology (DOE) under the Federal Water Pollution Control Act, also known as the Clean Water Act, and the Washington Water Pollution Control Act. The Clean Water Act is designed to protect the "chemical, physical, and biological integrity of the Nation's waters" and is implemented through Section 401, Section 402 (the National Pollutant Discharge Elimination System [NPDES]) and Section 404 (addressing fill and the waters of the United States). According to DOE, the conditions of the NPDES permit "constitutes compliance with the Federal Water Pollution Control Act.and the Washington Water Pollution Control Act (RCW 90.48)." NMFS has not consulted with EPA on impacts of water quality standards to threatened and endangered species. However, restrictions imposed in the past by the NPDES permits have improved the water quality of stormwater discharged by the Port. Conditions imposed by DOE for the NPDES permit include: 1) Effluent limitations based on the more stringent of either technology- or water quality-based limits; 2) A stormwater pollution prevention plan (SWPPP)

that identifies source control and treatment best management practices (BMPs); 3) Routine water quality and toxicity monitoring for STIA stormwater outfalls and IWS discharge, and reporting of these results to Ecology and; 4) Evaluation of pollution sources and BMP effectiveness via self-inspection and monitoring results.

The Port has proposed numerous BMPs to reduce and minimize water quality effects including pollutant source control, water quality treatment and enhancement of wetland and stream water quality functions. Past monitoring programs identified the need for specific BMPs to reduce or eliminate identified or potential water quality impacts. This adaptive management approach will continue to be used to identify additional BMPs for new, existing, and redeveloped areas at STIA. Thus, the quality of stormwater discharge should improve as new technologies are developed or specific sources of contamination are identified.

Changes on the landscape due to removal of vegetation, excavation and grading during construction could contribute to increased turbidity and sedimentation in the receiving waters. The Port will utilize BMPs (eg. Temporary and permanent cover practices, erosion control and sediment retention) and a stormwater treatment system during construction to reduce potential impacts. Demonstration projects to date indicate that treated discharge water meets applicable water quality criteria and is often less turbid than untreated water in the streams.

Increased sedimentation and turbidity are likely short-term effects due to instream construction in Miller and Des Moines Creeks. Sediment inputs may result from a variety of activities including the initial redirection of the stream, disturbance of the banks by construction, planting activities, and stormwater runoff. Exposed soil is vulnerable to erosion from short-term hydration rainfall or steady rainfall over a longer period of time which saturates the soil. Failure of erosion control measures could result in higher levels of sediment and turbidity in the aquatic system. Since chinook salmon are not found in these streams we do expect any effects to this species from sediment and turbidity changes in these streams. However, resident salmonids and other vertebrate and invertebrate species in the streams may be affected.

Increased turbidity and sedimentation is not expected to occur in Gilliam Creek because the only construction project in this basin, a new water tower, has the same footprint as the existing tower and no new impervious surfaces will be added in the basin.

Sediment may initially enter the Green River due to construction of the alternative mitigation site. The mitigation site will be dewatered during construction and pumped water will be discharged to the Green River. During excavation and until replanted vegetation has formed adequate cover, turbid water may also leave the site via the drain system, which eventually flows into the Green River.

Quantifying the impacts of turbidity to fish species is complicated by several factors (Bisson and Bilby 1985, Spence et al 1996). Turbidity will typically decrease downstream from instream

activity. However, the rate at which turbidity levels attenuate is dependent upon the quantity of materials in suspension (e.g. mass or volume), the particle size of suspended sediments, the amount and velocity of ambient water (dilution factor), and the physical/chemical properties of the sediments. The impact of turbidity on fishes is related not only to the turbidity levels (NTUs), but also the particle size of the suspended sediments. When salmonids are exposed to turbidity, they display a number of behavioral and physiological responses (i.e., gill flaring, coughing, avoidance, increase in blood sugar levels) that indicate some level of stress (Berg and Northcote 1982, Servizi and Martens 1992). The magnitude of these responses is generally higher when turbidity is increased and particle size decreased. However, moderate levels of turbidity (35-150 NTU) may benefit juvenile chinook salmon by increasing foraging rates and growth and reducing vulnerability to predators (Gregory and Northcote 1992). A particularly important impact of fine sediments is to cause embeddedness of spawning and incubation gravel with subsequent reductions in the survival of eggs and embryos.

Several factors contribute to minimize the potential impacts of sediment discharges to chinook in the Green River. Proposed water quality controls will limit the amount of sediment that will be discharged. Distance from the project site to discharge in the Green River will allow for settling of sediments prior to discharge. High turbidity levels in the Green River will cause sediment load in the discharge from the mitigation site to be imperceptible. The timing window will reduce the likelihood of chinook juveniles being present in the river during the construction period. If juvenile chinook are present in the river and turbidity levels are high, the fish are expected to move temporarily to refuges where high turbidity can be avoided, thus preventing injury or death. Because the turbidity caused by this action will be short lived, returning to baseline levels soon after construction is over, long-term impacts (i.e., adverse modification of critical habitat) will not occur. Overall, this project will not increase the existing baseline turbidity level of the Green River.

Operation of the airport after implementation of the STIA projects could impact water quality in Miller and Des Moines creeks and waters of the Puget Sound near the IWS outfall. Water quality impacts to each creek could result from the discharge of pollutants typically present in urban stormwater, as well as the anti-icing and de-icing chemicals used in airport operations. Additional water quality impacts could occur in the water column at the IWS discharge.

Effects of chemicals in stormwater generated by the STIA operations were predicted using measured chemical concentrations in existing discharges and then mathematically modeling exposure concentrations for critical habitats where chinook salmon may be present. The Port has monitored stormwater quality from its outfalls since 1995. Total petroleum hydrocarbon [TPH], fecal coliforms, BOD, TSS, turbidity, total recoverable copper (Cu), lead (Pb), and zinc (Zn), ethylene glycol and propylene glycol are the chemicals that DOE and the Port have considered to be the significant chemicals most likely to be discharged to surface waters by airport activities. Ethylene glycol and propylene glycol, potassium acetate (KA), and calcium magnesium acetate (CMA) are de-icing chemicals used at STIA.

Past data show the efficacy of BMPs implemented by the Port. For example, airport runoff is, for most parameters measured, cleaner than runoff from other urban areas although it may not meet water quality standards for protection of aquatic life. Cu and Zn concentrations have dropped significantly at outfall SDS-1 since new BMPs re-routed runoff from the SDS to the IWS in June 1997. Cu and Zn concentrations at SDN-3 and SDN-4 are high relative to water quality standards but may be reduced with new BMPs imposed with new STIA projects. Although these outfalls discharge into an area where listed chinook salmon do not occur, and where critical habitat does not exist, concentrations of Cu and Zn that exceed the water quality standards may adversely impact resident fish and other aquatic species.

Water in Des Moines Creek and Miller Creek, and discharges from the IWS may exceed chronic toxicity concentrations for Cu and acute toxicity values for Zn. The plume from the IWS outfall diffuser is located 1,800 feet off shore in Puget Sound at a depth of 156 ft to 178 ft. Discharge rates at the IWS will increase as a result of the proposed action and could raise baseline chemical concentrations above ambient in the vicinity of the outfall. Migrating adult chinook may occur within this area, however, they are unlikely to be exposed for long periods of time. Therefore, exposure in the vicinity of the IWS outfall will not significantly affect Puget Sound chinook.

Juvenile chinook salmon may also be exposed to elevated concentrations of Cu and Zn if they migrate through the estuaries at the mouths of Des Moines and Miller creek. Exposure to current concentrations of contaminants does not appear to be detrimental because toxicity testing with 100% stormwater discharge generally does not exhibit toxicity to the cladoceran (*Daphnia pulex*), a species that is very sensitive to trace metal contaminants. In addition, the healthy salmonid populations that occur in these streams would not be expected if the streams were exposed to significant contamination from Cu and Zn for extended periods. If there are no significant effects near the stormwater discharges, it is unlikely that more significant impacts would be observed in the estuary as a result of these discharges. Concentrations of Zn and Cu discharged into Miller and Des Moines creeks will decline as a result of STIA projects because pollution generating impervious surfaces (PGIS) that currently exist at the airport will be retrofit with BMP's or diverted to the IWS to reduce discharges to the streams. Conversion of current residential areas to runways and open space will also reduce heavy metal discharges from these areas.

Application of ground de-icers (potassium acetate. calcium magnesium acetate and sand on road surfaces) is not expected to affect chinook salmon because these chemicals degrade into naturally occurring elements or will be retained by treatment BMPs. Runoff of aircraft anti-icing and de-icing fluids could potentially affect chinook salmon and other aquatic species. The maximum modeled concentrations at the IWS outfall and at the mouths of Miller and Des Moines creeks are a factor of seven lower than the relevant toxicity value. Therefore, anti-icing and de-icing fluids are not expected to negatively impact chinook salmon. In addition, the highest concentrations of de-icing fluids will occur in the winter when chinook salmon are not expected to occur at these sites.

Numerous other actions are proposed by the Port to improve overall water quality in Miller and Des Moines creeks. These include source controls, diversion of contaminated materials to the IWS for treatment, extensive implementation of treatment BMPs, conversion of farmlands and golf course to shrub wetlands, and conversion of residential areas to open lands and streams with more extensive buffers.

There is a potential for contaminated leachate to enter Miller Creek from the embankment. Although the Port is accepting fill material that generally meets the Model Toxics Control Act (MTCA) Method A contaminant levels that have been established by DOE, some fill material has been accepted that contains DDT, PCBs, PAHs, and mercury. Material that is obtained from state-certified commercial borrow pits is generally accepted for airport airfield projects without source-specific environmental certification. The Washington Department of Transportation certifies materials that are geotechnically suitable but does not include testing for contaminants. Some material that does not satisfy MTCA Method A levels of contaminant may be appropriate for placement in a specific project location. The Port will consult with the DOE for approval prior to accepting fill that does not meet the Method A standard. The Port, in consultation with USFWS, has redesigned the embankment to minimize the potential release of contaminants. The Port will also develop a monitoring program to confirm that the concentration of contaminants in seepage water from the embankment are not impacting aquatic life in the streams.

Hydrology: The most important effects of urban and suburban development on salmonid populations results from alterations in stream hydrology. Removal of forests and creation of impervious surfaces prevents infiltration of water into the ground and creates rapid discharge of stormwater over the earth's surface or from stormwater pipes. Significant changes to hydrology include increased peak flows during the winter and lower summer base flows.

The proposed project will create increased impervious surfaces in the Miller Creek (approximately 106 acres), Walker Creek (approximately 6 acres), and Des Moines Creek (approximately 128 acres) watersheds. No increase in impervious surfaces is expected in the Gilliam Creek watershed. To minimize impacts to stream hydrology within these watersheds, stormwater management actions are proposed to reduce peak flow events. Detention facilities will be sized to meet King County Level 2 flow control standards. These standards require that flow duration of post-developed runoff will match the pre-developed flow duration for all flow magnitudes between 50 percent of the 2-year flow event and the 50-year flow event.

To protect Miller and Des Moines creeks from increased stormwater runoff, the Port will design STIA projects and retrofit existing airport areas to match peak flows and control the duration of erosive flow rates in the streams to pre-developed conditions. The Port will construct stormwater conveyance, detention, and treatment facilities to manage runoff from both newly developed project areas and existing airport areas. Projects designed to minimize hydrologic impacts include construction of stormwater detention ponds and wet vaults. Some BMP's employed to minimize the impacts of water quality (eg. Bioswales) and infiltration adjacent to the runways

and in reconstructed areas of Miller Creek should reduce direct runoff compared to current conditions.

The Stormwater Management Plan prepared by the Port suggests that flow controls for the STIA projects will reduce peak flows in Miller, Walker, and Des Moines creeks downstream of the STIA discharges. The target flow regime was selected to achieve the flows required by regulations and to reduce peak flows in the stream channels. Reduced peak flows will reduce bank erosion and potentially reduce sedimentation and turbidity in the creeks and their estuaries. These actions are also predicted to enhance baseline hydrologic conditions in the streams and associated estuaries.

The Comprehensive Stormwater Management Plan that was submitted by the Port is currently being reviewed by King County and the Washington State Department of Ecology. It is uncertain if the detention facilities that are currently proposed are adequate to meet Level 2 flow control standards. If the project as implemented satisfies the Level 2 flow control standard, peak flows in Miller, Walker and Des Moines creeks will be improved and alterations in hydrology will not adversely impact chinook salmon or their critical habitat in the estuaries. However, if peak flows are not reduced, and the peak/base flow indicator may be further degraded. This indicator is currently "not properly functioning" in all three watersheds. Further degradation may adversely impact critical habitat in the Miller and Des Moines creek estuaries and require reinitiation of consultation.

The proposed project may result in reduced baseflows within Miller and Des Moines Creeks, although the BA predicts that post-project hydrology will match or improve on the existing baseline for Miller, Walker, and Des Moines creeks. Current baseflows in Miller and Des Moines Creeks are approximately 1.8 cfs and 2.4 cfs, respectively. A reduction of approximately 4 percent (0.07 cfs) in Miller Creek baseflows and 7 percent (0.17 cfs) in Des Moines Creek baseflows was projected by Pacific Groundwater Group (2000). Streamflow analyses conducted by Earth Tech, Inc. (2000) also predicted reduced streamflows for both Des Moines and Miller Creeks during the low flow periods of August and September. Stream flows for Walker Creek were predicted to increase during August and September, 0.008 cfs and 0.010 cfs, respectively, as a result of recharge from the fill recharge and secondary impervious recharge. No net change in 7-day/2-year low flow is anticipated for Walker Creek. For the 7-day duration/2-year frequency stream discharge, a deficit of 0.10 cfs for Miller Creek at the SR 509 crossing and 0.08 cfs for Des Moines Creek were predicted.

Measures to prevent or mitigate effects on low summer baseflows in Miller and Des Moines Creeks include incorporation of infiltration into stormwater detention facilities, managed release of stormwater from reserved storage and secondary recharge from biofiltration strips on the embankment. According to the low stream flow analysis, average August and September flows are predicted to increase and the 7-day low flows are expected to match pre-project conditions for Miller, Walker and Des Moines creeks. If these flows are met, changes in low flow

hydrology will not adversely affect chinook salmon or their critical habitat. Several assumptions in the low flow analysis have been challenged by the ACC, including the inability to construct acceptable storage vaults, reduced infiltration from the IWS lagoons, unknown infiltration capacity and percolation properties of the embankment, potential subsurface flows in the reconstructed sections of Miller Creek, and loss of discharge and inter-basin transfer of water if IWS discharge is piped to the Renton treatment plant. These concerns suggest that low flow may actually be reduced following STIA actions. If lower flows do occur they may negatively impact resident fish and other aquatic species, but impact to chinook salmon will be discountable because chinook do not occur in these streams.

Wetland and stream habitat: The STIA projects will produce temporary and permanent effects to riparian and wetland habitats. Temporary construction impacts to stream and riparian habitat will be minimized by implementing the BMPs for erosional and sedimentation control.

Direct impacts to stream habitat caused by STIA projects include the filling of approximately 980 ft of Miller Creek. The existing stream channel influences the flow pattern in receiving waters, the amount of aquatic habitat available to macro-invertebrates, and detritus transport to the creek. This section of Miller Creek also supports resident fish including cutthroat trout and threespine stickleback but does not contain critical habitat for any listed species. This affected section of Miller Creek is an artificial (i.e., constructed ditch) stream channel adjacent to the Vacca Farm site that has been modified to support agricultural activities. Existing conditions are degraded because the natural creek was moved to its present location and constructed as a straight channel to improve drainage in the area for farming. The existing channel lacks spatial heterogeneity in streambed substrate, channel configuration, instream fish habitat and riparian vegetation. Ditching of this section of the Miller Creek channel has probably reduced macroinvertebrate habitat, detritus transport, and fish habitat compared to more natural channel reaches located downstream. Direct impacts from filling 980 ft of the stream channel would be a loss of surface water conveyance, and existing macroinvertebrate habitat and fish habitat.

The proposed project will fill 0.26 ac of Wetland 44 but no direct impacts are expected to occur to the Walker Creek channel or fish habitat. A culvert over Des Moines Creek on the Tyee Golf Course will be replaced, but this culvert does not occur in stream habitat used by listed species. No other culverts will be added to Miller, Des Moines, or Walker creeks.

Adverse impacts resulting from the filling of Miller Creek will be reduced through conservation measures designed to improve ecological functions in this reach relative to existing conditions. Conservation measures to minimize impacts include: 1) Relocating Miller Creek in a new channel that has a more natural, complex stream morphology and substrate, and 2) Establishing a native forested riparian zone to provide particulate trapping and sediment retention, optimal buffer stream temperatures, adequate shade for the stream, and a source of detritus and coarse woody debris to the downstream reaches. The net effect of relocating a reach of Miller Creek is expected to be an improvement in water quality and macro-invertebrate and fish habitat in the relocated reach and downstream portions of Miller Creek. Although there will be a temporary

loss of function while the reconstructed stream develops natural functions, these alterations will not adversely impact chinook salmon or their critical habitat because there are no chinook salmon in the stream.

The STIA projects will result in direct permanent impacts (filling) to 18.3 ac of wetlands and temporary construction impacts to 2.2 ac of wetlands. Temporary impacts during construction include removal of wetland vegetation (native and non-native), potential sedimentation, and temporary use of wetland areas for construction stormwater management. Direct impacts to wetland functions due to STIA projects include loss of wildlife habitat and other ecological functions. Wetlands in the project area support native shrub and forest vegetation that provide habitat for songbirds, amphibians, and small mammals. Several wetland areas that are in the riparian zone of Miller Creek or Walker Creek are presumed to support fish habitat in the adjacent streams. These wetlands provide shade, detrital inputs, invertebrates, woody debris, and groundwater discharge to the creeks. The riparian wetlands located on groundwater seeps adjacent to Miller and Des Moines creeks provide base flow support functions and may help maintain stream temperatures during summer months. Many of the wetlands have limited stormwater storage capacity due to their small size, lack of direct connections to the streams, or topographic conditions that limit stormwater detention. The existing groundwater recharge function is also limited because most wetlands appear to be underlain by relatively compact soils that limit groundwater infiltration rates. Wetlands within the project area that occur on relatively flat areas and receive runoff from urban areas do function to improve water quality.

Conservation measures are proposed to avoid and minimize direct impacts to the biological and physical functions of on-site wetlands. These combined conservation measures include restoration and functional enhancement of a total of 19.7 ac of in-basin wetlands, as well as enhancement of 28.4 ac of riparian and wetland buffers. In addition, to mitigate for avian habitat that cannot be replaced in-basin due to wildlife hazards to aircraft operations, a total of 40.6 ac of restored or enhanced wetlands, and 15 ac of buffer enhancement will be created at the Auburn mitigation site. It is difficult to determine if these measures will completely mitigate for lost wetland functions, however, as chinook salmon do not occur in Miller Creek, no direct impacts to the species or their critical habitat will occur from stream relocation or wetland fill. Indirect effects to chinook will be insignificant because of the minimization and conservation measures to be implemented by the applicant.

Potential indirect impacts due to filling of wetlands by the MPU project include changes in hydrology to downslope wetlands and streams, reduction in the amount of wildlife habitat available for wetland species, and changes in water quality through removal of wetland area.

Indirect impacts to hydrology include changed hydrology in wetlands downslope of filled wetlands, as well as impacts to base flow in streams adjacent to filled wetlands. Indirect impacts to the hydrology of wetlands adjacent to the fill are not expected to be significant and will not significantly alter their hydrologic function. It is anticipated, however, that Section 404 permit

conditions will require monitoring the hydrology of downslope wetlands to determine that sufficient hydrology is present to maintain the areas as wetland.

Several STIA projects are designed to avoid and minimize unavoidable impacts to wetlands. In-basin projects are proposed to restore wetland and stream functions, including the establishment of 48.06 ac of wetland enhancement and stream buffering that will be protected in perpetuity from future development. Other actions include grading to establish wetland hydrology, removing invasive non-native species, planting native wetland vegetation, and installing LWD. Mitigation actions also include removing certain existing land use conditions (e.g., paved surfaces, artificial landscaping and attendant nutrient and pesticide inputs, septic systems, and channel riprap) that degrade on-site wetland and aquatic habitat.

The buffer enhancement project will protect about 24 ac of riparian habitat along Miller Creek. Planting along the length of the buffer will vary depending upon the existing buffer condition. In sections of the buffer that are primarily lawn, areas will be planted with native trees and shrubs. Areas that contain some native and some non-native vegetation will be enhanced by either inter-planting native species to produce a continuous tree canopy or underplanting native shrubs beneath an existing canopy that lacks understory vegetation. Some areas that contain invasive species (such as Himalayan blackberry and Japanese knotweed) will be cleared, graded, and also inter-planted with native woody vegetation. The increased riparian buffer is expected to increase habitat quality for resident salmonids and other aquatic organisms in the Miller Creek basin.

To improve water quality and riparian habitat within the Des Moines Creek basin, approximately 4.5 ac of emergent wetland area, located within the existing and active Tyee Valley Golf Course, would be restored to a native shrub vegetation community. The enhancement would convert the existing turf wetland to a native shrub wetland community. Planting a native shrub community on the golf course would reduce chemical runoff reaching aquatic environments and fish populations in Des Moines Creek, increase nutrient removal and recycling in the riparian zone, and decrease wildlife attractants within 10,000 ft of the airfield.

Efforts to restore and enhance aquatic environments have generally been less successful than envisioned by their planners. Even if long term benefits result, there are often short term negative impacts as the new projects develop into natural systems. It seems likely that short term adverse impacts may occur in Miller Creek although the long term effects will probably be beneficial to most aquatic life in this ecosystem.

Chinook salmon will not be adversely affected by wetland and stream habitat projects because all wetland impacts occur in portions of the Miller and Des Moines creek basins that do not contain critical habitat for these species.

Conclusion

Effects of STIA projects were evaluated in terms of water quality, hydrology and habitat alterations for various locations within the action area. At several of these locations, chinook salmon do not occur. At other locations chinook occur seasonally or rarely. Consequently, the

effects determinations are generally insignificant or discountable (Table 2).

TABLE 2. Summary of STIA Project Effects to Puget Sound Chinook Salmon

LOCATION	Fish Present	Water Quality	Hydrology	Habitat Alterations
Miller Creek	NO	Insignificant	Insignificant	Insignificant
Walker Creek	NO	Insignificant	Insignificant	Insignificant
Des Moines Creek	NO	Insignificant	Insignificant	Insignificant
Gilliam Creek	Rarely	Discountable	Discountable	Discountable
Green River (Mitigation site)	YES	Discountable	Discountable	Beneficial
Miller Creek Estuary	Seasonally	Insignificant	Insignificant	Insignificant
Des Moines Creek Estuary	Seasonally	Insignificant	Insignificant	Insignificant
Midway Sewer Outfall	Adults	Insignificant	Discountable	Discountable

After reviewing the current status of the Puget Sound chinook salmon, the environmental baseline for the action area, and the effects of the proposed STIA actions, the NMFS concludes that these actions may affect but are not likely to adversely affect Puget Sound chinook or their designated habitat.

Incidental Take

Section 9 of the Act and federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity

NMFS does not anticipate the proposed action will incidentally take Puget Sound chinook salmon. Therefore, reasonable and prudent measures are not necessary and appropriate. Furthermore, no terms and conditions are provided as incidental take is not anticipated.

Conservation Recommendations

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The following conservation recommendations are provided for FAA, the COE and the Port:

1. Monitor fish use, including spawning activities of salmonid species, in Miller and Des Moines Creeks to determine success of habitat enhancement and restoration activities.

2. Monitor macro-invertebrates in Miller and Des Moines Creek to evaluate the effectiveness of restoration activities. Samples should be collected near the restoration sites and near the mouths of the creeks to evaluate if basin-wide impacts are detected.

3. Evaluate the effectiveness of temporary erosion and sediment control measures.

4. Monitor instream flows in Miller, Walker and Des Moines Creeks to confirm that peak flows have been reduced and low flows have been maintained.

5. Where feasible, expand the buffers along Miller Creek to restore natural ecological functions in the riparian zone and at the land-stream ecotone.

6. Implement additional best management practices to reduce concentrations of Cu and Zn below the chronic toxicity levels for aquatic organisms.

7. Monitor storm water drains for Cu and Zn to confirm that the expected reductions actually occur.

8. Use mechanical methods to remove exotic vegetation and reduce pesticide use in riparian zones, golf course and any other areas that drain to the strormwater system or directly to surface streams.

Reinitiation Notice

This concludes informal consultation on the Master Plan Update Improvements Seattle-Tacoma International Airport Project. As provided in 50 C.F.R.§ 402.16 consultation must be reinitiated where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) any take occurs; (2) new information reveals effects of the action that may affect listed species in a way not previously considered; or (3) a new species is listed or critical habitat is designated that may be affected by the action). To reinitiate consultation, the FAA must contact the Habitat Conservation Division (Washington Branch Office) of NMFS.

The WDOE and the Army Corps of Engineers have not completed their review of the project at this time, therefore issuance of the NPDES permit, water quality certification (401), and Clean Water Act Section 404 permit have not occurred. The BA includes a number of best management practices that are proposed to meet state water quality standards. The BA acknowledges that additional measures may be necessary. The NMFS' review of the effects of the proposed action assumes that the criteria in the Washington State surface water quality standards will be met by the project at all times. Any future actions that may be taken to meet State surface water quality standards or Section 404 permit requirements need to be evaluated to determine if reinitiation of this consultation is necessary. The NMFS will consult on future federal actions that are not included in this consultation.

ESSENTIAL FISH HABITAT

Federal agencies are obligated, under Section 305 of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 USC 1855(b)) and its implementing regulations (50CFR600), to consult with NMFS regarding actions that are authorized, funded, or undertaken by that agency, that may adversely affect Essential Fish Habitat (EFH). The MSA (§3) defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Furthermore, NMFS is required to provide the Federal agency with conservation recommendations that minimize the adverse effects of the project and conserve EFH. This consultation is based, in part, on information provided by the Federal agency and descriptions of EFH for Pacific coast groundfish, coastal pelagic species, and Pacific salmon contained in the Fishery Management Plans produced by the Pacific Fisheries Management Council.
The proposed action and action area are described in the BA. The action area includes habitats which have been designated as EFH for various life stages of 17 species of groundfish, and 4 coastal pelagic species (Table 2). Information submitted by FAA in the BA is sufficient for NMFS to conclude that the effects of the proposed actions are transient, local, and of low intensity and are not likely to adversely affect EFH in the long-term. NMFS also believes that the conservation measures proposed as an integral part of the actions would avert, minimize, or otherwise offset potential adverse impacts to designated EFH.

EFH Conservation Recommendations: The conservation measures that the FAA included as part of the STIA projects are along with those that NMFS recommends in the ESA Concurrence letter, adequate to minimize the adverse impacts from this project to designated EFH for the species in Table 3. It is NMFS' understanding that the FAA intends to implement the proposed activity with these built-in conservation measures that minimize potential adverse effect to the maximum extent practicable. Consequently, NMFS has no additional conservation recommendations to make at this time.

Please note that the MSA (§305(b)(4)(B)) requires the Federal agency to provide a written response to NMFS' EFH conservation recommendations within 30 days of its receipt of this letter. However, since NMFS did not provide conservation recommendations for this action, a written response to this consultation is not necessary.

This concludes EFH consultation in accordance with the MSA and 50CFR600. The FAA must reinitiate EFH consultation with NMFS if the proposed action is substantially revised in a manner that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH conservation recommendations (50 CFR 600.920(k)).

Table 3. Species of fishes with designated EFH in the action area.

