Chapter Four
Environment

With Chinook salmon now listed as a threatened species, and other valued species dangerously close to joining the list, protecting both our rural and urban environments remains a critical concern.

King County's regulations for protecting the environment are some of the most stringent in the country. In a region as rainy as the Pacific Northwest, maintaining healthy wetland systems, controlling stormwater runoff and preventing development on sloping hillsides are all vital in preventing erosion and flooding. Without proper regulatory control, damage to private property, as well as salmon streams, is unavoidable and costly.

I. Natural Environment

A. Protection and Regulation

Protecting and restoring air quality, water resources, soils, and plant, fish and animal habitats are among King County's primary goals. This chapter establishes policies to protect the environment and enhance the region's high quality of life. Most of this chapter's policies provide a basis for either new non-regulatory approaches or for existing regulations. Some new regulations are necessary to implement the policies. However, new regulations such as wetland mitigation banking offer flexibility compared with existing regulations.

The Growth Management Act requires that critical areas be designated and protected. Critical areas include 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. This chapter designates aquifer recharge areas and fish and wildlife habitat conservation areas under the Growth Management Act. Wetlands, frequently flooded areas, and geologically hazardous areas are designated in the King County Sensitive Areas Ordinance, Ordinance 9614, as amended.

One of the most significant environmental issues facing King County is the recent listing of salmonid species under the Endangered Species Act. Wild Pacific Salmon have great cultural, economic, recreational and symbolic importance to the Puget Sound region. It is King County's goal to ensure long-term protection of our salmon resources to harvestable levels for today and tomorrow, with the least economic impact possible. Successful restoration and maintenance of healthy salmon populations will require time, money and effort, and collaboration with federal, state, tribal and local governments, as well as businesses, environmental groups, and citizens. To meet this goal, King County and the region will need to consider salmon when making decisions about land use and development, providing facilities and services, maintaining roads, parks, and flood control facilities, and building new capital improvement projects.

Relative to land use, three types of environmental situations exist in King County. In highly developed urban areas, the quality and functions of most critical areas have been significantly affected by past development. Additional impacts in these affected areas will likely result from higher density development, but these impacts may be preferable than similar impacts to currently pristine areas, which can result in a net loss of the region's natural resources. Salmon-bearing streams and rivers do pass through many urbanized areas in King County. The challenge of this plan is to balance the need to meet urban density goals and prevent urban sprawl, while also ensuring such development occurs in accordance with the provisions and requirements of the Endangered Species Act. To meet this challenge, a variety of regulatory and non-regulatory tools and programs will be needed.

In other urban areas with low levels of development, significant critical areas are usually more intact than in highly developed urban areas. Onsite mitigation of new development, if designed well and monitored, may achieve resource protection. Achieving development goals must be balanced with protecting critical area functions and tailoring individual solutions by following the guidance of Comprehensive Plan policies that recognize both critical area protection and the need to reduce urban sprawl.

The Rural Area and Natural Resource Lands contain the bulk of King County's remaining wildlife and fisheries values. Protection of resources through land use planning and impact mitigation will be most successful in these areas, and it can occur with the least disruption to intended land uses.

While critical areas within the Urban Growth Area will receive adequate protection, the emphasis is to protect and enhance critical areas in the Rural Area and Natural Resource Lands and to avoid impacts to specific animal species, such as salmon and bald eagles, that use or pass through the Urban Growth Area. These policies provide for a watershed-based approach to planning. This approach acknowledges that different areas of King County have different resource values and face different levels of development pressure, therefore different methods of protecting critical areas need to be developed to balance the protection of the environment with the need to reduce urban sprawl and preserve our quality of life.

E-101 ((~~NE-101~~)) **In addition to its regulatory authority, King County should use incentives to protect and restore the natural environment whenever practicable. Incentives should be monitored to determine their effectiveness.**

E-102 ((~~NE-102~~)) **King County should take a regional role in environmental stewardship through((:)) direct education, coordinating of educational efforts and establishing partnerships with other entities that share similar environmental concerns or stewardship opportunities.**

King County needs to coordinate many programs with other agencies. Coordination with the Washington State Department of Ecology and affected jurisdictions is necessary to comply with mandates of the Clean Water Act that address point and non-point source pollution. Further coordination with air quality agencies, such as the Puget Sound Air Pollution Control Agency and Puget Sound Regional Council, is needed to exchange information and develop consistent programs. Coordination with water service providers who use ground water sources is necessary to protect the region's ground water quantity and quality.

E-103 **King County should coordinate with local jurisdictions, federal and state agencies, federally-recognized tribes, citizen interest groups, special districts, and citizens to develop Water Resource Inventory Area plans for all areas of King County.**

E-104 ((~~NE-103~~)) **Development of environmental regulations and restoration projects ((~~King County~~)) should be coordinated with local jurisdictions, federal and state agencies, federally-recognized tribes, special interest groups and citizens when protecting and restoring the natural environment consistent with Urban Growth Area, Rural Area and Natural Resource Land goals.**

King County will use existing and updated subarea and functional plans and Water Resource Inventory Area plans to provide guidance to programs, regulations and incentives to protect and restore environmental quality.

E-105 ((~~NE-104~~)) **((~~King County should protect e~~)) Environmental quality and important ecological functions shall be protected and ((~~minimize~~)) hazards to health and property shall be minimized through development reviews and implementation of land use plans, Water Resource Inventory Area plans, surface water management plans and programs, and park master plans. These plans shall also encourage restoration of critical areas as defined in the Growth Management Act, and include an adaptive management approach.**

E-106 ((~~NE-105~~)) Acreage that is not developable because of environmental constraints and values shall be assessed at a lower taxable value.

E-107 ((~~NE-106~~)) ((~~King County~~)) The protection of lands where development would pose hazards to health, property, important ecological functions or environmental quality shall be achieved through ((~~use~~)) acquisition, enhancement, ((~~and~~)) incentive programs and appropriate regulations ((~~to encourage the protection of lands where development would pose hazards to health, property, important ecological functions or environmental quality~~)). The following natural landscape features are particularly susceptible and should be protected:

a. Floodways of 100 year floodplains;
b. Slopes with a grade of 40 percent or more or landslide hazards that cannot be mitigated;
c. Wetlands and their protective buffers;
d. Streams and their protective buffers;
e. Channel migration hazard areas;
f. Designated wildlife habitat networks;
g. Critical Aquifer Recharge Areas ((~~in designated sole source aquifers~~));
h. Marine beaches, wetlands, intertidal and subtidal habitat and riparian zones including bluffs;
i. Regionally Significant Resource Areas and Locally Significant Resource Areas; and
j. Fish and Wildlife Habitat Conservation Areas, and other critical habitat areas identified for protection through Water Resource Inventory Area plans.

E-108 ((~~NE-107~~)) Regulations to prevent unmitigated significant adverse impacts will be based on the importance and sensitivity of the resource. The presence of a species listed as endangered or threatened by the federal government may be considered an unusual circumstance and the County may use its authority under the State Environmental Policy Act (SEPA) to mitigate for significant adverse environmental impacts to that habitat that supports those species, pending approval by the National Marine Fisheries Service and/or the United States Fish and Wildlife Service (the "Services") of a Tri-County plan for compliance with a 4(d) rule issued by either of the Services and subsequent adoption of specific regulations by King County. Following approval by the Services and adoption of the specific regulations to protect listed salmonid species, the County shall rely upon the regulations to protect endangered and/or listed species, rather than SEPA.

E-109 ((~~NE-108~~)) King County should promote efficient provision of utilities and public services by exempting minor activities from its critical areas regulations, provided the agency has an approved best management practice plan approved by King County, and the plan ensures that proposed projects that may affect habitat of listed species be carried out in a manner which protects the resource or mitigates adverse impacts.

B. Air Quality

The preservation of clean air is essential to the quality of life enjoyed by residents of King County. Since many of the long-term solutions to air pollution in our region now depend on land use and transportation decisions, King County must assume a more active role in maintaining the region's air quality.

The elderly, those suffering from respiratory illness, and young children are especially prone to the harmful effects of air pollutants. People with chronic respiratory problems, such as asthma, are most sensitive to ozone and particulate pollution. Studies show that ozone also damages forests, as ozone pollutant concentrations tend to increase at mountain elevations.

