

CHAPTER 4: Conservation and Environment Element

BACKGROUND AND CONTEXT

Des Moines is rich in beauty and natural resources that include the Puget Sound shoreline, hillsides and bluffs, urban forests, diverse streams and wetlands, ~~fish, wildlife~~ and open space. There are also a variety of fish and wildlife species present in the area including priority habitat species such as Chum, Coho Salmon, and Cutthroat Trout. The Puget Sound is the southern extent of the Salish Sea and part of the migration route for many birds, Bull Trout, and Chinook Salmon, with Des Moines Creek being an area that these species utilize for foraging habitat during parts of the year. These are defining features of our City that are valued by our citizens and are important for us to protect for generations to come. Both individually and interacting as a whole, these resources provide valuable functions to the City's ecosystem including:

- Control of flooding, surface water runoff, erosion, and sedimentation;
- Groundwater and aquifer recharge;
- Soil and geologic stability;
- Air and water quality; and
- Habitat for animals and marine life.

The Conservation and Environment Element contains goals, policies and implementation strategies aimed at environmental stewardship and protecting the City's environmental assets, with particular emphasis on environmentally critical areas, shorelines, surface and groundwater quality, and climate change. The Washington State Growth Management Act mandates the protection of aquifer recharge areas, fish and wildlife habitat conservation areas, flood hazard areas, geologically hazardous areas, wetlands, and stream corridors while the Shoreline Management Act provides for the protection of shorelines. Recognizing that a substantial portion of the City is located in geologic hazard geologically hazardous areas, this element also addresses the health of ecological functions, public safety, and protection from natural dangers, including erosion, landslides, and seismic hazards.

Environmentally Critical Areas ~~critical areas (referred to as "critical areas") are those that~~ provide environmental functions and require local and state law protections to ensure safe and/or functional environments. Scientific research has determined that unstable slopes are best protected by undisturbed buffer areas. Landslides on such slopes can result in enormous public and private costs, and severe threats to public safety and natural resources. Protection or avoidance of geologically hazardous areas (typically achieved through buffers) can help to prevent large amounts of public and private costs while ensuring public safety. Critical areas within the

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City of Des Moines include wetlands, streams, ~~areas with a critical recharging effect on aquifers~~ critical aquifer recharge areas (CARAs), frequently flooded areas, geologically hazardous areas, and fish and wildlife habitat conservation areas. The locations of critical areas within the City of Des Moines are shown in the following figures:

Figure 4-1 Slope and Topography

Figure 4-2 Drainage Basins

Figure 4-3 Wetlands and Surface Water

Figure 4-4 Geologically Hazardous Areas

Figure 4-5 Fish and Wildlife Habitat Conservation Areas

Figure 4-6 Critical Aquifer Recharge Areas

Figure 4-7 Frequently Flooded Areas

The GMA requires ~~that~~ the City of Des Moines to designate its critical areas and develop policies and development regulations to protect ~~their~~ the functions and values ~~of critical areas~~ using “best available science” (BAS). As defined in Washington Administrative Code (WAC) WAC 365-195-905, BAS is information that (1) state or federal natural resource agencies have determined represents the best available science, (2) was derived from consultation with qualified scientific expert(s), or (3) was produced through a valid scientific process. A valid scientific process should have the following characteristics: peer review, methods, logical conclusions and reasonable inferences, quantitative analysis, context, and references.

Approximately 115 acres of land is regulated by the City’s Shoreline Master Program (SMP). The SMP is a planning document that outlines goals and policies for shorelines of the City, pursuant to the Shoreline Management Act of 1971 (SMA).” The *City of Des Moines Critical Areas Inventory: Wetland, Stream and Habitat Elements* (2006) and map folio, along with the Shoreline Master Program (2019), ~~and~~ Surface Water Management Comprehensive Plan (2015), and 2021 Technical Memorandum Supplementing the Mid-Plan Update of the 2015 Surface Water Comprehensive Plan provide the background data for this element. The City’s natural resource inventory is supplemented on an ongoing basis by technical information that is provided through individual project reviews or special studies.

In 1996, the Washington State Legislature established the Puget Sound Water Quality Management Program that clearly delineates federal, state, and local action necessary to protect and restore the biological health and diversity of Puget Sound. The plan includes the framework describing various governmental roles for enhancing recreational opportunities, and restoring a balanced population of indigenous shellfish, fish and wildlife. Using this road map, the City of Des Moines developed a long-term strategy that implements the goals outlined in the Puget Sound Water Quality Management Program.

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By 2029, the City of Des Moines will be required to include a separate Climate Element in its Comprehensive Plan per Washington State Legislature House Bill 1181, which aims to utilize the planning framework to strengthen the state's climate response. Although the City is not currently required to have a separate Climate Element, the Environment Element includes goals and policies throughout that provide a strong starting point for climate change prevention and resiliency, including methods for conserving energy and water, and improving air quality. Since the last Comprehensive Plan update, the City is continuing to expand efforts to preserve the environment and mitigate for future impacts through city-wide projects that have been pursued.

Previous projects in the City of Des Moines with environment and conservation focus have included removal of barriers to fish passage, natural areas restoration, invasive plant removal, floodplain improvements, and development of public parks. The Comprehensive Plan and critical areas regulations will continue to allow for future projects to restore, support, improve, and protect the City's environmental assets.

GOALS

Goal CE 1 Protect, improve, and sustain environmental quality through the State Environmental Policy Act (SEPA), the use of best management practices, and the use of best available science.

Goal CE 2 Protect environmentally critical areas from damage caused by encroachment and development.

Goal CE 3 Maintain and monitor a shoreline master program, consistent with state law, to enhance and protect the quality of the shoreline environment consistent with the best available science.

Goal CE 4 ~~Prevent~~ Consider natural processes such as flooding, and flooding, erosion, sedimentation, water quality, and habitat degradation, and to erosion before siting development and protect, restore, and enhance water quality of all surface waters (freshwater and marine), as well as shorelines and riparian areas.

Goal CE 5 Protect fish and wildlife species and habitats with emphasis on those identified by the State and Federal governments as endangered, threatened, or sensitive resources, or identified by the Washington Department of Fish and Wildlife's Priority Habitat and Species program.

Goal CE 6 Maintain a solid waste system that bases its primary means of solid waste disposal on the principles of reduction, reuse, and recycling.

Goal CE 7 Promote ~~the conservation of energy~~ energy conservation in the location and design of public and private development.

Goal CE 8 Protect air quality to maintain a healthy environment now and for ~~current and~~ future generations.

Goal CE 9 Educate the community on how to care for and improve Des Moines's natural environment.

POLICIES AND IMPLEMENTATION STRATEGIES

Conservation Best Management Practices

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CE 1.1 **Plan and encourage sound management of natural resources – land, air, water, vegetation, fish, wildlife, and energy – considering entire watersheds and regional influences.**

CE 1.1.1 Prepare and utilize studies of Des Moines area watersheds, such as the Green/Duwamish and Central Puget Sound Watershed (WRIA 9) Salmon Habitat Plan (2021 Update), to identify identifying environmental problems and short-term and long-term means for solving identified problems. rResource management and mitigation.

CE 1.1.2 When feasible, identify and rank-prioritize capital improvement and land acquisition projects that can prevent or reduce flooding, protect surface and ground water quality, stabilize hillsides, and protect, restore, and enhance fish and wildlife habitat. Collaboration with neighboring jurisdictions and regional stakeholders will be utilized during this effort.

CE 1.1.3 Regulate public and private development proposals in ways to insure-ensure that the valuable functions of natural resources are preserved, restored, or improved.

CE 1.1.4 Explore approaches to regulations and procedures that streamline the permit review process for development in or near shorelines and critical areas.

