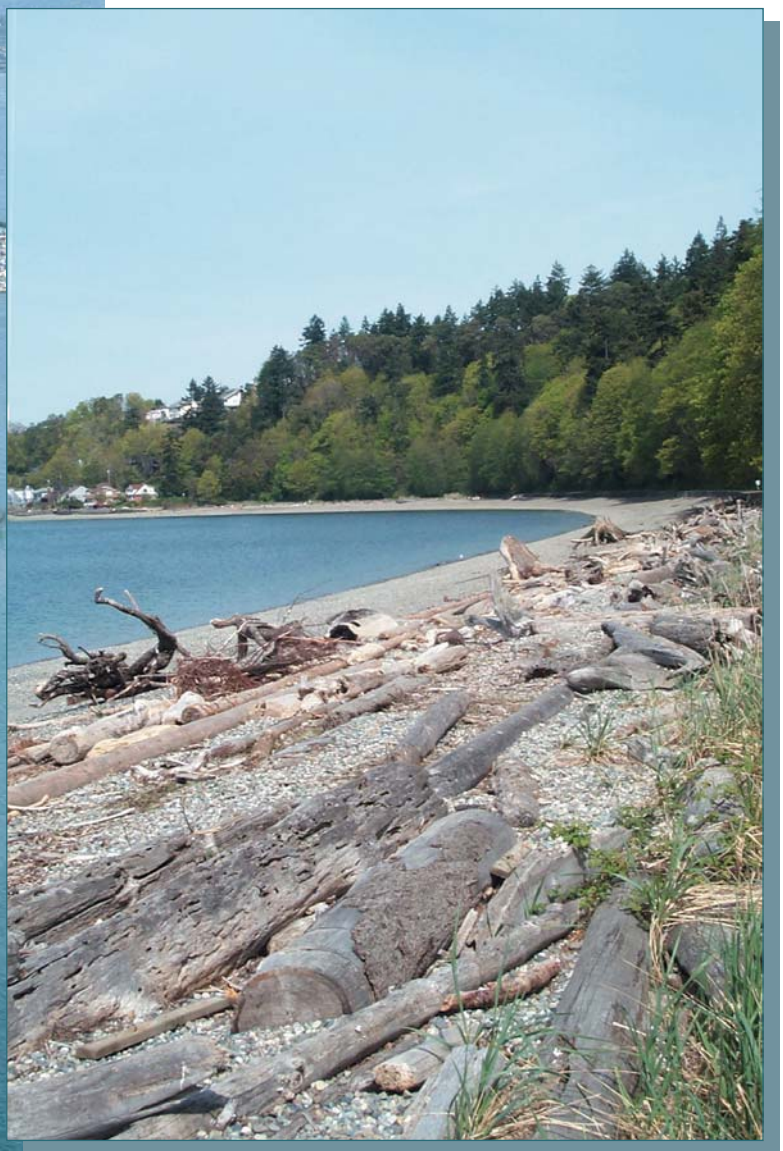
Reconnaissance Assessment of the
STATE OF THE NEARSHORE ECOSYSTEM:

Eastern shore of Central Puget Sound, including Vashon and Maury Islands



KING COUNTY

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Port of Seattle

Puget Sound Water Quality Action Team
Office of the Governor

Reconnaissance Assessment of the State of the Nearshore Ecosystem: Eastern Shore of Central Puget Sound, Including Vashon and Maury Islands (WRIAs 8 and 9)

Battelle Marine Sciences Laboratory
Sequim, Washington

Pentec Environmental
Seattle, Washington

Striplin Environmental Associates
Seattle, Washington

Shapiro Associates, Inc.
Seattle, WA

King County Department of Natural Resources
Seattle, Washington

May 2001

Prepared for
King County Department of Natural Resources, Seattle, Washington

Under a Commercial Work for Others Agreement with the U.S. Department of Energy under Contract DE-AC06-76RLO 1830

Pacific Northwest National Laboratory
Operated for the U.S. Department of Energy
by Battelle Memorial Institute

PREFACE

Puget Sound has long been recognized for its natural beauty, mild climate, abundant and diverse living resources, and a "quality of life" unlike regions found elsewhere. These qualities have attracted increasing numbers of people to this region to live and work, and for recreation. The increasing human population has led to increased demands for housing, infrastructure, and recreational opportunities. The demand for products, services, and increasing world trade has also led to growth in commerce and industry. This growth has resulted in increasing pressure on terrestrial and aquatic ecosystem processes that support all natural resources in the region. Development and other alterations of sensitive areas such as shorelines have led to dramatic losses of habitats and species declines. The most recent indicators of impacts to marine resources include the Endangered Species Act (ESA) listings of Puget Sound chinook salmon, Hood Canal summer chum salmon, bull trout, and petitions to list coho salmon, 18 other marine fishes and orca whales in Puget Sound. These ESA listings have led to increasing efforts in the development of watershed and salmon recovery plans. The marine environment has only recently been recognized as a part of individual watersheds and historical efforts to protect salmonids have primarily focused on the freshwater, reproductive and rearing phases of salmon life history.

