Appendix V

EAST WATERWAY, EVERETT, WASHINGTON
TECHNICAL DOCUMENT REVIEW

Review of:

Washington State Department of Ecology, 1990, Scott Paper Company
Everett Plant Draft NPDES Permit and Fact Sheet

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EAST WATERWAY TECHNICAL DOCUMENT REVIEW

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ATTACHMENTS

Attachment A - Additional Monitoring Requirements Found in the NPDES Fact Sheet

Attachment B - Monitoring and Report Submittal Schedule from the NPDES Permit

1.0 INTRODUCTION AND CHRONOLOGY OF EVENTS

The documents reviewed were the public notice, fact sheet, and National Pollution Discharge Elimination System (NPDES) Permit No. WA000062-1 proposed for reissuance to Scott Paper Company (Scott), Everett, Washington. The public comment period for this permit has passed, and the results and any changes to the proposed permit that may have occurred due to public comment were not available at the time of this review and therefore are not addressed in this review.

Scott operates a Sulfite Pulp and Paper Mill located on Port Gardner Bay, at 26th Street and Federal Avenue in Everett, Washington. This mill produces pulp by means of the sulfite pulping and groundwood pulping processes for use at the facility in making paper tissue and paper towels. In addition, the mill imports nonintegrated tissue-type pulp to be used in making the paper tissue and paper towels.

The permit will allow Scott to discharge wastewater after either primary or secondary treatment into Everett Harbor and Port Gardner Bay, class B and class A waters, respectively. The permit covers effluent discharge from the pulp and paper mill wastewater treatment plant to three outfalls, 001, 003, and 008. In addition, nonprocess stormwater is authorized from outfalls 001, 010, 011, 012, 013, 014, and 015, subject to the development of a stormwater sampling program. The reissued NPDES permit requires Scott to conduct several tests and studies which are not in the existing NPDES permit. These tests will be further discussed in Section 2.

Outfall 001 discharges via a 30-inch line that extends 3,000 feet due west into Port Gardner Bay to a depth of 440 feet. The diffusers section of the discharge line is 1,001 feet in length and contains 119 outlets, 3 inches in diameter. Wastewater flow discharged through outfall 003 leaves through 16 downfeeders spaced at 20-foot intervals along a 42-inch diameter header. These headers are located parallel to the Scott-Everett pulp mill warehouse dock. The downfeeders discharge at a depth of -25 feet mean low low water (MLLW). Wastewater from outfall 008 is discharged via a 36-inch line that extends 255 feet west from shore to a water depth of -27 feet MLLW. The diffuser section of the discharge line is 180 feet for outfall 008 and contains 23 outlets, 8 inches in diameter.

The mill's treated wastewater from pulp making process (washing, screening and drying) and paper making (broke bleaching, resin making, secondary fiber, groundwood making, paper finishing, color change line, steam plant/boilers, hog fuel boiler ash quench water, water treatment backwash, and stormwater runoff from processing areas) is discharged through outfalls 001 and 003. This wastewater receives primary treatment before being discharged into Everett Harbor. The mill's treated wastewater from the pulp making process (washing, screening, bleaching, drying, and spent sulfite liquor and paper making) is discharged through outfall 008. The wastewater discharged via outfall 008 receives secondary treatment in an activated sludge wastewater treatment system. All discharges, outfalls 001, 003, and 008, are continuous. The flow discharged via outfalls 001, 003, and 008 averaged approximately 6.8,

7.1, and 16.0 million gallons per day (MGD), respectively, for the 1987 to 1988 biennial. During 1987 to 1988, the plant has produced a daily average of 485 air dried tons per day sulfite pulp and 34 tons/day groundwood pulp. The plant imports 55 tons/day of nonintegrated tissues.