CE 1.1.5 Balance social, economic, and environmental goals to-with land use planning activities.

CE 1.1.6 Evaluate the impacts of new development on Natural resources as a part of the SEPA environmental review process and require mitigation measures as appropriate.

CE 1.2 **Include “best available science” when reviewing, revising, or developing policies and regulations to protect the functions and values of critical areas, giving special consideration to the protection of anadromous fish.**

CE 1.2.1 Document the use of BAS and instances when non-scientific information is used in-lieu-of BAS during the process of developing policies and regulations to protect critical areas and anadromous fisheries. Documentation should include relevant sources of BAS.

Documentation should also include the rationale rational for using information that departs from BAS, and identify potential risks to the functions and values of the critical areas, and any additional measures to mitigate such risk.

Environmentally Critical Areas

CE 2.1 **Review and revise the City’s Critical Areas Ordinance, on or before June 30, 2015, and approximately every eight-ten years thereafter to ensure protection of the ecological functions and values of critical areas from cumulative adverse**

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environmental impacts, and to ensure compliance with the requirements of the Growth Management Act.

CE 2.1.1 Designate and protect critical areas using “best available science” (BAS) pursuant to RCW 36.70A.172 and WAC 365-195-900 through 365-195-925.

CE 2.2

Prevent the destruction of critical areas including 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.

CE 2.2.1 Regulate development on bluffs and ravine sidewalls to ~~ensure~~ insure human safety, health, and welfare, and to restore and preserve other functions (relating to significant habitat qualities) served by bluffs and ravines.

CE 2.2.2 Limit development proposals and land disturbance on potentially unstable land, such as erosion, landslide, and seismic hazard areas, to ~~insure~~ ensure safety and conformity with existing natural constraints, as permitted by state and federal law.

CE 2.2.3 Seek public acquisition of environmentally critical areas that have outstanding valuable natural functions and aesthetic assets, when feasible.

CE 2.2.4 Require the issuance of a permit and critical area review by the City prior to any construction or land disturbing activity that would occur in or adjacent to, or would likely affect, a critical area.

CE 2.2.5 Where valid or complete scientific information is not available, the City shall take a precautionary or no risk approach, in which development and land use activities are strictly limited until the uncertainty is sufficiently resolved (as stated in WAC 365-195-920). As an interim approach, the City should take an effective adaptive management approach, where the results of land use decisions are scientifically evaluated as to their impacts on critical areas.

CE 2.3

Ensure that stream and wetland buffers are ~~of adequate size~~ adequately sized to protect critical wildlife species and habitat.

CE 2.3.1 Identify and delineate wetlands and their boundaries ~~pursuant to~~ in accordance with the approved federal wetland delineation manual and applicable regional supplements (WAC 173-22-035).

CE 2.4

Promote the preservation of native vegetation and mature trees, revegetation, and appropriate landscaping to improve air and water quality and fish and wildlife habitat.

CE 2.4.1 Regulate and plan land use and condition development proposals in ways that protect mature trees, native vegetation, stream flow, fish and wildlife habitat, groundwater recharge, and air quality, as well as natural topographic, geologic, and hydrologic features.

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CE 2.4.2 Encourage the preservation of trees within critical areas by maintaining a permitting process that requires review prior to tree removal or pruning.

CE 2.4.3 Maintain and preserve significant trees by requiring development proposals to adhere to a replacement ratio of 3:1 for the removal, destruction, or damage of any trees that were identified to be retained.

CE 2.4.4 Meet Department of Ecology National Pollutant Discharge Elimination System (NPDES) requirements for tree retention and preservation as new permits are issued.

CE 2.4.5 When removing hazard trees, consideration for snag creation or leaving the removed downed tree in-place will be given.

CE 2.5 Balance the City's goals of protecting environmentally critical areas with the other social, cultural, and economic goals of the City of Des Moines Comprehensive Plan.

CE 2.5.1 Identify environmentally critical areas and implement performance standards and development regulations that result in no net loss of ecological values and functions for any proposed developments within or adjacent to them.

CE 2.5.2 Accommodate design flexibility and compensate for critical area preservation by calculating density for residential dwelling units as the ratio of developable area to undevelopable critical areas on site.

CE 2.5.3 Work with Tribal Nations, state and regional agencies and other stakeholders to identify and protect archaeological resources from development.

Shorelines

CE 3.1 Provide protections for shorelines of the state, as designated by the City's Shoreline Master Program (SMP).

CE 3.1.1 Review the SMP at least every ten years to ensure protection of the ecological functions and values of shorelines from cumulative adverse environmental impacts, and to ensure compliance with the requirements of the Growth Management Act.

CE 3.1.1 The SMP update was adopted by City Council Ordinance No. 1502 on January 27, 2011 and amended by Ordinance No. 1720 on July 11, 2019 and is codified in Title 16 Environment of the Des Moines Municipal Code.

CE 3.1.2 Maintain and monitor the SMP to control and regulate development in the shoreline areas.

CE 3.12 Provide protections for environmentally critical areas within shorelines, as designated by the SMP. Review and revise the City's Shoreline Management Program, at least every eight years to ensure protection of the ecological functions

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~~and values of shorelines from cumulative adverse environmental impacts, and to ensure compliance with the requirements of the Growth Management Act.~~

CE 3.2.1 Update the environmentally critical areas sections within the SMP including but not limited to Section 6.4 to be consistent with the City's Critical Areas Ordinance and best available science (BAS).

Water Management

CE 4.1 Analyze the chain of environmental impacts from public and private development proposals in context of the whole watershed. Approve, condition, restrict, or deny development proposals based upon accurate and well-documented environmental information.

CE 4.1.1 Implement the surface water management program to:

1. Enhance water quality and control flooding;
2. Effectively use and maintain existing drainage facilities that provide fish and wildlife habitat;
3. Satisfy all regulatory requirements and compliance schedules; and
4. Identify and fund capital improvements.

CE 4.1.2 Require that development proposals maintain surface water runoff rate, volume, and quality at pre-development levels.

CE 4.1.3 Protect and improve surface and ground water quality by requiring development proposals to implement best management practices and other available technology for controlling point and non-point sources of pollution.

CE 4.1.4 Promote ground water infiltration and minimize surface water runoff by requiring development proposals to mitigate impervious surfaces.

CE 4.1.5 Grading and construction activities shall implement erosion control Best Management Practices and other development controls as necessary to reduce sediment and pollution discharge from construction sites to minimal levels.

CE 4.1.6 Work with the Washington State Department of Ecology to implement the programs of the Puget Sound Water Quality Management Plan.

CE 4.1.7 Study and consider incentives for residential and commercial property owners to maintain and enhance water quality.

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CE 4.1.8 Implement the goals and regulations of the Federal Clean Water Act to maintain and ensure the chemical, physical, and biological integrity of the City's water.

CE 4.1.9 Encourage Low-Impact Development (LID) by utilizing natural features when feasible, to preserve the quality and quantity of available water.

CF 4.1.10 Encourage the use of drought-tolerant landscaping.

CE 4.24.5 Protect, improve, and sustain ground water quality and quantity through best management practices, and sound innovative environmental management.

CE 4.2.14.5.1 Protect the quality and quantity of groundwater by:

1. Assisting Assist with the implementation of the South King County Groundwater Management Plan (as amended).
2. ImplementingImplement, as appropriate, Wellhead Protection Programs in conjunction with adjacent jurisdictions and ground water purveyors.
3. Requiring Require use of Best Management Practices for new development recommended by the South King County Groundwater Management Plan (as amended).
4. Refining Refine land use and critical areas regulations, as appropriate, to protect critical aquifer recharge areas.
5. Identifying Identify innovative stormwater techniques that protect groundwater from contamination and pollution.

