Environmental Policy Element

Index:

Section I – Introduction

The Environmental Policy Element of the Comprehensive Plan consists of goals and policies that provide a basis for evaluating development based on environmental considerations with particular emphasis on development in critical areas and potentially hazardous areas.

Scope

The Environmental Policy Element addresses environmental issues and concerns within the City of Tacoma and provides a logical and reasonable basis for evaluating the impacts of development on the natural environment and providing alternative development standards. The element consolidates previously adopted environmental policies and sets forth additional environmental policies.

The scope of the plan is city-wide. The critical areas and natural resource lands components of the Environmental Policy Element addresses those areas mandated by the Washington State Growth Management Act. They include aquifer recharge areas, fish and wildlife habitat conservation areas, flood hazard areas, geologically hazardous areas, wetlands, stream corridors and mineral resource lands. Future elements will be developed to address additional environmental issues and subject areas.

Purpose and Intent

It is intended that the Environmental Policy Element be a comprehensive, single source of the City's environmental policies. The element will present a culmination of policy recommendations on some of the City's most important environmental issues. It will provide direction for evaluating environmental conditions and natural processes. It is meant to review the environmental resources of Tacoma and address the issues affecting those resources. The Environmental Policy Element is intended to be working in harmony with other elements of the Comprehensive Plan and federal, state and local regulatory programs. It is intended to consolidate previously adopted environmental policies, set forth additional environmental policies, and develop workable decision-making and administrative procedures.

The Environmental Policy Element's primary concern and focus is the preservation and enhancement of the quality of life of the individuals living within the sphere of influence of the City of Tacoma. The element recognizes that no definition for quality of life exists and that it is a system of interrelated and interwoven human values. The concept of quality of life must surely include preservation of our cultural and biologic heritage, enjoyment of the aesthetic values of our environment, freedom from undo health risks, pursuit of individual activities and aspirations and the opportunity to appreciate our environment. Quality of life is greatest when a balance between values is achieved.

Framework

Managing growth within potentially hazardous natural areas prevents environmental problems as well as preserves open space. For example, steep slopes and floodplains that are potentially hazardous when developed, provide scenic corridors and greenbelts when retained in a natural state. Development patterns and practices that preserve or enhance natural features add to community quality as well as protect water quality, wildlife and property.

Developments in potentially hazardous areas need to be subject to standards which may be stricter than the standards which apply in areas where natural constraints are not present. In cases where developments are permitted in these potentially hazardous areas, the developments need to be designed in harmony with natural systems. This approach is intended to protect the public health, safety and welfare by averting potential problems associated with development. The recommended approach may also reduce needless public and private expenditures related to landslides, flooding, erosion, uneven settlement or other disruptions. Furthermore, one of the purposes of the Environmental Policy Element is to insure that if development activities occur, undue hardships are not imposed on adjacent property owners and land owners, developers and buyers are made aware of natural constraints.

Section II – General Goal and Policies

Goal

In accordance with the desire to protect the City of Tacoma's natural beauty and environmental quality and in recognition of the useful and aesthetic functions of natural systems, it is the City's goal to:

> **Ensure conservation, protection, enhancement and proper management of natural resources and shoreline, while providing for a balanced pattern of development and the needs of the citizens of the City of Tacoma.**

The goal considers all aspects of natural features -- including physical constraints to development, important economic functions and aesthetic qualities. They also establish the intent to utilize the land forms of the city as a means of providing variety, community identity and open space areas.

The policies stress the recognition and protection of many of Tacoma's natural amenities. The proposed policies address development and use of environmental resources and promote sensitive use of private property consistent with these concepts.

General Policies

General Government

The authority to govern and control development in the city is provided by the Tacoma Municipal Code. Ordinances adopted by the City Council are codified into the city code and are a means of insuring that different land uses are compatible with each other; that property rights are protected; and that the health, safety, and social concerns of citizens are not adversely affected. They also insure that proper design and construction standards are utilized for appropriate growth and development. Chief among the city's regulations are the Land Use Regulatory Code and the Building Code. The principal issues addressed in the Land Use Regulatory Code include zoning, platting, critical areas and shoreline management.

E-GG-1 Regulatory System
Maintain a system of codes and regulations intended to improve design and development standards, insure a livable environment and protect the natural resources of the community.

E-GG-2 Public Support
Recognize that the interest and concern of the public is essential to the improvement of the environment and sponsor and support public information programs to that end.

Environmental - Natural Features

The city's unique natural features are a visual and aesthetic asset to the community. Lakes, streams, slopes, and gulches are highly valued for their aesthetic quality and recreational opportunities. These natural features also provide valuable ecological functions as well. Therefore, growth and development should be in harmony with the environment in order to prudently protect these features for the benefit of as many citizens as possible.

E-ENF-1 Natural Features Value
Recognize the value of natural features of the land within the urban environment; conserve as many natural features as is possible and appropriate. Natural features are not only important for ecological reasons but they both possess educational and recreational values as well.

E-ENF-2 Preservation of Natural Resources
Preserve through programs of acquisition, easement, design standards and zoning an optimum amount of the City's desirable natural features for public purposes. Included would be steep slope areas, water frontage, wooded areas, aquatic lands and other unique and significant natural areas.

E-ENF-3 Environmental Considerations
Emphasize careful planning in growth and development activities in order that the City's natural features may be preserved, soil stability maintained and renewable and non-renewable resources protected.

E-ENF-4 Natural Features and Unstable Soil
Carefully plan residential development in order that the city's natural features are preserved, if at all possible, and areas of unstable soil are not disturbed.

E-ENF-5 Natural Features
Avoid alteration of desirable natural features, where feasible, in the development of utilities and services facilities

Growth and Development

The city will continue to be the focal point of growth for the greater Tacoma area and a growth center for the region and the state. It is intended that growth and development occur in an orderly and desirable manner in accordance with citizen needs and desires, the physical characteristics of the land.

E-GD-1 Site Planning
Encourage site planning and construction techniques that maintain natural landforms, retain native vegetation, and preserve open space.

E-GD-2 Development Hazards
Discourage development on lands where such development would pose hazards to life or property, or where important ecological functions or environmental quality would be adversely affected: (a) floodways of 100-year floodplains, (b) erosion hazard areas, (c) landslide hazards areas, (d) unique or significant wetlands or stream corridors, (e) fish and wildlife conservation areas and (f) seismic hazard areas.

E-GD-3 Manage Development
Encourage development standards in critical areas in accordance with the severity of natural constraints to reduce risks, minimize damage to life and property and mitigate potential hazards.

E-GD-4 Educational/Aesthetic Appearance
Encourage regulations or development limitations within areas of recognized educational, anthropological, historical, biological or aesthetic significance to avoid irreversible damage to such areas.

E-GD-5 Environmental/Economic Consideration
Recognize that management of environmental resources should consider protection of the public health, safety and welfare and economic development needs.

Low Impact Development

Low Impact Development is a land use development strategy that emphasizes protection and use of on-site natural features integrated with engineered, small scale stormwater controls at the parcel and subdivision scale to manage stormwater and maintain or restore pre development watershed hydrology functions.

E-LID-1 Manage Stormwater
Encourage the use of low impact development techniques to mitigate stormwater runoff by retaining native vegetation and using pervious material for hard surfaces that allow water infiltration.

Pollution

Pollution affects the livability of our environment and affects land use.

E-P-1 Environmental Protection
Acknowledge the dangers to health presented by all forms of environmental pollution and degradation by individuals as well as by industries, and support education and technical assistance, as well as rigorous enforcement of regulations when necessary, to alleviate these dangers.

E-P-2 Air and Water Pollution
Support education and technical assistance, as well as strict enforcement when necessary, of air, water, noise and other pollution laws and regulations with the ultimate purpose of eliminating these problems as negative features of the environment.

Recreation and Open Space

Recreation and open space facilities including playgrounds, parks, public school sites, open space corridors, public golf courses, scenic or historic routes, bikeways, trails and conservation areas.

E-ROS-1 Usurping of Open Space
Discourage the use of designated open space for non-open space uses. Such utilization of open space land should not be permitted unless land and facilities of like character and equal value are provided.

E-ROS-2 Public Land Disposal
Examine all publicly owned lands for their potential open space use prior to surplus and sale.

E-ROS-3 Desirable Open Spaces
Preserve and maintain through easement, acquisition or other appropriate means, desired open space areas such as steep slopes, scenic view areas, water frontage, wooded areas, unique natural features, and historic areas taking care to provide a proper balance between retaining these areas and private development.

E-ROS-4 Open Space Uses
In recognition of their ecological, conservational, recreational and educational values, preserve and maintain open spaces for bird and small animal habitats, green areas in urbanized neighborhoods, green separations between dissimilar land use districts, and aesthetic purposes.

E-ROS-5 Private Open Space
Encourage the retention or preservation of private open space through such programs as the Open Space Current Use Assessment Program.

Energy

Energy and its availability affect the livability of our environment and affects land use.

E-E-1 Locate and Design for Energy Efficiencies
Encourage building design, orientation and land use arrangements that take advantage of natural landforms, existing vegetation, and climatic features for the purpose of reducing energy demands for heating and cooling purposes.

Air Quality

Air quality affects the livability of our environment and affects land use.

E-AQ-1 Air Pollution
Support the control and ultimate elimination of the contaminating by-products of transportation equipment.

Noise

Noise affects the livability of our environment and affects land use.

E-N-1 Buffer Noise Sources
Encourage the use of buffer areas and/or noise absorbing barriers between sources of noise and residential areas or other noise sensitive land uses.

E-N-2 Noise Reduction Measures
Promote the use of construction techniques, building siting and other means that reduce the level of internal and external noise, particularly in high noise areas.

E-N-3 Noise Impacted Areas
Discourage development in noise impacted areas that will significantly increase noise levels by either a direct contribution or by removing an existing natural feature that acts as a noise absorbing barrier.

E-N-4 Noise Sensitive Land Uses
Discourage the development of noise sensitive land uses within or near high noise areas.

Water Quality

Water quality affects the livability of our environment and affects land use.

E-WQ-1 Water Pollution
Recognize the need for an increase in the level of sewage treatment and the eventual treatment of storm water in order to meet future water pollution standards.

E-WQ-2 Retain Vegetation Near Water
Encourage the retention of natural vegetation along lakes, ponds, and streams, where appropriate, in order to help preserve water quality, protect fishery resources and control erosion and runoff.

E-WQ-3 Shoreline
Encourage cooperation between public and private efforts in the management and development of Tacoma's shorelines.

Storm Water Runoff

While the majority of Tacoma's drainage is conveyed to Puget Sound through artificial conveyances, twenty-nine percent is conveyed via either Flett or Leach Creeks and their respective natural tributaries. Various areas within the Flett and Leach Creek watersheds have experienced storm drainage problems as a result of urbanization and large natural storm events. One approach to lessen or alleviate the possible problems in all city watersheds is to construct new facilities and/or update existing systems. Developments near slopes, ravines or gulches may be required to implement measures to prevent erosion or further adverse impacts to the drainage system.

E-SWR-1 On-Site Detention Facilities
Encourage the use of on-site detention facilities and filtration systems that are designed in conjunction with the city's storm drainage system, as may be appropriate or necessary, for all developments located within identified critical drainage areas; or within areas where drainage problems would occur as a result of the proposed development, with the exception of the South Tacoma Groundwater Protection District.

E-SWR-2 Natural Watercourses
Prohibit any filling of natural watercourses without adequate provisions for modifying the natural channel to meet drainage standards established by the City's regulations.

E-SWR-3 Natural Land Features and Erosion
Protect existing natural gulches, watercourses, ravines, and similar land features from the adverse erosional effects of increased storm water runoff that is generated by new development.

Scenic Areas

Urban aesthetics and design encompasses all aspects of the physical and natural environment of a city. Quality design, historic preservation, and preservation of natural areas can give citizens a sense of time and place within their environment and pride in their community.

E-SA-1 Scenic Sites and Vistas
Develop and maintain a system of scenic view sites and vistas in order to take advantage of the natural beauty of Tacoma and its siting in the Puget Sound Region.

E-SA-2 Tree Trimming
Permit the trimming or removal of trees or vegetation from natural open space areas only if it can be accomplished in accordance with the Critical Areas Preservation Ordinance or established regulations for view preservation or if it can be proven that the trees or vegetation are a detriment to the ecology or aesthetic appearance of the area or that they present an unsafe condition.

E-SA-3 View Corridors
View corridors which can link the City and the water should be preserved or created.

E-SA-4 Promote Steep Slope Views
Recognize, protect and promote the visual qualities and the view potential offered by steep slope areas.

E-SA-5 Preservation Large Trees/ Existing Views
Preserve, wherever and whenever feasible, large existing trees within residential neighborhoods and select and locate new trees to preserve existing views.

E-SA-6 Design and Aesthetics
Emphasize good design and aesthetics with respect to scale, proportion and the use of compatible materials in new development and redevelopment within the City.

E-SA-7 Encourage Private Covenants
Encourage the establishment of private covenants to control height and vegetation in new plats to promote view preservation.

E-SA-8 Coordination of Efforts
Encourage the agencies responsible for utility lines to work together to achieve the long-range goal of undergrounding all utility lines.

E-SA-9 Vegetation Planning
Encourage the selection and location of landscaping on public and private property that minimizes view blockage when planted and when fully grown.

E-SA-10 Vegetation Control
In limited instances, where appropriate, and after City approval, permit private individuals to provide for the trimming, thinning or removal of

vegetation on public property where views are obstructed or other circumstances may warrant.

E-SA-11 Neighbor Cooperation
Encourage neighboring property owners to work together to preserve individual property views.

Solid Waste and Recycling

Solid waste and recycling affects the livability of our environment and affects land use.

E-SWR-1 Waste Recycling
Support programs designed to seek solutions for disposal problems, to develop means of recycling waste material in order to relieve the problems of waste disposal and to lessen the drain on our natural resources.

Environmental Remediation

The City has designated certain lands as environmentally sensitive or critical areas. These areas include aquifer recharge areas, fish and wildlife habitat conservation areas, flood hazard areas, geologically hazardous areas, natural resource areas, stream corridors, and wetlands. Because of the growing pressures and the increased understanding of the value of critical areas, the City has drafted standards to manage development for their protection and preservation. Critical areas warrant protection because they maintain and protect surface and ground water quality, provide erosion and storm water control, and serve as an essential habitat for fish and wildlife.

E-ER-1 Comprehensive Cleanup Strategies
Encourage improvement of the environmental quality of Commencement Bay, its associated waterways, and the Tacoma watershed, including all nearshore and adjacent upland areas through comprehensive cleanup strategies.