2.0 LEGAL AND REGULATORY ISSUES

According to the fact sheet, during 1987 and 1988, Scott has been out of compliance three times on the NPDES bioassay limit, and during the year ending 1989, Scott was out of compliance for one bioassay test, one total suspended solid (TSS) test, and one pH test result. There was no mention of any biochemical oxygen demand (BOD-5) results being out of compliance. The following is a quantitative description of the discharge for Scott for the years 1987 to 1988 as stated in the fact sheet:

Parameter	Outfall	Biennial Average	Monthly Ranges
Flows (MGD)	001	6.8	5.7 - 8.2
	003	7.1	4.7 - 10.7
	008	16.0	13.1 - 18.0
pH	001	--	2.8 - 10.6
	003	--	2.7 - 11.1
	008	--	5.4 - 7.4
BOD-5 (lb/day)	Combined	10,419	8,066 - 12,720
TSS (lb/day)	Combined	12,577	10,151 - 17,615

The permit limits were:

Parameter	Monthly Average	Daily Maximum
BOD-5	16,800 lb/day	32,300 lb/day
TSS	25,300 lb/day	47,100 lb/day

pH (Range) 5.0 to 9.0 with exceptions for specified excursions.

The effluent limitations for this permit are based on Best Practicable Control Technology (BPT) and Best Available Technology Economically Achievable. The Washington State Department of Ecology determined that the BPT is equal to Best Conventional Pollutant Control Technology (BCT), which has not yet been promulgated by United States Environmental Protection Agency. If the BCT promulgated is more stringent, the permit would be modified to reflect that.

The effluent limitations for conventional pollutants in the permit were based on the Effluent Guidelines and Standards in 40 CFR Part 430.212, Subpart U, Sulfite Pulp Subcategory (Acid Sulfite/Surface Condensers); 40 CFR 430.192, Subpart O, Nonintegrated-Tissue Paper Subcategory; and 40 CFR 430.152, Subpart S, Groundwood-Fine Papers

Subcategory, July 1, 1988. The following limitations for conventional pollutants of BOD-5 and TSS were taken from 40 CFR Part 430, July 1, 1988:

Grade	Limits	Production Tons/day	BOD-5 Avg. lb/ton	BOD-5 Max. lb/ton	TSS Avg. lb/ton	TSS Max. lb/ton
Sulfite	BPT	485	31.0	59.5	47.3	87.9
Groundwood	BPT	34	7.2	13.7	12.6	23.5
Nonintegrated Tissue	BPT	55	12.5	22.8	10.0	20.5

The permit may be modified due to the toxic studies to be performed. If a modification is made, the effluent limitations for toxic pollutants will be based on the Washington Administrative Code Chapter 173-201, Water Quality Standards for Surface Waters of the State of Washington.

The combined effluent limitations (pounds allowed for all three discharges) for conventional pollutants as well as the range for pH specified in the draft permit, are as follows:

Parameter	Monthly Average	Daily Maximum
BOD-5	15,967 lb/day	30,577 lb/day
TSS	23,919 lb/day	44,558 lb/day
pH (Range - see excursion below)	5.0 to 9.0	

Definition of pH excursions:

1. Outfalls 001 and 003

   The pH values outside the 5.0 to 9.0 range shall be considered violations except for the following excursions for outfalls 001 and 003:

   a. An excursion is defined as an unintentional and temporary incident in which the pH exceeds the 5.0 to 9.0 range.

   b. The total time of the excursions for both outfalls (001 and 003) shall not exceed 90 min/mo.

   c. No individual excursion shall continue for more than 30 minutes.

d. No individual excursion shall exceed a pH range of 3.5 to 10.5 for more than 10 minutes.

e. The instantaneous minimum and maximum pH shall be reported monthly.

2. The range of pH from 5.0 to 9.0 indicates the permitted values. Excursions between 4.0 and 10.0 shall not be considered violations for outfall 008, provided no single excursion exceeds 60 minutes in length and the total excursions do not exceed 7 hours and 26 min/mo. Any excursions below 4.0 or above 10.0 shall be considered violations. The instantaneous maximum and minimum pH shall be reported monthly.

In addition to the previously mentioned requirements, Scott is required to conduct the studies and analysis listed below. Additional information on the studies is listed in Attachment A, which is a portion of the reviewed fact sheet. The monitoring and report submittal schedule for the studies, found in the NPDES Permit, is listed in Attachment B.

