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CHAPTER 5 ENVIRONMENT

The environment in King County includes a rich and valuable array of natural resources ranging from marine and freshwater environments, to highly urbanized areas, lower density rural areas, highly productive farm and forest land, to nearly pristine landscapes in the foothills of the Cascades. The policies in this chapter protect that environment, ensure its effective management, and support its restoration where needed ~~((, and support the Strategic Plan’s goal of a healthy environment))~~.

King County residents depend on sound policies not only to protect public health and safety, but also to preserve quality of life for future generations. King County is committed to pursuing partnerships, cost-effective strategies, and best management practices to address climate change and optimize the long-term protection and restoration of the environment within available resources. These ~~((policies))~~ policies guide King County’s environmental development regulations as well as incentives, education, and stewardship programs in unincorporated King County.

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10 One of the central tenets of the Growth Management Act, the Countywide Planning Policies, and King County’s
 11 Comprehensive Plan is that new growth be focused within designated urban areas with the aim of protecting
 12 ~~((resource lands(-))~~forestry, agriculture, and mining~~((s)))~~ lands and reducing development pressure on the Rural
 13 Area and Natural Resource Lands. ~~((At the same time, t))~~The Growth Management Act also requires that each
 14 city and county in Washington State identify, designate and protect critical areas found in their local
 15 environment. Critical areas, as defined by the Growth Management Act, include wetlands, areas with a critical
 16 recharging effect on aquifers used for potable water, fish and wildlife habitat conservation areas, frequently
 17 flooded areas, and geologic hazard areas. Achieving development goals must be integrated with protecting
 18 critical area functions and values. ~~((Individuals))~~Solutions can be tailored by following the guidance of
 19 comprehensive plan policies that recognize both critical area protection and the need to reduce urban sprawl.

20
 21 All parts of the county—from densely developed urban areas, to farm and forest land, to the Rural Area—have a
 22 role to play and a common interest in environmental protection. Responsibility for environmental protection
 23 cannot fall on one geographic area or ~~((category of people))~~ community alone. ~~((Tools for environmental
 24 protection, for all residents whether in the Urban Area, Rural Area or Natural Resource Lands, include buying
 25 locally grown produce at a Farmers Market, taking care to avoid polluted discharges to stormwater drainage
 26 systems, riding the bus, investing in natural resource programs like those offered by the King Conservation
 27 District, complying with stormwater standards, controlling invasive plants, protecting forest cover, and ensuring
 28 development minimizes flood risk.))~~

29
 30 For the urban ~~((residents))~~ area, environmental protection occurs through different means, including investing in
 31 wastewater treatment and stormwater improvements, protecting greenbelts and other remnants of native
 32 habitats, adding new public open space – especially in historically underserved communities, and ~~((living))~~
 33 concentrating development in densely developed areas. For the ~~((r))~~Rural ~~((residents))~~ Area and Natural
 34 Resource Lands, it means protecting aquifers used for drinking water, using development practices that slowly
 35 infiltrate stormwater, and ~~((using best management practices to protect))~~ protecting water quality and habitat for
 36 fish and wildlife. On farm~~((-))~~lands, forest~~((-))~~lands, and lands in the Rural Area, stewardship and technical
 37 assistance provides opportunities for supporting long-term resource use while protecting the environment.

38
 39 Climate change is already having severe and wide-ranging impacts on public health, safety, and welfare; the
 40 economy; and the environment. Climate change in the Pacific Northwest is projected to continue to bring more
 41 severe weather events including extreme heat events, wildfires, storms and droughts, decreased water supply for
 42 people and fish, and changes in habitat and species distribution. King County is a leader in taking steps to
 43 reduce greenhouse gas emissions, advance climate equity, and to prepare for the impacts of climate change.

44
 45 ~~((One of the most significant environmental issues facing King County during the past decade was))~~ Salmon
 46 recovery continues to be one of the biggest challenges facing the Puget Sound Region, despite significant
 47 investment in habitat protection and restoration by cities, counties, Indian tribes, state agencies, conservation
 48 districts, and nonprofits over more than twenty years since the listing of Chinook salmon and bull trout as

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49 threatened under the Endangered Species Act. ~~((Since 2000, the region has seen))~~ There has been unprecedented
 50 cooperation between local governments, residents, Indian tribes, conservation districts, non((-)profit groups, and
 51 federal and state fisheries managers to develop watershed-based Water Resource Inventory Area plans for
 52 salmon conservation. These plans form the basis for the federal recovery plan for Chinook salmon. Watershed
 53 partners are continuing to work together to implement and monitor these plans through Water Resource
 54 Inventory Area Forums. Southern Resident Orca, which are dependent on Chinook salmon as a food source,
 55 were listed as endangered in 2005.

56
 57 ~~((King County has taken significant steps to increase protections for Chinook and other salmon species and
 58 improve habitat through changes in daily operations (such as maintenance of county roads and parks), increased
 59 open space protection, tax incentives, updated development regulations, and construction of habitat restoration
 60 projects. The lessons learned and relationships developed through cooperative planning in response to the
 61 Chinook salmon and bull trout listings should help to inform King County’s response to new listings, and bolster
 62 efforts to prevent future species listings.))~~

63
 64 Individual species protections under the Endangered Species Act continue to play an important role. At the
 65 same time, both nationally and internationally, many governments are initiating multi-species approaches aimed
 66 at conserving biodiversity. Biodiversity refers not only to plants and animals but also to their habitats and the
 67 interactions among species and habitats.

68
 69 Protection of biodiversity in all its forms and across all landscapes is critical to continued prosperity and quality
 70 of life in King County. In fisheries, forestry, and agriculture, the value of biodiversity to sustaining long-term
 71 productivity has been demonstrated in region after region. ~~((With the impending effects of climate change,
 72 maintaining biodiversity will be critical to the resilience of resource-based activities and to many social and
 73 ecological systems. The continued increase in King County’s population and the projected effects of climate
 74 change make conservation a difficult but urgent task.))~~ The protection and restoration of biodiversity and of a
 75 full range of supporting habitats is important to King County. King County ~~((will))~~ incorporates these
 76 considerations in its operations and practices, ranging from its utility functions (such as wastewater, solid waste,
 77 and stormwater management) to its regulatory and general government practices.

78
 79 ~~((State and federal agencies are undertaking biodiversity initiatives. The Washington Biodiversity Council was
 80 created by the Governor in 2004, in part, with the aim of refocusing state conservation efforts from the species
 81 level to the ecosystem level. In 2009, the Washington Department of Fish and Wildlife released Landscape
 82 Planning for Washington’s Wildlife: Managing for Biodiversity in Developing Areas. The goal of this document
 83 is to provide information to planners and others that can be used to minimize the impacts of development on fish
 84 and wildlife and to conserve biodiversity.~~

85
 86 ~~The U.S. Forest Service also integrates biodiversity principles into its land management practices.~~
 87 ~~Internationally, Local Governments for Sustainability’s Local Action for Biodiversity Project convenes local~~

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88 governments from around the world, including King County, to establish strategies for the conservation of urban
89 biodiversity.

90

91 Climate change has the potential for severe and wide ranging impacts on public health, safety, and welfare; the
92 economy; and the environment. Climate change in the Pacific Northwest is projected to bring more severe
93 weather events including heat events, winter storms and summer droughts, decreased water supplies for people
94 and fish, and changes in habitat and species distribution. King County is a leader in taking steps to reduce
95 greenhouse gas emissions and to adapt to climate change.

96

97 New approaches for stormwater management known as Low Impact Development, are providing additional
98 options for stormwater management, especially in site development. Low Impact Development Best
99 Management Practices can mimic the natural functions of soil and forest cover in slowing and filtering
100 stormwater runoff by infiltrating or dispersing stormwater onsite, or by capturing and reusing it. Used
101 exclusively, or in conjunction with a comprehensive stormwater management program of structural controls and
102 other best management practices, Low Impact Development Best Management Practices can reduce
103 environmental impacts from stormwater runoff. Low Impact Development techniques also work in tandem with
104 other strategies such as retaining forest cover, preserving native plants and preserving native soil.

105

106 These techniques help to meet other objectives such as retention of canopy cover, protection of riparian habitat
107 and preservation of native soils that help protect biodiversity, improve air quality, and protect the ecological
108 functions of the landscape and surface waters. These approaches help create a more sustainable environment and
109 create a better quality of life for King County residents.))

110

111 Untreated stormwater runoff remains the largest source of pollution to Puget Sound. Stormwater management
112 requirements and practices continue to evolve, with greater emphasis on low impact development and green
113 stormwater infrastructure that can mimic the natural functions of soil and forest cover in slowing and filtering
114 stormwater runoff by infiltrating or dispersing stormwater onsite, or by capturing and reusing it. Modifying
115 stormwater facilities, or building new ones in previously developed areas, is very expensive. The County
116 continues to develop, apply, and update evidence-based tools to identify and prioritize actions to achieve the best
117 outcomes for reducing pollution to Puget Sound.

118

119 The County also partners with cities, Indian tribes, other counties, and nonprofits to identify where projects like
120 “stormwater parks” can provide the greatest environmental benefit while increasing access to open space in
121 historically underserved areas. Stormwater parks offer promise for reducing pollutants at a basin-wide scale
122 while providing access to new green space. These multi-benefit facilities can be designed to remove pollutants
123 like nutrients, heavy metals, and many organic pollutants, including polychlorinated biphenyls including
124 persistent bio-accumulative toxics, sometime referred to as, “forever chemicals.” Such stormwater parks, if
125 located strategically, could treat billions of gallons of stormwater a year, significantly reducing stormwater
126 pollution reaching receiving water bodies, which would in turn improve outcomes for fish consumption and orca

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127 health. In making decisions about where to site stormwater parks, King County focuses on communities
128 experiencing the greatest water pollution and having the least access to open space.

129

130 Environmental initiatives during the past decade have underscored the need for monitoring changes in the
131 environment and the effectiveness of the County's efforts to protect it. Monitoring and performance
132 measurement help local governments to target limited resources on existing and emerging environmental
133 problems, determine whether actions are having their intended effect, promote accountability, and adapt
134 approaches to environmental management. ~~((The Department of Natural Resources and Parks assesses
135 environmental conditions with a variety of monitoring programs. The results are presented in the environmental
136 indicator section of KingStat and are used to develop appropriate county responses and provide an opportunity
137 to collaborate and partner with other organizations in making improvements.))~~

138

139 This chapter reflects the overarching goal of the Countywide Planning Policies to protect, restore and enhance
140 the quality of the natural environment in King County for future generations. ~~((This chapter has been updated to
141 integrate county strategies for protection of land, air, and water; to emphasize implementation of salmon
142 recovery plans; to reflect increased emphasis on climate change and biodiversity; and to support monitoring and
143 adaptive management.))~~ Policies in this chapter promote implementation of strategies and goals from multiple
144 recent plans and initiatives, including the Strategic Climate Action Plan, the Land Conservation Initiative, the
145 30-year Forest Plan, increasing focus on restoring fish passage, and the Clean Water Healthy Habitat Strategic
146 Plan. These policies guide King County's environmental regulations and incentives, education and stewardship
147 programs in unincorporated King County.

148

149 ~~((I.))~~ **Natural Environment and Regulatory Context**

150 ~~((A.))~~ **Integrated Approach**

151 Environmental protection efforts need to be integrated across species, habitats, ecosystems, and landscapes.
152 Efforts to reduce flooding or protect water quality and habitat cannot work successfully in isolation from
153 management of land use across the larger contributing landscape. Efforts to protect one particular species or
154 resource type could be detrimental to another if such efforts are not considered in an ecosystem context.
155 Protection and restoration of natural ecosystem processes provide the best opportunity to conserve native
156 species.

157

158 Likewise, the tools King County uses to protect the environment—incentives, regulations, changes in
159 ~~((e))~~ County operations, planning, capital projects, land acquisition, education, stewardship, and monitoring—
160 also need to be integrated. For example, the regulatory buffers placed around wetlands need to consider
161 changing conditions in the watershed around the wetland, including natural hydrological processes. These
162 conditions are influenced by land use, stormwater runoff management, clearing and grading requirements, and
163 protection of forest cover and open space. Incentives, education, and technical assistance programs also must

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164 work hand-in-hand so that land((-)owners can access a seamless set of programs that work together to
165 accomplish environmental protection and restoration.

166

167 As part of the ((2004)) 10-year Comprehensive Plan update process, King County ((updated)) updates its critical
168 areas, stormwater runoff management, and clearing and grading regulations consistent with Growth
169 Management Act requirements to ((include)) use best available science and address no net loss of the functions
170 and values of critical areas and demonstrate “special consideration” given to conservation and protection of
171 anadromous fish species. These regulations are functionally interrelated, with the standards for protection of
172 wetlands, aquatic areas, and wildlife areas also working in tandem with ((landscape-level)) standards for
173 stormwater management, water quality, and clearing and grading, as well as programs for land conservation.

174

175 Habitat conditions vary throughout unincorporated King County, with higher quality habitat generally found in
176 less developed areas of the county. However, both urban and rural habitats play a critical role for various species
177 and during different life stages. The environmental protections the ((e))County uses should consider
178 development patterns, habitat conditions, and the roles played by different geographic and ecologic areas. A
179 geographic and watershed-based approach to planning, stewardship, and environmental protection
180 acknowledges that different areas of King County may have different environmental and resource values and
181 face different levels of development pressure. Therefore, methods of protecting critical areas that respect those
182 distinctions must continue to evolve to balance the protection of the environment with the need to reduce urban
183 sprawl and preserve the County's quality of life.

184

185 ((In 2004, the county strengthened)) The County offers a variety of incentives ((available to)) for land((-)owners
186 ((through its Public Benefit Rating System, a)) to promote environmental stewardship and restoration and
187 enhancement of ecosystems. These include tax incentive programs through which landowners can receive
188 reduced property taxes in exchange for commitments to protect open space and natural resources((~~However,~~
189 ~~incentives are not just limited to tax incentives, but can include~~)), market-based programs for permanent land
190 protection and regulatory flexibility (((e.g., alternatives to fixed-width buffers)) such as the Transfer of
191 Development Rights program and fee-in-lieu compensatory mitigation program), ((streamlined permit
192 processing, reduced permit fees,)) and free or low-cost technical assistance. ((Additionally, the King County
193 Strategic Plan, released in 2010 and updated in 2015 through Motion 14317, has a healthy environment goal to
194 preserve open space and rural character while addressing climate change.))

195

196 **E-101** In addition to its regulatory authority, King County should use incentives to
197 protect and restore the natural environment whenever practicable. Incentives
198 ((shall)) should be monitored and periodically reviewed to determine their
199 effectiveness ((in terms of)) at protecting and restoring natural resources.

200

201 **E-102** King County should take a regional role in promoting and supporting
202 environmental stewardship through direct education, coordinating of educational

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203 efforts, and establishing partnerships with other entities that share similar
204 environmental concerns and stewardship opportunities.

205
206 **E-102a** King County ~~((will))~~ **shall** consider environmental justice and climate ~~((justice))~~
207 equity impacts and disparities in its planning, projects and services to assess
208 and mitigate unintended impacts on frontline communities and to ensure
209 solutions that enhance conditions for people and the environment.

210
211 King County coordinates many programs internally as well as with other agencies and governments. The
212 cooperative development and implementation of watershed-based salmon recovery plans over the last decade has
213 brought together local governments, federal and state agencies, residents, and interest groups. Continued
214 collaboration at the watershed level is critical for successful implementation of these habitat-focused plans.
215 Indian ~~((F))~~tribes with treaty reserved fishing rights and the Washington Department of Fish and Wildlife
216 co-manage harvest and hatchery actions. Working closely with these co-managers is essential to ensure that
217 watershed-based salmon recovery strategies effectively integrate habitat, harvest, and hatchery actions.

218
219 King County works closely with federal and state agencies, cities, and other counties to try to integrate and
220 streamline compliance with federal mandates, including the Clean Water Act, Clean Air Act, and Endangered
221 Species Act. In doing so, multiple benefits can be achieved. For example, in some cases mandated monitoring
222 for Clean Water Act compliance can provide useful information to support salmon conservation efforts.

223
224 King County also participates in ~~((F))~~the Puget Sound Partnership ~~((was created by the Washington State~~
225 ~~Legislature and Governor in July 2007 to achieve the recovery of the Puget Sound ecosystem by the year 2020.~~
226 ~~The Partnership's goal is))~~, which works to coordinate and significantly strengthen the federal, state, local, and
227 private efforts undertaken to date to protect and restore the health of Puget Sound and its watersheds.
228 ~~((Additional discussion of King County's participation in the Puget Sound Partnership is found later in this~~
229 ~~chapter.~~

230
231 ~~King County also works closely with federal and state agencies, cities, and other counties to try to integrate and~~
232 ~~streamline compliance with federal mandates, including the Clean Water Act, Clean Air Act, and Endangered~~
233 ~~Species Act. In doing so, multiple benefits can be achieved. For example, in some cases mandated monitoring~~
234 ~~for Clean Water Act compliance can provide useful information to support salmon conservation efforts.))~~

235
236 **E-103** King County should coordinate with local jurisdictions, universities, federal and
237 state agencies, Indian tribes, special interest groups, special districts,
238 businesses, and residents to implement, monitor, and update Water Resource
239 Inventory Area salmon recovery plans for all areas of King County.

240
241 **E-104** Development of environmental regulations, restoration, and mitigation projects,
242 and incentive and stewardship programs should be coordinated with local

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243 jurisdictions, federal and state agencies, Indian tribes, special interest groups,
 244 and residents when conserving and restoring the natural environment consistent
 245 with Urban Growth Area, Rural Area, and designated Natural Resource Land
 246 goals.

247

248 King County ((will)) uses existing and updated subarea and functional plans and Water Resource Inventory Area
 249 salmon recovery plans to ((provide guidance to)) guide programs, regulations and incentives to protect and
 250 restore environmental quality. Two key plans developed by the Department of Natural Resources and Parks
 251 establish goals and strategies to ensure protection and enhancement of the environment to create ecological
 252 integrity and ensure benefits of a healthy environment accrue to all King County residents:

- 253 • **Land Conservation Initiative:** Calls for a series of accelerated actions to close gaps in equitable access
 254 to open space and to protect King County's last, most important natural lands and urban green spaces
 255 before increasing land prices and development pressure foreclose opportunities for conservation. The
 256 regional collaboration between King County, cities, businesses, farmers, environmental partners, and
 257 other key partners outlines a strategy to save money and achieve conservation results more quickly.
- 258 • **Clean Water Healthy Habitat Strategic Plan:** Recommends 30-year (through 2050), outcome-based
 259 goals, measures and strategies for six interrelated goal areas: healthy forests and more greenspaces;
 260 cleaner, controlled stormwater runoff; reduced toxics and fecal pathogens; functional river floodplains;
 261 better habitat for fish; and resilient marine shorelines.

262

263 **E-105** Environmental quality and important ecological functions shall be protected and
 264 hazards to health and property shall be minimized through development reviews
 265 and implementation of land use plans, Water Resource Inventory Area salmon
 266 recovery plans, the Strategic Climate Action Plan, stormwater management plans
 267 and programs, flood hazard management plans, environmental monitoring
 268 programs, and park ((master)) management plans, as well as focused ongoing
 269 efforts such as the fish passage restoration program, Land Conservation
 270 Initiative, 30-Year Forest Plan, and Clean Water Healthy Habitat Strategic Plan.
 271 Implementation of ((T))these plans and programs ((shall)) should also encourage
 272 stewardship and restoration of critical areas as defined in the Growth
 273 Management Act, ((and include)) such as including an adaptive management
 274 approach.

275

276 The State Environmental Policy Act requires King County to consider the environmental impacts of proposed
 277 actions ((that may have a significant adverse environmental impact)). Over the years, King County has adopted
 278 development regulations that address many of the impacts that are likely to occur as a result of development. In
 279 many cases, King County's regulations adequately address environmental impacts and development proposals
 280 do not require additional mitigation under the State Environmental Policy Act. However, there may be certain
 281 development proposals or unusual circumstances not contemplated by the development regulations that require
 282 further mitigation under the State Environmental Policy Act. This principle is articulated in King County Code

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283 Chapter 20.44. The presence of a species listed as endangered or threatened by the federal government is an
284 example of such an unusual circumstance.

285

286 **E-107 Regulations to prevent unmitigated significant adverse environmental impacts**
287 **should be based on the importance and sensitivity of the resource.**

288

289 **E-108 King County may exercise its substantive authority under the State**
290 **Environmental Policy Act to condition or deny proposed actions ((in order)) to**
291 **mitigate associated individual or cumulative impacts such as significant habitat**
292 **modification or degradation that may actually kill, injure, or harm listed**
293 **threatened or endangered species by significantly impairing essential behavioral**
294 **patterns, including breeding, feeding, spawning, rearing, migrating, or sheltering.**

295

296 **E-109 King County should promote efficient provision of utilities and public services by**
297 **exempting minor activities from its critical areas regulations, if the agency has an**
298 **approved best management practice plan approved by King County, and the plan**
299 **ensures that proposed projects that may affect habitat of listed species be**
300 **carried out in a manner that protects the resource or mitigates adverse impacts.**

301

302 **~~(B-)~~ Policy and Regulatory Context**

303 **~~(1-)~~ Endangered Species Act**

304 ~~((In March 1998, The National Marine Fisheries Service proposed to list the Puget Sound Chinook salmon as~~
305 ~~"threatened" under the Endangered Species Act. This Chinook population was officially listed in March 1999.~~
306 ~~The listing of Chinook as threatened triggered a requirement for consultations with the National Marine~~
307 ~~Fisheries Service on any activity requiring a federal permit, relying on federal funds, or being sponsored by a~~
308 ~~federal agency.~~

309

310 ~~Since that listing, several other aquatic species present in King County have been listed as threatened, including~~
311 ~~two additional salmonids: bull trout in November 1999, and steelhead in May 2007. Coho salmon are~~
312 ~~considered a Species of Concern. Puget Sound's southern resident Orca, which rely almost solely on Chinook~~
313 ~~salmon as a food source, were also listed under the Endangered Species Act as endangered in November 2005.))~~

314 Over the last twenty years, several species connected to King County's streams and rivers have become listed
315 under the Endangered Species Act. Threatened species include Chinook salmon , bull trout , and steelhead, and
316 Southern Resident killer whales are listed as endangered. The listing of Chinook salmon and Southern Resident
317 killer whales are related to one another, as Southern Resident killer whales rely heavily on Chinook as a primary
318 food source. The listings trigger requirements for consultations with the National Marine Fisheries Service on
319 any activity requiring a federal permit, relying on federal funds, or being sponsored by a federal agency.

320 The National Marine Fisheries Service and the U.S. Fish and Wildlife Service have also issued rules describing

321 regulations deemed necessary to conserve Puget Sound Chinook and steelhead, as well as other threatened West

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322 Coast salmonids. ~~((These rules, commonly referred to as “4(d) rules,” legally establish the protective measures~~
 323 ~~that are necessary to provide for conservation of a listed species. These rules also make it a violation of the~~
 324 ~~Endangered Species Act for any person, government, or other entity to “take” a threatened species. Prohibited~~
 325 ~~“take” under the Endangered Species Act includes harm through significant habitat modification or degradation~~
 326 ~~where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including~~
 327 ~~breeding, feeding, spawning, rearing, migrating or sheltering.~~

328

329 ~~The 4(d) rule for Chinook and steelhead also establishes conditions or limits under which certain categories of~~
 330 ~~activities that may result in “take” may be conducted. King County takes actions under the conditions~~
 331 ~~established for two categories of activity: routine road maintenance and habitat restoration projects funded by the~~
 332 ~~State Salmon Recovery Funding Board.))~~

333

334 Final Endangered Species Act Recovery Plans have been developed for Puget Sound Chinook (2007) ~~((and)),~~
 335 ~~bull trout (((2004)) 2015), and Puget Sound steelhead (2019).~~ A final Recovery Plan for Orca whales was
 336 published in 2008. These plans describe recovery goals for the species, specific measures to address the factors
 337 that are limiting the health of the species, and timeframes and cost estimates for recovery measures.

338 Conservation actions identified in Water Resource Inventory Area salmon recovery plans for King County
 339 watersheds are now being implemented subject to available funding and are anticipated to contribute
 340 significantly to the achievement of recovery goals for these species and their eventual removal from the
 341 Endangered Species list.

342

343 **~~((2.))~~ Clean Water Act**

344

345 The Clean Water Act requires that all states protect and restore their waters to beneficial uses. This is
 346 accomplished through the development of a permitting framework called the National Pollutant Discharge
 347 Elimination System (NPDES) Permit program. Authority for administering the NPDES Program has been
 348 delegated by the Environmental Protection Agency to the Washington State Department of Ecology (Ecology),
 349 and King County holds a number of NPDES general permits for various specified activities.

350

351 For instance, the County must comply with permit conditions that cover ongoing construction site activities,
 352 industrial activities, and stormwater runoff discharges from the municipal stormwater system. Since 1995,
 353 Ecology has issued a NPDES Phase I Municipal Stormwater permit to King County, authorizing stormwater
 354 discharges from the County’s municipal separate stormwater sewer system.

355

356 ~~((The current permit, set to expire July 31, 2018, contains prescriptive requirements for discovering, controlling~~
 357 ~~and monitoring pollutants in municipal stormwater, as well as stormwater control design standards for site~~
 358 ~~development, public education and outreach, mapping, and operating and maintaining municipal stormwater~~
 359 ~~infrastructure.))~~

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361 The County complies with the current Phase I municipal NPDES stormwater permit by implementing the
 362 County’s stormwater management program plan ~~((that can be found at the following website:
 363 [http://www.kingcounty.gov/environment/waterandland/stormwater/pollution-discharge-permit/annual-](http://www.kingcounty.gov/environment/waterandland/stormwater/pollution-discharge-permit/annual-reports.aspx)
 364 [reports.aspx](http://www.kingcounty.gov/environment/waterandland/stormwater/pollution-discharge-permit/annual-reports.aspx)~~

365
 366))_The implementation of the County’s plan is reported to Ecology by submitting an annual report. The annual
 367 report documents compliance with permit requirements over the preceding year and the stormwater
 368 management plan outlines compliance activities for the upcoming year. ~~((The most current annual report can be
 369 found here:
 370 [http://www.kingcounty.gov/environment/waterandland/stormwater/pollution-discharge-permit/annual-](http://www.kingcounty.gov/environment/waterandland/stormwater/pollution-discharge-permit/annual-reports.aspx)
 371 [reports.aspx](http://www.kingcounty.gov/environment/waterandland/stormwater/pollution-discharge-permit/annual-reports.aspx)))~~

373 **Water Quality Standards and Total Maximum Daily Loads**

374
 375 When a particular water body falls short of state surface water quality standards Ecology must impose a Total
 376 Maximum Daily Load (TMDL). A TMDL is developed to restore beneficial uses to the water body by reducing
 377 or eliminating pollutants. In addition to the actions found in the County’s stormwater management plan, the
 378 Permit also contains requirements for the County to implement actions that address four impaired water bodies.
 379 The Bear-Evans watershed, Issaquah Creek, and the Puyallup/White watershed are impaired by elevated levels
 380 of fecal coliform~~((, and))~~. The Lower White River has a TMDL for elevated pH and Cottage Lake is impaired
 381 by elevated levels of total phosphorous. The actions to counteract these elevated levels of pollution include:
 382 animal waste education and collection stations at municipal parks, and inventorying and inspecting commercial
 383 animal handling facilities. King County’s Illicit Discharge Detection and Elimination program also conducts
 384 field screening for pollution sources by designating high priority areas, and conducting bacteria sampling and
 385 monitoring.

386
 387 In addition to the TMDLs found in the Permit, several others have been approved within King County:
 388 the Snoqualmie River, Little Bear Creek, Lake Fenwick, Lake Sawyer, the Duwamish River, Lower Green
 389 River, Pipers Creek, North Creek, Newaukum Creek, Puyallup River, White River, and Fauntleroy Creek. King
 390 County TMDLs under development or pending approval by the Environmental Protection Agency include
 391 Green River and Newaukum Creek, White and Puyallup Rivers, and Soos Creek. ~~((A list of these Water Quality
 392 Improvement Projects in King County can be found at:
 393 <http://www.ecy.wa.gov/programs/wq/tmdl/TMDLsbyCounty/king.html>))~~

394
 395 **E-110 Surface waters designated by the state as Water Quality Impaired under the**
 396 **Clean Water Act (water bodies included in Category 5 of the Water Quality**
 397 **Assessment) shall be improved through monitoring, source controls, best**
 398 **management practices, enforcement of existing codes, and, where applicable,**

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399 implementation of Total Maximum Daily Load plans. The water quality of other
400 water bodies shall be protected or improved through these same measures.

401

402 ~~((E-111 King County shall evaluate development proposals subject to drainage review in
403 unincorporated King County to assess whether the proposed actions are likely to
404 cause or contribute to violations of Washington State water quality standards in
405 receiving waters for individual pollutants of concern and identify mitigation or
406 requirements to avoid the impacts when appropriate.))~~

407

408 There are certain actions that can be used to help moderate water quality. Such actions may include maintaining
409 and increasing connections between surface waters and shallow groundwater or hyporheic flow, promoting
410 riparian vegetation and stormwater structural retrofitting using infiltration techniques including ~~((L))~~low
411 ~~((H))~~impact ~~((D))~~development techniques, and increasing the physical complexity of river channels.

412

413 **E-112** When environmental monitoring, testing, or reliable data indicates human
414 activities have caused impaired water quality, such as increased water
415 temperature, fecal contamination, low oxygen, excess nutrients, metals, or other
416 contaminants, King County shall take actions ~~((which will))~~ that help moderate
417 those impairments.

418

419 **~~((3.))~~ Growth Management Act and Critical Areas Protection**

420 ~~((The Growth Management Act requires that each city and county in Washington State identify, designate, and
421 protect critical areas found in their local environment. Critical areas, as defined in the Growth Management
422 Act, include wetlands, areas with a critical recharging effect on aquifers used for potable water, fish and wildlife
423 habitat conservation areas, frequently flooded areas and geologically hazardous areas.))~~ This chapter establishes
424 policies for designating and protecting critical areas in King County. King County Code Title 21A provides the
425 regulatory framework for these policies.