CE 4.34.4 Reduce flooding, erosion, and sedimentation; prevent and mitigate habitat loss; enhance ground water recharge; and prevent water quality degradation.

CE 4.3.14.4.1 The surface waters of the City of Des Moines should be managed through plans, programs and regulations (and as amended) developed by the City of Des Moines in cooperation with affected jurisdictions.

CE 4.3.2 Take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains. This can be obtained by reviewing and revising the City's Critical Areas Ordinance and Flood Hazard Areas Code in intervals as required by state statute to ensure protection of the ecological functions and values of the City's flood hazard areas from cumulative adverse environmental impacts, and to ensure compliance with the requirements of the Growth Management Act, Washington State Department of Ecology, and Federal Emergency Management Agency (FEMA).

CE 4.3.3 Continue to monitor and modify flood hazard mapping databases based on most current available information.

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CE 4.4 Regulate significant land clearing, grading, and filling to minimize the area, time, and slope length of exposed soils, and to reduce on-site erosion and off-site sediment transport.

CE 4.4.1 Limit significant clearing, grading, or filling operations prior to drainage and erosion/sedimentation plan approval and implementation.

CE 4.5 Undertake all necessary actions to protect the quality of surface water bodies located in the city.

CE 4.5.1 ~~To~~Ensure the quality of surface water and protect the health and welfare of citizens by:

1. ~~Establish~~Establishing a program to monitor surface water quality within its boundaries and ~~encourage supporting~~ neighboring jurisdictions to implement similar monitoring programs.
2. ~~Develop~~Developing plans, programs and regulations, in cooperation with other jurisdictions, to manage the surface waters of the City.
3. ~~Work~~Working cooperatively with tribal jurisdictions to establish, monitor, and enforce consistent standards for managing streams and wetlands throughout drainage basins, as required by law. other jurisdictions
- 3.4. ~~Working tribes, and stakeholders~~with other jurisdictions, tribes, and stakeholders to develop a watershed approach to surface water management that includes implementation of Best Management Practices and public education initiatives and coordinated, knowledge-based management decisions.
- 4.5. ~~Establish~~Establishing and/or ~~maintain~~maintaining enforcement mechanisms that may be used to prevent or stop contamination to surface water quality.

CE 4.6 Undertake actions to protect and maintain tree canopy to support stormwater management and water quality improvements per adopted policies

CE 4.6.1 Study and propose regulations to increase tree replacements policies on privately owned land or in lieu fee.

CE 4.6.2 Seek grant opportunities to acquire additional land that meets the need for expanding or protecting mature tree canopy.

CE 4.6.3 Develop a program for planting and long term maintenance plan to support viability of newly planted trees and seek grant funding to support costs.

CE 4.6.4 Establish a public outreach program to help community members become aware of the importance of tree canopy and water quality and any associated requirements.

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Fish and Wildlife

CE 5.1 Strive to maintain the existing diversity of species and habitat in the City and maintain a quality environment that includes fish and wildlife habitats that support the greatest diversity of native species.

CE 5.1.1 Continue to designate, map, and protect habitat networks throughout the City of Des Moines from significant adverse environmental impacts.

CE 5.2 Work with adjacent jurisdictions and state, federal, and tribal governments during land use plan development review to identify and protect habitat networks at jurisdictional boundaries.

CE 5.2.1 Protect and preserve habitat for species that have been identified as endangered, threatened, or sensitive by the state or federal government, or as ~~priority species or priority habitats by the County~~ priority habitat or species designated by the Washington Department of Fish and Wildlife's Priority Habitats and Species program.

CE 5.2.2 Conservation or protection measures necessary to preserve or enhance anadromous fisheries include measures that protect habitat important for all life stages of anadromous fish, including, but not limited to, spawning and incubation, juvenile rearing and adult residence, juvenile migration downstream to the sea, and adult migration upstream to spawning areas. Special consideration should be given to habitat protection measures based on the best available science relevant to stream flows, water quality and temperature, spawning substrates, instream structural diversity, migratory access, estuary and nearshore marine habitat quality, and the maintenance of salmon prey species. Conservation or protection measures can include the adoption of interim actions and long-term strategies to protect and enhance fisheries resources.

CE 5.2.3 Encourage the integration of native plant communities and wildlife habitats with other land uses where possible. Encourage or require that development protect wildlife habitat through site design and landscaping.

CE 5.2.4 Provide technical assistance, education, and information to citizens and groups wishing to install wildlife enhancement projects. Encourage public demonstration projects that show the range of possibilities for integration of wildlife into a variety of land uses. Consider demonstration projects done jointly by the City and a private landowner or organization.

CE 5.2.5 Be a good steward of public lands and integrate fish and wildlife habitat into capital improvement projects when practicable.

CE 5.2.6 Preserve native vegetation in parks and other publicly owned lands in the design and construction of new public facilities.

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CE 5.2.7 Minimize habitat fragmentation by linking wildlife habitats, parks, and open spaces via corridors. Connect wildlife habitat corridors with each other within the City and the region to achieve a continuous network for the benefit of wildlife movement and recreational opportunities.

CE 5.3

Protect salmonid habitat by ensuring that land use and facility plans (transportation, water, sewer, power, gas) include riparian habitat conservation measures. Ensure that development within basins that contain fish enhancement facilities consider impacts to those facilities.

CE 5.3.1 Designate and protect fish and wildlife habitat conservation areas including:

1. Priority species of local importance and their habitat as listed by the most current King County Comprehensive Plan and/or the Washington Department of Fish and Wildlife;
2. Commercial and recreational shellfish areas;
3. Kelp and eel grass beds;
4. Herring and smelt spawning areas; and
5. Wildlife habitat networks designated by the City of Des Moines.

CE 5.3.2 The City of Des Moines shall evaluate programs and regulations to determine their effectiveness in contributing to Endangered Species Act listed species conservation and recovery, and shall update and enhance programs and plans where appropriate including evaluation of the Zoning Code, the Critical Areas Ordinance, the Shoreline Master Program, the clearing and grading regulations, the landscaping regulations, best management practices for vegetation management, and use of insecticides, herbicides and fungicides. The City of Des Moines shall amend these regulations, plans and best management practices to enhance their effectiveness in protecting and restoring salmonid habitat.

CE 5.3.3 The City of Des Moines shall continue its collaboration efforts through projects such as the Water Resource Inventory Area (WRIA) Salmon Habitat Plan, Poverty Ball Bay Shellfish Protection District, and the Des Moines Creek Basin Committee and 2021 update in an effort to restore the Chinook Salmon habitat.

Solid and Hazardous Waste Management

CE 6.1

Manage solid and hazardous wastes in a manner that results in waste reduction, prevents land, air, and water pollution, and conserves natural resources.

CE 6.1.1 Prepare, implement, and monitor a waste reduction and recycling plan consistent with State of Washington law and the King County Comprehensive Solid Waste Management Plan.

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CE 6.1.2 Prepare, implement, and monitor a hazardous waste management plan consistent with State of Washington law and the Local Hazardous Waste Management Plan for Seattle-King County.

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Energy

CE 7.1 Regulate land uses to conserve all forms of energy.

CE 7.1.1 Establish construction and site planning standards that result in energy conservation, or utilize alternative energy sources.

CE 7.1.2 Seek to stimulate a land use pattern that encourages an efficient transportation system.

CE 7.1.3 Implement measures to increase accessibility, encourage the use of, and improve bicycle and pedestrian circulation systems, helping to achieve a reduction in per capita vehicle miles traveled.