Recognizing the importance of the nearshore environment to salmonids and overall watershed health, King County and other local jurisdictions sponsored a program to develop a science-based approach to understanding the role of the nearshore environment in salmon recovery and watershed planning. Early in this process, it was determined that a reconnaissance-level assessment was needed to determine what was known and what was not known about the nearshore. On December 7, 1999, King County convened a workshop of marine scientists to identify data sources and data gaps. The results of the workshop were published in June of 2000 (Macdonald 2000) and served as a basis of information for the Nearshore Technical Committee (NTC) that first met in January of 2000.

The NTC is comprised of marine scientists and technical specialists from a broad range of institutions (federal, state, county and city resource management agencies, tribes, the Port of Seattle, the University of Washington, Battelle Marine Sciences Laboratory and other consultants from the private sector). These specialists volunteer their time and energy to provide guidance and technical expertise in the development of a nearshore technical program for salmon recovery and watershed planning in WRIAs 8 and 9. This report is a product of their collective efforts and those of the contributing authors.

The idea for this report was first conceived and presented to the NTC by Steve Ralph (USEPA) in the early spring of 2000. It was clearly recognized that this would be a great contribution because nobody had ever attempted to write a comprehensive report on the Central Puget Sound nearshore system, especially one that was to go beyond a single species assessment. Fortunately, numerous marine scientists contributed to this effort and the Port of Seattle and Puget Sound Action Team graciously agreed to help fund the report. It proved to be a daunting task, but the perseverance and dedication of many individuals prevailed.

This report provides some new information and a level of assessment that has never before been completed for this region. Most of what is contained in this report is a consolidation of previously reported information. Taking an ecosystem approach in our assessment enabled us to summarize what we know about the nearshore ecosystem, identify data gaps, and draw important and meaningful conclusions and recommendations. However, many of the conclusions and recommendations found in this report have been reported previously. The assessment reveals that concerns regarding the loss of nearshore habitat and species are nothing new, and that responses to warnings from scientists have been inadequate to protect the nearshore ecosystem and species that are dependent upon properly functioning conditions within the system. The system is clearly out of balance and actions are urgently needed to protect, preserve, and restore the health of the nearshore ecosystem to prevent further degradation and loss.

We are hopeful that this report provides a new and useful foundation for decision-makers and resource managers. While we lack adequate levels of rigorous scientific information in some areas to provide definitive answers for restoration and recovery, the abundance of data gaps should not be a barrier to making decisions on protective measures. We fully expect that opponents to recommendations for increased conservation measures and improved resource management will continue to use well-established arguments of using less conservative measures and fewer regulations until we have more information. This approach can only lead to further degradation and losses. Similarly, inadequate levels of funding and other resource allocations for additional scientific investigation and assessment will leave us uninformed and unable to respond appropriately to increasing pressures for improved resource management, restoration, and salmon recovery.

In addition, we hope that this report will provide a springboard from which to launch a new understanding and appreciation for a part of the ecosystem that has long been neglected and poorly understood. We would like to think of this report as a work-in-progress. However, there are currently no plans for updating and revising this report. Regardless, readers are encouraged to ask questions and provide constructive comments on this document to improve our understanding and ability to convey complete and accurate technical information. Furthermore, we encourage policy makers to use this document in at least two ways: First, as an expression of concern by scientists and resource managers that all is not well in the nearshore; and, second, as a resource from which a greater understanding and appreciation of this extraordinary ecosystem can be achieved.

Finally, it should be noted that this report is a good example of how technical experts from a broad range of jurisdictional, research, management, and other interests can come together in a cooperative manner to develop an approach and collaborate on an assessment of a complex ecosystem. It is imperative that this cooperative effort be encouraged and supported by managers and policy-makers for future assessment work because of the scale of work and the broad range of expertise needed to properly address management and ecosystem protection and restoration needs.

