

northwest hydraulic consultants inc.

16300 christensen road, suite 350
seattle, washington 98188-3418
(206) 241-8000 - phone
(206) 439-2420 - fax
www.nhcweb.com

sacramento
vancouver
edmonton
seattle

February 15, 2001

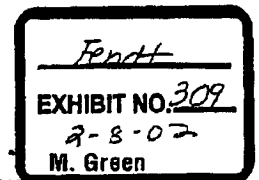
U.S. Army Corps of Engineers
Regulatory Branch
Post Office Box 3755
Seattle, Washington 98124-2255
ATTN: Jonathan Freedman, Project Manager

Washington State Department of Ecology
Shorelands and Environmental Assistance Program
3190 - 160th Avenue Southeast
Bellevue, Washington 98008-5452
ATTN: Ann Kenny, Environmental Specialist

Subject: Comments on stormwater, hydrology, and hydraulics aspects of proposed 3rd runway and related development actions at Seattle-Tacoma International Airport, Corps Reference No. 1996-4-02325.

Northwest Hydraulic Consultants has been retained on behalf of the Airport Communities Coalition to provide technical reviews of stormwater, hydrology, and hydraulics elements of proposed development actions at SeaTac airport. Our comments on the November 1999 version of the project stormwater management plan and related environmental documents were submitted to Ecology and the Corps in a series of three letters dated 11/24/99, 5/3/2000, and 7/31/2000. Our comments on the August 2000 version of the stormwater management plan were submitted to Ecology (but not the Corps) in a series of four letters dated 9/7/2000, 9/21/2000, 9/25/2000, and 9/27/2000. The purpose of this letter is to record our review comments on the December 2000 version of the documents listed below.

- "Comprehensive Stormwater Management Plan; Seattle-Tacoma International Airport Master Plan Update Improvements" dated December 2000 by Parametrix, Inc. Also reviewed were the separately-bound (as Volumes 2 through 4) Comprehensive Stormwater Management Plan Appendices A through Z dated December 2000. (SMP)
- "Natural Resource Mitigation Plan; Seattle-Tacoma International Airport; Master Plan Update Improvements" dated December 2000 by Parametrix, Inc. Also reviewed were the separately-bound Natural Resource Mitigation Plan Appendices A-E Design Drawings dated December 2000. (NRMP)



16. Based on project drawings obtained for other (non-SMP) reviews, there appears to be a dam safety issue at the proposed SASA facility. The current SMP is deficient because it fails to include any plans or design drawings for the SASA stormwater facility, and because dam safety requirements for this facility are not addressed.
17. In addition to dam safety reviews for the open water detention facilities identified above, dam safety or equivalent safety reviews are needed for proposed vaults SDS7 and G1 (Basin SDW1A) as shown in SMP Appendix D, Exhibits C140 and C151. Vault SDS7 proposes above-grade storage of 21.4 acre-feet of water volume in a rectangular structure with an above-ground water depth of 19.8 feet. Vault G1 proposes storage of about 13.8 acre-feet of water volume (detention storage plus reserve storage) with a water depth of 30 feet. There is an obvious need for a safety review to assure the structural stability of Vault SDS7. Our concerns over Vault G1 result from its close (about 20 feet) proximity to the top edge of a 140-foot high fill embankment. Furthermore, because of its proposed placement in fill, Vault G1 (and perhaps others) fails to satisfy the KCSWDM technical requirement (pg 5-37) that "Vaults shall not be allowed in fill slopes, unless analyzed in a geotechnical report for stability and constructability."
18. Many of the proposed vaults are in violation of KCSWDM pg 5-38 which specifies, "The maximum depth from finished grade to the vault invert shall be 20 feet." This requirement appears to relate to the maximum loading which a conventional vault structure can withstand without risk of structural failure. If so, then special structural designs will need to be developed for Vaults SDS3 and G1 (cover depth to about 40 feet), Vaults SDN3 and C1 (cover depth to about 30 feet), and Vaults M6 and C2 (cover depth to about 25 feet). Due to the currently-proposed depths, none of these six vault facilities are in compliance with the King County technical requirements for stormwater facilities. In some cases, this compliance problem has been caused or worsened because the facilities have been enlarged (deepened) to accommodate reserve stormwater storage for purposes of low flow augmentation. Further analysis is necessary to determine whether these facilities are viable.
19. SMP section 3.1.2.3 discusses concerns with standing open water. A drain time calculation proposed in the SMP for addressing open water concerns is inappropriate and will underestimate actual open water durations. The drain time method is inconsistent with actual prolonged-duration precipitation conditions in the Puget Sound. Continuous simulation methods need to be used. (Also see Comments 10 and 11 of our letter of November 24, 1999.) The current SMP proposes an inappropriate methodology to assess open water durations and furthermore fails to provide any analysis, by any method, of expected open water durations in any of the stormwater facilities being proposed. The consequence of using an inappropriate analysis methodology in this instance is that the duration of standing open water is likely to be significantly underestimated and that mitigation designs (for example netting over lower cells within detention ponds) could fail to prevent the creation of open water waterfowl attractants which are incompatible with safe airport operations.
20. Insufficient information has been provided regarding proposed Erosion and Sediment Control (ESC) facilities to offer any assurance that facilities are adequately sized and will perform as intended. There is no cogent explanation of how this ESC system is supposed to function and