Groundfish Species	Sablefish *Anoplopoma fimbria*	**Coastal Pelagic Species**
Spiny Dogfish *Squalus acanthias*	Bocaccio *S. paucispinis*	anchovy *Engraulis mordax*
California Skate *R. inornata*	Brown Rockfish *S. auriculatus*	Pacific sardine *Sardinops sagax*
Ratfish *Hydrolagus colliei*	Copper Rockfish *S. caurinus*	Pacific mackerel *Scomber japonicus*
Lingcod *Ophiodon elongatus*	Quillback Rockfish *S. maliger*	market squid *Loligo opalescens*
Cabezon *Scorpaenichthys marmoratus*	English Sole *Parophrys vetulus*	
Kelp Greenling *Hexagrammos decagrammus*	Pacific Sanddab *Citharichthys sordidus*	
Pacific Cod *Gadus macrocephalus*	Rex Sole *Glyptocephalus zachirus*	
Pacific Whiting (Hake) *Merluccius productus*	Starry Flounder *Platichthys stellatus*	

If you have any questions regarding NMFS concurrence on ESA or conservation measures for EFH, please contact Tom Sibley at the Washington State Habitat Office (206) 526-4446.

Sincerely,

Donna Darm
Acting Regional Administrator

cc: Muffy Walker, ACOE
Nancy Brennen-DubbsFWS
A. Kenny, WDOE
E. Leavitt, Port of Seattle

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Table 1. Proposed Master Plan Update improvement projects at Sea-Tac Airport.

Project	Description
Runway and Taxiway Projects	
Property Acquisition, Street and Utility Vacation	Includes purchasing property and demolishing existing structures between existing Sea-Tac boundary west to Des Moines Memorial Drive and State Route (SR) 509. Required for third runway embankment fill and construction impact mitigation. Acquisition and demolition is also required for the south runway protection zone (RPZ).
Embankment Fill	Embankment for third runway, constructed using imported fill. Approximately 16.5 million cubic yards (cy) will be placed over a 5- to 7-year period. Existing roads and streets under the embankment footprint will be removed.
Interconnecting Taxiways	New connecting taxiways between existing runway and third runway. Project is located on existing airfield, requiring only minimal grading.
Runway 16X/34X	Paving of third runway after completion of embankment fill.
Extension of Runway 34R by 600 feet (ft)	Extend runway by 600 ft for improved warm weather and large aircraft operations. Project is located at the southern end of the east runway.
Additional Taxiway Exits on 16L/34R	Construction of new ramps to the existing terminal apron.
Dual Taxiway 34R	Improvements to taxiways serving the South Aviation Support Area (SASA) and south apron.
Runway Safety Areas (RSAs)	
Runway 34R Safety Fill	Extend runway safety fill to meet FAA standards.
RSAs 16R/16L	Extend safety fills by 1,000 ft to meet FAA standards.
Relocation of Displaced Threshold on Runway 16L	Airfield taxiway improvements. The runway threshold (i.e., the emergency landing pad at end of runway pavement) to be relocated onto new RSA.
Miller Creek Sewer Relocation	Relocate sewer for third runway embankment and runway safety fills. New sewer to run along alignment of new 154th/156th Street.

Project	Description
Borrow Sites	
Borrow Sites	Sources of fill for third runway embankment, located on Sea-Tac property south of the airport. Approximately 6.7 million cy[1] of material to be excavated from three sites and transported across airport property to the embankment.

FAA Navigation Aids (NAVAIDS)	
New Airport Traffic Control Tower	New air traffic control tower to be located in existing developed area near terminal.
Relocate Airport Surveillance Radar, Airport Surface Detection Equipment, NAVAIDS	Existing radar and navigation equipment will be relocated to allow construction of third runway.

Airfield Building Improvements	
New Snow Equipment Storage	New building to house snow removal equipment.
Weyerhaeuser Hangar Relocation	Relocate existing hangar on west side of airfield to allow construction of third runway. New hangar will be located near south end of third runway.

Terminal/Air Cargo Area Improvements	
Relocation of Airborne Cargo	Relocate existing cargo building from air traffic control tower site to north cargo area. Located in existing developed area near terminal.
Central Terminal Expansion	Passenger terminal remodel. Located in existing developed area at terminal.
South Terminal Expansion Project (STEP)	Passenger terminal remodel. Located in existing developed area to the south of the main passenger terminal.
Northwest Hangar Relocation	Relocate Northwest hangar to site now occupied by Delta hangar. Located in existing developed area.
Satellite Transit Shuttle System Rehabilitation	Remodel and upgrade underground transit system linking terminal to satellites.
Redevelopment of North Air Cargo	New or expanded air cargo facilities along Air Cargo Road at north end of airport.

Relocation of Airborne Cargo	Relocate existing cargo building from air traffic control tower site to north cargo area. Located in existing developed area near terminal.
Expansion of North Unit Terminal (North Pier)	Addition to new passenger terminal located north of existing terminal. Located in existing developed area (Doug Fox parking lot and airport access freeway).
Project	**Description**
New Airport Rescue and Fire Fighting Facility	Replaces facility displaced by new North Terminal. The new facility will be located to the north of the North Terminal.
Cargo Warehouse at 24th Avenue South	New air cargo facility located north of SR 518 on 24th Avenue South.
Westin Hotel	New hotel located immediately north of main passenger terminal. Located in existing developed area at terminal.
New Water Tower	Construct new water tower and piping in engineering yard south of South 160th Street in subbasins (Gilliam Creek watershed) served by stormwater outfalls 012 and 013.

Roads[2]	
Temporary SR 518 and SR 509 Interchanges	Temporary access ramps to serve construction of third runway embankment and runway safety fill; to be removed after project completion.
154th/156th Street Relocation	Relocate public roadway to allow construction of third runway embankment and runway safety fills. Existing road to be demolished.
154th/156th Street Bridge Replacement	Relocate existing South 156th Street bridge over Miller Creek to accommodate the third runway footprint and South 154th/156th Street relocation. In-water work associated with this project is limited to the removal of the existing bridge and bank restoration.
Improvements to Main Terminal Roads	Transportation circulation, seismic and other improvements to roadway systems serving terminal.
Improved Access and Circulation Roadway Improvements	Improvements to existing roadway system serving passenger terminal, garage, and air cargo facilities.
North Unit Terminal Roadways	Improvements to existing roadway system to serve the new North Terminal and garage.
Improvements to South Access Connector Roadway (South Link)	Improvements to existing roadway system serving passenger terminal, garage, and air cargo facilities. Will connect terminal and garage area to South Access roadway and SR 509 extension south of airport.

Project	Description
Parking	
Main Parking Garage Expansion	Expand parking facility at main passenger terminal on north and south sides (existing developed areas), and add floors to portions of existing garage.
The North Employees Parking Lot (NEPL), Phase 1	New parking facility for employees, located north of SR 518.
North Unit Parking Structure	Construction of new garage serving new North Terminal facility. Facility will be located at existing Doug Fox parking lot.
The South Aviation Support Area	
The SASA and Access Taxiways	New airport support facility for cargo and/or maintenance, located at the south end of the airport south of the Olympic Tank Farm and South 188th Street. Airplane access will be by new parallel taxiway constructed along Runway 34R.
Relocation of Existing Facilities to the SASA	Airport operation support facilities will be relocated to the SASA once SASA site development is completed. Many of these facilities must be relocated from their present locations due to main terminal expansion (i.e., STEP and North Terminal), including Northwest hangar, ground support equipment, ground and corporate aviation facilities, new airport maintenance building, and United maintenance complex.
Stormwater Facilities[3]	
Miller Creek Detention Facility Expansion	Expand the Miller Creek Detention Facility by 16.4 acre-ft to provide flow control retrofitting for existing Sea-Tac discharges to Miller Creek. All construction would take place in uplands, and would create free-draining detention volume.
SASA Detention Pond	Create regional stormwater detention pond for the SASA project and other sites. Pond is 33.4 acre-ft and discharges to Des Moines Creek.
NEPL Vault	A 13.9 acre-ft vault to retrofit the NEPL; discharges to Miller Creek via Lake Reba.
Third Runway Vaults and Ponds	Stormwater detention vaults and ponds at the north, west, and south sides of the airport, discharging to Miller, Walker, and Des Moines Creeks.

Third Runway Vaults and Ponds	Stormwater detention vaults and ponds at the north, west, and south sides of the airport, discharging to Miller, Walker, and Des Moines Creeks.
Sea-Tac Retrofit Facilities	Detention vaults or ponds to provide flow control retrofitting for existing Sea-Tac discharges to Des Moines Creek. Vaults to be constructed in combination with third runway facilities when possible.
Cargo Vault	Detention vault for North Cargo Facility (4.5 acre-ft discharging to Miller Creek via Lake Reba).

Natural Resources	
Miller Creek Relocation	Approximately 980 ft of Miller Creek immediately downstream of the Miller Creek Detention Facility will be relocated to accommodate third runway embankment and runway safety fill.
Miller Creek Buffer and Wetland Enhancement	Establish a 100-ft buffer (average) along approximately 6,500 linear ft of Miller Creek and riparian wetlands associated with Miller Creek within the acquisition area. Enhance approximately 7.4 acres of existing wetlands along the stream.
Miller Creek Floodplain and Wetland Restoration	Excavate approximately 9,600 cy from the Vacca Farm site adjacent to Miller Creek to compensate for approximately 8,500 cy of floodplain fill for third runway embankment and north safety fill. Restore and enhance approximately 17 acres of stream habitat, floodplain wetlands, aquatic habitat in Lora Lake, and buffers at Vacca Farm.

Miller Creek Relocation	Approximately 980 ft of Miller Creek immediately downstream of the Miller Creek Detention Facility will be relocated to accommodate third runway embankment and runway safety fill.
Miller Creek Instream Habitat Enhancement	Project 1: South of the Vacca Farm site, approximately 650 ft of channel. Remove rock riprap, footbridges, and trash. Place large woody debris (LWD) throughout this section of the stream. Plant riparian areas along the stream with native wetland and upland plant species. Project 2: Approximately 150 ft upstream of South 160th Street, approximately 235 ft[1] of channel. Install LWD in the stream channel, grade a small section of the west bank of the stream to create a gravel bench in the floodplain, remove two rock weirs to improve fish passage, and plant the upland area with native trees and shrubs. Project 3: Immediately downstream of South 160th Street, approximately 380 ft[1] of channel. Grade a section of the east bank, remove a rubber-tire bulkhead and install LWD in the stream and on its banks. Plant buffer areas with native trees and shrubs. Project 4: Miller Creek immediately upstream of 8th Avenue South, approximately 820 ft[4] of channel. Grade portions of both banks. Remove footbridges and portions of concrete block walls. Install LWD in the stream and on its banks. Plant buffer areas with native trees and shrubs. In addition to these specific enhancements, debris such as tires, garbage, and fences will be removed throughout the entire stretch of Miller Creek from the Vacca Farm site south to Des Moines Memorial Drive. In areas where access is readily available, LWD will be selectively placed throughout the stream to improve instream habitat conditions.
Drainage Channels Relocation	Relocate a minimum of 1,290 linear ft of drainage channels to accommodate the third runway embankment. Plant buffers along the drainage channels with native grass and shrubs.

Miller Creek Relocation	Approximately 980 ft of Miller Creek immediately downstream of the Miller Creek Detention Facility will be relocated to accommodate third runway embankment and runway safety fill.
Restoration of Temporarily Impacted Wetlands	Approximately 2.05 acres of wetland located west of the third runway embankment, north of relocated South 154th Street, and west of the Miller Creek relocation project, will be temporarily filled or disturbed during embankment construction. When construction activities are completed, remove fill material, restore pre-disturbance topography, and plant wetlands with native shrub vegetation.
Tyee Valley Golf Course Wetlands Enhancement and Des Moines Creek Buffer Enhancement	Restore approximately 4.5 acres of emergent wetland area and approximately 1.6 acres of buffer located within Tyee Valley Golf Course to a native shrub vegetation community. The enhancement actions would be integrated into plans to construct a Regional Detention Facility on the golf course[2] (King County Capital Improvement Project Design Team 1999). The enhancement would convert the existing turf wetland to native shrub wetland community. Enhance approximately 3.4 acres (average 100 ft wide) of buffer and 1.0 acre of existing wetland along Des Moines Creek.
Wetland Habitat (including Avian Habitat) near the Green River in Auburn	Restore wetland functions to a 67-acre parcel near the Green River in the City of Auburn. Create and/or restore approximately 17.2 acres of forest, 6.0 acres of shrub, 6.2 acres of emergent, and 0.60 acre of open-water wetland. Enhance protective buffers totaling about 15.90 acres.

[1] Size modified from that originally stated in BA.

[2] Temporary roads used to haul fill material from three on-site borrow areas to construction sites are included in the analysis of the borrow areas and are not listed here.

[3] Des Moines Creek Basin Plan Committee may construct a Regional Detention Facility on Tyee Golf Course to provide regional flow control. This project would eliminate the need for Sea-Tac retrofit facilities described above. As this is a cumulative action subject to future federal action, it is not a Master Plan Update improvement.

[4] Project length includes approximately 12 ft of instream work as part of driveway demolition, and 400 ft of riparian enhancement.

Ann Kenny Declaration

Exhibit 10

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Western Washington Office
510 Desmond Drive SE, Suite 102
Lacey, Washington 98503
Phone: (360) 753-9440 Fax: (360) 753-9008

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Lowell H. Johnson
Federal Aviation Administration
1601 Lind Avenue SW
Renton, Washington 98055-4056

FWS Reference #: 1-3-00-F-1420, Master Plan Update Improvements, Seattle-Tacoma International Airport

X Reference #: 1-3-96-I-29, 1-3-99-SP-0744

Dear Mr. Johnson:

This document transmits the U. S. Fish and Wildlife Service's (FWS) biological opinion (BO) regarding the effects of the proposed Master Plan Update Improvements (MPUI) for the Seattle-Tacoma International Airport (Sea-Tac) in King County, Washington on the threatened bull trout (*Salvelinus confluentus*), bald eagle (*Haliaeetus leucocephalus*), and marbled murrelet (*Brachyramphus marmoratus*) in accordance with Section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). This project is proposed by the Port of Seattle, Sea-Tac (Port). Your June 15, 2000, request for formal consultation was received by our office on approximately June 16, 2000. We received a letter by fax from you on August 21, 2000, requesting that we concur with a "may affect, not likely to adversely affect" call for the marbled murrelet rather than a "no effect."

This biological opinion is based on the following information: biological assessment (BA) dated June 2000; Supplement for Property Acquisition and Demolition for 34X Runway Protection Zone, dated September 2000; supplement to the BA, dated December 18, 2000; Memorandum, dated December 21, 2000; Sea-Tac Runway Fill Hydrology Studies Report (PGG 2000), Comprehensive Stormwater Management Plan (Parametrix 2000a); Seattle-Tacoma Airport Master Plan Update, Low Streamflow Analysis (Earth Tech, Inc. 2000) letter dated October 30, 2000 transmitting new Joint Aquatic Resources Permit Application; Final Natural Resource Mitigation Plan (Parametrix 2000b) information provided by fax from you on October 16, 2000 and January 10, 2001; e-mail and telephone communications from the Port on April 20, 21, and 23, 2001; e-mails, letters and attachments dated March 26 and 30, and April 20 and 24, 2001 from James Lynch, Stoel Rives, LLP, the law firm representing the Port; information provided by telephone, fax and e-mail by your consultant, Parametrix Inc., on August 18, 21, 22, and 23, 2000, December 28 and 29, 2000, and January 17, 18, and 19, 2001; documents from the Airport

Communities Coalition; and other supplemental information provided in numerous telephone calls, and email or written correspondence up through May 22, 2001. A complete administrative record of this consultation is on file at this office.

CONSULTATION HISTORY

The FAA originally consulted with the Service on this action in 1995. The BA for that consultation addressed effects to bald eagles and peregrine falcons, and concluded that the proposed MPUI "may affect, but will not adversely affect" these species (Tims 1995, FAA 1995). The FWS concurred with these determinations (USFWS 1995).

Due to the recent listing of bull trout, new information regarding the presence of marbled murrelets in the action area, and modifications to the project proposal not previously analyzed, the FAA has requested reinitiation of this consultation. Since that time, the peregrine falcon has been delisted (August 25, 1999, 64 FR 46542), and therefore, is not addressed in this reinitiation of consultation.

The FAA determined that the current proposed action is "not likely to adversely affect" the bull trout, the bald eagle and the marbled murrelet. Although ESA Section 7 compliance for the proposed project could be completed through informal procedures, the FAA requested that the FWS use the formal consultation process. Therefore, this BO will address the effects to bull trout, bald eagle, and marbled murrelet.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Project Location

The proposed MPUI is located at Sea-Tac within the cities of SeaTac and Des Moines, King County, Washington (Sections 4 and 5, Township 22 North, Range 4 East, and Sections 20, 21, 28, 29, 32, and 33, Township 23 North, Range 4 East, Willamette Meridian). Associated with these improvements is the off-site wetland mitigation located in the City of Auburn, King County, Washington (Section 31, Township 22 North, Range 5 East, Willamette Meridian).

Project Description

The MPUI would develop portions of property located on and near the existing Sea-Tac airport, and provide wetland mitigation near the Green River in the City of Auburn. The proposed actions will impact creek, riparian and wetland habitats within the action area. The FAA's proposed actions are:1) to approve future collection and use authorization for passenger facility charges related to implementation of Sea-Tac Master Plan update MPUI; 2) issue future grants and grants issued after May 24, 1999, related to the implementation of MPUI; and 3) direct

construction of the airport traffic control tower and navigational aids. The U. S. Army Corps of Engineers (Corps) proposed action is the issuance of a Clean Water Act 404 permit for the proposed fill within waters of the United States, including wetlands, and associated mitigation. The proposed project will result in the permanent filling on-site of approximately 18.37 acres of wetlands and temporarily filling of 2.05 acres of wetlands. Also, approximately 21.64 acres of historically farmed and emergent wetlands will be temporarily filled and 0.12 acres of wetlands will be permanently filled as part of the off-site mitigation in Auburn. Mitigation for proposed aquatic impacts includes but is not limited to the following: restoration or enhancement of 25.21 acres of wetlands in basin and 49.48 acres of wetlands out-of-basin at the Auburn mitigation site. The following (Table 1) is a listing of all proposed actions included in the MPUI.

Table 1. Proposed Master Plan Update improvement projects at Sea-Tac Airport.

Project	Description
Runway and Taxiway Projects	
Property Acquisition, Street and Utility Vacation	Includes purchasing property and demolishing existing structures between existing Sea-Tac boundary west to Des Moines Memorial Drive and State Route (SR) 509. Required for third runway embankment fill and construction impact mitigation. Acquisition and demolition are also required for the south runway protection zone (RPZ).
Embankment Fill	Embankment for third runway, constructed using imported fill. Approximately 16.5 million cubic yards (cy) will be placed over a 5- to 7-year period. Existing roads and streets under the embankment footprint will be removed.
Interconnecting Taxiways	New connecting taxiways between existing runway and third runway. Project is located on existing airfield, requiring only minimal grading.
Runway 16X/34X	Paving of third runway after completion of embankment fill.
Extension of Runway 34R by 600 feet (ft)	Extend runway by 600 ft for improved warm weather and large aircraft operations. Project is located at the southern end of the east runway.
Additional Taxiway Exits on 16L/34R	Construction of new ramps to the existing terminal apron.
Dual Taxiway 34R	Improvements to taxiways serving the South Aviation Support Area (SASA) and south apron.

Project (cont.)	Description (cont.)
Runway Safety Areas (RSAs)	
Runway 34R Safety Fill	Extend runway safety fill to meet FAA standards.
RSAs 16R/16L	Extend safety fills by 1,000 ft to meet FAA standards.
Relocation of Displaced Threshold on Runway 16L	Airfield taxiway improvements. The runway threshold (i.e., the emergency landing pad at end of runway pavement) to be relocated onto new RSA.
Miller Creek Sewer Relocation	Relocate sewer for third runway embankment and runway safety fills. New sewer to run along alignment of new 154th/156th Street.
Borrow Sites	
Borrow Sites	Sources of fill for third runway embankment, located on Sea-Tac property south of the airport. Approximately 6.7 million cy[1] of material to be excavated from three sites and transported across airport property to the embankment.
FAA Navigation Aids (NAVAIDS)	
New Airport Traffic Control Tower	New air traffic control tower to be located in existing developed area near terminal.
Relocate Airport Surveillance Radar, Airport Surface Detection Equipment, NAVAIDS	Existing radar and navigation equipment will be relocated to allow construction of third runway.
Airfield Building Improvements	
New Snow Equipment Storage	New building to house snow removal equipment.
Weyerhaeuser Hangar Relocation	Relocate existing hangar on west side of airfield to allow construction of third runway. New hangar will be located near south end of third runway.
Terminal/Air Cargo Area Improvements	
Relocation of Airborne Cargo	Relocate existing cargo building from air traffic control tower site to north cargo area. Located in existing developed area near terminal.
Central Terminal Expansion	Passenger terminal remodel. Located in existing developed area at terminal.
South Terminal Expansion Project (STEP)	Passenger terminal remodel. Located in existing developed area to the south of the main passenger terminal.
Northwest Hangar Relocation	Relocate Northwest hangar to site now occupied by Delta hangar. Located in existing developed area.

Project (cont.)	Description (cont.)
Satellite Transit Shuttle System Rehabilitation	Remodel and upgrade underground transit system linking terminal to satellites.
Redevelopment of North Air Cargo	New or expanded air cargo facilities along Air Cargo Road at north end of airport.
Expansion of North Unit Terminal (North Pier)	Addition to new passenger terminal located north of existing terminal. Located in existing developed area (Doug Fox parking lot and airport access freeway).
New Airport Rescue and Fire Fighting Facility	Replaces facility displaced by new North Terminal. The new facility will be located to the north of the North Terminal.
Cargo Warehouse at 24th Avenue South	New air cargo facility located north of SR 518 on 24th Avenue South.
Westin Hotel	New hotel located immediately north of main passenger terminal. Located in existing developed area at terminal.
New Water Tower	Construct new water tower and piping in engineering yard south of South 160th Street in subbasins (Gilliam Creek watershed) served by stormwater outfalls 012 and 013.
Roads[2]	
Temporary SR 518 and SR 509 Interchanges	Temporary access ramps to serve construction of third runway embankment and runway safety fill; to be removed after project completion.
154th/156th Street Relocation	Relocate public roadway to allow construction of third runway embankment and runway safety fills. Existing road to be demolished.
154th/156th Street Bridge Replacement	Relocate existing South 156th Street bridge over Miller Creek to accommodate the third runway footprint and South 154th/156th Street relocation. In-water work associated with this project is limited to the removal of the existing bridge and bank restoration.
Improvements to Main Terminal Roads	Transportation circulation, seismic and other improvements to roadway systems serving terminal.
Improved Access and Circulation Roadway Improvements	Improvements to existing roadway system serving passenger terminal, garage, and air cargo facilities.
North Unit Terminal Roadways	Improvements to existing roadway system to serve the new North Terminal and garage.
Improvements to South Access Connector Roadway (South Link)	Improvements to existing roadway system serving passenger terminal, garage, and air cargo facilities. Will connect terminal and garage area to South Access roadway and SR 509 extension south of the airport.

Project (cont.)	Description (cont.)
Parking	
Main Parking Garage Expansion	Expand parking facility at main passenger terminal on north and south sides (existing developed areas), and add floors to portions of the existing garage.
The North Employees Parking Lot (NEPL), Phase 1	New parking facility for employees, located north of SR 518.
North Unit Parking Structure	Construction of new garage serving new North Terminal facility. Facility will be located at existing Doug Fox parking lot.
The South Aviation Support Area	
The SASA and Access Taxiways	New airport support facility for cargo and/or maintenance, located at the south end of the airport south of the Olympic Tank Farm and South 188th Street. Airplane access will be by new parallel taxiway constructed along Runway 34R.
Relocation of Existing Facilities to the SASA	Airport operation support facilities will be relocated to the SASA once SASA site development is completed. Many of these facilities must be relocated from their present locations due to main terminal expansion (i.e., STEP and North Terminal), including Northwest hangar, ground support equipment, ground and corporate aviation facilities, new airport maintenance building, and United maintenance complex.
Stormwater Facilities[3]	
Miller Creek Detention Facility Expansion	Expand the Miller Creek Detention Facility by 16.4 acre-ft to provide flow control retrofitting for existing Sea-Tac discharges to Miller Creek. All construction would take place in uplands, and would create free-draining detention volume.
SASA Detention Pond	Create regional stormwater detention pond for the SASA project and other sites. The pond is 33.4 acre-ft and discharges to Des Moines Creek.
NEPL Vault	A 13.9 acre-ft vault to retrofit the NEPL; discharges to Miller Creek via Lake Reba.
Third Runway Vaults and Ponds	Stormwater detention vaults and ponds at the north, west, and south sides of the airport, discharging to Miller, Walker, and Des Moines Creeks.
Sea-Tac Retrofit Facilities	Detention vaults or ponds to provide flow control retrofitting for existing Sea-Tac discharges to Des Moines Creek. Vaults to be constructed in combination with third runway facilities when possible.

Project (cont.)	Description (cont.)
Cargo Vault	Detention vault for North Cargo Facility (4.5 acre-ft discharging to Miller Creek via Lake Reba).
Natural Resources	
Miller Creek Relocation	Approximately 980 ft of Miller Creek immediately downstream of the Miller Creek Detention Facility will be relocated to accommodate third runway embankment and runway safety fill.
Miller Creek Buffer and Wetland Enhancement	Establish a 100-ft buffer (average) along approximately 6,500 linear ft of Miller Creek and riparian wetlands associated with Miller Creek within the acquisition area. Enhance approximately 7.4 acres of existing wetlands along the stream.
Miller Creek Floodplain and Wetland Restoration	Excavate approximately 9,600 cy from the Vacca Farm site adjacent to Miller Creek to compensate for approximately 8,500 cy of floodplain fill for third runway embankment and north safety fill. Restore and enhance approximately 17 acres of stream habitat, floodplain wetlands, aquatic habitat in Lora Lake, and buffers at Vacca Farm.
Miller Creek Instream Habitat Enhancement	Project 1: South of the Vacca Farm site, approximately 650 ft of channel. Remove rock riprap, footbridges, and trash. Place large woody debris (LWD) throughout this section of the stream. Plant riparian areas along the stream with native wetland and upland plant species. Project 2: Approximately 150 ft upstream of South 160th Street, approximately 235 ft[1] of channel. Install LWD in the stream channel, grade a small section of the west bank of the stream to create a gravel bench in the floodplain, remove two rock weirs to improve fish passage, and plant the upland area with native trees and shrubs. Project 3: Immediately downstream of South 160th Street, approximately 380 ft[1] of channel. Grade a section of the east bank, remove a rubber-tire bulkhead and install LWD in the stream and on its banks. Plant buffer areas with native trees and shrubs. Project 4: Miller Creek immediately upstream of 8th Avenue South, approximately 820 ft[4] of channel. Grade portions of both banks. Remove footbridges and portions of concrete block walls. Install LWD in the stream and on its banks. Plant buffer areas with native trees and shrubs.