~~CE 7.1.4 Support regional efforts to develop electric vehicle infrastructure, such as charging stations.~~

~~CE 7.1.4 In accordance with RCW 36.70A.210, ensure that the City's comprehensive plan and development regulations plan for, adapt to, and mitigate the ongoing and future effects of a changing climate.~~

~~CE 7.1.5 Explore various funding opportunities in order to continue developing a Climate Element by 2029 in accordance with RCW 36.70A.210.~~

Air Quality and Noise

CE 8.1 Protect clean air for present and future generations.

CE 8.1.1 Support federal, state, and regional clean air policies in cooperation with the Puget Sound Clean Air Agency and the Puget Sound Regional Council.

CE 8.1.2 Strive for high air quality through coordinated land use and transportation planning and management.

CE 8.1.3 Support regional efforts to develop electric vehicle infrastructure, such as charging stations.

CE 8.1.4 Implement measures to reduce the amount of air-borne particulates such as:

1. Continuing street sweeping.
2. Encouraging dust abatement at construction sites.
3. Promoting low-emission construction practices.
4. Transitioning to an electric or a low-emission municipal vehicle fleet.

CE 8.1.5 Require that trees be an integral part of City street development standards.

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CE 8.1.6 Require all developments to include landscaping improvements using trees, shrubs, and ground covers. Undertake measures to ensure the survival and good health of trees and plants or the replanting and maintenance of trees and plants that are unable to be restored or retained.

CE 8.1.7 Implement and maintain processes that encourage the preservation and maintenance of trees through programs such as Off-Site Mitigation and Fees Paid In Lieu and continue developing strategies to increase funding to programs such as the Urban Forestry Fund.

CE 8.1.8 Study and consider incentives for residential and commercial property owners to maintain and enhance air quality.

CE 8.1.9 Identify environmental impacts disproportionately affecting people of color and low-income populations in the community and develop strategies to mitigate these outcomes

CE 8.1.10 Continue to participate in the SEA Stakeholder Advisory Round Table (StART), or similar, meetings and provide feedback to the Port of Seattle on airport related issues such as air quality, small particulates, aircraft noise and disproportionate impacts on racial and ethnic minority groups and low-income households.

CE 8.1.11 Support Long-term monitoring of airport and traffic related air pollutants in proximity to Sea-Tac Airport within the City of Des Moines, through the support for the establishment of a fixed site monitoring location.

Education and Outreach

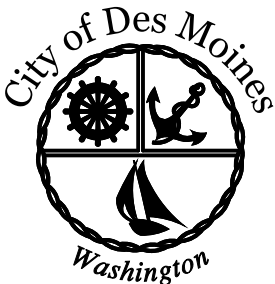
CE 9.1 Encourage and support education and public involvement programs aimed at protecting environmental quality. These programs should: (1) inform, educate, and involve individuals, groups, businesses, industry, and government; (2) increase understanding; and (3) encourage commitment.

CD 9.1.1 Promote public involvement in restoring, protecting, and enhancing natural resources through such programs such as the Green Des Moines Partnership Urban Forest Enhancement Plan, Adopt-A-Stream and the, Habitat at Home, Adopt-a-Drain, and Storm Drain Marking Program~~Backyard Wildlife Sanctuary Program~~, by working with local educational institutions, and by integrally involving citizens in developing, implementing, and monitoring environmental programs.

CE 9.1.2 Work with citizens, ~~land owners~~landowners, businesses, tribes, neighboring cities, King County, special purpose districts, and private and public agencies to protect and improve environmental quality, seeking shared responsibility and uniform environmental management.

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CE 9.1.3 Manage surface water using-by developing a watershed approach, with responsibility shared among the City of Des Moines and affected jurisdictions. Emphasize educational programs and implementation of Best Management Practices to reduce pollution entering surface waters.



City of Des Moines
Critical Area Map Series
Slope & Topography

Hillsides / Slope
0 - 15%
15 - 25%
25 - 45%
45% or Greater

Streams

Des Moines City Limits

Jurisdictions

- Normandy Park
- Burien
- SeaTac
- Kent
- Federal Way
- Unincorporated King County

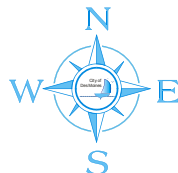
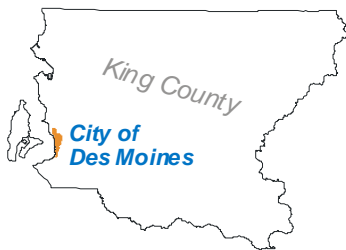
CITY OF DES MOINES CRITICAL AREAS MAP SERIES
This map series is intended for general planning purposes related to the Greater Des Moines Comprehensive Plan. The Growth Management Act (GMA) requires that local jurisdictions designate and protect critical areas (as described in RCW 36.70A.505, 36.70A.172(1) and Chapter 365-190 and 365-195 WAC). GMA also requires jurisdictions to include the best available science when designating critical areas. These maps include the best available science to locate, illustrate and categorize critical areas. However due to scale, the maps are not precise delineations of every critical area and are not a substitute for site-specific analysis. These maps are a composition of various sources of information in both paper and electronic format. They were created from available public records and existing map sources. Where available, scientific delineations and field surveys were digitized at the original scale and merged into the GIS database.

PRIMARY MAP SOURCES AND ORIGINAL SCALES:
PAPER MAP SOURCES

NRCS (SCS) 1972 Soil Survey 1:24,000 (1"=2,000')
Digitized Assessor's tax maps 1:1200 (1"=100')
1987 & 1990 King County Sensitive Areas Map Folio 1:24,000 (1"=2,000')

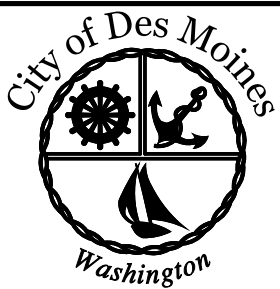
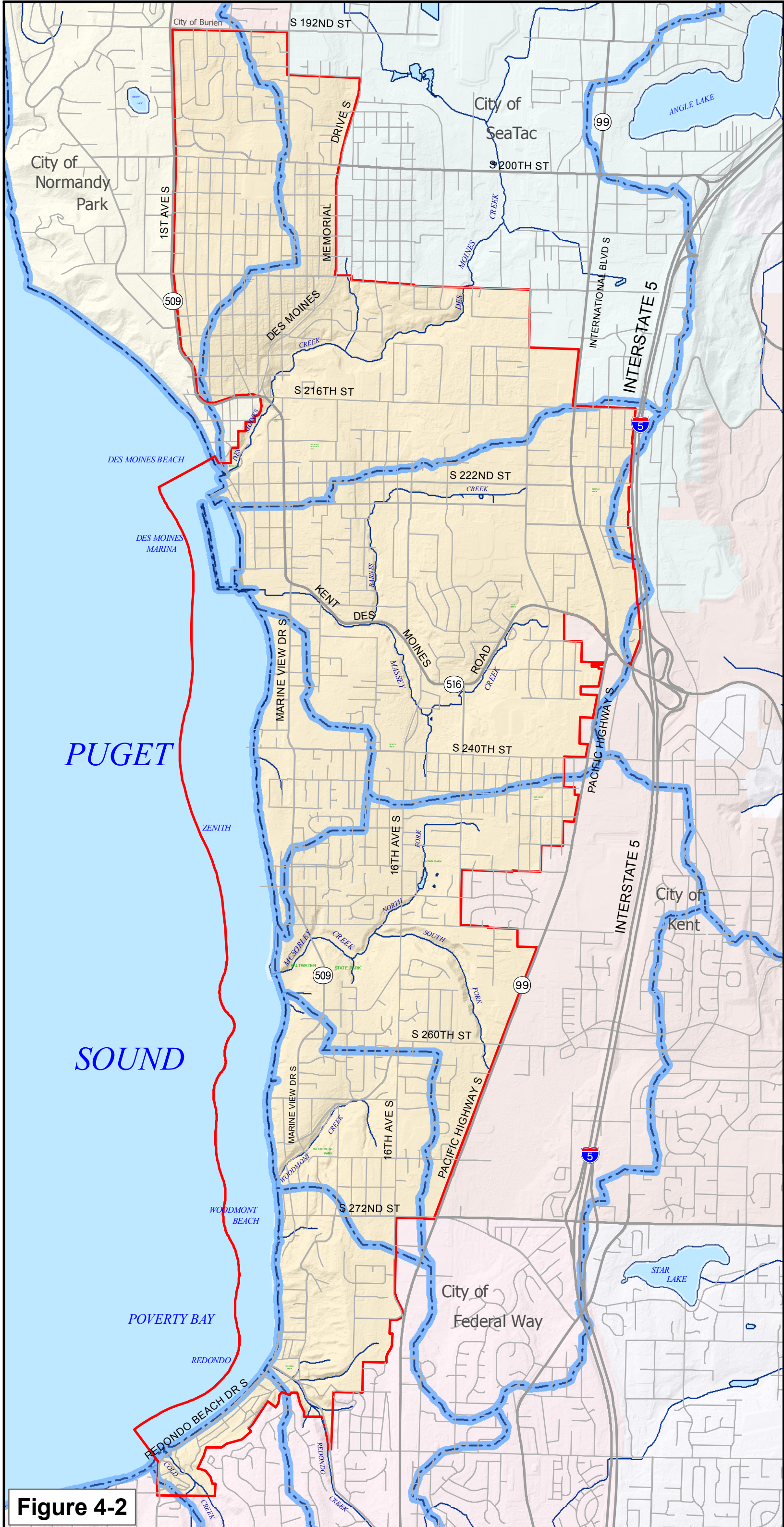
ELECTRONIC GIS LAYERS
Slope derived from King Co 6 ft LIDAR Digital Ground Model (No Scale)
Triathlon, Inc. Orthophotography May 2002 6" resolution (1"=600')
Triathlon, Inc. Topography - 2 foot contour interval May 2002 (1"=600')