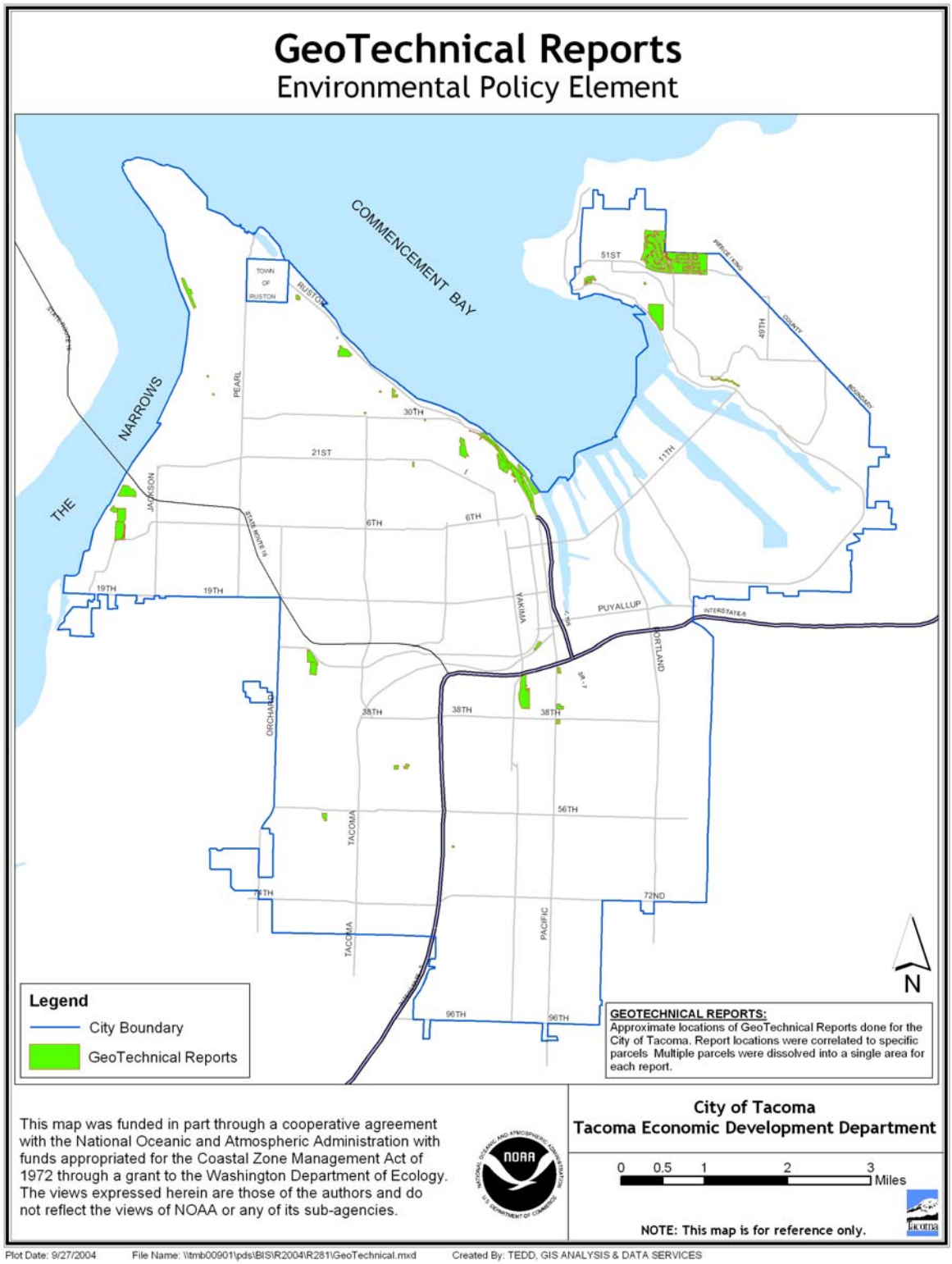
E-ER-2 Contaminated Sites
Encourage the identification and characterization of all contaminated sites which adversely affect the City's shoreline areas, surface waters and groundwater.

E-ER-3 Source Control
Encourage source control of all contaminated sites within and adjacent to the City's shoreline areas or which impact shoreline areas or surface waters.

E-ER-4 Public/Private Partnerships
Encourage public and public/private partnerships to ensure the most comprehensive, timely and cost-effective cleanup actions.

E-ER-5 Best Management Practices
Ensure the use of Best Management Practices by private industry and municipal government to prevent recontamination of wetlands, streams, shorelines, groundwater and other aquatic areas.

E-ER-6 Best Available Science
Ensure the use of Best Available Science Practices by private industry and municipal government to prevent recontamination of wetlands, streams, shorelines, groundwater and other aquatic areas. Special attention should be placed on anadromous fisheries.


GeoTechnical Reports
Environmental Policy Element
COMMENCEMENT BAY
THE NARROWS
TOWN OF RUSTON
RUSTON
PEARL
JACKSON
STATE ROUTE 16
30TH
21ST
6TH
19TH
ORCHARD
TACOMA
78TH
96TH
YAKIMA
PUYALLUP
INTERSTATE-5
PORTLAND
38TH
56TH
72ND
PACIFIC
51ST
49TH
QUARY
BOUNDARY
11TH
Legend
City Boundary
GeoTechnical Reports
N
GEOTECHNICAL REPORTS:
Approximate locations of GeoTechnical Reports done for the City of Tacoma. Report locations were correlated to specific parcels Multiple parcels were dissolved into a single area for each report.
This map was funded in part through a cooperative agreement with the National Oceanic and Atmospheric Administration with funds appropriated for the Coastal Zone Management Act of 1972 through a grant to the Washington Department of Ecology. The views expressed herein are those of the authors and do not reflect the views of NOAA or any of its sub-agencies.
NOAA
City of Tacoma
Tacoma Economic Development Department
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NOTE: This map is for reference only.
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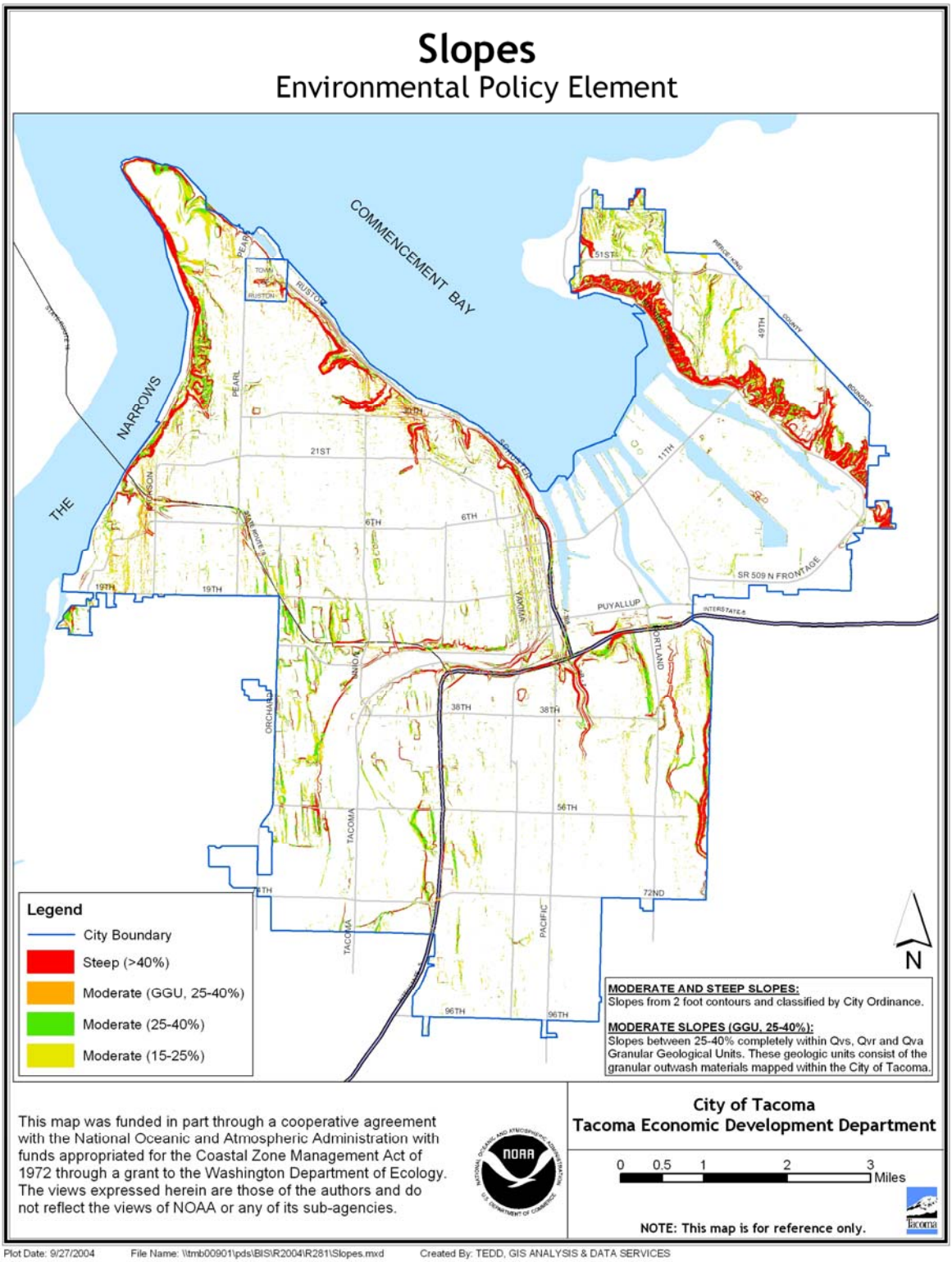
Slopes
Environmental Policy Element
COMMENCEMENT BAY
NARROWS
THE
PEARL
RUSTON
51ST
49TH
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11TH
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19TH
38TH
56TH
72ND
96TH
SR 509 N FRONTAGE
PUYALLUP
INTERSTATE-5
YAKIMA
PORTLAND
ORCHARD
TACOMA
PACIFIC
Legend
City Boundary
Steep (>40%)
Moderate (GGU, 25-40%)
Moderate (25-40%)
Moderate (15-25%)
MODERATE AND STEEP SLOPES:
Slopes from 2 foot contours and classified by City Ordinance.
MODERATE SLOPES (GGU, 25-40%):
Slopes between 25-40% completely within Qvs, Qvr and Qva Granular Geological Units. These geologic units consist of the granular outwash materials mapped within the City of Tacoma.
N
This map was funded in part through a cooperative agreement with the National Oceanic and Atmospheric Administration with funds appropriated for the Coastal Zone Management Act of 1972 through a grant to the Washington Department of Ecology. The views expressed herein are those of the authors and do not reflect the views of NOAA or any of its sub-agencies.
NOAA
City of Tacoma
Tacoma Economic Development Department
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NOTE: This map is for reference only.
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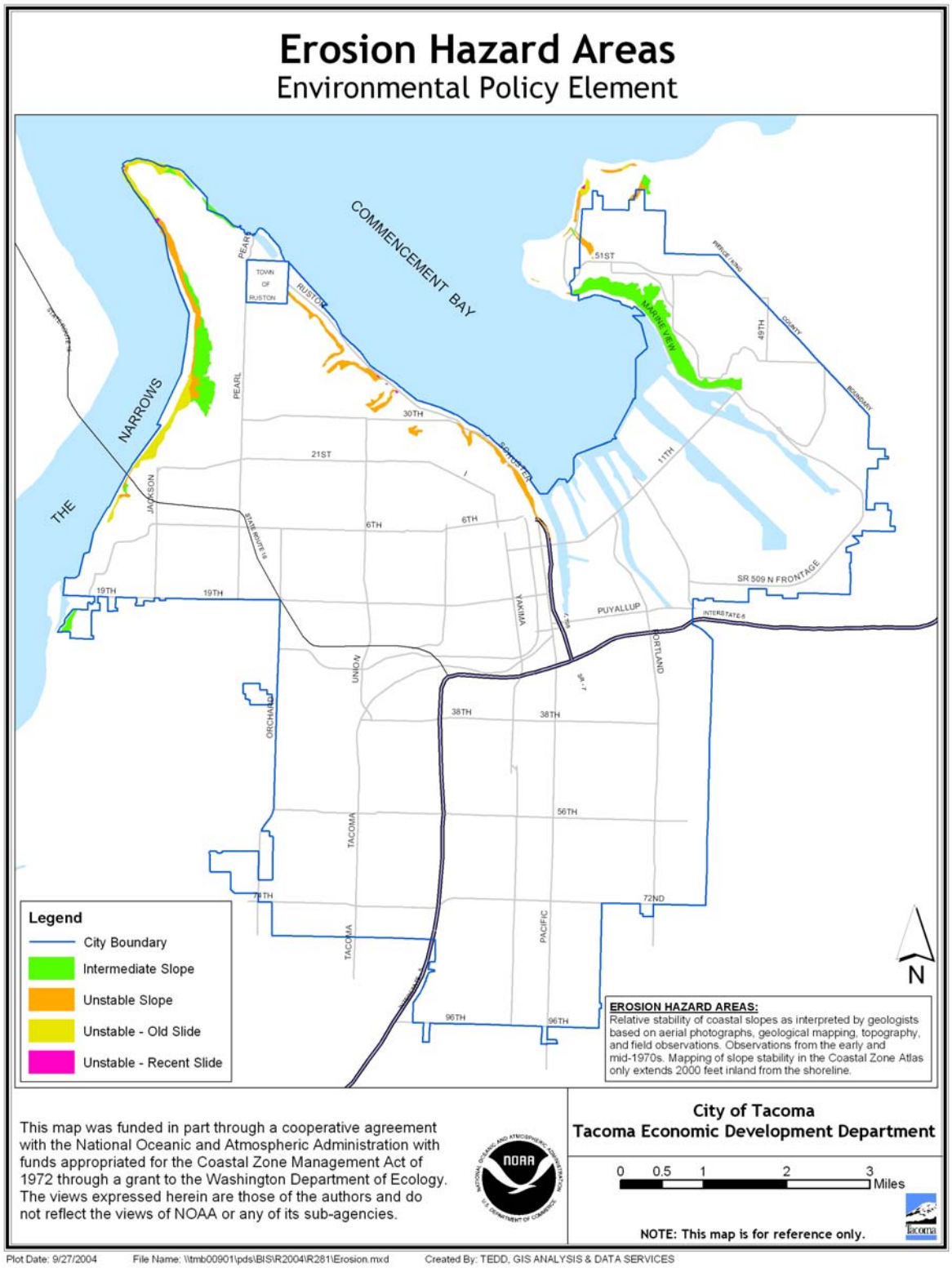
Created By: TEDD, GIS ANALYSIS & DATA SERVICES