Project (cont.)	Description (cont.)
Miller Creek Instream Habitat Enhancement (cont.)	In addition to these specific enhancements, debris such as tires, garbage, and fences will be removed throughout the entire stretch of Miller Creek from the Vacca Farm site south to Des Moines Memorial Drive. In areas where access is readily available, LWD will be selectively placed throughout the stream to improve instream habitat conditions.
Drainage Channels Relocation	Relocate a minimum of 1,290 linear ft of drainage channels to accommodate the third runway embankment. Plant buffers along the drainage channels with native grass and shrubs.
Restoration of Temporarily Impacted Wetlands	Approximately 2.05 acres of wetland located west of the third runway embankment, north of relocated South 154th Street, and west of the Miller Creek relocation project, will be temporarily filled or disturbed during embankment construction. When construction activities are completed, remove fill material, restore pre-disturbance topography, and plant wetlands with native shrub vegetation.
Tyee Valley Golf Course Wetlands Enhancement and Des Moines Creek Buffer Enhancement	Restore approximately 4.5 acres of emergent wetland area and approximately 1.6 acres of buffer located within Tyee Valley Golf Course to a native shrub vegetation community. The enhancement actions would be integrated into plans to construct a Regional Detention Facility on the golf course[2] (King County Capital Improvement Project Design Team 1999). The enhancement would convert the existing turf wetland to native shrub wetland community. Enhance approximately 3.4 acres (average 100 ft wide) of buffer and 1.0 acre of existing wetland along Des Moines Creek.
Wetland Habitat (including Avian Habitat) near the Green River in Auburn	Restore wetland functions to a 67-acre parcel near the Green River in the City of Auburn. Create and/or restore approximately 17.2 acres of forest, 6.0 acres of shrub, 6.2 acres of emergent, and 0.60 acre of open-water wetland. Enhance approximately 19.5 acres of existing wetlands. Enhance protective buffers totaling about 15.90 acres.

[1] Size modified from that originally stated in BA.

[2] Temporary roads used to haul fill material from three on-site borrow areas to construction sites are included in the analysis of the borrow areas and are not listed here.

[3] Des Moines Creek Basin Plan Committee may construct a Regional Detention

Facility on Tyee Golf Course to provide regional flow control. This project would eliminate the need for Sea-Tac retrofit facilities described above. As this is project would be subject to a future federal action, it is not considered a Master Plan Update improvement and is not addressed in this BO.

[4] Project length includes approximately 12 ft of instream work as part of driveway demolition, and 400 ft of riparian enhancement.

The proposed project would result in a relatively small increase in the total number of operations (airplane take-offs or landings) over existing conditions. Operations without the new facilities are approximately 460,000 annually. With the proposed project, by 2010, the operations would reach 474,000 (M. Vigelanti, Synergy Consultants, pers. com., 2001). This is an increase of approximately 14,000 take-offs or landings or approximately 3 percent.

STATUS OF THE SPECIES (rangewide and/or recovery unit)

Bull Trout

On November 1, 1999, the FWS (USDI 1999a) listed all distinct population segments (DPSs) of the bull trout, a member of the family Salmonidae, within the coterminous United States as threatened. Five DPSs with 187 subpopulations are currently identified. They include 1) Coastal/Puget Sound, 34 subpopulations; 2) Columbia River, 141 subpopulations; 3) Jarbidge River, 1 subpopulation; 4) St. Mary-Belly River, 4 subpopulations and; 5) Klamath River, 7 subpopulations. Critical habitat has not been designated at this time. The bull trout is mainly threatened by habitat degradation, passage restrictions at dams, and competition from non-native lake trout (*Salvelinus namaycush*) and brook trout (*Salvelinus fontinalis*).

The FWS has identified 35 subpopulations of native char (bull trout and/or Dolly Varden) within the Coastal/Puget Sound DPS. These subpopulations are grouped into five analysis areas based on their geographic location: Coastal, Strait of Juan de Fuca, Hood Canal, Puget Sound, and Transboundary. These groupings were made in order to identify trends that may be specific to certain geographic areas.

The FWS has rated the subpopulations as either strong, depressed, or unknown, modified after Rieman et al. (1997). A strong subpopulation is defined as having all life history forms that once occurred, abundance that is stable or increasing, and at least 5,000 total fish or 500 adult fish present. A depressed subpopulation is defined as having either a major life history form eliminated, abundance that is declining or half of the historic abundance, or less than 5,000 total fish or 500 adults present. A subpopulation status is unknown if there is insufficient information to determine whether the status is either strong or depressed. Within the Coastal/Puget Sound DPS, only one subpopulation is considered strong, 10 are depressed, and 25 are unknown.

The proposed project is located within the Puget Sound Analysis Area of the Coastal/Puget Sound DPS. Fifteen subpopulations occur in the Puget Sound Analysis Area, from the Nisqually River north to the Upper Middle Fork Nooksack River. The more northern subpopulations appear to be relatively more abundant compared to the southern populations (USDI 1999). The large amount of federal land in these northern drainages, and the lower levels of urbanization, provide better habitat conditions than in southern Puget Sound. All five of the subpopulations within the Seattle-Olympia urban corridor are considered depressed. These subpopulations are within the Nisqually River, Puyallup River, Green River, and Lake Washington basins. Although there is scant historical information on population abundance, adverse impacts associated with habitat degradation have been documented for other salmonid species in these systems (e.g., chinook salmon (*Oncorhynchus tshwytscha)*). Given the bull trout's more restrictive habitat requirements, it is reasonable to assume that native char have been similarly affected. These adverse impacts include fish passage barriers, water temperature, interactions with nonnative salmonids, geomorphic processes, timber harvest, agricultural practices, and urban development.

Taxonomists have considered the bull trout to be a separate char species from Dolly Varden (*Salvelinus malma*) since 1978 (Cavender 1978). The American Fisheries Society formally accepted the two separate species in 1980. Bull trout populations exhibit four distinct life history forms: resident, fluvial, adfluvial, and anadromous.

Resident bull trout inhabit the same streams or nearby tributaries in which they were hatched. Fluvial bull trout spawn in tributary streams where the young rear from one to four years before migrating to a river where they grow to maturity. Adfluvial bull trout spawn in tributary streams, and, after rearing, migrate to a lake (Fraley and Shepard 1989). Anadromous char are known only to occur in Coastal/Puget Sound DPS subpopulations where major growth and maturation occurs after migration to and from salt water. Potentially anadromous bull trout populations have been identified in the Puyallup, White, Carbon, and Green Rivers. These diverse life histories are important to the stability and viability of bull trout populations (Rieman and McIntyre 1993).

Bull trout have more specific habitat requirements than other salmonids. High quality bull trout habitat is typically characterized by cold temperatures; abundant cover in the form of large wood, undercut banks, boulders, etc.; clean substrate for spawning; interstitial spaces large enough to conceal juvenile bull trout; and stable channels. Because habitat has been degraded in many basins and bull trout populations in these basins may be depressed, the fish may utilize less optimal habitat.

Stream temperatures and substrate types are critical for their sustained long-term residence. Bull trout are found primarily in colder streams, although the fish are also found in larger, warmer river systems that may cool seasonally or provide migratory corridors and important forage bases. Bull trout are associated with the coldest, cleanest and most complex stream reaches within basins. Temperature is critical for spawning and early life history requirements. Very cold water is required for incubation, and juvenile rearing appears to be restricted to areas with cold water.

Spawning areas are often associated with the coldest streams in a river basin. In one study by Goetz (1994), juvenile bull trout were not found in water temperatures above 12 ° Celsius (C). Many studies show that temperatures must drop below 9 ° C or 10 ° C before spawning occurs (McPhail and Murray 1979; Craig 1997). Egg survival decreases as water temperature increases, with higher survival levels documented at 2 ° C to 4 ° C (McPhail and Murray 1979). The best bull trout habitat in several Oregon and Washington streams had temperatures which seldom exceeded 15 ° C (Buckman et al. 1992; Craig 1997; Ratliff and Howell 1992; Ziller 1992). Stream bottom and substrate composition are also highly important for bull trout (Pratt 1992), especially for juvenile rearing and spawning site selection (Rieman and McIntyre 1993; Graham et al. 1981; McPhail and Murray 1979). Fine sediments can influence incubation survival and emergence success (Weaver and White 1985) but might also limit access to substrate interstices that are important cover during rearing and over-wintering (Goetz 1994; Jakober 1995; USDI 1999a).

The anadromous life-form is more complex than the other life-forms discussed. Limited information on the marine and estuarine residency for bull trout is known. While it was thought that the Dolly Varden were primarily anadromous and the bull trout were fluvial and adfluvial in the north Puget Sound area, this is not the case. In the limited sampling done in Port Susan and Skagit Bay, the char have been identified as both bull trout and Dolly Varden (Kraemer in prep.).

In the north Puget Sound area many of the sub-adult char migrating out of headwater or mainstem areas adopt an anadromous life history. The smolts move downstream in the spring of the year (April, May, and early June) to the river mouths and nearby beaches. Sub-adults typically spend the spring and most of the summer in the marine environment where they experience rapid growth (25 millimeters (mm) to 40 mm per month).

Bull trout are opportunistic feeders. Like other apex predators, they require a large prey base and a large home range. Sub-adult and adult migratory bull trout move throughout and between basins in search of prey. Resident and juvenile bull trout prey on terrestrial and aquatic insects, macrozooplankton, amphipods, mysids, crayfish, and small fish (Wyman 1975; Rieman and Lukens 1979 in Rieman and McIntyre 1993; Goetz 1989; Donald and Alger 1993). Adult and sub-adult migratory bull trout are primarily piscivorous, feeding on various trout and salmon species, whitefish, yellow perch, and sculpin. A recent study in the Cedar River Watershed of western Washington found adult bull trout diets to also consist of salamanders (Connor et al. 1997).

Limited stomach content work and feeding observations indicate that while the char are in the marine environment of Skagit Bay and Port Susan they feed heavily on surf smelt (*Hypomesus pretious*). Other food items eaten in the marine waters include Pacific herring (*Clupea harengus pallasi*), Pacific sand lance (*Ammodytes hexapterus*), pink salmon smolts (*Oncorhynchus gorbuscha*), chum salmon smolts (*O. keta*), and a number of invertebrates. In Port Susan and Skagit Bay the smelt and herring spawning beaches match nearly exactly those used by the char while they are in the marine area (Kraemer in prep.). This matches information for foraging in

freshwater, where bull trout were found to aggregate near seasonally concentrated forage fish in Flathead Lake, Montana (MBTSG 1998).

After several months in salt water, maturing adult bull trout begin their spawning migration. The fish leave the tidal areas in late May, June and early July. At this time, the first time spawners are 400 mm to 525 mm in length. In the Sauk basin the spawning migration can be as long as 195 km and the fish may climb to an elevation of 1000 meters (Kraemer in prep.). Bull trout become sexually mature between 4 and 9 years of age (Shepard et al. 1984), and may spawn in consecutive or alternate years (Shepard et al. 1984; Pratt 1992). Migratory bull trout frequently begin their spawning migrations as early as May, moving from the salt water back to the lower river and its tributaries to begin their spawning migration. The anadromous life-form does make considerable migrations. Migratory bull trout have been known to move upstream as far as 259 kilometers (155 miles) to spawning grounds (Fraley and Shepard 1989). Fish may be in salt water areas 40 km from the river mouth in the spring of the year and have been documented moving nearly 200 km upstream of the river mouth during spawning migrations. An adult tagged while staging in the spawning areas of the upper South Fork Sauk was recaptured by a fisherman the following spring in the marine area on the east side of Camano Island, fifteen air miles from the mouth of the Skagit River. A radio tagging study on the South Fork Skykomish (Kraemer pers. com. *in* WDFW 1997) showed that when the fish did migrate in the upper watershed, they commonly moved 2 km to 3 km a day with the maximum distance traveled of 15.2 km. In the lower river, the fish may travel at an even greater rate. During the low flows of summer and fall, most of the movement seemed to occur during the low-light periods just after dawn or before sunset. Once the fish reach staging areas near the spawning ground they may remain in the same general area, even the same pool, for several months.

In the Coastal/Puget Sound region, spawning occurs from August through December. Spawning typically occurs in cold, low-gradient 1st- to 5th-order tributary streams, over loosely compacted gravel and cobble having groundwater inflow (Shepard et al. 1984; Brown 1992; Rieman and McIntyre 1996; Swanberg 1997; MBTSG 1998). Spawning sites usually occur near cover (Brown 1992). They typically spawn in headwaters of tributary streams (Craig 1997). Hatching occurs in winter or early spring, and alevins may stay in the gravel for extended periods, sometimes exceeding 220 days. After spending the winter in the lower 35 kilometers (km) to 40 km of the river, the sub-adult char return to the marine environment. Some fish reenter the salt water as early as late February. Post-spawning mortality, longevity, and repeat-spawning frequency are not well known (Rieman and McIntyre 1996), but lifespans may exceed 10-13 years (McPhail and Murray 1979; Pratt 1992; Rieman and McIntyre 1993; USDI 1999a).

The full range of depths bull trout may use in Puget Sound is not known. There is some limited information on preferred depths available from freshwater lakes. This may be an appropriate surrogate for marine waters. One bull trout has been captured at 60 meters in Lake Washington, Washington (D. Beauchamp, University of Washington, pers. com. 2000). Bull trout were captured infrequently in Flathead Lake, Montana at depths greater than 34 meters (MBTSG

1998). However, there appeared to be tendency for bull trout to be associated with depths less than 34 meters (Leathe and Graham 1982 *in* MBTSG 1998, Huston 1975 *in* MBTSG 1998).

Bull trout are threatened by land management activities, water management activities, over-harvest, and competition or hybridization with non-native fishes (USDI 1999a). Urban and agricultural development has resulted in the loss of riparian habitat and wetlands, with a subsequent increase in impervious surfaces. These changes, especially in the lowland streams, have resulted in increased stream temperatures, alteration of stream flows and water quality, and impacts to forage species. Logging, road building activities and associated cumulative effects impact bull trout through increased sediment production and delivery to streams, loss of large pools and woody debris, increased water temperatures, and degradation of water quality and quantity. Dam, reservoir and irrigation construction and operations have altered portions of bull trout habitat. Dams without fish passage create barriers to migratory bull trout metapopulations. Dams and reservoirs also alter the natural hydrograph, thereby affecting forage, water temperature, and water quality.

Bald Eagle

A detailed account of the taxonomy, ecology, and reproductive characteristics of the bald eagle is presented in the Pacific States Bald Eagle Recovery Plan (USFWS 1986) and the final rule to reclassify the bald eagle from endangered to threatened in all of the lower 48 States (60 FR 36010). Additional information on the listing of the species, and its status in Washington State was included in the biological opinion for the Point Roberts golf course (USFWS 1999a).

The bald eagle is found throughout North America. It breeds primarily in Alaska, Canada, the Pacific Northwest states, the Rocky Mountain states, the Great Lake states, and Chesapeake Bay (USFWS 1986, American Ornithologists' Union 1983). The bald eagle winters over most of the breeding range, but is most concentrated from southern Alaska and southern Canada southward.

The recent proposal to delist the bald eagle in the lower 48 states (USDI 1999b) indicates that numeric delisting goals have been met for the bald eagle in the Pacific Recovery Region since 1995. The proposed project is located within the Pacific Recovery Region.

In Washington, bald eagles are most common along saltwater, lakes, and rivers in the western portion of the state and along the Columbia River east of the Cascade Mountains (Larrison and Sonnenberg 1968). Resident, breeding eagles are found throughout the state near large bodies of water. Most nesting habitat in Washington is located in the San Juan Islands and on the Olympic Peninsula coastline (Grubb 1976).

The primary wintering range of bald eagles in Washington is Puget Sound and its major rivers. Most eagles wintering in Washington occur along the Skagit, Nooksack, and Sauk River Basin (USFWS 1986).

The bald eagle is found along the shores of saltwater, and freshwater lakes and rivers. In Washington, breeding territories are located in predominantly coniferous, uneven-aged stands with old-growth components (Anthony et al. 1982).

Bald eagles typically build large stick nests in mature or old-growth trees, and these nests are generally used over successive years. In Washington, courtship and nest building activities normally begin in March or early April, with eaglets hatching in mid-April or early May. Eaglets usually fledge in mid-July (Anderson et al. 1986).

The size of an eagle nest is dictated by the forest type and tree species found within a geographic area; eagles apparently select nest sites for structure rather than tree species (Anthony et al. 1982, Anthony and Isaacs 1989). The three main factors affecting distribution of nests and territories include: 1) nearness to water and availability of food, 2) suitable trees for nesting, perching, and roosting, and 3) the number of breeding-aged eagles (Stalmaster 1987).

Wintering bald eagles generally concentrate in areas where food is abundant and disturbance is minimal. The birds use perches near feeding areas during the day, which are typically isolated areas in old-growth and mature stands that have trees larger than the surrounding trees; the perches also provide views of foraging areas. Night roost trees are chosen according to their diameter and growth form. The canopy of night roost trees provides protection from inclement weather and disturbances (USFWS 1986).

Important food items during fall and winter include carrion such as "spawned out" salmon taken from gravel bars along wide, braided river stretches (Stalmaster et al. 1985, Stalmaster 1987). Anadromous and warm-water fishes, small mammals, carrion, waterfowl, and seabirds are among the most prevalent food items consumed during the breeding season (Anderson et al. 1986, USFWS 1986).

Marbled Murrelet

The marbled murrelet was federally listed as threatened on September 28, 1992 (57 FR 45328). Critical habitat was designated on May 24, 1996 (61 FR 26256). In North America, marbled murrelets range along the Pacific coast from Alaska south to central California. Wintering birds have occasionally been found in southern California. Puget Sound has one of the more concentrated marbled murrelet populations of California, Washington and Oregon (USFWS 1997). An account of the taxonomy, ecology, and reproductive characteristics of the marbled murrelet is found in: the 1988 Status Review (Marshall 1988); the final rule designating the species as threatened; the Service's biological opinion for Alternative 9 (USFWS 1994) of the FSEIS (USDA and USDI 1994); the *Ecology and Conservation of the Marbled Murrelet* (Ralph et al. 1995a); the final rule designating critical habitat for the species (61 FR 26256); the recovery plan for the species (USFWS 1997); and, the biological opinion on the Simpson Habitat Conservation Plan (USDI 2000). The following summarizes some of this information.

The population size of murrelets in Washington, Oregon, and California has been estimated at 18,550 to 32,000 (Ralph et al. 1995b). The large range in the population estimate is a result of two widely divergent population estimates in Oregon. Based on demographic analyses, Beissinger and Nur (1997) estimate the murrelet population to be declining at a rate of at least 4 percent per year and perhaps as much as 7 percent per year in Washington, Oregon, and California.

Ralph et al. (1995b) summarized some of the reasons for variability in population estimates among researchers, including differences in methodology, assumptions, spatial coverage, and survey and model errors. Nevertheless, both Ralph et al. (1995b) and the Marbled Murrelet Recovery Team (1994) have concluded that the listed population appears to be in a long-term downward trend. The Marbled Murrelet Recovery Team estimates that the population may be declining at rates of between 4 and 12 percent, which means that in 20 years the population could be less than one-half to one-twelfth its current size.

In Washington, Speich and Wahl (1995) concluded that murrelet populations are lower now than they were at the beginning of the century. Total estimates for Washington, which were derived from surveys conducted in the early 1980s, are about 5,500 murrelets (Speich and Wahl 1995). Based on surveys conducted in 1993, Varoujean and Williams (1995) estimated that 3,250 murrelets occur on the outer coast of Washington and the western portion of the Strait of Juan de Fuca.

Nesting habitat is crucial to murrelets. Unlike other alcids, marbled murrelets nest inland in mature and old growth coniferous forests as far as 52 miles from the ocean (Marshall 1989). In Washington, Oregon, and California, murrelet nests have been found in trees. South of the Alaskan tundra, murrelets nesting occurs within mature or old growth coniferous forests within 50 miles of the ocean (Carter and Erickson 1988, Hamer and Cummins 1990, Hamer and Cummins 1991, Nelson 1989, Nelson 1990, Paton and Ralph 1990, Sealy and Carter 1984).

Murrelet nests have been found on platforms or broad surfaces that are formed by large limbs, moss, branches deformed by diseases such as mistletoe, or damaged branches. Suitable nesting platforms are found most commonly on older trees. Most nests are directly under overhanging branches, which may provide protection from harsh weather and predators. The Pacific Seabird Group defines potential nesting habitat as 1) mature (with or without an old growth component) and old growth coniferous forests; and 2) younger coniferous forests that have deformation or structures suitable for nesting (Ralph et al. 1993). Preferred tree species are Douglas-fir, coast redwood, western hemlock, Sitka spruce, or western red cedar. Because murrelets are seabirds, their nesting habitat must be within flight distance of a marine environment (USDA Forest Service et al. 1993).

The loss of nesting habitat (older forests) has generally been identified as the primary cause of the marbled murrelet's population decline and disappearance across portions of its range (Ralph et al. 1995a). Prey resources and nesting habitat are identified as the two main factors which can

affect seabird populations (Cairns 1992 *in* USFWS 1997). As the proposed project may affect the marine environment as opposed to nesting habitat, we will focus on the former aspect of the environment.

Marbled murrelets typically are found foraging within 0.6 miles to 1.2 miles from shore (USFWS 1997). Marbled murrelets feed mostly in near-shore marine waters and in inland saltwater bays and sounds, and occasionally inland freshwater lakes (Marshall 1989). They often gather at the mouths of rivers. Many prey species concentrate in specific nearshore areas where conditions concentrate lower trophic levels which are food for marbled murrelet prey species. In areas were marbled murrelet prey are concentrated, foraging marbled murrelets have also been concentrated (Carter 1984 *in* USFWS 1997, Carter and Sealy 1990 *in* USFWS 1997).

Marbled murrelets are considered opportunistic foragers. They are known to feed on invertebrates as well as fish. Mysids, gammarid amphipods and euphausiids invertebrates have been identified as important forage species during various times of the year and in certain localities. Invertebrate species appear to be more important during the winter and spring, as opposed to the summer breeding period. The prey is known to differ by species and/or its size between that eaten by adults versus chicks (Sealy 1975 *in* USFWS 1997, Carter 1984 *in* USFWS 1997, Carter and Sealy 1990 *in* USFWS 1997, Burkett 1995).

In the Pacific Northwest, the main fish prey for marbled murrelets has been identified as Pacific sand lance (*Ammodytes hexapterus*), Pacific herring (*Clupea harengus*), northern anchovy (*Engraulis mordax*), and smelt (Osmeridae) (USFWS 1997). Marbled murrelets have been seen occasionally foraging on salmonids in inland lakes in British Columbia and Washington (Carter and Sealy 1990 *in* USFWS 1997).

While declines in forage species may affect marbled murrelet populations, little information on any direct effect is available. Declines in species such as the Pacific herring have been documented in parts of Puget Sound (Burkett 1995, WDFW 1995 *in* USFWS 1997). However, the spawning biomass of Pacific herring has remained stable over the last 20 years (WDFW 1995 *in* USFWS 1997).

Marbled murrelets may shift their feeding areas in response to changes in prey in localized areas. Marbled murrelets are known to shift their nearshore foraging areas between years off of the Oregon coast (Strong 1995). Marbled murrelets may change their foraging area by up to 50 miles, based on daily foraging distances from nest sites and feeding areas (Carter and Sealy 1990 *in* USFWS 1997, Jodice and Collopy 1995 *in* USFWS 1997, Kuletz et al. 1995).

Some anthropogenic impacts to marbled murrelets in marine waters include mortality from gill nets, oil spills, and other marine pollution. The actual number of net mortalities in Washington is low. These impacts are addressed in the biological opinions for Puget Sound area non-treaty commercial salmon net fisheries (USFWS 1996) and the treaty commercial salmon net fisheries in the Strait of Juan de Fuca and Puget Sound (USFWS 1999b). Oil pollution is a significant

threat or conservation problem in southern Alaska, southern British Columbia, Washington, and California (King and Sanger 1979 *in* USFWS 1997, Wahl et al. 1981, Sealy and Carter 1984, Carter and Erickson 1988, Carter and Erickson 1992 *in* USFWS 1997, Marshall 1988, Carter and Kuletz 1995 *in* USFWS 1997). Oil spills include large spills, such as the 1991 Tenyo Maru spill off the Olympic Peninsula, Washington, to small spills which may result from tank cleaning and bilge pumping. Other marine pollution which may affect marbled murrelets includes chemical contaminates which enter the water way via direct dumping and effluent from onshore sources. Marbled murrelets in Washington which were analyzed for contaminants appeared to be within the normal ranges for seabirds from clean environments (Grettenberger et al., in prep.).

Habitat Conservation Plans

The range-wide status of the bald eagle, marbled murrelet and bull trout has been affected by a number of recent Habitat Conservation Plans (HCPs) that were prepared in conjunction with incidental take permit applications to the Service pursuant to Section 10(a)(1)(B) of the Act.

Six HCPs have been completed within Washington. The following summarizes the anticipated and/or permitted take of bald eagles, marbled murrelets, and bull trout for the HCPs which include these species:

- West Fork Timber Co. HCP (formerly Murray Pacific HCP): bald eagle, marbled murrelet
- Port Blakely L.P.- Robert .B. Eddy Tree Farm HCP: bald eagle, marbled murrelet
- Washington Department of Natural Resources (WDNR) HCP: bald eagle, bull trout, marbled murrelet
- Seattle Public Utility's Cedar River Watershed HCP: bald eagle, bull trout, marbled murrelet
- Plum Creek Timber Company I-90 HCP: bull trout, marbled murrelet
- Simpson Timber HCP: bald eagle, bull trout, marbled murrelet,

West Fork Timber Co. HCP (formerly Murray Pacific HCP)

The West Fork Timber Co. HCP 100-year amended incidental take permit for the 53,527-acre Mineral Tree Farm, located in Lewis County in western Washington, was approved in June, 1995. Although no marbled murrelet occupancy has been identified by current surveys, the amended permit allows incidental take of murrelets associated with 800 acres out of 1,091 acres of potential murrelet habitat. If murrelets occupy potential habitat in the future, some incidental take may occur as a result of disturbance.

The HCP does not anticipate the incidental take of bald eagles, although bald eagles are a "covered" species under the terms of the permit.

Port Blakely L .P.- Robert B. Eddy Tree Farm HCP

The Port Blakely Tree Farms, L. P. 50-year incidental take permit for the 7,486-acre R. B. Eddy Tree Farm, located in Pacific and Grays Harbor counties in southwest Washington, was approved in July, 1996. No modification nor disturbance of known occupied murrelet sites is authorized under the HCP. However, due to the possibility that habitat surveyed in the first 5 years of the plan could eventually become occupied in the future, incidental take may result from harvest of 210 acres of deferred habitat and 250 acres of habitat that may develop in Riparian Management Zones. In addition, incidental take from disturbance due to harvest may occur during the nesting season. The HCP permits the incidental take of up to 25 wintering eagles due to harvest of wintering habitat.

City of Seattle for the Seattle Public Utility's Cedar River Watershed HCP

The City of Seattle for the Seattle Public Utility's Cedar River Watershed HCP permitted the take of an undetermined number of marbled murrelets associated with one known occupied stand and an unknown number of other occupied stands over a 50-year period as a result of the proposed action. The number of marbled murrelets taken annually could not be determined. Specifically, incidental take of marbled murrelets was authorized within the watershed as a result of 14,400 acres of forest restoration (ecological and restoration thinning, and conifer under-planting), 240 miles of road removal, and 380-520 miles of on-going road maintenance, and as much as 4 miles of streambank stabilization and re-vegetation work and 50 in-stream wood placement projects over the term of the HCP.

The incidental take permit for the HCP allowed an undetermined number of bald eagles to be taken over a 50-year period as a result of this proposed action. The number of bald eagles taken annually could not be determined. However, the number of bald eagles expected to be taken is very small, both because of the low number of bald eagles thought to occur within the watershed at this time (only transients and migrants and no known nesting activity), and due to the level of protection provided by the HCP.

Two harm and harassment estimates of take were determined for bull trout based on the assumption that this species occurs throughout lands managed by the City of Seattle.

The incidental take permit for the HCP allows the take of bull trout associated with 420 acres of restoration thinning (0 to 30-year old trees) conducted in the first fifteen years on the HCP and 150 acres of ecological thinning (30 to 60-year old trees) over the full term of the HCP. It also included take associated with maintenance of 520 miles of currently maintained roads, and with the ground disturbance associated with removing about 240 miles of existing roads during the first 20 years of the HCP. However, by year twenty of the HCP, the total maintained road mileage will drop to approximately 380. Some incidental take in the form of harm associated with improvement of about 4 miles to 10 miles of road per year is also anticipated.