426

427 ~~((The Growth Management Act also requires local governments to include the best available science in
428 developing policies and development regulations to protect the functions and values of critical areas, and to give
429 special consideration to the conservation or protection measures necessary to preserve or enhance anadromous
430 (fish that spawn in freshwater and spend part of their lifecycle in salt water) fisheries.))~~

431

432 **E-112a** The protection of lands where development would pose hazards to health and
433 safety, property, important ecological functions or environmental quality shall be
434 achieved through acquisition, enhancement, incentive programs, and appropriate
435 regulations. The following critical areas are particularly susceptible and shall be
436 protected in King County:

437

- a. Floodways of 100-year floodplains;

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476 Sound was revised in 2012, 2014, 2016, and 2018, focusing on three Strategic Initiatives: protecting and restoring
477 habitat, preventing pollution from stormwater, and recovering shellfish beds.))

478

479 **E-113 King County should actively participate in updating and implementing the Puget**
480 **Sound Partnership’s Action Agenda, through the Puyallup-White River, South**
481 **Central Action Area Caucus Group ((and)), Snohomish-Stillaguamish, and West**
482 **Sound Partners for Ecosystem Recovery Local Integrating Organizations,**
483 **consistent with King County goals.**

484

485 **E-114 King County should collaborate with other watershed forum partners to ensure**
486 **that recommendations of watershed-based salmon recovery plans, goals for**
487 **regional stormwater controls, and goals for human and community health for**
488 **King County are integrated with the Puget Sound Partnership recommendations.**

489

490 ((The Puget Sound Partnership maintains a Strategic Science Plan and Biennial Science Work Plan which
491 provide an overall framework for development and coordination of specific science activities necessary to
492 support Puget Sound ecosystem protection and restoration under the Partnership’s Action Agenda. The Puget
493 Sound Partnership also organizes the Puget Sound Ecosystem Monitoring Program, a collaborative effort to
494 improve communication and data sharing among the many monitoring programs operating in Puget Sound,
495 with the goal of assessing progress towards recovery of the health of the Sound. King County actively
496 participates in the Ecosystem Monitoring Program.))

497

498 **E-115 King County should identify opportunities for coordinating its existing**
499 **monitoring programs with monitoring and assessment work conducted through**
500 **Puget Sound Ecosystem Monitoring Program, the Puget Sound Partnership’s**
501 **Strategic Science Plan, and the Puget Sound Partnership’s Biennial Science**
502 **Work Plan.**

503

504 **((6.)) Noxious Weeds**

505 ((Left uncontrolled, n))Noxious weeds can significantly impact public and private land use in the County. Left
506 uncontrolled, noxious weeds will ultimately undermine many of the County’s environmental goals and
507 initiatives including: the Local Food Initiative, salmon habitat restoration projects, and the Land Conservation
508 Initiative. The State Noxious Weed Control Law (Chapter 17.10 Revised Code of Washington ((17.10)))
509 establishes all property owners’ responsibility for preventing and controlling the spread of noxious weeds.
510 Because plants grow without regard to property lines or political jurisdictions, everyone’s cooperation is needed
511 – city gardeners, government land agencies, foresters, and farmers all have a role to play. The key to successful
512 noxious weed control is effective engagement and participation of landowners and communities in the
513 stewardship of their lands. ((The law spells out these responsibilities and creates the government infrastructure
514 needed to educate residents and implement regulatory processes.))

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515

516 E-115a King County shall ~~((exercise its authority under Revised Code of Washington~~
517 ~~17.10 to))~~:

518 ~~((4))~~ a. ~~((establish a))~~ **Work with the King ((e))County ((n))oxious ((w))Weed**
519 **((e))Control ((b))Board to provide public oversight and direction of the**
520 **County's Noxious Weed Control Program;**

521 ~~((2))~~ b. ~~((i))~~ **Implement a program of activities that minimizes the impacts of**
522 **noxious weeds to the environment, economy, recreation, and public**
523 **health within the ((C))county; and**

524 c. **Adopt regulations to ensure control of noxious weeds and weeds of**
525 **concern as identified by the Noxious Weed Control Board.**

526

527 ~~((H.))~~ Climate Change

528 Climate change is one of the paramount environmental and economic challenges for this generation. Human
529 caused sources of greenhouse gas emissions, including carbon dioxide and methane, are causing unprecedented
530 and severe changes in global and local climate systems. This is the consensus view of the world's leading
531 scientists, including the Intergovernmental Panel on Climate Change and the U.S. National Academy of
532 Sciences.

533

534 King County faces significant environmental and economic challenges stemming from climate change, including
535 stressed and rapidly changing ecosystems, costly impacts on public and private property, and increasing public
536 health risks related to wildfire smoke, extreme heat waves, and changes in infectious disease. The impacts of a
537 changing climate will be experienced differently by King County residents, influenced by factors such as income,
538 age, health, and location. These changes can act as a threat multiplier that creates complex challenges,
539 particularly for frontline communities affected by historical and current inequities who have limited resources to
540 adapt.

541

542 Effective and equitable climate action requires a significant commitment on the part of King County to reduce
543 greenhouse gas emissions, prepare for climate change impacts, and build sustainable and resilient frontline
544 communities.

545

546 King County's ~~((2015))~~ Strategic Climate Action Plan, ~~((which was adopted))~~ updated every five years and
547 approved by the King County Council ((through Motion 14449)), is King County's comprehensive legislative
548 and policy plan for equitable climate action. ((It provides the blueprint for county decision-makers, employees,
549 and the general public to learn about the County's climate change commitments.)) The Strategic Climate Action
550 Plan outlines King County's priorities and commitments for climate action, integrating climate change and
551 climate equity into all areas of County operations and in the County's work with cities, partners, communities,
552 and residents. A subset of the policies and commitments from the Strategic Climate Action Plan are also

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553 reflected in this section of the Comprehensive Plan. ((To learn more about the Strategic Climate Action Plan:
554 <http://www.kingcounty.gov/climate>.

555
556 Impacts from climate change have the potential to dramatically impact ecosystems, agriculture, economy,
557 biodiversity, and public health and safety in myriad and interrelated ways. Impacts of a changing climate will be
558 experienced differently by King County residents, influenced by factors such as income, age, health, and
559 location. However, by working collaboratively to develop and implement strategies to prevent, respond to, and
560 prepare for climate change, King County has many opportunities to address broader inequities. Sustaining
561 quality of life and the environment requires a significant commitment on the part of King County to both
562 reducing greenhouse gas emissions, the primary driver of human caused climate change, and preparing for
563 climate change impacts in an ever-changing and increasingly dynamic landscape.))

564

565 **E-200 The 2020 Strategic Climate Action Plan, or successor plans, should guide the planning,**
566 **development, and implementation of greenhouse gas reduction goals and actions,**
567 **equitable and community-driven climate solutions, and policies and actions that reduce**
568 **climate change vulnerabilities and increase climate resilience.**

569

570 **((Climate Change Science and Impacts**

571 Human caused sources of greenhouse gas emissions, including carbon dioxide and methane, are causing
572 unprecedented and severe changes in global and local climate systems. This is the consensus view of the world's
573 leading scientists, including the Intergovernmental Panel on Climate Change and the US National Academy of
574 Sciences.

575

576 In King County, decreasing mountain snowpack, increasing flooding, and rising sea levels are evidence that the
577 climate system is changing. While many factors affect the climate system and natural environment, scientists
578 have attributed many changes in significant part to recent increases in atmospheric greenhouse gas
579 concentrations. The County faces significant environmental and economic challenges stemming from climate
580 change, including stressed and rapidly changing ecosystems, costly impacts on public and private property, and
581 new public health risks resulting from worsening air and water quality (e.g., toxic algal blooms), additional heat
582 related impacts, and increased exposure to infectious disease.))

583

584 **King County Greenhouse Gas Emissions**

585 Climate change over the last century has been caused primarily ((from)) by increasing greenhouse gas emissions
586 such as methane, carbon dioxide and nitrous oxide. Human activities, such as the use of fossil fuels and land
587 conversion, are the main cause of these emissions. King County is committed to ((reduce the)) reducing
588 greenhouse gas emissions of its operations and ((support)) to supporting broader efforts to reduce countywide
589 emissions.

590

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591 **~~((Government Operations~~**

592 ~~King County government operations create greenhouse gas emissions.)) Major ((government)) sources of~~
593 ~~greenhouse gas emissions from government operations~~ are associated with combustion of diesel and gasoline for
594 transit buses and fleet vehicles, methane from landfills, electricity usage, and fossil fuel in buildings and for
595 wastewater treatment, and emissions from the production, use, and disposal of government purchased goods and
596 services.

597

598 ~~((King County is making progress in reducing greenhouse gas emissions from county operations, with emissions~~
599 ~~from energy related non-transit sources decreasing 14% between 2007 and 2014. During this time emissions~~
600 ~~directly associated with vehicles and transit service increased by six percent, primarily due to increased use of~~
601 ~~biodiesel and increased transit service.~~

602

603 **Countywide**

604 ~~Within King County's geography))~~ At the countywide community scale, the largest contributors to greenhouse
605 gas emissions are ((primarily caused by)) fossil fuel use (((gasoline and diesel) for transportation and to a lesser
606 but significant extent to heat buildings (natural gas and heating oil))) for building energy and transportation,
607 followed to a lesser extent by land use, refrigerants, waste, and wastewater. In King County, overall greenhouse
608 gas emissions increased by 11 percent from 2007 to 2019; however, per capita emissions declined by seven
609 percent during the same time period. The most substantial drivers for an increase in emissions were population
610 growth, higher greenhouse gas emissions, electricity, and increased aviation emissions. The largest contributors
611 to decreasing emissions have been increased efficiency of passenger vehicles (decreased emissions per mile) and
612 more efficient electricity use by households and commercial entities. Additional significant emissions are
613 associated with consumption in King County, but these sources do not necessarily occur within its geographic
614 borders. These emissions are created through the production, transport, sale, use, and disposal of ~~((imported))~~
615 purchased goods and services ((such as food and electronics)).

616

617 **~~((Preparing for Climate Change Impacts~~**

618 ~~Even if all human sources of greenhouse gas emissions ceased today, global and regional temperatures would~~
619 ~~continue to increase for several decades. Therefore, King County must be proactive in preparing for local~~
620 ~~climate change impacts. For King County, this includes preparing for more frequent and severe flooding and~~
621 ~~droughts, developing recycled water sources, working with farm and forest owners to address climate change~~
622 ~~impacts, planning for effects of climate change on human health, taking steps to improve the resiliency of the~~
623 ~~natural and built environments, and ensuring that the County can continue to provide services such as transit,~~
624 ~~wastewater treatment, and flood protection.~~

625

626 **~~E-201 ————— King County should participate in and support appropriate local, regional and~~**
627 **~~national efforts and organizations focused on reducing greenhouse gas~~**
628 **~~emissions and preparing for climate change impacts.))~~**

629

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630 **Status of King County Climate Change Efforts**

631 King County ~~((has a long record of))~~ is committed to innovation, leadership, and investment in reducing
632 greenhouse gas emissions, prioritizing climate equity, and preparing for the impacts of climate change.
633 Consideration of climate change impacts and opportunities to reduce energy use and greenhouse gas emissions
634 are deeply embedded throughout the work plans and capital investments of ~~((e))~~ County departments and lines of
635 business. ~~((Since 2010, the investments in energy efficiency and changes in operations have reduced building
636 energy use and costs by over \$3 million annually.~~

637

638 ~~King County Metro has pioneered the use of hybrid bus technology is on track to have an all hybrid or electric
639 bus fleet by 2018. As of 2015, the county is now producing renewable energy equivalent to 57% of its
640 government operational energy needs. However, to make significant reductions in greenhouse gas emissions and
641 ensure that the built and natural environment are resilient in the face of a changing climate, even bolder action
642 and stronger collaboration with cities, businesses, and county residents is required.)~~

643

644 The following ~~((sections of this section highlight and))~~ subsections include climate related policies, which are
645 consistent with key ~~((2015))~~ Strategic Climate Action Plan ~~((policies and commitments))~~ goals, strategies, and
646 priority actions.

647

648 **~~((A.))~~ Assessment**

649 ~~King County has completed periodic inventories and assessments of greenhouse gas emissions associated with
650 government operations as well as emissions associated with all resident and business activity in the county since
651 2000. These assessments have provided valuable data to inform actions that will reduce greenhouse gas
652 emissions as well as to monitor progress toward meeting emissions reduction targets.~~

653

654 **~~E-202~~ King County shall assess and publicly report on:**

- 655 **~~a. Its normalized and total energy usage and total greenhouse gas~~**
656 **~~emissions associated with county operations;~~**
657 **~~b. Countywide greenhouse gas emissions associated with resident,~~**
658 **~~business, and other local government activities; and~~**
659 **~~c. Countywide greenhouse gas inventories that quantify all direct local~~**
660 **~~sources of greenhouse gas emissions as well as emissions associated~~**
661 **~~with local consumption.~~**

662

663 **~~E-203~~ King County shall collaborate to set transparent standards to account for the net**
664 **~~energy and greenhouse gas emissions impacts of government actions such as~~**
665 **~~constructing transportation infrastructure and providing services such as~~**
666 **~~recycling and transit and shall assess and publically report these impacts as~~**
667 **~~practicable.~~**

668

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669 ~~E-204 King County shall collaborate with experts in the field of climate change,
670 including scientists at the University of Washington’s Climate Impacts Group, to
671 monitor, assess and publicly share information about the impacts of climate
672 change in King County.)~~

674 **~~((B.)) Reducing Greenhouse Gas Emissions~~**

675 King County is ~~((leading by example in))~~ reducing operational sources of greenhouse gas emissions through
676 efforts such as:

- 677 • ~~((Green building and sustainable development practices that reduce emissions of capital facilities projects;~~
- 678 • ~~Purchasing and maintenance practices that reduce emissions associated with the production, use and~~
679 ~~disposal of goods and services;~~
- 680 • ~~Modifying operations of county buildings and facilities that reduce emissions and resource demand;~~
- 681 • ~~Purchasing and efficiently using alternative vehicles such as electric powered vanpools ((and hybrid)), cars,~~
682 ~~and buses;~~
- 683 • ~~Improving energy efficiency and producing renewable energy sources at King County’s wastewater~~
684 ~~treatment and solid waste disposal facilities; and~~
- 685 • ~~Protecting forested areas, encouraging, and supporting active stewardship, and undertaking tree planting~~
686 ~~and restoration projects that enhance biological carbon sequestration))~~
- 687 • Increasing the efficiency of County vehicle fleets and minimizing their greenhouse gas emissions;
- 688 • Reducing energy use in County facilities, making investments to reduce building fossil fuel use, and
689 producing more renewable energy;
- 690 • Building, maintaining, and operating County facilities consistent with the highest green building and
691 sustainable building practices
- 692 • Minimizing operational resource use, maximizing reuse and recycling, and choosing products and services
693 with low environmental and carbon impacts; and
- 694 • Managing and restoring County-owned parks, natural lands, and farmlands to maximize biological carbon
695 storage and increase climate resilience.

696
697 King County is also supporting emissions reductions at the broader countywide scale through ~~((sustainable land~~
698 ~~use policies, transportation infrastructure, and through the provision of important services such as recycling and~~
699 ~~transit, including actions and policies))~~ efforts such as:

- 700 • ~~((Land use designations and zoning that influence the pattern and density of development and the level~~
701 ~~of reliance on single occupancy vehicles;~~

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- 702 • ~~Use of voluntary tools such as Transfer of Development Rights to reduce development density on Rural~~
703 Area and Natural Resource Lands;
- 704 • ~~Building codes and facilities standards that can influence the types of building materials and future~~
705 energy demands;
- 706 • ~~Promoting the use of transit and non-motorized travel modes to decrease vehicle miles traveled; and~~
- 707 • ~~Protecting Rural Area and Natural Resource Lands from further development through acquisition of fee~~
708 title or conservation easements to redirect future growth to urban areas to reduce emissions related to
709 transportation and new development))
- 710 • Reducing passenger car trips and vehicle emissions by sustaining and increasing transit services,
711 focusing development into urban areas and centers, supporting equitable pricing of vehicle usage, and
712 supporting clean fuels and electric vehicles;
- 713 • Reducing energy and fossil fuel use in the built environment and increasing the use of clean energy
714 supplies and technologies by partnering do develop efficiency programs and supporting converting oil,
715 natural gas, and propane-heated homes to clean sources;
- 716 • Reducing energy use and greenhouse gas emissions associated with new construction, additions,
717 retrofits, and remodels in all buildings in King County by working with partners to advance state green
718 building code amendments, updating building codes in unincorporated King County, and improving
719 commercial energy code;
- 720 • Achieving a circular economy, whereby waste is minimized through prevention, reuse, recycling, and
721 materials staying in use longer by spurring and supporting new recycled markets, implementing a
722 regional organics plan, prioritizing food waste reduction strategies, and recycling improvements at
723 County-owned transfer stations; and
- 724 • Protecting high-value forests and farmlands, expanding the total area of forest cover and actively farmed
725 lands, and restoring health, vitality, and resilience of forest and farmlands by implementing the Land
726 Conservation Initiative, Rural Forest Carbon Program, and ensuring that strategies to reduce emissions
727 and increase carbon sequestration are included in farm and forest stewardship plans.
- 728
- 729 King County is committed to actions and solutions that reduce emissions and prevent and repair harms to
730 frontline communities. To learn more about how the County is committed to advancing climate equity, see
731 additional details in the "Advancing Climate Equity" subsection of this section. Many actions that reduce
732 greenhouse gas emissions result in additional benefits, such as saving energy and fuel costs, improving health,
733 and minimizing other types of air and water pollution. For example, walkable, transit-oriented communities
734 have been shown to have significantly below average ((per capita)) greenhouse gas emissions while at the same
735 time saving residents money, supporting healthier lifestyles, and creating stronger communities.
736

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737 In some cases, ((e))County actions are direct sources of greenhouse gas emissions, but when considered at a
 738 broader scale have a net emissions reduction benefit. For example, ((providing public transportation results in
 739 significant direct greenhouse gas emissions, primarily from combusting diesel. At the same time,)) the
 740 greenhouse gas emissions avoided by providing public transit service ((offsets these direct operational emissions
 741 by more than three times by decreasing)) from decreased driving, providing traffic congestion relief, and
 742 supporting walkable, efficient land use are three times greater than direct emissions from operating public transit
 743 service itself. As this example shows, there are sometimes complex considerations that need to be taken into
 744 account in making decisions about greenhouse gas emissions reduction strategies.

745
 746 Policies related to King County efforts to reduce operational and countywide greenhouse gas emissions are
 747 presented below. Policies related to reducing greenhouse gas emissions and adaptation strategies for agriculture
 748 and forestry can be found in Chapter 3((:)), Rural Area and Natural Resource Lands. Policies related to
 749 reduction of Greenhouse Gas Emissions from transit and fleet vehicles can be found in Chapter 8((:)),
 750 Transportation. Policies related to water supply, use of recycled water, and energy can be found in Chapter
 751 9((:)), Services, Facilities, and Utilities. Policies related to green building and sustainable development can be
 752 found in Chapter 9((:)), Services, Facilities, and Utilities (as related to government operations), and Chapter
 753 10((:)), Economic Development (as related to private development).

754

Government Operations

755
 756 **((E-205)) E-201** King County shall reduce greenhouse gas emissions from ~~((all facets of))~~ its
 757 operations and actions, including but limited to those associated with
 758 construction and management of ((e))County-owned facilities, infrastructure
 759 development, transportation, and environmental protection programs to achieve
 760 the emissions reductions targets set in ((E-206)) E-202 and to work towards the
 761 carbon neutral goal in F-215b.

762

763 **((E-206)) E-202** King County shall reduce total greenhouse gas emissions from government
 764 operations, compared to a 2007 baseline by at least ((25%)) 50 percent by ((2020))
 765 2025 and ((50%)) 80 percent by 2030.

766

767 **((E-206a)) E-203** King County's Department of Natural Resources and Parks, including the
 768 Wastewater Treatment Division, Solid Waste Division, Parks and Recreation
 769 Division, and Water and Land Resource Division, ((shall)) should achieve, at a
 770 minimum, net carbon neutrality ((for its operations by 2017)) on an annual basis.

771

772 **((E-206b)) E-204** King County's Wastewater Treatment Division and Solid Waste Division ((shall))
 773 should each independently achieve carbon-neutral operations by 2025.

774

775 **((E-207)) E-205** King County shall ~~((develop and))~~ continue to implement an operational "social
 776 cost of carbon." The social cost of carbon should be used in life-cycle

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777 assessments and decision making related to County operations, including for
778 purchase of vehicles, buses and fuels, for facility construction and resource
779 efficiency projects, and for related technology investments. ~~((King County
780 should also pursue using the cost of carbon to inform broader County planning
781 and decision making.))~~

782
783 ~~((E-208) King County shall maximize the creation of resources from waste products from
784 county operations such as gases produced by wastewater treatment and solid
785 waste disposal in a manner that reduces greenhouse gas emissions and
786 produces renewable energy.))~~

787
788 **((E-209)) E-207** King County ~~((will))~~ **shall** continue to evaluate its own maintenance and
789 operations practices, including procurement, for opportunities to reduce its own
790 emissions or emissions produced in the manufacturing of products.

791 **Countywide**

792
793 ~~((In 2014,))~~ King County and 39 King County cities ~~((came together to develop))~~ have shared, countywide
794 greenhouse gas emissions reduction targets. ~~((In July 2014, targets were unanimously))~~ These targets are
795 adopted in the Countywide Planning Policies by the King County Growth Management Planning Council. The
796 formal adoption of a shared, community scale greenhouse gas emissions target by local governments is relatively
797 unusual in the U.S., and provides a strong foundation and guidepost for community-scale efforts to reduce
798 greenhouse gas emissions. The shared targets are near- and long-term, ambitious and achievable, and consistent
799 with what climate science says needs to be done ~~((in order))~~ to avoid the worst impacts of climate change. ~~((The~~
800 adopted targets are significantly more ambitious than Washington State's greenhouse gas emissions reduction
801 requirements (Revised Code of Washington 47.01.440).))

802
803 **((E-210)) E-209** King County shall ~~((collaborate)),~~ **independently and in collaboration with ((its))**
804 **cities((,)) and other partners, ((to reduce countywide sources of greenhouse gas**
805 **emissions, compared to a 2007 baseline, by 25% by 2020, 50% by 2030, and 80%**
806 **by 2050))** **adopt and implement policies and programs to achieve a target of**
807 **reducing countywide sources of greenhouse gas emissions, compared to a 2007**
808 **baseline, by 50 percent by 2030, 75 percent by 2040, and 95 percent, including**
809 **net-zero emissions through carbon sequestration and other strategies, by 2050.**
810 **King County shall evaluate and update these targets over time in consideration**
811 **of the latest international climate science and statewide targets aiming to limit**
812 **the most severe impacts of climate change and keep global warming under 1.5**
813 **degrees Celsius.**

814
815 ~~((E-212) King County will work with its cities and other partners to establish a greenhouse~~
816 ~~gas emissions inventory and measurement framework for use by all King County~~

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817 ~~jurisdictions to efficiently and effectively measure progress toward countywide~~
818 ~~targets.))~~

819

820 Renewable energy technology, such as solar power, has the potential for replacing a significant share of King
821 County's energy portfolio. Renewable energy technologies that have the benefit of zero or very low levels of
822 greenhouse gas emissions should be encouraged. Renewable energy production should consider other potential
823 benefits and uses of renewable available resources; for example, King County should prioritize the use of
824 potentially wasted edible food to reduce hunger over its use for renewable energy. The renewable energy
825 technology industry is evolving, and no single technology is guaranteed to fit all the county's alternative energy
826 needs. King County should provide flexibility in its policies and regulations to adapt to the changing
827 circumstances.

828

829 **((E-213)) E-210** King County should ensure that its land use policies, development and building
830 regulations, technical assistance programs, and incentive programs support and
831 encourage the use of viable renewable energy, energy efficiency, and fossil fuel
832 reduction and transition technologies that ((have)) produce zero or minimal
833 greenhouse gas emissions, while considering equity and racial and social justice
834 siting impacts.

835

836 **E-211** King County shall develop and implement building and energy codes that reduce
837 energy use and phase out fossil fuel use in the built environment within King
838 County's jurisdiction.

839

840 **E-212** King County shall support:
841 a. Stronger Washington State building and energy codes and policies that
842 reduce energy use, reduce the embodied carbon of materials, phase out
843 fossil fuel use, and support deployment of electric vehicles and clean
844 energy; and
845 b. Increased state resources for local code development and
846 implementation.

847

848 **E-213** King County should work with other local building officials and staff, as well as
849 community partners and the building industry, to effectively implement energy
850 and building codes that reduce energy use and embodied carbon of materials
851 and phase out fossil fuel use.

852

853 **E-214** King County shall develop and implement countywide community-scale built
854 environment programs and policies that:
855 a. Reduce energy use, increase the use of renewable energy, and phase
856 out the use of fossil fuels, such as: energy loan, residential efficiency

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857 retrofits; and fossil fuel reduction and transition incentives and
858 programs; and

859 b. Prioritize access and affordability of solutions for frontline communities,
860 especially for low-income, senior, and renter households.

861

862 **((E-214)) E-215** King County, through its Comprehensive Plan policies and development
863 regulations, should promote healthy community designs that enable ~~((walking,~~
864 ~~bicycling;))~~ **active transportation** and public transit use, thereby reducing
865 greenhouse gas emissions and regional air pollution.

866

867 **((New Development**

868 Nearly every new development results in new sources of greenhouse house gas emissions. These include
869 ~~emissions from construction and land development, emissions created from producing and transporting building~~
870 ~~materials, energy used in operating buildings and structures, and transportation associated with the development.~~
871 ~~Although the emissions associated with construction occur today, the emissions associated with energy and~~
872 ~~transportation will occur over the life of the development, which may extend for 50 years or more. This means~~
873 ~~that decisions made today about development will have an effect on climate change far into the future.~~

874

875 ~~**E-215** King County shall evaluate proposed actions subject to the State Environmental~~
876 ~~Policy Act for their greenhouse gas emissions. King County may exercise its~~
877 ~~substantive authority under the State Environmental Policy Act to condition or~~
878 ~~deny proposed actions in order to mitigate associated individual or cumulative~~
879 ~~impacts to global warming. In exercising its authority under this policy, King~~
880 ~~County should consider project types that are presumed to be not significant in~~
881 ~~generating greenhouse gas emissions and do not require review for their~~
882 ~~greenhouse gas emissions. (Any standards related to consideration of~~
883 ~~greenhouse gas emissions through the State Environmental Policy Act process~~
884 ~~shall be subject to Council review and adoption by ordinance.))~~

885

886 **Assessment**

887 King County has completed periodic inventories and assessments of greenhouse gas emissions associated with
888 government operations, as well as emissions associated with all resident and business activity in the county since
889 2000. These assessments have provided valuable data to inform actions that will reduce greenhouse gas
890 emissions, as well as to monitor progress toward meeting emissions reduction targets.

891

892 **((E-202)) E-216** King County shall ~~((assess and publicly report on:~~
893 ~~a. Its normalized and total energy usage and total greenhouse gas~~
894 ~~emissions associated with county operations;~~
895 ~~b. Countywide greenhouse gas emissions associated with resident,~~
896 ~~business, and other local government activities; and~~

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- 897 ~~c. Countywide greenhouse gas inventories that quantify all direct local~~
 898 ~~sources of greenhouse gas emissions as well as emissions associated~~
 899 ~~with local consumption));~~
 900 a. Assess and publicly report on countywide greenhouse gas emissions
 901 associated with resident, business, and local government buildings,
 902 vehicles, and solid waste at least every two years;
 903 b. Update its comprehensive greenhouse gas emissions inventory that
 904 quantifies all direct local sources of greenhouse gas emissions and
 905 emissions associated with local consumption at least every five years;
 906 and
 907 c. Develop city-specific emissions inventories and data, in partnership with
 908 cities.
 909

910 **((E-203)) E-217**

911 ~~King County ((shall collaborate to set transparent standards to account for the~~
 912 ~~net energy and greenhouse gas emissions impacts of government actions such~~
 913 ~~as constructing transportation infrastructure and providing services such as~~
 914 ~~recycling and transit and shall)) should assess and ((publically)) publicly report
 915 on ((these impacts as practicable)) the net energy and net greenhouse gas
 916 impacts of the County providing services, such as recycling and public transit,
 917 and constructing infrastructure, using best practice accounting standards.
 918~~

919 **Advancing Climate Equity**

920 King County recognizes that climate change can have disproportionate impacts on frontline communities due to
 921 existing and historic racial, social, environmental, and economic inequities. These inequities create barriers to
 922 frontline community participation in decision-making processes. Climate equity ensures the just distribution of
 923 climate protection efforts and alleviates the unequal burdens created by climate change through an equitable
 924 division of accountability, benefits, and opportunities. Addressing climate change and social inequities
 925 simultaneously requires bold action to prioritize equity, develop co-benefit solutions (solutions for people and for
 926 climate stabilization) in partnership with frontline communities, and to address climate change as a threat
 927 multiplier to other social issues, including systemic racism.
 928

929 As King County transitions away from an extractive fossil fuel-based economy toward a more resilient,
 930 equitable, and sustainable one, it is critical that the County's solutions benefit frontline communities and avoid
 931 leaving people behind. This approach requires addressing the root causes of climate vulnerability which often
 932 overlap and compound impacts. By intentionally investing in and partnering with frontline communities, the
 933 County can center and integrate community-driven climate solutions. The County is addressing climate equity
 934 by working with frontline communities to:

- 935 • Plan for and invest in long-term partnerships that build capacity in frontline communities; Black,

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- 936 Indigenous, and other People of Color populations; and among youth:
- 937 • Build the knowledge base of community leaders and community-based organizations regarding
 - 938 climate change impacts on frontline communities;
 - 939 • Invest in and supporting green jobs pathways that advance sustainability and living wage career
 - 940 opportunities for frontline communities;
 - 941 • Partner with and investing in frontline communities to prepare for, respond to, and recover from
 - 942 emergency events and climate-related health impacts;
 - 943 • Invest in strengthening local, culturally relevant food systems and food security for populations at
 - 944 risk of food insecurity;
 - 945 • Support, align, and elevate actions and strategies advancing affordable and climate-resilient
 - 946 housing in frontline communities, including anti-displacement strategies;
 - 947 • Support and invest in reducing energy burden, and increasing access to and resources for
 - 948 transitioning to sustainable and energy efficient systems; and
 - 949 • Prioritize community-driven mobility development and climate resilient transit infrastructure.