Erosion Hazard Areas
Environmental Policy Element
COMMENCEMENT BAY
NARROWS
THE
PEARL
RUSTON
TOWN OF RUSTON
30TH
21ST
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SUMNER
JACKSON
STATE ROUTE 16
51ST
MARINE VIEW
49TH
11TH
SR 509 N FRONTAGE
INTERSTATE-5
PUYALLUP
YAKIMA
UNION
ORCHARD
38TH
56TH
TACOMA
72ND
PACIFIC
96TH
PORTLAND
Legend
City Boundary
Intermediate Slope
Unstable Slope
Unstable - Old Slide
Unstable - Recent Slide
N
EROSION HAZARD AREAS:
Relative stability of coastal slopes as interpreted by geologists based on aerial photographs, geological mapping, topography, and field observations. Observations from the early and mid-1970s. Mapping of slope stability in the Coastal Zone Atlas only extends 2000 feet inland from the shoreline.
This map was funded in part through a cooperative agreement with the National Oceanic and Atmospheric Administration with funds appropriated for the Coastal Zone Management Act of 1972 through a grant to the Washington Department of Ecology. The views expressed herein are those of the authors and do not reflect the views of NOAA or any of its sub-agencies.
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City of Tacoma
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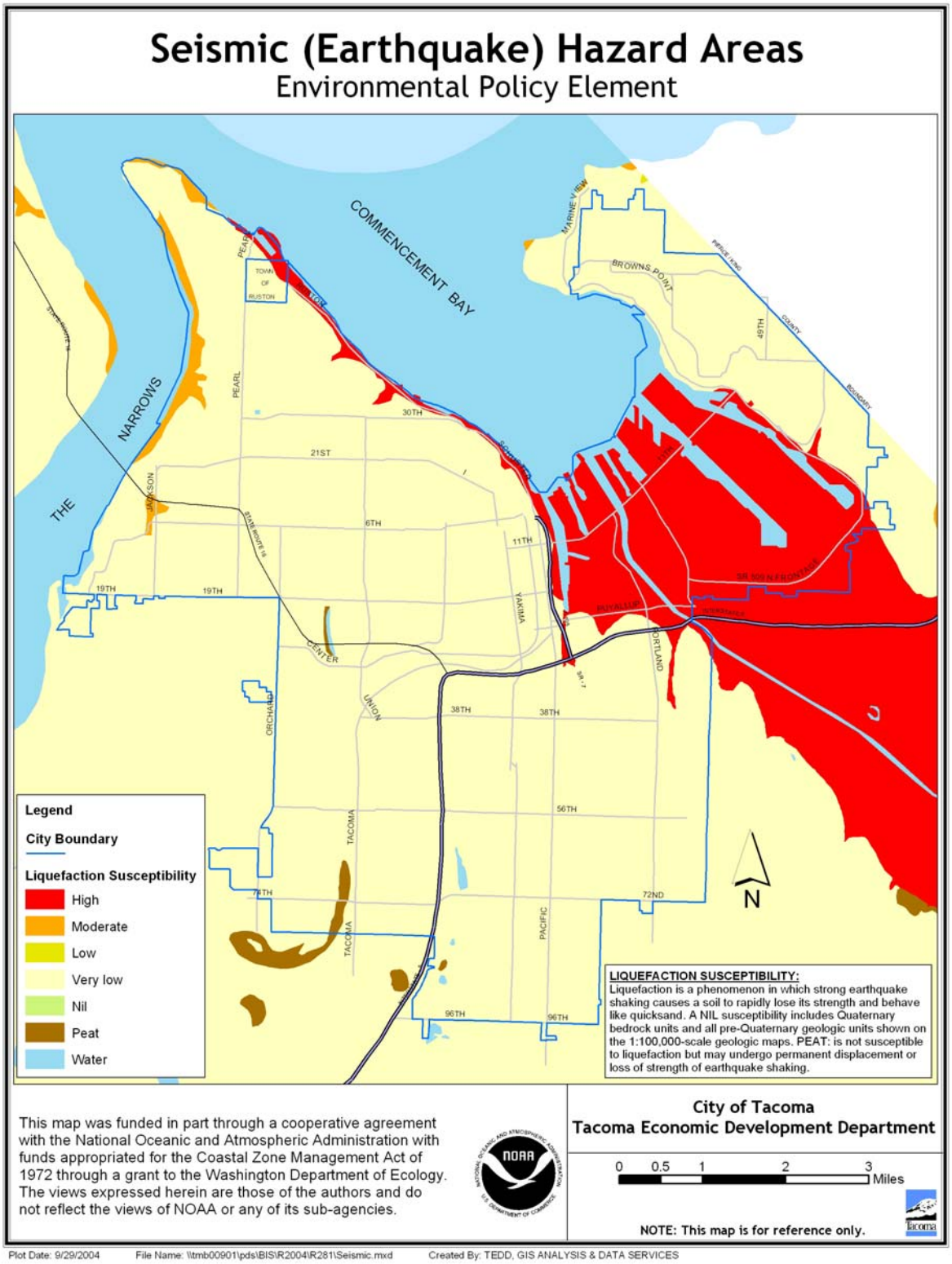
Seismic (Earthquake) Hazard Areas
Environmental Policy Element
COMMENCEMENT BAY
THE NARROWS
BROWNS POINT
TOWN OF RUSTON
PEARL
30TH
21ST
6TH
11TH
19TH
19TH
CENTER
UNION
38TH
38TH
56TH
72ND
96TH
96TH
78TH
TACOMA
ORCHARD
YAKIMA
PORTLAND
PACIFIC
JACKSON
STATE ROUTE 16
SR 509 FREEWAY
PUYALLUP
49TH
N
Legend
City Boundary
Liquefaction Susceptibility
High
Moderate
Low
Very low
Nil
Peat
Water
LIQUEFACTION SUSCEPTIBILITY:
Liquefaction is a phenomenon in which strong earthquake shaking causes a soil to rapidly lose its strength and behave like quicksand. A NIL susceptibility includes Quaternary bedrock units and all pre-Quaternary geologic units shown on the 1:100,000-scale geologic maps. PEAT: is not susceptible to liquefaction but may undergo permanent displacement or loss of strength of earthquake shaking.
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NOAA
City of Tacoma
Tacoma Economic Development Department
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Section III – Critical Areas

Aquifer Recharge Areas

Background

The Clover-Chambers Creek Watershed aquifer system is the largest identified aquifer in the area. It is a large groundwater resource area which encompasses central Pierce County, areas to the south and west of the City of Tacoma, and extends into the City boundaries, most notably in the South Tacoma area (see accompanying map).

Numerous individual and public water systems in Pierce County, including the City of Tacoma, use this aquifer as a water supply. The aquifer provides a significant amount of drinking water for Tacoma, supplying as much as 40 percent of the total water demand during periods of peak summer use. Therefore, protection of both the quantity and quality of this groundwater aquifer is imperative.

Intent

A clear relationship exists between uses of land and the quantity and quality of groundwater. Rainfall replenishes the aquifer in a process known as recharge. Land developed with impervious surfaces (areas which water can not penetrate to reach the groundwater) can impact the quantity of groundwater.

Activities occurring on the surface above the aquifer can impact the quality of the groundwater below. Contaminants from land use activities, if not controlled, can seep into the groundwater. Pinpointing the exact sources of contamination is a very complex process because of the many potential sources. Remedial action to clean up contaminated groundwater is typically very expensive and in some instances not practical. The City of Tacoma's policy is to emphasize prevention, and to commit to a long-term effort to adopt and implement groundwater protection programs.

The nature of groundwater flow within aquifers is such that contamination in part of the aquifer may affect water quality through large areas of the aquifer. Because of the potential for contamination, inter-governmental coordination in aquifer protection will be necessary.

Efforts to determine the extent of groundwater pollution and the sources of such pollution are continuing. Effective groundwater protection will require the combined efforts of a number of governmental departments and agencies, including Tacoma Water, Pierce County, the City of Lakewood, the Tacoma-Pierce County Health Department, Washington State Department of Health, and others. Coordinated planning and protection efforts will assist in retaining Tacoma's high standards of water quality.

Long-term protection of aquifers is thought to depend to a significant degree upon control of certain types of surface and subsurface land use activities. Control of land use activities generally occurs through such mechanisms as zoning, building codes and health and sanitary codes. Zoning controls combined with Best Management Practices and Best Available Science are considered appropriate measures for groundwater protection because they can be applied in a geographically specific manner and can include provisions to control specific uses or activities that are potential sources of contamination.

Because of the complexity of potential contamination, development of zoning regulations is considered only one step in a long-term groundwater management effort. Other efforts include public education and awareness, business education or regulation as necessary, an enhanced monitoring program, capital improvements (i.e., land acquisition around a public water supply well's area of influence) and the development of recharge areas.

For further protection, the identified area of the aquifer vulnerable to contamination has been designated as an environmentally sensitive area. The principal advantage in this designation is that development, previously considered exempt will now be subject to the environmental review process mandated by the State.

Groundwater protection measures should not inhibit desirable development but rather be used as a positive factor to safeguard one of the City's vital assets – its plentiful and safe water supply. As technology advances and more information

are made available, other actions may be necessary. The City shall continue to strenuously pursue all possible methods to have a safe and pure water supply.

Issues

Tacoma's most important source of groundwater is the South Tacoma Channel, an approximately four-mile long valley located in the north-west part of the Clover-Chambers Creek Watershed. The Tacoma Water Division has extensively developed the groundwater resources of the South Tacoma Channel through the construction of a well field consisting of 13 high-yield production wells. Groundwater from the channel produces about 10% of the 80 million gallon per day average demand for Tacoma Water, and about 36% of the 140 million gallon per day peak water demand.

The availability of groundwater resources is particularly critical during the summer, the period of peak demand for water. That period generally coincides with the time of the year when the amount of surface water available for diversion to the Tacoma system from the Green River is reduced due to seasonally declining flows. Thus, the South Tacoma Channel is not only a critical component of Tacoma's current water supply, but its role may become even more vital in future years.

The South Tacoma Channel's geology is characterized by highly porous sands and gravels. These geologic factors make this aquifer not only highly productive but also highly susceptible to contamination.

Applicable Law

Chapter 90.44 RCW and Department of Ecology's Chapter 246-290 WAC, as may be amended from time to time, addresses groundwater protection by, among other things, calling for the Department of Ecology in cooperation with local governments to initiate development of groundwater protection programs.

In 1988, the City of Tacoma adopted the South Tacoma Groundwater Protection District, which is codified in Chapter 13.09 of the Tacoma Municipal Code. The provisions of this Chapter are implemented principally by the Tacoma-Pierce County Health Department, in cooperation with Tacoma Water Division, Tacoma Public Works Environmental Services Division, and others.

This regulation addresses business use and handling of hazardous materials within the South Tacoma area. In addition, the ordinance contains spill prevention and management requirements as well as certain restrictions on specific 'high-risk' commercial and industrial land uses. Stormwater infiltration is generally prohibited within the South Tacoma Groundwater Protection District due to the potential movement of contaminants to the underlying aquifers. The district boundary, regulations and performance standards were revised and updated in 2005-2006.

The Growth Management Act declares that cities shall develop comprehensive plans that address "critical areas" management for preservation and protection. Aquifer recharge areas are one of several critical areas designated for protection by the City.

Policies

The following policies support and strengthen the City's intent relative to aquifer recharge areas.

E-ARA-1 Groundwater Protection
Protect and preserve the quantity and quality of Tacoma's groundwater supply.

E-ARA-2 Natural Area Retention
Encourage the retention of sufficient natural areas to maintain a balance between development and the need for adequate recharge of the aquifer in order to assure a continued adequate groundwater supply.

E-ARA-3 Management Techniques
Encourage the development and use of alternative mechanisms for preventing and reducing the risk of groundwater contamination (e.g., by process or product changes) and disposal (e.g., through resource recovery and recycling).

E-ARA-4 Performance Criteria
Encourage the development of performance criteria and guidelines which address siting, design, construction and operation of

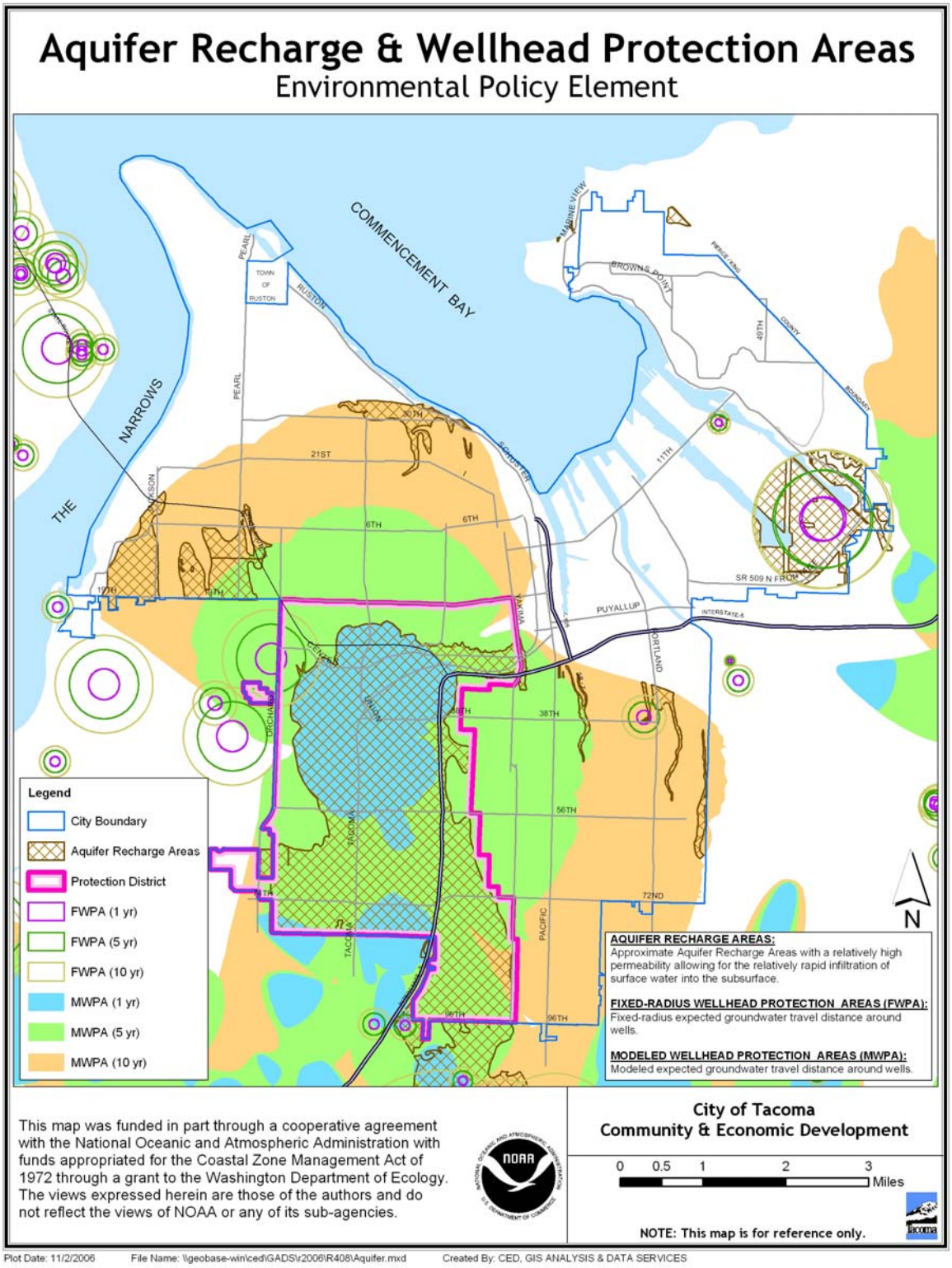
commercial and industrial structures and activities to prevent groundwater contamination.

E-ARA-5 Economic Benefit
Coordinate with the Chamber of Commerce and the Economic Development Board to ensure that the groundwater protection program is used as a positive factor in attracting new business and industry to the area.

E-ARA-6 Groundwater Protection Program
Support a coordinated effort of City, County, State and Federal departments and agencies to develop a comprehensive program that will ensure incorporation of groundwater protection measures into all potentially disruptive development activities.

E-ARA-7 Public Awareness Education
Support a public awareness/education program for users and handlers of toxic and hazardous materials and the general public concerning groundwater pollution problems and necessary remedial actions.

E-ARA-8 Monitoring
Support an ongoing effort to monitor groundwater quality in order to determine the effectiveness of the groundwater program over time.