Incidental take of bull trout in the Chester Morse Lake/Masonry Pool system occurs from entrainment through two intakes devices, the Cedar Falls Hydroelectric Project at Masonry Dam

and the Overflow Dike into Masonry Pool. It is expected that no more than seven percent of the estimated bull trout population in that system will be killed per year through any combination of these intake devices. Take is also expected to occur due to inundation of redds and preventing spawners from accessing the tributaries of the reservoir by unusually low water levels in the reservoir. Studies have shown that less than ten percent of the bull trout redds in the Cedar River have been located below the normal high pool elevation of 1,563 feet. Thus, these lower elevation redds would be subject to take every year. Nearly all (~95 percent) Rex River bull trout redds were annually located below 1,563 feet. Therefore, these redds would be subject to some form of take, because they can be reasonably expected to be inundated for some duration before juvenile bull trout emerge. Reservoir management zones of "Infrequent" (2) and "Very Infrequent" (1) are expected to take more bull trout than the "Normal" (3) operating zone. Zone (2) and (1) are expected to occur once every ten and fifty years, respectively, with durations exceeding one week. Short durations of spawner impedance can be expected to occur in the reservoir management zone (Appendix 38) of "Normal" (3) every year, but periods longer than one week will only occur once every four years. Spawner blockage is not expected to occur in the "Normal" (3) zone. The "Infrequent" zone (4) is expected to occur with a frequency of one in ten years where both spawner impedance and blockage is expected to occur with durations of one to three weeks. The "Very Infrequent" zone (5) will impede and block spawners, but is expected to occur only once in fifty years.

Plum Creek Timber Company I-90 HCP

The Plum Creek Timber Company I-90 HCP addressed about 170,600 acres for 50 to 100 years in King and Kittitas Counties, Washington. The permit allows incidental take of murrelets associated with up to 400 acres of unsurveyed low-quality habitat west of the Cascade Crest and 1,400 acres of unsurveyed land east of the Crest. The amended HCP to address the I-90 land exchange in 1999 permitted the additional take of 721 acres of low-quality suitable habitat or marginal habitat west of the Cascade Crest. Also, some portion of 1,741 acres of nonhabitat (Mature Forest Structural Stage) west of the Cascade Crest, could eventually become habitat during the 100-year permit, and subsequently subject to harvest without surveys.

The Plum Creek Timber Company's HCP amended the HCP (USDI 1998a) to include the Columbia River DPS of bull trout. The amendment allowed for the take of bull trout associated with habitat degradation/loss due to 150 acres of selective and thinning/restoration-oriented silvicultural harvest per year, 2 miles of stream restoration per year, and 20.2 miles of road construction, maintenance, and removal per year.

WDNR's HCP

The WDNR incidental take permit for 1.6 million acres of State forest land in the State of Washington was approved on January 30, 1997. The 70-year permit covers all WDNR-managed lands within the range of the spotted owl and authorizes incidental take occurring from commercial forest activities as well as non-timber resource activities. The HCP permits the

incidental take (in the form of harm) of all bald eagles associated with the harvest of 200,000 acres of forested habitat over the life of the HCP. In addition, incidental take (in the form of harassment) of bald eagles due to disturbance may occur on a total of 2,402,820 acres over the life of the HCP. This disturbance is due to both forest (i.e., harvest) and non-forest resource activities. Incidental take was issued for bald eagles under the WDNR HCP. However, inadvertent incidental take of bald eagles will be minimal because the DNR will actively conserve known nest sites.

Approximately 376,000 acres of State Forest land occurs within the Olympic Peninsula. Of this 376,000 acres, 23,836 acres of suitable murrelet habitat are scheduled for harvest under the HCP. In addition to habitat removal, disturbance related take for marbled murrelets due to timber harvest and non-timber resource activities may occur on 6,402 acres per year for the first decade of the HCP on the Olympic Peninsula.

The WDNR's HCP amendment (USDI 1998b) to include bull trout allowed for incidental take of bull trout associated with habitat degradation/loss due to 29 miles of road construction and maintenance per year, and 158 acres of selective and thinning harvest per year. This amendment added only the Coastal/Puget Sound DPS of bull trout to the WDNR's HCP.

Simpson Timber HCP

The Simpson Timber incidental take permit was issued on October 12, 2000. The HCP encompasses the Plan Area of 261,575 acres and approximately 640,000 acres of additional lands (known as the Assessment Area) surrounding the Plan Area. The Assessment Area lands are not currently owned by Simpson, but may be in the future. All lands occur in Mason, Grays Harbor, and Thurston counties. The incidental take permit authorizes take of bald eagles, bull trout, and marbled murrelets associated with commercial timber harvest and land management activities for a period of 50 years. .

The FWS authorized incidental take of marbled murrelets in the form of harm, as a result of harvest of up to a total of 315 acres of suitable marbled murrelet (but currently unoccupied) habitat outside of Riparian Conservation Reserves (RCR). Take, in the form of harassment, due to disturbance of undiscovered nesting marbled murrelets, is anticipated to occur. Specifically, the FWS authorized take of marbled murrelets due to disturbance associated with timber harvest activities within the Plan Area, on potentially covered lands allowed to be added per Provision 10 of the Implementing Agreement (IA), and those immediately adjacent (within one mile) of the Plan Area. The FWS authorized take of marbled murrelets, due to harassment, as a result of activities near suitable habitat within the RCRs that are currently occupied, or which could become occupied over the proposed incidental take permit term (162 acres expected to develop within the RCR by the year 25, and 1231 acres are expected to develop within the RCR by the year 50 of the incidental take permit term). Marbled murrelets could be taken due to harassment as a result of harvest of trees outside of, but adjacent to RCRs. The FWS authorized take for marbled murrelets associated with habitat outside of RCRs that becomes occupied prior to being

harvested, and for marbled murrelets associated with occupied habitat outside of the RCRs as a result of harvest of trees within 300 feet of such habitat. The FWS authorized take, due to harassment, of marbled murrelets associated with habitat that is within 0.25 mile of up to 250 miles of new road construction over the term of the HCP, a small portion of which may be as close as 300 feet to occupied marbled murrelet habitat, and for activities associated with potential remediation of a maximum of 2,001 miles of system roads (during the first 15 years of the proposed permit term,100 percent of all roads needing remediation would have such work completed; thus all potential take associated with road remediation would occur within the first 15 years of the permit term). The FWS authorized take due to harassment of all marbled murrelets associated with activities in habitat adjacent to a maximum of 6,160 acres of experimental thinning sites over the proposed ITP term, where timber harvest may occur. A small portion of the 6,160 acres could be adjacent to occupied marbled murrelet habitat (but would not occur within suitable or occupied habitat). The FWS anticipated take due to harassment for all marbled murrelets within one mile of any blasting activities occurring between September 1 and September 15 of any given year. Take due to harassment of marbled murrelets is not authorized during the time period April 1 through August 30 for blasting, as Simpson has stated that they would not blast during this time period near marbled murrelets. Take may occur on an unknown number of acres due to blasting in an unknown number of sites and locations over the life of the HCP, potentially causing nesting upset, loss of eggs, or nest abandonment if this blasting occurs proximal to nests. The FWS anticipated take in the form of harassment in limited areas of the Plan Area involved in proposed Covered Activities that were subject to protocol surveys and determined to be unoccupied, but become occupied during the ITP term.

The FWS authorized bull trout take as a result of timber harvest and experimental thinning associated with stream habitats on 2,987 acres (187 acres in the first 10 years of the permit term, and up to 5,973 (total of 6,160 acres minus 187 acres) for the remaining 40 years of the permit term. In addition, the FWS authorized take for bull trout associated with habitat adjacent to 250 acres of new road construction, and with habitat adjacent to potential remediation of 2,001 miles of system roads (during the first 15 years of the proposed permit term, 100 percent of all roads needing remediation would have such work completed). By year 15 of the HCP, effects to bull trout habitat resulting from road remediation should be eliminated.

The FWS authorized take, in the form of harassment, due to disturbance of all bald eagles associated with timber harvest adjacent to bald eagle roosting habitat, a maximum of 250 miles of new road construction, a maximum of 2,001 miles of system road remediation within the first fifteen years of the proposed ITP term, and a maximum of 6,160 acres of experimental thinning. Only winter roosting and migrant bald eagles are currently known from the Plan Area; no nesting activity is currently known. The communal roost site supports approximately 30 bald eagles. A small amount of nesting is likely to occur during the proposed ITP term within the Plan Area. Nesting during the proposed permit term is more likely within lands allowed to be added for coverage per Provision 10 of the IA, particularly near Puget Sound (nesting activity in this area is currently undetermined). The number of bald eagles anticipated to be taken is small, but the potential for take to occur is moderate. A small number of bald eagles are expected to occur

within the Plan Area and environs during the proposed permit term as most of the potential habitat is in a relatively young successional stage, and a relatively small amount of high function perching and nesting habitat is expected to develop during the proposed ITP term.
ENVIRONMENTAL BASELINE (in the action area)

Bull Trout and Aquatic Resource Conditions

The proposed project is located within and adjacent to the Green River Sub-Population of bull trout. Very limited information is available on the status of bull trout in this sub-population of the Coastal/Puget Sound DPS.

Green River

Very limited information is available on the status of bull trout in the Green River basin. Extensive surveys specifically for bull trout have not been conducted in the Green River. Bull trout are presumed to occur in very low numbers in this system. It is unknown how bull trout specifically use the Green River and its tributaries, although it is likely used for foraging, and migration for the purpose of this BO. However, there is unlikely to be any suitable spawning habitat in the action area. No spawning locations are known (WDFW 1998). The life history forms of bull trout in this drainage are not known; however, they are likely to be anadromous and/or fluvial. Historical accounts suggests that bull trout were once common (Suckley and Cooper 1860). However, creel counts on the Green River, dating from 1940, indicate bull trout are now extremely rare, with only four char taken by over 35,500 anglers checked between 1940 and 1973 (Cropp *in* WDW 1993). Though few in number, Cropp (*in* WDW 1993) indicated that char are still occasionally caught in the Green River. A native char was caught in May 1994 in the Duwamish River that was positively identified as a bull trout both by Haas measurements and by genetic work (E. Warner, Muckleshoot Indian Tribe, pers. com. 1997). Eight native char were caught in the turning basin of the Duwamish River Estuary near river mile (RM) 1.5 in August and September, 2000 (Taylor Associates 2001). Positive identification as bull trout has been established by genetic analysis for two of the six fish; the remaining fish have not been analyzed to date (W. Mavros, King County, pers. com. 2001a). Watson and Toth (1994 *in* WDFW 1998) state that native char have been harvested in the Green River as far upstream as RM 64. More recently, a bull trout, as determined by genetic work, was caught at the mouth of Newaukum Creek off the mainstem of the Green River, approximately 40 miles upstream from the mouth of the Green/Duwamish River (E. Warner, Muckleshoot Indian Tribe, 2000). Plum Creek Timber Company has conducted presence/absence surveys for bull trout in the upper Green River watershed above Howard Hanson dam, with no presence documented.

Mongillo (1993) listed bull trout in the Green River as a remnant population, with status unknown, and with an immediate need for data. WDFW (1998) lists the Green River population as unknown status. The FWS believes the status of this subpopulation is depressed, based on available information that indicates native char occur in very low numbers in comparison to

historic levels. Total abundance for the subpopulation is believed to be less than 5,000 individuals or 500 adults.

The Green River and its tributaries presently provide only poor to fair habitat for bull trout because of industrial, residential and agricultural developments along the lower and middle reaches of the Green River and its tributaries, the presence of two dams at RM 61 and 64.5, and extensive timber harvest in the upper basin. These activities have resulted in the increase in fine sediments, a severe reduction in the riparian corridor, constriction of the river channel and isolation from its floodplain, a reduction in channel complexity and habitat diversity, instream flow reductions, alteration of the natural flow regime, elevated water temperatures, the interruption of the transport of large woody debris and spawning gravels, and the blockage of access to upstream habitats.

Bull trout spawning habitat is limited by the availability of suitable substrate and water temperatures. The Green River channel below Howard Hanson Dam and extending downstream to near Flaming Geysers Park is largely armored due to the interception of coarse sediments by Howard Hanson Dam (Perkins 1999). A large landslide near Flaming Geysers State Park and several tributaries, including Soos, Newaukum and Burns Creeks, contribute large amounts of fine sediment. Most of the tributary streams are also impacted by sedimentation. The temperature of the water released from Howard Hanson Dam may be too high for successful bull trout spawning and incubation in the Green River downstream from Howard Hanson Dam, but springs entering the channel bed may provide suitable conditions. Some of the spring fed tributaries, both upstream and downstream of Howard Hanson Dam, may also provide suitable spawning and incubation habitat.

Bull trout rearing habitat is likely limited by high water temperatures and the relative lack of channel complexity and habitat diversity. The Green River has been listed as water quality impaired by Washington Department of Ecology (WDOE) (WDOE 2000). It is on the 303(d) list for the following parameters: elevated temperatures, metals, ammonia, fecal coliform bacteria, pH, low dissolved oxygen, and high biochemical oxygen demand. However, State temperature standards themselves may not be adequate for bull trout given that the temperature standard for the highest class of waters is 16 ° C, whereas temperatures in excess of about 15 ° C are thought to limit bull trout distribution (Rieman and McIntyre 1993). The removal of riparian vegetation and large woody debris from the system, the confinement of the channel by levees and riprap, the elimination of the channel forming flood flows, water withdrawals, and reduced groundwater recharge have all contributed to degradation of bull trout rearing habitat. As a consequence, the Green River mainstem probably provides suitable rearing habitat for only a portion of the year, with spring fed tributaries providing summertime refuge.

The Green River and many of its tributaries provide suitable foraging habitat for bull trout, given the significant number of chinook, coho (*Oncorhynchus kisutch)* and chum salmon, and steelhead trout that are produced within the basin. Other potential prey resources include sculpins, suckers,

whitefish, and crayfish, as well as a number of estuarine and marine species within the tidally influenced portion of the lower river.

Gilliam Creek

Gilliam Creek basin is highly developed by urban land uses. This has resulted in increased peak flows and runoff due to impervious surfaces. The creek is scoured and eroded in its upper reaches, with sediment deposition in the lower reaches. Gilliam Creek drains into the Green River with its confluence at RM 12.7. Its basin is composed of 2.9 square miles. The creek has been fragmented by streets, freeway crossings, residential and commercial development, and wetland fill.

Gilliam Creek does not have a specific water quality designation by the WDOE. The water quality designation is determined by its receiving water, the Green River (City of Tukwila 2000), which is currently listed as impaired.

Chinook, coho, chum, steelhead, and sea-run cutthroat (*Oncorhynchus clarki clarki*) have been reported from Gilliam Creek (Partee1999 pers. com. *in* City of Tukwila 2000, Jones and Stokes 1990 *in* City of Tukwila 2000). Partee (2000) reports that the correct list for Gilliam Creek is chinook and coho salmon, and cutthroat trout. Partee (2000) has identified juvenile chinook salmon in the lower reaches of the creek. Pacific lamprey (*Lampera tridentata*), river lamprey (*L. ayresi*), rainbow trout (*Oncorbynchus mykiss*), western brook lamprey (*L. richardsoni*), cutthroat trout (*O. clarki*), sculpin (*Cottus* sp.), longnose dace (*Rhinichthys cataractae*), largescale sucker (*Catostomus macrocheilus*), three-spine stickleback (*Gasterosteus aculeatus*), and speckled dace (*R. osculus*) may also occur within this creek system (Wydoski and Whitney 1979). There is a flap gate where Gilliam Creek drains into the Green River. Anadromous fish access to Gilliam Creek is therefore limited, although access by juveniles does occur. There is potential salmon spawning and rearing habitat in the lower reach of the creek (City of Tukwila 2000).

Miller Creek, Walker Creek and Miller Creek Estuary

The Miller Creek Watershed is approximately 8 square miles in size. The creek is approximately 4 miles long. At RM 1.8, the creek flows through a ravine. Miller Creek has been altered as a result of the loss of riparian habitat, and impervious surfaces which has lead to stream degradation. The estimates of the amount of impervious surfaces range from 23 percent to 49.4 percent.

Benthic macroinvertebrate sampling was performed in Miller Creek. A benthic index of biotic integrity (B-IBI) of 10 was scored. B-IBI scores tend to decrease with increasing impervious areas. B-IBI may be as high as 40 plus in Puget Sound lowlands for areas of low impervious surface (Kleindl 1995 *in* Karr and Chu 1999). Low B-IBI scores in Puget Sound creeks have

indicated habitat degradation. Miller Creek has not been listed by WDOE as an impaired stream (WDOE 2000).

The streambank and riparian condition are variable. The upper sections of the creek are within urbanized areas, with housing in close proximity to the stream. Native and non-native vegetation occurs along the streambanks, providing some canopy cover and detrital matter. Some sections of the creek have been stabilized with hardened structures. The lower section winds through a private park, which includes its estuary. The park is primarily a grassy area with deciduous trees. The estuary banks are confined by riprap. The shoreline adjacent to Miller Creek is predominantly gravel and sand, with some driftwood. The intertidal zone at the mouth of the creek is composed predominantly of mixed gravel and sand. The creek channel in the upper intertidal zone contains more cobble than adjacent areas. The estuary channel is vegetated with green algae.

A water fall at RM 3.1 may be a migration barrier for anadromous fish. No anadromous fish have been reported upstream of this location, to date. Bull trout are known to ascend waterfalls that other anadromous fish are unable to pass. No bull trout have been noted within the creek. Bull trout may use the Miller Creek estuary for foraging. It is unlikely that they forage upstream of tidal influence due to the low forage base produced in the stream, high water temperatures, lack of cover, and their inability to osmoregulate rapidly.

Threespine stickleback, pumpkinseed sunfish, black crappie, and cutthroat trout have been found upstream of the water fall. Cutthroat and coho have been detected rearing below the falls. Chum salmon spawn in lower Miller Creek. Five chum redds were located in the lower 1.75 miles of the creek during the 1998-1999 spawning period.

Walker Creek is a tributary to Miller Creek. It enters Miller Creek at approximately 300 ft upstream from the mouth of Miller Creek. Its watershed is primarily urbanized. Its channel is approximately 3-ft wide and is incised approximately 1.5 ft. The creek is tidally influenced to approximately 100 ft of a control weir. Walker Creek is an anadromous fish bearing stream. Coho and chum salmon redds, and potentially a cutthroat trout redd have been located in the lower sections of the creek.

Des Moines Creek and Estuary

The Des Moines Creek Watershed is approximately 5.8 square miles. The watershed is urbanized, with approximately 35 percent impervious surface. Most of the stream in the upper watershed has been placed in culverts, road side ditches and drainage pipe. The creek is 3.5 miles long, beginning on a plateau, and then descending through a ravine before it reaches Puget Sound. The Des Moines Creek estuary is located within the Des Moines Creek Beach public park. Prior to flowing into the estuary, the creek flows through the park, and under buildings which span the creek.

Des Moines Creek is listed as a 303(d) stream by the WDOE (WDOE 2000). It is listed as an impaired water due to high fecal coliform levels.

Fish production in Des Moines Creek is limited due to fish barriers, high stream flows, limited rearing and overwintering habitat, low summer flows, low dissolved oxygen, and high water temperatures (Des Moines Creek Basin Committee 1997). Due to high flows, some areas of the creek have eroded, and the stream bed has been scoured of gravel.

Bull trout have not been noted within Des Moines Creek. Bull trout may use the creek estuary for foraging. It is unlikely that they forage upstream of tidal influence due to the low forage base produced in the stream, high water temperatures, lack of cover, and their inability to osmoregulate rapidly.

In the lower reaches of the creek, coho and chum salmon, steelhead, and cutthroat trout have been seen. Some spawning in the lower reaches also occurs. A culvert at Marine View Drive (RM 0.4) limits the migration of fish to spawn upstream. In 1998-1999, 22 coho redds were found in the first 1.24 miles of Des Moines Creek, with 21 of these redds in the first half mile. Sixteen chum redds were found during this same time period in the first half mile of the creek.

Puget Sound

Limited information regarding bull trout use of marine waters is available. No specific sub-population unit is specified for Puget Sound. Bull trout are known to use these waters for migration and foraging.

Puget Sound has been significantly altered from its original condition. It has been estimated that one-third of the shoreline in Puget Sound has been altered (PSWQAT 1998). In the eastern side of Puget Sound's main basin, which includes the action area, approximately 80 percent of the shoreline from Mukilteo to Tacoma has been altered (PSWQAT 1998). It is not known how the distribution of eelgrass has been affected over time. Eelgrass is important spawning and rearing habitat for bull trout forage fish.

Declines in populations, productivity and survival of a number of organisms that live in Puget Sound have been noted in recent years. This includes declines in the spawning runs of Pacific herring, rockfish stocks, and coho salmon, as well as declines in over-wintering grebes and scoters (PSWQAT 1998).

The distribution of the char in marine waters is believed to be closely tied to the distribution of the bait fish, especially their spawning beaches. A sandlance spawning area is known from less than one mile north of the Miller Creek estuary. Surf smelt spawning areas are identified approximately one mile north and south of the Des Moines Creek estuary (WDFW 2000). Marine observations of native char, including bull trout, nearest to the proposed project site have

occurred in the turning basin of the Duwamish River and at Shilshole (W. Mavros, King County, pers. com. 2001b).

Toxic contaminants have also been released into Puget Sound from various sources, degrading the aquatic habitat. Some contaminants are in declining levels, which may be a result of improved pollution control. However, there is some evidence that polyaromatic hydrocarbons may be increasing in some areas. There has been a higher incidence of liver lesions in English sole in Elliot Bay, which may be the result of increased polyaromatic hydrocarbons (PSWQAT 1998). The WDFW is conducting tests on Pacific herring, a forage species for bull trout and marbled murrelet, to monitor the pollutants in Puget Sound (PSWQAT 1998). Results from the1995 pilot study in Fidalgo Bay showed that Pacific herring accumulated the same type of contaminants that have been observed for other species in Puget Sound. Some of the contaminants detected included polychlorinated biphenyls (PCB's), dichloro diphenyl dichloroethane (DDD) and dichloro diphenyl dicholorethylene (DDE) (metabolites of dichloro diphenyl tricholoroethane)(DDT)), and metals (i.e., mercury). These levels were within the range of that observed for other Puget Sound fish species (PSWQAT 1998). The Washington State Puget Sound Ambient Monitoring Program in the future plans to monitor the effects of PCB accumulation in the Puget Sound food webs (PSWQAT 1998).

Sea-Tac currently uses deicers, flocculents, petroleum products, pesticides, and herbicides which may enter the ground and surface water. Existing treatment facilities reduce but may not eliminate these contaminants in the aquatic system. Existing levels of potential contaminants, such as copper (Cu) and zinc (Zn), may be at levels which could have acute and/or chronic toxicity effects on aquatic species.

Des Moines Creek and Miller Creek, and discharges from the industrial wastewater system (IWS) may currently exceed lethal and sub-lethal toxicity levels for bull trout and their forage species for Cu and Zn (Eisler 1998) (Table 2). Except for lethal levels for Zn, all potential impacts are based on values available for other fish species. There is currently no specific information available for bull trout regarding Cu toxicity or sublethal effects of Zn.

Table 2. Cu and Zn concentrations within action area and sublethal and acute toxicity values for fish species, including bull trout.

Chemical	Location		
	Mouth of Miller Creek	Mouth of Des Moines Creek	IWS Outfall
Cu, existing levels, micrograms/liter[1](µg/L)	7 - 45	10 - 24	2 - 30

Cu sublethal effects (µg/L)[2]	4 - 10		
Cu LC_{50} toxicity value (µg/L)[3]	42 - 110		
Zn, existing levels (µg/L)[1]	35-234	24-60	7-103
Zn, sublethal and lethal effects (µg/L)[4]	50-235 4.9-9.8 for the brown trout (*Salmo trutta*)		
Zn LC_{50} toxicity value for bull trout, (µg/L)[5]	31.9-86.9		

1 Adapted from BA, Tables 7-10 and 7-11.

2 Eisler 1998.

3 Adapted from BA, Table 7-12.

4 Eisler (1993).

5 96 hour and 120 hour exposures at variable temperatures (8° C and 12° C), pH (6.5 and 7.5) and hardness (30 mg/L and 90 mg/L), and based on Spearman-Karber and Probit statistical analyses, Stratus Consulting, Inc. (1999).

Tempo, Banner, Triester, Cidekick, Diuron, Roundup, Crossbow, and Deluxe Turf with Trimec are included on the list of pesticides and herbicides that may be used on Sea-Tac. Tempo and Diuron have not been used. The Landscape Management Plan for Sea-Tac currently imposes a 50 ft buffer around waterbodies. A buffer of 50 ft may not adequately prevent some of these chemicals from entering the aquatic system via surface water and/or groundwater. This plan does not apply to the proposed mitigation areas and their buffers (J. Kelley, Parametrix, Inc. pers. com. 2000).

Cationic polyacrylamides (PAM) are currently used at Sea-Tac, and are proposed for continued use to reduce suspended solids from its treatment systems. Sojka and Lentz (no date) state that neutral and especial cationic PAMs have been shown to have LC_{50}s low enough for concern to certain aquatic organisms, whereas, anionic PAMs do not. Cationics are attracted to the hemoglobin in fish gills, which may result in suffocation. It is noted, however, that when PAMs are used in waters containing sediments, humic acids, or other impurities, the effects of PAMs on biota are buffered greatly (Buchholz 1992 *in* Sojka and Lentz (no date), Goodrich et al. 1991 *in* Sojka and Lentz (no date).

Bald Eagle

The action area is located in the Puget Sound Management Zone, which has the highest density of nesting bald eagles in Washington. In 1998, 298 occupied territories were documented (WDFW data), which far exceeds the recovery objective of 115 territories.

No bald eagle nest sites are located within the action area. The nearest nest is approximately one mile east of the action area, near Angle Lake. Bald eagles forage within Puget Sound and the Green River. It is assumed that the bald eagles occupying the Angle Lake nest site forage primarily in Angle Lake, though use of Puget Sound is also possible. Angle Lake has been stocked with rainbow trout and kokanee for a number of years (at least since 1982), therefore providing a very localized forage base for these eagles.

There is currently a risk of airplane strikes with bald eagles at the airport. However, no airplane strikes of bald eagles have been reported to date at Sea-Tac. Bald eagles have been seen on, and flying over and near the airport (Tables 3 and 4).

Table 3. Total bald eagle sightings reported by month at Sea-Tac, 1995 - April 2001.[1]

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
2001	3	1 (2)[2]	5	3								
2000			3	1 (2)	1	1			1	3 (5)		
1999					1							
1998	1 (2)	1 (2)		1							1	
1997	1				1							
1996					2 (3)							
1995		2 (3)	1 (2)							1 (2)	1 (2)	1
Total	5 (6)	4 (7)	9 (10)	5 (6)	5 (6)	1	0	0	1	4 (7)	2 (3)	1

[1] Osmek (2001a)

[2] Numbers in parentheses represent actual number of birds sighted.

Table 4. Bald eagle behavior reported at Sea-Tac, 1995 - April 2001.[1]

Behavior	Total	Frequency (percent)
Fly (Passing over)	21 (25)[2]	
Fly (Passing over)/Harassed (by birds)	1	
Total Fly	22 (26)	59
Towering/Soaring	9 (15)	
Towering/Soaring/Harassed (by birds)	1	
Total Towering/Soaring	10 (16)	27
Loafing/Standing	4 (5)	
Perching	1	
Total Loafing/Standing/Perching	5 (6)	14
Grand Total	37 (48)	100

[1] Osmek (2001a)

[2] Numbers in parentheses represent actual number of birds sighted.