950

951 Climate equity is anchored within the Environment chapter. As an intersectional issue, it is also reflected across

952 other parts of the Comprehensive Plan, including: the Guiding Principles in Chapter 1, Regional Growth

953 Management Planning; Chapter 3, Rural Areas and Natural Resource Lands; Chapter 4, Housing and Human

954 Services; Chapter 7, Parks, Open Space, and Cultural Resources; Chapter 8, Transportation; and Chapter 10,

955 Economic Development.

956

957 **E-218 King County shall prioritize and support ongoing partnerships with frontline**

958 **communities in co-development and implementation of County climate planning,**

959 **policies, and programs.**

960

961 **E-219 King County shall invest in and enable culturally and linguistically contextualized**

962 **climate change education that builds frontline communities' capacity to engage**

963 **on climate change impacts and solutions.**

964

965 **E-220 King County shall invest in climate solutions that result in equitable outcomes**

966 **that benefit frontline communities by:**

- 967 **a. Centering and funding access and pathways to living wage green jobs**
- 968 **and careers for frontline communities, including youth and Black,**
- 969 **Indigenous, and other People of Color populations;**
- 970 **b. Providing frontline communities with resources and support to respond**
- 971 **to extreme weather events and public health emergencies through**
- 972 **culturally relevant strategies and avenues;**

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- 973 **c. Supporting a just food economy that increases affordability and access**
 974 **to healthy foods;**
 975 **d. Addressing housing insecurities intensified by climate change through**
 976 **programs and resources expanding frontline community access to**
 977 **climate-resilient housing and anti-displacement strategies;**
 978 **e. Prioritizing an affordable transition to renewable energy infrastructure**
 979 **and utility assistance; and**
 980 **f. Expanding public transportation mobility access and climate-resilient**
 981 **infrastructure for frontline communities in greatest need of public**
 982 **transit.**
 983

984 **((C.)) Preparing for Climate Change Impacts**

985 Climate change impacts are here and now((; in the last century, sea level in Seattle has risen by eight inches and
 986 average annual temperatures in the Pacific Northwest have increased 1.5 degrees Fahrenheit)). Average annual
 987 air temperature is increasing, heavy rain events are getting heavier, the region is experiencing a long-term decline
 988 in snow and ice in the Cascades and Olympic mountains, sea level is rising, and ocean chemistry is changing in
 989 ways that are harmful to local marine species like shellfish and salmon. These changes can have significant
 990 consequences. More than 30 deaths in King County were attributable to a record-setting June 2021 heat wave
 991 that saw temperatures reach 108 degrees Fahrenheit or higher in the County. While greenhouse gas emissions
 992 must be reduced to avoid the worst impacts of climate change, impacts are projected through the end of the
 993 century or longer, even if global and local greenhouse gas emissions are drastically cut. To ensure that County
 994 residents are prepared for and able to effectively adapt to climate change impacts, ((P))the County is integrating
 995 climate change preparedness into:

- 996 • Operations and maintenance of infrastructure, programs, and natural resources;
 997 • Provision of public services;
 998 • Policies and regulation; and
 999 • Partnerships with other local governments, community groups and businesses.

1000

1001 **Overarching Climate Change Preparedness Goals**

1002 ~~**((E-215a) King County will collaborate with local cities, residents, and other partners to**~~
 1003 ~~**prepare for the effects of climate change on the environment, human health,**~~
 1004 ~~**public safety, and the economy.))**~~

1005

1006 **E-221 King County shall take actions that equitably reduce climate change**
 1007 **vulnerabilities and increase the resilience of King County residents,**
 1008 **communities, natural systems, and the built environment by:**
 1009 **a. Integrating and accounting for climate impacts in policies, plans, practices,**
 1010 **and procedures, and implementing climate-resilient decisions;**

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- 1052 landslides, into emergency management planning and programs.
- 1053
- 1054 **((E-223)) E-226** King County shall consider projected impacts of climate change on habitat for
- 1055 salmon and other wildlife when developing long-range conservation plans and
- 1056 prioritizing habitat protection and restoration actions.
- 1057
- 1058 **((E-224)) E-227** To foster resilience to climate change in ecosystems and species, King County
- 1059 should prioritize efforts such as: the restoration of floodplains to improve the
- 1060 resilience of major rivers to changing flow regimes and temperatures; the
- 1061 protection and restoration of riparian vegetation and mature and old-growth
- 1062 forests to reduce warming in cold water systems, of wetlands to reduce drought
- 1063 and flooding, and of connections between different habitats to maintain current
- 1064 seasonal migration; and facilitate migration opportunities for species whose
- 1065 ranges shift in latitude and altitude.
- 1066
- 1067 **Building Technical Capacity**
- 1068 King County is committed to using best available science and technical information to inform its climate
- 1069 preparedness work. This includes drawing on existing climate change research and technical studies conducted
- 1070 by other agencies and organizations, as well as directly funding and/or conducting new studies and technical
- 1071 assessments. This also includes building internal staff capacity and expertise to apply current data and science to
- 1072 preparedness activities.
- 1073
- 1074 **((E-204)) E-228** King County shall collaborate with experts in the field of climate change,
- 1075 including scientists at the University of Washington’s Climate Impacts Group, or
- 1076 successor groups, to monitor, assess, and publicly share information about the
- 1077 impacts of climate change in King County.
- 1078
- 1079 **((E-215e)) E-229** King County should collaborate with the scientific community, state and federal
- 1080 agencies, and other jurisdictions to develop detailed, science-based estimates of
- 1081 the magnitude and timing of climate change, including impacts on air
- 1082 temperatures and heat waves, rainfall patterns and severe weather, forest health
- 1083 and wildfire, public health river flooding, sea level rise, biodiversity (including
- 1084 fish and wildlife), and ocean acidification ~~((in King County))~~.
- 1085
- 1086 **~~((E-215bbb))~~ E-230** King County shall assess the best available sea level rise projections ~~((two~~
- 1087 ~~years))~~ prior to each ~~((eight))~~ 10-year update((,)) and shall ~~((incorporate the~~
- 1088 ~~projections into))~~ update relevant risk assessments and policies in the
- 1089 Comprehensive Plan, where appropriate.
- 1090
- 1091 **((E-220)) E-231** King County shall periodically review and evaluate climate change impacts on
- 1092 natural resources that its resource programs are designed to protect, such as

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1093 open space, forests, fisheries, productive farmland, and water quality and
1094 treatment, ~~((in order))~~ to assess and improve the efficacy of existing strategies
1095 and commitments.

1096

1097 **Prioritizing Health and Equity**

1098 Grounding King County’s climate preparedness work in climate and health equity, with a focus on vulnerable
1099 populations, will help ensure that County efforts help address disproportionate impacts.

1100

1101 ~~((E-218))~~ **E-232** King County shall ~~((apply its Equity Impact Review process))~~ use equity impact
1102 reviews to help prioritize investments in making infrastructure, natural resources,
1103 and communities more resilient to the impacts of climate change.

1104

1105 ~~((E-225))~~ **E-233** Through land use and transportation actions, King County should work to reduce
1106 ~~((air quality and))~~ climate change ~~((related))~~ health inequities ~~((and))~~ related to the
1107 exposure of vulnerable populations to poor air quality and extreme weather
1108 events.

1109

1110 ~~((E-226))~~ **E-234** King County shall develop and incorporate into outreach efforts public health
1111 messages related to the health implications of climate change, particularly in
1112 urban communities, and the benefits of actions ~~((, such as using alternative~~
1113 ~~transportation options that simultaneously reduce greenhouse gas emissions,~~
1114 ~~improve air quality, and improve public health))~~ that can reduce climate impacts
1115 on health.

1116

1117 **Preparedness Coordination with Partners**

1118 Collaborations and partnerships are critical to preparing for the complex challenges of climate change.
1119 Strengthening collaborations and partnerships between the County and other jurisdictions and organizations
1120 provides opportunities to align preparedness activities, leverage limited resources, share lessons learned, stay
1121 informed of issues relevant to King County’s climate preparedness efforts, and develop equitable approaches
1122 to reducing impacts that match the scale of the challenges and opportunities presented by climate change.

1123

1124 ~~((E-215a))~~ **E-235** King County ~~((will))~~ shall collaborate with local cities, residents, and other
1125 partners to prepare for and adapt to the effects of climate change on the
1126 environment, natural resources, human health, public safety, infrastructure, and
1127 the economy.

1128

1129 ~~((E-215c))~~ ~~King County should collaborate with the scientific community, state and federal~~
1130 ~~agencies, and other jurisdictions to develop detailed, science-based estimates of~~
1131 ~~the magnitude and timing of climate change impacts on air temperatures and~~
1132 ~~heat waves, rainfall patterns and severe weather, river flooding, sea level rise,~~

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1133 ~~fish and wildlife, and ocean acidification in King County.)~~

1134

1135 ~~((E-215d)) E-236~~ King County ~~((should)) shall~~ share information on climate change impacts and
1136 collaborate on approaches to improving ~~((resiliency of)) infrastructure resilience,~~
1137 disaster preparedness, and public engagement with ~~((local))~~ cities and other
1138 partners to ~~((make the best use of limited resources and))~~ more efficiently and
1139 effectively engage King County residents.

1140

1141 ~~((Public Services)) Outreach, Engagement, and Education~~

1142 Successfully preparing for and adapting to climate change requires building a shared understanding of how
1143 climate change is affecting King County, how the County is actively working to reduce climate impacts and
1144 build resilience, and what individuals and communities can do to reduce climate risks. This includes outreach
1145 and engagement work to King County staff, residents, and businesses.

1146

1147 ~~E-237~~ King County should implement and support equitable outreach, engagement, and
1148 technical assistance related to reducing climate risks. This should include
1149 providing information on climate change impacts in King County, local efforts to
1150 address climate change, and actions that individuals and communities can take
1151 to reduce climate risks.

1152

1153 ~~((E-216~~ ~~King County shall integrate observed and projected climate change impacts,~~
1154 ~~including severe weather, flooding, drought, fire, and landslides, into emergency~~
1155 ~~management planning and programs.~~

1156

1157 ~~E-217~~ ~~King County will work with its cities and other partners to formulate and~~
1158 ~~implement climate change adaptation strategies that address the impacts of~~
1159 ~~climate change to public health and safety, the economy, public and private~~
1160 ~~infrastructure, water resources, and habitat.~~

1161

1162 ~~E-218~~ ~~King County shall apply its Equity Impact Review process to help prioritize~~
1163 ~~investments in making infrastructure, natural resources, and communities more~~
1164 ~~resilient to the impacts of climate change.~~

1165

1166 ~~County Infrastructure and Operations~~

1167 ~~E-219~~ ~~King County shall integrate estimates of the magnitude and timing of climate~~
1168 ~~change impacts into capital project planning, siting, design, and construction~~
1169 ~~and also implement infrastructure operation and maintenance programs that~~
1170 ~~consider full life-cycle costs and climate change impacts in asset management.~~

1171

1172 ~~Natural Environment~~

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1173 ~~E-220~~ ~~King County shall periodically review and evaluate climate change impacts on~~
1174 ~~natural resources that its resource programs are designed to protect, such as~~
1175 ~~open space, forests, fisheries, productive farmland, and water quality and~~
1176 ~~treatment, in order to assess and improve the efficacy of existing strategies and~~
1177 ~~commitments.~~

1179 ~~E-222~~ ~~King County should collaborate with climate scientists in order to increase~~
1180 ~~knowledge of current and projected climate change impacts to biodiversity.~~

1182 ~~E-223~~ ~~King County shall consider projected impacts of climate change on habitat for~~
1183 ~~salmon and other wildlife when developing long-range conservation plans and~~
1184 ~~prioritizing habitat protection and restoration actions.~~

1186 ~~E-224~~ ~~To foster resilience to climate change in ecosystems and species, King County~~
1187 ~~should prioritize efforts such as: the restoration of floodplains to improve the~~
1188 ~~resilience of major rivers to changing flow regimes and temperatures; the~~
1189 ~~protection and restoration of riparian vegetation to reduce warming in cold water~~
1190 ~~systems, of wetlands to reduce drought and flooding, and of connections~~
1191 ~~between different habitats to maintain current seasonal migration; and facilitate~~
1192 ~~migration opportunities for species whose ranges shift in latitude and altitude.~~

1194 **Public Health**

1195 ~~Vulnerable populations are often defined as groups whose unique needs may not be fully integrated into planning~~
1196 ~~for disaster response. These populations include, but are not limited to, those who are physically or mentally~~
1197 ~~disabled, blind, deaf, hard of hearing, cognitively impaired, or mobility challenged. Also included in this group~~
1198 ~~are those who are non-English (or not fluent) speakers, geographically or culturally isolated, medically or~~
1199 ~~chemically dependent, homeless, frail elderly and children. Public Health—Seattle & King County has~~
1200 ~~established a Vulnerable Population Action Team (The Community Resilience + Equity Program) to address the~~
1201 ~~needs of this population.~~

1203 ~~E-225~~ ~~Through land use and transportation actions, King County should work to reduce~~
1204 ~~air quality and climate change related health inequities and the exposure of~~
1205 ~~vulnerable populations to poor air quality and extreme weather events.~~

1207 ~~E-226~~ ~~King County shall develop and incorporate into outreach efforts public health~~
1208 ~~messages related to the health implications of climate change, particularly in~~
1209 ~~urban communities, and the benefits of actions, such as using alternative~~
1210 ~~transportation options that simultaneously reduce greenhouse gas emissions,~~
1211 ~~improve air quality, and improve public health.)~~

1212

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1213 **~~((D-))~~ Collaboration with Others**

1214 King County recognizes that ~~((the))~~ climate change ~~((challenge))~~ is worldwide in its scope, ~~((and that))~~ with far
1215 reaching consequences to the environment and to ~~((humankind's))~~ quality of life ~~((may result if this issue is not~~
1216 ~~addressed effectively)).~~ ~~((King))~~ While the County's actions are important ~~((contributors to addressing this issue;~~
1217 ~~however, its))~~ contributions, the global nature ~~((will))~~ requires cooperation across local, regional, state and
1218 international boundaries. King County can play important roles in collaborating with others ~~((on solutions,~~
1219 ~~especially))~~ through community outreach, education, advocacy, monitoring, and information sharing with other
1220 ~~((local))~~ governments and universities.

1221

1222 **~~((E-204))~~ E-238** King County ~~((should))~~ shall participate in and support appropriate local, regional
1223 and national efforts and organizations focused on reducing greenhouse gas
1224 emissions, advancing climate equity, and preparing for climate change impacts.

1225

1226 **~~((E-227))~~ E-239** King County shall support~~((s))~~ a comprehensive federal, regional and state
1227 science-based limits and a market-based price on carbon pollution and other
1228 greenhouse gas emissions. A portion of revenue from these policies should
1229 support local greenhouse gas emissions reduction efforts, such as funding for
1230 transit service, energy efficiency and fossil fuel reduction projects, and forest
1231 protection and restoration initiatives; efforts that advance climate equity and
1232 frontline community investments; and climate preparedness and resilience
1233 efforts. King County shall also support~~((s))~~ renewable energy standards for
1234 electricity production and vehicle efficiency performance standards.

1235

1236 **~~((E-228))~~ E-240** King County ~~((should))~~ shall advocate for federal, regional and state initiatives
1237 and grant and loan programs that support local investments in projects and
1238 programs, such as community solar, fossil fuel reduction, ~~((and))~~ energy
1239 efficiency retrofits to reduce greenhouse gas emissions, climate equity, and
1240 ~~((prepare))~~ preparedness strategies for climate change impacts.

1241

1242 **~~((E-229))~~ E-241** King County shall work with ~~((the business community))~~ relevant industry sector
1243 partners to support efforts that reduce energy and fossil fuel use and
1244 greenhouse gas emissions, ~~((and to promote King County and the Puget Sound~~
1245 ~~region as a center for green manufacturing))~~ as well as promoting locally
1246 recognized high growth sectors identified in the Green Jobs Strategy, such as
1247 green manufacturing, construction, transportation, and professional services in
1248 King County and the Puget Sound. The ~~((e))~~County shall also work with
1249 community groups, consumers, and the retail sector to promote the consumption
1250 ~~((of green-manufactured products))~~ and adoption of products and services
1251 supporting reduced energy use and reduced greenhouse gas emissions.

1252

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1253 ~~((H.))~~ **Air Quality**

1254 ~~((A.))~~ **Overview**

1255 ~~((Clean air, free of pollutants, is essential for the day-to-day quality of life and long-term health of county
1256 residents. King County has shown critical leadership in forging solutions to air pollution and will continue to do
1257 so well into the future.))~~

1258
1259 King County works ~~((for clean air))~~ to ensure clean and healthy air in partnership with the Puget Sound Clean
1260 Air Agency, which ~~((has))~~ serves as the lead air quality regulatory and monitoring ~~((responsibilities))~~ agency for
1261 the region in accordance with the Clean Air Act. ~~((Underlying drivers of the Clean Air Act include protecting
1262 public health, reducing property damage, and generally protecting the environment. Because air quality impacts
1263 water quality, a better understanding is needed regarding the input of pollutants via air transport from both local
1264 and distant sources.~~

1265
1266))The Puget Sound Clean Air Agency is the lead agency responsible for monitoring and regulating ~~((six
1267))~~criteria air pollutants~~((“ using standards set by the Environmental Protection Agency. The six “criteria” air
1268 pollutants are:~~

- 1269 • ~~—~~ ~~Fine particulate matter (dust, soot, smoke);~~
- 1270 • ~~—~~ ~~Ground level ozone (smog);~~
- 1271 • ~~—~~ ~~Carbon monoxide (gas primarily from vehicle exhaust);~~
- 1272 • ~~—~~ ~~Sulfur dioxide (gas primarily from industrial processes like smelters, paper mills, and power plants);~~
- 1273 • ~~—~~ ~~Oxides of nitrogen; and~~
- 1274 • ~~—~~ ~~Lead.))~~ (fine particulate matter, ozone, carbon monoxide, sulfur oxide, oxides of nitrogen, and lead).

1275
1276 The Puget Sound Clean Air Agency also focuses on reducing harmful air toxics that come ~~((primarily))~~ from
1277 wood smoke and diesel burning~~((, as well as))~~ and greenhouse gases such as carbon dioxide and methane from
1278 landfills. ~~((The Puget Sound Clean Air Agency is also responsible for regulating))~~ They also regulate air
1279 pollution emissions ((of air pollution)), such as asbestos and gasoline vapors, from businesses. King County
1280 coordinates with Puget Sound Clean Air Agency on regional air quality data and on related community plans
1281 and projects.

1282
1283 Efforts to address climate change and improve air quality are strongly linked. For example, conversion from
1284 conventional to ~~((hybrid))~~ electric buses and fleet vehicles ~~((not only helps to))~~ reduces greenhouse gas
1285 emissions~~((, but also reduces))~~ and emissions of fine particulate(s) matter that can be harmful to public health.
1286 Similarly, in indoor settings, conversion from gas to electric stoves and furnaces reduces indoor and outdoor
1287 pollution. Additionally, a likely impact of climate change on air quality is an increase in fine particulate matter

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1288 from more wildfires and wildfire smoke episodes that can impact regional air quality and increase ground-level
 1289 ozone because higher temperatures enhance the conversion of precursors into ground-level ozone. Ozone and
 1290 fine particulate matter can exacerbate health conditions such as asthma, chronic obstructive pulmonary disease,
 1291 and heart disease, and generally reduce respiratory system functioning. Because of these linkages, there is
 1292 significant overlap ((with)) between this section and the climate change section of this chapter. ((Section II,
 1293 subpart B of this chapter relates to reducing greenhouse gas emissions. These strategies usually concurrently
 1294 reduce other types of air pollution. Section II, subpart C of this chapter describes the linkages between climate
 1295 change and health impacts, including policies related to minimizing health inequities among vulnerable
 1296 populations more negatively impacted by climate change and air pollution.
 1297

1298 ~~B-))~~ **Ozone, Fine Particulate and Toxics**

1299 Reducing criteria pollutants ((will)) continue to be a primary focus for King County. The ozone strategy
 1300 identified by the Puget Sound Clean Air Agency for the central Puget Sound region focuses on reducing volatile
 1301 organic compounds, which are precursors to ozone formation. Emission of volatile organic compounds results
 1302 mostly from vehicles, as well as to a significant degree from household chemicals and paint evaporation.
 1303

1304 In addition to ozone, fine particulate((s)) matter (dust, soot, and smoke) also represent a serious health threat.
 1305 Health studies have shown a significant association between exposure to fine ((particles)) particulate matter and
 1306 premature death from heart or lung disease. Fine ((particles)) particulate matter can aggravate heart and lung
 1307 diseases and have been linked to effects such as: cardiovascular symptoms; cardiac arrhythmias; heart attacks;
 1308 respiratory symptoms; asthma attacks; and bronchitis. These effects can result in increased hospital admissions,
 1309 emergency room visits, absences from school or work, and restricted activity days. Individuals that may be
 1310 particularly sensitive to fine ((particles)) particulate matter exposure include people with heart or lung disease,
 1311 older adults, and children. Diesel emissions are one of the county’s largest sources of fine particulate matter
 1312 emissions. ((King County’s participation in the ultra-low sulfur diesel program, known as “Diesel Solutions,”
 1313 has made tremendous strides in cleaning up King County Metro’s fine particulate emissions.)) Indoor burning
 1314 and outdoor burning are a major source of fine particulate((s)) matter, especially during winter months.
 1315

1316 Contributions of fine particulate matter from wildfire smoke are also a growing concern. Climate change is
 1317 contributing to an increase in the frequency of large wildfires in the Pacific Northwest and British Columbia. As
 1318 a result, King County is seeing more days in summer with degraded air quality. For example, in 2020, King
 1319 County experienced 14 days of air quality unhealthy for sensitive groups to hazardous air quality from fires near
 1320 Portland, Oregon. In 2022, King County experienced more than 30 days with moderate to very unhealthy air
 1321 quality due to smoke from the Bolt Creek fire near Skykomish. Public Health has partnered with community-
 1322 based organizations to develop outreach materials on wildfire smoke hazards, to distribute box fans and air filters
 1323 for indoor air filtration, and to set up HEPA air filtration units for homeless service providers, small businesses,
 1324 childcare providers, and schools.
 1325

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1326 As a large county with a mix of urban, Rural Area, and Natural Resource Lands uses, King County will
 1327 continue to face risks from air ~~((toxics))~~ pollution that can be toxic to people, pets, and wildlife. Examples of
 1328 ~~((air toxics))~~ toxins that may be present in air pollution include benzene, formaldehyde, mercury, and dioxins.
 1329 The air quality impact of ~~((toxics))~~ these toxins cannot be evaluated in isolation. Their greatest health risk comes
 1330 from their combined effect. ~~((National air toxics assessment data indicate that air toxics risks in the Puget Sound~~
 1331 ~~region are in the top five percent in the nation.))~~ The Environmental Protection Agency and its regulatory
 1332 partners at the state and local level identify steps to reduce toxic air pollutants and provide important health
 1333 protections~~((:))~~ by reducing toxic emissions from industrial sources; reducing emissions from vehicles and
 1334 engines through stringent emission standards and cleaner burning gasoline; and addressing indoor air pollution
 1335 through voluntary programs.

1336
 1337 Local air monitoring data done by the Washington State Department of Ecology indicates that diesel exhaust
 1338 and wood smoke are key contributors to ~~((toxics))~~ air pollution toxins.

1339
 1340 ~~((In 2002, King County Metro became the first transit agency in the United States to test articulated hybrid-diesel~~
 1341 ~~electric buses. King County Metro currently owns 214 articulated hybrid buses, the largest such fleet in the~~
 1342 ~~nation. A National Renewable Energy Laboratory study found articulated hybrids provide a 30% reduction in~~
 1343 ~~greenhouse gases and are 40% more reliable than diesel fueled articulated buses.))~~ The U.S. Environmental
 1344 Protection Agency has adopted increasingly stringent air pollution standards for heavy-duty vehicles, which has
 1345 significantly reduced air pollution. In 2020, Metro retired the last of its diesel-only fleet vehicles; the entire bus
 1346 fleet is now either diesel electric hybrid or zero-emission. Metro has continued its efforts to reduce air pollution
 1347 and greenhouse gas emissions and has committed to transitioning to a fully zero emission bus fleet by 2035. As
 1348 of 2023, Metro operates a fleet of more than 1,300 buses, comprised of approximately 1,145 diesel-electric
 1349 hybrids, 174 zero emission trolleys, and 45 zero emission battery electric buses.

1350
 1351 ~~((Wood smoke is a leading contributor to air toxics. King County will examine proposals to curtail the impacts~~
 1352 ~~of woodstove burning and land-clearing practices in rural parts of the county.))~~

1353
 1354 The focus of King County air quality improvement efforts is to engage in projects and changed practices ~~((to))~~
 1355 that reduce county emissions, reduce the impacts of poor air quality on health (particularly for frontline
 1356 communities), and promote policies that incorporate consideration of air quality impacts. Motorized vehicle and
 1357 other fuel burning engine-related emissions are the primary source of ozone, fine particulate matter, ~~((toxics))~~
 1358 toxins, and greenhouse gas emissions in King County and therefore should be a primary focus for emissions
 1359 reduction.

1360
 1361 **E-301 King County should support initiatives that reduce air pollution emissions due to**
 1362 **indoor and outdoor wood burning consistent with the actions of Puget Sound**
 1363 **Clean Air Agency to control this source of ~~((public health threat))~~ health impacts.**

1364

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1365 **E-302** King County ~~((will))~~ shall continue to actively develop partnerships with the
 1366 Puget Sound Clean Air Agency, local jurisdictions, the state, and public, private,
 1367 and ~~((not-for-profit))~~ nonprofit groups to promote programs, ~~((and))~~ policies, and
 1368 code changes that reduce emissions and health impacts of ozone, wildfire
 1369 smoke, fine particulates, toxics, and greenhouse gases, particularly for those
 1370 populations already experiencing health disparities linked to air quality.

1371
 1372 **E-303** King County should encourage the use of methods to improve indoor air quality
 1373 and reduce smoke infiltration into indoor environments during wildfire smoke
 1374 events, particularly for populations already experiencing health disparities, such
 1375 as air filtration technologies and other mechanisms that reduce the level of
 1376 wildfire smoke that can make its way into indoor environments.

1377
 1378 ((More detailed policies related to reducing greenhouse gas emissions and improving air quality can be found in
 1379 Section II of this chapter, Chapter 8: Transportation, and Chapter 9: Services, Facilities and Utilities.))

1380

1381 ~~((IV.))~~ **Land and Water Resources**

1382 ~~((A.))~~ **Conserving King County's Biodiversity**

1383 It is King County's goal to conserve fish and wildlife resources in the county and to maintain countywide
 1384 biodiversity. This goal may be achieved through implementation of several broad policy directions that form an
 1385 integrated vision for the future. Each of the pieces is necessary for the whole to be successful. The policy
 1386 objectives are to: (1) initiate multi-species, biodiversity management approaches, (2) integrate biodiversity
 1387 conservation goals and climate change planning into new and existing developments and habitat restoration
 1388 programs, (3) identify and protect fish and wildlife habitat conservation areas, (4) connect the fish and wildlife
 1389 habitat conservation areas and other important conservation areas and protected lands through a habitat network
 1390 system, (5) include working farmland and forestland within the larger conservation landscape, and (6) provide
 1391 education and incentive opportunities to engage residents. ~~((Incentives can include, but are not limited to, tax
 1392 incentives, regulatory flexibility (e.g., alternatives to fixed width buffers), streamlined permit processing, reduced
 1393 permit fees, and free or low cost technical assistance.))~~ Conservation of biodiversity is necessary if benefits
 1394 including important ecosystem services such as clean water, natural flood control, agricultural and timber
 1395 production, climate ~~((regulation))~~ change adaptation, and pollination currently enjoyed and relied upon by
 1396 residents of the county are to be available for future generations.

1397

1398 ~~((1.))~~ **Biodiversity**

1399 Because of its size, topography, and geology, the diversity of landscapes and habitats in King County is
 1400 dramatic. From the Cascade Mountains to Puget Sound, alpine areas to lowland bogs, King County possesses
 1401 an astonishing array of habitats and species. Approximately 220 species of breeding and non-breeding birds are

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1402 usually seen on an annual basis in King County. Based on an analysis by the State of Washington, 69 species of
 1403 mammals, 12 species of amphibians, and 8 species of reptiles are thought to be breeding in the county. About 50
 1404 species of native fish (and 20 species of introduced fish) are found in the freshwater streams, rivers, ponds, and
 1405 lakes of King County. In the county’s marine environment, over 200 species of fish, some 500 species of
 1406 invertebrate animals, and eight species of marine mammals can be found. A total of 1,249 (383 introduced)
 1407 species of vascular plants have been identified in the county. The diversity of geography combined with King
 1408 County’s history of land use has shaped the biodiversity of the past and present and will continue affecting it into
 1409 the future.