Aquifer Recharge & Wellhead Protection Areas
Environmental Policy Element
COMMENCEMENT BAY
NARROWS
THE
PEARL
RUSTON
TOWN OF RUSTON
MARINE VIEW
BROWNS POINT
PIERCE COUNTY
SCHUSTER
21ST
30TH
6TH
11TH
SR 509 N FRON
PUYALLUP
INTERSTATE 5
PORTLAND
ORCHARD
UNION
38TH
56TH
72ND
96TH
PACIFIC
TACOMA
Legend
City Boundary
Aquifer Recharge Areas
Protection District
FWPA (1 yr)
FWPA (5 yr)
FWPA (10 yr)
MWPA (1 yr)
MWPA (5 yr)
MWPA (10 yr)
N
AQUIFER RECHARGE AREAS:
Approximate Aquifer Recharge Areas with a relatively high permeability allowing for the relatively rapid infiltration of surface water into the subsurface.
FIXED-RADIUS WELLHEAD PROTECTION AREAS (FWPA):
Fixed-radius expected groundwater travel distance around wells.
MODELED WELLHEAD PROTECTION AREAS (MWPA):
Modeled expected groundwater travel distance around wells.
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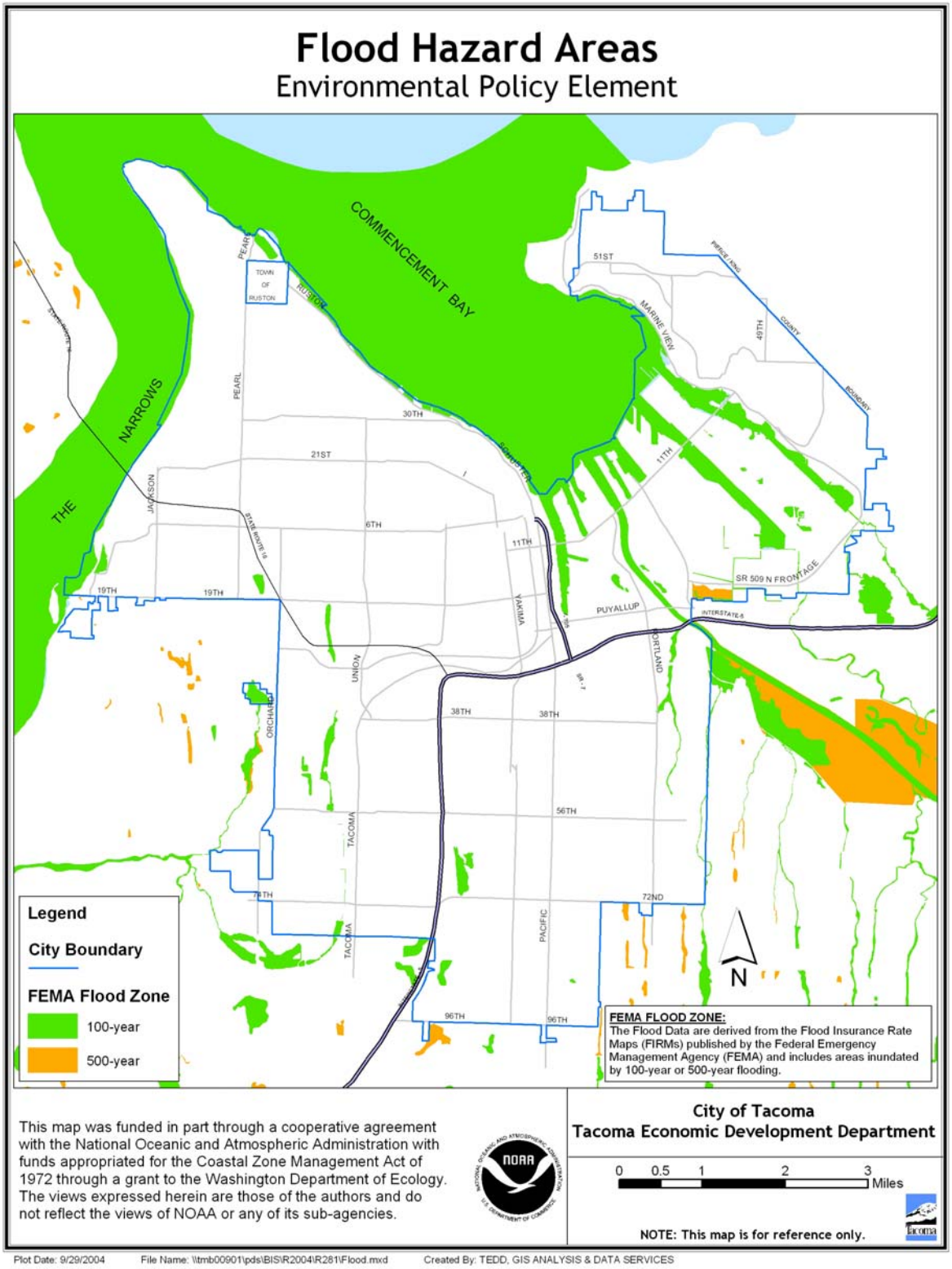
NOAA
City of Tacoma
Community & Economic Development
0 0.5 1 2 3
Miles
NOTE: This map is for reference only.
Plot Date: 11/2/2006
File Name: \\geobase-win\ced\GADS\r2006\R408\Aquifer.mxd
Created By: CED, GIS ANALYSIS & DATA SERVICES


Flood Hazard Areas
Environmental Policy Element
COMMENCEMENT BAY
THE NARROWS
PEARL
TOWN OF RUSTON
RUSTON
51ST
MARINE VIEW
49TH
30TH
21ST
6TH
11TH
19TH
SR 509 N FRONTAGE
PUYALLUP
INTERSTATE-5
YAKIMA
PORTLAND
UNION
ORCHARD
38TH
56TH
72ND
TACOMA
PACIFIC
96TH
JACKSON
STATE ROUTE 16
Legend
City Boundary
FEMA Flood Zone
100-year
500-year
N
FEMA FLOOD ZONE:
The Flood Data are derived from the Flood Insurance Rate Maps (FIRMs) published by the Federal Emergency Management Agency (FEMA) and includes areas inundated by 100-year or 500-year flooding.
This map was funded in part through a cooperative agreement with the National Oceanic and Atmospheric Administration with funds appropriated for the Coastal Zone Management Act of 1972 through a grant to the Washington Department of Ecology. The views expressed herein are those of the authors and do not reflect the views of NOAA or any of its sub-agencies.
NOAA
City of Tacoma
Tacoma Economic Development Department
0 0.5 1 2 3 Miles
NOTE: This map is for reference only.
Plot Date: 9/29/2004
File Name: \\tmb009901\pds\BIS\R2004\R281\Flood.mxd
Created By: TEDD, GIS ANALYSIS & DATA SERVICES

Fish and Wildlife Habitat Conservation Areas

Background

In general, most of the land in Tacoma has been greatly affected by human activity. Consequently, native plant cover and its dependent wildlife species have been severely reduced and restricted to rather small, often steep-sloped or marshy areas. Because of steepness, unstable soil or water conditions, such areas are generally difficult and expensive to use for building purposes but lend themselves well to open space, greenbelt and wildlife preservation. Their relatively small area and lineal configuration, however, limit the type and amount of vegetation and wildlife able to exist there. Consequently, what is found in these areas is a complex of native and invasive species of plants and animals able to withstand exposure and competition with limited territorial requirements.

Plant life is dominated by evergreen and broadleaf trees with an understory and ground cover of broadleaf shrubs, vines, herbs and grasses. Fern, moss, fungus and lichen species are prevalent and, in open and marshy areas, cattails, horsetails, sedges and rushes prevail.

Seeping banks along the Point Defiance shoreline support a population of chain-fern. Ranging from British Columbia to South California, chain-fern is found in only a few scattered sites in Puget Sound and is listed as a sensitive plant species by the Washington Department of Ecology.

Around Point Defiance, steep slopes are backed by a considerable extent of mature upland forest approximating original conditions and providing range requirements for some larger species of wildlife. Along the shoreline, numerous water birds are resident and large numbers of migratory birds feed and rest. Offshore, large numbers of marine diving birds and several marine mammals occur in season. A large concentration of octopi occurs in the Narrows between Point Defiance and Titlow Beach. This area has been designated a critical biological area by the Washington State Department of Ecology.

Other protected species commonly found in the area include harbor seals, California and Steller sea lions, killer whales and other cetaceans, hawks, owls, songbirds, flying squirrels, chipmunks and turtles. Rare or endangered species occasionally found in shoreline areas are given special protection; examples are the peregrine falcon, sandhill crane, bluebirds, osprey, bald eagle and the western grey squirrel. Two reptile species, the sharp-tiled snake and the western pond turtle, may possibly occur, most likely in the Wapato Lake area. All of these require maximum protection wherever they chance to appear.

Intent

Land development projects will mean a loss of some natural habitats, which would result in the elimination of wildlife in those habitats. Expanded development will invariably involve such construction modifications as clearing, grading and landscaping. Increased human activity will result in a loss or destruction of the existing natural vegetation and the reduction or elimination of resident fauna.

It is intended that removal of existing and native vegetation in fish and wildlife habitat conservation areas be carefully considered. Such practice destroys the benefits that green spaces provide and threatens the habitats of local wildlife. However, it is possible to accommodate development needs and, yet, retain important vegetation. Where significant wooded areas occur, the application of innovative development techniques that cluster dwellings and maximize the acreage of undisturbed areas is an appropriate alternative for conventional grid subdivisions. Such projects can be designed to provide a green space buffer or vegetated habitat that will provide important functions for wildlife. Where existing vegetation is removed, extensive landscaping should be installed in appropriate locations.

While the City should be considerate of general flora and fauna values, it must also recognize the significance of specific specimen trees. Protection of these trees, particularly those of historic merit or outstanding size, is intended.

It is recognized that the City's existing wildlife habitats are valuable for propagating and sheltering wildlife populations and for sustainable biodiversity, education, recreation

and aesthetics. Wildlife habitats will undoubtedly be impacted by development; however, mitigation will be required.

Habitat improvement is encouraged to intentionally improve the overall processes, functions and values of critical habitats, including wetland, stream and aquatic habitats. Such actions may or may not be in conjunction with a specific development proposal, and include, but not be limited to, restoration, creation, enhancement, preservation, acquisition, maintenance and monitoring. Habitat improvement includes actions to acquire and preserve key natural areas that remain; and to improve existing environmental conditions, such as providing new or better habitat, better water quality or other supporting factors, or increasing the number or diversity of species.

It is important that the City and developers work with State and Federal agencies and land owners to identify, locate and protect habitats of endangered or threatened species. Development practices such as clustering, retention of native vegetation and protection of wetlands, ponds, streams and other water features are encouraged to protect habitats. It is also important to include habitats in lands designated for open space purposes to protect wildlife.

Issues

Fish and wildlife habitat conservation areas may contain priority species and priority habitats that may include a seasonal range or habitat element with which a given species has a primary association. These areas may include other critical ecosystems susceptible to alterations such as:

a) slopes;

b) landslide areas;

c) geologically hazardous areas;

d) shorelines, stream corridors and wetlands;

e) natural resource areas; and

f) these critical ecosystem's associative transitional areas or buffers.

Alteration of these critical ecosystems may reduce the likelihood that the species will survive or reproduce. Activities allowed in fish and wildlife habitat conservation areas must be consistent with the species classification located there and any applicable State and Federal guidelines or standards, including Best Available Science with special consideration given to anadromous fisheries. Standards for development in these areas must be in accordance with the requirement for development in the underlying zone or critical area classification.

Habitat Zone

Habitat Zones are areas locally designated and mapped that depict high quality, relatively undisturbed natural open spaces that provide valuable functions and values beyond the individual natural habitats that may be contained within the zone. It is intended that the mapped Habitat Zone will include areas of biological diversity that are an important community resource.

Identification of the habitat zone will assist land owners, City officials and citizens in determining priority areas for protection, enhancement and restoration. Initially, the Habitat Zone will include areas that are designated as Wetlands and/or Streams of Local Significance. Other areas as they are identified, designated and mapped will be added, including Habitats of Local Importance which are areas that include a seasonal range or habitat element with which a given species has a primary association, and which, if altered, may reduce the likelihood that the species will remain and reproduce over the long-term. These might include areas of high relative density or species richness, breeding habitat, winter range and movement corridors. These might also include habitats that are of limited availability or high vulnerability to alternations, such as cliffs, talus, and wetlands. An assessment of the biological diversity and habitat value is needed to designate these areas. The Habitat Zone may also include other areas where habitat protection is desired, including corridors upon completion of a biological diversity assessment.

It is intended that development proposals within the designated Habitat Zone will be subject to greater scrutiny to ensure valuable habitats are protected. Enhancement and restoration activities should be prioritized and directed to areas within the designated Habitat Zone.

Applicable Law

The Endangered Species Act of 1972 addresses the protection of rare, endangered and threatened plant and animal species. Title 77 RCW revises and reorganizes the game code of the State of Washington to clarify and improve the administration of the state's game laws. Title 75 RCW addresses food fish and shellfish management in the State of Washington. Chapter 13.08 of the Official Code of the City of Tacoma addresses the maintenance, preservation and conservation of open space lands within the city.

The Growth Management Act declares that cities shall develop comprehensive plans that address "critical areas" management for preservation and protection. Engrossed Substitute House Bill 1933 that became effective on July 27, 2003, clarifies the relationship between the Growth Management Act and the Shoreline Management Act as it pertains to critical areas and it states that "the legislature intends that critical areas within the jurisdiction of the shoreline management act shall be governed by the shoreline management act and that critical areas outside the jurisdiction of the shoreline management act shall be governed by the growth management act." Fish and wildlife habitat conservation areas are one of several critical areas designated by the City.

Policies

The following policies support and strengthen the City's intent relative to fish and wildlife habitat conservation areas.

E-FW-1 Wildlife and Natural Environment
Support and enforce laws, regulations and programs designed to protect wildlife and natural resources.

E-FW-2 Retain Vegetation
Encourage the retention of native vegetation and the installation of landscaping designed to complement local wildlife and native vegetation and help mitigate the loss of wildlife habitat areas that results from development.

E-FW-3 Landscaping Stabilization
Ensure that sufficient and appropriate native landscaping be installed to stabilize and beautify areas and improve habitat where extensive removal of vegetation has occurred.

E-FW-4 Specimen Trees
Encourage the identification and preservation of specimen trees of historic merit and/or outstanding size.

E-FW-5 Removal of Native Vegetation
Discourage the indiscriminate removal of native vegetation to preserve green space and protect habitats.

E-FW-6 Innovative Development Techniques
Encourage innovative development techniques such as clustering to maximize the amount of open space and preserve habitats.

E-FW-7 Habitat Protection
Identify, locate and protect habitats of endangered, threatened, priority or sensitive species.

E-FW-8 Maintain Habitat Diversity
Encourage the preservation of large blocks of land around critical areas to ensure maximum habitat diversity.

E-FW-9 Strengthen Habitat Connections
Encourage actions which protect and improve natural resources in both the upper and lower areas of the Puyallup River watershed and strengthen connections within and between them.

E-FW-10 Integrate Development Projects
Promote the integration of development projects into their surrounding environments, promoting a "greenbelt natural corridor" for movement and use by species.

