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KEY PENINSULA-GIG HARBOR-ISLANDS WATERSHED COMMITTEE

Mark Mauren - Chair, Washington State Department of Natural Resources, Resident
Denny Lewis - Vice Chair, Resident
Nancy Hill - Anderson Island Resident
Loren Jangaard - Environmental Engineer, Resident
Mary Knackstedt - Environmental Educator, Resident
Elizabeth Lathrop - Resident
James May - On-site System Designer, Resident
Rick McNicholas - Watershed Planner, Kitsap County SSWM
Steve Marek - Tacoma-Pierce County Health Department
Darwin Norby - Stream Team, Property Owner
Rod Reid - Alpine Evergreen
Jonathan White - Peninsula Light
Luther Winsor - Peninsula Land Trust, National Park Ranger (retired), Resident

ADDITIONAL CONTRIBUTORS

Paul Alvestad - Burley-Minter Citizen Involvement Committee, Resident
Mary Brown - Stream Team, Resident
Jane Gauger - Environmental Engineer, Resident
Ray Hanowell, TPCHD
Brad Harp, TPCHD
Jim Hoyle, TPCHD
John Sherman, TPCHD
Steve Kalinowski, Fish & Wildlife
Mike Chamblin, Fish & Wildlife
Sally Sharrard, Pierce County Solid Waste
Kathy Marshall, DNR
Bill Crevling, TPCHD
Gretchen Wilbert, City of Gig Harbor, Resident
Ken Stone, DOT
Mike Erkinnen, PALS
John Kingsbury, Kitsap Conservation District, Resident
Philip Dickey, Washington Toxics Coalition
Norm Hemley, Resident
Philip Carlstroem, Resident
Diane Marcus-Jones, Resident
Pam Dorland, Resident
R.M. Lang, PNA, Resident
Jean Zeren, Farm Owner, Resident

Barbara Kvamme, Resident
Bob Kvamme, Resident
Roy Lampson - SPSSEG, Property Owner
Kathy Lampson - SPSSEG, Property Owner
Hugh Shipman, Washington State Department of Ecology
Jeffree Stewart, Washington State Department of Ecology
Lawrence Oathout - SPSSEG

CONTRIBUTING PIERCE COUNTY WATERSHED PLANNING STAFF

Roy Huberd - Senior Planner
Barbara Ann Smolko - Associate Planner, Principal Writer
Bob Dieckmann - Assistant Planner
Ann Rees - Graphic Design & Layout, Research, Editorial Assistant
David Grinstead - Mapping
Diane Marcus-Jones - Intern

WATER PROGRAMS MANAGER

Tim H. Ramsaur, P.E.

CAPITAL IMPROVEMENT PROGRAMS MANAGER

Harold P. Smelt, P.E.

WASHINGTON STATE DEPARTMENT OF ECOLOGY

Bob Duffy, Project Grant Manager

EXECUTIVE SUMMARY

The most notable feature of the *Key Peninsula-Gig Harbor-Islands (KGI) Watershed* is its abundant quantities of saltwater shoreline. Most residents live either on a salt or freshwater shoreline or within two miles of marine waters. Some areas of the watershed have retained rural characteristics, but the proximity of the area to the city of *Tacoma* has resulted in strong growth pressure for more residential and commercial land uses. This pressure has driven a concern by residents about protecting water quality and preserving beneficial uses of water.

DESCRIPTION OF THE WATERSHED

The *KGI Watershed* is located mostly in *Pierce* and *Kitsap Counties, Washington*, although a very small area of the watershed falls within *Mason County*. The watershed lies between *Case Inlet* on the west, and *Dalco Passage* and *The Narrows* on the east. The watershed's northern boundary is in southern *Kitsap County*, and the southern boundary is formed by the *Nisqually Reach, Puget Sound, and Cormorant Passage*. (See Figure 1 Plan Area) The watershed contains approximately 101,000 acres, or 158 square miles of land and about 144 miles of shoreline. Approximately 22,029 acres of the watershed fall within *Kitsap County*. It is composed of two large peninsulas and many islands. The three largest islands are *Fox, McNeil* (state-owned), and *Anderson*. There are a number of smaller islands, including *Raft, Herron, Cutts, Eagle, Gertrude, Tanglewood, and Ketron*. It includes the incorporated city of *Gig Harbor*, as well as the unincorporated communities of *Burley, Home, Vaughn, Rosedale, Longbranch, Lakebay, Key Center, Lake Holiday, and Purdy*.