1410

1411 King County defines biodiversity as the variety of living organisms considered at all levels, from genetic diversity
 1412 through species, to higher taxonomic levels, including the variety of habitats, ecosystems, and landscapes in
 1413 which the species are found. ~~((The Washington Biodiversity Conservation Strategy provides another working~~
 1414 ~~definition:)) Biodiversity is the full range of life in all its forms, including the habitats in which ~~((they))~~ species
 1415 live, the ways species interact with each other and their environment, and the natural processes (such as
 1416 flooding) that support those interactions.~~

1417

1418 The biggest threats to biodiversity in King County visible today are climate change and habitat loss and
 1419 fragmentation from development~~((, invasive plant and animal species, and climate change)).~~

1420

1421 **E-401 King County shall strive to conserve the native diversity of species and habitats**
 1422 **in the county.**

1423

1424 **E-402 In the Urban Growth Area, King County shall strive to maintain a quality**
 1425 **environment that includes fish and wildlife habitats that support the greatest**
 1426 **diversity of native species consistent with Growth Management Act-mandated**
 1427 **population density objectives. In areas outside the Urban Growth Area, the**
 1428 **~~((e))~~County should strive to maintain, protect, and recover ecological processes,**
 1429 **native landscapes, ecosystems, and habitats that can support viable populations**
 1430 **of native species. This should be accomplished through coordinated**
 1431 **conservation planning and collaborative implementation.**

1432

1433 **E-403 King County should develop a biodiversity conservation framework and**
 1434 **conservation strategy to achieve the goals of maintaining and recovering native**
 1435 **biodiversity. ~~((This framework should be coordinated with the Washington~~**
 1436 **Biodiversity Conservation Strategy where applicable.)) King County should**
 1437 **collaborate with other governments and private and nonprofit organizations on**
 1438 **the creation and implementation of this strategy.**

1439

1440 ~~**((E-404 King County should collaborate with other governments and private and**~~
 1441 ~~**non-profit organizations to establish a bioinventory, an assessment and**~~

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1442 ~~monitoring program, and a database of species currently using King County to~~
1443 ~~provide baseline and continuing information on wildlife population trends in the~~
1444 ~~county.))~~

1445

1446 ~~**((2.)) Climate Change and Biodiversity**~~

1447 ~~The effects of climate change on native biodiversity in the Pacific Northwest are likely to be serious, but as yet~~
1448 ~~are largely unpredictable. In King County, some effects already are apparent as average temperatures over the~~
1449 ~~last decade have increased slowly but steadily, especially in winter. For many native species, e))Climate change~~
1450 ~~((will present)) brings added stresses ((to)) for many native species and ecosystems ((and populations)), including~~
1451 ~~changes in distribution and availability of food, cover, and breeding habitat. Changes in temperature can alter~~
1452 ~~productivity and growth rates or cause direct mortality, particularly for salmon, and trigger invasions of~~
1453 ~~non-native species. The range and seasonal presence of some species will shift, and ((it is likely that)) the timing~~
1454 ~~of when some species are in certain habitats won't match ((with)) the availability of their food sources. Some~~
1455 ~~species will go extinct locally, and new species will move into the area. Finally, changing lake and ocean~~
1456 ~~temperatures may have devastating impacts on the base of food web.~~

1457

1458 ~~The effects of climate change are ((only)) beginning to be observed and understood in the county and ((are~~
1459 ~~presumed to)) will increase over time. In the face of climate change, biodiversity conservation may be of critical~~
1460 ~~importance for buffering the effects of rising temperatures on regional ecosystems, damping the rates of~~
1461 ~~ecological change, and reducing the potential for sudden, extreme changes in the environment.~~

1462

1463 **E-405 King County should evaluate a range of projected future climate scenarios based**
1464 **on best available science to help ensure that biodiversity conservation efforts are**
1465 **able to meet their objectives in a changing climate.**

1466

1467 ~~**((3.)) Biodiversity Conservation Approaches**~~

1468 ~~This section provides guidance for biodiversity management of the county's natural resources. The following~~
1469 ~~concepts and principles are based on current approaches to conservation biology, restoration ecology, and~~
1470 ~~climate science ((combined with input from the new Washington State Climate Change Response Strategy)).~~

1471

1472 ~~**((a.)) Landscape Context**~~

1473 ~~Natural resource protection occurs within an ecological context. Environmental management should consider~~
1474 ~~not only the immediate site but also the spatial and temporal context that surrounds it. In terms of spatial~~
1475 ~~context, different activities will require consideration of different scales—from small sub-basins of a few square~~
1476 ~~miles to watersheds and ecosystems that contain many hundreds or thousands of square miles. For example,~~
1477 ~~watershed boundaries are useful ways to define ecological planning units for resource protection of aquatic~~
1478 ~~systems whereas large-scale vegetation communities may be more useful for terrestrial systems.~~

1479

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1480 In terms of temporal contexts, habitat conditions and populations can fluctuate over long time periods. It may
1481 take decades to see the results of habitat restoration projects and other environmental management actions on
1482 populations, and in the interim climate change and possibly major events such as flooding will also impact the
1483 trajectory of restoration actions.

1484
1485 There is no single scale appropriate for all planning and management of conservation activities. Management
1486 within the context of a landscape helps to ensure the actions in one area will not be undone or rendered
1487 unsustainable by conditions in the surrounding watershed or ecoregion. Conservation efforts designed to protect
1488 only one species could have an unintended, detrimental effect on others. Ecological communities consist of
1489 multiple species often that interact in the same geographical area.

1490

1491 **E-406 King County’s conservation efforts should be integrated across multiple**
1492 **landscape scales, species, and ecological communities.**

1493

1494 **E-407 Distribution, spatial structure, and diversity of native wildlife and plant**
1495 **populations should be taken into account when planning restoration activities,**
1496 **acquiring land, and designing, planning, and managing parks.**

1497

1498 **E-408 King County should carry out conservation planning efforts in close**
1499 **collaboration with other local governments, Indian tribes, state and federal**
1500 **governments, land((-)owners, community groups, and other conservation**
1501 **planning ((stakeholders)) partners.**

1502

1503 (~~“Ecoregions” are land areas that contain a geographically unique set of species, communities, and~~
1504 ~~environmental conditions. Washington is a highly diverse state, with portions of nine ecoregions located within~~
1505 ~~its boundaries. Three ecoregions cover parts of King County: the Puget Lowland Ecoregion in the western half~~
1506 ~~of the county, the North Cascades Ecoregion in the northeastern and east central portion, and the Cascades~~
1507 ~~Ecoregion in the southeastern portion of the county.~~

1508

1509 ~~Ecoregions are the largest units of biodiversity in King County, and this scale is appropriate for broader natural~~
1510 ~~resources planning and management. More localized habitats and species can be identified within these~~
1511 ~~ecoregions, and can inform actions at the watershed and even property specific level. Funding for landscape~~
1512 ~~evaluations ((of this nature)) is extremely limited and will typically require grant funds. The County should take~~
1513 ~~advantage of opportunities that may arise to collaborate with other ecoregional planning efforts.~~

1514

1515 ~~**E-409 King County should develop a countywide landscape characterization system**~~
1516 ~~**based on ecoregions as a key tool for assessing, protecting, and recovering**~~
1517 ~~**biodiversity.**~~

1518

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1519 **b-)) Habitat connectivity**

1520 Protecting and enhancing habitat connectivity is a critical action for maintaining ecosystem integrity and
1521 resilience, particularly in the face of climate change. However, funding for such evaluations is extremely limited.
1522 Protection of isolated blocks of habitat is critical but not enough to adequately protect wildlife in King County.
1523 Critical wildlife habitats and refuges also need to be connected across the landscape through a system of habitat
1524 corridors, or networks.

1525

1526 relocated from "Wildlife Habitat Network" subsection below, with edits

1527 The King County Wildlife Habitat Network was designed to help reduce the effects of fragmentation by linking
1528 diverse habitats through the developed and developing landscape. The network is intended to facilitate animal
1529 dispersal by connecting isolated critical areas, segments, open space, and wooded areas on adjacent properties.
1530 The corridors tend to follow riparian areas and streams ~~((corridors))~~ across the lowlands and the upland plateau
1531 to the east and southeast of Lake Washington into the foothills. The Wildlife Habitat Network is mapped on the
1532 "Wildlife Network and Public Ownership Map."

1533

1534 How wide the corridors within the network should be is related to requirements of target wildlife species, length
1535 of network segment and other important characteristics within the network. Wider corridors will be required for
1536 larger species if the distance between refuges is great or if multiple uses, such as public access and trails, are
1537 desired. Because it may not be possible to protect wide corridors in the Urban Growth Area, it may not be
1538 possible to accommodate larger wildlife species in all areas. Networks will address some of the problems of
1539 habitat fragmentation for smaller species within the Urban Growth Area.

1540

1541 Open spaces set aside during subdivision of land should be located to make connections with larger offsite
1542 systems. This approach will also benefit other open space goals.

1543

1544 **E-410 Habitat networks for threatened, endangered and Species of Local Importance,**
1545 **as listed in this chapter, shall be designated and mapped. Habitat networks for**
1546 **other priority species in the Rural Area and Natural Resource Lands should be**
1547 **identified, designated and mapped using ecoregion information about the county**
1548 **and its resources and should be coordinated with state and federal ecosystem**
1549 **mapping efforts as appropriate.**

1550

1551 ~~((As mentioned above, protecting and enhancing habitat connectivity is critical for maintaining ecosystem
1552 integrity and resilience. Functional habitat connectivity is the degree to which a given species can easily move
1553 between habitat areas. Because individual species respond to the landscape, functional connectivity depends on
1554 both the features in the landscape and how particular species respond to that landscape. Focal species are used to
1555 identify important linkages between habitat areas that will be suitable for a variety of species.))~~

1556

1557 **E-411 King County should ~~((conduct an analysis to identify areas critical for functional~~**
1558 **habitat connectivity. ~~This assessment should be coordinated with state and~~**

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1559 **federal mapping efforts as appropriate)) map habitat connectivity corridors and**
 1560 **biodiversity areas to protect wildlife populations in a changing climate. Areas**
 1561 **identified by this analysis ((as being critical for functional habitat connectivity))**
 1562 **should be prioritized by King County, and in collaboration with Indian tribes, the**
 1563 **state, cities, and other landowners, for land conservation and restoration actions**
 1564 **and programs.**

1566 In planning for climate change, it will be increasingly important to provide for habitat connectivity not only
 1567 across jurisdictional boundaries, but also across a range of environmental gradients. ~~((As the “Washington State~~
 1568 ~~Integrated Climate Change Response Strategy” explains:))~~ Habitat connectivity is ~~((expected))~~ anticipated
 1569 allow species and ecosystems to ((better withstand)) adapt to a changing climate ((change)) by allowing ((them))
 1570 species to follow changes in climate across the landscape and maintain critical ecological processes such as
 1571 dispersal and gene flow. ((In general, it is much costlier and more difficult to restore connectivity than to
 1572 maintain existing connectivity, yet ongoing development rapidly removes this opportunity. Planning for habitat
 1573 connectivity in the near term will be far more economical the sooner it is implemented.))

1574
 1575 King County’s Fish Passage Restoration Program is an example of prioritizing investments in habitat restoration
 1576 with a focus on restoring habitat connectivity. The program has surveyed more than 3,000 potential blockages to
 1577 salmon migration up streams and prioritized 50 barrier locations where restoration of fish passage would open
 1578 half of historically connected habitat blocked by County-owned barriers. The County-owned barriers occur
 1579 mixed with fish passage barriers owned by other municipalities and landowners. Coordination with other barrier
 1580 owners to address nearby barriers will maximize the habitat benefits of restoring fish passage in county
 1581 waterways.

1582
 1583 **E-412 King County should work with adjacent jurisdictions, state and federal**
 1584 **governments, Indian tribes, and landowners during development of land use**
 1585 **plans, Water Resource Inventory Area salmon recovery plans, fish passage**
 1586 **plans, and site development reviews to identify and protect habitat networks at**
 1587 **jurisdictional and property boundaries.**

1588
 1589 **E-412a King County should work with non-governmental organizations and regulatory**
 1590 **agencies to accelerate removal of barriers to fish passage and should:**
 1591 **a. Seek opportunities to accelerate permitting and project implementation;**
 1592 **b. Explore all mechanisms available to remove barriers and restore salmon**
 1593 **access to the most and highest quality habitat as quickly as possible;**
 1594 **and**
 1595 **c. Aggressively seek funding for projects to remove barriers.**

1597 Additional medium- and long-term strategies identified in the “Washington State Integrated Climate Change
 1598 Response Strategy” that are appropriate for the County to consider when planning for connectivity include:

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- 1599 • Identifying and designating areas most suitable for core habitat and connectivity in view of a changing
1600 climate.
- 1601 • Protecting and restoring areas most suitable for current core habitat, likely future core habitat, and
1602 connections between them.
- 1603 • Protecting and re-establishing connectivity of rivers and their floodplains.
- 1604 • Adjusting the size and boundaries of conservation areas (parks and natural areas) to accommodate
1605 anticipated shifts in habitat and species' ranges.
- 1606 • Adjusting land use designations in important connectivity areas (for example, allowable density).
- 1607 • Facilitating inland migration of marine shoreline habitats.

1608

1609 Connectivity is addressed further below, as the Wildlife Habitat Network is a designated Fish and Wildlife
1610 Habitat Conservation Area.

1611

1612 **((e-)) Ecosystem Resilience and Natural Processes**

1613 Ecosystems and habitats suitable for particular species communities are the result of various geologic,
1614 hydrologic, climatic, and biologic processes. Where habitat forming processes are intact, ecosystems and their
1615 inhabitants are more likely to persist in the face of environmental variation and disturbances made worse by
1616 climate change, including disease, invasive species, wildfire, flooding, and drought.

1617

1618 ~~((Further, reducing vulnerability of systems to large scale disturbances including disease, invasive species,
1619 catastrophic fire, flooding, and drought is best accomplished by supporting resilience, which is the ability of a
1620 system to return to its former state after a disturbance. When an ecosystem is resilient, that system with its
1621 species communities is better able to bounce back following disturbance or change with ecological functions and
1622 processes still intact. In addition, current efforts such as the Washington State Department of Ecology's
1623 Watershed Characterization analysis can be used to inform decisions and direct resources for regarding land
1624 protection and restoration efforts with maximum ecological benefit.))~~

1625

1626 **E-413 King County's efforts to restore and maintain biodiversity should place priority
1627 on protecting and restoring ecological processes that create and sustain habitats
1628 and species diversity and support climate change resilience.**

1629

1630 ~~**((E-414 When acquiring land for habitat protection, efforts should be made to protect and
1631 restore areas of each habitat type most likely to be resistant to and enhance
1632 resilience to climate change.))**~~

1633

1634 "Structural diversity" is an accepted scientific term whose meaning varies depending on the ecosystem. For
1635 example, ~~((in))~~ in a forest, structural diversity means the combination of tree species, tree height classes, and

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1636 legacy components (snags, logs); the more of each of these there are, the greater the forest structural diversity.
1637 Structural diversity of a river or stream means the degree of sinuosity (meaning curviness of the river and more is
1638 better) combined with both native riparian habitat and natural in-stream structure, which includes downed
1639 wood, various-sized substrate, and a combination of pools, riffles, and glides. "Landscape diversity" means the
1640 size, shape, and connectivity of different ecosystems across a large area; a mosaic of heterogeneous land cover
1641 types and vegetation types; assemblages of different ecosystems.

1642

1643 **E-415 King County should conserve areas where conditions support dynamic**
1644 **ecological processes that sustain important ecosystem and habitat functions and**
1645 **values, and promote structural and landscape diversity.**

1646

1647 **((d-)) Decisions in the Face of Uncertainty**

1648 ~~((Both))~~ Historical, current, and ~~((historical))~~ projected information on habitat conditions, including climate, and
1649 species distribution can inform ecologists and decision-makers about environmental management decisions.
1650 However, decision-makers do not always have access to complete information.

1651

1652 **E-416 King County should use a mixture of information on historic, current, and**
1653 **projected future conditions to provide context for managing public hazards and**
1654 **protecting and restoring habitat.**

1655

1656 **E-417 King County should take precautionary action informed by best available science**
1657 **where there is a significant risk of damage to the environment. Precautionary**
1658 **action should be coupled with monitoring and adaptive management.**

1659

1660 **((e-)) Rare Ecosystems, Habitats, and Species**

1661 Rare or sensitive habitats and species are at a greater risk of extinction than those that are widespread and
1662 abundant and therefore should be a high priority for conservation. ~~((An important secondary benefit of~~
1663 protecting habitat for rare, e)) Endemic species are those that are ((())native to a particular geographic area and
1664 found nowhere else. If the habitat where endemic species live is damaged or lost, the species would cease to
1665 exist. ((, or k)) Keystone species are those ((a species)) that ((is)) has a disproportionately large effect on its
1666 natural environment relative to its abundance and are central to the survival of a multitude of other species((
1667 species is that habitat for many other species is protected as well. For example, the most effective way to protect
1668 and enhance native salmonid populations is through protection of those river and stream channels, riparian
1669 corridors, lakes, wetlands, groundwater, headwaters, and watersheds that provide or impact spawning and
1670 rearing habitat, food resources, and fish passage. Protecting these resources also enhances protection of habitat
1671 for other species.)) Keystone species may have habitat regulating functions, such as sea stars, or they have
1672 habitat forming functions, such as North American beavers.

1673

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1674 **E-418** King County should assess the relative scarcity and sensitivity of different land
1675 types, habitats, and resources, the role of these land types, habitats, and
1676 resources in supporting sensitive species, and the level of threat to these land
1677 types, habitats, and resources in terms of habitat modifications that would likely
1678 reduce populations of sensitive species.

1680 **E-419** King County should give special consideration to protection of rare, endemic,
1681 and keystone species when identifying and prioritizing land areas for protection
1682 through acquisition, conservation easements, and incentive programs.

1684 **E-420** King County should incorporate climate change projections into new species
1685 protection plans and shall revise older species protection plans when feasible or
1686 when conducting ((eight)) 10-year updates to incorporate projected impacts from
1687 climate change.

1689 Rare ecosystems, habitats, and species are also addressed in the Fish and Wildlife Habitat Conservation Areas
1690 section below.

1692 **~~((f.))~~ Integrated Land and Water Management and Planning**

1693 In the past, aquatic and terrestrial habitats and species have often been managed independently of each other.
1694 Effective conservation and resource management of aquatic and terrestrial systems requires coordinated planning
1695 among departments with authority over development regulations and guidelines, wastewater treatment,
1696 stormwater management, flood hazard management, groundwater protection, transportation planning and road
1697 building, water quality, natural resource management, agriculture, and fish and wildlife conservation. Effective
1698 conservation planning must include the interests of private landowners as well.

1699 Coordinated planning and management can improve understanding of cumulative effects on terrestrial and
1700 aquatic systems, and can allow for a systems-based approach to avoiding or mitigating for adverse effects and
1701 improving habitat functions and value over time.

1704 **E-421** Terrestrial and aquatic habitats should be conserved and enhanced to protect
1705 and improve conditions for fish and wildlife.

1707 **E-422** King County's land use and park planning, regulatory, and operational functions
1708 related to environmental protection, public safety, and equity should be closely
1709 coordinated across departments and with other applicable agencies and
1710 organizations to achieve an ecosystem-based approach.

1711

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1712 **~~((g-))~~ Habitat and Development**

1713 A key element in local wildlife conservation is the integration of wildlife and habitats into developments of all
1714 types. Wildlife protection does not have to be at odds with many types of development. Urban multifamily
1715 projects, industrial developments, new school facilities and rural open space projects all provide opportunities to
1716 enhance wildlife ~~((amenities))~~ habitat quality and connectivity. Residential developers and businesses have been
1717 able to use wildlife in marketing strategies to attract more potential homeowners, renters, and quality employees.

1718
1719 Techniques such as minimizing clearing during site preparation, using native plant species in required buffers,
1720 landscaping, using bridges and wildlife-specific crossings rather than culverts to cross streams and innovative site
1721 design can be used to promote wildlife presence and connectivity and minimize ~~((problems))~~ conflicts with
1722 ~~((nuisance))~~ wildlife. Other plan elements, such as open space, road system design and housing density, also
1723 have related impacts on the remaining wildlife values that must be considered.

1724
1725 Benefits to wildlife are enhanced if screening and landscaping is composed of native vegetation. Retention of
1726 natural vegetation can provide wildlife and aesthetic benefits often at a lower cost than non-native or constructed
1727 options.

1728

1729 **E-423 New development, erosion control projects, and restoration of stream banks,**
1730 **lakes, shorelines, and wetlands should, where possible, incorporate native plant**
1731 **communities into the site plan, both through preservation of existing native**
1732 **plants and addition of new native plants. Introductions of non-native invasive**
1733 **plant, vertebrate, and invertebrate species should be avoided in terrestrial,**
1734 **freshwater, and marine environs.**

1735

1736 **E-424 King County shall steward public lands well and shall integrate fish and wildlife**
1737 **habitat considerations into capital improvement projects whenever feasible. Fish**
1738 **and Wildlife Habitat Conservation Areas should be protected and, where**
1739 **possible, enhanced as part of capital improvement projects.**

1740

1741 Standard buffers for streams and wetlands will not always adequately protect wildlife resources that utilize those
1742 sensitive areas. Areas with critical wildlife resources may need larger buffers to protect the resource.

1743

1744 **E-425 To protect or improve adjacent wetlands and aquatic habitats, stream and**
1745 **wetland buffer requirements may be increased to protect King County species of**
1746 **Local Importance and their habitats, as appropriate. Whenever possible, density**
1747 **transfers, clustering, and buffer averaging should be allowed.**

1748

1749 **~~((h-))~~ Non-Native Species**

1750 Non-native species are often invasive because they did not evolve as part of the ecosystem and therefore do not
1751 have natural controls or competition. These species may be terrestrial, freshwater, or marine. Invasive species

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1752 can create costly maintenance problems for both public and private landowners. Noxious and invasive weeds
 1753 and animal species pose threats to the environmental health of all landscapes in King County, including natural,
 1754 agricultural, wildlife, wetland, stream, and recreational areas. Weeds spread in a variety of ways, including the
 1755 transport of seeds or plant parts by vehicles boats, shoes, clothing, and animals (including pets, livestock,
 1756 wildlife, birds, and insects), in soil, gravel and other landscaping and building materials, down watercourses and
 1757 in floods, by wind, and occasionally through deliberate introduction by people. They alter ecosystems through
 1758 disrupting food chains, out-competing native species, and reducing habitat for native wildlife. Invasive species,
 1759 including weeds, are widely recognized as having a significant negative impact on wildlife biodiversity. Invasive
 1760 plants can also increase the risk of forest fire by acting as an accelerant for fire (when extremely flammable)
 1761 and/or by acting as ladder fuels that carry a fire from ground level to the crown of trees.

1762
 1763 King County offers technical assistance with identification and removal of non-native plants ~~((through programs,~~
 1764 ~~including Forest Stewardship and Natureescaping)).~~ The ~~((e))~~County also partners with volunteer groups to
 1765 remove invasive plants from open space and natural areas. Some non-native species are classified as “noxious”
 1766 weeds. The King County Noxious Weed Control Program provides many services to county residents,
 1767 including: educational materials and workshops, current information on control and eradication of noxious
 1768 weeds, support to volunteer and land~~((-))~~owner groups, and annual road-side surveys. In addition, the Noxious
 1769 Weed Control Program implements the State Weed Law ~~((Revised Code of Washington e))~~Chapter 17.10
 1770 Revised Code of Washington) in the county, which requires all landowners to eradicate Class A noxious weeds
 1771 and control designated Class B and ~~((e))~~County-selected Class C noxious weeds on their properties.

1772
 1773 The State Weed Law applies to both private and public lands (except for federal and Indian tribal lands). King
 1774 County manages approximately ~~((4,420))~~ 4,400 parcels of public land totaling over 36,000 acres. King County
 1775 also owns or manages approximately 1,500 linear miles of roads and right of way. These lands are managed by
 1776 multiple ~~((e))~~County agencies, including the King County Departments of Natural Resources, ~~((Transportation))~~
 1777 Local Services, and Executive Services. Since weed infestations can spread from property to property, on both
 1778 public and private lands, it is critical that the ~~((e))~~County have a coordinated strategy for controlling noxious and
 1779 invasive weeds on ~~((e))~~County-owned and managed lands.

1780
 1781 ~~**((E-426 ————— Introductions of non-native, invasive plant, vertebrate, and invertebrate species**~~
 1782 ~~**should be avoided in terrestrial, freshwater, and marine environs.))**~~

1783
 1784 **E-427 King County should promote and restore native plant communities where**
 1785 **sustainable, feasible, and appropriate to the site and surrounding ecological**
 1786 **context and should incorporate climate change considerations into planting**
 1787 **design, including:**
 1788 **a. Encouraging management and control of nonnative invasive plants,**
 1789 **including aquatic plants;**
 1790 **b. Using environmentally sound methods of vegetation control to control**
 1791 **noxious weeds;**

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1832 ((Additional text and policies related to monitoring and adaptive management can be found at the end of this
1833 chapter.

1834 **4.) Fish and Wildlife Habitat Conservation Areas**

1835 Fish and wildlife habitat conservation, according to the state’s definition, means land management for
1836 maintaining populations of species in suitable habitats within their natural geographic distribution so that the
1837 habitat available is sufficient to support viable populations over the long term and isolated subpopulations are
1838 not created. This definition does not mean that all individuals of all species at all times must be maintained, but
1839 it does mean not degrading or reducing populations or habitats so that they are no longer viable over the long
1840 term. Additionally, it should be recognized that geographic distributions will shift with climate change.

1841

1842 King County’s fish and wildlife policies and regulations have been informed by current state fish and wildlife
1843 guidance, recommendations, and requirements. The Growth Management Act directs local jurisdictions to
1844 designate and protect critical areas, including Fish and Wildlife Habitat Conservation Areas. Fish and Wildlife
1845 Habitat Conservation Areas are designated with the intent to ensure the conservation of individual species
1846 recognized as declining or imperiled as well as protect and connect specific areas of habitat deemed important.
1847 This approach of protecting individual species and their habitat comprises one of the five major objectives
1848 described above for protecting the county’s biodiversity. Because biodiversity encompasses a variety of levels,
1849 from genes to ecosystems, and occurs at multiple spatial scales, a wider approach beyond single-species
1850 management is necessary to conserve biodiversity in King County. Additionally, most fish and wildlife species
1851 are not confined to small portions of the landscape; rather, they move about for feeding, breeding, rearing young,
1852 and interacting with other members of their species to ~~((insure))~~ ensure adequate genetic exchange and
1853 population viability.

1854

1855 Federal laws have been enacted over the past century to protect a wide range of species. In addition to the
1856 Endangered Species Act, other federal laws include the Marine Mammal Protection Act, and the Migratory Bird
1857 Treaty Act. Individuals of Endangered Species Act -listed species, marine mammals, and migratory birds in
1858 King County are protected under the provisions of these laws.

1859

1860 ~~((In order to))~~ To build a robust approach to biodiversity conservation, especially in view of a changing climate,
1861 individual species and habitat protections must be integrated with a landscape-scale approach to fostering and
1862 protecting resilient and diverse ecosystems. Fish and Wildlife Habitat Conservation Areas occur on both
1863 publicly and privately owned lands. Designating these areas is an important part of land use planning for
1864 appropriate development densities, the ((u))Urban ((g))Growth ((a))Area ((boundaries)) boundary, open space
1865 corridors, incentive-based land conservation and stewardship programs, and acquisition planning. The policies
1866 in this section are intended to fulfill federal and state requirements for protection of specific species and habitats
1867 while implementing landscape-based approaches to conserve native biodiversity in the long term. Protection
1868 measures designed to help maintain populations of certain species may necessarily include protecting the habitat
1869 where those species have a primary association with the protected area such as spawning or breeding, and also
1870 for rearing young, resting, roosting, feeding, foraging, and migrating.

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1871

1872 **E-432**

King County shall designate the following areas as Fish and Wildlife Habitat Conservation Areas:

1873

1874

a. **Areas with which federal or state listed endangered, threatened or sensitive species have a primary association;**

1875

1876

b. **Habitats of Local Importance and ((H))habitats for Species of Local Importance;**

1877

1878

c. **Wildlife habitat networks designated by the ((e))County;**

1879

d. **Commercial and recreational shellfish areas;**

1880

e. **Kelp and eelgrass beds;**

1881

f. **Herring, smelt, and sand lance spawning areas;**

1882

g. **Riparian ((corridors)) areas; and**

1883

h. **State aquatic reserves.**

1884

1885 **E-433**

King County should map Fish and Wildlife Habitat Conservation Areas. King County shall protect Fish and Wildlife Habitat Conservation Areas through measures such as regulations, incentives, capital projects, or purchase((, as appropriate)).

1886

1887

1888

1889

~~((The Washington Administrative Code guidelines suggest considering waters of the state, wetlands, salmonid habitat (which includes marine nearshore areas), and riparian ecosystems when designating fish and wildlife habitat conservation areas. All of these areas and their associated buffers are highly valuable wildlife habitat, and they serve many other functions as well. Protections for these areas are addressed more broadly in other provisions of this chapter.~~

1895

a-)) Federal and State Listed Endangered, Threatened, Sensitive Species

The importance of designating seasonal ranges and habitat elements where federal and state listed endangered,

threatened and sensitive species have a primary association is that these areas, if altered, may reduce the

likelihood that the species will survive over the long term. The state recommends that King County and other

local jurisdictions identify and classify these areas.

1901

1902 **E-434**

Habitats for species that have been identified as endangered, threatened, or sensitive by the state or federal government shall not be degraded or reduced in size and should be conserved.

1903

1904

1905

((b-)) Species and Habitats of Local Importance

Federal and state listings of species as endangered or threatened often encompass relatively large geographic

areas. More localized declines of species within King County may not be captured by state and federal listings.