Additional studies:

1. Effluent and Water Quality Monitoring which includes acute and chronic bioassay monitoring

2. Chemical Analysis of the Influent and Effluent

3. Sediment Monitoring which includes acute bioassay, chemical analysis and macroinvertebrate studies

4. Particulate Monitoring Study

5. Dilution Zone Study

6. Toxicity Study of Influent and Effluent

Additional requirements include quarterly acute salmonids bioassay using 65 percent effluent, review and update of the current treatment system operating plan to ensure proper operation of all equipment, an annual update of the existing spill prevention plan to establish proper containment measures in case of a spill from the mill, a stormwater runoff study to characterize the chemical constituents in the stormwater runoff, a solid waste plan to ensure proper disposal of solid wastes, a dioxin study to determine if dioxin is present in the effluent, an Adsorbable Organic Halogen (AOX) monitoring program and a phased in limit, and a removed substances clause to ensure that removed materials are not reintroduced into the effluent streams.

3.0 DEMOGRAPHICS AND LAND USE

N/A

4.0 POTENTIALLY LIABLE PERSONS

N/A

5.0 IDENTIFICATION OF POLLUTION POINT SOURCES

Scott has three NPDES permitted outfalls for primary and secondary wastewater treatment effluent. The permitted wastewater effluent outfalls are:

001 Discharging an average of 6.8 MGD via a 30-inch line that extends 3,000 feet due west of the plant into Port Gardner Bay.

003 Discharges an average of 7.1 MGD through 16 down-feeders spaced along a 42-inch diameter header located parallel to the warehouse dock.

008 Discharges an average of 16.0 MGD via a 36-inch line that extends 255 feet west from shore.

Nonprocess stormwater is discharged via outfalls 009, 010, 011, 012, 013, 014, and 015.

6.0 IDENTIFICATION OF POLLUTION NON-POINT SOURCES

N/A

7.0 CHEMICAL DATA

No chemical data were generated for this permit; however, a summary of past data was mentioned. No raw data were presented.

8.0 BIOLOGICAL DATA (FLORA/FAUNA)

N/A

9.0 DATA QUALITY

N/A

10.0 HYDROLOGIC AND HYDRODYNAMIC INFORMATION

N/A

11.0 DREDGING AND DISPOSAL ISSUES AND DATA

N/A

12.0 ENVIRONMENTAL IMPACTS

N/A

13.0 INTERIM MEASURES/SPILL AND POLLUTION PREVENTION MEASURES

This permit requires Scott to annually update their existing Spill Control Plan.

14.0 COMMUNITY RELATIONS INFORMATION

N/A

15.0 RECOMMENDATIONS

N/A

16.0 FINAL COMMENTS

N/A

Attachment A

ADDITIONAL MONITORING REQUIREMENTS
FOUND IN THE NPDES FACT SHEET

ADDITIONAL MONITORING REQUIREMENTS FOUND IN THE NPDES FACT SHEET

Scott Paper Company will be required to conduct the following series of studies and analyses. Several studies include monitoring for pollutants of interest that were selected from reviews of past permit applications, federal monitoring reports and documents, and analysis of water samples obtained during site inspections by personnel from Ecology.

1. **Effluent and Water Quality Monitoring**

   Acute bioassay monitoring will be done for a 1-year period using three species to determine the most sensitive organism. The most sensitive species will be selected as the test organism for the future bioassay that will be tested quarterly. Chronic bioassay monitoring will be required to be done six times during a 1-year period to determine the chronic toxicity effects on the biota in the vicinity of the outfall in Port Gardner Bay. The most sensitive species will be chosen with approval by the department after the 1-year study is completed. Until the permit is modified, the salmonid bioassay limitation will remain in effect. These studies are required by directives from the Puget Sound Water Quality Management Plan.

2. **Chemical Analysis of the Influent and Effluent**

   Chemical analysis of the influent and of the secondary wastewater treatment process effluent will be performed during the terms of the permit. These analyses shall coincide with one of the acute and chronic bioassay. These studies are required by directives from Puget Sound Water Quality Management Plan.