E-FW-11 Estuary Ecosystem
Promote a functioning and sustainable ecosystem with a diversity of habitat types in the industrialized estuary of the Commencement Bay environment.

E-FW-12 Protect in Perpetuity
Encourage the protection of habitat improvement project sites in perpetuity.

E-FW-13 Benefit Injured Resources
Encourage actions to restore various habitat components of the Commencement Bay ecosystem that benefit natural resources injured by releases of hazardous substances.

E-FW-14 Commencement Bay Habitat Planning
Encourage habitat preservation and improvement actions within Commencement Bay that reflect the historical functions and current physical conditions of the estuary, the needs of a variety of selected species or groups of species, the consideration of strategically located habitats in the estuary, the concept of diversity on an ecosystem basis, and bay-wide planning and siting criteria.

E-FW-15 Improve Altered Habitats
Encourage the improvement of habitat along the edges of shorelines and creeks, migration corridors, and productive areas that have been altered by past shoreline activities.

E-FW-16 Sustainable Habitat
Encourage acquisition, preservation and restoration of remaining sustainable habitat and improvement of existing habitat corridors.

E-FW-17 Diversity of Habitat Types
Encourage, through restoration, a diversity of sustainable habitat types and species within the Commencement Bay ecosystem to improve fish and wildlife resources.

E-FW-18 Performance Standards
Encourage design and performance standards that promote source control and habitat restoration efforts.

E-FW-19 Integrate Improvement Actions
Encourage the integration of habitat improvement actions with other regulatory efforts, including environmental remediation, source control, and site development actions, as well as long range planning activities.

E-FW-20 Habitat Improvement Actions
Encourage new development to provide or incorporate habitat improvement actions as appropriate.

E-FW-21 Locating Habitat Improvement Actions
Focus habitat improvement actions on sites with low possibilities of contamination.

E-FW-22 Public Access
Encourage public access provisions in all habitat improvement projects where such access will complement, not disrupt, the habitat improvement action.

E-FW-23 Superfund Cleanups
Encourage the integration of habitat improvement actions into source control and sediment remedial actions as part of federal and state Superfund cleanups.

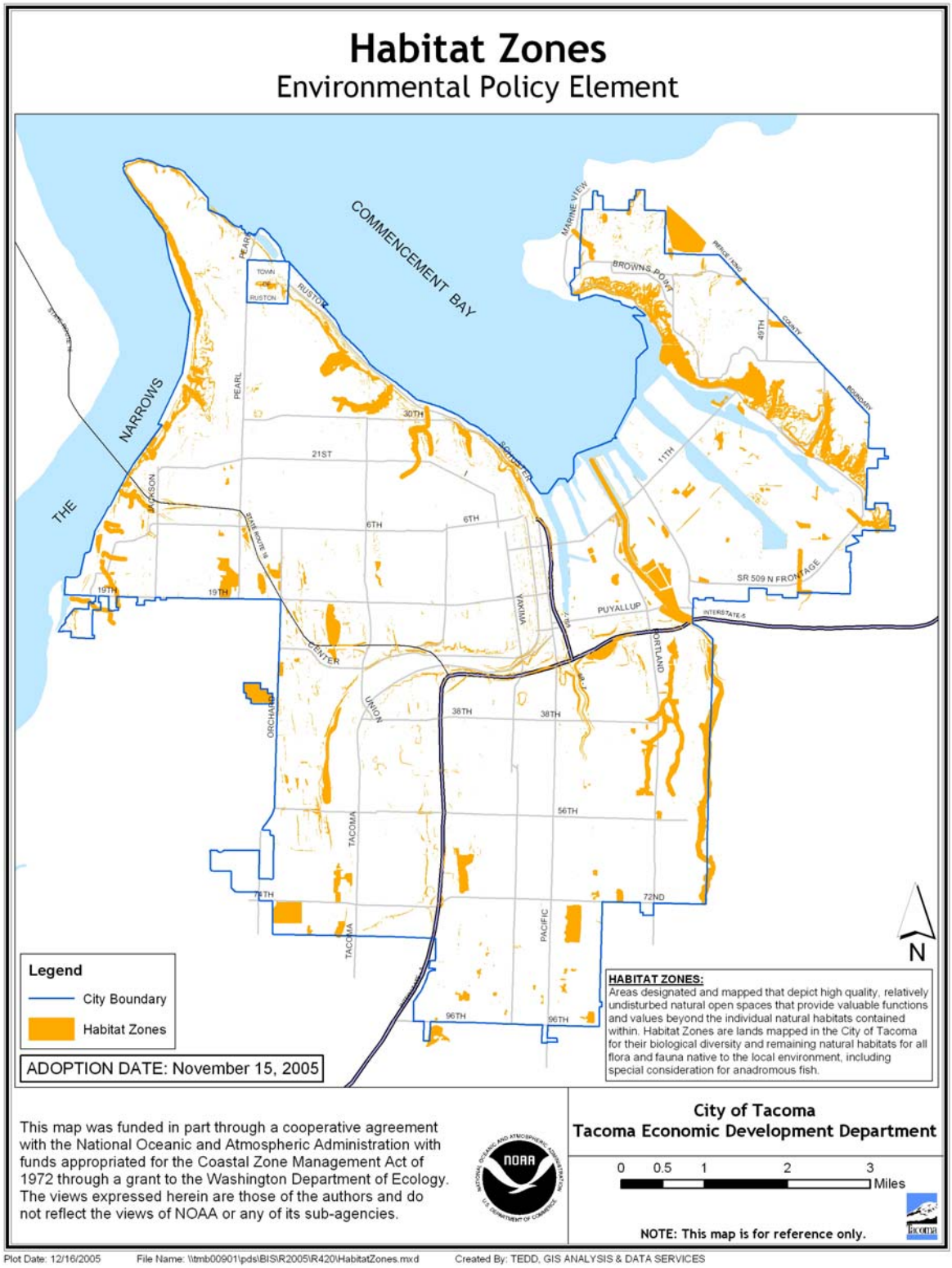
E-FW-24 Private Conservation Efforts
Encourage community based or nonprofit local and regional trusts and private conservation efforts.

E-FW-25 Cleanup Coordination
Promote coordination among diverse cleanup and regulatory programs and agencies.

E-FW-26 Strengthen Working Relationship
Strengthen working relationships among citizens, agencies, tribes, and companies to plan and implement bay-wide habitat improvement efforts.

E-FW-27 Habitat Zones
Adopt a Habitat Zones map to identify locally important habitat areas in order to provide greater scrutiny and review of development proposals and to identify priority areas for restoration and enhancement programs and activities.

E-FW-28 Habitats of Local Importance
Establish regulations that will provide greater protection to areas designated as habitats of local importance.


Habitat Zones
Environmental Policy Element
COMMENCEMENT BAY
THE NARROWS
PEARL
RUSTON
TOWN OF RUSTON
MARINE VIEW
BROWNS POINT
30TH
21ST
6TH
19TH
SR 509 N FRONTAGE
PUYALLUP
INTERSTATE-5
CENTER
ORCHARD
UNION
38TH
56TH
72ND
96TH
TACOMA
PACIFIC
PORTLAND
YAKIMA
Legend
City Boundary
Habitat Zones
ADOPTION DATE: November 15, 2005
HABITAT ZONES:
Areas designated and mapped that depict high quality, relatively undisturbed natural open spaces that provide valuable functions and values beyond the individual natural habitats contained within. Habitat Zones are lands mapped in the City of Tacoma for their biological diversity and remaining natural habitats for all flora and fauna native to the local environment, including special consideration for anadromous fish.
N
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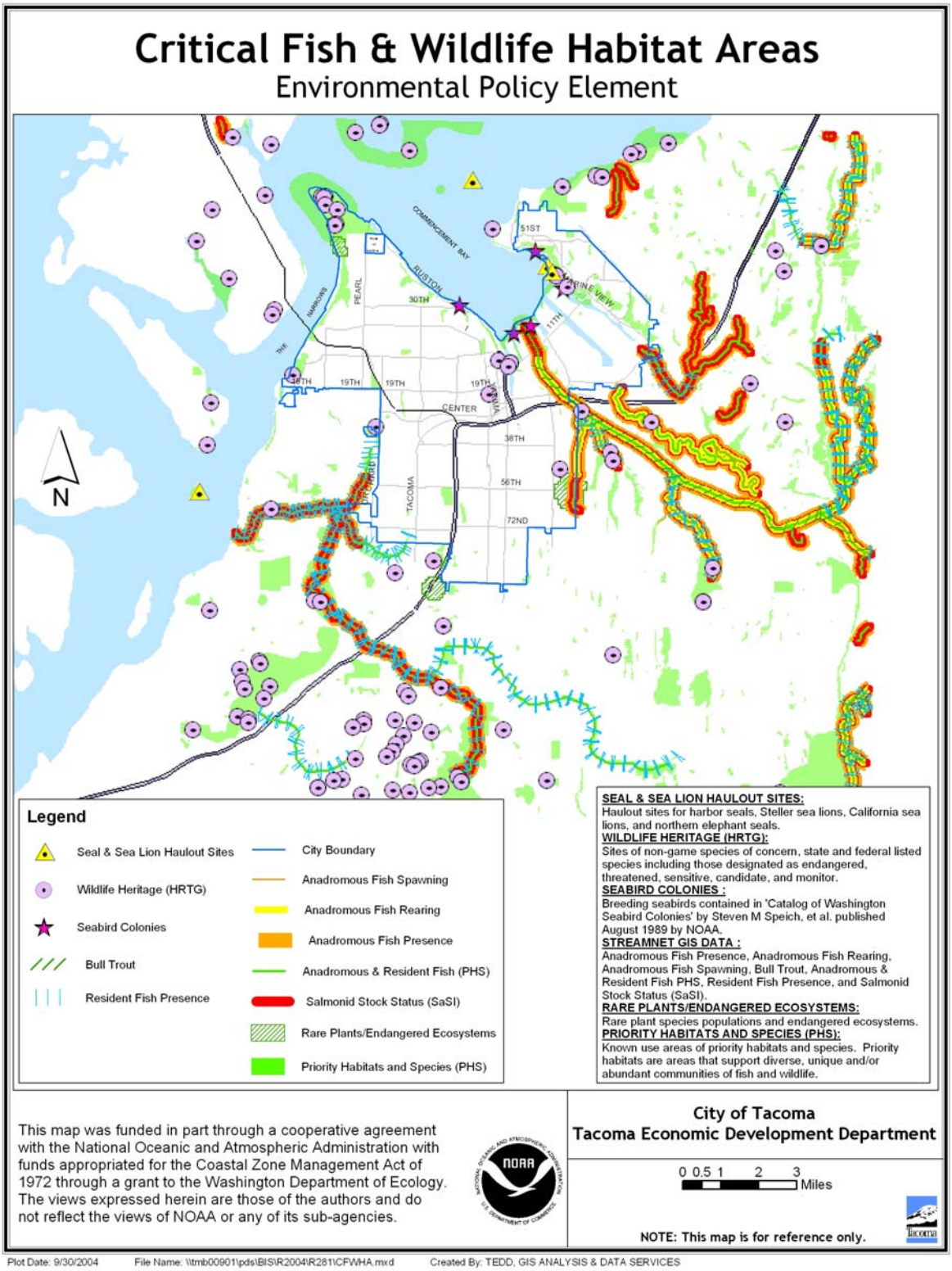
NOAA
City of Tacoma
Tacoma Economic Development Department
0 0.5 1 2 3
Miles
NOTE: This map is for reference only.
Plot Date: 12/16/2005
File Name: \\tmb00901\pds\BIS\R2005\R420\HabitatZones.mxd
Created By: TEDD, GIS ANALYSIS & DATA SERVICES


Critical Fish & Wildlife Habitat Areas
Environmental Policy Element
N
COMMENCEMENT BAY
RUSTON
NARROWS
PEARL
51ST
MARINE VIEW
30TH
11TH
19TH
CENTER
38TH
56TH
72ND
TACOMA
Legend
Seal & Sea Lion Haulout Sites
Wildlife Heritage (HRTG)
Seabird Colonies
Bull Trout
Resident Fish Presence
City Boundary
Anadromous Fish Spawning
Anadromous Fish Rearing
Anadromous Fish Presence
Anadromous & Resident Fish (PHS)
Salmonid Stock Status (SaSI)
Rare Plants/Endangered Ecosystems
Priority Habitats and Species (PHS)
SEAL & SEA LION HAULOUT SITES:
Haulout sites for harbor seals, Steller sea lions, California sea lions, and northern elephant seals.
WILDLIFE HERITAGE (HRTG):
Sites of non-game species of concern, state and federal listed species including those designated as endangered, threatened, sensitive, candidate, and monitor.
SEABIRD COLONIES :
Breeding seabirds contained in 'Catalog of Washington Seabird Colonies' by Steven M Speich, et al. published August 1989 by NOAA.
STREAMNET GIS DATA :
Anadromous Fish Presence, Anadromous Fish Rearing, Anadromous Fish Spawning, Bull Trout, Anadromous & Resident Fish PHS, Resident Fish Presence, and Salmonid Stock Status (SaSI).
RARE PLANTS/ENDANGERED ECOSYSTEMS:
Rare plant species populations and endangered ecosystems.
PRIORITY HABITATS AND SPECIES (PHS):
Known use areas of priority habitats and species. Priority habitats are areas that support diverse, unique and/or abundant communities of fish and wildlife.
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NOAA
City of Tacoma
Tacoma Economic Development Department
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NOTE: This map is for reference only.
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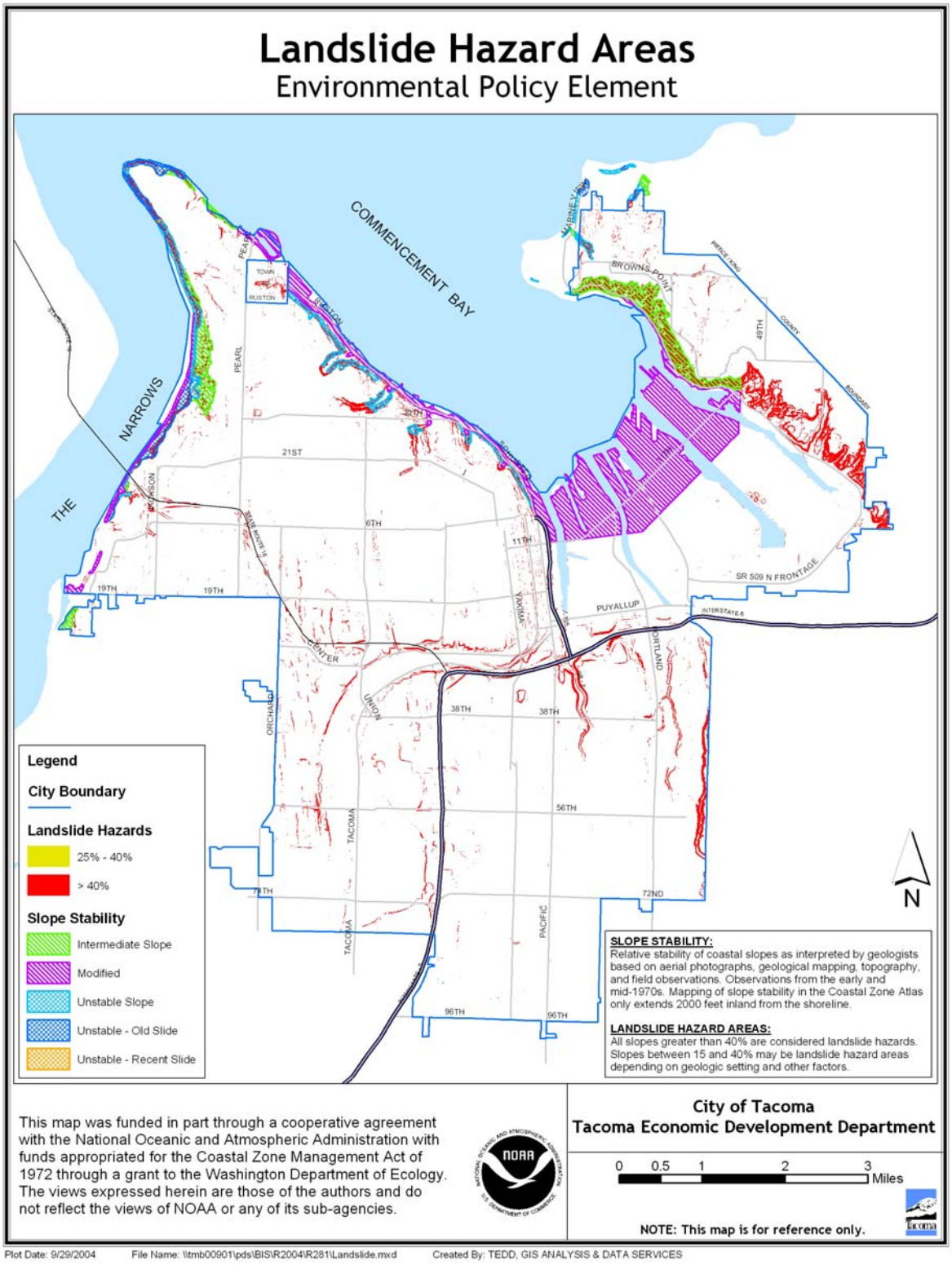
Landslide Hazard Areas
Environmental Policy Element
COMMENCEMENT BAY
NARROWS
THE
BROWNS POINT
PEARL
RUSTON
21ST
6TH
11TH
19TH
38TH
56TH
72ND
96TH
PUYALLUP
SR 509 N FRONTAGE
INTERSTATE 5
CENTER
UNION
TACOMA
PACIFIC
PORTLAND
ORCHARD
Legend
City Boundary
Landslide Hazards
25% - 40%
> 40%
Slope Stability
Intermediate Slope
Modified
Unstable Slope
Unstable - Old Slide
Unstable - Recent Slide
SLOPE STABILITY:
Relative stability of coastal slopes as interpreted by geologists based on aerial photographs, geological mapping, topography, and field observations. Observations from the early and mid-1970s. Mapping of slope stability in the Coastal Zone Atlas only extends 2000 feet inland from the shoreline.
LANDSLIDE HAZARD AREAS:
All slopes greater than 40% are considered landslide hazards. Slopes between 15 and 40% may be landslide hazard areas depending on geologic setting and other factors.
N
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NOAA
City of Tacoma
Tacoma Economic Development Department
0 0.5 1 2 3 Miles
NOTE: This map is for reference only.
Plot Date: 9/29/2004
File Name: \\tmb00901\pds\BIS\R2004\R281\Landslide.mxd
Created By: TEDD, GIS ANALYSIS & DATA SERVICES