For example, local monitoring data indicate the extinction of the ((Early)) Lake Sammamish Kokanee Early run,

((likely)) possible extinction or significant decline of the ((Middle)) Lake ((Sammamish)) Washington Kokanee

1910

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1911 ~~((salmon)) Middle run, and a significant decline in the ((Late)) Lake Sammamish Kokanee ((salmon)) Late~~
 1912 ~~run((s)). ((In 2000, a petition to list just the Early run was filed with the U.S. Fish and Wildlife Service, but by~~
 1913 ~~2003 the run went extinct without any federal action to prevent that result. In 2007, a second petition was filed~~
 1914 ~~to list all remaining Lake Sammamish kokanee. This petition led to an official review of the population's status~~
 1915 ~~by the U.S. Fish and Wildlife Service.~~
 1916
 1917 ~~On September 30, 2011, the U.S. Fish and Wildlife Service concluded that kokanee and sockeye throughout the~~
 1918 ~~Pacific Northwest should be considered together in their listing determination and therefore declined to list this~~
 1919 ~~unique kokanee population. However,)) King County and its partners believe((s)) the conservation of local native~~
 1920 ~~kokanee salmon and its watershed habitat to be important to the quality of life and natural heritage of the~~
 1921 ~~region's residents. Towards that end the County maintains strong collaborative relationships with the watershed~~
 1922 ~~cities, the U.S. Fish and Wildlife Service, Washington Department of Fish and Wildlife, Washington State~~
 1923 ~~Parks, the Muckleshoot Tribe, the Snoqualmie Tribe, Trout Unlimited, Long Live the Kings, and additional~~
 1924 ~~governmental and non-governmental organizations, schools, watershed residents, and other key contributors.~~
 1925 ~~Together these partners work to: improve kokanee salmon habitat, including Lake Sammamish, tributary~~
 1926 ~~streams, and contributing watershed areas; conduct research((,)); educate local residents and businesses((,)); and~~
 1927 ~~support an artificial propagation program at the Issaquah Salmon Hatchery and the Long Live the Kings~~
 1928 ~~hatcheries to increase the viability of the kokanee population.~~
 1929
 1930 King County defines Species of Local Importance as those species that are of local concern primarily because of
 1931 their population status or their sensitivity to habitat manipulation. The ((e))County takes into consideration
 1932 native species named as priority species by the Washington Department of Fish and Wildlife; anadromous
 1933 salmonids; aquatic species whose populations are particularly vulnerable to changes in water quality and
 1934 quantity; species whose habitat or mobility is limited (local populations of species that are immobile or have very
 1935 limited habitat); and species that can be directly impacted by King County (for example, where road projects or
 1936 other infrastructure development can impact habitat; where the ((e))County may acquire, protect, or restore
 1937 certain habitat types). King County Species of Local Importance are identified so that they and their habitats
 1938 may be considered during land use planning and protected during project implementation and development.
 1939 Habitats for Species of Local Importance are designated as a type of Fish and Wildlife Habitat Conservation
 1940 Area and are covered by policies and regulations designed to protect those areas. However, individual animals
 1941 or plants may also be at risk of injury from development or during construction or other changes to the landscape
 1942 and may require additional measures to protect them from injury. For example, freshwater mussels may be
 1943 protected from an instream project by relocating individual animals so they are not injured or killed during
 1944 construction. Or, a rare individual plant may require the protection of an area of land because the plant cannot
 1945 be relocated.
 1946
 1947 **E-435 King County designates the following to be Species of Local Importance:**
 1948 **a. Salmonids and other anadromous fish – Kokanee salmon, Sockeye/red**
 1949 **salmon, Chum salmon, Coho/silver salmon, Pink salmon, Coastal**

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- 1950 resident/searun cutthroat trout, Rainbow trout, Dolly Varden, and Pacific
1951 lamprey;
- 1952 b. Native Freshwater Mussels – Western pearlshell mussel, Oregon and
1953 western floater, and western ridge mussel;
- 1954 c. Shellfish – Dungeness crab, Pandalid shrimp, Geoduck clam, and Pacific
1955 oyster;
- 1956 d. Marine Fish – White sturgeon, Pacific herring, Longfin smelt, Surfsmelt,
1957 Lingcod, Pacific sand lance, English sole, and Rock sole;
- 1958 e. Birds – Western grebe, American bittern, Great blue heron, Brant,
1959 Harlequin duck, Wood duck, Hooded merganser, Barrow’s goldeneye,
1960 Common goldeneye, Cinnamon teal, Tundra swan, Trumpeter swan, Surf
1961 scoter, White-winged scoter, Black scoter, Osprey, Western screech-owl,
1962 Sooty grouse, Band-tailed pigeon, Belted kingfisher, Hairy woodpecker,
1963 Olive-sided flycatcher, Western meadowlark, Cassin’s finch, and Purple
1964 finch;
- 1965 f. Mammals – American marten, mink, Columbian black-tailed deer, Elk in
1966 their historic range, mountain goat, Pika, roosting concentrations of
1967 Big-brown bat and Myotis bats;
- 1968 g. Amphibians – Red-legged frog;
- 1969 h. Reptiles – Western fence lizard;
- 1970 i. Rare Plants – bristly sedge; Canadian St. John’s-wort; clubmoss
1971 cassiope; Oregon goldenaster; toothed wood fern; Vancouver
1972 ground-cone; and white-top aster; and
- 1973 j. High-quality ecological communities - Douglas-fir - Pacific Madrone /
1974 Salal; Douglas-fir - Western Hemlock / Swordfern; Forested Sphagnum
1975 Bog PTN, Low Elevation Freshwater Wetland PTN, North Pacific
1976 Herbaceous Bald and Bluff, Red Alder Forest; Western
1977 Hemlock - (Western Redcedar) / Bog Labrador-tea / Sphagnum Spp.;
1978 Western Hemlock - (Western Redcedar) / Devil’s-club / Swordfern;
1979 Western Hemlock - (Western Redcedar) / Sphagnum Spp.; Western
1980 Hemlock / Swordfern – Foamflower; Western Redcedar- Western
1981 Hemlock / Skunkcabbage; and Willow Spp. Shrubland [Provisional]).

1982

1983 **E-436 King County shall protect Species of Local Importance through measures such**
1984 **as regulations, incentives, capital projects, or purchase, as appropriate.**

1985
1986 Caves, cliffs, and talus (a sloping mass of rocky fragments at the base of a cliff) occupy a very small percent of the
1987 total land area, yet they are disproportionately important as wildlife habitats. The same is true for
1988 sphagnum-dominated peat bogs, Oregon white oak woodlands, herbaceous balds, Westside prairie, old((-)
1989 growth forest, and snag-rich areas, which have all declined as a result of development. Each of these habitats
1990 concentrates and supports a unique plant and animal community. Plant associations adjacent to caves, cliff, and

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1991 talus are important because they help stabilize light and wind patterns, and as with snag-rich areas, they provide
1992 perches for raptors. Caves, cliffs, talus, Oregon white oak woodlands, herbaceous balds, Westside prairie, and
1993 sphagnum-dominated peat bogs are fragile environments that can be easily destroyed, but cannot be easily
1994 restored

1995

1996 **E-437 King County shall designate the following to be Habitats of Local Importance:**

- 1997 a. Caves;
- 1998 b. Cliffs;
- 1999 c. Talus;
- 2000 d. Old-growth forest;
- 2001 e. Sphagnum-dominated peat bogs; and
- 2002 f. Snag-rich areas.

2003

2004 The federal and state governments also designate “candidate” species. In the context of the Endangered Species
2005 Act, candidate means any species being considered for listing as an endangered or a threatened species but not
2006 yet the subject of a proposed rule. Lists of federal candidate species are updated annually. Review of these lists
2007 and the supporting assessments can provide valuable information about threats to species found within King
2008 County and can help the county to be proactive in preparing for potential future listings.

2009

2010 **E-438 King County should review federal and state candidate listings for information**
2011 **about candidate species that are under consideration for listing as an**
2012 **endangered or threatened species and found in King County. King County shall**
2013 **protect habitat for candidate species, as listed by the Washington Department of**
2014 **Fish and Wildlife or a federal agency. Information regarding candidate species**
2015 **should be used to inform King County’s long-term wildlife conservation and**
2016 **planning efforts.**

2017

2018 **E-439 King County shall review fish and wildlife surveys and assessments with local**
2019 **application to King County and consider additional habitat protections where**
2020 **warranted. Habitat protection should be accomplished through incentives,**
2021 **cooperative planning, education, habitat acquisition, habitat restoration, or other**
2022 **appropriate actions based on best available science.**

2023

2024 **E-440 King County should regularly review the Washington Department of Fish and**
2025 **Wildlife’s list of Priority Species and other scientific information on species of**
2026 **local importance, and evaluate whether any species should be added to or**
2027 **deleted from the lists in policies E-435 and E-437. Any additions or deletions**
2028 **((should)) may be made through the annual update.**

2029

2030 **E-441 Development proposals shall be assessed for the presence of King County**
2031 **Species of Local Importance. A comprehensive assessment should follow a**

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2032 **standard procedure or guidelines and shall occur one time during the**
 2033 **development review process.**

2034

2035 In accordance with new statutory requirements, as described in Chapter 9, Services, Facilities, and Utilities, the
 2036 Department of Ecology has established a Watershed Restoration and Enhancement Committee in all five
 2037 Watershed Resource Inventory Areas located either entirely or partially within King County. King County is
 2038 participating in the Ecology process of developing a flow restoration strategy for each of the Watershed Resource
 2039 Inventory Areas to mitigate the consumptive use of new permit-exempt wells drilled in the next 20 years. ~~((The~~
 2040 ~~flow restoration strategies are anticipated to be recommended by 2021-))~~ Ecology has adopted streamflow
 2041 restoration plans for Water Resource Inventory Area 9 (the Green/Duwamish Watershed), and Water Resource
 2042 Inventory Area 10 (the White/Puyallup Watershed). The streamflow restoration committees for Water
 2043 Resource Inventory Area 7 (the Snohomish/Snoqualmie/Skykomish Watershed), Water Resource Inventory
 2044 Area 8 (Cedar/Sammamish Watershed), and Water Resource Inventory Area 15 (Kitsap) did not did not reach
 2045 agreement by all members to complete their planning process. Ecology has completed these plans and forwarded
 2046 them to the Salmon Recovery Funding Board for technical review after which they may amend and adopt the
 2047 plans. Ecology will initiate rulemaking within six months of plan adoption.

2048

2049 Salmon are particularly important because of their significance to local and regional character, Indian tribes, salt
 2050 and freshwater ecosystems, and recreational and commercial fisheries. A growing number of salmon stocks
 2051 within King County and other areas of Puget Sound are in a serious state of decline. Three salmonid species
 2052 present within King County have been listed under the Endangered Species Act, several others have significant
 2053 potential for listing, and the salmon-dependent Orca whale has been listed as endangered.

2054

2055 The protection and restoration of river and stream channels, riparian ~~((corridors))~~ areas, lakes, wetlands,
 2056 headwaters and watersheds, and marine nearshore habitats that provide or impact spawning and rearing habitat,
 2057 food resources, and fish passage is essential to the conservation of native fish populations. Intermittent streams
 2058 also can be critical to native fish populations.

2059

2060 Hatcheries and other artificial propagation facilities that are properly managed to protect the abundance,
 2061 productivity, genetic diversity, and spatial distribution of native salmon may contribute in the near term to both
 2062 maintaining sustainable salmon stocks and harvest opportunities while habitat protection and restoration
 2063 measures for salmon are implemented.

2064

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2065 **E-442** King County should conserve and restore salmonid habitats by ensuring that
 2066 land use and facility plans (transportation, water, sewer, electricity, gas) include
 2067 riparian and stream habitat conservation measures developed by the ((c))County,
 2068 cities, Indian tribes, service providers, and state and federal agencies. Project
 2069 review of development proposals within basins that contain hatcheries and other
 2070 artificial propagation facilities that are managed to protect the abundance,
 2071 productivity, genetic diversity, and spatial distribution of native salmon and
 2072 provide harvest opportunities should consider significant adverse impacts to
 2073 those facilities.

2074
 2075 **~~((c.)) Wildlife Habitat Network~~**

2076 ~~The King County Wildlife Habitat Network was designed to help reduce the effects of fragmentation by linking~~
 2077 ~~diverse habitats through the developed and developing landscape. The network is intended to facilitate animal~~
 2078 ~~dispersal by connecting isolated critical areas, segments, open space, and wooded areas on adjacent properties.~~
 2079 ~~The corridors tend to follow riparian and stream corridors across the lowlands and the upland plateau to the east~~
 2080 ~~and southeast of Lake Washington into the foothills. The Wildlife Habitat Network is mapped on the “Wildlife~~
 2081 ~~Network and Public Ownership Map.”~~

2082

2083 **5.) Conservation Incentives and Education**

2084 King County offers landowner technical assistance for protection of fish and wildlife habitat through programs
 2085 including Forest Stewardship, Noxious Weed Control, ~~((the GoNative web site,))~~ and assistance for native plant
 2086 restoration and landscaping. Other organizations, including King Conservation District, Natural Resource
 2087 Conservation Service, Washington State University Extension, and Washington Department of Fish and
 2088 Wildlife’s Backyard Wildlife Sanctuary Program offer support to landowners to enhance fish and wildlife
 2089 habitat. Landowners can also receive property tax reductions through the King County Public Benefit Rating
 2090 System in exchange for protecting and improving habitat.

2091

2092 **E-443** King County should promote voluntary wildlife habitat enhancement projects by
 2093 private individuals and businesses through educational, active stewardship, and
 2094 incentive programs.

2095

2096 **E-444** King County should partner with community associations, realtors, community
 2097 groups, and other agencies to conduct targeted outreach to potential and new
 2098 property owners about fish and wildlife habitat education and forestry education
 2099 and incentive programs, particularly in Rural Areas and Natural Resource Lands
 2100 in the county.

2101

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2102 **((B.)) Stormwater Quality**

2103 Rivers, streams, lakes, wetlands, and groundwater must be protected from the adverse impacts of development
2104 and land use change to continue functioning in a beneficial manner. Because development both increases runoff
2105 from storms and reduces streamflows in dry months by limiting infiltration, control of the rate, volume, and
2106 quality of stormwater runoff is critical. Unmitigated stormwater runoff can cause erosion, sedimentation and
2107 flooding with resulting adverse impacts on water quality, fish and wildlife habitat, property and human safety.
2108 In addition, stormwater runoff can carry pollutants, such as oil, heavy metals, fertilizers, herbicides, pesticides
2109 ~~((and))~~ animal wastes, dust from tire wear that is lethal to Coho salmon, naturally occurring nutrients at
2110 problematic levels, and toxins and contaminants of emerging concern into waters. Sedimentation from soil
2111 disturbed by clearing, grading, farming and logging can reduce river or stream channel capacity, fill lakes and
2112 wetlands, and smother aquatic life and habitat.

2113

2114 King County stormwater management encompasses a wide range of strategies that ~~((integrate proven, traditional~~
2115 ~~approaches with new and innovative concepts,))~~ include maintenance of more traditional, "gray" infrastructure
2116 such as stormwater ponds, and encourage more "green" approaches, such as low impact development practices
2117 intended to manage stormwater runoff onsite, reducing discharges of pollutants in stormwater runoff, and
2118 mimicking natural hydrology.

2119

2120 King County's stormwater management strategies include but are not limited to: encouraging an approach to site
2121 development that includes clustering or smart growth, minimizes impervious surfaces, and maximizes the
2122 amount of native plants and soils; using education and social marketing to increase the public's awareness of
2123 water quality issues and encourage behaviors that support water quality; providing incentives for private
2124 landowners to install green stormwater infrastructure; improving pollution source control by legislating product
2125 or material restrictions; improving business practices by educating business owners and operators about pollution
2126 generating activities and best management practices to mitigate them; and constructing and maintaining an
2127 stormwater infrastructure system that controls, conveys and treats stormwater runoff. Examples of these
2128 programs include the recently launched RainScapes Green Stormwater Infrastructure Incentive for private
2129 landowners program, and the first ever King County Stormwater Retrofit Prioritization Framework, which will
2130 strategically prioritize King County's work in basins where actions can achieve the greatest benefit to regional
2131 water quality.

2132

2133 The County applies evidence-based tools like the Water Quality Benefit Evaluation Tool and Stormwater
2134 Retrofit Prioritization Framework to evaluate where water quality investments will bring the greatest benefits,
2135 with a focus on communities most impacted by water pollution. The County also conducts research on best
2136 management practices for treating contaminants of concern and is conducting research on sources of "forever
2137 chemicals" to inform efforts to control pollution at its source.

2138

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2139 Together these strategies will reduce pollution and flow impacts of stormwater runoff on King County’s surface
2140 and ground waters.

2141

2142 As required by the National Pollution Discharge Elimination System Phase I Municipal Stormwater Permit,
2143 King County ~~((is making))~~ has made low impact development the preferred and commonly used approach to site
2144 development. As a result of using the low impact development approach, an increasing number of stormwater
2145 management best management practices including, but not limited to, rain gardens, dispersion, permeable
2146 driveways and walkways, vegetated roofs, and the capture and reuse of rainwater, will be constructed on private
2147 property and will rely on private maintenance for their continuing function.

2148

2149 ~~((In addition to the stormwater strategies discussed above, as well as those discussed in Chapter 8:
2150 Transportation, effective stormwater management will require a basin or sub-basin approach that identifies areas
2151 that were built out under old or nonexistent stormwater design standards. Basins where deficiencies in flow
2152 control or water quality are identified would be prioritized to correct those deficiencies. These retrofits could
2153 include upgrades to existing stormwater management structures or the placement of new ones, including onsite
2154 low impact development best management practices like bioretention or raingardens, or the replacement of
2155 impervious pavement with permeable.~~

2156

2157 ~~Achieving the goals of contemporary stormwater management may require improvements to best management
2158 practices and encouraging or requiring the use of different products. Approaches could include using green
2159 products, implementing new land development approaches such as cluster housing, and, in some areas, the
2160 setting aside of land and its dedication to riparian habitat, and maintaining natural vegetation.))~~

2161

2162 The Phase I Municipal Stormwater Permit also requires King County to address impacts caused by stormwater
2163 discharges from areas of existing development; including runoff from highways, streets, and roads that were built
2164 under old or nonexistent stormwater design standards. Modifying stormwater facilities, or building new ones in
2165 previously developed areas, is very expensive. The County is developing strategies using evidenced-based tools
2166 to identify and prioritize actions to achieve the best outcomes for reducing pollution to Puget Sound. The
2167 County is partnering with cities, Indian tribes, counties, and nonprofits to identifying where projects like
2168 “stormwater parks” can provide the greatest environmental benefit while increasing access to open space in
2169 historically underserved areas.

2170

2171 **E-445 Stormwater runoff shall be managed through a variety of methods, with the goal**
2172 **of protecting surface water quality, in-stream flows, and aquatic habitat;**
2173 **promoting groundwater recharge while protecting groundwater quality; reducing**
2174 **the risk of flooding; protecting public safety and properties; and enhancing the**
2175 **viability of agricultural lands.**

2176

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- 2177 **E-446** King County should:
- 2178 a. ~~_____~~ ((e)) Evaluate the need for product or material restrictions because of
- 2179 water quality impacts;
- 2180 b. Ensure the use of a data- and science-driven approach to identify and
- 2181 reduce the use of contaminants of emerging concern;
- 2182 c. Seek changes to state regulations and permits that incentivize regional
- 2183 stormwater investments where they will achieve the best outcomes for
- 2184 pollution reduction; and
- 2185 d. Continue to support regional collaborative stormwater management
- 2186 approaches, including consideration of incentives for regional
- 2187 collaboration and identification of supplemental funding sources for
- 2188 collaborative stormwater management in the region.
- 2189

2190 **~~((C.)) Upland Areas~~**

2191 **~~((1.)) Forest Cover~~**

2192 King County recognizes the value of trees and forests in both rural and urban communities for benefits such as

2193 improving air and water quality and enhancing fish and wildlife habitat. Forests absorb and slowly release

2194 rainwater to streams and aquifers, filter runoff, store carbon, and provide food, shade, and cover for wildlife. In

2195 doing so, they help to prevent flooding and erosion, reduce stormwater runoff and increase infiltration, protect

2196 drinking water, ~~((and))~~ support fish and wildlife and their habitat, and provide recreational opportunities and

2197 health benefits to communities. ~~((Therefore, it is important that regulations protecting critical areas like wetlands~~

2198 ~~take into consideration both regulations and incentive programs intended to conserve forest cover in upland~~

2199 ~~areas.))~~ Forested headwaters in upper reaches of watersheds can be especially important for preventing flooding,

2200 improving water quality, and protecting salmon and other wildlife habitat, given the presence of large areas of

2201 with relatively low levels of development. Forests in rural King County are also relied upon for recreation and

2202 resource use, including harvest and firewood collection and cultivation of special forest products categorized as

2203 edibles, florals, and medicinals. The King County 30-Year Forest Plan provides goals and strategies for the

2204 management of forests in the county to maintain and enhance these benefits. Another strategy for managing

2205 forest health is through development of Forest Stewardship Plans, which provide mechanisms for tailoring

2206 regulations and best management practices for forest management to individual properties. Completion of one

2207 of these plans can also qualify landowners for tax incentive programs and streamlined permitting. ~~((The~~

2208 ~~retention or restoration of forest cover and native vegetation also reduces stormwater runoff and maximizes~~

2209 ~~natural infiltration processes, thus reducing the need for additional stormwater management.))~~

2210

2211 **E-447** ~~((King County recognizes that conserving and restoring headwater and upland~~

2212 ~~forest cover is important for preventing flooding, improving water quality, and~~

2213 ~~protecting salmon and other wildlife habitat.))~~ The central role that forests

2214 ~~((ever))~~ play~~((s))~~ in supporting hydrologic and other ecological processes

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2215 should be reflected in ~~((policies and programs addressing))~~ stormwater
2216 management, flooding, wildlife, and open space policies and programs.

2217
2218 **E-448** King County’s critical areas and clearing and grading regulations should provide
2219 for activities compatible with long-term forest use, including use of recreational
2220 trails, firewood collection, forest fire ~~((prevention))~~ risk reduction, forest
2221 management, and control of invasive plants.

2222
2223 **E-449** King County shall promote retention of forest cover and significant trees using a
2224 mix of regulations, incentives, and technical assistance.

2225
2226 **E-449a** King County should identify and implement strategies that optimize ecological,
2227 social, and economic benefits of establishing and maintaining large blocks of
2228 forest, particularly in upper watershed areas and along major river corridors.

2229 These approaches should:

2230 a. Promote establishment of a broad mix of native tree species and age
2231 classes, including eventual establishment of forests with old growth
2232 characteristics in areas prioritized as having high conservation value;

2233 and

2234 b. Consider the effect of conservation acquisitions on the viability of the
2235 timber resource economy in King County.

2236

2237 **((2.)) Soils and Organics**

2238 Soils play a critical role in the natural environment. The benefits of healthy soils include: (1) keeping
2239 disease-causing organisms in check, (2) moderating stormwater runoff, (3) filtering, binding, and biodegrading
2240 pollutants, (4) recycling and storing nutrients, and (5) serving as the basis for forest and agricultural fertility.
2241 More recently, the carbon storage properties of soils have been recognized as a major climate-moderating
2242 influence. The properties of a healthy soil are similar to those of a sponge, faucet, and filter. They soak up and
2243 store water, naturally regulate the flow of water, and bind and degrade pollutants. The presence of millions of
2244 macro and microorganisms in soil creates a vibrant soil culture where organic material is consumed and air and
2245 water are retained. Nutrients are made available to plants to allow healthy root growth and oxygen generation.

2246

2247 It is common for healthy native soils to be removed during land development. Even when soils are not removed,
2248 development and other human activity often cause soil compaction, removal, and erosion of healthy, native
2249 soils. Fewer organisms are present in disturbed soils. The resulting decrease in organic matter inhibits the soil’s
2250 ability to hold water, which increases stormwater runoff. In addition, plants cannot thrive in disturbed soils
2251 because of the lack of nutrients. This, in turn, causes people to use more chemical fertilizers, pesticides, and
2252 water to induce plant growth. The combination of increased stormwater runoff and increased fertilizer and
2253 pesticide use results in greater water pollution downstream.

2254

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2255 Increasing the organic content in disturbed soils can help restore their environmental function. Composted
 2256 organic materials that might be used include yard debris, food and wood wastes, soiled paper, biochar, biosolids
 2257 and/or livestock wastes, but not others, such as fly ash from industrial smokestacks. Benefits of incorporating
 2258 composted organic materials in soils include: improving stream habitat, supporting healthier plants, reducing
 2259 stormwater runoff, and closing the recycling loop for organic materials. The transformation of degraded soils to
 2260 enhance their ability to uptake and store carbon may be the one of the most effective actions that can be taken to
 2261 mitigate the near-term effects of climate change.

2262
 2263 It is preferable to leave native soil and vegetation in place as much as possible so that it can continue to function
 2264 as a natural sponge and filter, minimizing erosion and stormwater runoff. Where soil is disturbed or removed,
 2265 soil function can be improved by providing soil with adequate depth and organic matter content.

2266
 2267 ~~((E-450) Site development practices should minimize soil disturbance and maximize
 2268 retention of native vegetation and soils. Where soil disturbance is unavoidable,
 2269 native soils should be stockpiled on-site and reused on-site in accordance with
 2270 best management practices to the maximum extent practicable.~~

2271
 2272 ~~E-451 King County shall require the use of organic matter to restore disturbed soils on
 2273 site developments.~~

2274
 2275 ~~Salmon play an important role in sustaining the productivity of soils in riparian and floodplain areas. Salmon
 2276 mature in saltwater environments and then spawn and die in their original spawning streams. In doing so,
 2277 salmon transport nutrients back to watersheds that eventually become available to vegetation.~~

2278
 2279 ~~E-452 The role of salmon in transferring nutrients and maintaining the productivity of
 2280 riparian and floodplain soils should be incorporated in the development of
 2281 salmon and soil conservation plans.)~~

2282
 2283 Organics comprise a large portion of the waste generated by King County residences, businesses and farms. This
 2284 organic waste stream requires significant solid waste, farm management, and wastewater treatment resources.
 2285 Many of these “waste materials” (yard debris, food and wood waste, soiled paper, biosolids, and agricultural
 2286 livestock wastes), can be minimized, recycled, and reused to provide numerous uses that are beneficial to the
 2287 environment and the economy.

2288
 2289 King County has a long history of resource conservation and waste reduction and recycling. Programs have
 2290 successfully captured organic materials for beneficial use such as yard debris, residential food waste, and
 2291 biosolids applications to farms, forests and composting. However, large volumes of organic waste continue to be
 2292 disposed of in the landfill. Significant volumes of livestock waste generated in the suburbs, Rural Areas and
 2293 Natural Resource Lands are inadequately managed, which can adversely impact water quality and fish habitat.

2294

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2295 Although efforts are underway to increase the amount of organic materials that are recycled, the region still lacks
 2296 the capacity to process all of these materials. Along with its efforts to promote beneficial use of these products,
 2297 King County is working with organic material processors and others to try and increase the processing capacity
 2298 in the region through advancement of the Re+ program, which focuses on actions to minimize King County's
 2299 environmental footprint, create more green jobs, divert waste from the landfill, and ensure everyone in King
 2300 County has equitable access to efficient waste services.

2301

2302 **E-453 King County should implement programs to improve availability and markets for**
 2303 **organic materials for soils that have been disturbed by new and existing**
 2304 **developments.**

2305

2306 ~~**((E-454 King County shall regard the region's organic waste materials as resources**~~
 2307 ~~**which should be reused as much as possible, and minimize the disposal of such**~~
 2308 ~~**materials.))**~~

2309

2310 **E-455 King County shall work with regional ((stakeholders)) partners to ensure a viable**
 2311 **and safe organics recycling infrastructure that allows for yard, food, wood,**
 2312 **biosolids, manure and other organic wastes to be turned into resources**
 2313 **benefiting climate change, soil health, water quality, and maximizing landfill**
 2314 **diversion, consistent with the County's zero waste of resources and Re+ goals.**

2315

2316 King County seeks to divert as much material as possible from disposal to reduce overall costs of solid waste
 2317 management, conserve resources, protect the environment, and strengthen the county's economy (see Chapter
 2318 9((:)), Services, Facilities, and Utilities((, F-266))). In many cases, organic materials can be recycled into a
 2319 beneficial, highly valued resource helping to meet these diversion goals. Beneficial uses of organic materials
 2320 include, but are not limited to, the following: soil amendment, mulch, erosion control, and even energy
 2321 production.

2322

2323 King County recognizes that in most cases, the best management method for yard debris and livestock wastes is
 2324 to compost it on the property where it is generated. Examples of residential onsite yard debris management
 2325 techniques include grasscycling (leaving the grass on the lawn when it is cut) and backyard composting.

2326

2327 **E-456 King County shall promote, encourage, and require, where appropriate, the**
 2328 **beneficial use and reuse of organic materials and minimize their disposal,**
 2329 **including but not limited to their use in the following activities: agriculture and**
 2330 **silviculture; road, park and other public project development; site development**
 2331 **and new construction; restoration and remediation of disturbed soils; nursery**
 2332 **and sod production; and landscaping. For these purposes, organic materials do**
 2333 **not include fly ash.**

2334

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2335 **E-457** King County agencies shall use compost and recycled organic products, ((such
2336 as ~~compost,~~)) whenever feasible, and promote the application of ((organic
2337 material)) compost to compensate for historic losses of organic content in soil
2338 caused by human actions, including development, landscaping agricultural
2339 practices, and resource extraction.

2341 **E-458** King County ((will)) shall seek to enhance soil quality((,)) and protect water
2342 quality and biodiversity across the landscape by developing policies, programs,
2343 and incentives that support the goal of no net loss of organic material.

2345 Biosolids are the nutrient rich organic product from the wastewater treatment process which can be recycled as a
2346 soil amendment. At King County’s wastewater treatment plant, solids are removed from the wastewater and
2347 treated in large digesters where the organic solids are stabilized, reducing the volume by half. After digestion, a
2348 portion of water is removed, leaving the semisolid material ready for recycling.

2350 The Biosolids Management Program's mission is to safely and sustainably return carbon and nutrients to the
2351 land through the use of biosolids. The Biosolids Management Program pursues environmental stewardship
2352 through diverse public-private partnerships. One hundred percent of county biosolids are beneficially used
2353 through the forestry and agriculture programs. ((A portion of the County’s biosolids are composted as a Class A
2354 product.))

2356 **E-459** King County supports and should explore ways to beneficially use biosolids
2357 locally, whenever feasible.

2359 On-farm composting as a method of managing livestock waste and other organic waste materials is ((becoming))
2360 an important waste management strategy for farmers. Benefits of on-farm composting include:

- 2361 • Additional revenue from the sale of compost;
- 2362 • Reduced costs for water, fertilizers and pesticides, due to reduced water usage and reduced reliance on
2363 fertilizers and pesticides;
- 2364 • Reduced impacts to surface waters; and
- 2365 • Increased crop yields.

2367 ((King County’s Livestock Management Ordinance, adopted in December 1993, sets manure management
2368 standards in order to minimize impacts to water quality by preventing farm wastes from contaminating the
2369 region’s watersheds. The Livestock Management Ordinance)) Regulations for managing livestock encourage((s))
2370 farmers to implement farm plans in collaboration with the King Conservation District to protect and enhance
2371 natural resources, including water quality. The King Conservation District provides technical assistance and
2372 education to agricultural landowners on how to implement best management practices, which include manure

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2373 storage facilities and pasture renovation, as well as stream and wetland buffer fencing ((and clean water
2374 diversion)). The resulting farm plans can include provisions for onsite and offsite management of livestock
2375 wastes and strategies to integrate processing livestock wastes with other organic waste materials. These strategies
2376 should be consistent with the King County Comprehensive Solid Waste Management Plan, including but not
2377 limited to on-farm composting and land application of processed yard debris. Farm plans that address livestock
2378 waste management further compliance with the provisions of the Clean Water Act and other federal and state
2379 mandates regarding water quality.