3. **Sediment Monitoring**

   Acute bioassay test and chemical analysis will be done on the sediment near the permittee's outfalls. A macroinvertebrate study is required in the vicinity of each outfall. These studies are required by directives from Puget Sound Water Quality Management Plan. These studies will determine the near field effects of the outfalls on the sediment.

4. **Particulate Monitoring Study**

   Particulate in the effluent will be analyzed for various chemicals after the department establishes procedures for conducting this type of study. These studies are required by directives from Puget Sound Water Quality Management Plan.

5. **Dilution Zone Study**

The dilution ratios will be determined by field measurements near outfalls 001, 003, and 008. The purpose of these studies will be to calculate the actual dilution of effluent into the receiving waters of Port Gardner Bay and the energy gradient of the diffuser's environment. The results of these studies will be used to determine the actual concentration of various toxic chemicals discharged into the receiving water in accordance with WAC 173-201 Water Quality Criteria, Acute and Chronic Toxicity. These studies are required by directives from Puget Sound Water Quality Management Plan. The dilution zone boundaries were taken from the "Criteria for Sewage Works Design," Effluent Dilution Zone Guidelines, 1985.

6. **Toxicity Study of Influent and Effluent**

Any pollutant which had been measured at a level greater than one third of the state and/or federal water quality acute criteria for salt water at the edge of the zone of initial dilution (ZID), was considered to be a pollutant of interest. The permittee shall perform a 12-month study on the influent and effluent to determine the concentration of various pollutants of interest (i.e., copper [total recoverable] and weak and dissociable cyanide for outfalls 001, 003, and 008). This study will produce a large enough database to determine if any chemical substances are present and ways to eliminate them from the discharges. These chemicals, copper, and cyanide were identified from the permittee's application and from the chemical analysis of the wastewater effluent samples taken by staff of the Ecology during visits. Although copper and cyanide were identified at concentrations ranges that could potentially exceed water quality criteria from information identified from the permittee's permit application and from chemical analysis of samples taken from an on-site visit with both sample sets being collected on January 31, 1989, there is insufficient data available to: 1) determine whether a problem truly exists, and 2) establish a permit limit for these pollutants. There is only one data point. An intensive monitoring study of copper (total recoverable) and cyanide concentrations in the effluent is included in the permit to verify the concentration of copper (total recoverable) and weak and dissociable cyanide in the treated wastewater and as necessary, to establish a database from which effluent limitations can be developed.

Additional Information

1. The salmonid bioassay effluent limitation is technology-based and was derived from historical performance data gathered for the Pulp and Paper Making Industries.

2. The special studies ("Effluent and Water Quality Monitoring" and "Dilution Zone") included in the permit are the results of concerns and directives outlined in the "Puget Sound Water Quality Management Plan."

3. The chronic tests shall be conducted for 1 year, with the resulting information available for use in determining future effluent monitoring needs and/or toxicity reduction.

4. A permit reopener statement has been included in the permit. If the results of any of the special monitoring studies or other requirements indicate that further actions are required (i.e., additional monitoring or toxic reduction evaluation), the reopener clause will allow Ecology to modify or establish permit conditions and limitations on the basis of monitoring results or with other information consistent with state and federal regulations.

5. The total chlorinated organic reduction program is based on the testing for Adsorbable Organic Halogen (AOX). An annual average AOX limit of 3.0 lbs/air dried ton (ADT) of bleached pulp and the monthly maximum AOX limit of 5.8 lbs/ADT of bleached pulp has been established based on best professional judgment. If, after the evaluation of the engineering and cost information submitted from this program, the department determines that the present limits are not appropriate, the permit will be reopened and new AOX limits will be established. Even though dioxin (TCDD) and furan (TCDF) species were not found in the permittee's discharges analyzed by EPA; 304(1) laboratory database, a study requirement with limits for AOX; is required to address the AOX, dioxin, and furan concentration within each outfall since the permittee uses chlorine as a bleaching agent in the production of bleached paper products and there was only one data point collected. This monitoring program for dioxin is an Industrial Section policy decision derived in "Proposed Effluent Limitations for Dioxin and AOX," Final Report, Industrial Section, Washington Department of Ecology, Olympia, Washington 98504, July 1990. The mass AOX limitations in pounds per day for the annual average and the monthly maximum are based on the production of 519 ADTD of bleached pulp that is produced on site and the above stated limits.

