

CHAPTER NINE

NATURAL ENVIRONMENT

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9.0 INTRODUCTION

Maintaining and improving the quality of the natural environment in Federal Way is central to the City’s vision of the future. The quality of hydrologic features, forested areas, and scenic vistas are community assets to Federal Way. Businesses and citizens also make location decisions based on quality of life factors and therefore the quality of the natural environment is also important to the economic vitality of the City. Finally, maintaining the viability of the natural environment is prudent and cost effective public policy. For example, if the City maintains or improves the natural drainage system and how it functions, it will save tax dollars by not having to build and maintain costly storm drainage facilities. The intent of this chapter is to guide future actions such that the quality of the natural environment is maintained or improved.



Growth Management Act and Countywide Planning Policies

The Growth Management Act (GMA) defines critical areas as: wetlands: areas with a critical recharging effect on aquifers used for potable water, fish and wildlife habitat conservation areas, frequently flooded areas, and geologically hazardous areas. Pursuant to the periodic major update policies of the GMA (RCW 36.70A.130 (5) (a)), the City updated its environmentally critical area regulations in 2015 to meet Best Available Science requirements. These regulations are contained in Title 19 of the *Federal Way Revised Code* (FWRC).

Development of this chapter is based on:

- (1) *King County Countywide Planning Policies (Overarching Goal in the Environment Chapter* – “The quality of the natural environment in King County is restored and protected for future generations.”

- (2) *Puget Sound Regional Council Vision 2040, Overarching Goal for the Environment* – “The region will care for the natural environment by protecting and restoring natural systems, conserving habitat, improving water quality, reducing greenhouse gas emissions and air pollutants, and addressing potential climate change impacts. The region acknowledges that the health of all residents is connected to the health of the environment. Planning at all levels should consider the impacts of land use, development patterns, and transportation on the ecosystem.”
- (3) *GMA Planning Goal (10 Environment)* – Protect the environment and enhance the state’s high quality of life, including air and water quality, and the availability of water.”

9.1 NATURAL ENVIRONMENT GOALS AND POLICIES

Environmental Stewardship

Federal Way recognizes that the natural environment is an intrinsic part of the urban fabric for the following important reasons:

- It provides opportunities for recreation;
- It provides habitat for fish, wildlife, and plant life;
- It is part of the City’s surface water management system and water supply;
- It creates a positive visual image and open space;
- It supports economic development goals; and
- It is cost effective public policy.

The merits and costs of environmental actions must be weighed and balanced against other important demands, such as public safety, recreation, housing, public infrastructure, economic development, and private property rights.

Goal

- NEG1** *To preserve the City’s natural systems in order to protect public health, safety, and welfare, and to maintain the integrity of the natural environment.*

Policies

The City’s natural environment is composed of a wide variety of landforms, soils, watercourses, and vegetation. The City’s terrain ranges from steep hills and ridgelines to plateaus and lakes. Soil types vary from loam in the lowlands to sand, gravel, and till in



Figure 1 Example of proposed residential subdivision that complements natural surroundings. Source AHBL, Inc. courtesy of Puget Sound Partnership (2005)

the uplands. Land use and development practices need to be compatible with this variety of environmental conditions. As a general rule, the City intends to protect the natural environment rather than try to overcome its limitations for development.

- NEP1** Protect and restore environmental quality through implementation of land use plans, surface water management plans and programs, comprehensive park plans, and development review.
- NEP2** Preserve and restore ecological functions, and enhance natural beauty, by encouraging community development patterns and site planning that maintains and complements natural landforms.
- NEP3** Plant suitable native trees and vegetation within degraded stream, wetlands, lake buffers, and steep slopes.
- NEP4** The City will continue to work with internal departments, state and regional agencies, neighboring jurisdictions, and tribes to protect environmentally critical areas and the City's natural environment.
- NEP5** To assist in evaluating existing and proposed environmental policy, the City should continue to update inventories for each type of environmentally critical area to augment data received from other information sources.
- NEP6** Mitigation sequencing steps, which begin with avoiding impacts altogether by not taking certain action or parts of an action, should be applied to all projects where impacts to environmentally critical areas are proposed.
- NEP7** Implement and periodically update environmentally critical area regulations consistent with Best Available Science while also taking into consideration the City's obligation to meet urban-level densities and other requirements under the GMA.
- NEP8** Where appropriate, the City encourages private donations of land or conservation easements for environmentally critical areas and their associated buffers.
- NEP9** The City will continue to encourage utilization of the soil safety program and Model Remedies Guidance for properties impacted by the Tacoma Smelter Plume.
- NEP10** The City may continue to require environmental studies by qualified professionals to assess the impact and recommend appropriate mitigation of proposed development on environmentally critical areas and areas that may be contaminated or development that may potentially cause contamination.

Private Property Rights

The City recognizes the importance of private property rights as one of the 13 planning goals of the GMA. When implementing development regulations, GMA requires the property rights of landowners be protected from arbitrary and discriminatory actions.

Goal

- NEG2** *Balance the protection of environmentally critical areas with the rights of property owners.*

Policies

- NEP11** Environmentally critical area regulations will be based on Best Available Science.
- NEP12** The City should review future amendments to the environmentally critical areas regulations to ensure that new provisions do not unreasonably hinder private property rights.
- NEP13** The City will strive to enforce regulations and procedures on a consistent and equitable basis.
- NEP14** Environmentally critical area regulations should provide clear direction to property owners and applicants.
- NEP15** The repercussions of unauthorized alterations to environmentally critical areas should be clearly stated and consistently enforced.
- NEP16** The City should help identify potential environmental constraints to property owners and applicants early in the permit application process and provide guidance for permitting, best management practices, and effective environmental stewardship.
- NEP17** Continue the practice of providing a process for reasonable use exception when the implementation of environmentally critical areas regulations deprives a property owner of all reasonable use of their property.

9.2 WATER RESOURCES

Water resources include: streams, lakes, frequently flooded areas, wetlands, aquifer recharge areas, and shorelines. The aquifers and aquifer recharge areas are a source of the community's drinking water. The streams and wetlands are an essential part of the City's stormwater drainage system that provides necessary flood and erosion control. The lakes and shorelines provide fish and wildlife habitat and high quality places for recreation.

To protect the value and function of each individual feature, water resources must be managed as an integrated system. Use and modification of water resources and the surrounding terrestrial environment affects how the hydrologic cycle functions. The inappropriate alteration of water resources can cause detrimental impacts such as flooding, erosion, degradation of water quality, reduction in groundwater, and habitat loss. In order to minimize adverse impacts to water resources and to ensure their continued viability, the City promotes responsible land and water resource planning and

use. Policies, regulations, and standards are identified in the City's *Surface Water Management Comprehensive Plan*.

The City will permit development in a manner that protects water quality and ensures continued ecological and hydrologic functioning of water resources. Protection should include maintenance of stream base flows, allowance of natural water level fluctuations in wetlands, aquifer recharge, and stream corridor habitat preservation. Due to the limited capacity of the underlying aquifers and increased water demand, the City also encourages groundwater conservation measures.

Aquifer Recharge Areas (Groundwater)

Federal Way is dependent on groundwater as a source of drinking water. Water from rainfall, snowmelt, lakes, streams, and wetland seeps into the ground and collects in porous areas of rock, sand, and gravel called aquifers. Aquifers hold varying amounts of groundwater that can be extracted or pumped for use. Groundwater pumped from Lakehaven Utility District wells originates from three aquifer systems that underlie the City: the Redondo-Milton Channel Aquifer, the Intermediate Aquifer System (Mirror Lake and Eastern Upland Aquifers), and the Deep Aquifer (*Map IX-1*). The locations of wellhead capture zones in relationship to the aquifer systems are shown on *Map IX-2*. The Lakehaven Utility District notes that the precise extent of the aquifer recharge areas is uncertain.