Based on the information provided by Osmek (2001a), most bald eagle sightings have been during the nesting and late wintering seasons. The number of bald eagles sighted has increased over the six and a half year period that was reported. This may be due to two factors: an increase in observer effort and an overall increase in bald eagle numbers in Washington.

Observations on the airport include the use of the embankment for loafing and use of the VHF tower for perching (S. Osmek, Port of Seattle, pers. com. 2001b). The embankment is currently about 50 ft higher than the rest of the airport (excluding facilities). Bald eagles have also been seen on the infield of the airport (between the runway and the taxiway) (M. Cleland, USDA, pers. com. 2001). There are likely to be close encounters between bald eagles and airplanes which do not result in airplane strikes. For example, a bald eagle was recently seen hunting over the Tyee Golf Course, in proximity to the end of runway 34R (M. Cleland, USDA, pers. com.2001) when a plane was landing. The majority of landings and take-offs on the runways are from the north heading south (71 percent). Bald eagle sightings at the airport are primarily in the south (65 percent). The largest risk to bald eagles may therefore occur in the southern portion of the airport due to the higher number of bald eagles and take-offs. Airplanes on take-off tend to lift-off at

about the central part of the airport, and reach an altitude of approximately 1000 ft at the end of the airport. Bald eagles are more likely flying at a lower elevation at this point in their use near the airport, especially if they are moving between Angle Lake and Puget Sound.

Bald eagles may also forage near the mouths of Miller and Des Moines Creeks, but specific information on the use of these areas is not known. Due to the developed nature of and associated activity at Des Moines Creek estuary, use by bald eagles is likely to be minimal.

Marbled Murrelet

The action area for the proposed project is located in the Puget Sound Conservation Zone (USFWS 1997) in the marbled murrelet recovery plan. A population estimate for this zone has not been made. However, Speich and Wahl (1992) have estimated that there are approximately 2,600 marbled murrelets for the Strait of Juan de Fuca and Puget Sound. In this management zone, the largest number of murrelets is found in the northern Cascades and east Olympic Mountains and associated marine waters. Murrelets are found most commonly in the near shore waters of the San Juan Islands, Rosario Strait, the Strait of Juan de Fuca, Admiralty Inlet, and Hood Canal. They are more sparsely distributed elsewhere in this region, with smaller numbers observed at various seasons as far south as the Nisqually Reach and Budd Inlet, as well as in Possession Sound, Skagit Bay, Bellingham Bay, and along the eastern shores of Georgia Strait. Aggregations of murrelets are consistently observed in certain locations and at certain seasons. Marbled murrelets use these areas because of food availability, shelter or other ecological factors, and are also affected by the proximity and availability of nesting habitat.

In Puget Sound, few marine surveys have been conducted in the action area, primarily because murrelet occurrence is so infrequent. WDFW conducted surveys of Puget Sound from 1993 through 1995 during the marbled murrelet post-breeding season (Stein, J. and D. Nysewander 1999). Although the survey did not include the area specifically within the action area of this project, it did include areas north and south. These included surveys from Picnic Point to Edwards Point in the north, and Garden Point to Tatsolo Point, transect from Tatsolo Point to Sandy Point, transect from Yoman Point to McNeil Island stack, and shoreline from McNeil Island stack to Hyde Point. As the first survey in 1993 did not locate any marbled murrelets (first survey for Garden Point to Tatsolo Point occurred in 1994), future surveys of these areas were discontinued. The majority of marbled murrelet occurrences were documented in the Hood Canal area (Nysewander pers. com. 2000). Additional information regarding marbled murrelet occurrences in Puget Sound, including summer occurrences, is provided in Table 5. The majority of these occurrences are south of the action area.

Table 5. Marbled murrelet observations in Puget Sound.[1]

Date of Observation	Location	Number of Birds	Observer
NI[2]	Saltwater State Park	NI	T. Bock
NI	Redondo Beach	2 (1 pair)	T. Bock
NI	Narrow's Bridge, Tacoma	2 (1 pair)	T. Bock
NI	Brown's Point	NI	T. Bock
NI	Dash Point to Des Moines	6 (3 pair)	T. Bock
NI	Des Moines	4 (2 pair)	T. Bock
Summer 1990	Des Moines	6	T. Bock
NI	Des Moines	2 (1 pair)	T. Bock
NI	Brown's Point	12	T. Bock
NI	Brown's Point	8 (4 pair)	T. Bock
May 26 - June 3, 1993	Brown's Point	35-40	T. Bock
NI	Brown's Point	15	T. Bock
May 6, 1996	Brown's Point	8	T. Bock
NI	Brown's Point	7 (3 pair)	T. Bock
Summer 1999	Eastern Shore of Vashon-Maury Island	NI	M. Raphael, USFS

[1] Adapted from information provided by Norman, D. 2001 *in* Airport Communities Coalition. 2001.

[2] NI - No information provided.

Anecdotal observations indicate that marbled murrelets may occasionally forage in or near the Miller and Des Moines Creek estuaries on fish produced in these watersheds (including Walker Creek) and which migrate to the estuary and Puget Sound. The use of these estuaries and their vicinity by marbled murrelet, particularly during the breeding season, is likely to be limited due to low numbers of birds nesting in the nearest habitat, and possibly the lack of preferred prey species present in this area.

The number of murrelets nesting in the Cascades east of the action area, and using marine waters

associated with the action area is relatively small. No suitable nesting habitat for marbled murrelets occurs within the action area. Detections of marbled murrelet exhibiting occupied behavior associated with nesting habitat, occur between 17 and 45 miles from the action area. There have been nine marbled murrelet detections (four occupied sites and five detections only) east of Sea-Tac whose flight path might cross the airport. It is likely that numbers of marbled murrelets are low in the Cascades east of the proposed project area and in the marine area west of the project area because of the limited availability of suitable nesting habitat and the degraded condition of the marine shoreline as a result of urban development.

Outside of marine areas, observations of marbled murrelets in the vicinity of the action area have been rare. In addition to the detections of marbled murrelets described in the BA, two additional detections of marbled murrelets are provided in the WDFW data base. These occurred approximately 8 miles north and south of the action area. These detections were for a marbled murrelet in flight (1992) and a grounded chick in a person's yard (1974). It is unknown how the marbled murrelet reached the yard, as it still had down, which could indicate a nearby nest. A sandlance spawning area is known to be less than one mile north of the Miller Creek estuary. Surf smelt spawning areas are identified approximately one mile north and south of the Des Moines Creek estuary (WDFW 2000). However, most spawning areas are disjunct from known marbled murrelet feeding areas (USFWS 1997). Certain herring stocks in local areas have probably gone extinct in Puget Sound due to the loss of eelgrass beds, which provide spawning habitat for this species (Pantella, pers. com. 1996 *in* USFWS 1997).

Information does not exist to indicate that, other than Pacific sardine and the northern anchovy in offshore and shelf waters, marbled murrelet prey resources have either increased or decreased in inner Washington waters from historical ranges (MacCall pers. com. *in* USFWS 1997, Pantella pers. com. 1996 *in* USFWS 1997). Although prey species abundance, such as Pacific herring in Puget Sound, may have been reduced in certain areas this is not known to affect the overall prey abundance and their availability for marbled murrelets (USFWS 1997). As a result, insufficient information exists to state that the overall prey abundance and availability have changed to a degree that it affects the maintenance and recovery of marbled murrelet populations.

EFFECTS OF THE ACTION

The proposed action may result in a variety of environmental effects, including short-term negative impacts from construction, and potentially long-term negative impacts from reduced baseflows and increased peak flows in Miller and Des Moines Creeks and chronic and acute toxicity due to chemical contaminants. Longer-term positive effects may result from improved forage fish habitat, and a reduction of sediments and chemical contaminants. There is also a risk of long-term adverse effects due to potential bird strikes from in-coming or out-going airplanes. How these impacts affect listed species will be evaluated below.

Bull Trout

The subpopulation of bull trout in Puget Sound, Miller and Des Moines Creek estuaries, and the Green River is likely composed of individuals from other spawning streams in the Coastal/Puget Sound DPS. Bull trout spawning and rearing habitat are not known to be present in Puget Sound, Miller, Des Moines, Walker, and Gilliam Creek, or the mainstem Green River at this time. Therefore, bull trout spawning and rearing habitats are unlikely to be affected by the proposed project. Bull trout habitats that could be affected, therefore, are primarily foraging and migratory habitat.

The proposed project would result in the construction of mechanically stabilized earth (MSE) walls in proximity to Miller Creek. Failure of these walls could result in significant impacts to Miller Creek and the aquatic resources within the creek and the estuary due to filling the creek and wetlands, and increasing sediment loads. There have been concerns raised regarding the potential failure of the embankment. FAA has stated that the embankment has been properly engineered to avoid failures (FAA, pers. com. May 2001). The Corps will be evaluating the stability of the MSE wall. We also understand that an independent review is being conducted by the University of Washington on the stability of this wall (M. Walker, Corps, pers. com., 2001). Should their evaluation determine that there is a high and/or likely risk of failure, we will reevaluate our determination of the effects of the proposed MSE walls. We currently do not believe that failure of the MSE walls is reasonably foreseeable, and therefore the effects of its failure will not be further addressed in this BO.

There are potential long term and short term direct and indirect effects to bull trout from the proposed project. These impacts include a potential reduction of forage species, exposure of bull trout to contaminants through surface water and consumption of contaminated forage species, and physical effects due to sediment. However, due to proposed water quality measures during construction, potential water quality improvements over baseline conditions, minimal exposure to potential contaminants, and the very low likelihood for bull trout to be present during construction or in proximity to the affected areas, we believe that the proposed impacts are not likely to be significant, as discussed below.

To reduce water quality impacts related to construction of the proposed action, the BA states that the Washington Department of Ecology standard best management practices are to be implemented (Table 6).

Table 6. Summary of the Ecology Manual BMPs generally applicable to Master Plan construction sites.

Category	Applicable BMPs
Temporary cover practices	Temporary seeding, straw mulch, bonded fiber matrices, and clear plastic covering
Permanent cover practices	Preserving natural vegetation, buffer zones, permanent seeding and planting
Structural erosion control BMPs	Stabilized construction entrance, tire wash, construction road, stabilization, dust control, interceptor dike and swale, and check dams
Sediment retention	Filter fence, storm drain inlet protection, and sedimentation basins

In addition to the above measures, the BA also commits to the following:

- MPU projects will meet the turbidity standard for Class AA waters. This standard states that turbidity may not increase more than 5 Nephelometric Turbidity Units (NTU) over background when background is 50 NTU or less, or register more than 10 percent increase in turbidity when background exceeds 50 NTU.

- Implementation of advanced BMPs, as needed, including polymer stormwater batch treatment system or high-volume mechanical filtering devices.

Stormwater quality and hydrology mitigation implemented as part of the Sea-Tac MPU projects is proposed to improve water quality and hydrologic conditions in Miller and Des Moines creeks. Improved conditions may occur due to:

- Improved stormwater quality and quantity treatment of runoff from new development compared to the existing baseline,

- Retrofitting of existing airport facilities to upgrade water quality and quantity treatment of runoff to King County standards,

- Implementation of improved Ecology BMPs for construction and operation, and

- Mitigation activities in Miller and Des Moines creeks to improve instream habitat for fish and invertebrates.

Standard sediment and erosion control practices to minimize sedimentation may result in other potential water quality impacts including solar heating of the stored runoff which could affect stream temperatures when water is finally discharged. Temperature effects from retained

construction stormwater are unlikely because significant storms that would result in several days of water storage during warm weather are rare.

Some MPU project elements include in-water construction (e.g., Miller Creek Relocation, Vacca Farm restoration, 154th Street bridge replacement, and culvert replacement on the Tyee Golf Course) that could cause a direct increase of sediments to Miller and Des Moines creeks.

Degradation of the natural bank and stream will occur due to relocating and dewatering approximately 980 ft of the existing Miller Creek channel, and habitat enhancement activities. Some increased turbidity is likely to occur due to construction activities in-stream and along the banks. Construction elements for the stream relocation and the floodplain expansion occur concurrently, and are expected to occur during the driest time of the year, taking approximately 15 weeks, beginning in late June and ending by early October.

De-watering of Miller Creek within the project area will impact invertebrates inhabiting the substrate. These organisms could represent a potential food source for bull trout, but are primarily a food source for their forage fish. As the channel will only be dewatered for approximately 2 weeks and nearby sources of invertebrates are likely to recolonize the affected area following re-establishment of stream flows, the impact to bull trout is likely to be minimal.

Downstream of the floodplain and buffer enhancement areas at the Vacca Farm site, a 100-ft buffer will be established along the west side of approximately 6,500 linear ft of Miller Creek (within the acquisition area). Buffer averaging will be used on the east side of the creek, where a minimum 50-ft buffer will be established. Where the embankment design allows, buffers will be increased so that the average buffer width is 100 ft. A 100-ft buffer is also proposed on the West Branch of Des Moines Creek. The buffer enhancement should improve creek habitat over existing conditions. However, a 100-ft. buffer may not fully protect the aquatic resources. A 100-ft buffer may not adequately provide for sources of large woody debris. Large wood delivery into streams lessens at distances greater than one site potential tree height (FEMAT 1993). On the west side of the Cascades, one site potential tree height equates to approximately 150 ft.

Foraging bull trout are likely to be found in close association with their forage species. A sandlance spawning area is known from less than one mile north of the Miller Creek estuary. Surf smelt spawning areas are identified approximately one mile north and south of the Des Moines Creek estuary (WDFW 2000). Miller and Des Moines Creek estuaries may be used primarily as migration corridors for bull trout, with occasional foraging occurring on salmonids produced in these creeks. Since we believe that their primary forage base is not found within the Miller and Des Moines Creek estuaries, bull trout are unlikely to use these areas for extended periods of time. Therefore, their exposure to any potential increased sediment or contaminants which may enter the Miller or Des Moines Creek estuaries, or consumption of forage species which may have accumulated any contaminants from discharges associated with the proposed project, are reduced and likely insignificant.

Construction activities at the Auburn mitigation site could result in increased sediment inputs to the Green River. Prior to construction, the Auburn mitigation site will be dewatered. The pumped water will be discharge to the Green River about 1 mile north of the site via an existing drainage channel and outfall at South 277th Street. Dewatering will occur from approximately May 2001 through September 2001 for one or two seasons. The volume of dewatering water will be very small (2-8 cfs) compared to typical Green River flows (250-2000 cfs that occur during months when the system will operate), and therefore, unmeasurable and insignificant changes to river flows are expected. The existing farm drainage ditch between the site and South 277th Street will later be enlarged to create the outlet channel for the wetland. Discharged water will meet state water quality standards, and include pre-discharge treatment for sediment removal if necessary. Following dewatering, the mitigation site will be excavated and planted.

Pumped ground water may contain some sediments, but levels are not expected to be high. During excavation and until vegetation has formed adequate cover, turbid water may leave the site via the drain system, which eventually enters the Green River. Due to the proposed water quality controls and low levels of sediment which may be discharged, the distance from the project site to where the flows enter the Green River (thus allowing for some settling of sediments), and low likelihood for bull trout to be present near the existing outfall of the Green River, impacts to bull trout are expected to be insignificant.

During flood events, the Green River will back water into drainage channels and the wetland mitigation site (events greater than the approximate 10-year flood). The existing flap-gated culvert on the Green River, in its existing condition, may allow bull trout to access the drainage channel, where stranding may be possible. However, there is a low probability that bull trout access the drainage ditch through the drainage pipe. If bull trout do access the ditch, it is not anticipated that they would swim upstream to the mitigation site due to the lack of favorable conditions in the ditch and the minimal numbers of forage species present.

As bull trout are unlikely to be found within Miller, Walker, Des Moines, and Gilliam Creeks, as previously discussed, direct effects to this species in these waterways are unlikely. Indirect impacts may result due to impacts to bull trout forage species within these water bodies due to changes in flow, sediment discharges and chemical toxicity. However, based on the minimization measures proposed, these effects are likely to be minimal.

Indirect impacts caused by increases in impervious surfaces within a basin can increase the peak flows (duration and frequency) in receiving streams because the conversion to impervious surface speeds runoff and decreases infiltration and evapotranspiration (May *et al.* 1997). When a watershed's natural runoff cycle is modified by stormwater runoff, abnormal high flows increase erosion and destabilize channels during the wet season, and low summer flows are diminished due to lack of groundwater recharge. This limits fish populations by a number of interrelated mechanisms (Scott *et al.* 1986; Weaver *et al.* 1994; Whiles *et al.* 1995).

The proposed project will result in an increase of impervious surfaces as follows: approximately

106 acres (net) in Miller Creek watershed; approximately 6 acres in Walker Creek watershed; and approximately 128 acres in Des Moines Creek watershed. No increase in impervious surfaces is proposed for the Gilliam Creek watershed.

To minimize impacts from increases in impervious surfaces within these watersheds, stormwater management actions are proposed to reduce and minimize peak flows. Detention facilities will be sized to meet King County Level 2 flow control standards. These standards require that the flow duration of post-developed runoff match the pre-developed flow duration for all flow magnitudes between 50 percent of the 2-year flow event and the 50-year flow event.

The proposed project may result in reduced baseflows within Miller and Des Moines Creeks. Existing baseflows in Miller and Des Moines Creeks are approximately 1.8 cfs and 2.4 cfs, respectively. A reduction of approximately 4 percent (0.07 cfs) in Miller Creek baseflows and 7 percent (0.17 cfs) in Des Moines Creek baseflows was projected by Pacific Groundwater Group (2000). For Miller Creek, this equates to a reduction of approximately 1/8 inch to 1/4 inch in depth. In Miller Creek, there may be lower winter flows, but higher summer flows as a result of the potential for more groundwater infiltration with the project than currently exists. No information is available in the change in depth for Des Moines Creek. Additional streamflow analyses were conducted by Earth Tech, Inc. (2000) which also predicted reduced streamflows for both Des Moines and Miller Creeks during the low flow periods of August and September. Stream flows for Walker Creek were predicted to increase during August and September, 0.008 cfs and 0.010 cfs, respectively, as a result of pervious fill recharge and secondary impervious recharge. No net change in 7-day/2-year low flow is anticipated for Walker Creek. For the 7-day duration/2-year frequency stream discharge, a deficit of 0.10 cfs for Miller Creek at the SR 509 crossing and 0.08 cfs for Des Moines Creek were predicted. The reduction in baseflow may affect forage fish species. To minimize these impacts, reserved stormwater releases are proposed to be provided to Miller and Des Moines Creeks to off-set these reduced flows. The stormwater needs are calculated as 8.9 acre-feet for Miller Creek and 7.1 acre-feet for Des Moines Creek. The stormwater would be released at a prescribed rate, aerated, and discharged to the stream. Augmentation of baseflow in Des Moines Creek is also proposed using an existing Port owned well on the Tyee Golf Course. However, there are unresolved water rights issues with use of this well; therefore, other augmentation measures are being investigated. The well currently draws water from two zones. The Des Moines Creek Basin Plan includes inserting a casing and "packing off" the upper zone to eliminate potential wetland impacts resulting from well pumping. The Des Moines Creek Basin Committee would be responsible for implementing the use of the well for baseflow augmentation. Please see Table 7 for a summary of potential low flow changes.

Table 7. Summary of Des Moines, Miller and Walker Creek Streamflow Effects[1].

Creek		HSPF Model Stream Flow (cfs)		Predicted 2006 Conditions (cfs)[2]	Net Change from 1994 Conditions (cfs)
		1994	1996		
Des Moines	August	1.08	1.07	1.15	+0.07
	Sept	1.64	1.73	1.81	+0.17
	Aug./Sept	1.36	1.40	1.48	+0.12
	7-day/2-year low flow	0.35	0.27	0.35	0
Miller	August	1.27	1.10	1.31	+0.04
	Sept	1.50	1.40	1.55	+0.05
	Aug/Sept	1.39	1.25	1.43	+0.04
	7-day/2-year low flow	0.79	0.64	0.79	0
Walker	August	0.033	0.031	0.041	+0.008
	Sept	0.035	0.039	0.045	+0.010
	Aug/Sept	0.034	0.035	0.043	+0.009
	7-day/2-year low flow	0.021	0.015	0.021	0

[1] Based on Earth Tech, Inc. (2000).

[2] Flows based on the sum of 2006 HSPF streamflow, fill pervious recharge, non-hydrologic changes, secondary impervious recharge, and reserved stormwater release, as appropriate.

With the successful implementation of the proposed mitigation within the Miller and Des Moines Creek watersheds, the proposed action may benefit fish species due to improved riparian and instream conditions. The removal of structures near the stream channel, elimination of water withdrawals within the action area of Miller Creek, reduced turbidity, increased riparian vegetation, and augmented summer flows in Des Moines Creek should result in improved instream conditions in the long term for bull trout prey species. It is expected that baseline

production for salmonids should be maintained or improved with successful implementation of the proposed mitigation as described in the BA and supporting documents. Even if the projected streamflows are not achieved, and potential forage species for bull trout are impacted (i.e., reduced spawning grounds, reduced survival due to increased temperatures, increased stranding, reduced flows, dewatering, and/or a reduction in invertebrate forage), we do not anticipate these levels to be reduced to such an extent as to significantly impact this listed species. Potential forage fish currently produced in Miller, Des Moines, and Walker creeks are believed to represent an insignificant portion of the available forage base for bull trout in Puget Sound.

There is a potential for contaminated leachate to enter Miller Creek from the embankment fill, as well as for terrestrial organisms to expose and possibly bioaccumulate toxic materials that are contained in the fill material. Exposure of bull trout, bald eagles and marbled murrelets could potential result in impacts to these species. Some fill materials which have been accepted for use as part of the proposed action are known to contain DDT, PCBs, PAHs, and mercury (Table 8).

Table 8. Detected contaminants in fill material for the Sea-Tac MPUI.

Contaminant	Maximum Level Detected (USCOE[1])	Maximum Level Detected (Boeing[2])
Total DDT	14 parts per billion (ppb)	no detection
Total PCB	160 ppb	no detection
PAHs (Carcinogenic)	no detection	459 ppb
Mercury	0.074 parts per million (ppm)	0.51 ppm

[1] Corps detections, Hamm Creek Restoration Site, sampled June 16 and 17, 1997.

[2] Boeing detections, Hamm Creek Restoration Site, sampled April 17 and 18, 1990.

The Port is accepting fill material which generally meets the Model Toxics Control Act (MTCA) Method A contaminant levels. The Port may determine that specific material that does not satisfy MTCA Method A contaminant levels is appropriate for placement in a specific project location and will consult with the Washington Department of Ecology (WDOE) for approval prior to placement. Material that is obtained from state-certified commercial borrow pits is generally accepted for airport airfield projects without source-specific environmental certification. State certified materials are those that the Washington Department of Transportation has found to have geotechnically suitable material. The Washington Department of Transportation testing does not include testing for contaminants. Over 50 percent of the soil that the Port has placed to date has been from large pits. Most of these pits are state-certified and do not have historical sources of contamination. To date, all fill material accepted by the Port

has met the requirements of the Port/WDOE 1999 airfield project soil fill acceptance criteria, which includes the Method A standards for MTCA.

Limited information is available regarding effects of contaminants on bull trout. The lake trout, *S. namaycush,* a closely related species to bull trout, is the most sensitive species known for early life stage mortality associated with exposure of embryos to tetrachlorodibenzo-dioxin and related compounds. However, Cook et al. (1999) looked at the effects of 2, 3, 7, 8-Tetrachlorodibenzo-p-dioxin (TCDD) and polychlorinated biphenyl (PCB) 126 on early life stages of bull trout. Preliminary data indicated that bull trout are approximately three times more sensitive to TCDD than lake trout.

To ensure that leachate from the embankment fill does not result in contamination of aquatic resources in and adjacent to Miller Creek, and to reduce the risk to terrestrial organisms, the Port has agreed to the following measures, which are summarized below (see Enclosures 1 and 2 for the complete text):

1. No soil will be accepted that exceeds MTCA Method A standards for Resource Conservation and Recovery Act (RCRA) metals (Table 9) or organochlorines. If the Port considers placement of fill material that does not meet MTCA Method A Standards, the Port will discuss the results with the Service and reinitiate consultation, as appropriate. To mitigate stormwater runoff impacts on Miller and Des Moines creeks, the flow control standards adopted by the Port will comply with the approved MPU FEIS (FAA 1996), the Governors Certificate (Locke 1997), the King County Surface Water Design Manual (King County DNR 1998), and the Ecology Manual. The drainage layer cover (that layer immediately above the drainage layer of the embankment) will be composed of "ultra-clean" fill (as described below). It will measure at least 40 ft thick at the face of the embankment and will reduce in height to the east at a rate of 2 percent.

2. No soil will be accepted for the drainage layer cover that exceeds the back-calculated values in the second column of Table 9, unless the Synthetic Precipitation Leaching Procedure (SPLP) confirms the suitability of the soil, as described in Appendix 1, Attachment A, 1(b)(iv). The Port will consult with the FWS if site-specific data is collected which may merit a recalculation of the three phase model soil concentrations in Table 5, and reinitiate consultation, as appropriate.

3. If soil in the drainage cover layer exceeds background concentrations of metals, as stated in column 6 of Table 9, SPLP testing will be conducted to demonstrate that MTCA Method A criteria are protective of the baseline conditions for surface water receptors.

4. The Port will require testing for organochlorines where such compounds may be present.

5. Soils found to contain organochlorines at concentrations below Three Phase Partitioning Model concentrations (adjusted for PQLs) will be deemed acceptable. No soil will be

accepted for the drainage layer cover that exceeds Three Phase Partitioning Model concentrations unless SPLP testing confirms the suitability of the soil.

6. The surficial three feet of fill will be screened to not exceed the Proposed Ecological Standard or MTCA Method A, which ever is less.

7. The Port shall develop a plan to monitor the quality of seepage from the drainage layer beneath the embankment fill. Should monitoring detect adverse impacts to aquatic life in the project area, the Port shall reinitiate consultation as appropriate and implement measures to address such impacts.

Table 9. Soil Screening Criteria for the SeaTac Embankment Fill (milligram/kilogram (mg/kg)) (adapted from J. Lynch, Stoel Rives, pers. com. 2001).

RCRA [1] Metals	Three Phase Partioning Model Concentrations[2]	MTCA [3] Unrestricted Land Use			Puget Sound Background (upper 90 percent) [5]	Screening Criteria	
		Current Method A Standard	Proposed Method A Standard [4]	Proposed Ecological Standard [4]		Drainage Layer Cover	Top 3-feet of Embankment
Arsenic	88	20	20	95 (As V)	7	7 - 20 [6]	20 [7]
Barium	12,000	NA [8]	NA	1,250	NA	12,000 [9]	1,250 [10]
Cadmium	0.15	2	2	25	1	1 - 2 [11]	2 [7]
Chromium (total)	NA	100	NA	42	48	48 - 100 [11, 12]	48 [13]
Lead	500	250	250	220	24	24 - 250 [14]	220 [10]
Mercury (inorganic)	0.013	1	2	9	0.07	0.07 - 2 [11]	2 [7]
Selenium	0.52	NA	NA	0.8	NA	5 (PQL [15]) [16, 17]	5 (PQL) [16]
Silver	0.11	NA	NA	NA	NA	5 (PQL [15]) [16, 17]	5 (PQL) [16]

1 RCRA: Resource, Conservation and Recovery Act

2 MTCA WAC 173-340 747 (3), (4), and (5) Three Phase Partitioning Model soil concentrations calculated using aquatic freshwater quality criteria (WAC 173-201A). For purposes of this table, the lowest criteria from "Freshwater CCC Chronic" Screening Quick Reference Table (NOAA SQuiRT Table) were used.

3 MTCA: Model Toxics Control Act, Washington Administrative Code (WAC) 173-340.

[4] Proposed MTCA Method A and Ecological standards were finalized on February 15, 2001, and will become effective on August 15, 2001.