PURPOSE AND AUTHORITY

The purpose of the **Key Peninsula/Gig Harbor/Islands Watershed Action Plan** is to identify, attempt to correct, and prevent nonpoint source water pollution and protect beneficial uses of water.

Beneficial uses of water include: the aquatic and upland ecosystem, potable water supply, recreation, raising domestic plants and animals, quality of life, aquaculture, cleansing, commercial/industrial, agriculture and forestry, fire protection, and transportation.

The authority under which the Plan was written goes back as far as the federal *Clean Water Act* of 1972. Section 319" of the Act required states to address water pollution from nonpoint sources. The *Puget Sound Water Quality Authority* was formed in 1985 by the *Washington State Legislature* to meet stipulations included in amendments to the Act and the *Authority* proceeded to publish the first Puget Sound Water Quality

Management Plan in 1987. The Plan included an approach for dealing with nonpoint pollution that involved the establishment of *Washington Administrative Code 400-12* or the Nonpoint Rule in 1988. The Rule provides guidance in development of plans for addressing nonpoint pollution.

THE KGI WATERSHED COMMITTEE

The *KGI Watershed Committee* is made up of citizens, agencies, and other stakeholders with an interest in improving water quality. They are intended to represent diverse interests from within the watershed. Organizations and individuals represented on the *Committee* are listed on the inside of the front cover. Non-appointed individuals also contributed and were extremely helpful in forming the Plan. The *Committee* makes decisions through consensus rather than traditional voting.

SUMMARY OF FINDINGS

In the course of defining problem areas and sources, the *Committee* determined that the beneficial uses of water most threatened or impaired were aquaculture (particularly shellfish beds), potable water supply, and the aquatic and upland ecosystem. The measures of water quality and ecosystem health which they felt were showing up most frequently with signs of degradation or were key indicators of potential problems included: fecal coliform bacteria levels, sediment/turbidity readings, stream flow rates, nutrients, biological diversity (may be measured using macroinvertebrate sampling), percent of impervious cover, water temperatures, dissolved oxygen levels, percent of tree canopy cover, human population density, and land use activities.

The *Committee* identified water bodies within the *KGI Watershed* which they wished to place under a high-priority category for attention. This list includes water bodies which are already showing signs of significant degradation, water bodies with a high-potential for future degradation, and water bodies which are supporting significant beneficial uses such as shellfish, salmon runs, and recreational use which the committee felt needed extra protection. The list of high-priority water bodies includes: *Lake Florence*, *Lake Sylvia*, *McCormick Creek*, *Wollochet Creek*, *Artondale Creek*, *Crescent Creek*, *Goodenough Creek*, *Rocky Creek* (includes Rocky Creek, East Fork Rocky Creek, Fork Muck Creek, and Winter Creek), *Burley Creek*, *Purdy Creek*, *Minter Creek* (includes Minter Creek, Little Minter, and Huge Creek), *Burley Lagoon*, *Minter Bay*, *Rocky Bay*, *Filucy Bay*, *Mayo Cove*, *Glen Cove*, and *Gig Harbor* (Water bodies are listed randomly and do not reflect order of prioritization.).

The sources of water pollution which were perceived by the *Committee* as posing the greatest threat to beneficial uses include: forest practices related to forest land conversion, stormwater and erosion (specifically, changes in runoff rates from paved surfaces, erosion from construction activities, pollutants from paved surfaces, and fish passage blockages), runoff from residential areas, which includes pesticides and household hazardous wastes, illegal dumping, and on-site sewage system failures.