6. The analysis of the tentatively identified compounds (TIC) from the GC/MS scan by the Environmental Investigations and Laboratory Service section of Ecology did not show any compounds of interest that would exceed any water quality criteria.

7. The dissolved oxygen limitation of 5.0 mg/L for outfall 008 between August 1 and November 30 is taken from the current NPDES permit.

8. As discussed in the "DISCHARGE DESCRIPTION" section of the fact sheet, the discharge from the filter backwash receives primary treatment prior to discharge via outfalls 001 and/or 003.

9. General condition G12, "OTHER REQUIREMENTS OF 40 CFR" has been modified to eliminate the exception of 122.41(n) - "Upset Condition." The elimination of this exception is a Departmental policy decision.

Attachment B

MONITORING AND REPORT SUBMITTAL SCHEDULE
FROM THE NPDES PERMIT

MONITORING AND REPORT SUBMITTAL SCHEDULE FROM THE NPDES PERMIT

		Date
1.	Submit discharge monitoring report	Monthly
2.	12-month toxicity study	Due by August 1, 1991
3.	Conduct and submit report on salmonid bioassay	Quarterly
4.	Update and submit spill control plan	Within 6 months of permit issuance; annual update
5a.	Submit stormwater runoff discharge sampling plan	Within 6 months of permit issuance
5b.	Conduct stormwater runoff study	Within 4 months after approval of 5a
5c.	Submit stormwater runoff study	Within 6 months of study initiation 5b
6.	Update and submit solid waste plan	With permit application
7.	Update and submit treatment system operating plan	Within 6 months of permit issuance
8a.	Submit dilution ratio study plan	Within 4 months of permit issuance
8b.	Conduct dilution ratio study	Within 1 year of permit issuance
8c.	Submit dilution ratio study report	Within 3 months of study completion
9a.	Conduct acute biomonitoring study of effluent	Beginning within 6 months of permit issuance
9b.	Submit report on results of bio-monitoring study of effluent	Within 2 months after each sampling

MONITORING AND REPORT SUBMITTAL SCHEDULE FROM THE NPDES PERMIT (Cont.)

		Date
10a.	Conduct chronic biomonitoring study of effluent for 1 year	Within second year of permit term
10b.	Submit report on results of chronic biomonitoring study of effluent	Within 2 months of each sample interval
11a.	Conduct chemical analysis of influent and effluent	Within second year of permit terms
11b.	Submit report of results of chemical analysis of influent and effluent	Within 4 months of initial sampling in 11a
12a.	Submit a comprehensive study plan for the acute biomonitoring, chemical analysis, and microintervertebrate studies of the sediment	Within 18 months of permit issuance
12b.	Conduct studies in 12a	Within third year of permit term
12c.	Submit report of studies from 12b	Within 4 months of initial sampling in 12b
13a.	Conduct particulate monitoring study	Upon written notification
13b.	Submit report on results of particulate monitoring study	Within 9 months of written notification in 13a
14.	Submit slimicide usage report	Annually
15a.	Monitor for AOX, dioxin, and furan in effluent and sludge sample	Beginning with permit issuance
15b.	Submit report of monitoring results from 15a	Within 6 months of each sampling

MONITORING AND REPORT SUBMITTAL SCHEDULE FROM THE NPDES PERMIT (Cont.)