The federal government measures six "primary pollutants" as representative indicators of air quality to gauge impacts of industrialization and growing automobile traffic. Each of these six pollutants are commonly found in the Puget Sound region:

- PM10/PM2.5 (Particulate Matter)
- Carbon Monoxide (CO)
- Nitrogen Dioxide (NO2)
- Ozone (O3)
- Sulfur Dioxide (SO2)
- Lead

These "primary pollutants' are routinely measured in the Puget Sound airshed by a series of thirty-three stationary monitoring facilities. A violation of a federal air quality standard occurs when an individual monitoring site measures more 'exceedances' than allowed during a specific time frame. Recurring violations of national air quality standards in the future could jeopardize federal funding of road and transit projects in the region, underscoring the importance of the monitoring results and the need to maintain clean air in the region.

In addition to the "primary pollutants, there are other toxic compounds in our air such as arsenic, asbestos, benzene, vinyl chloride, mercury and beryllium resulting from industry and transportation activities.

An airshed can be compared to a watershed -- it is a geographic area where air pollutants from sources "upstream" or within the area flow and are present in the air. The Puget Sound airshed is greatly influenced by four factors: urban development, the Pacific Ocean, the mountains and the weather. Most urban development has taken place at elevations near sea level adjacent to the waters of the Puget Sound. The urban corridor extends from south of Tacoma, northward across the Canadian border to Vancouver B.C. Although it is not uniform in density, most air pollution comes from the cities and the network of highways along this north/south line.

The Puget Sound area meets federal standards for carbon monoxide -- levels have dropped dramatically over the last two decades because of tougher emission standards for cars and trucks, the state motor vehicle inspection program and the use of cleaner motor fuels. The Puget Sound region also meets federal sulfur dioxide, nitrogen dioxide and lead standards.

The Puget Sound area currently complies with the federal ozone standard, though by a slim margin. If a monitoring site registers an exceedence more than three times in a three-year period, the region is considered in violation of the federal standard. None of the Puget Sound ozone monitoring sites has measured more than two exceedences in the last two years. Likewise, data indicates that the region will meet the 24-hour standard for particulates (PM2.5), but is close to exceeding the annual particulate standard. Achieving and preserving air quality will require public education.

E-110 ~~((NE-201))~~ **~~((King County should reduce a))~~ Air pollution associated with land uses should be reduced by:**

a. Promoting the use of clean and efficient burning fuels;

b. Educating citizens about air quality problems; ((~~the health effects of high emissions of particulate matter measuring less than 10 microns (PM 10);~~))

c. Encouraging the planting of trees;

d.((~~c.~~)) Encouraging the proper use of wood stoves and fireplaces; and

e.((~~d.~~)) Providing alternatives to burning yard waste in residential neighborhoods in the Rural Area, such as curbside yard waste collection services and convenient yard waste site collection facilities at a reasonable cost.

E-111 ((~~NE-202~~)) ((~~King County should assess a~~)) Air quality impacts of ((its)) proposed land use actions shall be assessed when developing countywide, subarea, and local plans and transportation strategies.

E-112 ((~~NE-203~~)) King County ((~~should~~)) supports regional efforts to improve indoor air quality.

Panoramic views are treasured as an important part of quality of life in the Northwest. Reduced visibility is caused by weather (clouds, fog, and rain) and air pollution (fine particles and gases). The most important pollution contributor is fine particulate matter (PM2.5) emissions, which are transported aloft and may remain suspended for a week or longer.

E-113 ((~~NE-204~~)) ((~~King County should reduce air pollution e~~)) Emissions from construction and land clearing activities should be minimized.

E-114 ((~~NE-205~~)) King County should participate in, explore and support efforts to reduce or eliminate emissions of harmful pollutants, especially compounds that contribute to global warming, acid rain and ozone depletion in the upper atmosphere. Specific areas to explore could include development of an emissions trading policy, a net environmental benefit policy, radon gas monitoring, policies on asbestos, and construction and land clearing policies which favor chipping debris instead of burning debris.

E-115 ((~~NE-206~~)) King County should coordinate with other agencies and groups to provide information to the public on air quality problems and measures that each person can take to improve air quality.

C. Water Resources

King County's water resources include Puget Sound, rivers, streams, lakes, wetlands, marine nearshore and receiving waters of Puget Sound, and ground water. These resources provide many beneficial functions, including fish and wildlife habitat, flood and erosion control, water supply for agricultural, commercial, domestic and industrial use, energy production, transportation, recreational opportunities and scenic beauty.

In order to preserve and enhance the water resources in King County, those resources must be managed as an integrated system, not as distinct and separate elements. The hydrologic cycle (the occurrence, distribution and circulation of water in the environment) is the common link among the water resources and describes their interdependence.

Our use and modification of water resources and the surrounding terrestrial environment affects how the hydrologic cycle functions and can cause unintended detrimental impacts such as flooding, erosion, degradation of water quality, loss of fish and wildlife habitat, and loss of archeological and traditional cultural

resources that depend upon but do not damage natural resources. In order to minimize adverse impacts on the water resources of King County and ensure our continued ability to receive the benefits they provide, we need to promote responsible land and water resource planning and use.

E-116 ((~~NE-301~~)) **King County shall use incentives, regulations and programs to manage its water resources (Puget Sound, rivers, streams, lakes, freshwater and marine wetlands and ground water) and to protect and enhance their multiple beneficial uses—including fish and wildlife habitat, flood and erosion control, water quality control and sediment transport, water supply, energy production, transportation, recreational opportunities and scenic beauty. Use of water resources for one purpose should, to the fullest extent practicable, preserve opportunities for other uses.**

E-117 ((~~NE-302~~)) **Development ((~~should occur in a manner that~~)) shall support ((s)) continued ecological and hydrologic functioning of water resources ((~~. Development~~)) and should not have a significant adverse impact on water quality or water quantity, or sediment transport and should ((~~. On Vashon Island, development should~~)) maintain base flows, natural water level fluctuations, ground water recharge in Critical Aquifer Recharge Areas and fish and wildlife habitat.**

A watershed is an area that drains to a common outlet or identifiable water body such as Puget Sound, a river, stream, lake or wetland. There are six major watersheds in King County (Cedar River, Green River, Puget Sound, Skykomish River, Snoqualmie River and White River) divided into 72 individual basins that, in turn, contain numerous individual water bodies with small drainages. Surface and ground waters are managed most effectively by considering potential problems and solutions for an entire watershed. Because watersheds frequently extend into several jurisdictions, effective planning and implementation must be coordinated.

E-118 ((~~NE-303~~)) **((~~Future w~~)) Watershed plans ((~~should~~)) shall integrate marine and freshwater surface water, ground water, drinking water and wastewater planning to provide efficient water resource management.**

E-119 **As watershed plans are developed, zoning, regulations and incentive programs may be developed, applied and monitored so that critical habitat in King County watersheds is capable of supporting sustainable and fishable salmonid populations. Watershed-based plans should define how the natural functions of watersheds critical to salmonids are protected so that the quantity and quality of water entering the streams, lakes, wetlands and rivers support salmonid spawning, rearing, resting, and migration.**

E-120 ((~~NE-304~~)) **King County shall protect and should enhance surface waters, including streams, lakes, wetlands and the marine near shore and receiving waters of Puget Sound, on a watershed basis by analyzing water quantity and quality problems and their impacts to beneficial uses, including fish and wildlife habitat and flood and erosion control. Conditions of and impacts to the downstream receiving marine beaches and waters of Puget Sound shall be included in watershed management efforts. King County ((~~should~~)) shall continue to participate in the Central Puget Sound Water Resource Planning effort.**

E-121 ((~~NE-305~~)) **Responsibility for the costs of watershed planning and project implementation including water quality, flood hazard reduction and fisheries habitat protection, should be shared between King County and other jurisdictions within a watershed.**

King County contains a number of wetlands, river and stream reaches that are important to the viability of fish and wildlife populations and are therefore considered biological, social and economic resources. Some resource areas were previously identified through basin plans and other resource inventory efforts, and are categorized as either Regionally Significant Resource Areas (RSRAs) or Locally Significant Resource Areas (LSRAs). RSRAs contribute to the resource base of the entire Puget Sound region by virtue of exceptional species and habitat diversity and abundance when compared to basins of similar size and structure elsewhere in the region. These areas may also support rare, endangered or sensitive species, including threatened salmonids. LSRAs contribute to the aquatic resources within a specific basin, when compared to aquatic and terrestrial systems of similar size and structure elsewhere in the basin. They also provide wetland and stream habitat that is important for wildlife and salmonid diversity and abundance within the basin. As Water Resource Inventory Area plans are prepared in compliance with the Endangered Species Act, additional resource areas will be identified and analyzed to determine appropriate levels of resource protection.