MISSION, GOALS, AND OBJECTIVES

The *KGI Watershed Committee* developed the following mission, goals, and objectives to focus their efforts and expectations for the Action Plan.

MISSION STATEMENT

To protect water quality and beneficial uses of water by reducing water pollution from nonpoint sources.

Goals and Objectives

- 1) ***Land development will be conscientiously sited to protect beneficial uses of water and environmentally sensitive areas.***
 - Riparian, wetland, and shoreline buffers will be adequate to protect beneficial uses.
 - There will be a high-rate of compliance with *Comprehensive Plans and Critical Areas* ordinances.
 - A revised and updated *Pierce County Shoreline Master Program* will be in place.
 - There will be an increase in riparian cover.
- 2) ***The groundwater supply will be ample and safe for consumption by humans, animals, and plants.***
 - Groundwater quality will meet, or exceed Washington State Groundwater Standards.
 - Saltwater intrusion problems will be contained.
- 3) ***Good habitat and high quality water will support a healthy and diverse population of native plants, animals, and aquatic organisms.***
 - There will be an increase in the number of parcels and acreage in Open Space taxation designations.
 - There will be an increase in the amount of stream miles available for salmon spawning.
 - There will be healthy and increasing native fish populations.
- 4) ***Surface water quality will be superior and beneficial to the health of fish, shellfish, macroinvertebrate, wildlife, and human populations.***
 - Surface water quality will meet, or exceed Washington State Water Quality Standards (WAC 173-201A as amended).

- Macroinvertebrate sampling will show healthy population numbers and greater species diversity.

5) Stormwater will enter stream systems more gradually, with lower peak flows, and will preserve historic year-round flow levels.

- There will be a high-rate of implementation of stormwater Best Management Practices (BMP s).
- There will be reduced levels of impervious cover.
- Storm events will result in lower and longer peak flows in local streams.

- **Watershed residents will be educated about water quality issues and will take action to protect, restore, and steward the environment.**
- More watershed residents will participate in *Stream Team* and/or habitat restoration events.
- There will be increased participation in programs like the *Backyard Wildlife Sanctuary Program*.
- There will be a noticeable shift in local sales away from hazardous household and garden products in favor of environmentally friendly alternatives.

- **Natural resource harvesting will be sustainable and equitable.**
- There will be a healthy and stable farmed forestry industry within the watershed.
- There will be a healthy and stable local sportfishing industry within the watershed.

- **Shellfish growing areas will be numerous and produce shellfish which are safe for consumption and abundant.**
- All commercial and recreational shellfish beds will be open for harvest.
- Production levels for shellfish from within the watershed will increase.

- **There will be a significant reduction in the amount of solid waste generated, stored, and illegally dumped.**
- There will be a significant reduction in illegal dumping incidents.
- There will be an increased rate of recycling by watershed residents with more opportunities for recycling a wider variety of wastes.

- **A clear, effective, cooperative system will be in place to identify problems and respond to water quality concerns.**
- An ongoing sampling and monitoring program will be in place.
- Agency roles will be defined for responding to concerns.
- Implementers of the KGI Watershed Action Plan will meet regularly.
- There will be active resident involvement in identifying and reporting water quality concerns, and in Plan implementation.
- Regular reports on the progress of Plan implementation will be issued.

SUMMARY OF ACTION ITEMS

Appendix A gives an explanation and/or definition of Action Item terminology.

Appendix B lists all *Action Items* in **numerical order**.

Appendix C lists all *Action Items* grouped **by implementator**.

Appendix D lists all *Action Items* grouped **by funding source**.

LEAD IMPLEMENTERS

The primary Implementer of the **KGI Watershed Action Plan** is *Pierce County*. This means that if progress is not made toward implementation of the Plan, that *Pierce County* is responsible for pursuing implementation. The lead Implementers identified within each *Action Item* are ultimately responsible for their completion. *Pierce County's* role as the primary Implementer is to contact lead Implementers and encourage them to take action.