Typical activities associated with land development, such as clearing and grading, affects the natural hydrologic cycle. Historically, stormwater was managed in a way that conveyed it to natural water bodies as expediently as possible. This type of management circumvents the land's ability to absorb and retain water and increases the possibility of contamination. In addition, the runoff after heavy precipitation events has a deleterious effect on stream channels, water quality, and in-stream habitat.

Map IX-3, Areas Susceptible to Groundwater Contamination, is a map produced by the King County Department of Development and Environmental Services and Seattle-King County Health Department as a result of the study entitled *Mapping Aquifer Susceptibility to Contamination in King County*. This study looked at three criteria: soils, surface geology, and depth to groundwater. Based on these criteria, areas were mapped as low, medium, or high susceptibility to contamination from activities occurring in the area. This information is the best available at this time and will be used along with other information on streams, wetlands, and wildlife habitat to determine appropriate zoning.

Goal

NEG3 *To protect and enhance aquifer recharge areas.*

Policies

NEP18 The City, in cooperation with Lakehaven Utility District, should identify and map aquifer recharge areas within the City and its potential annexation area. Such areas shall be subject to regulations to protect the integrity of identified aquifer recharge areas.

- NEP19** The City should encourage the retention of surface water runoff in wetlands, regional retention facilities, and low impact development stormwater facilities, or use other similar stormwater management techniques to promote aquifer recharge.
- NEP20** The City should establish land use and building controls to use stormwater infiltration such as low impact development and green stormwater infrastructure techniques wherever feasible, and to minimize the amount of impervious surface created by development.
- NEP21** Encourage water reuse and reclamation for irrigation and other non-potable water needs.
- NEP22** While offering a contribution to groundwater recharge, the City recognizes that septic tank and drain field systems have a potentially adverse impact on groundwater quality within the aquifers. If adequate engineering solutions are available, the City may require connection to sanitary sewer service where poor soil conditions persist and/or sewer service is available.
- NEP23** The City will protect the quality and quantity of groundwater supplies by supporting water use conservation programs and adopting regulations to minimize water pollution. The effect of groundwater withdrawals and artificial recharge on streams, lakes, and wetlands within the Hylebos Creek and Lower Puget Sound drainage basins will be evaluated through coordination with the Lakehaven Utility District.

Wellhead Protection Areas



Figure 2 Joe's Creek Credit Dan Smith

The City will take preventative measures to avoid contamination in areas surrounding well sites because residents rely on groundwater as a source for their drinking water. The City and Lakehaven Utility District work cooperatively to implement the state's Wellhead Protection Program and Section 1428 of the 1986 Amendments to the *Federal Safe Drinking Water Act*, which generally requires mapping wellhead protection zones and establishing an interagency wellhead protection plan. The intent of the wellhead protection program is to be proactive and prevent contamination of groundwater used for drinking water. The objective of wellhead protection is to protect the health of people using groundwater supplies for drinking water. This is accomplished by providing management zones around public wells or wellfields to detect and manage potential sources of groundwater contamination. Another goal of the program is to promote awareness of special efforts to protect the groundwater and urge customers to

take a proactive approach to protecting the source of the City’s drinking water. *Map IX-4* maps wellhead protection areas around each of Lakehaven’s 13 wells that provide drinking water to the area. The primary zones of wellhead protection are defined using a time of groundwater travel criteria. The three principal zones are delineated using one, five, and ten year time of travel factors.

The following City policies address wellhead protection.

Goal

- NEG4** *Implement a local wellhead protection program to ensure a safe source of drinking water and to avoid the large financial impact of contaminated wells.*

Policies

- NEP24** The City will continue to work in conjunction with Lakehaven Utility District to delineate Wellhead Protection Areas for each well and wellfield as required and outlined by the state’s Wellhead Protection program.
- NEP25** The City will continue to work with water purveyors to model and map Wellhead Protection Areas, as funds are budgeted for such modeling and mapping.
- NEP26** The City will continue to work with Lakehaven Utility District, through a process developed by a joint City/District Wellhead Protection Committee, to conduct an inventory of all potential sources of groundwater contamination within the Wellhead Protection Areas and assess the potential for contamination.
- NEP27** The City should establish an interagency Wellhead Protection Committee to coordinate and implement a Wellhead Protection Plan, as is required by current state regulations.
- NEP28** The City will work with water purveyors, through a process developed by a joint City/District Wellhead Protection Committee, to develop a contingency plan for the provisions of alternate drinking water supplies in the event of well or wellfield contamination, as funds are budgeted for such purpose.
- NEP29** The City should establish buffer zones of sufficient size to protect wellhead areas.

Streams and Lakes (Surface Water)

The City of Federal Way is located within the Hylebos Creek, Lower Puget Sound, Lower Green River, and Mill Creek drainage basins. These basins contain an integrated system of lakes and streams that provide a natural drainage system for over 36 square miles of southwest King County and northeast Pierce County (*Map IX-5*).

Due to rapid urbanization, this natural system has been altered and in many areas no longer provides many of its original functions or habitats. The primary focus of the policies is to restore the natural functions that the City’s lakes and streams once provided.

Moreover, the s policies acknowledge that it is more cost effective to restore the natural system than it is to construct a man-made equivalent.

Goal

NEG5 *Protect, restore, and enhance the City's lakes and streams.*

Policies

NEP30 The City will seek to work cooperatively with affected regional and state agencies and tribes to implement water quality management strategies to comply with *Municipal National Pollutant Discharge Elimination System* regulations to address non-point pollution.

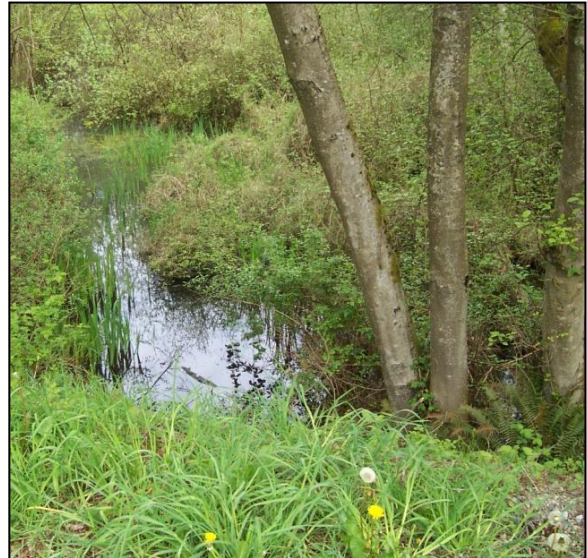


Figure 3 Redondo Creek. Credit ESA

- NEP31** Surface water management facilities that use natural streams and lakes for storage should ensure that those natural features are not adversely impacted by their inclusion in the City's surface water management system.
- NEP32** The City may regulate private development and public actions to protect water quality and to ensure adequate in-stream flow to protect fisheries, wildlife habitat, and recreation resources.
- NEP33** The City will seek to retain native vegetation within riparian corridors. New planting of vegetation with the approval from the City may be required where such revegetation will enhance the corridor's function. Consideration should be given to the removal of non-native invasive species.
- NEP34** Lakes should be protected and enhanced by proper management of surface waters and shorelines, by improvements in water quality, removal of invasive plant species, encouraging native planting, limiting the use of fertilizers/pesticides or other chemicals, and by restoration of fish and wildlife habitat.
- NEP35** The City should adopt stream definitions and water typing that are reflective of stream function and habitat. The water typing system should provide greater protections for streams that are known to be used by salmon and streams that provide suitable habitat for salmon. In addition, the definitions should make a distinction between manmade conveyance systems and natural streams.
- NEP36** The City should continue to limit stream relocation projects, the placing of streams in culverts, and the crossing of streams for both public and private projects. Where applicable in stream corridors, the City should consider

structures that are designed to promote fish migration and the propagation of wildlife habitat.