Wetlands/Stream Corridors

Background

Wetlands generally include small lakes, ponds, streams, wet meadows, shallow or deep marshes, bogs and swamps that are inundated or saturated by surface or ground water at a frequency and duration to support a prevalence of vegetation typically adapted for life in saturated soil conditions.

Wetlands do not include those wetlands constructed intentionally from nonwetland sites including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, farm ponds and landscape amenities if routinely maintained for those purposes. However, wetlands do include those wetlands constructed intentionally to mitigate impacts to other wetlands.

The federal government has developed manuals for identification and delineation of wetlands. Such manuals are used by the United States Army Corps of Engineers, the United States Environmental Protection Agency, the Washington Department of Ecology, local governments and individuals for delineation of wetlands and streams. The manuals set forth the physical characteristics of the soil, hydrology and vegetation. These characteristics are used to determine the existence of a wetland or stream.

In general, in order to be considered a wetland a site must have land which supports predominantly hydrophytes, the substrate must be predominantly undrained hydric soil and the substrate must be nonsoil and periodically saturated or covered by shallow water.

Wetlands are productive biological systems and are extremely important to the food chain. They also slow and store floodwaters, reduce shoreline erosion from wind and tidal action and help recharge groundwater supplies. Wetlands function naturally to improve water quality by filtering out sediments, using excess nutrients and breaking down some toxic chemicals. Wetlands are a scenic destination and contribute to a productive commercial and recreational fishery. They also provide important educational and research opportunities.

Loss of wetlands can result in degraded water quality, soil erosion, increased public safety and property damage risk, and loss of open space and wildlife habitat.

A variety of Federal and State laws are now in effect which help control wetland loss. The rate of loss from conversion of wetlands to other uses has greatly decreased since implementation of these laws.

In freshwater wetlands, losses are due primarily to commercial and residential development. The majority of the City's wetlands have been filled and developed into commercial, industrial or residential land uses.

Intent

The City's intent with regard to wetlands, streams and aquatic habitat is, in the short term, to prevent further net loss of wetlands, stream or aquatic habitat function and acreage and, in the long term, to achieve a measurable gain in wetlands, stream and aquatic habitat function and acreage. It is intended that regulations be developed which will preserve and protect the City's wetlands, associated uplands and associated waters and the functions they provide. In addition, to meet the City's long-term goal, the City will review all development actions and ensure that unavoidable losses to habitat are appropriately mitigated, and promote voluntary habitat improvements through a variety of incentives.

Recognizing the aesthetic, wildlife, water quality and flood control value of wetlands to the City's overall environmental systems, it is important that the wetlands of the city be inventoried and their value and function identified. A wetland inventory and assessment process would allow specific protection measures based on the uniqueness of the wetland involved. Such measures could include providing vegetated habitats that will provide important functions for wildlife, protective buffers, limits on alteration and water quality controls.

Wetland function and value is determined by vegetation, physical geography and composition of substrate. While it is recognized that constructed wetlands provide wetlands' function, benefit and value, naturally occurring wetlands are generally judged as superior in functional value because of their greater biodiversity and

are preferred. Therefore, naturally occurring wetlands that have greater functions and values are given a high priority for preservation.

Indiscriminate filling or draining of wetlands and stream corridors is not permitted. Structural developments in wetlands and stream corridors will be regulated to maintain safe and healthful conditions, to prevent water pollution and to protect habitats, feeding grounds and other natural beauty.

Development in wetlands would be appropriate only if impacts are unavoidable, loss of wetland function and acreage is compensated and careful soils analysis shows that construction measures can successfully mitigate potential hazards and unstable soil and drainage problems. New development adjacent to a valuable wetland should preserve or improve the wetland and provide vegetated habitat or buffer adjacent to the wetland adequate to protect its natural functions.

It is intended that large, ecologically significant wetlands lying on marine shorelands not be drained if such activity will cause salt water to infiltrate the groundwater, contaminating wells and killing vegetation. The amount of water taken by wells in shoreline areas must also be regulated to prevent salt water intrusion into the groundwater.

It is intended that regulations for location and design of development within ecologically significant wetlands and stream corridors insure sensitive development of identified ecologically important areas and insure structural safety for proposed buildings.

Development within wetland boundaries, adjacent habitats or designated buffer areas should be considered only in those instances where there is no practicable development alternative, where extraordinary hardship exists when development regulations are applied or where the overridng public benefit of a development proposal outweighs the value of wetland protection. Specific standards regarding these three conditions are contained in Chapter 13.11 of the Land Use Regulatory Code.

The first underlying measure of wetland and stream protection is to avoid impacts. The next measure is to minimize impacts where possible by limiting the magnitude or scope of the development or use. The final measure of protection is to mitigate or compensate for impacts. This can be accomplished through habitat improvement actions to the wetland or stream.

Habitat improvement actions should be undertaken on or adjacent to the site of project impacts, or on sites with high probability of success (such as existing or former wetlands) within the same drainage basin if possible.

Where feasible, habitat improvements should provide increased functions and values. If alteration to the wetland or its buffer is unavoidable, all adverse impacts resulting from a development proposal or alteration shall be mitigated using the best available science, so as to result in no net loss of critical area functions and values. Mitigation can include avoiding the impact, minimizing or reducing the impact or rectifying the impact through repair, rehabilitation, or restoring the affected environment or compensation for the impact by replacing, enhancing or providing substitute resources or environments. The preferred mitigation would be in-kind and on-site, when possible, and sufficient to maintain the functions and values of the wetland. However, when appropriate, a watershed approach to mitigation may be utilized. If used, compensatory mitigation should address the function affected by the alternation to the wetland or buffer area.

Issues

The local regulatory programs will be directed by guidelines developed by the Department of Ecology. The guidelines assist local governments by providing resources for development of local standards for protection and improved enforcement.

Applicable Law

Washington State Executive Order 90-04 mandates that wetlands must be protected. The Growth Management Act declares that cities shall develop comprehensive plans that address "critical areas" management for preservation and protection. Engrossed Substitute House Bill 1933 that became effective on July 27, 2003, clarifies the relationship between the

Growth Management Act and the Shoreline Management Act as it pertains to critical areas and it states that "the legislature intends that critical areas within the jurisdiction of the shoreline management act shall be governed by the shoreline management act and that critical areas outside the jurisdiction of the shoreline management act shall be governed by the growth management act." Wetlands are one of several critical areas designated for protection by the City.

Policies

The following policies support and strengthen the City's intent relative to wetlands.

E-WS-1 Preservation of Wetlands
Strive to preserve and maintain desirable small bodies of water or wetlands such as holding ponds basins, creeks, stream corridors and marshes for open space, flood control, drainage, water quality, aquifer recharge and habitat purposes.

E-WS-2 No Net Wetland Loss
Ensure that in the short term there is no net loss of wetland, stream, and aquatic habitat functions and acreage and, in the long term, there is a measurable gain of wetland, stream and aquatic habitat function and acreage.

E-WS-3 Wetland Protection
Ensure that new development adjacent to a wetland preserve, protect and improve the wetland and provide vegetated habitat or buffer adjacent to the wetland adequate to protect its natural functions.

E-WS-4 Wetland Development
Allow development in wetlands only if impacts are unavoidable and such development can successfully mitigate potential hazards and compensate for wetland loss.

E-WS-5 Wetland Filling/ Draining
Prohibit indiscriminate filling or draining of wetlands and stream corridors.

E-WS-6 Salt Water Intrusion
Discourage draining of wetlands lying on marine shorelands if such activity will cause salt water intrusion.

Wetlands and Streams of Local Significance

The wetlands and/or streams of local significance designation is to provide ways for the City of Tacoma to protect wetlands and/or streams to a degree higher than that afforded by strict application of the state and local criteria. It may be that particular wetlands and/or streams require more protection than that afforded by a strict application of rating criteria. For example, wetlands and/or streams may be critical to a local water supply or provide for storage capacity for floodwaters. The wetlands and/or streams may provide a combination of values that, when considered together, require a higher level of protection.

The wetlands and/or streams of local significance could also be identified and categorized on the basis of interlocal agreements where city boundaries arbitrarily divide a wetland or a stream. This could be essential when additional protection of a watershed-wide wetland and/or stream function was sought (i.e., flood-storage capacity) and the watershed is divided by multiple jurisdictions.

The wetlands and streams of local significance should be identified on the basis of the criteria below, regardless of the level of protection afforded them through the other city, state or federal laws. The wetlands and streams of local significance concept is not intended to allow a reduction of protection to wetlands and streams where protection is already required by local, state or federal laws.

Criteria

Any wetland or stream is eligible if it is identified and adopted by the city as part of its planning process and the Critical Area Preservation Ordinance (CAPO), following public review and appeal, and satisfies the following criteria:

a) Is locally rare, or

b) Is documented as a groundwater recharge area, or contributes functional value to a local government water quality or flood mitigation program, or

c) Provides habitat for fish and wildlife that is considered important by a local community, or

d) Is a recognized or planned educational site, or

e) Is part of a recognized or planned recreational resource, or

f) Is part of an open or planned open space resource, or

g) Is planned for restoration or enhancement as a part of a local government protection program, or

h) Is part of a wildlife corridor or connects wetland areas or streams of greater value, or

i) Is recognized and valued as a part of the local landscape, or

j) Is considered sensitive to development or disturbance, or

k) Is considered irreplaceable, or

l) Is a buffer area for a growth management boundary, or

m) Is an integral part of a system that would benefit from better overall protection, or

n) Contains anadromous fish.

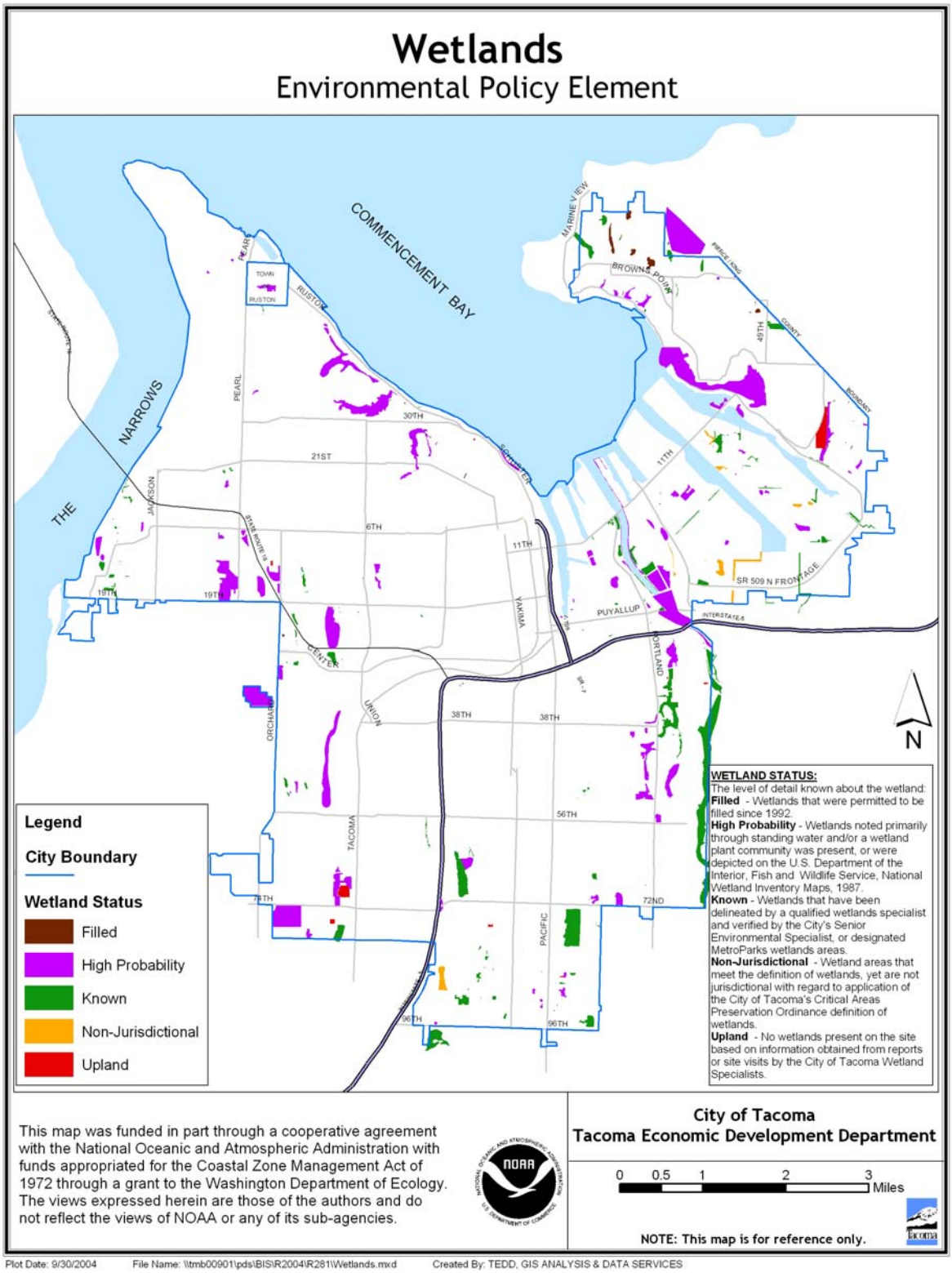
Using the above criteria the following Wetlands of Local Significance are identified:

a) Snake Lake
b) China Lake
c) Delong Park
d) Wapato Lake
e) McKinley Park

Using the above criteria the following Streams of Local Significance are identified:

a) Puyallup River
b) Hylebos Stream
c) Puget Creek
d) Wapato Creek
e) Swan Creek

Revisions to the above lists can occur through the plan amendment process if found consistent with the established criteria.