Des Moines Community Development Department
December 2003



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Figure 4-1



City of Des Moines
Critical Area Map Series
Drainage Basins

Generalized Drainage Basins

- Surface Water
- Streams

Jurisdictions

- Normandy Park
- Burien
- SeaTac
- Kent
- Federal Way
- Unincorporated King County

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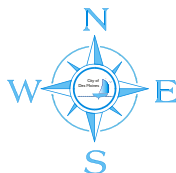
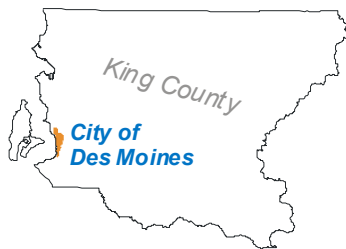
PRIMARY MAP SOURCES AND ORIGINAL SCALES:

PAPER MAP SOURCES
WSDNR Hydrography 1:24,000 (1"=2,000')

City of Des Moines Surface Water Management maps 1:1200

ELECTRONIC GIS LAYERS
Slope derived from USGS 10m Digital Elevation Models (1:24,000)

Triathlon, Inc. Topography - 2 foot contour interval May 2002 (1"=600')

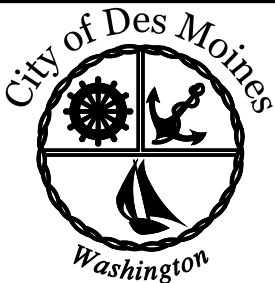
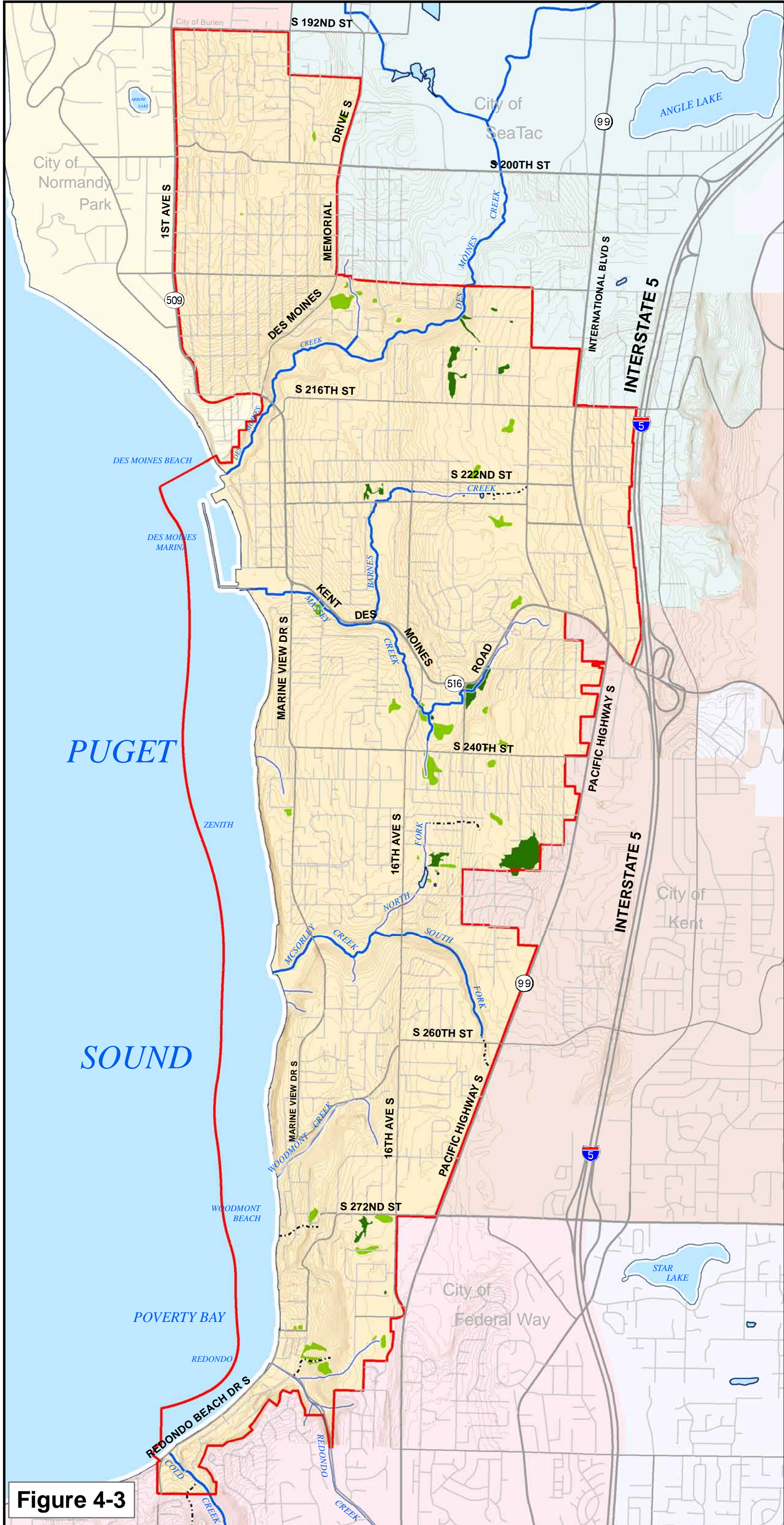


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File: DrainageBasins.mxd - April 2007
Product of City of Des Moines GIS

Figure 4-2



City of Des Moines
Critical Area Map Series

Wetlands & Surface Water

10 ft Interval Contours

Des Moines City Limits

Streams

- F - Fish habitat
- N - Non-Fish habitat
- S - Shorelines
- U - Unknown
- X - Mapped feature - no water type

Wetlands Status

- Delineation
- Potential Wetland / Not Field Surveyed

Jurisdictions

- Normandy Park
- Burien
- SeaTac
- Kent
- Federal Way
- Unincorporated King County

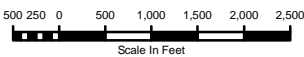
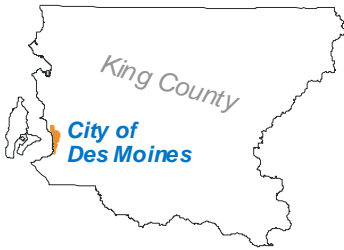
**CITY OF DES MOINES
CRITICAL AREAS MAP SERIES**

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Please see Wetland Update Log.xls for updates.