E-122 ((~~NE-306~~)) **As watershed management plans, Water Resource Inventory Area plans, and master drainage plans are ((~~adopted~~)) approved they should apply a tiered system of protection that affords a higher standard of protection for more significant resources. Resource categories should include Regionally Significant Resource Areas (RSRAs), Locally Significant Resource Areas (LSRAs), Fish and Wildlife Habitat Conservation Areas, and remaining resources. Where appropriate, additional designations shall be made as additional information on environmental functions becomes available. ((~~RSRAs and LSRAs shall be legislatively designated.~~))**

E-123 ((~~NE-307~~)) **Regionally Significant Resource Areas (RSRAs) and Locally Significant Resource Areas (LSRAs) shall be mapped, designated by ordinance and protected at appropriate levels as part of early and long-term actions towards salmon conservation and recovery under the ESA. These designations shall be based on adopted basin plans or habitat/resource assessments completed for the Waterways 2000 program, but may be changed or new areas may be designated pursuant to recommendations of Water Resource Inventory Area plans. The Executive shall study the standards of protection needed for RSRAs and LSRAs ((~~and shall report its findings and recommendations to the Council in 1996.~~)) The executive shall conduct a study as to which properties currently zoned R-1 in these areas are suitable for a high residential density of R-6 or more due to their lack of environmental constraints. The study will be presented to the Council by March 1, 2001 with recommended zoning changes.**

King County's Shoreline Management Master Program (Title 25 of the King County Code) is a functional plan developed in compliance with the Washington State Shoreline Management Act of 1971. The Master Program protects streams with a mean annual flow of 20 cubic feet or more per second, lakes that are 20 acres or more in size, the marine shoreline of Puget Sound and wetlands associated with these systems.

E-124 ((~~NE-308~~)) **Development within designated Shoreline Environments shall preserve the resources and ecology of the water and shorelines, avoid natural hazards, promote visual and physical access to the water, protect ESA listed species and their critical habitat, and preserve archeological, traditional cultural resources, shellfish resources, and navigation rights. Protection of critical areas shall take priority over visual values and physical access.**

Puget Sound was included in the National Estuary Program in March 1988. The National Estuary Program requires that a comprehensive conservation and management plan for Puget Sound recommend actions to restore and protect the estuary. The 1994 Puget Sound Water Quality Management Plan is the federally approved comprehensive conservation and management plan for Puget Sound.

E-125 ((~~NE-309~~)) **((~~Beginning in 1995~~)) King County shall implement the ((~~1994~~)) Puget Sound Water Quality Management Plan to restore and protect the biological health and diversity of the Puget Sound Basin.**

Rivers, streams, lakes and wetlands must be protected from the adverse impacts of urbanization and land use to continue functioning in a beneficial manner. Because urbanization increases stormwater runoff, control of the quantity and quality of stormwater runoff is critical. Unmitigated stormwater runoff can cause erosion, sedimentation and flooding with resulting adverse impacts on water quality, fish and wildlife habitat, property and human safety. In addition, stormwater runoff can carry pollutants such as oil, heavy metals, fertilizers, herbicides, pesticides and animal wastes into waters. Sedimentation from soil disturbed by clearing, grading, farming and logging can reduce river or stream channel capacity, fill lakes and wetlands, and smother aquatic life and habitat.

Methods of stormwater management include seasonal clearing restrictions, retention/detention, discharge and infiltration standards, and Best Management Practices.

E-126 ((~~NE-310~~)) **((~~Management of s~~)) Stormwater runoff shall ((~~occur~~)) be managed through a variety of methods, with the goal of limiting impacts to aquatic resources, protecting and enhancing the viability of agricultural lands and promoting groundwater recharge. Methods of stormwater management shall include temporary erosion and sediment control, flow control facilities, water quality facilities as required by the Surface Water Design Manual, and Best Management Practices as described in the Stormwater Pollution Control Manual. ((~~Stormwater r~~)) Runoff caused by development shall be managed to prevent ((~~unmitigated significant~~)) adverse impacts to water resources ((~~caused by flow rates, flow volumes or pollutants to promote groundwater recharge, infiltration of stormwater when feasible given geological, engineering and water quality constraints. King County's current practice is to pursue non-structural methods whenever possible. In the Urban Area, methods which are land consumptive will need to be balanced with the need to protect the supply of developable land.~~)) and farmable lands. Regulations shall be developed for lands outside of the Urban Areas that favor non-structural stormwater control measures when feasible including: vegetation retention and management; seasonal clearing limits; limits on impervious surface; and limits on soil disturbance.**

The Federal Clean Water Act requires states to prepare a list of water bodies that do not meet water quality standards. This list, known as the 303(d) list, is prepared for Washington State by the State Department of Ecology, and must be submitted to the U.S. Environmental Protection Agency (EPA) every two years. The water bodies on the list consist of "water quality limited" estuaries, lakes, rivers and streams that fall short of state surface water quality standards, and are not expected to achieve standards after implementation of technology-based controls. These standards are intended to ensure that our waters can be beneficially used for purposes we all enjoy, from fishing, swimming, boating, and drinking to industrial and agricultural purposes, and fish habitat. The beneficial uses that are intended to be protected by water quality standards are those that have existed or could have existed in the waterbody from November 1975 or later.

EPA requires that states set priorities for cleaning up impaired waters and establish a Total Maximum Daily Load (TMDL) for each. A TMDL, or water cleanup plan, entails analysis of how much pollution a waterbody can receive and still support its beneficial uses. The cleanup plan also includes recommendations for controlling pollution sources and a monitoring plan to test the plan's effectiveness. TMDL's have been approved by EPA for the Snoqualmie River, Lake Ballinger, Pipers Creek, Lake Fenwick, Lake Sawyer, and the Duwamish River and Lower Green. A complete listing of TMDLs and the 303(d) list can be found on the Department of Ecology's web site at www.wa.gov/ecology/wq/303d/.

E-127 **Surface waters designated by the State as Water Quality Impaired under the Clean Water Act (water bodies included on the State 303(d) list) shall be improved through monitoring, source controls, best management practices, enforcement of existing codes, and Total Maximum Daily Load plans (TMDLs). The water quality of all other state-classified water bodies shall be maintained or improved through these same measures, and other additional measures that may be necessary to ensure there is no loss of existing beneficial uses. Any beneficial uses lost since November 1975 shall be restored wherever practicable, consistent with the Federal Clean Water Act.**

There are approximately 3,126 miles of rivers and streams in King County. The river and stream channels, the surrounding riparian (streamside) areas and upland areas all contribute to the functioning and integrity of rivers and streams. Many rivers and streams provide critical habitat for many species of wildlife and fish, including salmonids.

E-128 (~~(NE-311)~~) **River and stream channels, stream outlets, headwater areas, and riparian corridors should be preserved, protected and enhanced for their hydraulic, hydrologic, ecological and aesthetic functions, including their functions in providing woody debris sources to salmonid bearing streams.**

There are approximately 700 lakes in King County ranging in size from less than one acre to Lake Washington. These lakes provide critical habitat for many species of fish and wildlife, including salmonids, as well as recreational opportunities and scenic beauty. Development near lakes can alter their functioning and lead to eutrophication (increases in nutrients). Eutrophication promotes the excessive growth of plant and animal life with the eventual depletion of oxygen levels caused by decay of the excess organic matter.

E-129 (~~(NE-313)~~) **Lakes should be protected through management of lake watersheds and shorelines. Lakes sensitive to nutrients shall be protected through the management of nutrients that stimulate algae blooms and aquatic plant growth. Where sufficient information is available, measurable standards for lake quality should be set and management plans established to meet the standards. Formation of lake management districts or other financing mechanisms should be considered to provide the financial resources necessary to support actions for protection of sensitive lakes.**

Wetlands are valuable natural resources in King County. They include shallow or deep marshes, bogs, ponds, wet meadows, forested and scrub-shrub communities and other lands supporting a prevalence of vegetation adapted to saturated soils. Many of the larger wetlands in King County are mapped in the County's *Sensitive Areas Map Folio*, and their vegetation, hydrology and wildlife are briefly described in the King County Wetlands Inventory.