Wetlands
Environmental Policy Element
COMMENCEMENT BAY
THE NARROWS
BROWNS POINT
PUYALLUP
Legend
City Boundary
Wetland Status
Filled
High Probability
Known
Non-Jurisdictional
Upland
WETLAND STATUS:
The level of detail known about the wetland:
Filled - Wetlands that were permitted to be filled since 1992.
High Probability - Wetlands noted primarily through standing water and/or a wetland plant community was present, or were depicted on the U.S. Department of the Interior, Fish and Wildlife Service, National Wetland Inventory Maps, 1987.
Known - Wetlands that have been delineated by a qualified wetlands specialist and verified by the City's Senior Environmental Specialist, or designated MetroParks wetlands areas.
Non-Jurisdictional - Wetland areas that meet the definition of wetlands, yet are not jurisdictional with regard to application of the City of Tacoma's Critical Areas Preservation Ordinance definition of wetlands.
Upland - No wetlands present on the site based on information obtained from reports or site visits by the City of Tacoma Wetland Specialists.
N
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City of Tacoma
Tacoma Economic Development Department
0 0.5 1 2 3 Miles
NOTE: This map is for reference only.
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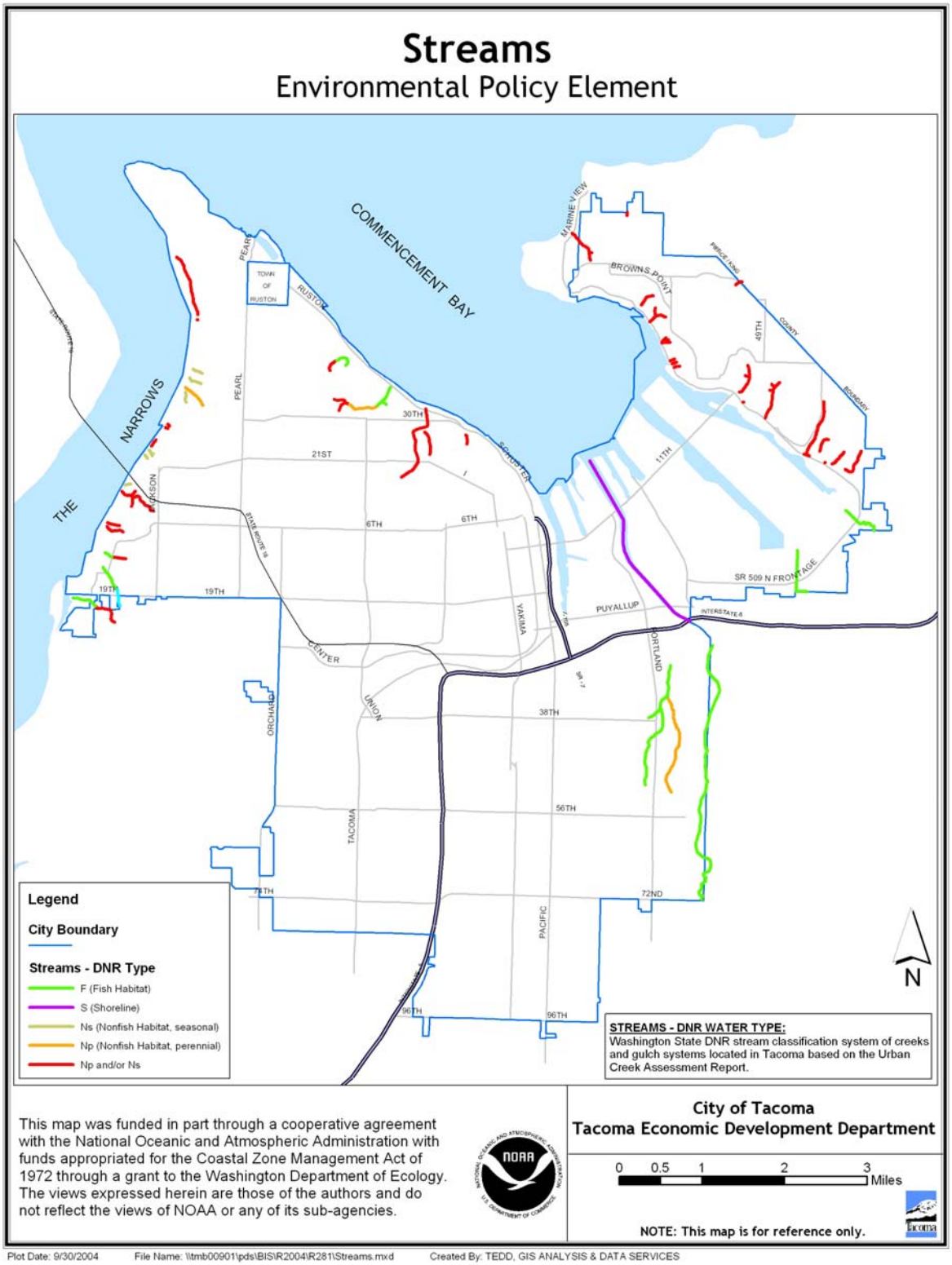
Streams
Environmental Policy Element
COMMENCEMENT BAY
NARROWS
THE
BROWNS POINT
MARINE VIEW
PEARL
RUSTON
TOWN OF RUSTON
30TH
21ST
6TH
19TH
SCHUSTER
JACKSON
STATE ROUTE 16
CENTER
UNION
ORCHARD
TACOMA
YAKIMA
PUYALLUP
PORTLAND
PACIFIC
38TH
56TH
72ND
96TH
49TH
11TH
SR 509 N FRONTAGE
INTERSTATE 5
Legend
City Boundary
Streams - DNR Type
F (Fish Habitat)
S (Shoreline)
Ns (Nonfish Habitat, seasonal)
Np (Nonfish Habitat, perennial)
Np and/or Ns
N
STREAMS - DNR WATER TYPE:
Washington State DNR stream classification system of creeks and gulch systems located in Tacoma based on the Urban Creek Assessment Report.
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NOAA
City of Tacoma
Tacoma Economic Development Department
0 0.5 1 2 3 Miles
NOTE: This map is for reference only.
Plot Date: 9/30/2004
File Name: \\tmb00901\pds\BIS\R2004\R281\Streams.mxd
Created By: TEDD, GIS ANALYSIS & DATA SERVICES

Mineral Resource Lands

Background

Natural resources in the City of Tacoma consist of mineral resources including rock and gravel deposits. These resources support industries that are an important part of Tacoma's economy, providing jobs and needed products for local use and export. Because of their economic benefits, resource lands are recognized as an important element of the City's growth and development plans.

Intent

Resource industries are productive land uses to be encouraged in the city. As growth occurs, however, many forces work against continued resource management and conservation of productive lands. Development adjacent to or near these areas can increase land prices and can result in pressure to convert these lands to uses compatible with adjacent land uses. Conflicts with nearby residents can occur. Productive lands and resource industries should be conserved while limiting the points of contact and potential conflict with incompatible adjacent uses.

It is important for federal, state, regional and local governmental jurisdictions and private industry to coordinate and cooperate to assure conservation, preservation and protection of natural resources.

The extraction of mineral resources is recognized as necessary to meet the needs of the entire public. If possible, this should be accomplished prior to development of the land for other purposes to avoid potential future conflicts and environmental consequences, provided that extractive areas should be thoroughly assessed as to their impact on the City before being created, established or extended.

Extractive operations are subject to proper location and strict performance standards to protect adjacent land uses as well as the community as a whole and to ensure proper reconditioning and beneficial future use of land.

The city must prudently protect and preserve the natural environment and natural resources, within the City's limitations.

Issues

It is important that resource industries use management practices that protect the environment and prevent significant adverse impacts to adjacent land uses.

Applicable Law

The Growth Management Act declares that cities shall develop comprehensive plans that address "resource lands" management for preservation and protection. Mineral resource lands are the only resource lands designated for protection by the City.

Chapter 13.06.406 of the Official Code of the City of Tacoma sets forth standards for excavations within the City.

Policies

The following policies support and strengthen the City's intent relative to mineral resource lands.

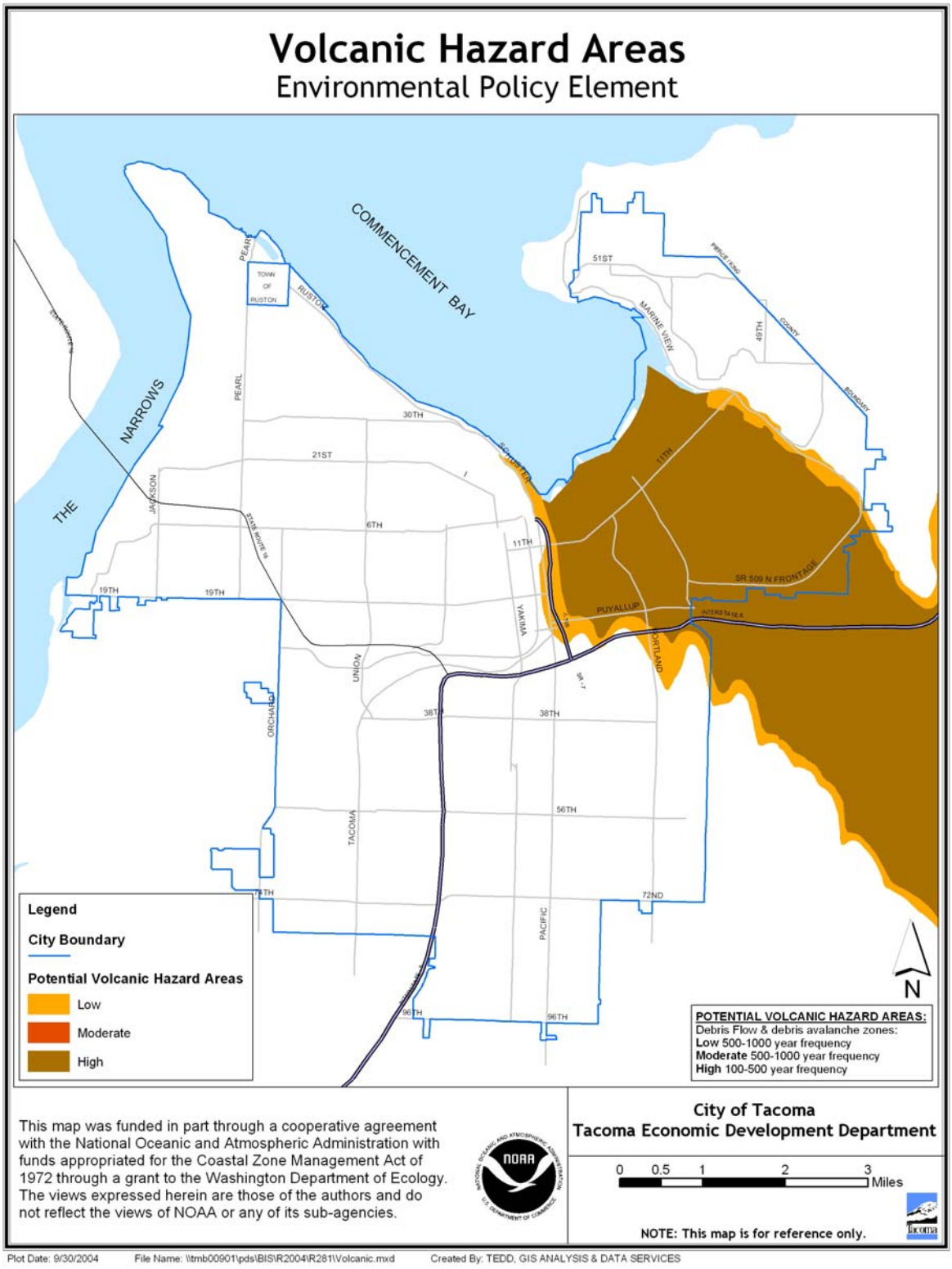
E-MRL-1 Coordinate Effort for Natural Resources Preservation
Coordinate and cooperate with federal, state, regional and local governmental jurisdictions and private industry to assure conservation, preservation and protection of our natural resources.

E-MRL-2 Mineral Resources Extraction
Recognize that the extraction of mineral resources is necessary to meet the needs of the entire public, and, if possible, should be accomplished prior to development of the land for other purposes, provided that extractive areas should be thoroughly assessed as to their impact on the City before being created, established or extended.

E-MRL-3 Extractive Operations
Ensure that extractive operations are subject to proper location and strict performance standards to protect adjacent land uses as well as the community as a whole and to ensure proper reconditioning and beneficial future use of land.

E-MRL-4 Protect Natural Resources
Prudently protect and preserve the natural environment and natural resources, within the City's limitation.

E-MRL-5 Best Management Practices
Encourage resource industries to use management practices that protect the environment and prevent significant adverse impacts to adjacent land uses.