PRIMARY MAP SOURCES AND ORIGINAL SCALES:

- PAPER MAP SOURCES**
- NRCS (SCS) 1973 Soil Survey 1:24,000 (1"=2,000')
- National Wetland Inventory 1:24,000 (1"=2,000')
- King County Area Hydric Soils List
- WSDNR Hydrography 1:24,000 (1"=2,000')
- Digitized Assessor's tax maps 1:1200 (1"=100')
- 1987 & 1990 King County Sensitive Areas Map Folio 1:24,000 (1"=2,000')
- City of Des Moines Surface Water Management maps 1:1200
- ELECTRONIC GIS LAYERS**
- King County GIS Data CD #3 September 2005 (No Scale)
- City of Kent GIS Wetland Data January 2003 (No Scale)
- Washington State DOT Des Moines Creek GIS Data June 2001 (No Scale)
- Slope derived from USGS 10m Digital Elevation Models (No Scale)
- Triathlon, Inc. Orthophotography May 2002 6" resolution (1"=600')
- Triathlon, Inc. Topography - 2 foot contour interval May 2002 (1"=600')

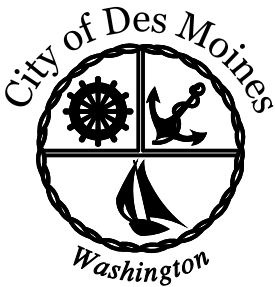
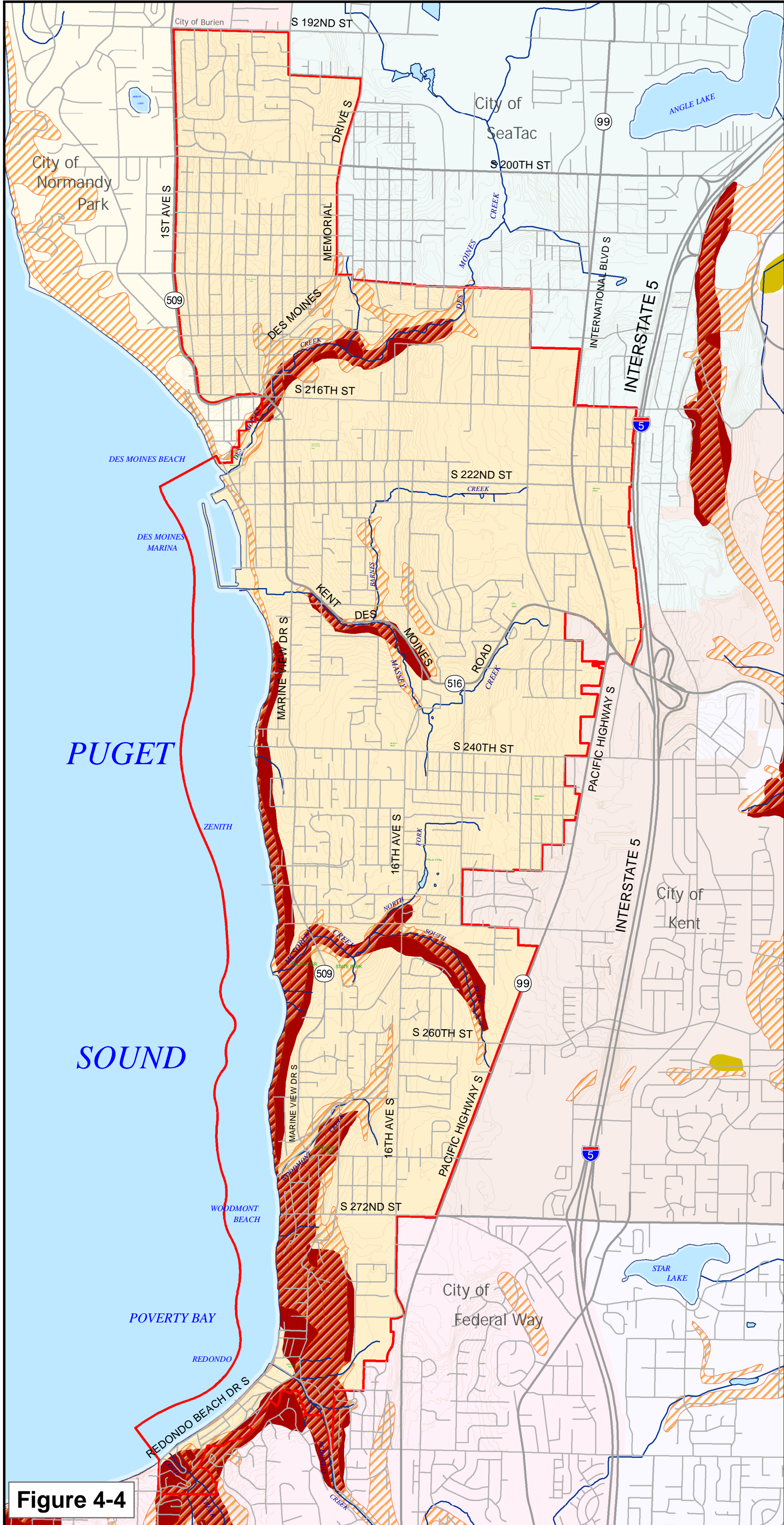


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File: Wetlands.mxd
Map Generated: Oct 12, 2010
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Figure 4-3



City of Des Moines

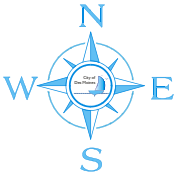
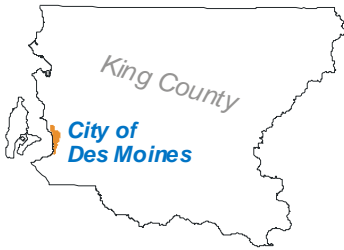
Critical Area Map Series

Geologically Hazardous Areas

- Seismic Hazards**
Yellow
- Erosion Hazards**
Orange diagonal lines
- Landslide Hazards**
Red diagonal lines
- Streams**
Blue line
- 10 ft Interval Contours**
Brown line

**CITY OF DES MOINES
CRITICAL AREAS MAP SERIES**
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WSDNR Hydrography 1:24,000 (1"=2,000')
1987 & 1990 King County Sensitive Areas Map Folio 1:24,000 (1"=2,000')
City of Des Moines Surface Water Management Maps 1:1200 (1"=100')
WSDOE Coastal Zone Atlas of Washington (1:24,000) (1"=2,000')
WSDNR Liquefaction Susceptibility of the Des Moines & Poverty Bay Quad 1:24,000
ELECTRONIC GIS LAYERS
King County GIS Data CD #3 September 2002 (No Scale)
Washington State DOT Des Moines Creek GIS Data June 2001 (No Scale)
Slope derived from USGS 10m Digital Elevation Models (No Scale)
Triathlon, Inc. Orthophotography May 2002 6" resolution (1"=600')
Triathlon, Inc. Topography - 2 foot contour interval May 2002 (1"=600')