- NEP37** Continue to enforce erosion control measures for work in or adjacent to stream or lake buffers.
- NEP38** Appropriate mitigation for detrimental impacts may be required for construction work within the buffer area associated with a stream or a lake. The City will continue to work in cooperation with the Department of Fish and Wildlife through the Hydraulic Project Approval permit process, as applicable, for development proposals that involve streams and lakes.
- NEP39** Public facilities and utilities may cross lakes or streams where no other feasible alternative exists. Impacts to the resources should be the minimum necessary to complete the project and compensatory mitigation should be required for unavoidable impacts.
- NEP40** For public access lakes, the City will take a lead role to develop and implement proactive comprehensive watershed and lake management plans and policies that are needed to identify and anticipate problems and prevent further deterioration, which could lead to costly lake restoration efforts in the future. Lake management plans identify problems, recommend solutions, and outline plans for implementation. The City will take an administrative role in assisting residents on private lakes to setup and run Lake Management Districts for the implementation of lake management plans.

Frequently Flooded Areas

Frequently flooded areas are defined as, "...areas in the floodplain subject to a one percent or greater chance of flooding in any given year including but not limited to, such areas as streams, lakes, and wetlands." Development in flood plains reduces the storage capacity and increases the amount of runoff. Increased runoff overtaxes both natural and man-made conveyance systems and leads to increased costs associated with the damage to public and private property.

Frequently flooded areas within the City are located along the Puget Sound shoreline and regulated by the Federal Way Shoreline Master Program (SMP).

Goal

- NEG6** *To prevent the loss of life, property, and habitat in frequently flooded areas.*

Policies

- NEP41** New improvements should not be located in floodplains unless fully mitigated via best building practices within areas of special flood hazard, shallow flooding, coastal high hazard, and floodways.

- NEP42** Any approved construction should follow the mitigation recommendations of a Habitat Assessment report.
- NEP43** In frequently flooded areas, the City should restrict the rate and quantity of surface water runoff to pre-development levels for all new development and redevelopment, in accordance with the current adopted technical design manual requirements.
- NEP44** Where feasible, the City shall protect and enhance natural flood storage and conveyance function of streams, lakes, and wetlands.

Wetlands

Wetlands are valuable natural resources. There are several types of wetlands in the City and each plays a valuable role in the hydrological system. The various types of wetlands include marshes, bogs, ponds, forested, lake-fringe and scrub-shrub. By storing floodwaters, wetlands reduce flooding and down stream erosion; trap and absorb sediments; and improve water quality by filtering pollutants. Wetlands also discharge water to aquifers and streams which helps to replenish groundwater and maintain base flows of streams. Wetlands are productive biological systems providing diverse habitat for wildlife, and important storage capacity for the hydrologic system.

Federal Way has several regionally significant wetland areas. The largest can be found in and adjacent to the West Hylebos State Park, Dash Point State Park, Dumas Bay, and throughout Spring Valley. Other smaller wetlands also dot the landscape.



Figure 4 Forested Wetland. Credit ESA

enhancement, or payment into an in-lieu fee program must be provided.

The City has completed a general inventory of wetlands within the City limits and Potential Annexation Area (PAA). The inventory was used to help the City create policy and regulations that reflect local and regional conditions.

The City may permit development that results in the destruction of wetlands if certain criteria are met. In these situations, compensatory wetland mitigation, such as wetland creation, restoration,

Goal

- NEG7** *Protect and enhance the functions and values of the City's wetlands.*

Policies

- NEP45** The City will protect its wetlands with an objective of no overall net-loss of functions or values.
- NEP46** Impacts to wetlands should be limited. All efforts should be made to use the following mitigation sequencing approach: avoid, minimize, rectify, reduce over time, compensate, and monitor.
- NEP47** Require buffers adjacent to wetlands to protect wetland function and values integral to healthy wetland ecosystems. Buffer requirements should be predictable and where allowances for buffer alterations are warranted, provide clear direction for mitigation, enhancement, and restoration.
- NEP48** Preserve wetland systems by maintaining native vegetation between nearby wetlands and between wetlands and nearby streams and other wildlife habitat areas.
- NEP49** The City will utilize the approved federal wetland delineation manual and applicable regional supplements as set forth in WAC 173-22-035 for identification and delineation of wetlands.
- NEP50** The City's wetland inventory will be updated when new delineations and ratings are approved by the City.
- NEP51** To meet Best Available Science requirements and for consistency with state guidelines, the City's wetland rating system should be based on the current Department of Ecology rating system.
- NEP52** The City will work with other jurisdictions, tribes, and citizen groups to establish wetland policies and a classification system for wetlands that allows for the designation of both regionally and locally unique wetlands.
- NEP53** The City will work with the Lakehaven Utility District to evaluate pumping rates within the Hylebos Creek and Lower Puget Sound drainage basin to establish the effect of groundwater withdrawal on streams, lakes, and wetlands.
- NEP54** The City will avoid the use of natural wetlands for use as public stormwater facilities whenever possible. If the use of a natural wetland is unavoidable, the functions/values of that wetland should be replaced to the extent that they are lost.

Goal

- NEG8** *Explore ways of mitigating wetland loss.*

Policies

- NEP55** The City should consider a partnership with the King County Mitigation Reserves In-Lieu Fee program to provide additional options for offsite mitigation.

- NEP56** Mitigation sites should replace or augment the wetland values to be lost as a result of a development proposal. Sites should be chosen that would contribute to an existing wetland system or, if feasible, restore an area that was historically a wetland.
- NEP57** All wetland functions should be considered in evaluating wetland mitigation proposals, including but not limited to fish and wildlife habitat, flood storage, water quality, recreation, and educational opportunities.
- NEP58** The City will protect wetlands by promoting the conservation of forest cover and native vegetation.
- NEP59** Wetlands created as a result of a surface or stormwater detention facility will not be considered wetlands for regulatory purposes.

Shorelines

The City's Shorelines of the State as identified by the Shoreline Management Act (SMA) within city limits include Puget Sound, Steel Lake, North Lake, and the incorporated portion of Lake Killarney. Shorelines of the State within the City's potential annexation area include the south portion of Lake Killarney, Star Lake, Lake Dolloff, Lake Geneva, and Five Mile Lake. Shorelines of the State also include the upland or shorelands that generally extend 200-feet landward from the edge of these waters, and any wetlands associated with such waters.