E-130 (~~(NE-314)~~) **King County shall use as minimum standards, the (~~("1987 U.S. Army Corps of Engineers Wetland Delineation Manual" in conjunction with the "1994 Washington Regional Guidance on the 1987 Wetland Delineation Manual")~~)**

Washington State Wetlands Identification and Delineation Manual, 1997 or its successor which is adopted by the King County Council and is the scientifically accepted replacement methodology based on better technical criteria and field indicators.

E-131 ((~~NE-315~~)) **King County shall work with other jurisdictions and federally-recognized tribes to establish uniform countywide wetlands policies ((~~and a classification system for wetlands~~)) that ((~~allows for the designation~~)) provide protection of both regionally and locally unique wetlands.**

Wetlands are productive biological systems, providing habitat for fish and wildlife. They may serve as outdoor classrooms for scientific study. Some are used for hiking, hunting, and fishing. Wetlands also store flood waters and control runoff, thereby reducing flooding, downstream erosion and other damage. Further, wetlands protect water quality by trapping sediments and absorbing pollutants. They discharge ground water, making it available to plants and animals. Wetlands store peak flows and discharge to streams in dry periods, thus enabling fish and other riparian animal populations to survive. These wetland functions need consideration from a watershed perspective.

E-132 ((~~NE-316~~)) **King County's overall goal for the protection of wetlands is no net loss of wetland functions ((~~or values~~)) within each drainage basin. Acquisition, enhancement, regulations, and incentive programs shall be used independently or in combination with one another to protect and enhance wetlands functions. ((~~Wetland values shall be protected only through acquisition, enhancement and incentive programs.~~))**

E-133 ((~~NE-317~~)) **Development adjacent to wetlands shall be sited such that wetland functions are protected, an adequate buffer around the wetlands is provided, and significant adverse impacts to wetlands are prevented.**

The functions and values of a wetland will change as land use surrounding the wetland changes. Fragmentation of habitat is considered the greatest threat to native biodiversity. Wetlands in the Urban Growth Area will experience the greatest reduction in the number of native animals and plants due to habitat fragmentation. The County recognizes that trading some isolated Class 3 wetlands in exchange for mitigation that contributes to a larger connected wetland system can often achieve greater resource protection in the Urban Growth Area.

Protecting native species biodiversity depends upon maintaining biological linkages and preventing fragmentation of wetland habitats. Small wetlands strategically located between other wetlands may provide important biological links between other, higher quality wetlands. Wetlands adjacent to habitat networks also are especially critical to wildlife functions and should receive special consideration in planning land use.

E-134 ((~~NE-318~~)) **Areas of native vegetation that connect wetland systems should be protected. Whenever effective, incentive programs such as buffer averaging, density credit transfers, or appropriate non-regulatory mechanisms shall be used.**

E-135 ((~~NE-319~~)) **The unique hydrologic cycles, soil and water chemistries, and vegetation communities of bogs and fens shall be protected through the use of incentives, acquisition, Best Management Practices, and implementation of**

the King County Surface Water Design Manual to control and/or treat stormwater within the wetland watershed.

E-136 ((NE-320)) Public access to wetlands for scientific, recreational use, and traditional cultural use is desirable, providing that public access trails are carefully sited, sensitive habitats and species are protected, and hydrologic continuity is maintained.

E-137 ((NE-321)) King County should continue to review wetland research and evaluate the need for changes in its wetland protection programs.

E-138 ((NE-322)) Enhancement or restoration of degraded wetlands may be allowed to maintain or improve wetland functions provided that all wetland functions are evaluated in a wetland management plan, and adequate monitoring, code enforcement and evaluation is provided and assured by responsible parties. Restoration or enhancement must result in a net improvement to the functions of the wetland system. Technical assistance to small property owners should be considered.

E-139 ((NE-323)) Alterations to wetlands may be allowed to:

a. ((a)) Accomplish a public agency or utility development;
b. ((p)) Provide necessary utility, stormwater tightline and road crossings; or
c. ((a)) Avoid a denial of all reasonable use of the property, provided all wetland functions are evaluated, the least harmful and reasonable alternatives are pursued, ((and)) affected significant functions are appropriately mitigated, and mitigation sites are provided with monitoring.

When adverse impacts cannot be avoided, compensatory mitigation may be allowed. This means the replacement of project-induced losses of wetland functions and values will be permitted through wetland creation, restoration or enhancement. The County recognizes that, especially in the Urban Growth Area, allowing alteration of isolated Class 3 wetlands in exchange for compensatory mitigation contributes to a larger connected wetland system and may achieve greater resource protection.

E-140 ((NE-324)) In the Urban Area, protection standards for low function, isolated Class 3 wetlands may be lower than standards in the rural area.

E-141 ((NE-325)) Mitigation sites should replace or augment the functions to be lost as a result of the project proposal. Wetland mitigation proposals should be approved if they would result in improved overall wetland functions within a drainage basin. All wetland functions should be considered. Mitigation sites should be located strategically to alleviate habitat fragmentation, and avoid impacts to and prevent loss of farmable land within Agricultural Production Districts.

E-142 ((NE-326)) Mitigation projects should contribute to an existing wetland system or restore an area that was historically a wetland. The goal for these mitigation projects is no net loss of wetland functions per drainage basin.

~~((NE-327)) Mitigation sites should replace or augment the functions to be lost as a result of the project proposal. Further, mitigation sites should be located strategically to alleviate habitat fragmentation.))~~

E-143 ((~~NE-328~~)) **Land used for wetland mitigation should be preserved in perpetuity. Monitoring and maintenance in conformance with King County standards should be provided by the project proponent until the success of the site is established.**

Mitigation banks are a form of regional compensatory mitigation, with the goal providing greater resource protection and benefit to the public. A mitigation bank allows for the consolidation of multiple, small mitigation projects into a large-scale wetland complex, resulting in economies of scale in planning, implementation and maintenance. Consolidation also can result in wetlands of greater value because of their size and the commitment to long-term management. Mitigation banking allows a project proponent to generate bank credits by contributing to the creation or restoration of the bank site.

E-144 ((~~NE-329~~)) **The County in partnership with jurisdictions and interested parties should ((~~develop a plan for the establishment of a~~)) implement the wetland mitigation banking program.**

E-145 **Creation of wetland mitigation banks is not allowed in the Agricultural Production District when the purpose is to compensate for filling wetlands for development outside the APD.**

Floodplains are lands adjacent to lakes, rivers and streams that are subject to periodic flooding. Floodplains naturally store flood water, protect water quality and are valuable for recreation, agriculture and fish and wildlife habitat. Floodplains also provide a deposition zone for sediments mobilized by rivers and streams. Wetlands are often an integral part of floodplains. Floodplains are designated based on the predicted frequency of flooding for a particular area. For example, a 100-year floodplain is a land area that has a one percent probability of experiencing flooding in any given year.

Development can reduce the floodplain's ability to store and convey floodwaters, thereby increasing the velocity and depth of floodwaters in other areas. In addition, floodplain development often occurs at the expense of important fish and wildlife habitat. King County has adopted the Flood Hazard Reduction Plan to provide guidance for decisions related to land use and flood control activities.

E-146 ((~~NE-330~~)) **The existing flood storage and conveyance functions and ecological values of floodplains, wetlands, and riparian corridors ((~~should~~)) shall be protected, and should, where possible, be enhanced or restored.**

E-147 ((~~NE-331~~)) **King County's floodplain land use and floodplain management activities ((~~should~~)) shall be carried out in accordance with the King County Flood Hazard Reduction Plan.**

Protecting ground water is an important regional issue because ground water provides approximately 30 percent of the water used in King County. The natural hydrologic system can be altered by development practices and overuse of the aquifer. The result may be depletion of aquifers. Ground water is also subject to contamination from human activity. Once a source of ground water is contaminated it may be lost forever. The cost of protection is considerably less than the cost of remediation and replacement.

E-148 ((~~NE-332~~)) **In unincorporated King County, areas identified as sole source aquifers or as areas with high susceptibility for ground water contamination where aquifers**

are used for potable water are designated as Critical Aquifer Recharge Areas as shown on the map, entitled Areas Highly Susceptible to Ground Water Contamination. Since this map focuses primarily on water quality issues, the county shall work in conjunction with cities and ground water purveyors to designate and map recharge areas which address ground water quantity concerns as new information from ground water and wellhead protection studies adopted by county or state agencies becomes available. Updating and refining the map shall be an ongoing process.