		Date
16a.	Submit a preliminary scope of work for control of total chlorinated organics	Within 5 months of permit issuance
16b.	Submit a final scope of work for control of total chlorinated organics	Within 6 months of permit issuance
16c.	Submit a total chlorinated organics reduction report	Within 18 months permit issuance
16d.	Commence construction necessary for AOX reduction per report of 16c	Within 24 months permit issuance
16e.	Achieve compliance with AOX discharge limits	Within 48 months of permit issuance

Appendix A

EAST WATERWAY DOCUMENT REVIEW REFERENCES CITED

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American Society for Testing and Materials, 1980, Standard Practice for Conducting Static Acute Toxicity Tests with Larvae of Four Species of Bivalve Molluscs, Designation: E 724-80, American Society for Testing and Materials, Philadelphia, Pennsylvania.

Anderson, J.W., E.A. Crecelius, and J.Q. Word, 1986, Biological and Chemical Analysis of Sediments for the Design and Construction of the U.S. Navy Homeport Facility at East Waterway - Everett Harbor, Washington, Phase III, prepared for United States Army Corps of Engineers, Seattle, Washington, by Pacific Northwest Laboratory, Richland, Washington.

Bray, J.R. and J.T. Curtis, 1957, "An Ordination of the Upland Forest Communities of Southern Wisconsin," Ecol. Monogr., 27:325-349.

Citizen's Planning/Mediation Committee, 1977, Consensus Guidelines, Future Development of the Port of Everett, Citizen's Planning/Mediation Committee, Everett, Washington.

COE (See United States Army Corps of Engineers).

Crecelius, E.A., N.S. Bloom, and J.M. Gurtisen, 1984, Chemical Analysis of Sediment Cores from the East Waterway (Everett, Washington), Final Report to United States Army Corps of Engineers, PNL-5045, UC-11, Seattle, Washington.

Dinnel, P.A., D.A. Armstrong, B.S. Miller, R.F. Donnelly, A.W. Whiley, R.R. Lauth, and S.C. Clarke, 1986, Puget Sound Dredge Disposal Analysis (PSDDA) Disposal Site Investigations: Phase I Trawl Studies in Saratoga Passage, Port Gardner, Elliot Bay and Commencement Bay, Washington--Part I, Crab and Shrimp Studies. Part II, Demersal Fish Studies, Final Report, prepared for Washington Sea Grant Program in cooperation with the United States Army Corps of Engineers, Seattle, Washington.

Downing, J.P., C.E. Sweeney, T.C. Demlow, and W.D. Eysink, 1987, "Predictions of Shoaling Rates for a New Harbor in Puget Sound, Washington," in Coastal Zone '87, Volume 1, Proceedings of the Fifth Symposium on Coastal and Ocean Management, edited by O.T. Magoon, H. Converse, D. Miner, L.T. Tobin, D. Clark, and G. Domurat, American Society of Civil Engineers.

EPA (See United States Environmental Protection Agency).

Galvin, D.V., G.P. Romberg, D.R. Houck, and J.H. Lesniak, 1984, Toxicant Pretreatment Planning Study Summary Report, Water Quality Division, Metro, Seattle, Washington.

Lee, C.R., R.K. Peddicord, M.R. Palermo, and N.R. Francingues, 1985, Decision Making Framework for Management of Dredged Material: Application to Commencement Bay, Washington, Draft miscellaneous paper, United States Army Engineer Waterways Experiment Station, Vicksburg, Mississippi.

Malins, D.C., B.B. McCain, D.W. Brown, et al., 1984, "Chemical Pollutants in Sediments and Diseases of Bottom-Dwelling Fish in Puget Sound, Washington," in Environ. Sci. Technol., 18:705-713.

Malins, D.C., B.B. McCain, D.W. Brown, A.K. Sparks, and H.O. Hodgins, 1980, Chemical Contaminants and Biological Abnormalities in Central and Southern Puget Sound, National Oceanic and Atmospheric Administration Technical Memorandum OMPA-2, National Oceanic and Atmospheric Administration.

McCain, B.B., M.S. Meyers, U. Varanasi, et al., 1982, Pathology of Two Species of Flatfish from Urban Estuaries in Puget Sound, Interagency Energy-Environment Research and Development Program Report, EPA 600/7-82-001, United States Environmental Protection Agency, Washington, D.C.