there are numerous potential problems inherent in the current SMP plans.. Our concerns are heightened because the Port has already issued "Third Runway- Embankment Construction Phase 4" construction plans¹³ and specifications for erosion control facilities and some permanent drainage facilities, without any known independent review or approval of those plans by any regulatory agency. Further review, prior to project approval, is needed to resolve the following questions:

- a) Where are the clearing limits for the proposed work? King County core requirement 1.2.5.1 requires that prior to any site clearing or grading, areas to remain undisturbed during project construction shall be delineated. For example, SMP Appendix R, Exhibit C24 suggests that there will be an undisturbed strip, which includes some wetlands, between a line marked "limits of embankment" and a proposed TESC ditch some distance downhill. Is this strip supposed to remain undisturbed? On the corresponding grading and drainage plan for the same area (SMP Appendix O, Exhibit C115) there are again no work limits shown and the plans are deficient for not identifying the grading necessary to restore the wetlands which were altered by construction of TESC facilities.
- b) What is the tributary area for each of the proposed ESC facilities? What are the design flows? Have the design calculations been reviewed? Who was responsible for this review?
- c) How big are the pumps being proposed for this work? (Pumps need to be of sufficient capacity and compatible with ESC processing rates and storage volume.) What is the power supply for these pumps? If gas/diesel pumps (or power generators) are proposed, how will refueling be accomplished and what safeguards will be in place to contain spills?
- d) How long will these "temporary" facilities be in place. One year? Six years?
- e) How are the "outer swale" ditches supposed to work? According to the geotechnical engineering report (SMP Appendix L, Figure 8) these ditches are supposed to intercept the seepage flow from the base of the embankment and convey the water to wetlands. Collection of the (clean water) seepage flow is in conflict with the use of these same ditches for conveyance of (turbid water) construction site runoff as proposed in the SMP Appendix R exhibits. Capture and routing of clean water seepage flows to erosion control facilities might overload sediment pond processing capacity, causing releases of untreated turbid water during storm events. Capture and routing of clean water seepage in interceptor swales would furthermore cause downslope wetlands to be significantly de-watered during the (multi-year?) period of construction.

¹³Port of Seattle major contract construction plans titled "Third Runway - Embankment Construction - Phase 4", Work Order #101346, Project STIA-0104-T-01, were approved on 1/25/01 by Raymond P. Rawe, Director of Engineering Services. The accompanying two-volume Project Manual, including Specifications, prepared under the direction of Raymond P. Rawe, is dated January 29, 2001.