2380

2381 **E-460 King County shall promote livestock waste management that keeps waste out of**
2382 **stormwater runoff and from infiltration to groundwater, and enhances soil health**
2383 **by methods such as combining livestock waste with other plant and animal**
2384 **waste material for incorporation into crop soils.**

2385

2386 **~~((D-))~~ Aquatic Resources**

2387 King County's aquatic resources include rivers, streams, lakes, wetlands, groundwater, and the marine waters of
2388 Puget Sound. These resources provide many beneficial functions, including fish and wildlife habitat; food
2389 supplies; flood risk reduction; water supply for agricultural, commercial, domestic and industrial use; energy
2390 production; transportation; recreational opportunities; and scenic beauty.

2391

2392 ~~((In order to))~~To preserve and enhance aquatic resources in King County, they must be managed as an integrated
2393 system together with terrestrial resources, and not as distinct and separate elements. The hydrologic cycle (the
2394 occurrence, distribution and circulation of water in the environment) is the common link among aquatic
2395 resources and describes their interdependence.

2396

2397 Use and modification of water resources and the surrounding terrestrial environment affects how the hydrologic
2398 cycle functions and can cause unintended detrimental impacts such as flooding, low stream and river flows,
2399 reduced groundwater availability, erosion, degradation of water quality, loss of fish and wildlife habitat, and loss
2400 of archeological and traditional cultural resources that depend upon but do not damage natural resources. ~~((In~~
2401 ~~order to))~~To minimize adverse impacts on the water resources of King County and ensure the continued ability to
2402 receive the beneficial uses they provide, the ~~((e))~~County will need to promote responsible land and water
2403 resource planning and use. These beneficial uses include fish and wildlife habitat, flood risk reduction, water
2404 quality control, sediment transport, energy production, transportation; recreational opportunities, scenic beauty,
2405 and water supply for agricultural, municipal, and industrial purpose.

2406

2407 **E-461 King County shall use incentives, regulations, capital projects, open space**
2408 **acquisitions, public education and stewardship, and other programs ((like)) such**
2409 **as recycled water to manage its aquatic resources (Puget Sound, rivers, streams,**
2410 **lakes, freshwater and marine wetlands, and groundwater) and to protect and**

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2411 enhance their multiple beneficial uses. Use of water resources for one purpose
2412 should, to the fullest extent practicable, preserve opportunities for other uses.

2413

2414 **E-462** Development shall occur in a manner that supports continued ecological and
2415 hydrologic functioning of water resources and should not have a significant
2416 adverse impact on water quality or water quantity, or sediment transport, and
2417 should maintain base flows, natural water level fluctuations, unpolluted
2418 groundwater recharge in Critical Aquifer Recharge Areas, and fish and wildlife
2419 habitat.

2420

2421 **~~(L)~~ Watersheds**

2422 A watershed is an area that drains to a common outlet or identifiable water body such as Puget Sound, a river,
2423 stream, lake, or wetland. There are six major watersheds in King County (Cedar/Lake Washington,
2424 Green/Duwamish, Puget Sound, South Fork Skykomish, Snoqualmie, and White) that, in turn, contain
2425 numerous smaller catchments and water bodies. Surface and ground waters are managed most effectively by
2426 understanding and considering potential problems and solutions for an entire watershed. Because watersheds
2427 frequently extend into several jurisdictions, effective restoration and preservation planning and implementation
2428 must be coordinated.

2429

2430 **E-463** King County shall integrate watershed plans with marine and freshwater surface
2431 water, flood hazard management, stormwater, groundwater, drinking water,
2432 wastewater, and recycled water planning, as well as federal and state Clean
2433 Water Act compliance and monitoring and assessment programs, to provide
2434 efficient water resource management.

2435

2436 **E-464** King County shall protect and should enhance surface waters, including streams,
2437 lakes, wetlands, and the marine waters and nearshore areas of Puget Sound, on a
2438 watershed basis by analyzing water quantity and quality problems and their
2439 impacts to beneficial uses, including fish and wildlife habitat, flood risk
2440 reduction, and erosion control. Conditions of and impacts to the downstream
2441 receiving marine beaches and waters of Puget Sound shall be included in
2442 watershed management efforts.

2443

2444 ~~((Over the past several years King County has been working cooperatively with many of the water utilities, local
2445 governments, state agencies, Indian tribes, and other interested parties in the region to gather data and
2446 information to support a regional water supply planning process. (For more information and specific policies
2447 related to regional water supply planning, please see Chapter 9: Services, Facilities and Utilities). This
2448 cooperative work includes assessments of current and future water demands and supplies, potential climate
2449 change impacts on water, opportunities for use of recycled water, and potential improvements to steam flows.~~

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2450 ~~These cooperative efforts will provide valuable information to inform not only water supply planning but also~~
2451 ~~salmon recovery planning and projects.))~~

2452

2453 **E-465 King County should use the information from local and regional water supply**
2454 **planning processes to enhance the county’s water resource protection and**
2455 **planning efforts, including implementation of Water Resource Inventory Area**
2456 **salmon recovery plans.**

2457

2458 **E-466 As watershed plans are developed and implemented, zoning, regulations, and**
2459 **incentive programs ((may)) should be developed, applied, and monitored so that**
2460 **critical habitat in King County watersheds is capable of supporting sustainable**
2461 **and fishable salmonid populations. Watershed-based plans should define how**
2462 **the natural functions and values of watersheds critical to salmonids are**
2463 **protected so that the quantity and quality of water and sediment entering the**
2464 **streams, lakes, wetlands and rivers can support salmonid spawning, rearing,**
2465 **resting, and migration.**

2466

2467 ~~**((E-467 Responsibility for the costs of watershed planning and project implementation,**~~
2468 ~~**including water quality, groundwater protection, and fisheries habitat protection,**~~
2469 ~~**should be shared between King County and other jurisdictions within a**~~
2470 ~~**watershed.))**~~

2471

2472 King County contains a number of wetlands, floodplains, lakes and river and stream reaches that are important
2473 to the viability of fish and wildlife populations and are therefore considered biological, social and economic
2474 resources. Some resource areas, including Regionally Significant Resource Areas and Locally Significant
2475 Resource Areas, were previously identified through ~~((basin plans))~~ watershed planning efforts and other resource
2476 inventory efforts. Additional high-priority habitat areas have been identified through Water Resource Inventory
2477 Area-salmon recovery plans, ~~((“Waterways 2000,” Cedar River Legacy Program, acquisition plans)),~~ the Land
2478 Conservation Initiative, and through basin conditions maps used to establish protective buffers along wetlands
2479 and streams under the Critical Areas Ordinance. Protection and restoration of connections between rivers and
2480 their floodplains is increasingly recognized as a priority element of salmon recovery and climate resiliency
2481 efforts. The Clean Water Healthy Habitat strategic plan includes a 30-year goal for restoring connected
2482 floodplains with native vegetation. Additionally, criteria for the County’s primary local land conservation
2483 funding sources, Conservation Futures Tax, and King County Parks Levy, have been updated to help focus
2484 investment in areas of the county that have historically been underserved with access to quality green space.

2485

2486 These areas contribute to the resource base of the entire Puget Sound region by virtue of exceptional species and
2487 habitat diversity and abundance when compared to basins of similar size and structure elsewhere in the region.

2488 These areas may also support rare, endangered, or sensitive species, including Endangered Species Act-listed

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2489 salmonids. They also provide wetland, lake, and stream habitat that is important for wildlife and salmonid
2490 diversity and abundance within the basin.

2491

2492 **E-468 King County’s Shoreline Master Program, watershed management plans, Water**
2493 **Resource Inventory Area salmon recovery plans, flood hazard management**
2494 **plans, master drainage plans, open space acquisition plans, and critical areas**
2495 **regulations should apply a tiered system of protection that affords a higher**
2496 **standard of protection for more significant resources.**

2497

2498 **E-469 ~~((A tiered system for protection of aquatic resources should be developed based~~**
2499 **~~on an assessment of basin conditions using Regionally Significant Resource~~**
2500 **~~Area and Locally Significant Resource Area designations, Water Resource~~**
2501 **~~Inventory Area Plans, habitat assessments completed for acquisitions plans, the~~**
2502 **~~Water Quality Assessment, Total Maximum Daily Loads, ongoing monitoring~~**
2503 **~~programs, and best available science.)) Through a coordinated approach of~~**
2504 **incentives and acquisitions, King County should prioritize, enhance, and protect**
2505 **a variety of ecosystems, including urban open space uplands, riparian areas,**
2506 **floodplains, and aquatic systems with the highest conservation value and those**
2507 **supporting equitable access to quality open space.**

2508

2509 **~~((2.))~~ Wetlands**

2510 Wetlands are valuable natural resources in King County. They include deep ponds, shallow marshes and
2511 swamps, wet meadows, and bogs. Wetlands comprise forested and scrub-shrub communities, emergent
2512 vegetation, and other lands supporting a prevalence of plants adapted to saturated soils and varying flooding
2513 regimes. Wetlands, with their highly diverse forms and diffuse distribution, can be particularly challenging to
2514 categorize and manage.

2515

2516 The federal and state governments also have roles in identifying and regulating certain types of wetlands and
2517 development activity. ~~((In order to))~~To streamline and synchronize regulatory standards for wetlands, the
2518 ~~((e))~~County relies on guidance from the Washington State Department of Ecology, U.S. Army Corps of
2519 Engineers Seattle District, and Environmental Protection Agency for wetland identification, delineation,
2520 categorization, and, where appropriate, mitigation.

2521

2522 ~~**((E-470) King County shall use current manuals and guidance from state and federal**~~
2523 ~~**governmental agencies and departments to identify, delineate, and categorize**~~
2524 ~~**wetlands and to establish mitigation requirements for wetlands.**~~

2525

2526 ~~**E-471 King County will apply the current scientifically accepted methodology for**~~
2527 ~~**wetland mitigation based on technical criteria and field indicators. Where**~~
2528 ~~**appropriate, King County should rely on publications and recommendations from**~~

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2529 ~~state and federal agencies to ensure King County-approved mitigation will be~~
 2530 ~~accepted by state and federal agencies with jurisdiction.~~

2531

2532 ~~Some wetlands are large and their physical boundaries as well as their functions and values extend beyond~~
 2533 ~~individual jurisdictional boundaries.~~

2534

2535 ~~**E-472 King County shall communicate and coordinate with other jurisdictions and**~~
 2536 ~~**tribes to establish uniform countywide wetlands policies that provide protection**~~
 2537 ~~**of both regionally and locally highly-rated wetlands.))**~~

2538

2539 Wetlands are productive biological systems, providing habitat for fish and wildlife. Wetlands also store flood
 2540 waters and control runoff, thereby reducing flooding, downstream erosion, and other damage. Further, wetlands
 2541 protect water quality by trapping sediments and absorbing pollutants. They allow rain and snowmelt to infiltrate
 2542 into aquifers, recharging them and potentially making that water available for human use. They discharge
 2543 groundwater, making it available to plants and animals. Wetlands store peak flows and discharge to streams in
 2544 dry periods, thus enabling fish and riparian animal populations to survive. They may serve as outdoor
 2545 classrooms for scientific study. Some are used for hiking, hunting, and fishing. These wetland functions and
 2546 values need consideration from a watershed perspective. Measures to protect wetland functions and values need
 2547 to be taken at both the site-specific and watershed scale. In the ~~((u))~~Urban ~~((g))~~Growth ~~((a))~~Area, land use
 2548 authority is often shared by multiple jurisdictions at the scale of a drainage basin. Similarly, efforts to protect
 2549 and restore wetlands may be sponsored by multiple parties, including local governments.

2550

2551 ~~**E-473 King County's overall goal for the protection of wetlands is no net loss of**~~
 2552 ~~**wetland functions and values within each drainage basin. Acquisition,**~~
 2553 ~~**enhancement, regulations, and incentive programs shall be used independently**~~
 2554 ~~**or in combination with one another to protect and enhance wetlands functions**~~
 2555 ~~**and values. Watershed management plans, including Water Resource Inventory**~~
 2556 ~~**Area plans, should be used to coordinate and inform priorities for acquisition,**~~
 2557 ~~**enhancement, regulations, and incentive programs within unincorporated King**~~
 2558 ~~**County to achieve the goal of no net loss of wetland functions and values within**~~
 2559 ~~**each drainage basin.**~~

2560

2561 Buffers are necessary but often insufficient to adequately protect wetland values and functions especially when
 2562 wetlands are small and the adjacent watershed large. Consequently, the location of development in addition to
 2563 its size is important in determining its impact on wetland functions and values.

2564

2565 The functions and values of a wetland will change as the surrounding land is altered by development and other
 2566 human activities, and as local conditions are influenced by climate change. Silviculture, agriculture, and
 2567 development-related changes in forest cover and impervious surface affect stormwater runoff patterns, flooding,
 2568 water quality, and wetland hydrology.

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2569

2570 **E-474 Development adjacent to wetlands shall be sited such that wetland functions and**
 2571 **values are protected, an adequate buffer around the wetlands is provided, and**
 2572 **significant adverse impacts to wetlands are prevented.**

2573

2574 The diversity of plants and animals found in wetlands generally far exceeds that found in terrestrial habitats in
 2575 the Pacific Northwest. Habitat loss and fragmentation are considered the greatest threats to this native
 2576 biodiversity. Wetlands in the Urban Growth Area will experience the largest reduction in the distribution and
 2577 number of native animals and plants due to habitat loss and fragmentation. It is anticipated that climate change
 2578 will exacerbate the adverse effects of habitat loss and fragmentation by further reducing existing wetland habitat
 2579 and altering wetland hydroperiods thereby increasing the inter-habitat distances and potentially restricting the
 2580 dispersal and movement of plants and wildlife between favorable wetlands and habitats.

2581

2582 Protecting wetland biodiversity depends upon supporting the natural processes (including hydrology, nutrient
 2583 cycling, and natural disturbances) that shape wetland habitat, protecting wetlands functions and values from the
 2584 impacts of adjacent land uses, maintaining biological linkages, and preventing fragmentation of wetland habitats.
 2585 Small wetlands strategically located between other wetlands may provide important biological links or “stepping
 2586 stones” between other, higher quality wetlands. Wetlands adjacent to habitat networks also are especially
 2587 critical to wildlife because they allow individual animals to escape danger and populations to inter-disperse and
 2588 breed. Wetlands adjacent to habitat networks should receive special consideration in planning land use.

2589

2590 **E-475 To improve adjacent wetlands and aquatic habitat, areas of native vegetation that**
 2591 **connect wetland complexes should be protected. Whenever effective, incentive**
 2592 **programs such as buffer averaging, density credit transfers, or appropriate**
 2593 **non-regulatory mechanisms shall be used for this purpose.**

2594

2595 Many wildlife species require access to both wetlands and adjacent terrestrial lands to support them at different
 2596 stages of their lives. For example, many amphibians breed in the water and need access to terrestrial habitat for
 2597 feeding and for shelter during the winter. Fixed-width buffers alone are unlikely to adequately address these
 2598 needs or entirely protect wetlands from surrounding human activity. Adjacent and accessible terrestrial habitat
 2599 may be too small or fragmented to provide core feeding, overwintering, and other habitat needs.

2600

2601 **E-476 King County should identify upland areas of native vegetation that connect**
 2602 **wetlands to upland habitats and that connect upland habitats to each other. The**
 2603 **((e))County should seek protection of these areas through acquisition,**
 2604 **stewardship plans, and incentive programs such as the Public Benefit Rating**
 2605 **System and the Transfer of Development Rights Program.**

2606

2607 **E-477 The unique hydrologic cycles, soil and water chemistries, and vegetation**
 2608 **communities of bogs and fens shall be protected through the use of incentives,**

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2609 acquisition, best management practices, and implementation of the King County
 2610 Surface Water Design Manual to control and/or treat stormwater within the
 2611 wetland watershed.
 2612

2613 **E-478** Public access to wetlands for scientific, recreational, and traditional cultural use
 2614 is desirable, providing that public access trails are carefully sited, sensitive
 2615 habitats and species are protected, and hydrologic continuity is maintained.
 2616

2617 **E-479** Regulatory approaches for protecting wetland functions and values, including
 2618 the application of wetland buffers and the siting of off-site compensatory
 2619 mitigation, should consider intensity of surrounding land uses and basin
 2620 conditions. King County shall continue to review and evaluate wetland research
 2621 and implement changes in its wetland protection programs based on such
 2622 information.
 2623

2624 **E-480** Enhancement or restoration of degraded wetlands may be allowed to maintain or
 2625 improve wetland functions and values, provided that all wetland functions are
 2626 evaluated in a wetland management plan, and adequate monitoring, code
 2627 enforcement, and evaluation is provided and assured by responsible parties.
 2628 The enhancement or ((R))restoration ((or enhancement)) must result in a net
 2629 improvement to the functions and values of the wetland system. Within available
 2630 resources, King County should provide technical assistance to small property
 2631 owners as an incentive to encourage the enhancement or restoration ((or
 2632 enhancement)) of degraded wetlands.
 2633

2634 **E-481** Provided all wetland functions are evaluated, impact avoidance and minimization
 2635 sequencing is followed, affected significant functions are appropriately
 2636 mitigated, and mitigation sites are adequately monitored, alterations to wetlands
 2637 may be allowed to:
 2638 a. Accomplish a public agency or utility development;
 2639 b. Provide necessary crossings for utilities, stormwater tightlines and
 2640 roads; or
 2641 c. Allow constitutionally mandated “reasonable use” of the property.
 2642

2643 When adverse impacts cannot be avoided, compensatory mitigation may be allowed. This means wetland
 2644 enhancement, restoration, or creation to replace project-induced losses of wetland functions and values. The
 2645 ((e))County recognizes that, especially in the Urban Growth Area, allowing alteration of low-function wetlands
 2646 in exchange for compensatory mitigation that contributes to wetlands of higher functions and values within a
 2647 connected wetland system may achieve greater resource protection than simply preserving the low functioning
 2648 wetland.
 2649

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- 2650 **E-482** A small Category IV wetland that is less than 2,500 square feet and that is not
 2651 part of a wetland complex may be altered to move functions to another wetland
 2652 as part of an approved mitigation plan that is consistent with E-483 and E-484.
 2653
- 2654 **E-483** Wetland impacts should be avoided if possible, and minimized in all cases.
 2655 Where impacts cannot be avoided, they should be mitigated on site if the
 2656 proposed mitigation is ((feasible)) practical, ecologically appropriate, and likely
 2657 to continue providing equivalent or better biological functions in perpetuity.
 2658 Where on-site mitigation is not possible or appropriate, King County may
 2659 approve off-site mitigation.
 2660
- 2661 **E-484** Mitigation projects should contribute to an existing wetland system or restore an
 2662 area that was historically a wetland. Mitigation should only create new wetlands
 2663 after site monitoring indicates that hydrologic conditions exist to support a new
 2664 wetland. Mitigation sites should be strategically located to reduce habitat
 2665 fragmentation or to restore and enhance area-specific functions within a
 2666 watershed.
 2667
- 2668 **E-485** Land used for wetland mitigation should be preserved in perpetuity. Monitoring
 2669 and maintenance in conformance with King County standards should be
 2670 provided or paid for by the project proponent until the success of the site is
 2671 established. Long-term stewardship should occur at mitigation sites to ensure
 2672 sites continue to provide desired functions and values.
 2673
- 2674 Mitigation banks and in-lieu fee programs are forms of watershed-based compensatory mitigation, with the goal
 2675 of providing greater resource protection and benefit to the public. Both approaches can allow for the
 2676 consolidation of multiple, small mitigation projects into a large-scale wetland or wetland complex, resulting in
 2677 economies of scale in planning, implementation, and maintenance. Depending on their location and functions,
 2678 mitigation banks and projects constructed using in-lieu fee programs can result in wetlands of greater hydrologic,
 2679 chemical, and biological value because of their size and ecological context and the commitment to long-term
 2680 management. These mitigation approaches also provide applicants with a range of options for meeting their
 2681 off-site mitigation obligations.
 2682
- 2683 Mitigation banking allows compensatory mitigation to occur prior to the loss of existing wetlands and their
 2684 functions and values, thereby reducing “temporal” losses. Mitigation banking allows a project proponent to
 2685 mitigate for their impacts by contributing fees to a bank sponsor for the creation or restoration of the bank site.
 2686 In-lieu fee programs, such as King County’s Mitigation Reserves Program, allow an applicant to meet its off-site
 2687 wetland mitigation requirements through payment of a fee to King County or another authorized agent with the
 2688 capacity to design and construct, maintain, and monitor a successful mitigation project. Both types of programs
 2689 enable fees to be pooled so that larger projects can be constructed to offset impacts elsewhere in a watershed.

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2690

2691 Moreover, King County’s Mitigation Reserves Program enables such projects to be constructed on lands with
 2692 degraded wetlands or aquatic areas or lands with the potential to reestablish wetlands or aquatic areas that could
 2693 be restored or enhanced to benefit overall watershed functions. These Mitigation Reserve lands are managed for
 2694 long term ecological protection, so that the landscape and stream basin context support a successful
 2695 enhancement project. Such projects should be planned in a watershed context and may achieve multiple
 2696 ecological objectives, including meeting salmon conservation and other habitat protection objectives as well as
 2697 wetland enhancement needs.

2698

2699 **E-486 King County in partnership with other governmental entities and interested**
 2700 **parties should encourage the development and use of wetland mitigation banks**
 2701 **through which functioning wetlands or aquatic areas are enhanced, restored, or**
 2702 **created prior to the impacting of existing wetlands or aquatic areas. The**
 2703 **((e))County shall encourage establishment of such banks by established**
 2704 **government entities as well as by private, entrepreneurial enterprises.**

2705

2706 ~~((In 2008, the U.S. Army Corps of Engineers and the Environmental Protection Agency jointly issued new~~
 2707 ~~federal rules (40 Code of Federal Regulations Part 230 and 33 Code of Federal Regulations Part 332) regarding~~
 2708 ~~compensatory mitigation for losses to functions and values of aquatic resources associated with unavoidable~~
 2709 ~~permitted impacts. These rules require implementation of mitigation in a watershed context and consideration of~~
 2710 ~~functional losses to resources from permitted impacts and functional gains at mitigation sites.))~~

2711

2712 King County ~~((revised its compensatory mitigation program in 2011 to comply with these new federal rules and~~
 2713 ~~is well positioned to become)) is a regional service provider for compensatory in-lieu fee mitigation – both to~~
 2714 ~~permittees in unincorporated King County and within cities ((when appropriate agreements are in place)). The~~
 2715 ~~((revised)) County's compensatory mitigation program((, authorized by state and federal agencies in 2012,))~~
 2716 offers private and public project proponents the opportunity to pay a fee to King County in lieu of completing
 2717 their own mitigation. These fees in turn will be used to implement mitigation projects, equitably applied among
 2718 larger- and smaller-scale developments, that address watershed needs as determined through analysis of best
 2719 available science.

2720

2721 In approving mitigation proposals, King County should consider the ecological context of the impacted wetland,
 2722 as well as the wetland impact acreage, functions, and values. Mitigation sites should be located in areas in which
 2723 the project will enhance ecological conditions of the watershed and should first replace or augment the functions
 2724 and values that are most important to the optimum functioning of the wetland being created, restored, or
 2725 enhanced. These functions and values may differ from those lost as a result of the impacting development
 2726 project. Wetland mitigation proposals should result in no net loss, and if possible, in an increase in overall
 2727 wetland functions and values within the watershed in which the impacted site is located.

2728

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2729 **E-487** King County should continue to implement and encourage use of its Mitigation
 2730 Reserves Program to provide a fee-based option for permit applicants to mitigate
 2731 for unavoidable impacts of permitted development on wetland and aquatic area
 2732 functions and values. The fee structure shall be based on the full costs of land
 2733 acquisition, site selection, design, construction, and long-term maintenance and
 2734 monitoring. Mitigation projects implemented through the Mitigation Reserves
 2735 Program should occur within a watershed context.
 2736

2737 **E-488** King County should be a regional service provider of compensatory mitigation
 2738 through the Mitigation Reserves Program by working with local cities, other
 2739 counties, and state agencies to establish partnerships for implementation of
 2740 inter-jurisdictional in-lieu fee mitigation.
 2741

2742 ~~((A large portion of western Washington farming occurs in lands that were once wetlands. Region-wide,
 2743 agricultural lands have been targeted as mitigation sites because the relative cost of land is low and the likelihood
 2744 of success in returning wetland functions is high. King County's Agricultural Production Districts that are
 2745 located in floodplains and the poorly drained Osceola soils of the Enumclaw Plateau are no exception. Unless
 2746 carefully sited and engineered, wetland mitigation projects can inadvertently raise water tables on adjacent
 2747 agricultural properties. King County has joined other counties in discouraging the use of productive farmland
 2748 for wetland mitigation, while working with farmers on wetland enhancement and restoration at a scale
 2749 appropriate to sustaining their farms.))~~

2750

2751 Through the King County Mitigation Reserves Program, ~~((restoration))~~ mitigation sites are selected ~~((and
 2752 pre-purchased in advance of))~~ to offset development related impacts. Selected sites, with wetland or aquatic area
 2753 preservation, enhancement, restoration, or creation potential, will be ~~((purchased))~~ protected in perpetuity as
 2754 open space and actively managed as mitigation sites ~~((and will be protected in perpetuity as open space))~~.
 2755 Mitigation projects implemented through the Mitigation Reserves Program will preserve, enhance, restore,
 2756 and/or create ecological functions at the site to compensate for wetland, stream, river, and/or buffer functions
 2757 and values lost during unavoidable impacts associated with permitted construction of projects at other locations.
 2758 Sites and projects through the Mitigation Reserves Program will occur where the projects will have sustainable
 2759 long-term benefits to aquatic resources in the watershed, ensuring projects at protected sites occur in places with
 2760 importance to ecological integrity of the watershed. King County's Mitigation Reserves Program ~~((has received
 2761 approval from))~~ is approved by the U.S. Army Corps of Engineers, ~~((the))~~ Environmental Protection Agency,
 2762 ~~((and the))~~ Washington Department of Ecology, and various local, state, and federal agencies to ~~((serve as an
 2763 in-lieu fee program to mitigate))~~ provide mitigation for the impacts to wetlands and other aquatic resources
 2764 subject to local, state, and federal regulations.
 2765

2766 A large portion of western Washington farming occurs in lands that were once wetlands. Region-wide,
 2767 agricultural lands have been targeted as mitigation sites because the relative cost of land is low and the likelihood
 2768 of success in returning wetland functions is high. King County's Agricultural Production Districts that are

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2769 located in floodplains and the poorly drained Osceola soils of the Enumclaw Plateau are no exception. Unless
2770 carefully sited and engineered, wetland mitigation projects can inadvertently raise water tables on adjacent
2771 agricultural properties. King County has joined other counties in discouraging the use of productive farmland
2772 for wetland mitigation, while working with farmers on wetland enhancement and restoration at a scale
2773 appropriate to sustaining their farms.

2774

2775 **E-489 Wetland mitigation projects should avoid impacts to and prevent loss of farmable**
2776 **land within Agricultural Production Districts. Creation of wetland mitigation**
2777 **banks ((are)) shall not be allowed in the Agricultural Production Districts when**
2778 **the purpose is to compensate for wetland impacts from development outside the**
2779 **Agricultural Production Districts.**

2780

2781 **((3.)) Lakes**

2782 There are approximately 700 lakes in King County ranging in size from less than one acre to Lake Washington’s
2783 roughly 21,500 acres. These lakes provide habitat that is essential for various life stages of many species of fish
2784 and wildlife, including salmonids, as well as recreational opportunities and scenic beauty. Watershed
2785 ~~((D))development, shoreline alternation,~~ and stormwater runoff into lakes can alter their functioning and lead to
2786 eutrophication (increases in nutrients), loss of ~~((shoreline))~~ habitat, and threats to human and ecosystem health.
2787 Although sewage treatment has greatly reduced pollution in urban lakes like Lake Washington, stormwater
2788 runoff polluted by oil, metals, sediments, pet waste, lawn fertilizers, and ~~((pesticides))~~ toxic chemicals can
2789 threaten ~~((human health, aquatic life, and habitat. Construction of bulkheads and docks also has the potential to~~
2790 impact habitat by altering shoreline vegetation and natural erosion patterns)) lake ecosystems and those who use
2791 them.

2792

2793 King County conducts water quality monitoring assessment on lakes throughout ~~((King County, in some cases~~
2794 supported by interlocal agreements with cities)) the county, including sediment quality, habitat, biotic resources,
2795 and hydrology. ~~((Some of the earliest evidence of climate change includes temperature changes in regional lakes.~~
2796 Changes in annual temperature cycles in King County’s regional lakes, particularly Lake Sammamish, Lake
2797 Union, and Lake Washington, provide some of the most accurate measures of climate change available locally.))
2798 This monitoring supports restoration and protection of lakes in King County, as well as improves understanding
2799 of climate change, watershed development, stormwater impacts, and swimming, fishing, and drinking water
2800 uses.

2801

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2802 King County also conducts specialized monitoring assessments for public health and safety. During the summer
 2803 months, the ((e))County conducts regular monitoring at public swimming beaches and contaminate monitoring
 2804 of some fish species. When monitoring indicates a public health hazard, the County works collaboratively with
 2805 state agencies and local jurisdictions, and ((the)) information is provided to Public Health -- Seattle & King
 2806 County((, which can issue a temporary closure order. The Washington State Department of Health issues fish
 2807 and shellfish consumption advisories to protect human health. There are consumption advisories for a number of
 2808 species in Lake Washington. King County recently implemented a monitoring program to track the level of
 2809 select contaminants in some fish species in Lake Washington. These data are used to evaluate the potential for
 2810 both human health (through consumption) and ecological impacts)). This can result in public warnings,
 2811 consumption advisories, management recommendations, and a temporary closure order if necessary. King
 2812 County also offers technical response assistance to harmful algal bloom incidents.