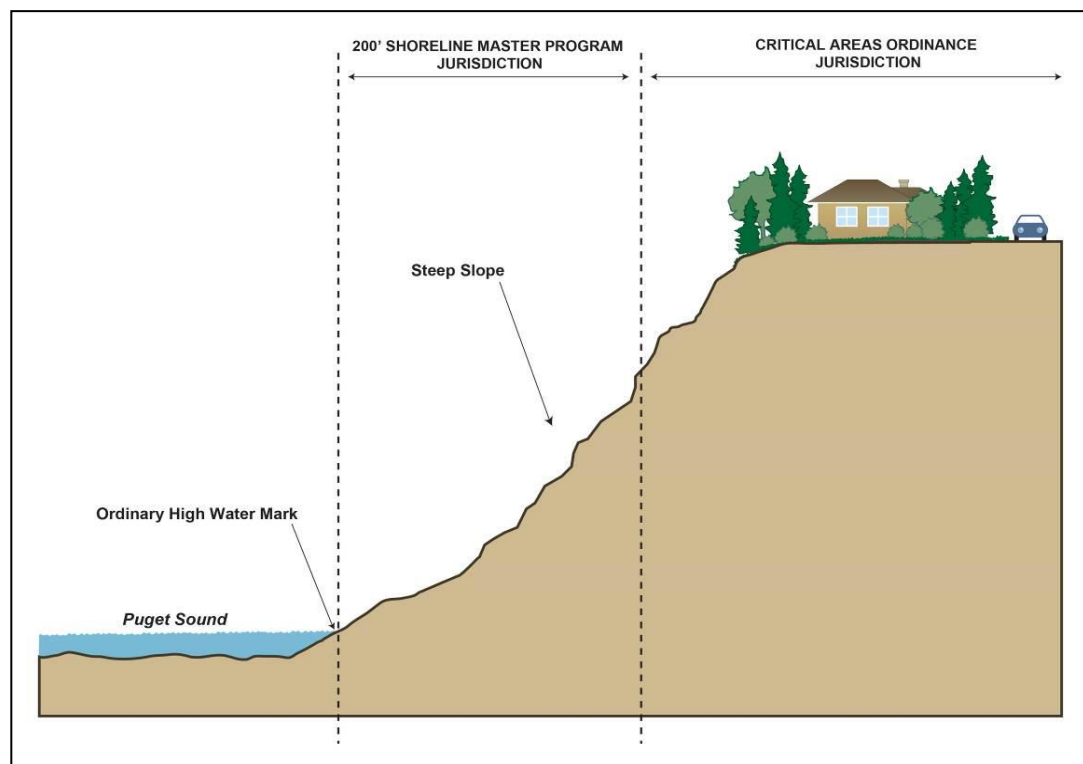


Figure 5 SMP regulations are in effect for areas within 200' of Puget Sound and listed lakes greater than 20 acres. Critical Area regulations are implemented for areas outside of the 200' SMP overlay. Graphic credit ESA

The updated Federal Way Shoreline Master Program (see FWCP Chapter 11), with its own environmentally-related goals and policies was adopted in 2011 following review and approval from the Washington State Department of Ecology. The regulations were incorporated into Federal Way Revised Code Title 15.

Policy

NEP60 The City should keep abreast of proposed changes to the state’s Shoreline Management Act regulations and amend the City’s master program in order to reserve the shoreline for preferred uses, protect shoreline natural resources against adverse effects, and promote public access to publically owned areas.

9.3 GEOLOGIC HAZARDOUS AREAS

Geologically hazardous areas include: steep slope hazard, landslide hazard, erosion hazard, and seismic hazard (liquefaction-prone) areas. WAC 365-196-200(10) defines geographically hazardous areas as, “...areas that because of their susceptibility to erosion, sliding, earthquake, or other geological events, are not suited to siting of commercial, residential, or industrial development consistent with public health or safety concerns.”

Most geologically hazardous areas have been mapped near the Puget Sound shoreline and within stream corridors (*Map IX-6*).

The following City policies address protection of geologically hazardous areas.

Goal

NEG9 *Implement applicable development regulations to ensure against the loss of both public and private property in geologically hazardous areas.*

Policies

NEP61 Land uses in geologically hazardous areas should be designed to prevent property damage and environmental degradation, and to enhance open space and wildlife habitat.

NEP62 Require appropriate levels of professional study and analysis for proposed construction within geologically hazardous areas.

NEP63 As slope increases, development intensity, site coverage, and vegetation removal should decrease and thereby minimize drainage problems, soil erosion, siltation, and landslides. Slopes of 40 percent or more should be retained in a natural state, free of structures and other land surface modifications.

NEP64 Limit disturbances in landslide hazard areas. Establish setbacks beyond the landslide hazard areas to avoid risks to life safety and property damage.

- NEP65** Utilize erosion control best practices in erosion hazard areas during construction and the site's ultimate use.
- NEP66** Maintain soil stability by retaining vegetation in geologically hazardous areas.
- NEP67** Prior to development in severe seismic hazard areas, the City may require special studies to evaluate seismic risks and to identify appropriate measures to reduce these risks. In areas with severe seismic hazards, special building design and construction measures should be used to minimize the risk of structural damage, fire, and injury to occupants, and to prevent post-seismic collapse.
- NEP68** Development along marine bluffs should take into consideration the unique habitat these areas provide by leaving as much native vegetation intact as possible, especially snags and mature trees.

9.4 FISH AND WILDLIFE HABITAT CONSERVATION AREAS

Fish and wildlife habitat conservation areas are necessary for both resident and seasonal migratory animal species (*Map IX-7*). These areas include:

- Areas with which endangered, threatened, sensitive, and candidate species have a primary association;
- Habitats and species with local importance;
- Kelp and eelgrass beds;
- Herring, surf smelt, and sand lance spawning areas;
- Naturally occurring ponds under 20 acres and their submerged aquatic beds that provide fish or wildlife habitat; and
- Waters of the state

Significant habitat also exists in wetland, riparian corridors, and on steep slopes that are privately owned, but protected by development regulations. Linking public and private habitat areas can provide food, shelter, and migration corridors for a healthy and sustainable population of salmon, songbirds, and other species.

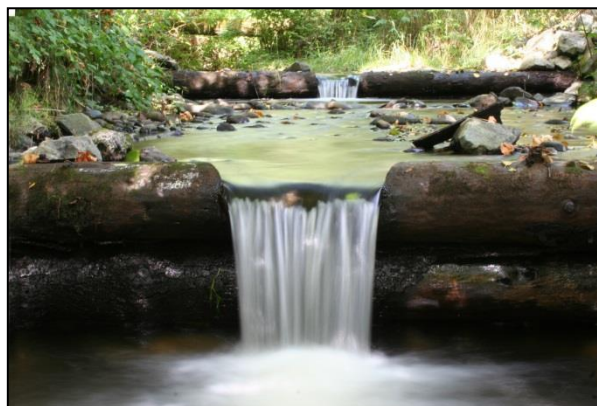


Figure 6 Hylebos Creek Fish Ladder. Credit Dan Smith

Urban landscaping, parks, and open space are valuable complements to natural areas in terms of providing habitat for a wide variety of wildlife. The loss of natural wildlife habitat to urban development can be partially offset by landscaping that includes a variety of native plants, which could provide habitat.

Goal

NEG10 *Preserve, protect, and enhance fish and wildlife habitat.*

Policies

NEP69 As feasible, the City will conduct studies needed to identify and map critical fish and wildlife habitat conservation areas and may re-evaluate existing regulations for the protection of these areas.

NEP70 The City should manage aquatic and riparian (stream side) habitat in a way that minimizes its alteration in order to preserve and enhance its ability to sustain fish and wildlife.

NEP71 The City should preserve and enhance native vegetation in riparian habitat wherever possible.

NEP72 The City should encourage residents and businesses to use native plants in residential and commercial landscaping.

NEP73 The City should protect wildlife corridors in City owned open space. These areas should use native plants that support native species of birds and animals.

NEP74 Support community and non-profit efforts to restore fish and wildlife conservation areas with native vegetation.

NEP75 As feasible, continue the property acquisition program in Spring Valley, which not only provides natural flood storage but also preserves wildlife habitat and provides corridors for their movement.

NEP76 As feasible, the City will adopt and implement fish habitat conservation plans for the salmon runs in the Hylebos drainage, Lakota Creek, Joe's Creek, and any other identified salmon streams. These plans will include recommendations for improvements to the riparian corridor and provisions for adequate buffers adjacent to all proposed development.

NEP77 The City should encourage informational and educational programs and activities dealing with the protection of wildlife. An example of such a program is the Backyard Wildlife Sanctuary program established by the state's Department of Fish and Wildlife.

NEP78 Minimize overhead lighting that would shine on the water surface of the City's streams, lakes, and marine waters.

- NEP79** Minimize and manage ambient light levels to protect the integrity of ecological systems and public health without compromising public safety.