Jim Brennan — Editor

ACKNOWLEDGEMENTS

This report is the result of a major collaborative effort by many dedicated technical professionals who have a great appreciation for, and interest in, the marine environment. The concept and development of this report, and other nearshore technical guidance in WRIAs 8 and 9 watershed and salmon recovery work, came from the Nearshore Technical Committee (NTC). For most members, their participation is not a part of their regular work program, yet they continue to give of their precious and valuable time. Their dedication to this effort is greatly appreciated, and their technical input and guidance has proven to be invaluable. This report would not have been possible without their assistance and the contribution of review comments by other marine ecosystem experts. We would also like to extend a special note of appreciation to the Port of Seattle for their financial contribution in providing technical support in the creation of this document, and to the Puget Sound Water Quality Action Team for their financial contribution.

We have made every effort to list the names of those who have directly participated in the development and review of this report in order to acknowledge their contribution, and hope that we have not missed anyone. Our advance apologies if we have missed someone. We are eternally grateful and deeply indebted to everyone who has had a direct or indirect influence in the development and production of this report.

This report is also the result of efforts by visionary politicians, policy-makers and planners who have recognized the need to understand and incorporate the nearshore ecosystem into watershed and salmon recovery planning efforts. Their leadership and support is essential to the continuation and success of our ability to understand, protect, and restore our valuable marine resources.

Principal Authors of Individual Chapters:

Executive Summary	*Jim Starkes*[1]
Introduction	*Jim Brennan*[2] *and Greg Williams*[3]
Conceptual Model	*Jim Brennan*
Oceanography and Physical Processes	*Marty Miller*[3]
Nutrient Dynamics and other Water Properties	*Dana Woodruff*[3] *and Marty Miller*[3]
Primary Productivity Dynamics and Rates	*Dana Woodruf*
Food Web	*Greg Williams, Dana Woodruff, and Pete Striplin*[5]
Selected Nearshore Habitats	
▪ Eelgrass	*Ron Thom*[3]
▪ Kelp Forests	*Ron Thom*
▪ Flats	*Ron Thom*
▪ Tidal Marshes	*Ron Thom*
▪ Subestuaries	*Amy Borde*[3]
▪ Sand Spits	*Ron Thom*

- Beaches and Backshore ..... *Ron Thom*
- Banks and Bluffs ..... *Ron Thom*
- Marine Riparian Zones ..... *Jim Brennan and Amy Borde*

Selected Fishes
- Salmonids ..... *Mark Pedersen[4] and Greg Williams*
- Forage Fishes ..... *Greg Williams*
- Groundfish ..... *Greg Williams*
- Rockfish ..... *Greg Williams*

Selected Invertebrates
- Clams, Oysters, Abalone ..... *Roy Kropp[3]*
- Dungeness crab ..... *Mark Pedersen and Roy Kropp*

Shoreline Conditions
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- Overwater Structures ..... *Ann Skillman*
- Dredging ..... *Sue Blanton[3]*
- Filling ..... *Viki Fagerness[5]*
- Sewage Discharge ..... *Pete Striplin*
- Sediment Contamination ..... *Pete Striplin*
- Non-point Pollution ..... *Mark Pedersen*
- Non-native Species ..... *Mark Pedersen*

Elliott Bay and the Duwamish River Estuary *Jim Starkes, Jon Houghton[1], Cygnia Freeland[1], and Kerrie McArthur[1]*

Conclusions and Recommendations ..... *Greg Williams, Ron Thom and Jim Brennan*

1 Pentec Environmental, Edmonds Washington
2 King County Department of Natural Resources
3 Battelle Marine Sciences Laboratory
4 Shapiro Associates, Inc.
5 Striplin Environmental Associates

Final Report Editor:
Jim Brennan

Draft report editorial review and preparation:

Heida Diefenderfer, John Southard, Jeff Ward, Battelle Marine Sciences Laboratory
Nathan Evans, Associate Western University program intern at Battelle
Jill Raben, Shapiro & Associates, Inc.

Project Management:

Laura Blackmore and Jim Brennan, King County Department of Natural Resources
Greg Williams, Battelle Marine Sciences Laboratory

Graphics:

Laural Preston, Sandy Kraus and Megann Devine, King County Department of Natural Resources, GIS and Visual Communications Unit
Amy Borde, Battelle Marine Sciences Laboratory

GIS:

Collene Gaolach and Ken Rauscher, King County Department of Natural Resources, GIS and Visual Communications Unit

ShoreZone Data:

Washington Department of Natural Resources (with special thanks to Helen Berry, WADNR, for all of her assistance).