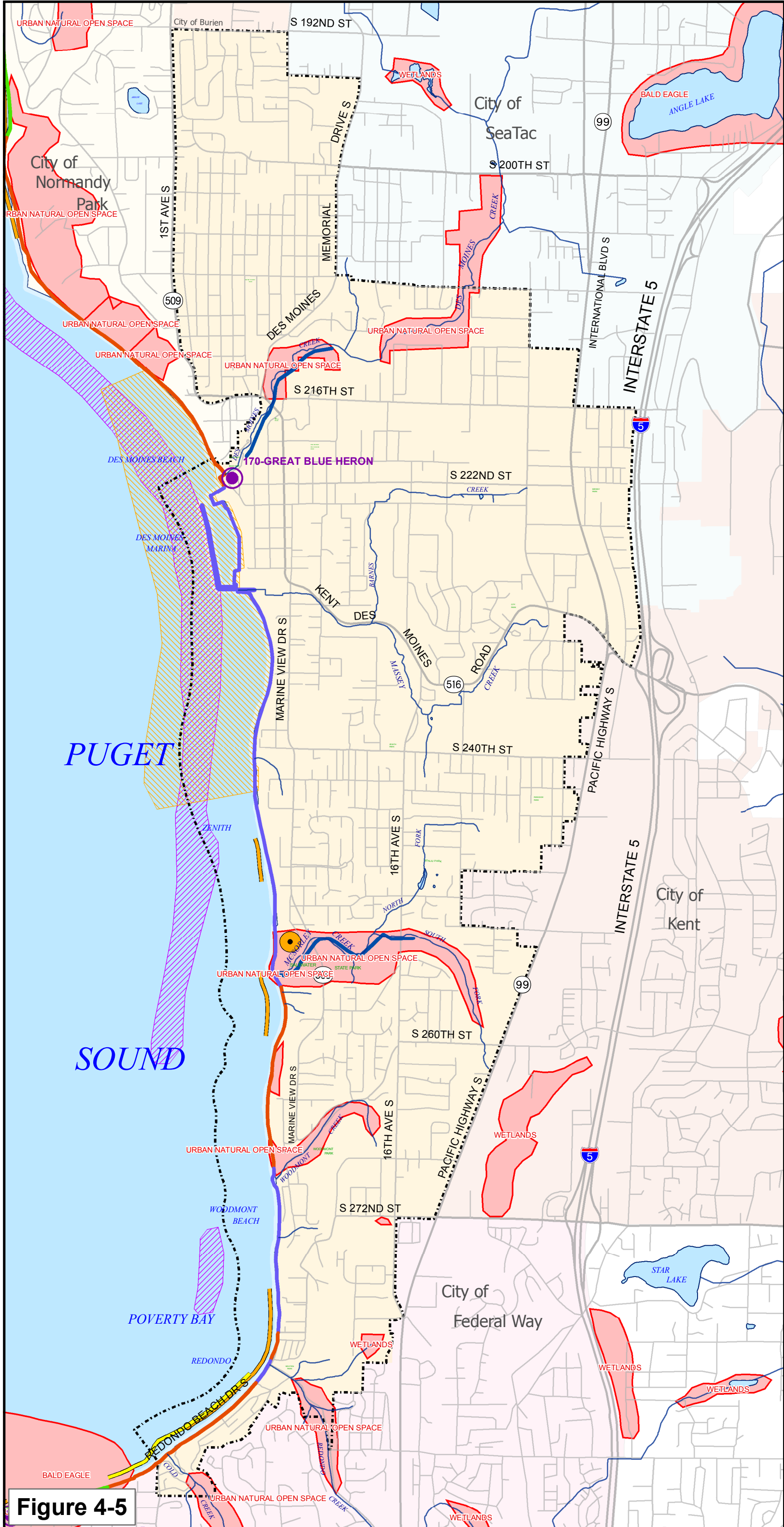


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File: GeoHazards - April 2007
Product of City of Des Moines GIS

Figure 4-4



City of Des Moines

Critical Area Map Series

Fish & Wildlife Conservation Areas

Wildlife Heritage Pts (WDFW)



Seabird Colony (WDFW)



Eelgrass (WDNR)

- ABSENT
- CONTINUOUS
- PATCHY

PHS Fish Presence

- PHS Fish Presence

Sand Lance (WDFW)



Surf Smelt (WDFW)



Hard Shell Clam (WDFW)



Geoduck (WDFW)



PHS Polygons



Des Moines City Limits

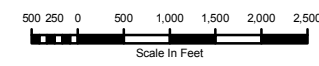
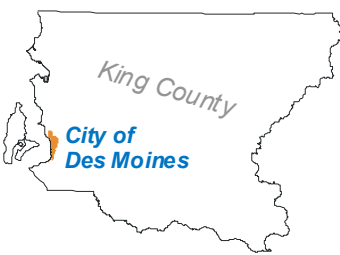


Streams



Jurisdictions

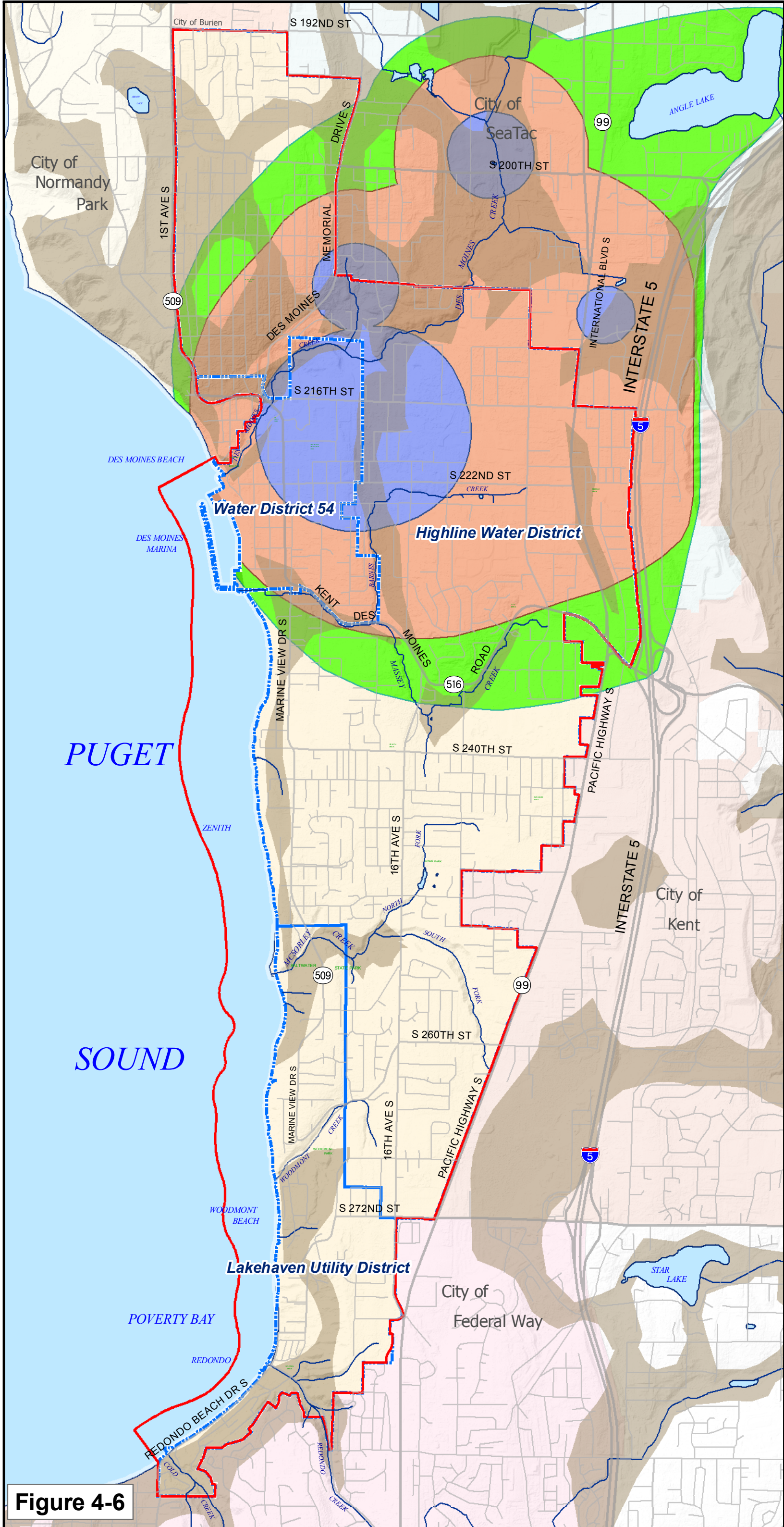
- Normandy Park
- Burien
- SeaTac
- Kent
- Federal Way
- Unincorporated King County