9.5 TREE PRESERVATION

The City benefits in maintaining its urban tree canopy by:

- Stabilizing and enriching soil;
- Improving air and water quality;
- Protecting fish and wildlife habitat;
- Reducing the impacts of stormwater runoff;
- Mitigating the heat island effect; and
- Enhancing the economic value of new and existing development.

Goal

- NEG11** *To preserve and enhance the City’s physical and aesthetic character by incentivizing the preservation of mature trees and preventing untimely and indiscriminate removal or destruction of trees.*

Policies

- NEP80** Continue to implement the tree density standards within the Clearing, Grading, and Tree and Vegetation Retention code.
- NEP81** Provide greater tree density credits for retained mature trees.
- NEP82** Encourage minimal modification of trees within environmentally critical areas and their buffers.
- NEP83** Encourage preserving forested areas within tracts and Native Growth Protection Easements when subdividing land.
- NEP84** Support voluntary tree planting programs.
- NEP85** Discourage the topping of healthy trees. Instead, encourage the benefits of sustainable pruning practices and “window pruning” in view corridors.

9.6 AIR QUALITY AND CLIMATE CHANGE

Greenhouse gas (GHG) emissions are resulting in a changing climate. Human activities such as burning fossil fuels for electricity, heat, and transportation are responsible for a significant portion to the increase in greenhouse gases.

According to Puget Sound Regional Council’s Planning for Whole Communities Toolkit, a warming climate is expected to impact the availability of basic necessities like fresh water, food and energy. Climate change is also likely to have an impact on human health,

particularly for sensitive populations such as the elderly, those with respiratory ailments, and young children, from increases in extreme heat events, forest fires, and increased summer air pollution. An increase in rates of heat-related illnesses, respiratory illness, and infectious disease is also likely.

Goal

NEG12 *Promote land use patterns and transportation systems that minimize air pollution and greenhouse gas emissions.*

Policies

NEP86 Support state and federal air quality standards and the regulation of activities that emit air pollutants.

NEP87 Utilize building design, construction, and technology techniques to mitigate the negative effects of air pollution on indoor air quality for uses near sources of pollution such as Interstate-5.

NEP788 Encourage transportation demand management and alternatives to the single occupancy vehicle in order to reduce energy consumption, air, and water pollution.

NEP89 Educate residents about air quality impacts associated with vehicle usage, alternative modes of transportation and alternative fuels.

NEP90 Encourage compact growth in the City Center and other mixed-use zones that support mass transit, encourage non-motorized modes of travel, and reduce trip lengths.

NEP91 Facilitate modes of travel such as bicycling and walking by implementing the recommendations of the Bicycle and Pedestrian Master Plan, as adopted by reference.

NEP92 Regulate new development to ensure new blocks encourage walkability and maximize connectivity and route choice. Create reasonable block lengths to encourage more walking and physical activity.

NEP93 Require the continuation of the street network between adjacent development projects to promote walkability and allow easier access for emergency vehicles.

NEP94 Conduct City operations and institutionalize practices that reduce municipal greenhouse gas emissions and lead the community in reducing GHG emissions.

NEP95 Implement a program to install the latest energy-efficient technologies for street and parking lot lights as funding becomes available.

NEP96 Assist and encourage new development to meet criteria of green building certification or credentials through established programs such as LEED and Energy Star.

NEP97 Consider upgrading the City government fleet to vehicles that have a lower carbon footprint or are more fuel efficient.

NEP98 Incorporate climate change considerations into City comprehensive and operational plans.

9.7 NOISE

Noise pollution can be harmful to the general public's health and welfare and has adversely affected the livability and comfort of neighborhoods within the City of Federal Way. Noise is primarily generated by: air traffic from Seattle-Tacoma International Airport (SeaTac); vehicle traffic; and construction activities. The City will need to continue its efforts at the regional and state level to mitigate the impacts associated with the SeaTac Airport.

Goal

NEG13 *Develop programs and/or regulations to address noise pollution in all areas of the City.*

Policies

NEP99 The City should develop and adopt construction standards to mitigate noise generated by SeaTac Airport and Interstate 5, as well as other major arterials.

NEP100 Provide noise reduction and mitigation measures to reduce the noise and visual impacts of Interstate 5 and arterials on residential areas.

NEP101 Ensure the Washington State Department of Transportation provides appropriate levels of noise suppression when improving state highways.

NEP102 The City will evaluate potential noise impacts associated with non-residential uses and activities located in residential areas as part of the site plan review process.

NEP103 The City should continue to work in concert with the Puget Sound Regional Council, Regional Commission on Airport Affairs, and the Airport Communities Coalition, or their successors or other entities, to resolve problems associated with the expansion of SeaTac Airport.

NEP104 In developing new roadway systems, the City will evaluate the noise impact on residential neighborhoods as appropriate in, or through, residential areas.

9.8 OPEN SPACE

Trails and open space corridors form linkages between and within neighborhoods, commercial areas, and neighboring jurisdictions. Open space corridors also provide wildlife habitat, recreation areas, as well as visual and physical separation between land uses. In order to achieve an effective open space system, the City will work cooperatively with surrounding jurisdictions to construct a network of open space. Open space can include: environmentally sensitive areas, forests, pasture land, lakes, and waterways.



Figure 7 West Hylebos Wetland Park. Credit Dan Smith

Areas identified as open space in the Comprehensive Parks Plan may be purchased or otherwise protected from development by the City.

Goal

NEG14 *Develop a contiguous open space network throughout the City and with adjacent jurisdictions.*

Policies

NEP105 Open space provides important wildlife habitat corridors and should be linked with other designated regional and state open space systems.

NEP106 Preserve and restore habitat connections and tree canopy to link stream corridors, geologically hazardous areas, floodplains, wetlands, and critical habitat sites into a system of habitat corridors. This provides connections for wildlife, supports biodiversity, improves water quality, reduces risks due to flooding and landslides, and supports the City's adaptation to climate change.