McCain, B.B., K.V. Pierce, S.R. Wellings, and B.S. Miller, 1977, "Hepatomas in Marine Fish from an Urban Estuary," in Bull. Environ. Contam. Toxicol., 18:1-2.

Navy (See United States Department of Navy).

Osborn, J.G. and D.E. Weitkamp, February 1985a, "Benthos of Everett Harbor, 1984," Final Environmental Impact Statement, Carrier Battle Group Puget Sound Region Ship Homeporting Project, United States Department of Navy, Western Division, Naval Facilities Engineering Command, San Bruno, California.

Osborn, J.G. and D.E. Weitkamp, February 1985b, "Epibenthos of Everett Harbor, 1984," Final Environmental Impact Statement, Carrier Battle Group Puget Sound Region Ship Homeporting Project, United States Department of Navy, Western Division, Naval Facilities Engineering Command, San Bruno, California.

Parametrix, Inc., 1985, Final Environmental Impact Statement, Carrier Battle Group Puget Sound Region Ship Homeporting Project, prepared for United States Department of Navy, Western Division, Naval Facilities Engineering Command, San Bruno, California. (See United States Department of Navy 1985)

Pierce, K.V., B.B. McCain, and S.R. Wellings, 1978, "Pathology of Hepatomas and Other Liver Abnormalities in English Sole (Parophrys vetulus) from the Duwamish River Estuary, Seattle, Washington," J. Natl. Cancer Inst., 60:1445-1453.

PTI Environmental Services, 1988, Everett Harbor Action Program: 1988 Action Plan, Draft Report, prepared for Tetra Tech, Inc. and United States Environmental Protection Agency, Region X, by PTI Environmental Services, Bellevue, Washington.

Richter, K.O. and J.A. Dragavon, May 1985a, "Marine Mammal Study, Everett Harbor and Vicinity, Winter 1984-1985," Final Environmental Impact Statement, Carrier Battle Group Puget Sound Region Ship Homeporting Project, United States Department of Navy, Western Division, Naval Facilities Engineering Command, San Bruno, California.

Richter, K.O. and J.A. Dragavon, May 1985b, "Water Bird Study, Everett Harbor and Vicinity, Winter 1984-1985," Final Environmental Impact Statement, Carrier Battle Group Puget Sound Region Ship Homeporting Project, United States Department of Navy, Western Division, Naval Facilities Engineering Command, San Bruno, California.

Riley, R.G., E.A. Crecelius, D.C. Mann, K.H. Abel, B.L. Thomas, and R.M. Bean, 1980, Quantitation of Pollutants in Suspended Matter and Water from Puget Sound, National Oceanic and Atmospheric Administration Technical Memorandum ERL MESA-49, National Oceanic and Atmospheric Administration, Boulder, Colorado.

Riley, R.G., E.A. Crecelius, M.L. O'Malley, K.H. Abel, and D.C. Mann, 1981, Organic Pollutants in Waterways Adjacent to Commencement Bay, National Oceanic and Atmospheric Administration Technical Memorandum OMPA-12, National Oceanic and Atmospheric Administration, Boulder, Colorado.

Romberg, G.P., S.P. Pavlou, R.F. Shokes, W. Hom, E.A. Crecelius, P. Hamilton, J.T. Gunn, R.D. Muench, and J. Vinelli, October 1984, Toxicant Pretreatment Planning Study, Technical Report C1: Presence, Distribution and Fate of Toxicants in Puget Sound and Lake Washington, Metro Toxicant Program Report No. 6A, Water Quality Division, Seattle, Washington.

Schadt, T.H. and D.E. Weitkamp, February 1985, "Juvenile Salmonid Stomach Content Study, Everett Harbor, 1984," Final Environmental Impact Statement, Carrier Battle Group Puget Sound Region Ship Homeporting Project, United States Department of Navy, Western Division, Naval Facilities Engineering Command, San Bruno, California.

Strand, J.A., E.A. Crecelius, R.A. Elston, G.W. Fellingham, and W.H. Pearson, 1985, Detailed Chemical and Biological Analysis of Selected Sediments from Puget Sound, PNL-5471, Pacific Northwest Laboratory, Richland, Washington.