2813

2814 **E-490** Lakes ~~((should))~~ shall be protected through management of lake watersheds and
 2815 shorelines. Lakes ((sensitive to nutrients shall)) should also be protected
 2816 through the management of nutrients that stimulate potentially harmful algae
 2817 blooms and aquatic plant growth. Where sufficient information is available,
 2818 measurable standards for lake quality should be set and management plans
 2819 established to meet the standards. Formation of lake management districts or
 2820 other financing mechanisms should be considered to provide the financial
 2821 resources necessary to support actions for protection of ((sensitive)) lakes.

2822

2823 **E-491** King County, in partnership with other governments and community groups,
 2824 should monitor and assess lake water and sediment quality, physical habitat,
 2825 ((and)) biotic resources, and hydrology. Assessment should identify trends and
 2826 describe impacts on human and ecosystem health, aquatic life, and wildlife
 2827 habitat.

2828

2829 **E-491a** ~~((The e))~~ King County should collaborate with other ((affected)) jurisdictions,
 2830 Public Health - Seattle & King County((, the State Department of Health, and the
 2831 State Department of Ecology)), and state agencies to identify and address
 2832 pollutant sources adversely impacting aquatic life and/or human and ecosystem
 2833 health((; through local or grant funding opportunities, the county should reduce
 2834 or remove these inputs)).

2835

2836 **E-492** Swimming beaches on lakes should be monitored for ~~((bacterial))~~ fecal
 2837 contamination and algal toxins. When data shows public health to be at risk,
 2838 Public Health - Seattle & King County should take appropriate action to address
 2839 public health risks.

2840

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2841 **((4.)) Groundwater Resources**

2842 Protecting groundwater is an important regional issue because groundwater provides approximately 30((%))
 2843 percent of the water used in King County and is the primary source of water in the Rural Areas geography. On
 2844 Vashon-Maury Island and in other sole-source aquifer areas, it is the only source of drinking water.

2845
 2846 The natural hydrologic system can be altered by development practices and overuse of the aquifer. The result
 2847 may be depletion of aquifers. Groundwater is also subject to contamination from human activity. Once a source
 2848 of groundwater is contaminated it may be lost forever. The cost of protection is considerably less than the cost of
 2849 remediation and replacement. Having accurate, up-to-date information on groundwater quality and quantity is
 2850 essential for managing this resource. Mapping risk could be achieved for a variety of pollutants or pollutant
 2851 classes by integrating groundwater protection level, distance to groundwater, soil type, pollutant mobility, and
 2852 land use information into a new map layer for each pollutant. Finally, public education (particularly for
 2853 individual well owners) and coordinated groundwater management efforts will help to protect this resource over
 2854 the long-run.

2855

2856 **E-493 King County shall identify and map areas in unincorporated King County that are**
 2857 **considered Critical Aquifer Recharge Areas and sole-source aquifers. The**
 2858 **((e))County shall periodically update this map with new information from adopted**
 2859 **groundwater and wellhead protection studies and other relevant sources. King**
 2860 **County should develop and maintain map layers of groundwater risk level when**
 2861 **funding is available.**

2862

2863 **E-494 King County should protect the quality and quantity of groundwater countywide**
 2864 **by:**

- 2865 **a. Implementing adopted Groundwater Management Plans;**
- 2866 **b. Reviewing and implementing approved Wellhead Protection Programs in**
 2867 **conjunction with cities, state agencies and groundwater purveyors;**
- 2868 **c. Developing, with affected jurisdictions, best management practices for**
 2869 **development and for forestry, agriculture, and mining operations based**
 2870 **on adopted Groundwater Management Plans and Wellhead Protection**
 2871 **Programs. The goals of these practices should be to promote aquifer**
 2872 **recharge quality and to strive for no net reduction of recharge to**
 2873 **groundwater quantity;**
- 2874 **d. Refining regulations to protect Critical Aquifer Recharge Areas and**
 2875 **well((-))head protection areas;**
- 2876 **e. Educating the public about Best Management Practices to protect**
 2877 **groundwater;**
- 2878 **f. Encouraging forest retention and active forest stewardship;**

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- 2879 g. Incorporating into its land use and water service decisions consideration
 2880 of potential impacts on groundwater quality and quantity, and the need
 2881 for long-term aquifer protection;
- 2882 h. Coordinating groundwater management efforts with cities, water
 2883 districts, groundwater committees, and state and federal agencies;
- 2884 i. Requiring the proper decommissioning of any well abandoned in the
 2885 process of connecting an existing water system to a Group A water
 2886 system; and
- 2887 j. When funding is available, monitoring groundwater status and trends,
 2888 especially for the groundwater protection planning areas established by
 2889 King County, and evaluating the groundwater monitoring results, along
 2890 with groundwater monitoring performed by public water systems, plus
 2891 their annual quantities of groundwater pumped over the five((-)-year
 2892 period. Findings as an indicator of environmental quality should be
 2893 reported for each groundwater management area.
 2894
- 2895 **E-495** King County should protect groundwater recharge quantity and quality by
 2896 promoting low impact development and other methods that infiltrate stormwater
 2897 runoff where site conditions permit and where pollution source controls and
 2898 stormwater treatment can prevent potential groundwater contamination.
 2899
- 2900 **E-496** ~~((In making future zoning and land use decisions that are subject to~~
 2901 ~~environmental review,)) King County ((shall)) should periodically evaluate and
 2902 monitor groundwater policies, their implementation costs, and the impacts upon
 2903 the quantity and quality of groundwater. The depletion or degradation of aquifers
 2904 needed for potable water supplies should be avoided or mitigated, and the need
 2905 to plan and develop feasible and equivalent replacement sources to compensate
 2906 for the potential loss of water supplies should be considered.
 2907~~
- 2908 **E-497** King County should protect groundwater in the Rural Area by:
- 2909 a. Preferring land uses that retain a high ratio of permeable to impermeable
 2910 surface area, and that maintain and/or augment the natural soil's
 2911 infiltration capacity and treatment capability for groundwater;
- 2912 b. Evaluating impacts on groundwater, where appropriate, during review of
 2913 commercial, industrial and residential subdivision development projects
 2914 that are proposed to be located within critical aquifer recharge areas,
 2915 and, where appropriate, requiring mitigation for anticipated groundwater
 2916 impacts to domestic water supply resulting from these projects; and
- 2917 c. Requiring standards for maximum vegetation clearing limits, impervious
 2918 surface limits, and, where appropriate, infiltration of surface water.
 2919

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2920 Climate change has the potential to impact future groundwater availability. Warmer temperatures in the Pacific
 2921 Northwest are projected to lead to greater demand for water in the summer and fall, while reduced snow pack
 2922 and associated stream flows could reduce seasonal groundwater recharge. Further analysis of the potential
 2923 impacts of climate change on groundwater supplies in King County is needed to understand and mitigate for
 2924 potential impacts.

2925

2926 **E-498** King County should, in partnership with water utilities, ~~((evaluate the likely~~
 2927 ~~effects of)) work to ensure that climate change impacts on ((aquifer recharge and
 2928 ~~groundwater supplies and develop a strategy to mitigate potential impacts in~~
 2929 ~~coordination with other climate change initiatives)) groundwater are being
 2930 accounted for in water supply planning and management, such as by
 2931 a. Evaluating effects of climate change on aquifer recharge and
 2932 groundwater supplies; and
 2933 b. Developing strategies through climate change initiatives with cities,
 2934 water districts, groundwater committees, state and federal agencies, and
 2935 Indian tribes to mitigate impacts of climate change.
 2936~~~~

2937 **((5.)) Rivers, Streams and Floodplains**

2938 There are approximately ~~((3,100))~~ 6,400 miles of rivers ~~((and)),~~ streams, and creeks in King County and more
 2939 than ~~((52,000))~~ 59,000 acres of floodplains along rivers, streams, and marine shorelines. The river and stream
 2940 channels, the surrounding riparian (streamside) areas and upland areas, their floodplains all contribute to the
 2941 functioning and integrity of rivers and streams. Many rivers and streams provide habitat that is essential for
 2942 various life stages of many species of wildlife and fish, including salmonids.

2943

2944 Rivers, streams and floodplains are dynamic systems. When flood waters overtop banks, floodplains temporarily
 2945 store that water. Depending on the depth and flow, floods can dramatically alter river and stream courses,
 2946 creating new channels, eroding banks, and depositing sediment and gravel. Flooding and erosion can also
 2947 dislodge trees. These changes slow flood flows and help to support dynamic and complex habitat for fish and
 2948 wildlife. At the same time, they can create public safety issues for people living along and recreating in rivers.

2949

2950 In addition, public access to rivers and streams is both a requirement of the Shoreline Management Act and a
 2951 goal for King County to support the regional economy and provide recreational opportunities for the
 2952 community. People enjoy rivers and streams for the scenic and recreation values, including boating, floating,
 2953 swimming, fish and wildlife viewing, and fishing. Management of these systems needs to consider not only
 2954 habitat protection, but also public health and safety and opportunities for education and stewardship.

2955

2956 **E-498a** The existing flood storage and conveyance functions and ecological values of
 2957 floodplains, wetlands, and riparian ~~((corridors))~~ areas shall be protected, and

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2997 **E-499e To maintain and restore stream health, sources of uncontrolled stormwater flows**
 2998 **contributing to peak flows in small streams should be managed using on-site**
 2999 **structural or non-structural flow control techniques.**
 3000
 3001 Most streams in King County originate in either mountainous terrain or on rolling glacial uplands. These
 3002 streams often descend through steep, narrow ravines before reaching the floodplain. At the point where these
 3003 streams leave their ravines and flow onto the floodplain, the channel gradient (slope) and confinement decrease
 3004 quickly, dramatically reducing the streams' ability to carry sediment. These are areas of natural sediment
 3005 deposition and channel migration. The combination of sediment deposition and repeated channel migration
 3006 creates fan-shaped depositional features known as alluvial "fans."
 3007
 3008 During periods of heavy rainfall, streams often carry large sediment loads from upstream that deposit on
 3009 downstream alluvial fans. Landslides, beaver dam failures and other natural disturbances can create episodes of
 3010 particularly high rates of sediment production and delivery. In many stream systems, instances of heavy
 3011 sediment deposition may occur episodically with years or decades of apparent stability in the intervening periods.
 3012 In many instances, sediment production and tributary or stream flow rates are exacerbated by upland land use
 3013 conditions and associated stormwater effects.
 3014
 3015 Alluvial fans share many of the ecological attributes and land use risks associated with channel migration hazard
 3016 areas and landslide hazards, though they are unique in many respects. In a natural environment, alluvial fans
 3017 often provide some of the best available spawning habitat in a tributary stream, while also providing a source of
 3018 gravel for areas downstream. In some heavily altered streams, the alluvial fan may represent the only remaining
 3019 areas that are suitable for spawning. Alluvial fans can also form the highest ground available in the floodplain,
 3020 and have historically been used for construction of buildings (including farm buildings), roads and other
 3021 structures. Unfortunately, they are inherently unstable environments in which to build. During high flows
 3022 coupled with sediment deposition, a stream may jump its bank in the area of the alluvial fan, in some cases
 3023 damaging private property, disrupting agricultural activities, destroying culverts and road crossings, stranding
 3024 fish, and creating risks to public safety. Protecting buildings, roads, and crops on and along alluvial fans often
 3025 requires extensive, ongoing maintenance activities. Maintenance activities can have adverse effects on habitat,
 3026 and in some circumstances may not be permissible under state regulations.
 3027
 3028 ~~((The Rural Areas and Natural Resource Lands chapter calls for alluvial fan pilot projects to test best~~
 3029 ~~management practices and innovative solutions for reducing hazards to agricultural landowners and protecting~~
 3030 ~~and restoring habitat.))~~
 3031
 3032 **E-499f King County should improve the management of alluvial fans by developing and**
 3033 **clarifying definitions of alluvial fans, mapping the locations of existing alluvial**
 3034 **fans, and developing appropriate management strategies. Strategies should**
 3035 **protect intact habitat ((and)), restore degraded habitat, and reduce threats to**
 3036 **public safety((, and accommodate)) in the context of existing land uses. Best**

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3037 Available Science and ((F))findings from Alluvial Fan Management Pilot Projects
3038 Reports should inform management strategies for alluvial fans, including
3039 potential regulatory changes.
3040

3041 **~~((6.))~~ Puget Sound**

3042 There are approximately 110 miles of marine shoreline in King County, including 51 miles in unincorporated
3043 areas. Shorelines provide important functions for maintaining a healthy ecosystem and also provide essential
3044 habitat for a variety of important and listed species, including mammals, birds, fish, and invertebrates. In
3045 addition to recreational opportunities, the marine nearshore environment provides essential habitat for a variety
3046 of species including juvenile salmonids, forage fish, and several commercially important shellfish species. Kelp
3047 and eelgrass populations are particularly important for providing food and habitat, especially for juvenile life
3048 stages for a variety of key fish and invertebrate species. The intertidal area of marine beaches are the only
3049 spawning habitats for Pacific sand lance and surf smelt, which form the base for much of the food chain in Puget
3050 Sound and are highly susceptible to impacts from residential development of shoreline areas. Marine resources
3051 and shorelines, especially embayments, are susceptible to impacts from water pollution, changes in upland
3052 vegetation, alteration of natural bluff and beach erosion patterns, and alteration of nearshore substrates and
3053 aquatic vegetation.

3054
3055 The majority of marine waters within King County are subtidal waters, which provide important ecosystem
3056 functions and essential habitat for a variety of important species, including marine mammals, birds, salmonids,
3057 and other fish and invertebrates. Subtidal waters support geoduck, shrimp, and ~~((bottomfish))~~ commercial and
3058 tribal fisheries ((as well as)), and also provide critical rearing habitats for salmonids and migratory pathways for
3059 marine mammals ((and salmonids)). Resident killer whales are often observed in King County subtidal waters
3060 feeding on salmonids, and Biggs' whales are often seen feeding on seals and sea lions. Adult life stages of many
3061 species, such as rockfish and Dungeness crab, use subtidal waters extensively. In addition, subtidal waters
3062 provide an important connection to Pacific Ocean waters as well as waters within other parts of Puget Sound.
3063 Subtidal habitat is susceptible to impacts from water pollution, over-utilizing of biological resources, and climate
3064 change.

3065
3066 King County conducts water quality monitoring in marine offshore and nearshore areas throughout King
3067 County as part of the Marine Monitoring Program. Nutrients, chlorophyll, and dissolved oxygen are measured
3068 along with other physical and chemical parameters. Biological parameters, such as ~~((chlorophyll))~~ fecal indicator
3069 bacteria and phytoplankton and zooplankton community structure are also assessed. Offshore sediment quality
3070 is assessed in various subtidal areas and nearshore sediments are assessed throughout King County. The
3071 Washington State Department of Health issues fish and shellfish consumption advisories to protect human
3072 health. There are consumption advisories for a number of species within King County marine waters. King
3073 County recently implemented a monitoring program to track the level of select contaminants in some species of
3074 fish and shellfish in Elliott Bay and King County's marine waters. These data are used to evaluate the potential
3075 for both human health (through consumption) and ecological impacts.

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3076

3077 King County’s freshwater and saltwater environments are integrally linked. Water, sediments, and nutrients
3078 move from upland areas to Puget Sound. Many species, including salmon, spend critical periods of their lives in
3079 both fresh and salt water. Salmon migrating from saltwater to their spawning areas bring marine-derived
3080 nutrients back to the upland areas. Given the functional linkages between freshwater and saltwater
3081 environments, it is critical that planning and management be integrated.

3082

3083 **E-499g** King County should collaborate with ~~((the))~~ federal and state agencies,
3084 ~~((including))~~ the Puget Sound Partnership~~((s))~~, cities, Indian tribes, other
3085 counties, and universities to monitor and assess Puget Sound marine waters,
3086 nearshore areas, and embayments. Monitoring and assessment should:
3087 a. _____ Address water and sediment quality, bioaccumulation of chemicals,
3088 physical habitat, ~~((and))~~ biotic resources, and hydrology (~~--Assessment~~
3089 should)); and
3090 b. _____ Identify trends and describe impacts on human and ecosystem health
3091 and safety, aquatic life, and wildlife habitat.

3092

3093 **E-499gg** ~~((The c))~~ King County should collaborate with other ~~((affected))~~ jurisdictions,
3094 ~~Public Health -- Seattle & King County, ((the State Department of Health, and the~~
3095 ~~State Department of Ecology)), and state agencies to identify and address~~
3096 pollutant sources adversely impacting aquatic life and/or human and ecosystem
3097 health(~~;; through local or grant funding opportunities, the county should reduce~~
3098 or remove these inputs)).

3099

3100 **E-499h** King County should protect and enhance the natural environment in those areas
3101 recommended or adopted as Aquatic Reserves by Washington State Department
3102 of Natural Resources. This should include participation in management planning
3103 for the aquatic reserves and working with willing landowners adjacent to the
3104 reserve on restoration and acquisition projects that enhance the natural
3105 environment.

3106

3107 **E-499hh** King County shall continue to support efforts of the Poverty Bay Shellfish
3108 Protection District to safeguard against threats to water quality that limit access
3109 to existing commercial shellfish harvesting areas.

3110

3111 **E-499hhh** King County should continue to support regional program and actions to monitor
3112 and address fecal pollution of King County lakes, streams, and beaches, such as
3113 the Pollution Identification and Control Program being run in collaboration with
3114 the King Conservation District and Public Health – Seattle & King County.

3115

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3116 Human waste contains high levels of nutrients and pathogens. These pollutants can enter Puget Sound marine
 3117 waters from a variety of pathways including combined sewer overflow outfalls, septic systems, stormwater
 3118 runoff, ships and boats, and rivers and streams. Nutrients are also present in treated wastewater effluent. Public
 3119 Health – Seattle & King County is responsible for assuring that onsite sewage systems in King County meet state
 3120 and local regulations. In addition, Public Health – Seattle & King County is required to identify areas where
 3121 marine water quality is threatened or impaired as a result of contamination from onsite sewage systems, to
 3122 designate these areas as Marine Recovery Areas, Public Health – Seattle & King County has developed a Marine
 3123 Recovery Areas plan for Vashon-Maury Island to identify failed septic systems within the Marine Recovery
 3124 Areas, and to assure that these systems are repaired and maintained.

3125
 3126 The State Department of Health conducts shoreline surveys, which identifies pollution sources that may impact
 3127 water quality. Marine water sampling is to determine fecal coliform bacteria levels in the marine waters.
 3128 Shellfish growing areas are classified determining whether ~~((or not))~~ shellfish in the area can be harvested for
 3129 human consumption. Public Health – Seattle & King County, in partnership with Department of Natural
 3130 Resources and Parks and King Conservation District, has implemented the Quartermaster Pollution
 3131 Identification and Correction programs to address the fecal coliform discharges that ~~((caused the shellfish beds to
 3132 be prohibited from))~~ limit commercial harvesting.

3133
 3134 The Marine Recovery Areas/Pollution Identification and Correction program has successfully returned portions
 3135 of Quartermaster Harbor to harvestable condition and is continuing work on Vashon-Maury Island to address
 3136 fecal coliform sources such as properties that have on-site sewage systems that pre-date regulatory oversight
 3137 systems or that have failing systems. In addition to Quartermaster Harbor, other ~~((King County))~~ commercial
 3138 shellfish beds that are listed as threatened or concerned in King County are East Passage and Colvos Passage on
 3139 Vashon, and Poverty Bay on the mainland.

3140
 3141 Most landowners act as responsible managers of their septic systems and maintain them effectively. However,
 3142 those septic systems that are not maintained can fail, and impact the environment. The County and the State
 3143 should work with landowners by providing technical assistance and support to prevent failures, take action to
 3144 correct failing systems and address the associated problems.

3145
 3146 **E-499i King County should work with landowners, other jurisdictions, the state**
 3147 **Department of Health, sewer districts, and the Puget Sound Partnership to**
 3148 **proactively address failing septic systems with a priority in environmentally**
 3149 **sensitive areas, including constrained shoreline environments.**

3150

3151 **~~((7-)) Beavers and Beaver Activity~~**

3152 Beaver ponds, created when beavers dam watercourses, provide a protective pool for a beaver lodge and
 3153 environmental benefits. They help retain stormwater runoff, trap sediment and pollutants, maintain stream flow
 3154 during summer, reduce downstream flooding and erosion, raise groundwater levels and help create diverse plant

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3155 and animal habitat. Beaver ponds also provide significant environmental benefits and functions for salmon
 3156 rearing habitat, floodplain connectivity, wood inputs, increased complexity of aquatic systems, and biodiversity.

3157

3158 Beaver dams may also cause upstream flooding of roads, utilities, and both public and private property, and
 3159 create the potential for downstream risk to public safety and infrastructure should dam failure occur. If a dam is
 3160 harmed or removed, the beavers will typically repair the damage quickly, because their survival depends on
 3161 having the entrance to their lodge underwater.

3162

3163 ~~((For over 150 years beavers and humans were able to coexist in King County, because beaver populations were~~
 3164 ~~kept in balance through trapping and human development was confined to areas without large beaver~~
 3165 ~~populations. However, as the urban and suburban areas of King County extended out into areas with an~~
 3166 ~~abundance of beaver habitat and beaver populations increased, beavers have begun to come into greater conflict~~
 3167 ~~with humans.~~

3168

3169 ~~These growing conflicts were exacerbated in 2000 with the passage of Initiative Measure 713 (I-713), a law that~~
 3170 ~~prohibited the use of body-gripping traps with the exception of a Conibear trap in water, a padded leg hold trap,~~
 3171 ~~or a non-strangling type foot snare, all of which require a special permit (see Revised Code of Washington~~
 3172 ~~77.15.194). The results of these changes were that fewer beavers are being trapped and more beavers are~~
 3173 ~~repopulating historic habitat.~~

3174

3175 ~~Fifteen years since I-713 went into effect, beavers continue to repopulate the water bodies of King County.~~
 3176 ~~Non-lethal/engineered solutions (beaver deceivers and pond levelers) help control water levels of beaver ponds~~
 3177 ~~and are part of the solution for co-existing with beavers. But these solutions are not always sufficient and will~~
 3178 ~~likely become less and less feasible in terms of maintenance capacity as beaver populations continue to expand.)~~

3179

3180 **E-499ii King County supports the coexistence of beavers and people in rural King**
 3181 **County. ~~((King County should prepare a beaver management strategy to guide a~~**
 3182 **~~program on issues such as where and how beavers and humans can co-exist~~**
 3183 **~~with or without engineered solutions and where beavers should be excluded or~~**
 3184 **~~removed.))~~**

3185

3186 **~~((E.)) Watershed-Based Salmon Recovery~~**

3187 The protection and recovery of salmonid species that are listed under the Endangered Species Act and
 3188 encompassed by Indian tribal treaty rights are and will continue to be a significant priority for King County. The
 3189 listing of a species under the Endangered Species Act and decline of Indian tribal treaty right protected species
 3190 are cause for great concern, because wild Pacific salmon have great environmental, cultural, economic,
 3191 nutritional, recreational, and symbolic importance to local communities, in particular Indian tribal communities,
 3192 in the entire Puget Sound region.

3193

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3194 It is King County's goal to ensure the recovery and maintenance of salmon populations to sustainable and
3195 harvestable levels, and to accrue the ecological, cultural, economic, and local food supply benefits that will be
3196 provided by healthy salmon stocks. King County ((will)) pursues salmon conservation strategies that sustain the
3197 region's vibrant economy. Successful restoration and maintenance of healthy salmon populations ((will))
3198 requires time, money and effort, and collaboration with federal, state, tribal and local governments, as well as
3199 businesses, environmental groups, and residents.

3200

3201 ~~((The increasing number and diversity of Endangered Species Act federally protected species in King County and
3202 around the Puget Sound calls for the development and implementation of species conservation actions that are
3203 embedded within a strategy that addresses natural resource management issues at the ecosystem scale. Although
3204 species are listed one at a time, managing them toward recovery and robust health that way increases the
3205 likelihood that conservation efforts will be incomplete, redundant, and more expensive.~~

3206

3207 ~~As a means to address salmonid listings and to sustain this precious resource for generations to come, l))~~ Local
3208 governments in the Puget Sound region, in cooperation with state and tribal governments and other ((major
3209 stakeholders)) partners, have developed long-term salmon habitat conservation strategies at the Watershed
3210 Resource Inventory Area level. The boundaries of Water Resource Inventory Areas are defined under state
3211 regulations, and generally adhere to the watershed boundaries of major river or lake systems.

3212

3213 King County participated as an affected jurisdiction in the development Water Resource Inventory Area plans
3214 for Water Resource Inventory Area 8 (Cedar/Sammamish Watershed), Water Resource Inventory Area 9 (the
3215 Green/Duwamish Watershed), Water Resource Inventory Area 7 (the Snohomish/Snoqualmie/Skykomish
3216 Watershed), about half of which is in King County, and Water Resource Inventory Area 10 (the White/Puyallup
3217 Watershed), a small percentage of which is in King County. Additionally, King County has acted as a service
3218 provider at the direction of multi-jurisdictional forums for the development and implementation of the salmon
3219 recovery plans for Water Resource Inventory Areas 8 and 9, and for the King County portion of Water Resource
3220 Inventory Area 7.

3221

3222 **E-499j King County shall continue to participate in the Water Resource Inventory Area**
3223 **salmon recovery plan implementation efforts and in other regional efforts to**
3224 **recover salmon and the ecosystems they depend on, such as the Puget Sound**
3225 **Partnership. King County's participation in planning and implementation efforts**
3226 **shall be guided by the following principles:**

3227

3228 **a. Focus on federally listed salmonid species and declining stocks**
3229 **protected under Indian tribal treaty rights first, take an ecosystem**
3230 **approach to habitat management and seek to address management**
3231 **needs for other species over time;**

3232

3233 **b. Concurrently work on early actions, long-term projects and programs**
3234 **that will lead to improvements to, and information on, habitat conditions**
3235 **in King County that can enable the recovery of endangered or threatened**

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- 3234 salmonids, while maintaining the economic vitality and strength of the
3235 region;
3236 c. Address both King County’s growth management needs and habitat
3237 conservation needs;
3238 d. Use best available science as defined in Chapter 365-195 Washington
3239 Administrative Code ((365-195-905 through 365-195-925));
3240 e. Improve water quality, water quantity and channel characteristics;
3241 f. Coordinate with key decision-makers and ((stakeholders)) partners; and
3242 g. Develop, implement and evaluate actions within a watershed-based
3243 program of data collection and analysis that documents the level of
3244 effectiveness of specific actions and provides information for adaptation
3245 of salmon conservation and recovery strategies.
3246

3247 The Water Resource Inventory Area plans recommend an array of actions including the restoration, acquisition
3248 and preservation of landscapes, municipal programmatic activities, and public outreach and education. The
3249 plans suggest that programmatic activities for salmon habitat conservation can generally be accomplished with
3250 the following three tools: regulation, incentives, and education. Consequently, in addition to capital projects,
3251 local governments, including King County, will need to incorporate salmon recovery objectives and strategies
3252 into their normal operations, making best use of a wide range of their authorities and programs.
3253

3254 **E-499k** King County should use the recommendations of approved Water Resource
3255 Inventory Area salmon recovery plans to inform the updates to development
3256 regulations as well as operations and capital planning for its floodplain
3257 management, fish passage, surface water management, transportation,
3258 wastewater treatment, parks, and open space programs.
3259

3260 **E-499I** King County should seek to support Water Resource Inventory Area salmon
3261 recovery plan goals of maintaining intact natural landscapes through:
3262 a. Retaining low density land use designations such as Agriculture,
3263 Forestry and Rural Area designations;
3264 b. Promoting Current Use Taxation and other incentives;
3265 c. Promoting stewardship programs including development and
3266 implementation of Forest Plans, Farm Plans, and Rural Stewardship
3267 Plans;
3268 d. Promoting the use of ((L))low ((H))impact ((D))development methods; and
3269 e. Acquiring property or conservation easements in areas of high
3270 ecological importance with unique or otherwise significant habitat
3271 values.
3272

3273 Many of the ((e))County’s ((functional)) plans, programs and development regulations assist in the ((e))County’s
3274 effort to conserve and recover Endangered Species Act listed species. These include the code provisions

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3275 governing zoning, critical areas, clearing and grading, landscaping, and the shoreline master program. County
 3276 ((plans)) documents guiding operations and regulations include the Surface Water Design Manual, the ((f))Flood
 3277 ((h))Hazard ((m))Management ((p))Plan, and ((r))Regional ((w))Wastewater ((s))Services ((p))Plan. Finally the
 3278 ((e))County’s reliance on best management practices for vegetation management((,)); use of insecticides,
 3279 herbicides, and fungicides((,)); and pest management((, as well as for)); management of agricultural and forest
 3280 lands also play a crucial role in protecting Endangered Species Act listed species.

3281

3282 **E-499m** King County ((will)) shall monitor and evaluate programs and regulations to
 3283 determine their effectiveness in contributing to Endangered Species Act listed
 3284 species conservation and recovery, and ((will)) shall update and enhance
 3285 programs and plans as necessary. King County should amend regulations, plans
 3286 and best management practices to enhance their effectiveness in protecting and
 3287 restoring salmonid habitat, using a variety of resources, including best available
 3288 science as defined in Chapter 365-195 Washington Administrative Code
 3289 ((365-195-905 through 365-195-925)).

3290

3291 **E-499n** Through the Watershed Resource Inventory Area planning process, geographic
 3292 areas vital to the conservation and recovery of listed salmon species are
 3293 identified. King County ((will)) shall evaluate this information to determine
 3294 appropriate short and long-term strategies, including, but not limited to:
 3295 designation of Fish and Wildlife Habitat Conservation Areas, development
 3296 regulations (special district overlays, zoning, etc.), acquisitions, facility
 3297 maintenance programs, and capital improvement projects.

3298

3299 **E-499o** King County may use its authority under the Growth Management Act, including
 3300 its authority to designate and protect critical areas, such as fish and wildlife
 3301 habitat conservation areas, to preserve and protect key habitat for listed
 3302 salmonid species by developing and implementing development regulations and
 3303 nonregulatory programs.