Nearshore Technical Committee Members

Jim Brennan, Chair, KCDNR; Laura Blackmore, Coordinator, KCDNR; Ron Thom, Battelle Marine Sciences Lab.; Gail Arnold and Al Solonsky, City of Seattle; Robert Newman, and Hugh Shipman, WADOE; Steve Ralph, USEPA; Scott Brewer, Tom Nelson and Randy Shuman, KCDNR; Thom Hooper, NMFS; Jon Houghton, Pentec Environmental and George Blomberg, Port of Seattle; Jaques White, People for Puget Sound; Doug Myers, PSWQAT; Si Simenstad, UW; Phyllis Meyers, Suquamish Tribe; Bill Taylor, Taylor Associates; Pat Cagney and Lori Morris, USACOE; Lou Ellyn Jones and Curtis Tanner, USFWS; John Kerwin, WCC; Randy Carman, Kirk Lakey, Mike Chamblin, Pam Erstad, Kurt Fresh, Wayne Palsson, Dan Penttila, and Jim West, WDFW; Tom Mumford and Betty Bookheim, WANDR.

Other Reviewers and Participants:

Wendy Gerstel, Washington Department of Natural Resources
Al Fukuyama, University of Washington
Glenn Grette, Pacific International Engineering
Michael Kyte, Berger/Abam Engineers, Inc.
Pat Romberg, King County Department of Natural Resources
Katy Vanderpool, King County DNR
Hilary Culverwell, King County DNR
Brian Murray, King County DNR
Daniel Smith, King County DNR
Debra Williston, King County DNR
Dag Henderson, King County DNR

Program Managers:

David Masters and David St John, King County Department of Natural Resources

Final Report Preparation:

Tom Ventur, King County Department of Natural Resources
Marcia McNulty, King County Department of Natural Resources

Recommended Citation:

Williams, G.D., R.M. Thom, J.E. Starkes, J.S. Brennan, J. P. Houghton, D. Woodruff, P.L. Striplin, M. Miller, M. Pedersen, A. Skillman, R. Kropp, A. Borde, C. Freeland, K. McArthur, V. Fagerness, S. Blanton, and L. Blackmore. 2001. Reconnaissance Assessment of the State of the Nearshore Ecosystem: Eastern Shore of Central Puget Sound, Including Vashon and Maury Islands (WRIAs 8 and 9). J.S. Brennan, Editor. Report prepared for King County Department of Natural Resources, Seattle, WA.

Financial Contributions:

- Governor's Salmon Recovery Office, Federal Funds for Salmon Habitat
- Port of Seattle
- Puget Sound Water Quality Action Team

The $50,000 from the Governor's Salmon Recovery Office funded approximately 25 percent of this project, which was financed entirely with governmental funds. The Port of Seattle generously supported this project by providing financial support to Pentec Environmental for their role in the creation of this document and participation in the deliberations of the Nearshore Technical Committee. Portions of this project were produced with support from the Puget Sound Water Quality Action Team.

Cover Photos:

Left photograph: Ned Ahrens, King County Department of Information and Administrative Systems

Right photograph: Katy Vanderpool, King County Department of Natural Resources

ACRONYMS AND ABBREVIATIONS

ACOE	U.S. Army Corps of Engineers
CAD	confined aquatic disposal
CSL	Cleanup Screening Levels
CSO	Combined Sewer Overflow
DO	dissolved oxygen
DPS	distinct population segments
ENSO	El Niño southern oscillation
ESUs	Evolutionarily Significant Units
g C m^{-2} y^{-1}	grams carbon per meter squared per year
H_2S	hydrogen sulfide
HPAH	high molecular weight polycyclic aromatic hydrocarbons
LAET	Lowest Apparent Effects Threshold
LPAH	low molecular weight polycyclic aromatic hydrocarbons
LWD	large woody debris
MGY	million gallons/year
MLLW	mean lower low water
MOSS	Marine Outfall Siting Study
NMFS	National Marine Fisheries Service
N:P	nitrogen to phosphate ratio
PAR	photosynthetically active radiation
ppt	parts per thousand
PRISM	Puget Sound Regional Synthesis Model
PSDDA	Puget Sound Dredged Disposal Analysis
PSP	paralytic shellfish poisoning
RM	river mile
SQS	Sediment Quality Standards
ug at/l	micrograms atoms per liter
um	micrometers
USFWS	United States Fish and Wildlife Service
WDNR	Washington State Department of Natural Resources
WDOE	Washington Department of Ecology
WRIA	Watershed Resource Inventory Area

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