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Figure 4-5



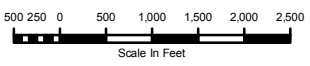
City of Des Moines
Critical Area Map Series
Critical Aquifer Recharge Areas

- Streams**
- Des Moines City Limits**
- Water District Boundary**
- Areas of High Susceptibility (King Co.)**
- Wellhead Protection Zones**
- Class 1 - One Year
 - Class 1 - 5 Year
 - Class 2 - 10 Year
- Jurisdictions**
- Normandy Park
 - Burien
 - SeaTac
 - Kent
 - Federal Way
 - Unincorporated King County

**CITY OF DES MOINES
CRITICAL AREAS MAP SERIES**
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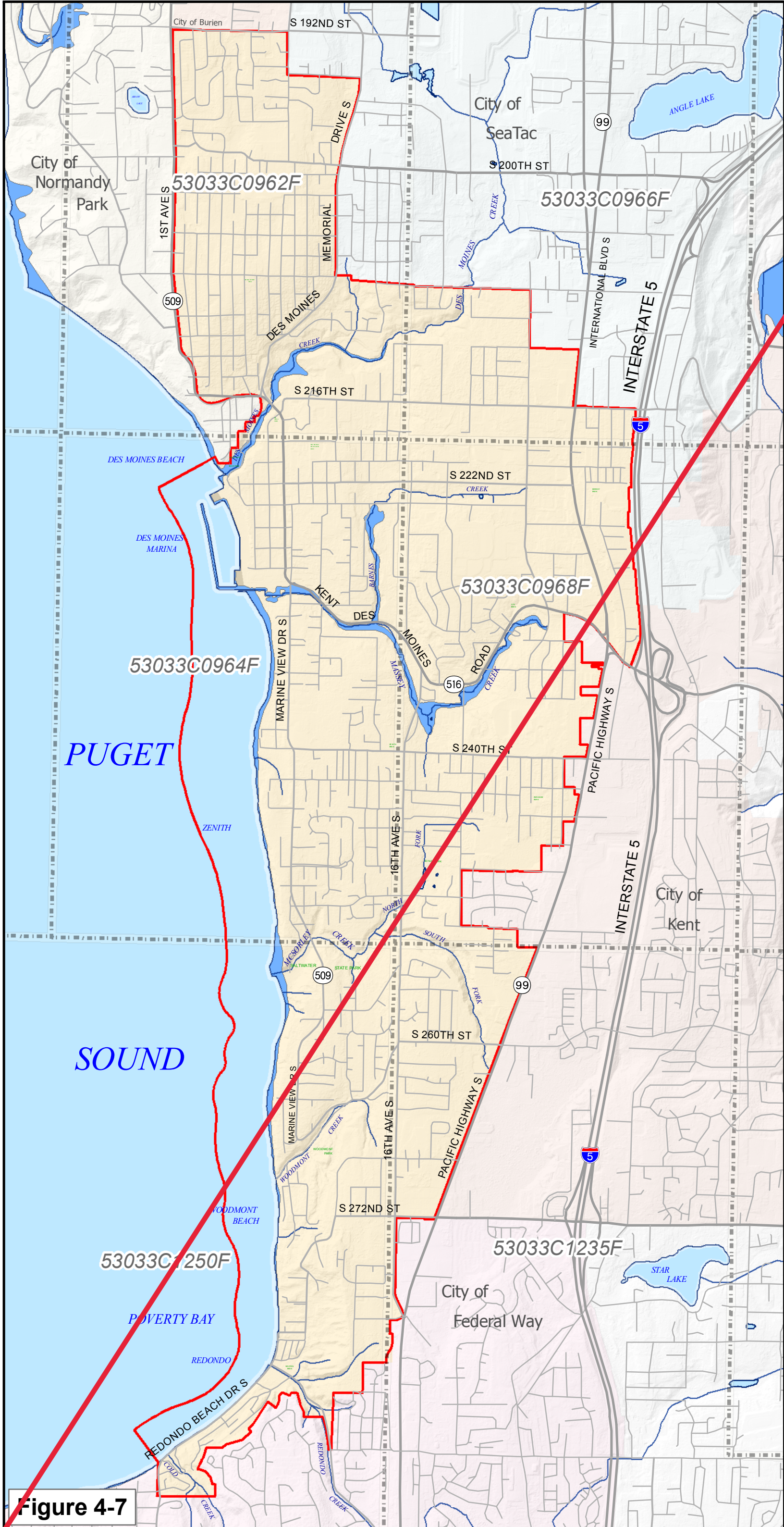
PRIMARY MAP SOURCES AND ORIGINAL SCALES:
PAPER MAP SOURCES
King Co. Water District 54 Wellhead Protection Plan
Highline Water District Wellhead Protection Plan
Digitized Assessor's tax maps 1:1200 (1"=100')
1987 & 1990 King County Sensitive Areas Map Folio 1:24,000 (1"=2,000')

ELECTRONIC GIS LAYERS
King County GIS Data CD #3, September 2002
King County GIS LiDAR Data, September 2002



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Figure 4-6



City of Des Moines

Critical Area Map Series

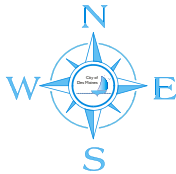
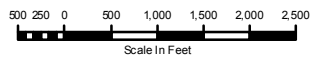
Frequently Flooded Areas

- Frequently Flooded Areas**
- A
 - AE
 - VE
- FIRM Map Boundary**
- ■ ■
- Streams**
-
- Des Moines City Limits**
-

CITY OF DES MOINES
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PRIMARY MAP SOURCES AND ORIGINAL SCALES:

- PAPER MAP SOURCES**
WSDNR Hydrography 1:24,000 (1"=2,000')
FEMA Flood Insurance Rate Maps - Panels 962, 964 & 968 1:24,000 (1"=2,000')
Digitized Assessor's tax maps 1:1200 (1"=100')
1987 & 1990 King County Sensitive Areas Map Folio 1:24,000 (1"=2,000')
City of Des Moines Surface Water Management maps 1:1200
ELECTRONIC GIS LAYERS
FEMA National Flood Insurance Program Q3 Flood Data (1:24,000)
King County GIS Data CD #3 September 2002 (No Scale)
Washington State DOT Des Moines Creek GIS Data June 2001 (No Scale)
Slope derived from USGS 10m Digital Elevation Models (No Scale)
Triathlon, Inc. Orthophotography May 2002 6" resolution (1"=600')
Triathlon, Inc. Topography - 2 foot contour interval May 2002 (1"=600')



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File: FreqFloodedAreas.mxd - April 2007
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Figure 4-7