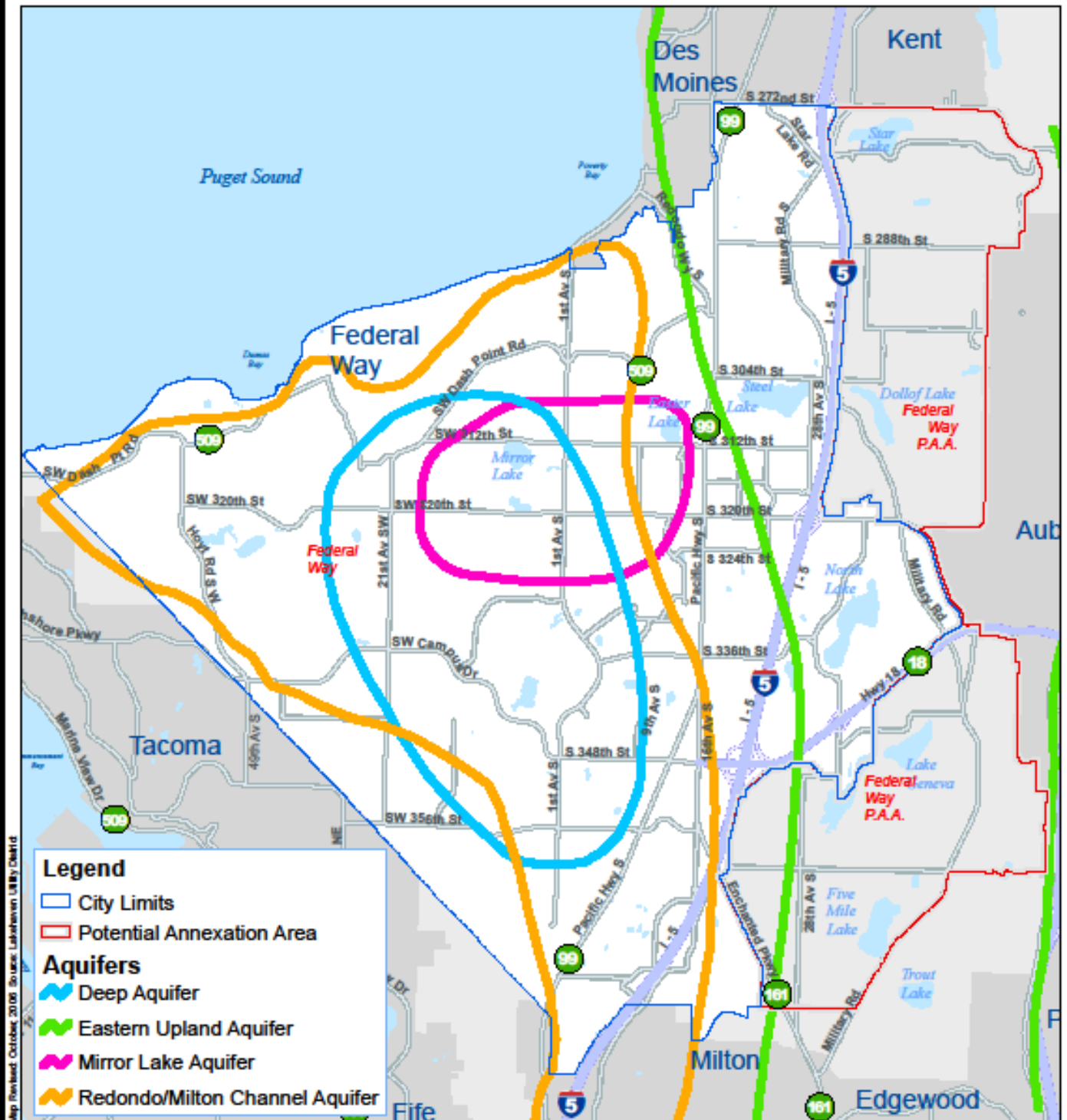
NEP107 The City should develop a procedure to acquire or accept donations of high value areas for preservation.

NEP108 The City should consider innovative ways of acquiring property for open space such as transfer of development rights and development incentives for set asides.

NEP109 Incorporate crime prevention through environmental design into the design process for parks, open space, and trails.

NEP110 Create methods and opportunities that encourage residents to monitor and report vandalism or criminal activity in open space areas, parks, and trails.

Map IX - 1 Aquifers

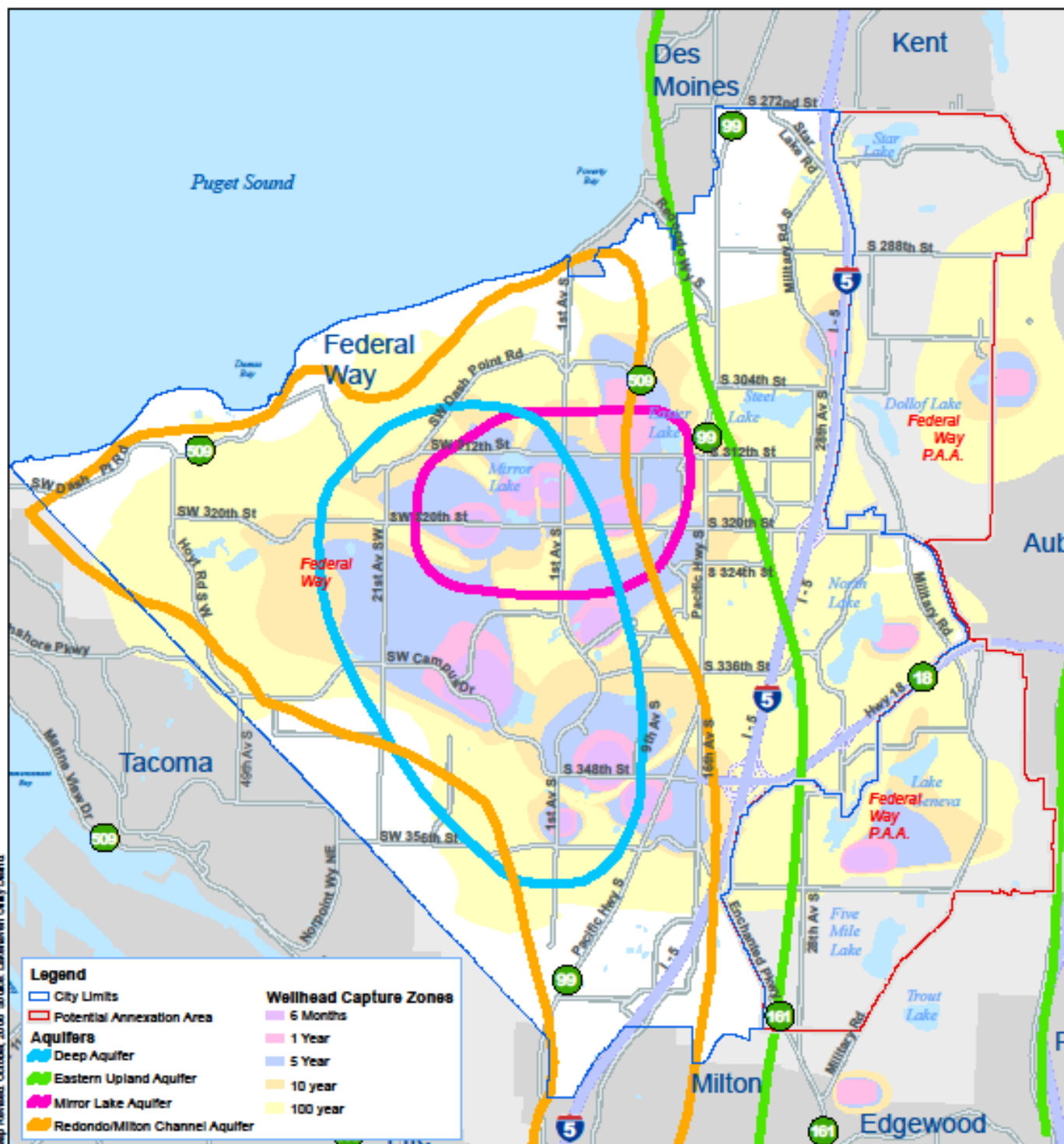


Natural Environment Element

This map is intended for use as a graphical representation. The City of Federal Way makes no warranty as to its accuracy.

Map IX - 2 Aquifers & Wellhead Capture Zones

Map Date: September 2015
City of Federal Way
GIS Division
33325 8th Ave S
Federal Way, WA 98003
253-835-7000
www.cityoffederalway.com