E-149 ((~~NE-333~~)) King County should protect the quality and quantity of ground water countywide by:

a. ((~~Placing a priority on~~ i))Implementing((~~ion of~~)) adopted Ground Water Management Plans;

b. ((~~Developing a process by which King County will r~~))Reviewing and implementing ((~~as appropriate, adopted~~)) approved Wellhead Protection Programs in conjunction with cities, state agencies and ground water purveyors; ((~~and~~))

c. Developing, with affected jurisdictions, best management practices for ((~~new~~)) development and for forestry, agriculture, and mining operations ((~~recommended in~~)) based on adopted Ground Water Management Plans and Wellhead Protection Programs ((~~as appropriate~~)). The goals of these practices should be to promote aquifer recharge quality and to strive for no net reduction of recharge to ground water quantity((~~.~~)) ; and

d. Refining regulations ((~~as appropriate~~)) to protect critical aquifer recharge areas and well-head protection areas ((~~when information is evaluated and adopted by King County~~)).

E-150 ((~~NE-334~~)) King County should protect ground water recharge quantity ((~~in the Urban Growth Area~~)) by promoting methods that infiltrate runoff where site conditions permit, except where potential ground water contamination cannot be prevented by pollution source controls and stormwater pretreatment.

E-151 ((~~NE-335~~)) In making future zoning and land use decisions which are subject to environmental review, King County shall evaluate and monitor groundwater policies, their implementation costs, and the impacts upon the quantity and quality of ground water. The depletion or degradation of aquifers needed for potable water supplies should be avoided or mitigated, and the need to plan and develop feasible and equivalent replacement sources to compensate for the potential loss of water supplies should be considered.

E-152 ((~~NE-336~~)) King County should protect ground water in the Rural Area by:

a. Preferring land uses that retain a high ratio of permeable to impermeable surface area and that maintain or augment the infiltration capacity of the natural soils; and

b. Requiring standards for maximum vegetation clearing limits, impervious surface limits, and, where appropriate, infiltration of surface water. These standards should be designed to provide appropriate exceptions consistent with Policy ((~~R-216~~)) R-232.

E-153 King County, in cooperation with the Vashon-Maury Island Groundwater Management Committee, Vashon-Maury Island Community Council and local water purveyors, shall undertake a new comprehensive study of ground and

surface water resources and impacts on Vashon and Maury Islands. This study shall include on-going well monitoring and other data gathering. The study shall recommend appropriate policy and planning actions that may be necessary to protect the ground and surface water resources. Pending the completion of the study and the County's action on it, applicants for new on-site sewage disposal permits on Vashon-Maury Islands shall be required to demonstrate the following:

a. That the location of the on-site sewage disposal system is not within 200 feet of the documented boundaries of upper-aquifer groundwater contamination or a surface water body or stream, or

b. That the new on-site sewage disposal system is designed to replace an existing disposal system and is likely to reduce impacts to ground and surface waters; or

c. That, if the size or features of a parcel make it infeasible to satisfy the 200-foot setback provided in subsection (a) above, the proposed on-site sewage disposal system uses the best available technology to reduce potential impacts to ground and surface waters. In such circumstances, the County may require periodic monitoring.

D. Erosion and Landslide Hazards

King County is located on the active, tectonic Pacific "Ring of Fire," which is characterized by numerous, dynamic geologic processes that include frequent earthquakes and recurring volcanic eruptions. The relatively recent glacial history has left numerous steep and unstable hillsides throughout the County. Because of these steep and unstable hillsides, many areas of the County are prone to naturally occurring landslides and treefalls. Snow avalanches are also a common occurrence in the Cascade Mountains in Eastern King County. Often times the result of these naturally occurring events can be beneficial to the environment, by providing gravel and woody debris in streams and rivers, and continuing the process of natural regeneration. Salmon need gravel for spawning and in-stream debris for cover and to provide shade and regulate temperature. King County must balance the positive benefits of these natural occurrences with any adverse impacts that pose a threat to public health and safety. The County must also strike a balance between allowing naturally occurring landslides and erosion, and the need to prevent the unnatural acceleration of landslides and erosion due to development activities. Coal mines have created additional areas of subsidence and instability in addition to those which occur naturally. When human activity occurs in areas subject to such active geologic processes, the potential consequences to life, property and environmental integrity can be enormous. If geologic processes are recognized and appropriately addressed in the course of development activities, adverse consequences can be substantially reduced if not completely eliminated. King County maintains inventories and maps of geologic hazards in the *King County Sensitive Areas Map Folio.*

1. Erosion Hazard Areas

Virtually any area in King County can experience soil erosion if subjected to inappropriate grading and construction practices. The U.S. Department of Agriculture Soil Conservation Service has identified certain soil types in King County as being especially subject to erosion, if disturbed. The approximate extent of these areas is shown in the *King County Sensitive Areas Map Folio.* These Erosion Hazard Areas may not be well suited to high density developments and intensive land uses because of the sensitivity of these soils to disturbance.

E-154 ((NE-401)) **Grading and construction activities ((should)) 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.**

E-155 ((NE-402)) **Land uses permitted in ((mapped)) Erosion Hazard Areas ((should)) shall minimize soil disturbance and should maximize retention and replacement of native vegetative cover.**

E-156 ((NE-403)) **Slopes with a grade of 40 percent or more ((should)) shall not be developed unless the risks and adverse impacts associated with such development can be reduced to a non-significant level. No disturbance zones shall be designated where basin plans identify the need to prevent erosion damages in areas that are extremely sensitive to erosion impacts. Properly designed stormwater tightlines may be allowed within designated no-disturbance zones.**

Vegetation is an important component of the natural environment. This general term refers to all plant life growing at, below or above the soil surface. It includes trees, shrubs, herbs, grasses and aquatic plants.

Vegetation, especially forests, provides many significant ecological functions. Vegetation absorbs, filters and slows surface water flow. This is particularly important over aquifer recharge areas. Native vegetation also provides wildlife habitat to which native species are well-adapted. Forests are key components in atmospheric cycles; they absorb carbon dioxide, produce oxygen and filter particulate matter. Additionally, they absorb noise and are aesthetically pleasing.

Noxious weeds are non-native invasive plants that pose a threat to health and safety, agriculture, wildlife, wetlands and recreational areas. They tend to spread in areas that have been disturbed by urban development and agriculture and are difficult to eradicate once they become established. Without natural predators, some noxious weeds can displace native plant communities, reducing plant diversity. Invasive plants also decrease the quality of wildlife habitats, reduce visual quality, and increase maintenance and production costs for natural resource managers and farmers.

E-157 ((NE-501)) **King County should protect native plant communities by encouraging management and control of non-native invasive plants, including aquatic plants. Environmentally sound methods of vegetation control should be used to control noxious weeds.**

E-158 ((NE-502)) **Through training and other programs, King County should actively encourage the use of environmentally safe methods of vegetation control. Herbicide use should be minimized. King County should be a good steward of public lands and protect water quality, by reducing the use of insecticides, herbicides and fungicides through the use of integrated pest and vegetation management practices.**

E-159 ((NE-503)) **The use of native plants should be encouraged in landscaping requirements and erosion control projects, and in the restoration of stream banks, lakes, shorelines, and wetlands.**

E-160 ((NE-504)) **((As part of King County's basin planning process,)) In response to watershed-based salmon conservation Water Resource Inventory Area plans and as part of King County's continued basin planning and stewardship programs, King County may adopt vegetation retention goals for ((each)) specific drainage basins ((in the Rural Area)). These goals should be consistent with Policy ((R-216)) R-232, as applicable. The County should ((explore)) adopt incentives and regulations to attain these goals, and the County should monitor their effectiveness.))**

2. Landslide and Avalanche Hazard Areas

Certain hillsides in King County are either naturally unstable or susceptible to instability when disturbed. These hillsides contain slopes greater than 15 percent, are underlain by impermeable soils, and are subject to seepage. They also include areas that have experienced landslides in the past and have slopes that are being undermined by stream or beach erosion. Construction in these areas is expensive and difficult. Landslides on such slopes following development can result in enormous public and private costs and severe threats to human health and safety. Such landslides can also cause severe natural resource damage.

Many of the mountainsides in the Cascade Range in Eastern King County are subject to snow avalanches during the winter. Such avalanches are destructive and can be deadly. King County supports all efforts to monitor and share information regarding avalanche dangers and to alert the public of those dangers.