AGC (Assc of General Contractors)
City of Gig Harbor
Department of Transportation
Department of Fish and Wildlife
Gig Harbor Lyons
Gig Harbor Rotary
KGI Watershed Council
Kitsap County

Bremerton-Kitsap County Health District
Department of Natural Resources
Department of Ecology
Gig Harbor Chamber of Commerce
Gig Harbor Parks
IMEX
Kitsap Conservation District
Local Congressional Representatives

Local Radio Stations	Master Gardeners
NRCS	Peninsula Heritage Land Trust
Peninsula Light	Peninsula Salmon
Peninsula School District	Penrose Point State Park
Pierce Conservation District	Pierce County
Pierce County Boating Advisory Committee	Pierce County Cooperative Extension
Pierce County Council	Pierce County Environmental Services
Pierce County Parks and Recreation	Pierce County Regional Water Assc
Pierce County Sheriff	Pierce County Solid Waste
Pierce County Water Programs	PTI
Sea Grant	Septic System Pumpers
Tacoma-Pierce County Marina Association	Tacoma-Pierce County Health Dept.
Tahoma Audobon	University of Washington
US West	WA State Farm Forestry Association
Washington Toxics Coalition	WSU Cooperative Extension

FUNDING

An estimated cost, funding source, and funding type have been suggested for each *Action Item*. A wide-variety of sources and types have been identified based on the type of action and the organizations involved. It would be misleading to identify a single-entity as having primary responsibility for funding implementation of the Plan. See the appendices for tables which estimate the costs assigned to each funding source. The total cost for full implementation of the Plan is approximately \$ 5.5 million.

It should be noted that lead Implementers concur with *Action Items* with the condition that they will implement as funding allows. However, lead Implementers may need to be encouraged to pursue appropriate funding sources.

ACTIONS TO BE TAKEN

Two significant actions will be taken to optimize the success of the Action Plan. First, concurrence will be sought from each of the lead Implementers identified within the Plan. Concurrence consists of receiving a letter or resolution from the prospective lead Implementer stating that they intend to implement the *Action Item* as funds become available. Lead Implementers may be able to condition their concurrence in ways that work better with their existing programs. Second, an *oversight or watershed council* will be established. This council will include broad representation from throughout the watershed and will relieve *Pierce County* of the primary oversight role once it is established and as long as it is active.

The watershed council will work with lead Implementers and issue regular reports on implementation of the Action Plan.

KEY TO ACRONYMS

AF	Agriculture/Forestry Action Item
AGC	Association of General Contractors
ALEA	Aquatic Lands Enhancement Account
ASAP	As Soon As Possible
BKCHD	Bremerton-Kitsap County Health Department
BM	Boats & Marinas Action Item
BMP	Best Management Practices
CAD	Computer Aided Design
CCWF	Centennial Clean Water Fund
CFSA	Consolidated Farm Services Agency
CO-OP	Pierce County Cooperative Extension
CUGA	Comprehensive Urban Growth Area
CZM	Coastal Zone Management Act
DCTED	Washington State Department of Community Trade and Economic Development
DNR	Washington State Department of Natural Resources
DOH	Washington State Department of Health
DOE or ECOLOGY	Washington State Department of Ecology
DOT	Department of Transportation
EFY	Every Five Years
EPA	Environmental Protection Agency
FCAAP	Flood Control Assistance Account Program
FPA	Forest Practices Act
GIS	Geographic Information Systems
GMA	Growth Management Act
GN	General Action Item
GUS	Groundwater Ubiquity Score
HPA	Hydraulic Project Approval
IAC	Inter-Agency Committee for Outdoor Recreation
ICM	Impervious Cover Management
IM	Implementation Action Item
IMEX	Industrial Material Exchange - Quarterly Magazine
IPM	Integrated Pest Management
KC	Kitsap County
KCD	Kitsap Conservation District
KGI	Key Peninsula/Gig Harbor/Islands Watershed
KGIWC	Key Peninsula/Gig Harbor/Islands Watershed Council
MO	Monitoring Action Item
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPD	Metropolitan Parks District
MSD	Marine Sanitation Device
MSW	Municipal Solid Waste