[5] Natural Background Soil Metals in Washington State (Ecology Publication 94-115).

[6] The MTCA Method A standard of 20 mg/kg is less than the Three Phase Partitioning Model concentration of 88 mg/kg indicating that the MCTA Method A standard is protective of surface water receptors. When soil concentrations are greater than background but below the MCTA Method A standard, sufficient SPLP testing will be conducted to confirm that the MCTA Method A standard is protective (see associated text in Attachment A for discussion of SPLP testing).

[7] Screening criteria based on MTCA Method A standards.

[8] NA: not available. Insufficient information available to develop the criteria.

[9] Three Phase Partitioning Model concentrations calculated using MTCA Method B ground water quality criteria because there was no available criteria for barium in surface water. If concentrations exceed calculated values, SPLP testing will be required to evaluate the suitability of the soil.

[10] Screening criteria based on ecological standards.

[11] Three Phase Partitioning Model concentrations, adjusted upward to background, and MTCA Method A standards. To verify the protectiveness of MCTA Method A standards, SPLP testing will be conducted when soil concentrations exceed background but are below MCTA Method A standards. (Note: exceedances in background concentrations anticipated due to natural variability of soil types being used as fill.)

[12] Chromium speciation may be conducted in the event SPLP is applied.

[13] Screening criteria based on ecological standards, adjusted for background.

[14] The MTCA Method A standard of 250 mg/kg is less than the Three Phase Partitioning Model concentration of 500 mg/kg indicating that the MTCA Method A standard is protective of surface water receptors. When soil concentrations are greater than background but below the MTCA Method A standard, sufficient SPLP testing will be conducted to confirm that the MCTA Method A standard is protective.

[15] PQL: Practical Quantification Limit

[16] PQLS from Department of Ecology "Implementation Memo No. 3: PQLs as Cleanup Standards," November 24, 1993.

[17] Three Phase Partitioning Model concentrations, adjusted upward to PQL. If soil concentrations exceed the PQL, SPLP testing will be required to evaluate the suitability of the soil.

In addition to these measures, the exposure to terrestrial organisms is further reduced as portions of the embankment are paved, and therefore, species cannot come into contact with fill material. Also, the Port actively manages the airport to dissuade the use of terrestrial organisms due to potential aircraft safety issues. Although some wildlife, such as small birds and rodents, may use and feed in areas of embankment fill, the numbers are expected to be low. It is anticipated that organisms which may utilize the embankment would provide a minor food source for bald eagles and there would be a low risk of bioaccumulation occurring should this listed species feed on these organisms.

Des Moines Creek and Miller Creek, and discharges from the IWS may currently exceed sub-lethal toxicity levels for bull trout and their forage species for Cu based on values available for other fish species (Eisler 1998) (Table 2). No specific information on Cu toxicity is available for bull trout.

IWS discharge rates will increase as a result of the proposed action. The plume from the IWS outfall diffuser is located at a depth of 156 ft to178 ft, 1,800 feet off shore in Puget Sound, and could raise baseline levels above ambient within 65 meters (213.2 ft) of the outfall. Bull trout could occur within this zone. Bull trout may also occur at the mouths of Des Moines and Miller Creeks. However, bull trout are unlikely to be exposed for long periods of time to chronic toxicity levels. Bull trout are opportunistic feeders, and their presence within an area of the marine environment is based largely on the forage base present. Cu is known to interact with many compounds in water. The amount of Cu compounds and complexes in solutions depends on many factors, including water pH, temperature, and alkalinity, as well as the concentrations of bicarbonate, sulfide, and organic ligands (USEPA 1980 *in* USGS 1998). The toxicity of Cu will depend on the interactions it has with other compounds. For example, mixtures of Cu and Zn salts are more-than-additive in toxicity in the marine and freshwater environment (Eisler and Garner 1973 *in* USGS 1998, Birge and Black 1979 *in* USGS 1998, Hodson et al. 1979 *in* USGS 1998). However, sequestering agents, increasing salinity, sediments and other variables reduce the toxicity of Cu in invertebrates and aquatic plants that have been tested (USGS 1998). Mortality from Cu to bony-fish is reduced in waters with high concentrations of organic sequestering agents (Hodson et al. 1979 *in* Eisler 1998). In rainbow trout, high salinities resulted in lower Cu toxicity (Wilson and Taylor 1993 *in* Eisler 1998).

The proposed project may result in a minor increase or possibly a reduction of Cu over existing levels due to the proposed conversion of land use from residential to open space and runway and taxiways, based on information provided in the BA and additional information provided by the consultants (Table 10).

Table 10. Estimation of Cu concentration change for Sea-Tac.[1]

	Runway/Taxiway	Residential	Commercial	Open-Space	Total Cu µg/L
Cu µg/L (median)	26	20	32	10	
Existing Conditions (acres)	149.2	373.7	0	0	
Existing Conditions (acres * Cu µg/L)	3,879	7,474	0	0	11,353
With Project (acres)	343.5	0	7.3	172.1	
With Project (acres * Cu µg/L)	8,931	0	234	1,721	10,886

[1] Based on information provided by Parametrix, from J. Lynch dated April 20, 2001.

The BA states that the median level of Cu from the runway and taxiway areas is 37 µg/L. This value has been updated based on two years of additional water quality data, and is currently calculated as 26 µg/L of Cu. Data for residential areas was assumed by the consultants to be similar to the data available for King County Metro of 20 µg/L. It was also assumed that any open space areas converted from residential would have a lower Cu value. Ten µg/L was estimated as the value for open-space based on the consultant's best professional judgement.

The Cu values cited for residential areas may not represent the Cu values currently discharged from the residential areas in the project area as the data used is a composite from King County rather than site specific information. Additionally, some of the residential area is misclassified. For example, Vacca Farms should be classified as agricultural lands, which may have a different Cu value from that presented. Therefore, the above values do not accurately predict existing or future conditions for Cu. However, we believe it is likely that lands that will be taken out of residential use and converted to open-space should result in a reduction of Cu being generated for this land use type. Taking into account the revised Cu discharges levels from Sea-Tac and the conversion of residential areas to open-space lands which should result in less Cu being generated over existing levels, we believe that the predicted Cu discharges are not likely to increase significantly over baseline values and may, in fact, be reduced.

Therefore, due to the relatively low production of forage fish in Miller and Des Moines Creeks,

and the low forage base level near the outfall, limited exposure of bull trout to potential chronic toxicity levels, and potentially minor increase or decrease of Cu over existing conditions, affects from Cu are likely to be minimal compared to baseline conditions.

Zn levels within Des Moines and Miller Creek estuaries, and discharges from the IWS (Table 2) currently exceed acute toxicity levels for bull trout based on studies conducted by Stratus Consulting, Inc. (1999). Acute toxicity analyses were performed for bull trout with regard to Zn and cadmium (Cd) (Stratus Consulting, Inc. 1999). Bull trout had a lethal concentration for fifty percent of the test animals (LC_{50}s) ranging from 31.9 µg to 86.9 µg Zn/L, with an average value of 54 µg Zn/L. Higher hardness and lower pH water produced lower toxicity of Zn and Cd in bull trout, but higher water temperature increased their sensitivity to Zn. Several trends have been noted regarding the affects of Zn on fish: 1) freshwater fish are more sensitive to Zn than marine species; 2) embryos and larvae are the most sensitive developmental stages; 3) effects are lethal or sublethal for most species in the range 50-235 µg Zn/L and at 4.9-9.8 µg Zn/L for the brown trout specifically; and 4) behavioral modifications, such as avoidance, occur at concentrations as low as 5.6 µg Zn/L (Eilser 1993). Impacts to reproduction may be one of the more sensitive indicators of Zn stress in freshwater teleosts, with effects evident in the 50-340 µg Zn/L range (Spear 1981 *in* Eisler 1993).

The toxicity of Zn to aquatic organisms depends on the physical and chemical forms, the toxicity of each form, and the degree of interconversion among the various forms (Eisler 1993). Suspended Zn has minimal effect on aquatic plants and fish, but many aquatic invertebrates and some fish may be adversely affected from ingesting enough Zn-containing particulates (EPA 1987 *in* Eisler 1993). Freshwater fish are affected by Zn toxicosis by destruction of gill epithelium and consequent tissue hypoxia. Osmoregulatory failure, acidosis and low oxygen tensions in arterial blood, and disrupted gas exchange at the gill surface and at internal tissue sites are all indicators of acute Zn toxicosis in freshwater fish (Spear 1981 *in* Eisler 1993). Zn may also affect fish immune systems (Ghanmi et al. 1989 *in* Eisler 1993). Additionally, combinations of Zn and Cu are generally more-than-additive in toxicity to a wide variety of aquatic organisms, including freshwater fish (Skidmore 1964 *in* Eisler 1993; Hilmy et al. 1987a *in* Eisler 1993) and marine fish (Eisler and Gardner 1973 *in* Eisler 1993; Eisler 1984 *in* Eisler 1993).

There are a number of factors which are known to modify the biocidal properties of Zn in aquatic environment. Zn tends to be more toxic to embryos and juveniles than to adult, to starved animals, at elevated temperatures, in the presence of Cd and mercury, in the absence of a chelating agent, at reduced salinities, under conditions of marked oscillations in ambient Zn concentrations, at decreased water hardness and alkalinity, and at low dissolved oxygen concentrations (Skidmore 1964 *in* Eisler 1993; Weatherley et al. 1980 *in* Eisler 1993; Spear 1981 *in* Eisler 1993; EPA 1987 *in* Eisler 1993; Paulauskis and Winner 1988 *in* Eisler 1993).

Although the existing levels of Zn typically exceed those levels detected to have an acute effect on bull trout, the toxicity values are based on 96 and 120 hours of exposure. It is unlikely that bull trout will remain in proximity to the mouths of Des Moines and Miller Creeks, or in the vicinity of the IWS outfall for this length of time. Chronic toxicity levels of Zn were not tested and are not known for bull trout. Chronic toxicity levels would be expected to be lower than acute levels.

Again, bull trout exposure at these sites to acute or chronic levels is expected to be minor due to the low likelihood of their feeding or occupying these areas for a significant length of time. Additionally, Zn levels may be reduced from existing levels due to the conversion of residential land use to airport runway and taxiway areas based on information provided in the BA as well as from the Washington Department of Ecology NPDES permit for Sea-Tac (WDOE 1998). The predicted levels of Zn may affect other fish or invertebrate species which occupy these water bodies. For example, the LC_{50} values listed in the BA for chinook salmon (446 µg/L) and brook trout (2,100 µg/L) are higher than those found by Stratus Consulting, Inc. (1999) for rainbow trout (27.3 µg/L to 447 µg/L). Therefore, although the data indicates that acute toxicity standards may not be exceeded for some species, prey species for bull trout and their forage fish may be affected by the levels of Zn occurring in these waters. However, we believe that the effects of Zn to bull trout as a result of the proposed project are likely to be minimal compared to existing baseline conditions.

Additionally, the proposed action includes improved stormwater treatment over existing conditions. Currently, approximately 166.2 acres of the 479.1 acres of pollutant generating impervious surface (PGIS) (the area requiring water quality treatment best management practices) are untreated. With the proposed project, approximately 80 acres will remain untreated due to proposed retrofitting of existing facilities or conversion from a PGIS to a non-PGIS status (approximately 7.3 acres). This increased treatment of stormwater includes source controls and additional best management practices, including wet vaults and bioswales. Based on the increased stormwater treatment over existing conditions, even with the new development which will also be fully treated, there is a potential improvement over existing water quality conditions.

The Port has committed to removing Tempo and Diuron from the list of allowable chemicals currently included for use on the airport (K. Smith, Port of Seattle, pers. com., 2001). The other pesticides and herbicides do to not pose as great a risk to aquatic species as do Tempo and Diuron (Meister 1995). In addition to the chemicals already included for use on Sea-Tac, the BA proposes to use 2,4-D amine and Garlon in the Green River mitigation area. No use of herbicides is proposed within other mitigation areas. Due to limited exposure bull trout would have to these chemicals, the effects are likely to be minimal.

Advanced stormwater treatment systems that use flocculation agents could potentially add chemicals to stormwater runoff. The potential water quality impacts from the advanced stormwater treatment BMPs used to control turbidity include changes to pH and the toxicity of treatment compounds. The draft Ecology Stormwater Manual Update includes a BMP for Construction Stormwater Chemical Treatment (Ecology 1999b). For its treatment regimes, the Port has used both organic polymers, such as CatFloc, and inorganic compounds such as alum. The use of cationic PAMs may result in impacts to forage fish and bull trout. However, due to the potential for buffering of treated water from sediments and the limited exposure bull trout may have to this chemical, the effects are likely to be minimal.

Bald Eagle

The proposed action is unlikely to result in significant impacts to bald eagles. Impacts are

expected to be minor since no bald eagle nesting territories occur within the action area and no potential nest trees will be removed. If permits to construct the third runway are obtained, the fill currently elevating the embankment 50 ft above the airport ground would be leveled and no longer serve as a perching area for bald eagles. Although trees within the MPUI are proposed to be removed, there is a low likelihood that they are used for perching due to the small forage base in Des Moines and Miller Creeks. Also, due to the high amount of noise generated by the airport, bald eagles are less likely to frequent this area in high numbers. Bald eagles may use the Tyee Golf Course area to forage for waterfowl. There is likely to be a reduction in waterfowl use of this area due to its conversion to scrub-shrub wetlands and airport facilities. This could result in a reduction in bald eagle foraging in this area over baseline conditions, should it currently occur. However, due to the existing human use and disturbance of this area, loss of this area as a possible foraging base is not expected to be significant to bald eagles. Additionally, since no additional habitat is provided by the proposed airport facilities, flight paths of bald eagles over the airport are not anticipated to increase due to the proposed project.
Runway 34R, which is the runway closest to Angle Lake, will be extended by 600 ft. It is estimated that larger planes will use the additional runway extension several times a year over existing conditions (E. Levitt, Port of Seattle, pers. com., 2001). Bald eagles flying from the nest site are likely to be at a lower flight elevation than planes that may be landing. Although there is a risk of collisions of bald eagles with airplanes due to the extension of this runway, the risk is anticipated to be minimal due to the few additional flights which will use this part of the runway over existing conditions. Additionally, most bald eagles are likely to be below 1000 ft. when planes are taking off from the airport, thus avoiding being struck by a plane.

No air strikes of bald eagles have been documented at Sea-Tac. There are a number of "unidentified" species that were struck by aircraft at Sea-Tac between 1991 and 1997. Of this total of 53 birds, 19 were small, 1 was large, and 33 were unknown (FAA 1999). Bald eagles have been identified in bird strikes by civil aircraft in the United States (FAA 1999). In a national report on bird strikes, out of a total of 22,320 bird strikes reported between 1990 and 1998, 20 were bald eagles and 32 were unidentified hawks, kites, and eagles. At least an additional 7 bald eagle strikes have occurred since 1998 (S. Wright, unpublished data). None of the eagle strikes reported were in Washington. The majority of the eagle strikes occurred in Alaska. Bird strike information is not required to be reported to FAA, and it is estimated that only about 20 percent of the bird strikes are reported, therefore the number of strikes is likely to be an underestimate (FAA 1999). Most bird strikes (53 percent) result during takeoff and climbing. Over 55 percent occurred within 99 ft above ground level and approximately 87 percent occurred within 2,000 ft above ground level (FAA 1999). Although bald eagles may be at risk of airplane strikes, the risk can be very low. Only one unconfirmed bald eagle strike in 1989 has been documented for Whidbey Island Naval Air Station, a site which is on Puget Sound north of the proposed project site and has daily use by bald eagles (M. Klop, Whidbey Island Naval Air Station, pers. com. 2001). Due to the large size of the bald eagle, should an air strike have occurred at Sea-Tac, it would be assumed that the bird would have been identified prior to contact or some body parts, including feathers, would still be identifiable. Even though reports of bird strikes are not required by FAA, Sea-Tac twice daily performs runways searches which would likely find signs of wildlife strikes should they occur. No bald eagles have been reported as a result of these searches.

Therefore, although there is a risk of an air strike of a bald eagle at Sea-Tac, we do not believe that this risk is significantly increased as a result of the proposed action

Concerns have been raised that air strikes of bald eagles might occur as this species may use thermals produced by the proposed retaining wall. It is unlikely that bald eagles would utilize the area near the retaining wall due to the lack of forage. Additionally, bald eagles primarily hunt from perches as opposed to soaring. Therefore, the risk of airplane strikes of bald eagles from their use of thermals is expected to be minimal.

The proposed on-site and off-site mitigation for the project could have some minor long term benefit for the bald eagle should it be successful. The proposed improvements to Miller and Des Moines Creeks may improve the forage base for bald eagles. However, bald eagles are not likely to forage in the upper watersheds. The creeks are relatively narrow with some canopy, limiting the ability of bald eagles to forage effectively. The proposed off-site mitigation may also have a beneficial effect on bald eagles, should it be successful, due to the potential to enhance waterfowl habitat, as waterfowl are prey for the bald eagle. However, depending on the amount of future disturbance due to increased development in the vicinity of the Auburn mitigation site, use of the site by foraging bald eagles may be minimal.

Marbled Murrelet

The proposed project is likely to result in insignificant impacts to marbled murrelets. Suitable marbled murrelet nesting habitat does not occur within the action area, including the off-site mitigation area. The nearest potential habitat to the east of the action area is approximately 32 miles away. The nearest known occupied site is approximately 36 miles away. Potential foraging habitat is present at the mouths of Miller Creek and Des Moines Creek, and within Puget Sound. Although the proposed project may result in some short term impacts to potential prey species (i.e., salmonids) that occur within Miller and Des Moines Creeks, salmonids are not known to form the primary diet of marbled murrelets. Thus, the effect to marbled murrelets from any impacts to the salmonid prey base would be minimal. There is a potential for a long term benefit to marbled murrelets should the proposed mitigation successfully enhance fish habitat and result in increased fish production within these creeks. However, as stated above, this benefit is likely to be minor as salmonids do not form the primary diet of the marbled murrelet.

Impacts from air strikes are unlikely. No air strikes have been documented for marbled murrelets at Sea-Tac. Although there are a number of "unidentified" species which have been struck by airplanes, the likelihood of aircraft striking marbled murrelets is considered insignificant. This conclusion is based on: 1) no alcids have been identified in any reported wildlife strikes to civil aircraft in the United States between 1990 and 1998 (FAA 1999); 2) marbled murrelets typically fly at altitudes greater than 2,770 ft (1,000 meters) in altitude when leaving the ocean to nesting habitat (Burger 1997) and most air strikes are within 900 ft above ground level (FAA 1999); and 3) marbled murrelets are fast fliers and can move quickly to avoid collisions, while the majority of bird strikes involve slower flying birds. Additionally, due to the rarity of marbled murrelets, few are likely to fly over Sea-Tac, therefore the risk of air strikes is reduced. Despite the numerous surveys which have occurred within this area, there have only been nine marbled murrelet

detections (four occupied sites and five detections only) east of Sea-Tac whose flight path might cross the airport. The majority of marbled murrelet sightings and detections for nesting and foraging are north and south of the project area. Their travel paths are unlikely to cross the airport between nesting and foraging locations. Although this does not represent all marbled murrelets which might travel near Sea-Tac between Puget Sound and the Cascades, it does demonstrate the small population that has been found to date.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future state, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this Section because they require separate consultation pursuant to Section 7 of the Act.

Three broad categories of cumulative effects which may occur in the action area include: 1) growth and development; 2) forest management; and, 3) other management actions. Growth and development refer to permanent loss of suitable habitats. Growth and development actions include conversion of forest habitat to urban, other residential, commercial, or agricultural uses, and for structures or networks providing infrastructure support such as hydro power and irrigation diversions, roads, and power-lines. Forest management refers to temporal and spatial changes from other state or private actions in suitable habitats across the landscape in the action area. Examples include age or structural changes resulting from harvest and other forest-management actions such as planting, pruning, fertilizing, forest growth, and wildland fires. Other management actions refer to actions within suitable habitats which impact habitat structures or composition such as recreation, grazing, fishing, and mining. Each of these categories of impacts may result in the loss of secure habitat for species using suitable habitats within the action area. Examples of this include physical displacement, exposure to contaminants, and declining air and water quality. The proposed MPUI site may be developed further. Redevelopment of the borrow or acquisition areas may occur in the future. However, the Port states that they have no immediate plans to develop the sites. Proposed actions near the off-site wetland mitigation project in Auburn include a proposed trail along the Green River and development of private property to commercial and residential uses. Some of these proposals may have a federal nexus (i.e., ACOE Section 404 permits) associated with them. It is not known to what extent these proposals will be addressed by future consultations. These proposed actions could result in increased impervious surfaces with potential stormwater and water quality impacts, increased access and use (including fishing) within the Green River, and the reduction of restoration potential of the riparian buffer and input of large woody debris into the Green River.

CONCLUSION

After reviewing the current status of the bull trout, bald eagle, and marbled murrelet, the environmental baseline for the action area, the effects of the proposed MPUI, and the cumulative effects, it is the FWS's biological opinion that the MPUI, as proposed, is not likely to jeopardize the continued existence of the bull trout, bald eagle or marbled murrelet. We reached this conclusion on the basis that the proposed action is not likely to adversely affect these species, as

discussed in the Effects section of this opinion.

No critical habitat has been designated for the bull trout or bald eagle. Therefore, none will be affected for these species. Critical habitat has been designated for the marbled murrelet. However, the project does not occur within designated critical habitat, therefore none will be affected for this species.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and federal regulation pursuant to Section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the FWS to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the FWS as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The FWS does not anticipate the proposed action will incidentally take bull trout, bald eagle or marbled murrelet. Therefore, no take exemption for the bull trout, bald eagle or marbled murrelet is provided.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

These are as follows:

1. The riparian buffers along Miller Creek and Des Moines Creek should be at least 150 ft on each side to better protect the aquatic environment, including cutthroat trout and coho salmon, which is a federal candidate for listing under the Act. This increased buffer width is critical in providing large woody debris and nutrients to the streams, as well as additional storm water benefits, should development occur immediately outside of the riparian buffers. Wider buffers also benefit wildlife species which use the riparian habitat for reproduction, foraging and resting by reducing the disturbance from human activities.

2. Monitor fish use, including spawning activities, in Miller and Des Moines Creeks to determine success of habitat enhancement and restoration activities.

3. Evaluate effects to invertebrates in the restored section of Miller Creek. Include changes in species composition from existing conditions, and recovery of the system following diversion of flows into the new channel.

4. Viable native plants shall be salvage and reused at mitigation sites.

5. Large diameter trees with attached rootwads or large rootwads that are to be removed as a result of the project should be retained/saved for future use on Port or other restoration/ mitigation sites in King County.

6. Large woody debris placed in Miller Creek should be keyed into the bank at a minimum 1 to 1 ratio (for every foot of wood instream, one foot should to be keyed into the bank). Root wads without boles should not be used. This will better insure the success that large woody debris placed for stream restoration will function as designed.

7. Pesticides and herbicides should not be used due to the potential to enter the groundwater and surface water where it may potentially affect the invertebrate forage base and fish species. Should their use be unavoidable, we recommend that a minimum 200 ft. buffer from waterbodies be required If a 200 ft buffer cannot be implemented, we recommend that a monitoring program be implemented to determine the adequacy of the 50 ft. buffer in protecting aquatic resources, including wetlands, from pesticide and herbicide contamination. Rodeo may be used if other non-chemical methods to control reed canary grass prove to be unsuccessful. If Garlon is used in the Green River mitigation area, it should be restricted to the use of Garlon 3a. Garlon 4 should not be used. Organophosphates, carbamates and triazine herbicides should not be used under any circumstance.

8. Reduce or eliminate airport sources of Cu and Zn. Implement additional best management practices to treat stormwater to levels of Cu and Zn below acute and chronic toxicity levels for aquatic organisms. Sufficient monitoring must be performed to determine that reduced levels are being achieved.

9. New structures should not contain pollution generating impervious surfaces.

10. Use anionic PAM products which have reduced toxicity on aquatic organisms compared to cationic PAM.

11. Evaluate the effectiveness of temporary erosion and sediment control measures.

12. Provide copies of monitoring reports to the Western Washington Office.

13. Conduct research to better define population status and use by bull trout of watersheds and marine areas where Port of Seattle and FAA activities occur.

For the FWS to be kept informed of actions minimizing or avoiding adverse affects or benefitting listed species or their habitats, we request notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation on the actions outlined in the request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: 1) the amount or extent of incidental take is exceeded; 2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; 3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or 4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

The WDOE and the Corps have not completed their review of the project at this time; therefore, issuance of the NPDES permit, water quality certification (401), and Clean Water Act Section 404 permit have not occurred. The BA includes a number of best management practices which are proposed to meet state water quality standards. The BA acknowledges that additional measures may be necessary. The FWS, in our review of the effects of the proposed action, assumes that the criteria in the Washington State surface water quality standards will be met by the project at all times. Any future actions that may be taken to meet state surface water quality standards or Section 404 permit requirements need to be evaluated to determine if reinitiation of this consultation is necessary.

If you have any questions regarding this Biological Opinion, please contact Nancy Brennan-Dubbs, of my staff, at (360) 753-5835 or Jim Michaels, of my staff, at (360) 753-7767.

Sincerely,

Ken S. Berg, Manager
Western Washington Office

c: Corps, Seattle (M. Walker)
NMFS, Seattle (T. Sibley)
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Port of Seattle, Sea-Tac (E. Levitt)

Enclosures

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Enclosure A

ATTACHMENT A

Response to U.S. Fish and Wildlife Service Comments and Recommendations
Concerning Embankment Fill at Seattle-Tacoma International Airport
(FWS Comments and Recommendations in Bold)

1. All fill material within the first 20 feet above the rock underdrain of the embankment fill shall be contaminant free (e.g., below probable affect levels stated in the appropriate NOAA SQuiRT tables or below background levels found within the area).

Through its Clean Water Act section 401 permitting process, Washington Department of Ecology (Ecology) has required the Port to develop a process for insuring that contaminated fill material *is not* incorporated into the Third Runway embankment. The screening process developed by the Port includes the use of MTCA Method A standards as a tool to evaluate what is or is not environmentally suitable for placement in the embankment. In our January 22, 2001, meeting, and in its February 27, 2001, comments, FWS requested additional information concerning the Port's screening process, including information indicating this process is adequately protective of listed species.

First, it is important to recognize that the Port is not accepting large amounts of soil with constituent concentrations just at or below levels defined as "clean" by MTCA Method A standards. Over 50 percent of the soil placed in the Third Runway embankment to date has been from large pits, most state-certified, without historical sources of contamination. Though it is the responsibility of the individual contractor to identify sources of fill material, the Port anticipates that large pits will continue to be a primary source of fill for the embankment. Second, the remaining amount of embankment fill will not include contaminated soil that has been remediated to MTCA Method A standards. Rather, such soil will be taken from sites or portions of sites that have not historically been affected by contamination. Thus, Method A standards in this case are used simply as a screening tool to verify that clean fill sources are in fact clean.

To evaluate the environmental suitability of a proposed fill source, the Port currently requires that, for those fill sources for which testing is mandated, the supplier at a minimum test for concentrations of total petroleum hydrocarbons (TPH) and the eight Resource Conservation and Recovery Act (RCRA) metals. Analysis for chemicals other than TPH and metals is presently required based upon site-specific conditions. The approach used for evaluating appropriate testing, including location of samples, number of samples, and type of analysis, is similar to that used for Phase I and Phase II Environmental Site Assessments as discussed below.