E-161 ((NE-404)) **Avalanche or Landslide Hazard Areas should not be developed unless the risks and adverse impacts associated with such development can be reduced to a non-significant level. Development proposed in or adjacent to avalanche or landslide hazard areas shall be adequately reviewed and mitigated to ensure development does not increase landslide or erosion hazards that would adversely impact downstream properties or natural resources.**

3. Coal Mine Hazard Areas

King County has a long and varied history of underground and surface coal mining. Some coal mining was conducted by large, well-capitalized mining companies which used methods such as detailed underground and surface mapping and protection of surface improvements. Other mines were small operations or re-mining operations that sought to maximize coal extraction with less regard for surface impacts or mapping. Some intensively developed areas of King County are located over abandoned underground coal workings, including Talbot Hill and the north Benson Hill of Renton, the Spring Glen area around Cascade Vista, East Fairwood, Black Diamond, southwest Issaquah, and the Newcastle/Coal Creek area.

The greatest dangers to people, wildlife and surface facilities typically exist around mine portals, timber chutes, air shafts, and workings which have collapsed to the surface. Other areas were deep mined by "room and pillar" mining techniques in which "pillars" of coal were left to provide support for the mining of adjacent "rooms." Once abandoned, pillars would collapse and rooms of mined-out coal would fill with collapsed roof material, coal debris and water. Regional downwarping of these areas was generally not observable and usually happened in the early years following mining of a section. Deep mined areas with a high ratio of overburden/cover-to-void usually present no hazards for surface development. However, areas with low overburden/cover-to-void ratio present higher risks and may require more advanced investigations and construction techniques for development. Mine portals, timber chutes, airshafts, and workings which have collapsed to the surface require the greatest need for detailed engineering studies to ensure that these sites are safe for new, productive use.

E-162 ((~~NE-405~~)) **King County encourages the elimination of coal mine hazard areas and will work with public and private property owners and the office of Surface Mining, Reclamation, and Enforcement to eliminate hazards and return lands to their highest productive uses. Land use plans and development activities should reflect the potential hazards in these areas. Residential, commercial, and industrial development may occur in coal mine hazard areas following study and engineering reports which detail the extent of the hazards, if any, and mitigation. Significant hazards associated with abandoned coal mining workings should be eliminated or mitigated so the site is safe using appropriate criteria to evaluate the proposed subsequent use. King County recognizes that most areas underlain by deep underground mining may be suitable for new development. Landowners and their consultants may be required to provide studies and reports with recommendations from licensed, professional engineers. Proposed surface facilities over some hazard areas may need to incorporate special design and performance tolerances for structures and infrastructure improvements. The location and de-classification of coal mine hazard features should be shown on recorded plat maps or site plans of the property. When new information regarding the location of coal mine hazard areas is discovered, it should be added to or deleted from existing maps and databases that record coal mine hazard area information.**

King County is an earthquake-prone region subject to ground shaking, seismically induced landslide and liquefaction of soil. Areas with low density soils are likely to experience greater damage from earthquakes. Areas in King County with a high potential for seismic induced subsidence, landslide, and other damages are shown in the *King County Sensitive Areas Map Folio* under seismic and landslide hazard areas.

E-163 ((~~NE-406~~)) **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.**

E-164 ((~~NE-407~~)) **King County should support efforts to model the effects of a mudflow comparable to the prehistoric mudflow which occurred in the White River drainage basin.))**

E. Fish and Wildlife

It is King County's goal to conserve fish and wildlife resources in the County and to maintain countywide biodiversity. This goal may be achieved through implementation of several broad policy directions that form an integrated vision for the future. Each of the pieces are necessary for the whole to be successful. The policy objectives are to 1) identify and protect critical fish and wildlife habitat conservation areas, 2) link those critical habitat areas and other protected lands through a network system, and 3) integrate fish and wildlife habitat and conservation goals into new and existing developments. Conservation of biodiversity is necessary if wildlife benefits currently enjoyed by residents of the County are to be enjoyed by future generations.

E-165 ((~~NE-601~~)) **The County shall strive to maintain the existing diversity of species and habitats in the County. In the Urban Growth Area, King County should strive to maintain a quality environment which includes fish and wildlife habitats that support the greatest diversity of native species consistent with the density objectives. The County should maximize wildlife diversity in the Rural Area.**

E-166 ((~~NE-602~~)) **Fish and wildlife should be maintained through conservation and enhancement of terrestrial, air, and aquatic habitats.**

E-167 ((~~NE-603~~)) **Habitats for species which have been identified as endangered, threatened, or sensitive by the state or federal government shall not be reduced and should be preserved. In the Rural Area and Natural Resource Lands, habitats for candidate ((~~priority~~)) species identified by the county, as well as species identified as endangered, threatened, or sensitive by the state or federal government shall not be reduced and should be preserved.**

The Growth Management Act requires jurisdictions to designate Fish and Wildlife Habitat Conservation Areas for protection. The Washington Administrative Code (WAC) sets out guidelines that jurisdictions must consider when designating these areas. As set forth in the WAC guidelines, Fish and Wildlife Habitat Conservation Areas include:

a. Areas with which endangered, threatened, and sensitive species have a primary association;
b. Habitats and species of local importance;
c. Commercial and recreational shellfish areas;
d. Kelp and eel grass beds; herring and smelt spawning areas;
e. Naturally occurring ponds under 20 acres and their submerged aquatic beds that provide fish or wildlife habitat;
f. Waters of the state;
g. Lakes, ponds, streams, and rivers planted with game fish by a governmental or tribal entity; or
h. State natural area preserves and natural resource conservation areas.

It is important to note that for some species, mere presence is not considered significant. Significant habitats, for some species, are those areas that may be limited during some time of the year or stage of the species life cycle.

King County has reviewed these guidelines and has developed policies E-168 through E-172 that address the various species included in the WAC guidelines. These policies recognize the tiered listing of these species and their habitats as defined by the United States Fish and Wildlife Service and the Washington State Department of Fish and Wildlife. These policies also recognize the need to regularly review the information developed on species and habitats and amend the tiered listing as appropriate.

E-168 ((~~NE-604~~)) **King County shall designate and protect, through measures such as regulations, incentives, capital projects or purchase, the following Fish and Wildlife Habitat Conservation Areas found in King County:**

- **a. Habitat for federal or state listed Endangered, ((~~or~~)) Threatened or Sensitive species.**
- **b. Habitat for Salmonids of Local Importance: kokanee/sockeye/red salmon, chum salmon, coho/silver salmon, ((~~king/chinook salmon and,~~)) pink salmon, coastal resident/searun cutthroat, rainbow trout/steelhead, Bull trout/Dolly Varden, and pygmy whitefish, including juvenile feeding and migration corridors in marine waters;**
- **c. Habitat for Raptors and Herons of Local Importance: red-tailed hawk, osprey, black-crowned night heron, and great blue heron;**
- **d. Commercial and recreational shellfish areas;**
- **e. Kelp and eelgrass beds;**
- **f. Herring, sand lance and smelt spawning areas;**
- **g. Wildlife habitat networks designated by the County, and**
- **h. Riparian corridors.**

King County shall also protect the habitat for candidate ((~~priority~~)) species, as listed by the Washington Department of Fish and Wildlife, found in King County outside of the Urban Growth Area.

((~~Candidate Priority Species of Local Importance are: birds - common loon, harlequin duck, golden eagle, northern goshawk, mountain quail, pileated woodpecker, purple martin, Vaux's swift, Western bluebird, yellow-billed cuckoo; fish - bull trout/Dolly Varden; amphibians - Cascades frog, red-legged frog, spotted frog; Van Dyke's salamander; invertebrates - Beller's ground beetle, Hatch's click beetle, long-horned leaf beetle, Puget blue butterfly, Feder's soliperlan stonefly, mammals - fisher, Townsend's big-eared bat, California wolverine, Pacific harbor porpoise.~~))

E-169 ((~~NE-605~~)) **King County should protect ((~~all~~)) the following ((~~priority~~)) species of local importance ((~~and their habitats~~)), as listed by the Washington Department of Fish and Wildlife and ((~~found in and~~)) listed by King County, on lands outside of the Urban Growth Area, where they are likely to be most successful. Protection should be accomplished through regulations, incentives or purchase.**

((~~Priority Species of local importance include: birds - trumpeter swan, tundra swan, snow goose band-tailed pigeon, mammals - marten, beaver, Columbian black-tailed deer, elk, mountain goat.~~))

Species of local importance are:

a. mollusks - Geoduck clam ((,)) and Pacific oyster;

b. crustaceans - Dungenous crab((,)) and Pandalid shrimp;

c. echinoderms- Red urchin;

d. fish - white sturgeon, Pacific herring, channel catfish, longfin smelt, surfsmelt, Pacific cod, Pacific whiting, black rockfish, copper rockfish, quillback rockfish, yelloweye rockfish, lingcod, Pacific sand lance, English sole, and rock sole;

e. birds – Trumpeter swan, Tundra swan, Snow goose, Band-tailed pigeon, Brant, Harlequin duck, Blue grouse, Mountain quail, and Western bluebird;

f. mammals - marten, mink, Columbian black-tailed deer, elk, and mountain goat((; ~~priority habitats - caves, cliffs, consolidated marine/estuarine shorelines, estuary, old growth/mature forest, unconsolidated marine/estuarine shorelines, snag-rich areas, talus slopes~~)).