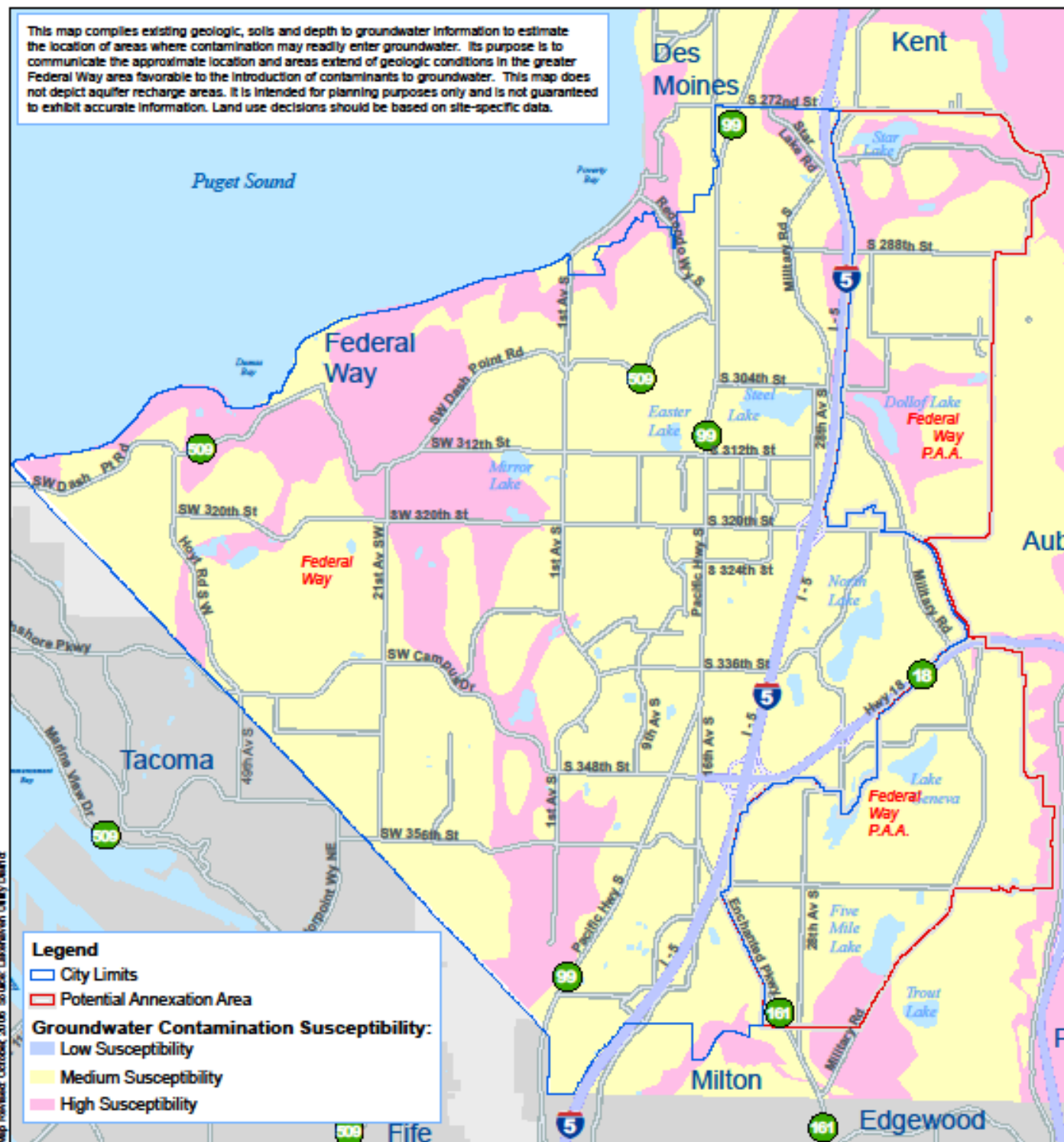
Scale:
0 0.5 1
Miles

Natural Environment Element

This map is intended for use as a graphical representation. The City of Federal Way makes no warranty as to its accuracy.

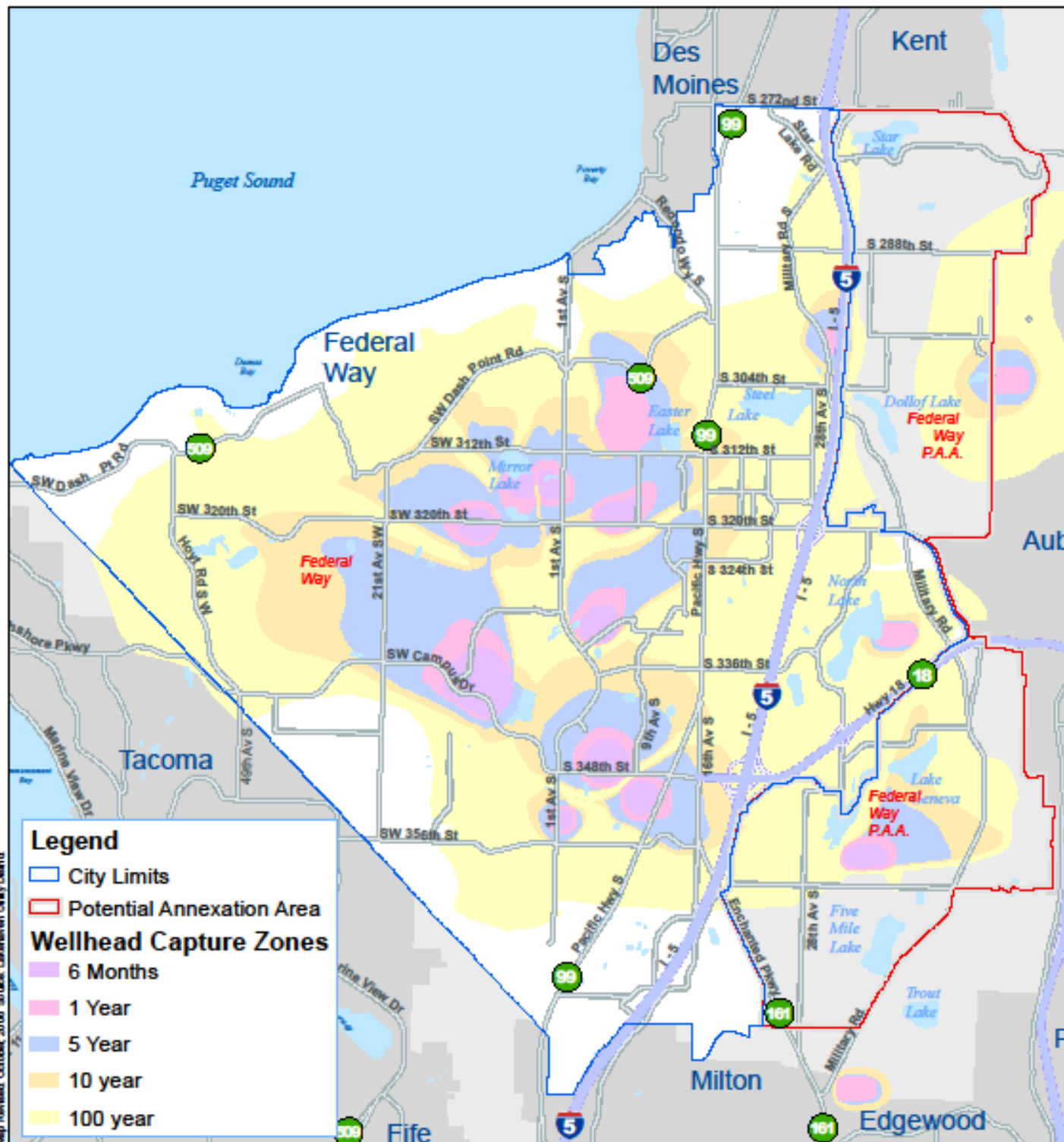
Map IX - 3 Areas Susceptible to Groundwater Contamination

This map compiles existing geologic, soils and depth to groundwater information to estimate the location of areas where contamination may readily enter groundwater. Its purpose is to communicate the approximate location and areas extend of geologic conditions in the greater Federal Way area favorable to the introduction of contaminants to groundwater. This map does not depict aquifer recharge areas. It is intended for planning purposes only and is not guaranteed to exhibit accurate information. Land use decisions should be based on site-specific data.