When the Washington Department of Ecology and the Port developed the process for evaluating fill material proposed for placement in the Third Runway embankment, they used standards for conducting Phase I and Phase II Environmental Site Assessments as a model. Typically, Phase I and Phase II Environmental Site Assessments are

conducted to identify environmental conditions at a site prior to some change of use or ownership. The nationally-accepted standard for these assessments is the American Society for Testing and Materials Standard (ASTM) Practice for Environmental Site Assessment: Phase I and Phase II Site Assessment Process (ASTM E 1527 and ASTM E 1903). Though not all ASTM procedures are relevant (e.g., lead paint testing, radon surveys, etc), the basic ASTM procedures for a site reconnaissance, review of historic operations, and appropriate testing to be conducted by a qualified environmental professional were adapted to the fill acceptance process. The use of Phase I and Phase II Environmental Site Assessments as a model is appropriate because it is a nationally-accepted process for evaluating the potential for contamination at a site.

Phase I and Phase II Environmental Site Assessments differ in objectives from Puget Sound Dredge Disposal Analysis (PSDDA) and remedial investigation studies. Phase I and Phase II Environmental Site Assessments look specifically for contamination. In contrast, PSDDA is a program which addresses the management and disposal of sediments that may be contaminated. As a result, sampling and analysis protocols are different. For Phase I and Phase II Environmental Site Assessments, the level of sampling and type of analyses can vary considerably from site to site based on the potential presence of contamination. This approach differs from PSDDA, in that PSDDA specifies a standard sampling protocol, including the number of samples and type of analyses, for evaluating the bulk characteristics of material proposed for open water disposal. This Phase I and II Environmental Site Assessment approach also differs from the more rigorous requirements for remedial investigation studies, which are designed to evaluate impacts from known contaminated sites.

When evaluating the suitability of proposed fill material, the Port uses MTCA Method A standards as a screening tool. However, the final suitability determination relies on best professional judgement. In general, the approach used in evaluating the fill suitability is similar to that of a prospective purchaser evaluating environmental information obtained in Phase I and Phase II Environmental Site Assessments. Careful consideration is given to other factors in addition to chemical test results. These include current and historic site uses, adequacy of the environmental documentation, type of proposed fill material (e.g., native vs. non-native) and the nature of the proposed excavation activities (e.g., Does the contractor have sound operational controls in place?). In some cases, the Port will condition acceptance to a specific area of a site, require ongoing testing and monitoring during excavation, or require regular site inspections to insure the quality of the incoming fill material. For example, the Port may determine that upper non-native soil at a source site may not be suitable because of its potential to contain asphalt or other debris, but that the underlying native soils at the same site are suitable. At the same site the Port may require an environmental professional monitor the site to ensure that the native and non-native materials are indeed separated.

In our January 22, 2001, meeting, and in subsequent comments, FWS inquired as to the protectiveness of Method A standards for the RCRA metals and for organochlorines. The Port will address these issues as follows:

(a) Drainage layer cover: The Port will establish a zone of "ultra-clean" fill above the drainage layer, in an area termed "drainage layer cover." The drainage layer cover will measure at least 40 feet thick at the face of the embankment and will reduce in height to the east at a rate of 2 percent (see Figures 1 and 2). The 2 percent slope is required for consistency with the embankment construction design, which has been developed to allow for appropriate drainage and runoff control. The overall thickness of the drainage layer cover will decrease away from the face of the embankment and will vary based on underlying topography. This configuration allows for the greatest protection for aquatic resources in the areas closest to the wetlands and Miller Creek, and will protect surface water quality in nearby Miller Creek.

(b) RCRA metals: The Port will employ the following standards and protocols concerning the placement of fill in the drainage layer cover with the goal of ensuring that baseline conditions are not altered for surface water receptors:

(i) For the drainage layer cover, as with the remainder of the embankment fill, no soil will be accepted that exceeds MTCA Method A standards for the RCRA metals per agreement with the Washington State Department of Ecology. These values are shown in columns 3 and 4 of Table 1.

(ii) The second column of Table 1 shows values for the RCRA metals that have been calculated using the Washington State Department of Ecology's (Ecology) "Three Phase Partitioning Model." Ecology uses this conservative model to establish soil concentrations that are protective of ground water as a drinking water source (see WAC 173-340-747(3), (4), and (5)) (Attachment B). The values in the second column of Table 1 are derived by using this model to "back-calculate" soil concentrations using freshwater ambient water quality criteria (WAC 173-201A) instead of ground water quality criteria. In other words, the model used by Ecology to establish soil concentrations that are protective of groundwater as a drinking water source has been employed to calculate soil concentrations that are protective of surface water receptors exposed to discharge or seepage from the drainage layer. No soil will be accepted for the drainage layer cover that exceeds the back-calculated values shown in the second column of Table 1 (with adjustments for PQLs and background concentrations as noted in Table 1 footnotes) unless the Synthetic Precipitation Leaching Procedure (SPLP) confirms the suitability of the soil as discussed below in (b)(iv). The Port will consult with the FWS if site-specific data is collected which may merit a recalculation of the three phase model soil concentrations in Table 1, and reinitate consultation as appropriate.

(iii) Column 6 shows Puget Sound Background concentrations for the eight RCRA metals. Exceedences of background metal concentrations can be expected due to the natural variability in soil types which will be offered

from numerous sources in the region. Thus, in column 7, a range of screening criteria between background levels, when available, and Method A standards is shown. In the event the Port desires to establish site-specific background criteria, it will discuss proposed criteria with FWS and reinitiate consultation as appropriate. If the suppliers wish to place soil in the drainage cover layer that exceed background concentrations, the Port will confirm the acceptability of the material by requiring suppliers using that source to conduct sufficient SPLP testing to show that Method A criteria are protective of baseline conditions for surface water receptors.

(iv) To confirm the protectiveness of the Method A standards and the Three Phase Partitioning Model, SPLP testing will be used as a laboratory method to ensure that leaching of metals through potential embankment soil will not occurr at unacceptable levels. SPLP testing according to the procedures contained in WAC 173-340-747(7) and SPLP methodology are shown in Attachments B and D respectively. SPLP results will be compared, as an initial screening tool, to freshwater ambient water quality criteria according to guidelines outlined at WAC 173-201A-040 (Attachment C). If the SPLP results indicate that metals in the proposed fill material *do not leach* at levels above the freshwater ambient water quality criteria, adjusted for PQLs as appropriate, the material will be considered suitable for placement. If the SPLP indicates that metals in the proposed fill material *leach* at levels above ambient water quality criteria, the Port will either reject the material or discuss the results of the SPLP with FWS before acceptance of the material. The Port shall submit to FWS for its review and approval a plan describing the Port's SPLP protocol. The FWS shall approve this plan prior the Port's implementation of the SPLP protocol.

(c) Organochlorines: The Port will employ the following standards and protocols concerning the placement of fill in the drainage layer cover:

(i) The Port will require testing for organochlorines on those sites where such compounds may be present, including sites with potential commercial pesticide applications, and sites with historic wood preserving operations. The supplier, with Port review, will identify sites potentially containing such compounds through the process discussed above under Response 1 (i.e., Phase I and II Environmental Site Assessments). The Port will update guidelines provided to suppliers to clearly state that testing for additional constituents must be conducted as appropriate based on current and historical site land uses.

(ii) As with the remainder of the embankment fill, sources of fill proposed for placement in the drainage layer cover which have detectable levels of organochlorines will not exceed MTCA Method A criteria.

(iii) Sources of fill proposed for placement in the drainage layer cover which have detectable levels of organochlorines will be evaluated using the "Three Phase Partitioning Model" discussed in (b) above. When organochlorines are detected in potential fill, the Port will use the Three Phase Partitioning Model to back-calculate soil concentrations using freshwater ambient water quality criteria. Soil found to contain organochlorines at concentrations below Three Phase Partitioning Model concentrations (adjusted for PQLs) will be deemed acceptable. No soil will be accepted for the drainage layer cover that exceeds Three Phase Partitioning Model concentrations (adjusted for PQLs) unless SPLP testing confirms the suitability of the soil as discussed below in (c)(iv).

(iv) The Port will require SPLP testing when proposed soil exceeds calculated Three Phase Partitioning Model concentrations. SPLP test results will be compared, as an initial screening tool, to freshwater ambient water quality criteria according to guidelines outlined at WAC 173-201A-040 (Attachment C). If the SPLP results indicate that organocholorines in the proposed fill material *do not leach* at levels above the freshwater ambient water quality criteria, adjusted for PQLs as appropriate, the material will be considered suitable for placement. If the SPLP indicates that organochlorines in the proposed fill leach at levels above ambient water quality criteria, the Port will either reject the material or discuss the results of the SPLP with FWS before acceptance of the material, and reinitiate consultation as appropriate.

2. To isolate organisms in the biologically active zone from contaminants that may be contained in the fill material, the surficial 3 feet of fill should be contaminant free (e.g., below probable affect levels stated in the appropriate NOAA SQuiRTs or below background levels found within the area if available).

As discussed in our January 22, 2001, meeting, and dates thereafter, from a practical standpoint it is difficult to apply different acceptance criteria to the upper three feet of embankment fill material versus the underlying fill material. Final grading of the embankment will involve working and reworking of the upper material to achieve appropriate compaction and site elevations. Portions of the embankment will be paved for the runway and associated taxiways. Remaining embankment areas will be grass covered and will have very strict wildlife controls (i.e., hazing and elimination) in accordance with FAA regulations to insure aircraft safety.

During our January 22, 2001 meeting, the Port agreed to evaluate the eight RCRA metals with respect to the recently-adopted MTCA regulation WAC 173-340-7490 Terrestrial Ecological Evaluation Procedures (Attachment E). The goal of the terrestrial ecological evaluation process is the protection of terrestrial ecological receptors from exposure to contaminated soil with the potential to cause significant adverse effects. Table 749-2 - Priority Contaminants of Ecological Concern for Sites that Qualify for the Simplified Terrestrial Ecological Evaluation Procedure lists soil concentrations for seven

of the eight RCRA metals (Attachment E). These concentrations are developed to protect wildlife through direct ingestion of soil using a robin/shrew food chain model, two surrogate receptors meant to represent highly exposed species. Soil concentrations were also developed for plants and soil invertebrates using toxicity values from the published literature. The most restrictive value was then placed into Table 749-2.

Generally, the Method A concentrations are less than or similar to Table 749-2 (see Table 1). However, the MTCA Method A standards list does not include values for barium, total chromium or selenium. For these constituents, the Table 749-2 ecological standards listed in Table 1 (adjusted for background and PQLs) will be used as screening criteria for the top three feet of embankment fill.

3. The Port of Seattle will monitor the seepage water from the rock underdrain for contaminants. Monitoring shall be for a period of 10 years, on a monthly basis. Based on the monitoring results, the monitoring schedule may be modified by FWS.

The Port of Seattle shall prepare a water quality monitoring plan to track the quality of seepage from the drainage layer beneath the Third Runway embankment fill. Such a plan shall be prepared to address the amount of monitoring in a tiered or phased approach. For example, if it is determined that water flowing through the new embankment is exceeding designated surface water quality criteria, new monitoring points may be established between the embankment and Miller Creek to evaluate the fate and transport of the impacted fill water. Monitoring Miller Creek would represent the final phase of a monitoring program if it were determined that constituents in embankment fill water were reaching the creek. The Port shall develop a monitoring plan in consultation with FWS. The Port shall submit a draft monitoring plan to FWS for its review and approval within 120 days after FWS' issuance of a biological opinion or concurrence letter. The monitoring plan shall provide for a minimum of three years of monthly monitoring, with the monitoring period commencing upon detection of seepage from the drainage layer of the completed embankment. At the end of the three-year monitoring period, the Port and FWS shall reevaluate the need to modify or continue the monitoring program. In the event seepage is not detected within six years after completion of embankment construction, the Port and FWS shall likewise reevaluate the need to modify or continue the monitoring program.

4, 5. If material is used which is known to have contaminants, this material shall be distributed over a large area to avoid creating a "hot spot" in the embankment. The Port of Seattle will request FWS approval for those fill materials proposed that do not meet MTCA Method A standards, at a minimum. Information on why these materials are to be used and proof that their chemical constituents/levels will not result in environmental impacts to aquatic organisms needs to be provided.

The use of MTCA Method A as a screening standard for incoming fill material will avoid the creation of "hot spots" in the embankment. In the event that the Port considers placement of fill materials that do not meet MTCA Method A standards, the Port will discuss results with FWS and consultation will be reinitiated as appropriate.

Acceptance of material above MTCA Method A standards requires Ecology approval. Discussion with the agencies will provide information regarding the environmental suitability of this material and proposed placement methods and locations.

TABLE 1
SOIL SCREENING CRITERIA FOR THIRD RUNWAY EMBANKMENT FILL (MG/KG)

		MTCA(a) – Unrestricted Land Use				Screening Criteria	
RCRA Metals	Three Phase Partitioning Model Concentrations(b)	Current Method A Standard	Proposed Method A Standard (c)	Proposed Ecological Standard (c)	Puget Sound Background (Upper 90%) (d)	Drainage Layer Cover	Top 3-feet Embankment
Arsenic	88	20	20	95 (As V)	7	7 to 20 (e)	20 (l)
Barium	12000	NA	NA	1250	NA	12,000 (f)	1250 (m)
Cadmium	0.15	2	2	25	1	1 to 2 (g)	2 (l)
Chromium (Total)	NA	100	NA	42	48	48 to 100 (g), (h)	48 (n)
Lead	500	250	250	220	24	24 to 250 (i)	220 (m)
Mercury (Inorganic)	0.013	1	2	9	0.07	0.07 to 2 (g)	2 (l)
Selenium	0.52	NA	NA	0.8	NA	5 (PQL), (j), (k)	5 (PQL), (j)
Silver	0.11	NA	NA	NA	NA	5 (PQL), (j), (k)	5 (PQL), (j)

Note: See associated text in Attachment A for related discussion.

Footnotes:

NA: Not available. Insufficient information available to develop criteria.

PQL: Practical Quantitation Limit

(a) Model Toxics Control Act WAC 173-340.

(b) MTCA WAC 173-340 747 (3), (4), and (5) Three Phase Partitioning Model soil concentrations calculated using aquatic freshwater quality criteria (WAC 173-201A). For purposes of this table, the lowest criteria from "Freshwater CCC Chronic" Screening Quick Reference Table (NOAA SQuiRT Table) were used.

(c) Proposed Method A and Ecological standards were finalized on February 15, 2001, and will become effective on August 15, 2001.

(d) Natural Background Soil Metals in Washington State (Ecology Publication 94-115).

(e) The MTCA Method A standard of 20 mg/kg is less than the Three Phase Partitioning Model concentration of 88 mg/kg indicating that the Method A standard is protective of surface water receptors. When soil concentrations are greater than background but below the Method A standard, sufficient SPLP testing will be conducted to confirm that the Method A standard is protective (see associated text in Attachment A for discussion of SPLP testing).

(f) Three Phase Partitioning Model concentrations calculated using MTCA Method B ground water quality criteria because there was no available criteria for barium in surface water. If concentrations exceed calculated values, SPLP testing will be required to evaluate the suitability of the soil.

(g) Three Phase Partitioning Model concentrations, adjusted upward to background, and Method A standards. To verify the protectiveness of Method A standards, SPLP testing will be conducted when soil concentrations exceed background but are below Method A standards. (Note: exceedances in background concentrations anticipated due to natural variability of soil types being used as fill.)

(h) Chromium speciation may be conducted in the event SPLP is applied.

(i) The MTCA Method A standard of 250 mg/kg is less than the Three Phase Partitioning Model concentration of 500 mg/kg indicating that the Method A standard is protective of surface water receptors. When soil concentrations are greater than background but the Method A standard, sufficient SPLP testing will be conducted to confirm that the Method A standard is protective.

(j) PQLS from Department of Ecology "Implementation Memo No. 3: PQLs as Cleanup Standards", November 24, 1993.

(k) Three Phase Partitioning Model concentrations, adjusted upward to PQL. If soil concentrations exceed the PQL, SPLP testing will be required to evaluate the suitability of the soil.

(l) Screening criteria based on MTCA Method A standards.

(m) Screening criteria based on ecological standards.

(n) Screening criteria based on ecological standards, adjusted for background.

ATTACHMENT B

WAC 173-340-747(3-5, 7) (February 12, 2001)

WAC 173-340-747 (3) Overview of methods. This subsection provides an overview of the methods specified in subsections (4) through (10) of this section for deriving soil concentrations that meet the criteria specified in subsection (2) of this section. Certain methods are tailored for particular types of hazardous substances or sites. Certain methods are more complex than others and certain methods require the use of site-specific data. The specific requirements for deriving a soil concentration under a particular method may also depend on the hazardous substance.

(a) Fixed parameter three-phase partitioning model. The three-phase partitioning model with fixed input parameters may be used to establish a soil concentration for any hazardous substance. Site-specific data are not required for use of this model. See subsection (4) of this section.

(b) Variable parameter three-phase partitioning model. The three-phase partitioning model with variable input parameters may be used to establish a soil concentration for any hazardous substance. Site-specific data are required for use of this model. See subsection (5) of this section.

(c) Four-phase partitioning model. The four-phase partitioning model may be used to derive soil concentrations for any site where hazardous substances are present in the soil as a nonaqueous phase liquid (NAPL). The department expects that this model will be used at sites contaminated with petroleum hydrocarbons. Site-specific data are required for use of this model. See subsection (6) of this section.

(d) Leaching tests. Leaching tests may be used to establish soil concentrations for certain metals. Leaching tests may also be used to establish soil concentrations for other hazardous substances, including petroleum hydrocarbons, provided sufficient information is available to demonstrate that the leaching test can accurately predict ground water impacts. Testing of soil samples from the site is required for use of this method. See subsection (7) of this section.

(e) Alternative fate and transport models. Fate and transport models other than those specified in subsections (4) through (6) of this section may be used to establish a soil concentration for any hazardous substance. Site-specific data are required for use of such models. See subsection (8) of this section.

(f) Empirical demonstration. An empirical demonstration may be used to show that measured soil concentrations will not cause an exceedance of the applicable ground water cleanup levels established under WAC 173-340-720. This empirical demonstration may be used for any hazardous substance. Site-specific data (e.g., ground water samples and soil samples) are required under this method. If the required demonstrations cannot be made, then a protective soil concentration shall be established under one of the methods specified in subsections (4) through (8) of this section. See subsection (9) of this section.

(g) Residual saturation. To ensure that the soil concentration established under one of the methods specified in subsections (4) through (9) of this section will not cause an exceedance of the ground water cleanup level established under WAC 173-340-720, the soil concentration must not result in the accumulation of nonaqueous phase liquid (NAPL) on or in ground water. The methodologies and procedures specified in subsection (10) of this section shall be used to determine if this criterion is met.

WAC 173-340-747 (4) Fixed parameter three-phase partitioning model.

(a) Overview. This subsection specifies the procedures and requirements for establishing soil concentrations through the use of the fixed parameter three-phase partitioning model. The model may be used to establish soil concentrations for any hazardous substance. The model may be used to calculate both unsaturated and saturated zone soil concentrations.

This method provides default or fixed input parameters for the three-phase partitioning model that are intended to be protective under most circumstances and conditions; site-specific measurements are not required. In some cases it may be appropriate to use site-specific measurements for the input parameters. Subsection (5) of this section specifies the procedures and requirements to establish site-specific input parameters for use in the three-phase partitioning model.

(b) Description of the model. The three-phase partitioning model is described by the following equation:

[Equation 747-1]

Place illustration here.

Where:
Cs = Soil concentration (mg/kg)
Cw = Ground water cleanup level established under WAC 173-340-720 (ug/l)
UCF = Unit conversion factor (1mg/1,000 ug)
DF = Dilution factor (dimensionless: 20 for unsaturated zone soil; see (e) of this subsection for saturated zone soil)
Kd = Distribution coefficient (L/kg; see (c) of this subsection)
&thgr;w = Water-filled soil porosity (ml water/ml soil: 0.3 for unsaturated zone soil; see (e) of this subsection for saturated zone soil)
&thgr;a = Air-filled soil porosity (ml air/ml soil: 0.13 for unsaturated zone soil; see (e) of this subsection for saturated zone soil)
Hcc = Henry's law constant (dimensionless; see (d) of this subsection)
&rgr;b = Dry soil bulk density (1.5 kg/L)

(c) Distribution coefficient (Kd). The default Kd values for organics and metals used in Equation 747-1 are as follows:

(i) Organics. For organic hazardous substances, the Kd value shall be derived using Equation 747-2. The Koc (soil organic carbon-water partition coefficient) parameter specified in Equation 747-2 shall be derived as follows:

(A) Nonionic organics. For individual nonionic hydrophobic organic hazardous substances (e.g., benzene and naphthalene), the Koc values in Table 747-1 shall be used. For hazardous substances not listed in Table 747-1, Kd values may be developed as provided in subsection (5) of this section (variable three-phase partitioning model).

(B) Ionizing organics. For ionizing organic hazardous substances (e.g., pentachlorophenol and benzoic acid), the Koc values in Table 747-2 shall be used. Table 747-2 provides Koc values for three different pHs. To select the appropriate Koc value, the soil pH must be measured. The Koc value for the corresponding soil pH shall be used. If the soil pH falls between the pH values provided, an appropriate Koc value shall be selected by interpolation between the listed Koc values.

[Equation 747-2]
Kd = Koc x foc
Where:
Kd = Distribution coefficient (L/kg)
Koc = Soil organic carbon-water partitioning coefficient (ml/g). See (c)(i) of this subsection.
foc = Soil fraction of organic carbon (0.1% or 0.001 g/g)

(ii) Metals. For metals, the Kd values in Table 747-3 shall be used. For metals not listed in Table 747-3, Kd values may be developed as provided in subsection (5) of this section (variable three-phase partitioning model).

(d) Henry's law constant. For petroleum fractions, the values for Henry's law constant in Table 747-4 shall be used in Equation 747-1. For individual organic hazardous substances, the value shall be based on values in the scientific literature. For all metals present as inorganic compounds except mercury, zero shall be used. For mercury, either 0.47 or a value derived from the scientific literature shall be used. Derivation of Henry's law constant from the scientific literature shall comply with WAC 173-340-702 (14), (15) and (16).

(e) Saturated zone soil concentrations. Equation 747-1 may also be used to derive concentrations for soil that is located at or below the ground water table (the saturated zone). The following input parameters shall be changed if Equation 747-1 is used to derive saturated zone soil concentrations:

(i) The dilution factor shall be changed from 20 to 1;

(ii) The water-filled soil porosity value shall be changed from 0.3 ml water/ml soil to 0.43 ml water/ml soil; and

(iii) The air-filled soil porosity value shall be changed from 0.13 ml air/ml soil to zero.

WAC 173-340-747 (5) Variable parameter three-phase partitioning model.

(a) Overview. This section specifies the procedures and requirements to derive site-specific input parameters for use in the three-phase partitioning model. This method may be used to establish soil concentrations for any hazardous substance. This method may be used to calculate both unsaturated and saturated zone soil concentrations.

This method allows for the substitution of site-specific values for the default values in Equation 747-1 for one or more of the following five input parameters: Distribution coefficient, soil bulk density, soil volumetric water content, soil air content, and dilution factor. The methods that may be used and the requirements that shall be met to derive site-specific values for each of the five input parameters are specified in (b) through (f) of this subsection.

(b) Methods for deriving a distribution coefficient (Kd). To derive a site-specific distribution coefficient, one of the following methods shall be used:

(i) Deriving Kd from soil fraction of organic carbon (foc) measurements. Site-specific measurements of soil organic carbon may be used to derive distribution coefficients for nonionic hydrophobic organics using Equation 747-2. Soil organic carbon measurements shall be based on uncontaminated soil below the root zone (i.e., soil greater than one meter in depth) that is representative of site conditions or in areas through which contaminants are likely to migrate.

The laboratory protocols for measuring soil organic carbon in the Puget Sound Estuary Program (March, 1986) may be used. Other methods may also be used if approved by the department. All laboratory measurements of soil organic carbon shall be based on methods that do not include inorganic carbon in the measurements.

(ii) Deriving Kd from site data. Site-specific measurements of the hazardous substance concentrations in the soil and the soil pore water or ground water may be used, subject to department approval, to derive a distribution coefficient. Distribution coefficients that have been derived from site data shall be based on measurements of soil and ground water hazardous substance concentrations from the same depth and location. Soil and ground water samples that have hazardous substances present as a nonaqueous phase liquid (NAPL) shall not be used to derive a distribution coefficient and measures shall be taken to minimize biodegradation and volatilization during sampling, transport and analysis of these samples.

(iii) Deriving Kd from batch tests. A site-specific distribution coefficient may be derived by using batch equilibrium tests, subject to department approval, to measure hazardous substance adsorption and desorption. The results from the batch test may be used to derive Kd from the sorption/desorption relationship between hazardous substance concentrations in the soil and water. Samples that have hazardous substances present as a nonaqueous phase liquid (NAPL) shall not be used to derive a distribution coefficient and measures shall be taken to minimize biodegradation and volatilization during testing.

(iv) Deriving Kd from the scientific literature. The scientific literature may be used to derive a site-specific distribution coefficient (Kd) for any hazardous substance, provided the requirements in WAC 173-340-702 (14), (15) and (16) are met.

(c) Deriving soil bulk density. ASTM Method 2049 or other methods approved by the department may be used to derive soil bulk density values.

(d) Deriving soil volumetric water content using laboratory methods. ASTM Method 2216 or other methods approved by the department may be used to derive soil volumetric water content values.

(e) Estimating soil air content. An estimate of soil air content may be determined by calculating soil porosity and subtracting the volumetric water content.

(f) Deriving a dilution factor from site-specific estimates of infiltration and ground water flow volume. Site-specific estimates of infiltration and ground water flow volume may be used in the following equation to derive a site-specific dilution factor:

[Equation 747-3]
$DF = (Qp + Qa)/Qp$
Where:
DF = Dilution factor (dimensionless)
Qp = Volume of water infiltrating (m3/yr)
Qa = Ground water flow (m3/yr)

(i) Calculating ground water flow volume. The following equation shall be used under this method to calculate the volume of ground water flow (Qa):

[Equation 747-4]
$Qa = K \times A \times I$
Where:

Qa = Ground water flow volume (m3/year)
K = Hydraulic conductivity (m/year). Site-specific measurements shall be used to derive this parameter.
A = Aquifer mixing zone (m2). The aquifer mixing zone thickness shall not exceed 5 meters in depth and be equal to a unit width of 1 meter, unless it can be demonstrated empirically that the mixing zone thickness exceeds 5 meters.
I = Gradient (m/m). Site-specific measurements shall be used to derive this parameter.

(A) Equation 747-4 assumes the ground water concentrations of hazardous substances of concern upgradient of the site are not detectable. If this assumption is not true, the dilution factor may need to be adjusted downward in proportion to the upgradient concentration.

(B) Direct measurement of the flow velocity of ground water using methods approved by the department may be used as a substitute for measuring the ground water hydraulic conductivity and gradient.

(ii) Calculating or estimating infiltration. The following equation shall be used under this method to calculate the volume of water infiltrating (Qp):

[Equation 747-5]
Qp = L x W x Inf
Where:
Qp = Volume of water infiltrating (m3/year)
L = Estimated length of contaminant source area parallel to ground water flow (m)
W = Unit width of contaminant source area (1 meter)
Inf = Infiltration (m/year)

(A) If a default annual infiltration value (Inf) is used, the value shall meet the following requirements. For sites west of the Cascade Mountains, the default annual infiltration value shall be 70 percent of the average annual precipitation amount. For sites east of the Cascade Mountains, the default annual infiltration value shall be 25 percent of the average annual precipitation amount.

(B) If a site-specific measurement or estimate of infiltration (Inf) is made, it shall be based on site conditions without surface caps (e.g., pavement) or other structures that would control or impede infiltration. The presence of a cover or cap may be considered when evaluating the protectiveness of a remedy under WAC 173-340-350 through 173-340-360. If a site-specific measurement or estimate of infiltration is made, then it must comply with WAC 173-340-702 (14), (15) and (16).