E-170 King County should protect the following priority habitats listed by the Washington Department of Fish and Wildlife that are not otherwise protected by policies and codes. Protection should be accomplished through regulations, incentives or purchase. Priority habitats are: caves, cliffs, consolidated marine/estuarine shorelines, estuary, old growth/mature forest, unconsolidated marine/estuarine shorelines, snag-rich areas, and talus slopes.

E-171 ((~~NE-606~~)) Development proposals should be assessed for the presence of species of local importance. ((~~The evaluations~~)) A comprehensive assessment should follow a standard procedure or guidelines and ((~~The identification of species which need protection~~)) shall occur one time during the development review process. ((~~This work shall be completed as established in a single set of study guidelines~~)).

E-172 ((~~NE-607~~)) King County should regularly review the Washington State Department of Fish and Wildlife's list of Priority Species and other scientific information on ((~~important local~~)) species of local importance, and evaluate whether any species should be added to or deleted from the list in Policies ((~~NE-604~~)) E-169 and((~~NE-605~~)) E-170 . Any additions or deletions should be made through the annual amendment process for the Comprehensive Plan.

Existing buffer requirements for streams and wetlands are not intended to, and do not, always adequately protect wildlife resources in those sensitive areas. Areas with critical wildlife resources may need larger buffers to protect the resource.

E-173((~~NE-608~~)) Stream and wetland buffer requirements may be increased to protect ((~~Endangered, Threatened, and Priority wildlife~~)) species of local importance, as listed in this chapter, and their habitats, as appropriate. Whenever possible, density transfers and/or buffer averaging should be allowed.

Salmon are particularly important because of their significance to local and regional character, federally-recognized tribes and the fisheries industry. Several salmon stocks within King County and other areas of Puget Sound are in a serious state of decline. Several salmon stocks within King County have been or are about to be listed under the Endangered Species Act. The most effective way to protect and enhance native fish populations is through protection of those river and stream channels, riparian corridors, lakes,

wetlands, headwaters and watersheds that provide or impact spawning and rearing habitat, food resources and fish passage. Intermittent streams also can be critical to native fish populations. Fish enhancement facilities currently are still critical to the maintenance of salmon stocks and the fisheries industry.

E-174 ((~~NE-609~~)) **King County should protect salmonid habitats by ensuring that land use and facility plans (transportation, water, sewer, electricity, gas) include riparian and stream habitat conservation measures developed by the County, cities, federally-recognized tribes, service providers, and/or state and federal agencies. Development within basins that contain fish enhancement facilities should consider significant adverse impacts to those facilities.**

Protection of isolated blocks of habitat will not adequately protect wildlife in King County. Critical wildlife habitats and refuges need to be connected across the landscape through a system of habitat networks. Some areas may be important because they connect other areas together.

Network width is related to requirements of desired wildlife species, length of network segment and other desired uses within the network. Wider corridors will be required for larger species if the distance between refuges is great or if multiple uses, such as public access and trails, are desired. Since it may not be possible to protect wide corridors in the Urban Growth Area, it may not be possible to accommodate larger wildlife species in all areas. Networks will address some of the problems of habitat fragmentation for smaller species within the Urban Growth Area.

Potential linkages are identified on the Wildlife Network and Public Ownership Map. Open spaces set aside during subdivision of land should be located to make connections with larger off-site systems. This approach will also benefit other open space goals.

E-175 ((~~NE-610~~)) **Dedicated open spaces and designated sensitive areas help provide wildlife habitat. Habitat networks for Threatened, Endangered and Priority species of local importance, as listed in this chapter shall be designated and mapped. ((~~Other Priority h~~))Habitat networks for other Priority Species in the Rural Area should be designated and mapped. Planning should be coordinated to ensure that connections are made with adjacent segments of the network. King County should provide incentives for new development within the networks to incorporate design techniques that protect and enhance wildlife habitat values.**

King County shall also protect the habitat for candidate species, as listed by the Washington Department of Fish and Wildlife, found in King County outside of the Urban Growth Area.

E-176 ((~~NE-611~~)) **King County should work with adjacent jurisdictions, state and federal governments and federally recognized tribes during development of land use plans, Water Resource Inventory Area plans, ((~~development~~)) and site development reviews to identify and protect habitat networks at jurisdictional boundaries.**

A key element in a comprehensive wildlife protection program is the integration of wildlife and habitats into developments of all types. Protection of many types of wildlife does not have to be at odds with many types of development. Urban multifamily projects, industrial developments, new school facilities and rural open space projects all provide opportunities to enhance wildlife amenities. Residential developers and businesses have been able to use wildlife in marketing strategies to attract more potential homeowners, renters and quality employees.

Techniques such as minimizing clearing during site preparation, using native plant species in required buffers, landscaping, using bridges rather than culverts to cross streams and innovative site design can be used to promote wildlife and minimize problems with nuisance wildlife. Other plan elements, such as open space, road system design and housing density, also have related impacts on the remaining wildlife values that must be considered.

Benefits to wildlife are enhanced if screening and landscaping is composed of native vegetation. Retention of natural vegetation can provide the same wildlife and aesthetic benefits at a lower cost.

E-177 ((~~NE-612~~)) New development should, where possible, ((~~l~~))incorporate((~~ing~~)) native plant communities ((~~should be encouraged where possible into development proposals~~)), both through preservation of existing native plants into the site plan, and addition of new native plants.

E-178((~~NE-613~~)) **The County should be a good steward of public lands and should integrate fish and wildlife habitats into capital improvement projects whenever feasible. Fish and Wildlife Habitat Conservation Areas should be protected and where possible, enhanced as part of capital improvement projects.**

E-179 ((~~NE-614~~)) **The County should promote voluntary wildlife habitat enhancement projects by private individuals and businesses through educational and incentive programs.**

F. Soils and Organics

Soils play a critical role in the natural environment. Healthy soils keep disease-causing organisms in check, recycle and store nutrients, and provide an important medium for air and water to pass through. The properties of a healthy soil are similar to those of a sponge, faucet and filter. They naturally regulate the flow of water, bind and degrade pollutants. The presence of millions of macro and microorganisms in soil creates a "vibrant soil culture" where organic material is consumed and air and water are retained. Nutrients are made available to plants to allow healthy root growth and oxygen generation.

Human activity often causes soil compaction, removal and erosion of healthy, native soils. Fewer organisms are present in disturbed soils. The resulting decrease in organic matter inhibits the soil's ability to hold water, which increases surface water runoff. In addition, plants can not thrive in disturbed soils because of the lack of nutrients. This, in turn, causes people to use more chemical fertilizers, pesticides, and water to induce plant growth.

Increasing the organic content in disturbed soils can help restore their environmental function. Composted organic materials that might be used include yard debris, food and wood wastes, soiled paper, biosolids and/or livestock wastes, but not fly ash from industrial smokestacks. Benefits of incorporating composted organic materials in soils include: improved stream habitat, healthier plants, and closing the recycling loop for organic materials.

Organic soil content can be increased during the development process. Typically, in a new development, topsoil is removed, and then later replaced. Developers can incorporate composted organic materials during the construction process by replacing removed topsoil with organics in areas to be landscaped to mitigate the impacts of development.

E-180 **Conservation of native soils should be accomplished through various mechanisms to ensure soils remain healthy and continue to function as a natural sponge and filter, minimizing erosion and surface water runoff. Native**

soils should be retained on site and reused on site to the maximum extent possible.

E-181 **Organic matter should be used in disturbed soils, such as those found in developed areas, and shall be increased through various mechanisms.**

Organics comprise a large portion of the waste generated by King County residences, businesses and farms. This organic waste stream requires significant solid waste, farm management, and wastewater treatment resources. Many of these "waste materials" (yard debris, food and wood waste, soiled paper, biosolids, and agricultural livestock wastes), can be recycled and reused to provide numerous uses that are beneficial to the environment and the economy.