N/A	Not applicable
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
O&M	Operation and Maintenance
OS	On-site Sewage Action Item
OSS	On-site Sewage System
OSU	Oregon State University
OT	Other Action Item
PAH	polycyclic aromatic hydrocarbons
PALS	Pierce County Planning & Land Services Department
PBRs	Public Benefit Rating System
PC	Pierce County
PCCD	Pierce County Conservation District
PIE	Public Involvement & Education
PNA	Peninsula Neighborhood Association
PIE	Public Involvement and Education Grant
PSAT	Puget Sound Action Team
PSWQAT	Puget Sound Water Quality Action Team
QA/QC	Quality Assessment/Quality Control
RCW	Revised Code of Washington
SEPA	State Environmental Policy Act
SH	Shoreline Action Item
SPI	Superintendent of Public Instruction
SSWM	Kitsap County Surface and Storm Water Management Program
SW	Stormwater/Erosion Action Item
KCSWAC	Kitsap County Surface Water Advisory Committee
SPSSEG	South Puget Sound Salmon Enhancement Group
SWM	Surface Water Management
TBT	tributyltin
TCI	Telecommunications Incorporated
TMDL	Total Maximum Daily Load
TPCHD	Tacoma-Pierce County Health Department
USDA	United States Department of Agriculture
USFWS	United State Fish and Wildlife Service
USGS	United States Geological Survey
UST	Underground Storage Tank
UW	University of Washington
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WFFA	Washington Farm and Forestry Association
WQ	Water Quality
WRD	Water Resource Department, Pierce County
WRIA	Water Resource Inventory Area
WSU	Washington State University Cooperative Extension
YMCA	Young Men's Christian Association

INTRODUCTION

This section is the **KEY PENINSULA-GIG HARBOR-ISLANDS (KGI) CHARACTERIZATION STUDY**. The purpose of the study is to provide a comprehensive biological and physical assessment of the *KGI Watershed*. The information found in this study will be used by the watershed management committee to develop an action plan in compliance with Washington Administrative Code 400-12. The study examines the following:

- Beneficial water uses in the watershed.
- Physical characteristics of the watershed, including topography, geology, climate and soils.
- This section also describes the hydrological aspects of the watershed including groundwater, wetlands, marine waters and shoreline dynamics.
- A description of the biological conditions of the watershed. This includes a description of the biological communities inhabiting the watershed including terrestrial and aquatic plants and animals.
- An overall assessment of water quality in the watershed is presented and trends are discussed.
- A review of the population and type of land uses and land coverage within the watershed.
- Sources of non-point pollution and to what extent they are occurring in the watershed.
- A description of subwatersheds in the KGI watershed , including specific water quality and habitat information.
- Applicable federal, state, and county water quality plans and regulations.
- Overall watershed character and quality.

DESIRABLE BUT UNAVAILABLE INFORMATION

The purpose of the characterization report is to assist the watershed committee in defining problems and ease the decision making process. However, certain pieces of information have not been collected and could not be used to support the work of the committee.

Physical Description: Historical and current information on flow regimes has not been done for the creeks within the watershed. This information would help identify creeks where hydrologic changes have resulted in higher stream flows which may be damaging creek systems.

Biological Conditions: A comprehensive macroinvertebrate survey has not been done for the watershed, nor has a wildlife survey. Information in fish counts and historic conditions is limited.

Habitat: Information on wetlands in the watershed is minimal. The types of wetlands have not been surveyed, the number of acres of wetlands is not precise, and the amount of wetlands lost to development is unavailable. In shoreline areas, shoreline armoring rates are not being measured which would assist in determining potential habitat impacts.

Water Quality: Most water quality data for streams in the watershed is limited to samples taken by Stream Team volunteers. This data is recent, is not always done regularly, and is limited to just a few streams. There is no historical data which would allow for the detection of changes or trends.

Land Use: The amount of impervious cover in the watershed has not been determined and changes in cover are not being calculated on a regular basis to allow identification of trends.