WAC 173-340-747 (7) Leaching tests.

(a) **Overview.** This subsection specifies the procedures and requirements for deriving soil concentrations through the use of leaching tests. Leaching tests may be used to establish soil concentrations for the following specified metals: Arsenic, cadmium, total chromium, hexavalent chromium, copper, lead, mercury, nickel, selenium, and zinc (see (b) and (c) of this subsection). Leaching tests may also be used to establish soil concentrations for other hazardous substances, including petroleum hydrocarbons, provided sufficient information is available to correlate leaching test results with ground water impacts (see (d) of this subsection). Testing of soil samples from the site is required for use of this method.

(b) **Leaching tests for specified metals.** If leaching tests are used to establish soil concentrations for the specified metals, the following two leaching tests may be used:

(i) EPA Method 1312, Synthetic Precipitation Leaching Procedure (SPLP). Fluid #3 (pH = 5.0), representing acid rain in the western United States, shall be used when conducting this test. This test may underestimate ground water impacts when acidic conditions exist due to significant biological degradation or for other reasons. Underestimation of ground water impacts may occur, for example, when soils contaminated with metals are located in wood waste, in municipal solid waste landfills, in high sulfur content mining wastes, or in other situations with a pH <6. Consequently, this test shall not be used in these situations and the TCLP test should be used instead.

(ii) **EPA Method 1311, Toxicity Characteristic Leaching Procedure (TCLP).** Fluid #1 (pH = 4.93), representing organic acids generated by biological degradation processes, shall be used when conducting this test. This test is intended to represent situations where acidic conditions are present due to biological degradation such as in municipal solid waste landfills. Thus, it may underestimate ground water impacts where this is not the case and the metals of interest are more soluble under alkaline conditions. An example of this would be arsenic occurring in alkaline (pH >8) waste or soils. Consequently, this test shall not be used in these situations and the **SPLP** test should be used instead.

(c) **Criteria for specified metals.** When using either EPA Method 1312 or 1311, the analytical methods used for analysis of the leaching test effluent shall be sufficiently sensitive to quantify hazardous substances at concentrations at the ground water cleanup level established under WAC 173-340-720. For a soil metals concentration derived under (b) of this subsection to be considered protective of ground water, the leaching test effluent concentration shall meet the following criteria:

(i) For cadmium, lead and zinc, the leaching test effluent concentration shall be less than or equal to ten (10) times the applicable ground water cleanup level established under WAC 173-340-720.

(ii) For arsenic, total chromium, hexavalent chromium, copper, mercury, nickel and selenium, the leaching test effluent concentration shall be less than or equal to the applicable ground water cleanup level established under WAC 173-340-720.

ATTACHMENT C

WAC 173-201A-040

WAC 173-201A-040 Toxic substances. (1) Toxic substances shall not be introduced above natural background levels in waters of the state which have the potential either singularly or cumulatively to adversely affect characteristic water uses, cause acute or chronic toxicity to the most sensitive biota dependent upon those waters, or adversely affect public health, as determined by the department.

(2) The department shall employ or require chemical testing, acute and chronic toxicity testing, and biological assessments, as appropriate, to evaluate compliance with subsection (1) of this section and to ensure that aquatic communities and the existing and characteristic beneficial uses of waters are being fully protected.

(3) The following criteria shall be applied to all surface waters of the state of Washington for the protection of aquatic life. The department may revise the following criteria on a statewide or waterbody-specific basis as needed to protect aquatic life occurring in waters of the state and to increase the technical accuracy of the criteria being applied. The department shall formally adopt any appropriate revised criteria as part of this chapter in accordance with the provisions established in chapter 34.05 RCW, the Administrative Procedure Act. The department shall ensure there are early opportunities for public review and comment on proposals to develop revised criteria. Values are µg/L for all substances except Ammonia and Chloride which are mg/L:

	Freshwater		Marine Water	
Substance	Acute	Chronic	Acute	Chronic
Aldrin/Dieldrin	2.5a	0.0019b	0.71a	0.0019b
Ammonia	f,c	g,d	0.233h,c	0.035h,d
(un-ionized NH3) hh				
Arsenic dd	360.0c	190.0d	69.0c,ll	36.0d, cc,ll
Cadmium dd	i,c	j,d	42.0c	9.3d
Chlordane	2.4a	0.0043b	0.09a	0.004b
Chloride	860.0h,c	230.0h,d	-	-
(Dissolved) k				
Chlorine (Total Residual)	19.0c	11.0d	13.0c	7.5d
Chlorpyrifos	0.083c	0.041d	0.011c	0.0056d
Chromium (Hex) dd	15.0c,l,ii	10.0d,jj	1,100.0c ,l,ll	50.0d,ll
Chromium (Tri) gg	m,c	n,d	-	-
Copper dd	o,c	p,d	4.8c,ll	3.1d,ll
Cyanide ee	22.0c	5.2d	1.0c,m m	-
DDT (and metabolites)	1.1a	0.001b	0.13a	0.001b
Dieldrin/Aldrin e	2.5a	0.0019b	0.71a	0.0019b
Endosulfan	0.22a	0.056b	0.034a	0.0087b
Endrin	0.18a	0.0023b	0.037a	0.0023b
Heptachlor	0.52a	0.0038b	0.053a	0.0036b
Hexachlorocyclohexane (Lindane)	2.0a	0.08b	0.16a	-
Lead dd	q,c	r,d	210.0c,l l	8.1d,ll
Mercury s	2.1c,kk,d d	0.012d,ff	1.8c,ll,d d	0.025d,ff
Nickel dd	t,c	u,d	74.0c,ll	8.2d,ll
Parathion	0.065c	0.013d	-	-
Pentachlorophenol (PCP)	w,c	v,d	13.0c	7.9d
Polychlorinated Biphenyls (PCBs)	2.0b	0.014b	10.0b	0.030b
Selenium	20.0c,ff	5.0d,ff	290c,ll, dd	71.0d, x,ll,dd
Silver dd	y,a	-	1.9a,ll	-

Toxaphene	0.73c,z	0.0002d	0.21c,z	0.0002d
Zinc dd	aa,c	bb,d	90.0c,ll	81.0d,ll

Notes to Table:

a. An instantaneous concentration not to be exceeded at any time.

b. A 24-hour average not to be exceeded.

c. A 1-hour average concentration not to be exceeded more than once every three years on the average.

d. A 4-day average concentration not to be exceeded more than once every three years on the average.

e. Aldrin is metabolically converted to Dieldrin. Therefore, the sum of the Aldrin and Dieldrin concentrations are compared with the Dieldrin criteria.

f. Shall not exceed the numerical value given by:

$$0.52 \div (FT)(FPH)(2)$$

where:
$FT = 10^{[0.03(20-TCAP)]}$; $TCAP \leq T \leq 30$
$FT = 10^{[0.03(20-T)]}$; $0 \leq T \leq TCAP$
$FPH = 1$; $8 \leq pH \leq 9$
$FPH = (1+ 10^{(7.4-pH)}) \div 1.25$; $6.5 \leq pH \leq 8.0$
$TCA_P = 20°C$; Salmonids present.
$TCA_P = 25°C$; Salmonids absent.

g. Shall not exceed the numerical value given by:

$$0.80 \div (FT)(FPH)(RATIO)$$

where:
$RATIO = 13.5$; $7.7 \leq pH \leq 9$
$RATIO = (20.25 \times 10^{(7.7-pH)}) \div (1+ 10^{(7.4-pH)})$; $6.5 \leq pH \leq 7.7$

where:
FT and FPH are as shown in (f) above except:
TCAP = 15°C; Salmonids present.
TCAP = 20°C; Salmonids absent.

h. Measured in milligrams per liter rather than micrograms per liter.

i. $\leq (0.944)(e(1.128[\ln(\text{hardness})]-3.828))$ at hardness= 100. Conversion factor (CF) of 0.944 is hardness dependent. CF is calculated for other hardnesses as follows: CF= 1.136672 - [(ln hardness)(0.041838)].

j. $\leq (0.909)(e(0.7852[\ln(\text{hardness})]-3.490))$ at hardness= 100. Conversions factor (CF) of 0.909 is hardness dependent. CF is calculated for other hardnesses as follows: CF= 1.101672 - [(ln hardness)(0.041838)].

k. Criterion based on dissolved chloride in association with sodium. This criterion probably will not be adequately protective when the chloride is associated with potassium, calcium, or magnesium, rather than sodium.

l. Salinity dependent effects. At low salinity the 1-hour average may not be sufficiently protective.

m. $\leq (0.316)e^{(0.8190[\ln(\text{hardness})]+3.688)}$

n. $\leq (0.860)e^{(0.8190[\ln(\text{hardness})]+1.561)}$

o. $\leq (0.960)(e^{(0.9422[\ln(\text{hardness})]-1.464)})$

p. $\leq (0.960)(e^{(0.8545[\ln(\text{hardness})]-1.465)})$

q. $\leq (0.791)(e^{(1.273[\ln(\text{hardness})]-1.460)})$ at hardness= 100. Conversion factor (CF) of 0.791 is hardness dependent. CF is calculated for other hardnesses as follows: CF= 1.46203 - [(In hardness)(0.145712)].

r. $\leq (0.791)(e^{(1.273[\ln(\text{hardness})]-4.705)})$ at hardness= 100. Conversion factor (CF) of 0.791 is hardness dependent. CF is calculated for other hardnesses as follows: CF= 1.46203 - [(In hardness)(0.145712)].

s. If the four-day average chronic concentration is exceeded more than once in a three-year period, the edible portion of the consumed species should be analyzed. Said edible tissue concentrations shall not be allowed to exceed 1.0 mg/kg of methylmercury.

t. $\leq (0.998)(e^{(0.8460[\ln(\text{hardness})]+3.3612)})$

u. $\leq (0.997)(e^{(0.8460[\ln(\text{hardness})]+1.1645)})$

v. $\leq e^{[1.005(\text{pH})-5.290]}$

w. $\leq e^{[1.005(\text{pH})-4.830]}$

x. The status of the fish community should be monitored whenever the concentration of selenium exceeds 5.0 ug/1 in salt water.

y. $\leq (0.85)(e^{(1.72[\ln(\text{hardness})]-6.52)})$

z. Channel Catfish may be more acutely sensitive.

aa. $\leq (0.978)(e^{(0.8473[\ln(\text{hardness})]+0.8604)})$

bb $\leq (0.986)(e^{(0.8473[\ln(\text{hardness})]+0.7614)})$

cc. Nonlethal effects (growth, C-14 uptake, and chlorophyll production) to diatoms (Thalassiosira aestivalis and Skeletonema costatum) which are common to Washington's waters have been noted at levels below the established criteria. The importance of these effects to the diatom populations and the aquatic system is sufficiently in question to persuade the state to adopt the USEPA National Criteria value (36 µg/L) as the state threshold criteria, however, wherever practical the ambient concentrations should not be allowed to exceed a chronic marine concentration of 21 µg/L.

dd These ambient criteria in the table are for the dissolved fraction. The cyanide criteria are based on the weak acid dissociable method. The metals criteria may not be used to calculate total recoverable effluent limits unless the seasonal partitioning of the dissolved to total metals in the ambient water are known. When this information is absent, these metals criteria shall be applied as total recoverable values, determined by back-calculation, using the conversion factors incorporated in the criterion equations. Metals criteria may be adjusted on a site-specific basis when data are made available to the department clearly demonstrating the effective use of the water effects ratio approach established by USEPA, as generally guided by the procedures in USEPA Water Quality Standards Handbook, December 1983, as supplemented or replaced. Information which is used to develop effluent limits based on applying metals partitioning studies or the water effects ratio approach shall be identified in the permit fact sheet developed pursuant to WAC 173-220-060 or 173-226-110, as appropriate, and shall be made available for the public comment period required pursuant to WAC 173-220-050 or 173-226-130(3), as appropriate.

ee. The criteria for cyanide is based on the weak and dissociable method in the 17th Ed. Standard Methods for the Examination of Water and Wastewater, 4500-CN I, and as revised (see footnote dd, above).

ff. These criteria are based on the total-recoverable fraction of the metal.

gg Where methods to measure trivalent chromium are unavailable, these criteria are to be represented by total-recoverable chromium.

hh Tables for the conversion of total ammonia to un-ionized ammonia for freshwater can be found in the USEPA's Quality Criteria for Water, 1986. Criteria concentrations based on total ammonia for marine water can be found in USEPA Ambient Water Quality Criteria for Ammonia (Saltwater)-1989, EPA440/5-88-004, April 1989.

ii. Conversion factor to calculate dissolved metal concentration is 0.982.

jj. Conversion factor to calculate dissolved metal concentration is 0.962.

ATTACHMENT E

WAC 173-340-7490 (February 15, 2001)

WAC 173-340-7490
Terrestrial ecological evaluation procedures.

(1) **Purpose.**
(a) WAC 173-340-7490 through 173-340-7494 define the goals and procedures the department will use for:
(i) Determining whether a release of hazardous substances to soil may pose a threat to the terrestrial environment;
(ii) Characterizing existing or potential threats to terrestrial plants or animals exposed to hazardous substances in soil; and (iii) Establishing site-specific cleanup standards for the protection of terrestrial plants and animals.
(b) Information collected during a terrestrial ecological evaluation shall also be used in developing and evaluating cleanup action alternatives and in selecting a cleanup action under WAC 173-340-350 through 173-340-390. WAC 173-340-7490 through 173-340-7494 do not necessarily require a cleanup action for terrestrial ecological protection separate from a human health-based cleanup action. Where appropriate, a terrestrial ecological evaluation may be conducted so as to avoid duplicative studies of soil contamination that will be remediated to address other concerns, as provided in WAC 173-340-350 (7)(c)(iii)(F)(II).
(c) These procedures are not intended to be used to evaluate potential threats to ecological receptors in sediments, surface water, or wetlands. Procedures for sediment evaluations are described in WAC 173-340-760, and for surface water evaluations in WAC 173-340-730. Procedures for wetland evaluations shall be determined by the department on a case-by-case basis.

(2) **Requirements.** In the event of a release of a hazardous substance to the soil at a site, one of the following actions shall be taken:
(a) Document an exclusion from any further terrestrial ecological evaluation using the criteria in WAC 173-340-7491;
(b) Conduct a simplified terrestrial ecological evaluation as set forth in WAC 173-340-7492; or
(c) Conduct a site-specific terrestrial ecological evaluation as set forth in WAC 173-340-7493.

(3) **Goal.** The goal of the terrestrial ecological evaluation process is the protection of terrestrial ecological receptors from exposure to contaminated soil with the potential to cause significant adverse effects. For species protected under the Endangered Species Act or other applicable laws that extend protection to individuals of a species, a significant adverse effect means an impact that would significantly disrupt normal behavior patterns that include, but are not limited to, breeding, feeding, or sheltering. For all other species, significant adverse effects are effects that impair reproduction, growth or survival.
(a) The simplified terrestrial ecological evaluation process has been developed to be protective of terrestrial ecological receptors at most qualifying sites, while the site-specific terrestrial ecological evaluation process is intended to be highly likely to be protective at any site.
(b) The following policy on terrestrial ecological receptors to be protected applies to all terrestrial ecological evaluations. For land uses other than industrial or commercial, protectiveness is evaluated relative to terrestrial plants, wildlife, and ecologically important functions of soil biota that affect plants or wildlife.
For industrial or commercial properties, current or future potential for exposure to soil contamination need only be evaluated for terrestrial wildlife protection. Plants and soil biota need not be considered unless:
(i) The species is protected under the federal Endangered Species Act; or
(ii) The soil contamination is located on an area of an industrial or commercial property where vegetation must be maintained to comply with local government land use regulations.
(c) For the purposes of this section, "industrial property" means properties meeting the definition in WAC 173-340-200. "Commercial property" means properties that are currently zoned for commercial property use and that are characterized by or are committed to traditional commercial uses such as offices, retail and wholesale sales, professional services, consumer services, and, warehousing.
(d) Any terrestrial remedy, including exclusions, based at least in part on future land use assumptions shall include a completion date for such future development acceptable to the department.

(4) **Point of compliance.**
(a) **Conditional point of compliance.** For sites with institutional controls to prevent excavation of deeper soil, a conditional point of compliance may be set at the biologically active soil zone. This zone is assumed to extend to a depth of six feet. The department may approve a site-specific depth based on a demonstration that an alternative depth is more appropriate for the site. In making this demonstration, the following shall be considered:
(i) Depth to which soil macro-invertebrates are likely to occur;

(ii) Depth to which soil turnover (bioturbation) is likely to occur due to the activities of soil invertebrates;
(iii) Depth to which animals likely to occur at the site are expected to burrow; and
(iv) Depth to which plant roots are likely to extend.
(b) **Standard point of compliance.** An institutional control is not required for soil contamination that is at least fifteen feet below the ground surface. This represents a reasonable estimate of the depth of soil that could be excavated and distributed at the soil surface as a result of site development activities, resulting in exposure by ecological receptors.

(5) **Additional measures.** The department may require additional measures to evaluate potential threats to terrestrial ecological receptors notwithstanding the provisions in this and the following sections, when based upon a site-specific review, the department determines that such measures are necessary to protect the environment.

Table 749-2

Priority Contaminants of Ecological Concern for sites that Qualify for the Simplified Terrestrial Ecological Evaluation Procedure.[a]

Priority contaminant	Soil concentration (mg/kg)	
	Unrestricted land use[b]	Industrial or commercial site
METALS[c]		
Antimony	See note d	See note d
Arsenic III	20 mg/kg	20 mg/kg
Arsenic V	95 mg/kg	260 mg/kg
Barium	1,250 mg/kg	1,320 mg/kg
Beryllium	25 mg/kg	See note d
Cadmium	25 mg/kg	36 mg/kg
Chromium (total)	42 mg/kg	135 mg/kg
Cobalt	See note d	See note d
Copper	100 mg/kg	550 mg/kg
Lead	220 mg/kg	220 mg/kg
Magnesium	See note d	See note d
Manganese	See note d	23,500 mg/kg
Mercury, inorganic	9 mg/kg	9 mg/kg
Mercury, organic	0.7 mg/kg	0.7 mg/kg
Molybdenum	See note d	71 mg/kg
Nickel	100 mg/kg	1,850 mg/kg
Selenium	0.8 mg/kg	0.8 mg/kg
Silver	See note d	See note d
Tin	275 mg/kg	See note d
Vanadium	26 mg/kg	See note d
Zinc	270 mg/kg	570 mg/kg
PESTICIDES		
Aldicarb/aldicarb sulfone (total)	See note d	See note d
Aldrin	0.17 mg/kg	0.17 mg/kg
Benzene hexachloride (including lindane)	10 mg/kg	10 mg/kg
Carbofuran	See note d	See note d
Chlordane	1 mg/kg	7 mg/kg
Chlorpyrifos/chlorpyrifos-methyl (total)	See note d	See note d
DDT/DDD/DDE (total)	1 mg/kg	1 mg/kg
Dieldrin	0.17 mg/kg	0.17 mg/kg
Endosulfan	See note d	See note d
Endrin	0.4 mg/kg	0.4 mg/kg
Heptachlor/heptachlor epoxide (total)	0.6 mg/kg	0.6 mg/kg
Hexachlorobenzene	31 mg/kg	31 mg/kg
Parathion/methyl parathion (total)	See note d	See note d
Pentachlorophenol	11 mg/kg	11 mg/kg
Toxaphene	See note d	See note d

OTHER CHLORINATED ORGANICS		
Chlorinated dibenzofurans (total)	3E-06 mg/kg	3E-06 mg/kg
Dioxins (total)	5E-06 mg/kg	5E-06 mg/kg
Hexachlorophene	See note d	See note d
PCB mixtures (total)	2 mg/kg	2 mg/kg
Pentachlorobenzene	168 mg/kg	See note d
OTHER NONCHLORINATED ORGANICS		
Acenaphthene	See note d	See note d
Benzo(a)pyrene	30 mg/kg	300 mg/kg
Bis (2-ethylhexyl) phthalate	See note d	See note d
Di-n-butyl phthalate	200 mg/kg	See note d
PETROLEUM		
Gasoline Range Organics	200 mg/kg	12,000 mg/kg except that the concentration shall not exceed residual saturation at the soil surface.
Diesel Range Organics	460 mg/kg	15,000 mg/kg except that the concentration shall not exceed residual saturation at the soil surface.

Footnotes:

a Caution on misusing these chemical concentration numbers. These values have been developed for use at sites where a site-specific terrestrial ecological evaluation is not required. They are not intended to be protective of terrestrial ecological receptors at every site. Exceedances of the values in this table do not necessarily trigger requirements for cleanup action under this chapter. The table is not intended for purposes such as evaluating sludges or wastes. This list does not imply that sampling must be conducted for each of these chemicals at every site. Sampling should be conducted for those chemicals that might be present based on available information, such as current and past uses of chemicals at the site.

b Applies to any site that does not meet the definition of industrial or commercial.

c For arsenic, use the valence state most likely to be appropriate for site conditions, unless laboratory information is available. Where soil conditions alternate between saturated, anaerobic and unsaturated, aerobic states, resulting in the alternating presence of arsenic III and arsenic V, the arsenic III concentrations shall apply.

d Safe concentration has not yet been established.

kk Conversion factor to calculate dissolved metal concentration is 0.85.

ll. Marine conversion factors (CF) used for calculating dissolved metals concentrations. Conversion factors are applicable to both acute and chronic criteria for all metals except mercury. CF for mercury is applicable to the acute criterion only. Conversion factors are already incorporated into the criteria in the table. Dissolved criterion= criterion x CF

Metal	CF
Arsenic	1.000
Cadmium	0.994
Chromium (VI)	0.993
Copper	0.83
Lead	0.951
Mercury	0.85
Nickel	0.990
Selenium	0.998
Silver	0.85
Zinc	0.946

m The cyanide criteria are: 9.1µg/l chronic and 2.8µg/l acute and are applicable only to waters which are east of a line from
m. Point Roberts to Lawrence Point, to Green Point to Deception Pass; and south from Deception Pass and of a line from Partridge Point to Point Wilson.

(4) USEPA Quality Criteria for Water, 1986 shall be used in the use and interpretation of the values listed in subsection (3) of this section.
(5) Concentrations of toxic, and other substances with toxic propensities not listed in subsection (3) of this section shall be determined in consideration of USEPA Quality Criteria for Water, 1986, and as revised, and other relevant information as appropriate. Human health-based water quality criteria used by the state are contained in 40 CFR 131.36 (known as the National Toxics Rule).
(6) Risk-based criteria for carcinogenic substances shall be selected such that the upper-bound excess cancer risk is less than or equal to one in one million.
[Statutory Authority: Chapter 90.48 RCW and 40 CFR 131. 97-23-064 (Order 94-19), § 173-201A-040, filed 11/18/97, effective 12/19/97. Statutory Authority: Chapter 90.48 RCW. 92-24-037 (Order 92-29), § 173-201A-040, filed 11/25/92, effective 12/26/92.]
NOTES:

Reviser's note: The brackets and enclosed material in the text of the above section occurred in the copy filed by the agency.

Enclosure B

of the eight RCRA metals (Attachment E). These concentrations are developed to protect wildlife through direct ingestion of soil using a robin/shrew food chain model, two surrogate receptors meant to represent highly exposed species. Soil concentrations were also developed for plants and soil invertebrates using toxicity values from the published literature. The most restrictive value was then placed into Table 749-2.

Generally, the Method A concentrations are less than or similar to Table 749-2 (see Table 1). However, the MTCA Method A standards list does not include values for barium, total chromium or selenium. For these constituents, the Table 749-2 ecological standards listed in Table 1 (adjusted for background and PQLs) will be used as screening criteria for the top three feet of embankment fill.

3. **The Port of Seattle will monitor the seepage water from the rock underdrain for contaminants. Monitoring shall be for a period of 10 years, on a monthly basis. Based on the monitoring results, the monitoring schedule may be modified by FWS.**

The Port of Seattle shall prepare a water quality monitoring plan to track the quality of seepage from the drainage layer beneath the Third Runway embankment fill. Such a plan shall be prepared to address the amount of monitoring in a tiered or phased approach. For example, if it is determined that water flowing through the new embankment is exceeding designated surface water quality criteria, new monitoring points may be established between the embankment and Miller Creek to evaluate the fate and transport of the impacted fill water. Monitoring Miller Creek would represent the final phase of a monitoring program if it were determined that constituents in embankment fill water were reaching the creek. The Port shall develop a monitoring plan in consultation with FWS. The Port shall submit a draft monitoring plan to FWS for its review and approval within 120 days after FWS' issuance of a biological opinion or concurrence letter. The monitoring plan shall provide for a minimum of three years of monthly monitoring, with the monitoring period commencing upon detection of seepage from the drainage layer of the completed embankment. At the end of the three-year monitoring period, the Port and FWS shall reevaluate the need to modify or continue the monitoring program. In the event seepage is not detected within six years after completion of embankment construction, the Port and FWS shall likewise reevaluate the need to modify or continue the monitoring program. In the event monitoring detects unforeseen adverse impacts to aquatic life in the project area, the Port shall reinitiate consultation as appropriate and implement measures to address such impacts.

4, 5. **If material is used which is known to have contaminants, this material shall be distributed over a large area to avoid creating a "hot spot" in the embankment. The Port of Seattle will request FWS approval for those fill materials proposed that do not meet MTCA Method A standards, at a minimum. Information on why these materials are to be used and proof that their chemical constituents/levels will not result in environmental impacts to aquatic organisms needs to be provided.**

The use of MTCA Method A as a screening standard for incoming fill material will avoid the creation of "hot spots" in the embankment. In the event that the Port

from numerous sources in the region. Thus, in column 7, a range of screening criteria between background levels, when available, and Method A standards is shown. In the event the Port desires to establish site-specific background criteria, it will discuss proposed criteria with FWS and reinitiate consultation as appropriate. If the suppliers wish to place soil in the drainage cover layer that exceed background concentrations, the Port will confirm the acceptability of the material by requiring suppliers using that source to conduct sufficient SPLP testing to show that Method A criteria are protective of baseline conditions for surface water receptors.

(iv) To confirm the protectiveness of the Method A standards and the Three Phase Partitioning Model, SPLP testing will be used as a laboratory method to ensure that leaching of metals through potential embankment soil will not occurr at unacceptable levels. SPLP testing according to the procedures contained in WAC 173-340-747(7) and SPLP methodology are shown in Attachments B and D respectively. SPLP results will be compared, as an initial screening tool, to freshwater ambient water quality criteria according to guidelines outlined at WAC 173-201A-040 (Attachment C). If the SPLP results indicate that metals in the proposed fill material *do not leach* at levels above the freshwater ambient water quality criteria, adjusted for PQLs as appropriate, the material will be considered suitable for placement. If the SPLP indicates that metals in the proposed fill material *leach* at levels above ambient water quality criteria, the Port will either reject the material ~~or discuss the results of the SPLP with~~ or obtain FWS' approval before acceptance of the material ~~.~~ through a reinitiated consultation. The Port shall submit to FWS for its review and approval a plan describing the Port's SPLP protocol. The FWS shall approve this plan prior the Port's implementation of the SPLP protocol.

(c) Organochlorines: The Port will employ the following standards and protocols concerning the placement of fill in the drainage layer cover:

(i) The Port will require testing for organochlorines on those sites where such compounds may be present, including sites with potential commercial pesticide applications, and sites with historic wood preserving operations. The supplier, with Port review, will identify sites potentially containing such compounds through the process discussed above under Response I (i.e., Phase I and II Environmental Site Assessments). The Port will update guidelines provided to suppliers to clearly state that testing for additional constituents must be conducted as appropriate based on current and historical site land uses.

(ii) As with the remainder of the embankment fill, sources of fill proposed for placement in the drainage layer cover which have detectable levels of organochlorines will not exceed MTCA Method A criteria.