Map IX - 4 Wellhead Capture Zones

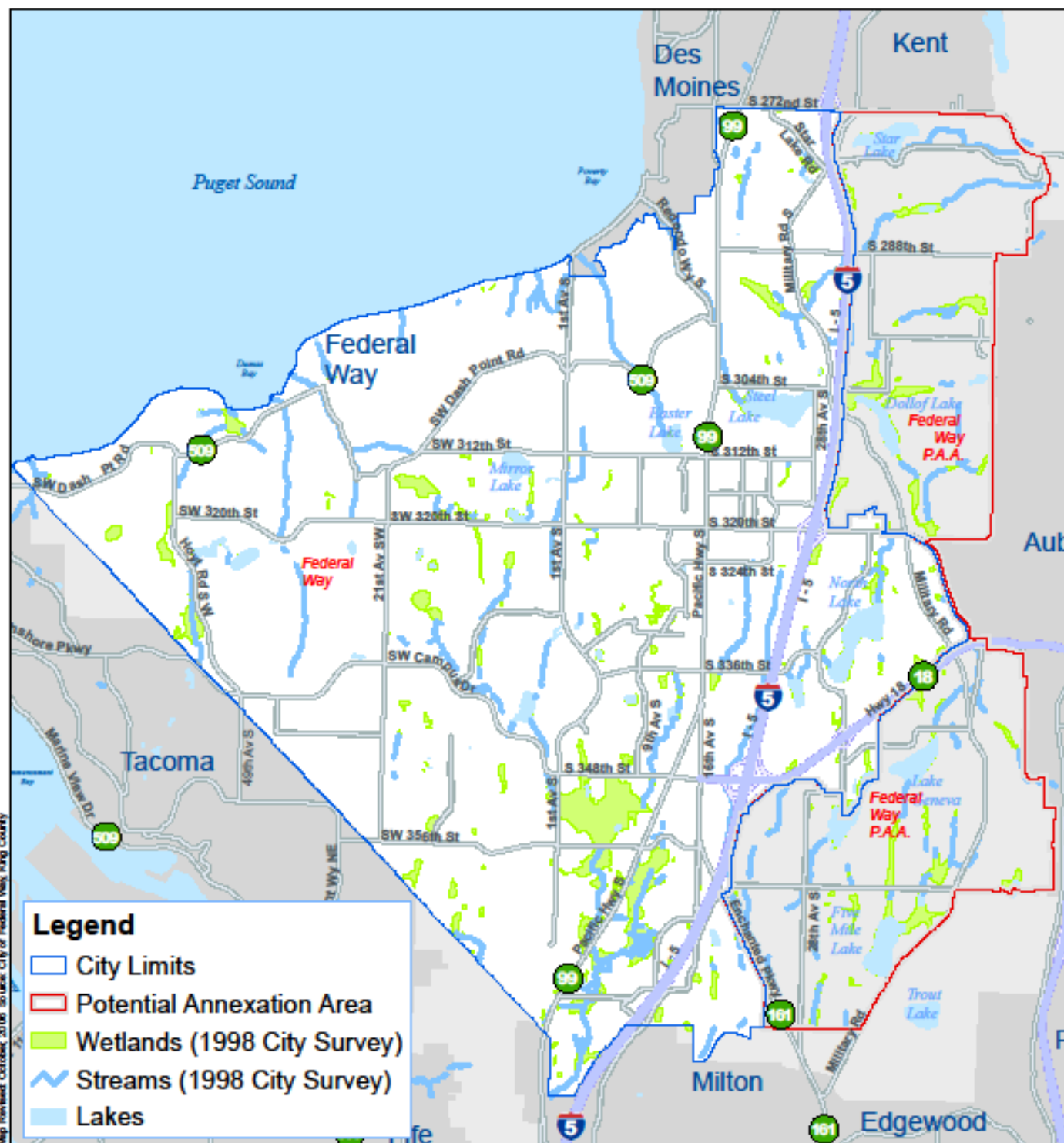
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Map IX - 5 Surface Water Resources



Natural Environment Element

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Map Notes: Possible hazards based on ground slope are not indicated on this map.

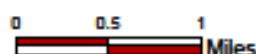
Legend

- City Limits
- Potential Annexation Area
- Landslide Hazard Areas
- Erosion Hazard Area

This map is intended for use as a graphical representation. The City of Federal Way makes no warranty as to its accuracy.



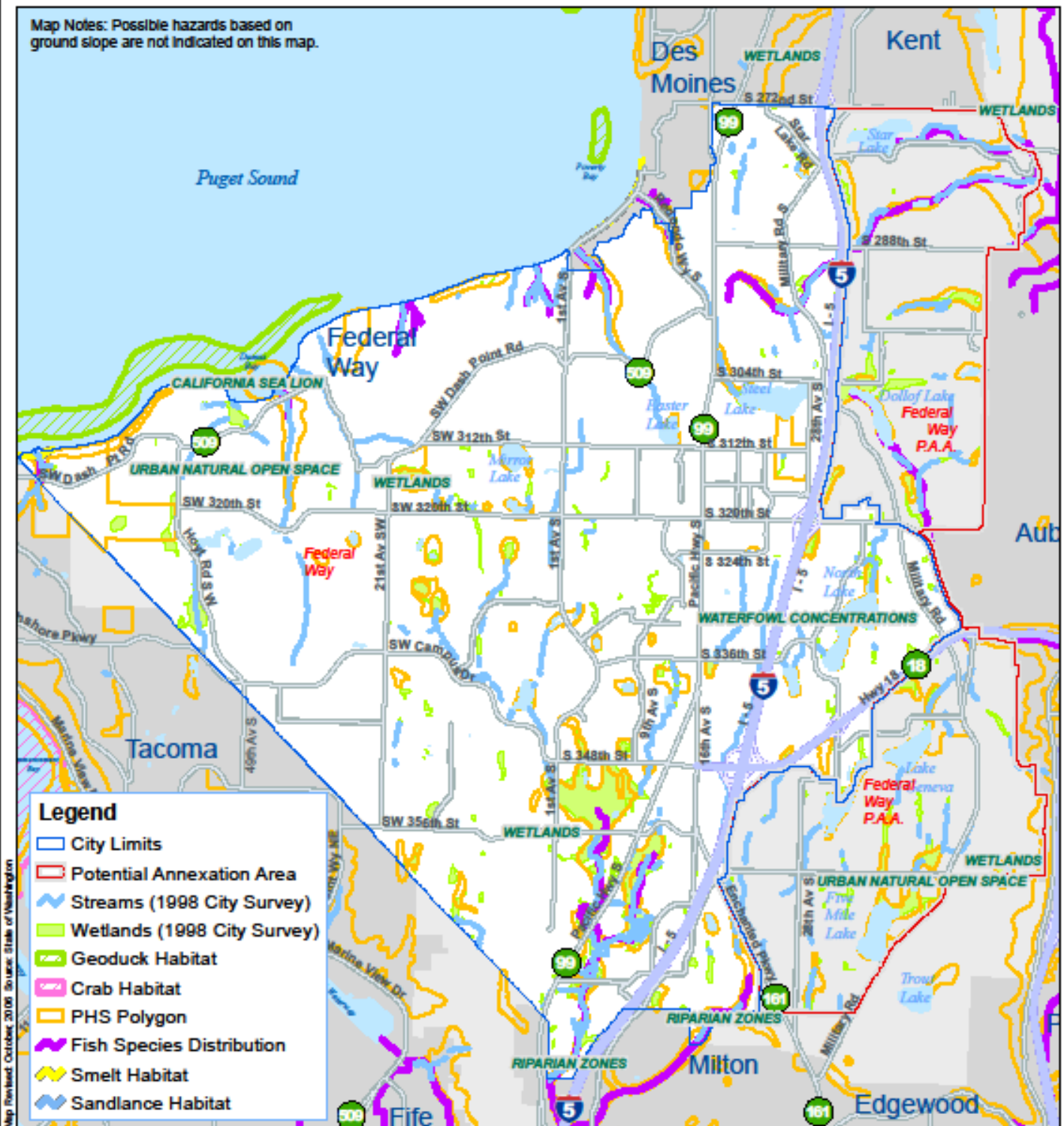
Scale:



Map IX - 7 Priority Habitats & Species

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Scale:

0 0.5 1
Miles

Natural Environment Element

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