King County has a long history of resource conservation and waste recycling. Programs have successfully captured organic materials for beneficial use such as yard debris, recycling and biosolids applications to farms, forests and composting. However, large volumes of yard debris and food scraps continue to be thrown away in the landfill. Significant volumes of livestock waste generated in the suburbs and rural areas are inadequately managed, which can adversely impact water quality and fish habitat.

Although efforts are underway to increase the amount of organic materials that are recycled, the region still lacks the capacity to process all of these materials. Along with its efforts to promote beneficial use of these products, King County is working with organic material processors and others to try and increase the processing capacity in the region. The challenge will be for King County to secure funding sources to ensure that sufficient processing capacity is in place to handle a variety of organic waste materials.

E-182 **King County should implement programs to improve availability and markets for organic materials for soils that have been disturbed by new and existing developments.**

E-183 **King County shall regard the region's organic waste materials as resources which should be reused as much as possible, and minimize the disposal of such materials.**

E-184 **King County shall identify long-term options for expanding the organic waste material processing capacity in the County.**

King County seeks to divert as much material as possible from disposal to reduce overall costs of solid waste management, conserve resources, protect the environment, and strengthen the county's economy (see Chapter 7, Facilities and Utilities, policy F-148). In many cases, organic materials can be recycled into a beneficial, highly valued resource helping to meet these diversion goals. Beneficial uses of organic materials include, but are not limited to, the following:

King County recognizes that in most cases, the best management method for yard debris and livestock wastes is to compost it on the property where it is generated. Examples of residential on-site yard debris management techniques include grasscycling (leaving the grass on the lawn when it is cut) and backyard composting.

E-185 **King County shall promote and encourage the beneficial use of organic materials, including but not limited to their use in the following activities: agriculture and silviculture; road, park and other public project development; site development and new construction; restoration and remediation of disturbed soils; nursery and sod production; and landscaping. Organic materials do not include fly ash.**

E-186 **King County agencies shall use recycled organic products, such as compost, whenever feasible.**

Biosolids are the nutrient rich organic product from the wastewater treatment process which can be recycled as a soil amendment. At King County's wastewater treatment plant, solids are removed from the wastewater and treated in large digesters where the organic solids are stabilized, reducing the volume by half. After digestion, a portion of water is removed, leaving the semi-solid material ready for recycling.

The Biosolids Management Program emphasizes beneficial use of the resource and pursues environmental stewardship through diverse public-private partnerships. One hundred percent of county biosolids are beneficially used through the forestry and agriculture programs. A portion of the biosolids are composted as a Class A product.

E-187 **King County should explore ways to beneficially use biosolids, whenever feasible, locally.**

Supporting agriculture is a key growth management strategy and vital to quality of life for King County residents (see Chapter 3: "Rural Legacy and Natural Resources Lands"). However, improper livestock management practices can have significant adverse impact on surface water, ground water and air quality.

On-Farm Composting as a method of managing livestock waste and other organic waste materials is becoming an important waste management strategy for farmers. Benefits of on-farm composting include:

- Additional revenue from the sale of compost,
- Reduced costs for water, fertilizers and pesticides, due to reduced water usage and reduced reliance on fertilizers and pesticides,
- Reduced impacts to surface waters, and
- Increased crop yields.

King County has approximately 200 commercial farms and 10,000 non-commercial farms in cities as well as unincorporated areas. King County's Livestock Management Ordinance, Ordinance 11168 adopted in December 1993, requires livestock owners to manage livestock waste so that it minimizes any impacts to streams. The Livestock Management Ordinance requires the preparation of farms plans to be developed jointly by farmers and the King Conservation District to assist in reducing water pollution from their operations. The Conservation District provides technical assistance and education to agricultural land owners on how to implement best management practices for federal, state and local water quality regulations. These best management practices include slurry tanks and manure lagoons, the installation of fencing to keep stock from streams and wetlands, and development of plans for livestock manure storage facilities in accordance with the Sensitive Areas Ordinance.

E-188 **King County shall develop alternatives to improve onsite and offsite management of livestock wastes and recommend strategies to integrate processing livestock wastes with other organic waste materials. These strategies should be consistent with the King County Comprehensive Solid Waste Management Plan, including but not limited to, on-farm composting and land application of processed yard debris. Alternative strategies for onsite and offsite management of livestock wastes shall be based on farm management plans, which protect water quality in streams and wetlands. Solid waste management and water quality programs should be developed to prevent liquid farm wastes from contaminating our watersheds.**

II. Endangered Species Act

In March 1999, The National Marine Fisheries Service (NMFS) listed the chinook salmon as "threatened" under the Endangered Species Act (ESA). In December, 1999, the U.S. Fish and Wildlife Service (USFWS) listed the Puget Sound and Coastal Bull trout as threatened under the ESA. It is anticipated that listing of other salmonid species may follow in the near future.

The listing of a species under the Act is cause for great concern, because Wild Pacific Salmon have great environmental, cultural, economic, recreational and symbolic importance to the Puget Sound region. It is King County's goal to ensure long-term protection of our salmon resources to harvestable levels for today and tomorrow, with the least economic impact possible. Successful restoration and maintenance of healthy salmon populations will require time, money and effort, and collaboration with federal, state, tribal and local governments, as well as businesses, environmental groups, and citizens.

In accordance with the ESA, the NMFS and USFWS may issue regulations deemed necessary to provide for the conservation of listed species. This rule, commonly referred to as a 4(d) rule, legally establishes the protective measures that are necessary and advisable to provide for conservation of a listed species. Local governments will be required to comply with these protective measures.

Local governments in the Puget Sound region, in cooperation with state and tribal governments and other major stakeholders, have established a Tri County partnership to identify early actions and develop long-term conservation strategies. The early actions will focus on protecting salmon habitat in order preserve options for recovery. The long-term conservation strategy will be developed at the Watershed Resource Inventory Area (WRIA) level. The boundaries of WRIAs are defined under state regulations, and generally adhere to the watershed boundaries of major river or lake systems. King County has lead responsibility for the development Water Resource Inventory Area plans for WRIA 8 (Cedar/Sammamish Watershed) and WRIA 9 (the Green/Duwamish Watershed). In addition, King County is supporting the planning efforts in WRIA 7 (the Snohomish/Snoqualmie Watershed), about half of which is in King County, and WRIA 10 (the White/Puyallup Watershed), a small percentage of which is in King County.

E-201 **King County shall continue to participate in the Tri-County partnership and Water Resource Inventory Area planning efforts to develop plans for each of the watersheds in King County. These plans shall:**

a. Identify early actions and long-term projects and programs that will lead to information on habitat conditions in King County which can enable the recovery of endangered or threatened salmonids, while maintaining the economic vitality and strength of the region;

b. Be comprehensive and science-based;

c. Address water quality, water quantity and channel characteristics;

d. Be developed in coordination with key decision-makers and stakeholders; and

e. Provide an adaptive management approach.

E-202 King County has evaluated and will continue to evaluate programs and regulations to determine their effectiveness in contributing to ESA listed species conservation and recovery, and will update and enhance programs where needed including evaluation of the zoning code, the Sensitive Areas Code, the Shoreline Master Program, the Clearing and Grading Code, the landscaping Code, the Surface Water Design Manual, best management practices for vegetation management and use of insecticides, herbicides and fungicides, and best management practices for agricultural lands and forest lands under county authority. King County may amend these regulations and best management practices to enhance their effectiveness in protecting and restoring salmonid habitat.

E-203 Through the Watershed Resource Inventory Area planning process, geographic areas vital to the conservation and recovery of listed salmonid species shall be identified. King County will evaluate this information to determine appropriate short and long-term strategies, including, but not limited to: designation of Fish and Wildlife Habitat Conservation Areas, development regulations (special district overlays, zoning, etc.) acquisitions, and capital improvement projects.

E-204 King County may use its authority under the Growth Management Act, including its authority to designate and protect critical areas, such as fish and wildlife habitat conservation areas, to preserve and protect critical habitat listed for salmonid species by developing and implementing development regulations and non-regulatory programs.

E-205 King County shall ensure a no net loss of housing capacity within urban unincorporated King County due to the Endangered Species Act.

E-206 King County shall, in cooperation with the cities, ensure the ability to accommodate the 2012 growth targets within the Urban Area in compliance with the Endangered Species Act.