Swartz, R.C., W.A. DeBen, J.K. Phillips, J.O. Lamberson, and F.A. Cole, 1984, "Phoxocephalid Amphipod Bioassay for Marine Sediment Toxicity," in Aquatic Toxocology, ASTM STP 854, American Society for Testing and Materials, Philadelphia, Pennsylvania.

Tetra Tech, Inc., 1985a, Everett Harbor Action Plan: Initial Data Summaries and Problem Identification, prepared for United States Environmental Protection Agency, Region X, Office of Puget Sound, by Tetra Tech, Inc., Bellevue, Washington.

Tetra Tech, Inc., 1985b, Sampling and Analysis Design of Everett Harbor Action Plan, Draft Report, prepared for the United States Environmental Protection Agency, Region X, Office of Puget Sound, by Tetra Tech, Inc., Bellevue, Washington.

Tetra Tech, Inc., 1986a, Recommended Protocols for Measuring Selected Environmental Variables in Puget Sound, Final Report, prepared for United States Environmental Protection Agency and United States Army Corps of Engineers by Tetra Tech, Inc., Bellevue, Washington.

Tetra Tech, Inc., 1986b, Quality Assurance Project Plan for Field Investigations to Support Development of the Everett Harbor Action Plan, prepared for United States Environmental Protection Agency, Region X, by Tetra Tech, Inc., Bellevue, Washington.

Tetra Tech, Inc., 1986c, Sampling and Analysis Design for Development of Everett Harbor Action Program, prepared for United States Environmental Protection Agency, Region X, by Tetra Tech, Inc., Bellevue, Washington.

Tetra Tech, Inc., 1986d, User's Manual for the Pollutant of Concern Matrix, Final Report, prepared for United States Environmental Protection Agency, Region X, by Tetra Tech, Inc., Bellevue, Washington.

Tetra Tech, Inc., 1988, Everett Harbor Action Program: Data Quality Assurance Assessment, Final Report, prepared for United States Environmental Protection Agency, Region X, Office of Puget Sound, by Tetra Tech, Inc., Bellevue, Washington.

United States Army Corps of Engineers, 1960, Everett Harbor Report to Congress from Department of Army, United States Army Corps of Engineers, Seattle, Washington.

United States Army Corps of Engineers, 1986a, Sediment Testing and Disposal Alternatives Evaluation, prepared for United States Department of Navy, Western Division, Naval Facilities Engineering Command, San Bruno, California.

United States Army Corps of Engineers, 1986b, Technical Supplement to Sediment Testing and Disposal Alternatives Evaluation, prepared for United States Department of Navy, Western Division, Naval Facilities Engineering Command, San Bruno, California.

United States Department of Navy, 1985, Final Environmental Impact Statement, Carrier Battle Group Puget Sound Region Ship Homeporting Project, United States Department of Navy, Western Division, Naval Facilities Engineering Command, San Bruno, California.

United States Enviornmental Protection Agency, 1986, Quality Criteria for Water, EPA 440/5-86/001, United States Environmental Protection Agency, Office of Water Regulations and Standards, Washington, D.C.

United States Environmental Protection Agency, 1986, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, SW-846, 3rd Edition, United States Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.

Washington State Department of Ecology, 1982, Water Quality of the Snohomish River/Estuary and Possible Impacts of a Proposed Hewlett-Packard Manufacturing Plant, EDOW 82-2, Washington State Department of Ecology, Olympia, Washington.

Whitman, R. and D.E. Weitkamp, February 1985, "Demersal Fish Survey of Everett Harbor, 1984," Final Environmental Impact Statement, Carrier Battle Group Puget Sound Region Ship Homeporting Project, United States Department of Navy, Western Division, Naval Facilities Engineering Command, San Bruno, California.

Woelke, C.E., 1972, Development of a Receiving Water Quality Bioassay Criterion Based on the 48-Hour Pacific Oyster, Crassostrea gigas Embryo, Washington Department Fish. Tech. Rept. 9, Olympia, Washington.