Volcanic Hazard Areas
Environmental Policy Element
COMMENCEMENT BAY
THE NARROWS
PEARL
RUSTON
TOWN OF RUSTON
30TH
21ST
6TH
19TH
11TH
51ST
MARINE VIEW
49TH
PORTLAND
PUYALLUP
YAKIMA
UNION
ORCHARD
TACOMA
38TH
56TH
72ND
96TH
PACIFIC
SR 509 N FRONTAGE
Legend
City Boundary
Potential Volcanic Hazard Areas
Low
Moderate
High
N
POTENTIAL VOLCANIC HAZARD AREAS:
Debris Flow & debris avalanche zones:
Low 500-1000 year frequency
Moderate 500-1000 year frequency
High 100-500 year frequency
This map was funded in part through a cooperative agreement with the National Oceanic and Atmospheric Administration with funds appropriated for the Coastal Zone Management Act of 1972 through a grant to the Washington Department of Ecology. The views expressed herein are those of the authors and do not reflect the views of NOAA or any of its sub-agencies.
NOAA
City of Tacoma
Tacoma Economic Development Department
0 0.5 1 2 3 Miles
NOTE: This map is for reference only.
Plot Date: 9/30/2004
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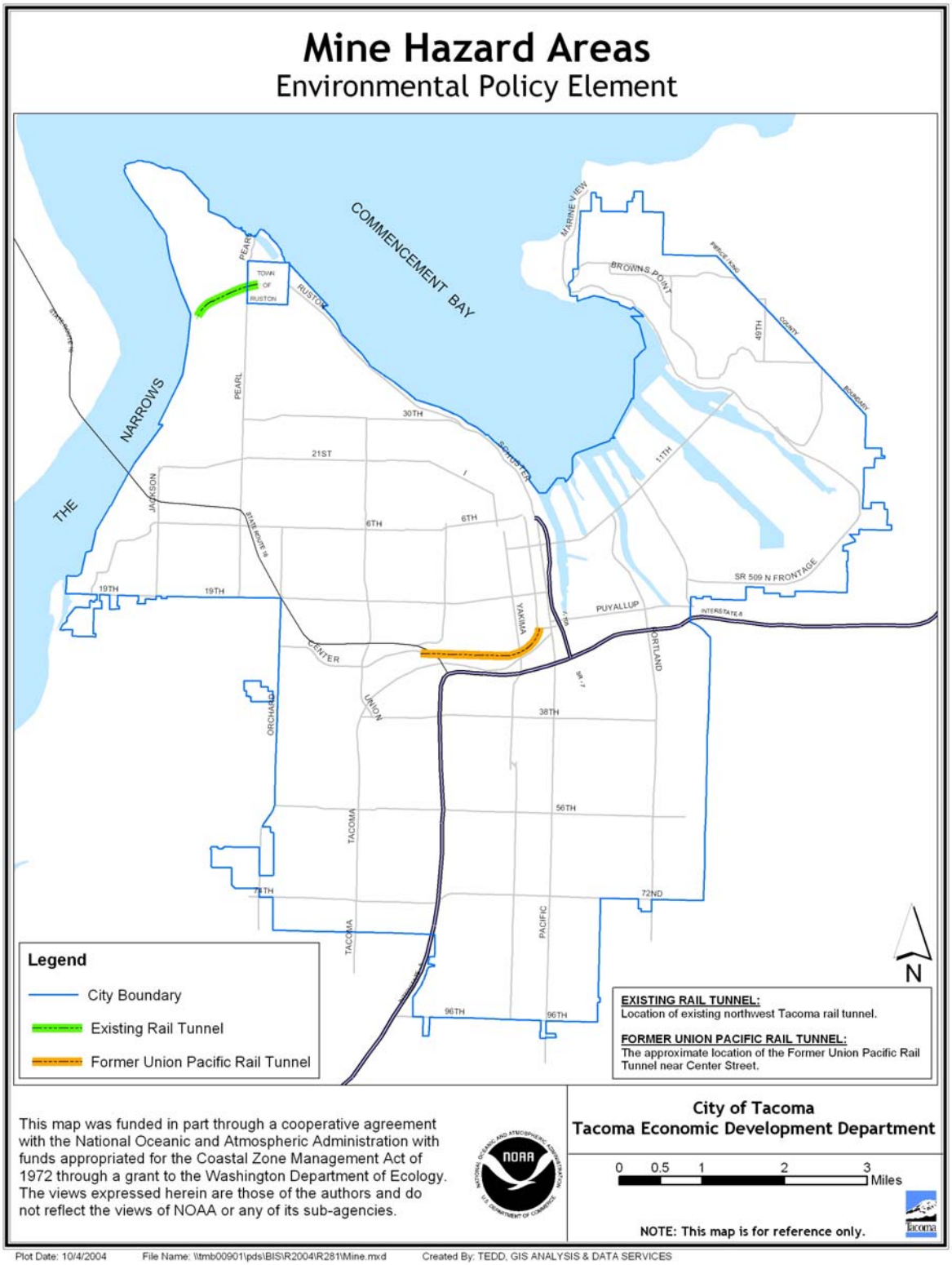
Mine Hazard Areas
Environmental Policy Element
COMMENCEMENT BAY
THE NARROWS
BROWNS POINT
MARINE VIEW
PEARL
RUSTON
TOWN OF RUSTON
30TH
21ST
6TH
19TH
SCHUSTER
JACKSON
STATE ROUTE 16
CENTER
YAKIMA
PUYALLUP
SR 509 N FRONTAGE
INTERSTATE 5
PORTLAND
UNION
ORCHARD
38TH
56TH
TACOMA
72ND
PACIFIC
96TH
Legend
City Boundary
Existing Rail Tunnel
Former Union Pacific Rail Tunnel
N
EXISTING RAIL TUNNEL:
Location of existing northwest Tacoma rail tunnel.
FORMER UNION PACIFIC RAIL TUNNEL:
The approximate location of the Former Union Pacific Rail Tunnel near Center Street.
This map was funded in part through a cooperative agreement with the National Oceanic and Atmospheric Administration with funds appropriated for the Coastal Zone Management Act of 1972 through a grant to the Washington Department of Ecology. The views expressed herein are those of the authors and do not reflect the views of NOAA or any of its sub-agencies.
NOAA
City of Tacoma
Tacoma Economic Development Department
0 0.5 1 2 3 Miles
NOTE: This map is for reference only.
Plot Date: 10/4/2004
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Created By: TEDD, GIS ANALYSIS & DATA SERVICES

Section IV – Appendices

Glossary

Aquifer - A saturated geologic formation that will yield a sufficient quantity of water to serve as a private or public water supply.

Carbon Monoxide - A highly toxic gas dispersed into the atmosphere through incomplete fossil fuel combustion.

Critical Areas - The following ecosystems: areas with a critical recharging effect on aquifers used for drinking water, fish and wildlife habitat conservation areas, frequently flooded areas, geologically hazardous areas, wetlands and streams.

DNR - The Washington State Department of Natural Resources.

Drainage Basin - See Watershed.

DSHS - The Washington State Department of Social and Health Services.

Dredging - Any physical digging into the bottom of a water body.

Ecology - A branch of science concerned with the interrelationship of organisms and their environments.

Ecology (DOE) - The Washington Department of Ecology which is responsible for implementing many environmental protection laws including the State Clean Water Act and the Shoreline Management Act.

Ecosystem - A community of living things, interacting with one another and with their physical environment such as a rain forest, pond or estuary.

Environmental Resources - Natural and man-made attributes that positively contribute to a community's quality of life.

Environmentally Sensitive Areas - Areas defined by SEPA which must be designated by local governments and which can include, but are not limited to, aquifer recharge areas, areas with unstable soil, steep slopes, unusual or unique plants or animals, wetlands, or areas which lie within floodplains.

EPA - The United States Environmental Protection Agency which administers many federal and environmental laws.

Erosion - Detachment of soil or rock fragments by water, wind, ice and/or gravity.

Erosion Hazard Areas - Areas which contain soils classified by the United States Department of Agriculture Soil Conservation Service that may experience severe to very severe erosion hazards.

Estuary - A confined coastal water body where fresh and salt waters meet and tides are experienced.

Fauna - A collective term for the animal life in an ecosystem.

Flora - A collective term for the plant life in an ecosystem.

Flood Hazard Areas - Lands in a floodplain. These include areas adjacent to lakes, streams, oceans or other bodies of water lying outside the ordinary bank of the water body and which are periodically inundated by flood flow with a one percent or greater expectancy of flooding in any given year.

Floodway - River channel, plus the adjacent area that contains deep and fast flowing water during a 100 year flood.

Floodway Fringe - An area within the floodplain characterized by shallower, slower flows than the floodway during floods.

Geologically Hazardous Areas - Areas that are susceptible to erosion, sliding, severe risk of earthquake damage or other geological events.

GMA - Growth Management Act of the State of Washington.

Groundwater - All water found beneath the ground surface. The slowly moving subsurface water present in aquifers and recharged areas.

Gulch - A sharp cleft in the earth with steep sides and a relatively flat bottom which may or may not contain a stream.

Habitat - The specific area or type of environment in which a particular type of animal lives.

Habitat conservation areas - Areas designated as fish and wildlife habitat conservation areas.

Habitats of local importance - Those areas that include a seasonal range or habitat element with which a given species has a primary association, and which, if altered may reduce the likelihood that the species will maintain and reproduce over the long-term. These might include areas of high relative density or species richness, breeding habitat, winter range, and movement corridors. These might also include habitats that are of limited availability or high vulnerability to alternations such as cliffs, talus, and wetlands.

Habitat Zones - Areas designated and mapped that depict high quality, relatively undisturbed natural open spaces that provide valuable functions and values beyond the individual natural habitats contained within.

Hydric Soil - Soil that is saturated, flooded or ponded long enough during the growing season to develop anaerobic conditions in the uppermost level.

Hydrophyte - An aquatic plant growing in water or on a substrate (hydric soil) that is at least periodically deficient in oxygen such that the soil is too wet for most plants to survive.

Impervious Surface - Natural or man-made material, on the ground, that does not allow surface water to penetrate into the soil. Impervious surfaces consist of all buildings, parking areas, driveways, roads, sidewalks and any areas of concrete asphalt, plastic, etc.

In-fill - Development within developed areas rather than in outlying areas.

Land Use - The way land is developed and used.

Landslide Hazard Areas - Areas that are subject to severe landslide risk because of a combination of geologic, topographic and hydrologic factors.

Liquefaction - A liquid-like shaking condition which typically occurs on alluvial soils with a high water table during earthquakes or earth tremors.

Natural Constraint - A condition posing potential hazards to life and/or property.

Natural Resources - Industrial materials and capacities supplied by nature.

Nonpoint Source - A non-specific source of pollutants, often from a large area.

Open Space - Any space or area characterized by natural scenic beauty and/or existing openness. Natural condition or present state of use such as steep slope or gulch. If retained, these areas would enhance the present or potential value of surrounding urban development, or would maintain or enhance the conservation of natural scenic resources.

Point Source - A source of pollutants from a specific pipe.

Pollutant - A contaminant that conversely alters physical, chemical or biological properties of the environment.

Primary Treatment - A waste water treatment method that uses settling, skimming or chlorination to remove solids, floating materials and pathogens from waste water.

Secondary Treatment - A waste water treatment method that usually involves the addition of biological treatment to the settling, skimming and disinfection provided by primary treatment.

Sediment - Materials suspended in or settling to the bottom of a body of water such as sand and mud.

Seismic Hazard Areas - Areas subject to severe risk of earthquake damage as a result of seismic induced settlement, sliding or soil liquefaction.

SEPA - State Environmental Policy Act of 1971.

Shoreline Development - As regulated by the Shoreline Management Act, the construction over water or within a shoreline zone (generally 200 feet landward of the water) of structures such as buildings, piers, bulkheads and breakwaters, including environmental alterations such as dredging and filling, or any project which interferes with public navigational rights on the surface waters.

Slope - Areas which include both moderate and steep slopes. Moderate slopes include any slope greater than or equal to 25 percent and less than 40 percent. Steep slopes include areas of 40 percent or greater slope.

SMA - Shoreline Management Act of 1971.

Sulfur Dioxide - A heavy, pungent, colorless gas formed primarily by combustion of fossil fuel.

Suspended Particulates - Small discreet masses of solid or liquid matter dispersed into the atmosphere including dust, smoke, fumes, mist, spray and fog.

Surface Water - Rivers, streams and lakes in the region.

Toxic - Poisonous, carcinogenic or otherwise directly harmful to life.

Turbidity - A measure of the amount of material suspended in the water.

Volcanic hazard areas - Areas subject to pyroclastic flows.

Watershed - The geographic region within which water drains into a particular river, river system, or body of water.

Wetlands - Areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include small lakes, ponds, streams, swamps, marshes, bogs and similar areas. Wetlands do not include those artificial wetlands intentionally created from nonwetland sites, including but not limited to irrigation and drainage ditches, grass-lined swales, canals, detention facilities, farm ponds and landscape amenities. However, wetlands do include those artificial wetlands intentionally created to mitigate conversion of wetlands.

Wetlands and/or Streams of Local Significance – Wetlands and/or Streams which have been locally designated through the comprehensive planning process consistent with adopted criteria and for which protection is warranted than would otherwise be provided because of the value provided by the wetland and/or stream to the city and the environment.

Wetland Plant Species

The following is a list of plants found in the Tacoma, Washington area and known to be wetland obligates; when no species has been listed, several may be present and the presence of the genus is a strong indicator of the presence of a wetland. This list is basic but not definitive.

Agrostis sp. - Bentgrass; damp meadows

Alisma plantago-aquatica - Waterplantain; marshes, emergent along ponds

Carex sp. - Sedges; wet ground

Cicuta bulbifera - Bulblet bearing water hemlock. swamps, ponds

Cornus stolonifera - Red-osier dogwood; swamps; associated with Willows

Eleocharis sp. - spike rush; wet ground

Equisetum fluviatile - Water horsetail; bogs, standing water; swamps

Iris pseudocornus - Yellow iris; lakes, ponds, streambanks

Isoetes sp. - Quillwort; wet ground

Juncus sp. - Rushes; wet meadows, swamps, marshes

Lemna minor - Lesser Duckweed; swamps, ditches, ponds

Lysichitum americanum - Skunk Cabbage; swamps

Lythrum salicaria - Purple Loosestrife; wet meadows, marshes

Mentha pulegium - Penny Royal; wet meadows, swamps

Mentha spicata - Spearmint; damp ground, wet meadows, swamps

Myriophyllum sp. - Water Milfoil; shallow water

Nuphar polysepalum - Yellow Pond lily; ponds and lakes

Nyphaea odorata - American water lily; ponds and lakes

Polygonum amphibium - Water smartweed; aquatic, semi-aquatic

Polygonum hydropiper - Marshpepper smartweed; swamps, marshes, ditches

Populus trichocarpa - Poplar; streambanks, wet meadows *Fac

Potamogeton sp. - Pondweed; ponds, lakes

Potentilla sp. - Cinquefoil; wet places

Puccinellia sp. - Alkali grass; marshes, saltmarshes

Ranunculus aquatilis - White Buttercup; lowlands, pond margins

Ranunculus sp.; - wet meadows, marshes

Rorippa nasturtium-officinale - Water cress; ditches, streams

Sagittaria sp. - Arrowhead; swamps, lakes and ponds

Salicornia sp. - Glasswort; salt marshes

Salix sp. - Willows; damp and wet places

Scirpus sp. - Bulrush; wet meadows, marshes, bogs

Sium suave - Water parsnip; marshes, swamps

Spirea douglasii - Steeple Bush; swamps to damp meadows

Triglochin maritimum - seaside arrow grass; salt marshes, brackish low lands

Typha latifoia - Cattail; swamps and ditches

Utricularia sp. - Bladderwort; marshes, ponds, lakes

Viola lanceolata - Lance leaf violet; wet meadows, swamps

Zostera sp. - Eel grass; salt marshes, marine