3304

3305 **E-499p** King County shall, in cooperation with the cities, ensure a no net loss of housing
 3306 capacity that preserves the ability to accommodate adopted growth targets, while
 3307 pursuing compliance with Endangered Species Act requirements. To achieve
 3308 this goal, densities shall be increased on buildable lands, consistent with H-110.

3309

3310 Local governments primarily have authority and influence over land use actions affecting habitat. However,
 3311 protecting and restoring habitat is just one piece of the salmon recovery puzzle. Management of fish harvest,
 3312 hatchery, hydropower, and water storage actions is also critical, and actions need to be coordinated with entities
 3313 having authority in these areas.

3314

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3315 **E-499q King County should continue to take actions that ensure its habitat restoration**
 3316 **and protection actions are implemented as part of a watershed-based salmon**
 3317 **conservation strategy that integrates habitat actions with actions taken by**
 3318 **harvest and hatchery managers. Harvest and hatchery managers specifically**
 3319 **include Indian tribes with treaty-reserved fishing rights, the Washington**
 3320 **Department of Fish and Wildlife, the National Marine Fisheries Service, and the**
 3321 **U.S. Fish and Wildlife Service. Appropriate venues for this coordination include**
 3322 **watershed plan implementation groups and other local or regional salmon**
 3323 **management entities that rely on actions by habitat, harvest, and hatchery**
 3324 **managers to achieve specific goals and objectives.**
 3325

3326 To ensure the long-term success of salmon recovery actions, King County will need to develop and implement a
 3327 program that provides for monitoring the effectiveness of recovery actions and the status and trends of priority
 3328 fish populations and habitat conditions. Both types of monitoring provide valuable information to redirect and
 3329 adapt salmonid recovery strategies and actions over time. ((Please-s))See the Monitoring and Adaptive
 3330 Management Section at the end of this chapter for policies related to this topic.
 3331

3332 **~~(F-)~~ Flood Hazard Management**

3333 Floodplains are lands adjacent to lakes, rivers and streams that are subject to periodic flooding. Floodplains
 3334 naturally store flood water, contribute to groundwater recharge, protect water quality and are valuable for
 3335 recreation, agriculture and fish and wildlife habitat. Floodplains also provide a deposition zone for sediments
 3336 mobilized by rivers and streams. Wetlands are often an integral part of floodplains.
 3337

3338 There are two primary types of flood hazards: inundation and channel migration. Inundation is defined as
 3339 floodwater and debris flowing through an area that is not normally under water. Such events can cause minor to
 3340 severe damage, depending on the velocity and depth of flows, the duration of the flood event, the quantity of logs
 3341 and other debris carried by flows, and the amount and type of development and personal property in the
 3342 floodwater's path. Floodplains are designated based on the predicted frequency of flooding for a particular area.
 3343 For example, a 100-year floodplain is a land area that has a one percent probability of experiencing flooding in
 3344 any given year. Inundation hazards can come from major rivers, smaller tributary streams, local stormwater
 3345 runoff, high lake levels, high groundwater levels, coastal storm surge, and tidal action.
 3346

3347 Channel migration results from erosion wears away of a riverbank by flowing water. Ongoing erosion of one
 3348 riverbank coupled with sediment deposition along the opposite bank results in the lateral movement or migration
 3349 of a channel across its floodplain. When this shift is abrupt it is called channel avulsion. Channel migration can
 3350 lead to flood and erosion damage to structures, farms, and critical infrastructure. At the same time, it is a natural
 3351 process that forms complex fish habitat by creating braided channels and causing trees to fall into rivers. Bank
 3352 stabilization actions to limit channel migration have negative impacts on channel processes and reduce salmonid
 3353 habitat quality and quantity. Channel migration hazard areas are designated based on geomorphic analyses and

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3354 review of historical channel migration patterns and rates, consistent with the King County Flood Hazard
3355 Management Plan and the Shoreline Management Act.

3356

3357 Development can reduce the floodplain's ability to store and convey floodwaters, thereby increasing the velocity
3358 and depth of floodwaters in other areas. In addition, floodplain development puts humans in harm's way and
3359 often occurs at the expense of important fish and wildlife habitat. King County has adopted the Flood Hazard
3360 Management Plan as a functional element of the King County Comprehensive Plan to detail regional policies,
3361 programs, and projects to reduce the risk to people and property from river flooding and channel migration in
3362 King County and to provide guidance for decisions related to land use and floodplain management activities.

3363

3364 **E-499qq** King County shall implement a comprehensive local floodplain management
3365 program that, consistent with the King County Flood Hazard Management Plan or
3366 successor plans; protects lives((,)); minimizes damage and disruption to
3367 infrastructure and critical facilities((,)); preserves and restores natural floodplain
3368 functions((,)); uses integrated approaches to provide multiple benefits; is
3369 resilient to climate change; supports floodplain management actions that benefit
3370 frontline communities; and ensures that new development does not put people in
3371 harm's way or cause adverse flooding impacts elsewhere((, consistent with the
3372 King County Flood Hazard Management Plan)).

3373

3374 **E-499qqq** King County shall continue to exceed the federal minimum standards stipulated
3375 by the National Flood Insurance Program for unincorporated areas to better
3376 protect public safety, reduce the risk of flood and channel migration hazards to
3377 existing public and private property, and prevent new at-risk development.

3378

3379 **E-499r** King County's floodplain land use and floodplain management activities shall be
3380 carried out in accordance with policies, programs and projects detailed in the
3381 King County Flood Hazard Management Plan, or successor plans.

3382

3383 **((G-)) Hazardous Waste**

3384 Throughout King County, businesses use and generate hazardous materials as part of their normal operations.
3385 There are numerous rules and requirements for the proper management of these materials and requirements can
3386 vary slightly by jurisdiction. Often the businesses will learn of these requirements after they have found out that
3387 they are not in compliance. To help mitigate the potential harmful effects to human health and the environment
3388 and to minimize the economic impacts to businesses that may generate hazardous chemicals, King County
3389 provides education and technical assistance to businesses on requirements for proper management and disposal
3390 of hazardous chemicals, as well as information on less toxic alternatives.

3391

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3392 Contacting businesses with information on proper hazardous waste disposal as early as possible in the business
3393 development phase can help to prevent improper disposal of hazardous waste and associated risks to public
3394 safety and the environment. Taking a preventative approach can also help to avoid costly code violations.

3395

3396 **E-499t King County should review new business permit and change of use applications**
3397 **for businesses that propose to use hazardous chemicals or generate hazardous**
3398 **waste as part of their operations. The ((e))County should offer to provide**
3399 **technical assistance related to hazardous waste disposal requirements, ((sp#**
3400 **response;)) and non-toxic alternatives.**

3401

3402 **~~((V.))~~ Geologically Hazardous Areas**

3403 King County is located at a tectonically active convergent plate margin, which is characterized by dynamic
3404 geologic processes including active mountain building, abundant seismic activity and volcanism. In addition,
3405 the relatively recent glacial history has resulted in the creation of numerous steep and unstable hillsides
3406 throughout the county, many of which are prone to naturally occurring landslides. Snow avalanches are also a
3407 common occurrence in the Cascade Mountains in ((E))eastern King County.

3408

3409 Often times the result of these naturally occurring events can be beneficial to the environment, by providing
3410 gravel and woody debris in streams and rivers, and continuing the process of natural regeneration. Salmon need
3411 gravel for spawning and in-stream debris for cover and to provide shade and regulate temperature. King County
3412 must balance the positive benefits of these natural occurrences with any adverse impacts that pose a threat to
3413 public health and safety. The ((e))County must also strike a balance between allowing naturally occurring
3414 landslides and erosion, and the need to prevent the unnatural acceleration of landslides and erosion due to
3415 development activities.

3416

3417 Coal mines have created additional areas of subsidence and instability in addition to those ((which)) that occur
3418 naturally. When human activity occurs in areas subject to such active geologic processes, the potential
3419 consequences to life, property and environmental integrity can be enormous. If geologic processes are
3420 recognized and appropriately addressed in the course of development activities, adverse consequences can be
3421 substantially reduced if not completely eliminated.

3422

3423 **~~((A.))~~ Erosion Hazard Areas**

3424 Virtually any area in King County can experience soil erosion if subjected to inappropriate grading and
3425 construction practices. The ((US)) United States Department of Agriculture's ((Soil)) Natural Resources
3426 Conservation Service has identified certain soil types in King County as being especially subject to erosion, if
3427 disturbed. These Erosion Hazard Areas may not be well suited to high-density developments and intensive land
3428 uses because of the sensitivity of these soils to disturbance.

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3429

3430 ~~((E-501~~ ~~Grading and construction activities shall implement erosion control best~~
3431 ~~management practices and other development controls as necessary to reduce~~
3432 ~~sediment and pollution discharge from construction sites to minimal levels.))~~

3433

3434 **E-502** Land uses permitted in Erosion Hazard Areas shall minimize soil disturbance and
3435 should maximize retention and replacement of native vegetative cover.

3436

3437 **E-503** Slopes with a grade of 40((%)) percent or more shall not be developed unless the
3438 risks and adverse impacts associated with such development can be reduced to
3439 a non-significant level. ~~((No disturbance zones shall be designated where basin~~
3440 ~~plans identify the need to prevent erosion damages in areas that are extremely~~
3441 ~~sensitive to erosion impacts. Properly designed stormwater tightlines may be~~
3442 ~~allowed within designated no-disturbance zones.))~~

3443

3444 ~~((Vegetation is an important component of the natural environment. This general term refers to all plant life~~
3445 ~~growing at, below or above the soil surface. It includes trees, shrubs, herbs, grasses and aquatic plants.~~
3446 ~~Vegetation, especially forests, provides many significant ecological functions. Vegetation absorbs, filters and~~
3447 ~~slows surface water flow. This is particularly important over aquifer recharge areas. Native vegetation also~~
3448 ~~provides wildlife habitat to which native species are well adapted. Forests are key components in atmospheric~~
3449 ~~cycles; they absorb carbon dioxide, produce oxygen and filter particulate matter. Additionally, they absorb noise~~
3450 ~~and are aesthetically pleasing.~~

3451

3452 ~~Noxious weeds are nonnative invasive plants that pose a threat to health and safety, agriculture, wildlife,~~
3453 ~~wetlands and recreational areas. They tend to spread in areas that have been disturbed by urban development~~
3454 ~~and agriculture and are difficult to eradicate once they become established. Without natural predators, some~~
3455 ~~noxious weeds can displace native plant communities, reducing plant diversity. Invasive plants also decrease the~~
3456 ~~quality of wildlife habitats, reduce visual quality, and increase maintenance and production costs for natural~~
3457 ~~resource managers and farmers.~~

3458

3459 ~~**E-504** King County should protect native plant communities by encouraging~~
3460 ~~management and control of nonnative invasive plants, including aquatic plants.~~
3461 ~~Environmentally sound methods of vegetation control should be used to control~~
3462 ~~noxious weeds.~~

3463

3464 ~~**E-506** The use of native plants should be encouraged in landscaping requirements and~~
3465 ~~erosion control projects, and in the restoration of stream banks, lakes,~~
3466 ~~shorelines, and wetlands.~~

3467

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3468 ~~E-507~~ ~~_____ In response to watershed-based salmon conservation Water Resource Inventory~~
 3469 ~~Area plans and as part of King County’s continued basin planning and~~
 3470 ~~stewardship programs, King County may adopt vegetation retention goals for~~
 3471 ~~specific drainage basins. These goals should be consistent with R-334, as~~
 3472 ~~applicable. The county should adopt incentives and regulations to attain these~~
 3473 ~~goals, and the county should monitor their effectiveness.))~~
 3474

3475 **~~((B-))~~ Landslide Hazard Areas**

3476 Certain hillsides in King County are either naturally unstable or susceptible to instability when disturbed. These
 3477 hillsides contain slopes greater than 15(~~(%)~~) percent, are underlain by impermeable soils, and are subject to
 3478 seepage. They also include areas that have experienced landslides in the past.

3479
 3480 Many of the largest and most active landslides in King County are associated with the steep slopes adjacent to
 3481 river corridors or along marine shorelines where glacial strata are eroded and steepened. Areas undergoing rapid
 3482 undercutting due to stream bank erosion, wave action or human alteration of stormwater discharge are
 3483 potentially unstable and such areas may be prone to damaging landslides.

3484
 3485 Construction in areas susceptible to landslides is expensive and difficult. Landslides on such slopes following
 3486 development can result in enormous public and private costs and severe threats to human health and safety.
 3487 Such landslides can also cause severe natural resource damage.

3488
 3489 ~~((Partly in response to the 2014 State Route 530 Landslide,))~~ King County has undertaken an effort to refine
 3490 ~~((our))~~ its knowledge of landslide hazard areas using updated mapping methods. King County ~~((initiated a~~
 3491 ~~project in 2014 to map and characterize))~~ has mapped and characterized landslide hazard areas using the best
 3492 available Light Detection And Ranging imagery and recent geologic mapping to identify potential areas at risk of
 3493 landsliding. Known and potential landslide hazard areas can be indicated by the known presence of shallow
 3494 landslides, deep-seated slumps, debris fans and flows, rockfalls, avalanches, unstable and over-steepened slopes
 3495 along river and stream channels, long runout presence or potential. ~~((The results of this work will be))~~ This
 3496 mapping is used to inform future planning, outreach, and regulatory decisions.

3497
 3498 **E-507a** **King County should work with partner jurisdictions to ~~((maintain a))~~ periodically**
 3499 **review and update the map and inventory of known and potential landslide**
 3500 **hazard areas in unincorporated King County ~~((that is based upon the best~~**
 3501 **available information)) consistent with best available science and current data.**
 3502 **This information ~~((will))~~ shall be used to inform future planning and guide**
 3503 **development regulations.**

3504
 3505 **E-507b** **King County should make landslide hazards information readily available to the**
 3506 **public ~~((in order))~~ to improve the general understanding of landslides and their**

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3507 associated hazards. This may include making information available on a public
3508 website and providing outreach and assistance to current and prospective
3509 property owners and developers.

3510
3511 **E-508** Landslide hazard areas shall not be developed unless the risks and adverse
3512 impacts associated with such development are eliminated or minimized so that
3513 they are at a non-significant level. Development proposed in areas affected by
3514 landslide hazards shall be adequately reviewed and mitigated as needed to
3515 eliminate or minimize risk to the development as well as to ensure the
3516 development does not increase landslide or erosion hazards that would
3517 adversely impact adjacent properties or natural resources.

3518
3519 **E-508a** King County shall consider landslide hazards and related flooding hazards in the
3520 context of hazard communication, operational preparedness and emergency
3521 response.

3522

3523 **~~((C.)) Seismic Hazard Areas~~**

3524 ~~King County is an earthquake-prone region subject to ground shaking, seismically induced landslide and~~
3525 ~~liquefaction of soil. Areas with low density soils are likely to experience greater damage from earthquakes.~~

3526

3527 ~~**E-509** In areas with severe seismic hazards, special building design and construction~~
3528 ~~measures should be used to minimize the risk of structural damage, fire and~~
3529 ~~injury to occupants and to prevent post-seismic collapse.~~

3530

3531 **~~D.)) Volcanic Hazard Areas~~**

3532 King County is located in a region characterized by active volcanism. The volcanic hazard that poses the
3533 greatest risk to safety and wellbeing of county residents would be from a lahar (volcanic mudflow) originating on
3534 ~~((Mt.)) Mount~~ Rainier and flowing down the White River valley (possibly overflowing into the lower Green
3535 River Valley). Ongoing investigations by the ~~((U.S.)) United States~~ Geological Survey continue to clarify the
3536 nature of this hazard. Current information provides the basis for taking steps to mitigate that risk.

3537

3538 **E-510** King County should work with the U.S. Geological Survey to identify lahar hazard
3539 areas and shall work with local governments to assess the risk to county
3540 residents from lahars and to implement appropriate emergency planning and
3541 implement appropriate development standards.

3542

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3543 **((E.)) Coal Mine Hazard Areas**

3544 King County has a long and varied history of underground and surface coal mining. Some coal mining was
3545 conducted by large, well-capitalized mining companies that used methods such as detailed underground and
3546 surface mapping and protection of surface improvements. Other mines were small operations or re-mining
3547 operations that sought to maximize coal extraction with less regard for surface impacts or mapping. Some
3548 intensively developed areas of King County are located over abandoned underground coal workings, including
3549 Talbot Hill and the north Benson Hill of Renton, the Spring Glen area around Cascade Vista, East Fairwood,
3550 Black Diamond, southwest Issaquah, and the Newcastle/Coal Creek area.

3551
3552 The greatest dangers to people, wildlife and surface facilities typically exist around mine portals, timber chutes,
3553 air shafts, and workings which have collapsed to the surface. Other areas were deep mined by “room and pillar”
3554 mining techniques in which “pillars” of coal were left to provide support for the mining of adjacent “rooms.”
3555 Once abandoned, pillars would collapse and rooms of mined-out coal would fill with collapsed roof material,
3556 coal debris and water. Regional downwarping of these areas was generally not observable and usually happened
3557 in the early years following mining of a section. Deep mined areas with a high ratio of overburden/cover-to-void
3558 usually present no hazards for surface development. However, areas with low overburden/cover-to-void ratio
3559 present higher risks and may require more advanced investigations and construction techniques for development.
3560 Mine portals, timber chutes, airshafts, and workings which have collapsed to the surface require the greatest need
3561 for detailed engineering studies to ensure that these sites are safe for new, productive use.

3562
3563 **E-511 King County ((will)) shall encourage efforts by public and private property**
3564 **owners and the Office of Surface Mining, Reclamation, and Enforcement to return**
3565 **lands to their highest productive use by safely minimizing or eliminating coal**
3566 **mine hazards.**

3567
3568 **E-512 King County shall require all development proposals potentially subject to coal**
3569 **mine hazards to assess the mine-related hazards, including risks to structures,**
3570 **improvements, occupants and public health and safety.**

3571
3572 **E-513 King County shall allow development within coal mine hazard areas if the**
3573 **proposal includes appropriate mitigation for identified, mine-related hazards**
3574 **using best available engineering practices and if the development is in**
3575 **compliance with all other local, state, and federal requirements.**

3576
3577 ~~**((E-514 King County shall require all landowners proposing new development in coal**~~
3578 ~~**mine hazard areas to document the potential hazard on the title of the parcel or**~~
3579 ~~**parcels being developed. This notice may include reference to any available**~~
3580 ~~**technical studies or detailed hazard delineations.))**~~

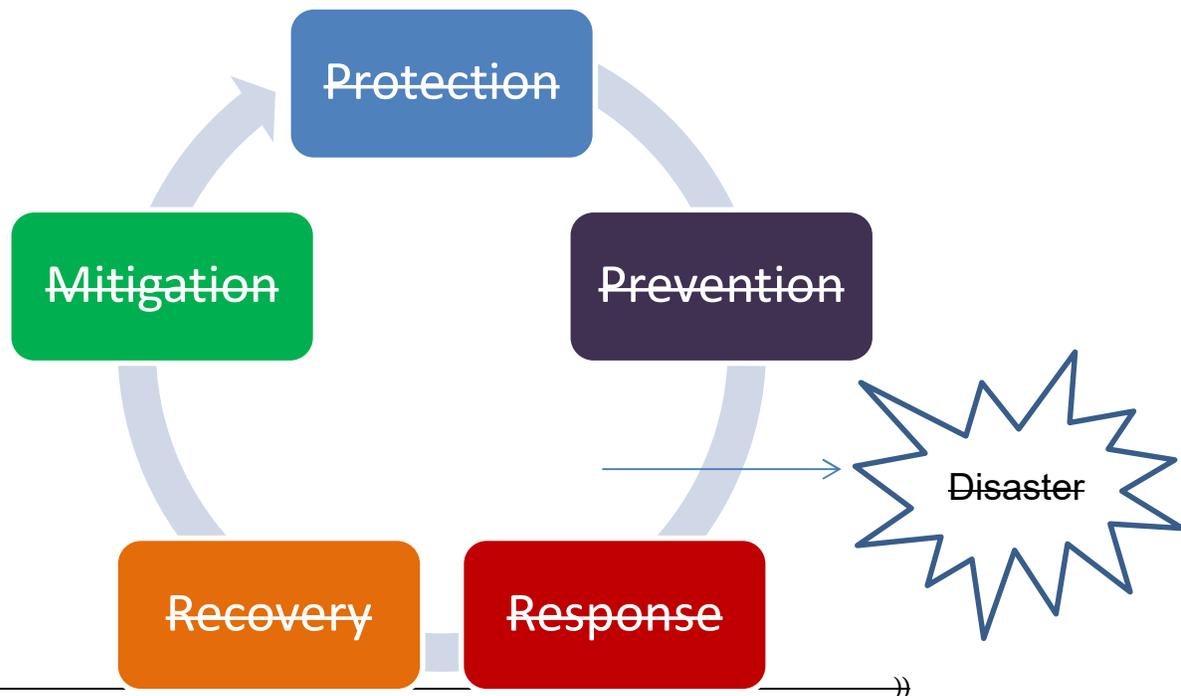
3581

3582 ~~((VI.))~~ **Planning for Disasters**

3583 King County has an active planning program, that goes beyond the land use and supporting services planning,
 3584 that occurs through the Comprehensive Plan. Based on the five phases of emergency management (protection,
 3585 prevention, response, recovery, and mitigation). ~~((F))~~this work takes into account mitigation of hazard impacts
 3586 prior to disasters, as well as the rebuilding of communities following a disaster. ~~((The following diagram~~
 3587 ~~illustrates the facets of planning for disasters.~~

3588

3589 **Figure: Resilient King County Planning Model**



3590

3591

3592 King County is susceptible to multiple hazards including earthquakes, flooding, and landslides. ~~((Based on the~~
 3593 ~~five phases of emergency management (depicted above), t))~~The process of mitigation allows the ~~((e))~~County to
 3594 build more resilient communities by assessing vulnerabilities~~((,))~~ and ~~((taking))~~ take sustained action to
 3595 permanently eliminate or reduce risk to future disasters. These actions can inform land use planning, such as in
 3596 ~~((the C))~~critical ~~((A))~~areas ~~((Ordinance))~~ regulations.

3597

3598 When a disaster does occur, the process of recovery allows the ~~((e))~~County to review the Comprehensive Plan
 3599 and its core principles, develop a recovery strategy by engaging the community, and rebuild the community in a
 3600 way that sustains physical, emotional, social, and economic well-being.

3601

3602 **E-601**

King County shall ((incorporate into)) consider high priority strategies and actions identified in the King County Regional Hazard Mitigation Plan, or successor plans, in its land use and transportation planning, economic

3603

3604

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3605 development efforts, and natural resource management ~~((the most promising~~
 3606 ~~actions))~~ to reduce impacts from natural hazards, such as earthquake, flooding,
 3607 and landslide risk.
 3608

3609 ~~((VII.))~~ **Monitoring and Adaptive Management**

3610 King County’s environment is constantly changing in response to land and water management actions that are
 3611 within its control, as well as climate cycles and geologic processes that are beyond human control. The
 3612 ~~((e))~~County makes significant investments in projects, programs, and policy implementation to help ensure that
 3613 its environment supports a range of ecological, cultural, and economic values that are fundamental to the
 3614 region’s quality of life.

3615
 3616 King County’s policies, regulations, and actions to protect and restore the environment need to be assessed on an
 3617 ongoing basis to ensure that they are having the intended effect, and that they are responding to changing
 3618 conditions. Efforts to protect the environment ~~((will also need to reflect))~~ requires continuous improvements in
 3619 knowledge about the natural environment and how human ~~((activity impacts))~~ activities affect ecological
 3620 systems~~((, and uncertainties about ecological and biological processes)).~~

3621
 3622 Assessing the effectiveness of specific and cumulative actions requires data collected within rigorous monitoring
 3623 programs. Monitoring provides essential information to track: (1) changes in the natural and built environment,
 3624 (2) implementation of planned and required actions (like construction of wetland mitigation projects), and (3)
 3625 effectiveness of environmental protection actions. Monitoring information ~~((can support))~~ is essential to
 3626 supporting a formal Adaptive Management program to modify policies, goals, and management decisions as
 3627 necessary, and inform regulatory change.

3628
 3629 Adaptive management can be used to help ~~((insure))~~ ensure that projects, programs, and policies are moving the
 3630 county toward its environmental goals over time. Adaptive Management is defined as the process of making
 3631 hypotheses of management outcomes, collecting data relevant to those hypotheses, and then using monitoring
 3632 data to inform changes to policies and actions to better achieve intended goals. Adaptive management concepts
 3633 are often applied in programs intended to address complex natural resource management problems, for example
 3634 in Water Resource Inventory Area plans for salmon recovery or in Habitat Conservation Plans to comply with
 3635 the Endangered Species Act. The Washington Administrative Code calls for local governments to use
 3636 monitoring and adaptive management to address uncertainties in best available science for protecting critical
 3637 areas like wetlands.

3638
 3639 King County conducts a diverse array of monitoring activities, ~~((ranging from project-specific))~~ including permit-
 3640 required monitoring of Capital Improvement Projects and legally required monitoring of municipal wastewater
 3641 and stormwater discharges in compliance with National Pollutant Discharge Elimination System ~~((permit~~
 3642 ~~requirements, to))~~. Effectiveness monitoring is used to evaluate projects and programs to improve project

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3643 designs and ecosystem management activities. Ambient monitoring is performed watershed-wide ((ambient
 3644 monitoring of)), encompassing groundwater, rivers, streams, lakes, and marine waters of Puget Sound to the
 3645 extent that funding allows. For example, King County maintains a continuous water quality monitoring
 3646 program for freshwater streams, rivers, lakes, and marine waters. This long-term monitoring program informs
 3647 the County's understanding of changes in water quality over time ((including those caused by climate change,
 3648 and contributes to)) allowing for the identification of emerging pollution issues and sources of water pollution.
 3649 ((The monitoring program also allows the quantification of water quality and aquatic habitat improvements.))
 3650 The status and trends information provided by long-term monitoring programs allows for better understanding of
 3651 how systems are responding to pressures like climate change and human impacts The data collected by these
 3652 programs additionally provides the necessary baseline information for many scientific studies conducted in King
 3653 County wetlands, lakes, streams, and marine waters by ((e))County scientists, as well as scientists at universities
 3654 and state and federal agencies.

3655
 3656 Financial resources for environmental protection programs, including monitoring, are limited((—Because
 3657 baseline monitoring does not result in an actual project “on the ground,” and often is not mandated, it may)) and
 3658 generally do not compete well with other priorities for limited funding. However, investments in monitoring will
 3659 provide essential information for evaluating the effectiveness of current actions and guiding future policy
 3660 decisions, priorities, and investments. To make the most efficient use of limited resources, it is critical that the
 3661 ((e))County look for opportunities to coordinate its data collection and dissemination efforts so that they can
 3662 meet as many information needs as possible. The ((e))County should also partner with entities conducting
 3663 monitoring, including other governments and universities.

3664
 3665 When data are collected, it is important that its usefulness is maximized. “Metadata” is background information
 3666 on data, and is necessary to facilitate the understanding, use, storage, sharing, and management of data. For
 3667 example, metadata can describe how a particular data set was collected, provide definitions for types of data, and
 3668 describe the reliability of the data.

3669 **E-701** **King County should conduct a comprehensive and coordinated program of**
 3670 **environmental monitoring and assessment to track long-term changes in climate**
 3671 **((e.g.)) such as precipitation((,)) and temperature), water quality and quantity,**
 3672 **toxics in fish and shellfish, land use, land cover and aquatic and terrestrial**
 3673 **habitat, natural resource conditions, and biological resources as well as the**
 3674 **effectiveness of policies, programs, regulations, capital improvement projects,**
 3675 **and stormwater treatment facility design. This monitoring program should be**
 3676 **coordinated with other jurisdictions, state and federal agencies, Indian tribes,**
 3677 **and universities to ensure the most efficient and effective use of monitoring data.**
 3678
 3679

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3680 **E-702** King County should seek to develop and maintain a publicly accessible,
3681 geo-spatial database on environmental conditions to inform policy decisions,
3682 support technical collaboration, and inform the public. All King County
3683 monitoring data should be supported by metadata.

3684
3685 **E-703** King County should establish a decision-support system suitable for adaptive
3686 management that uses data from its environmental monitoring programs.
3687

3688 **~~((A.))~~ Performance Measurement~~((,))~~ and Performance Management ~~((and~~
3689 **KingStat))****

3690 Like adaptive management in realm of science, performance management includes collecting data, analyzing
3691 data to inform decision-making, and making programmatic course corrections based on this analysis.

3692
3693 King County reports to the public both community-level conditions and agency performance measures.
3694 Monitoring data referenced in this chapter serves as a core element of helping elected officials and the public stay
3695 informed about the state of the environment and the effectiveness of agency programs.

3696
3697 ~~((The executive's KingStat program is using environmental monitoring data to assess environmental conditions,
3698 develop appropriate county responses, and provide an opportunity to collaborate and partner with other
3699 organizations in making improvements. With respect to environmental conditions, data used in KingStat
3700 includes marine water, freshwater, terrestrial habitat, fish and wildlife, atmosphere, and resource consumption.))~~

3701
3702 **E-704** King County should continue to collect data on key natural resource
3703 management and environmental parameters for use in ~~((KingStat, King County's
3704 Strategic Plan implementation goals and objectives, and other))~~ environmental
3705 benchmarking programs. Findings should be reported to the public, partner
3706 agencies, and decision-makers. The information collected should be used to
3707 inform decisions about policies, work program priorities and resource allocation.

3708
3709 **~~((B.))~~ National Pollutant Discharge Elimination System Compliance**

3710 King County operates under a number of National Pollutant Discharge Elimination System Permits, including a
3711 general Phase I Municipal Stormwater permit, and a number of general Industrial and Sand and Gravel
3712 Stormwater permits for Transit, Solid Waste and Roads facilities. There are individual wastewater permits for
3713 wastewater treatment plants and a solid waste management facility. King County also is issued construction
3714 stormwater permits for capital projects involving land disturbance. Complying with these permits is a high
3715 priority for King County as part of its strategy for protecting ground and surface water quality.

3716

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3717 **E-705** King County shall fully comply with the monitoring requirements in its National
3718 Pollutant Discharge Elimination System permits, including seeking compliance
3719 strategies that are cost-effective and useful.
3720

3721 **~~((C-))~~ Water Resource Inventory Areas Salmon Recovery Plan**
3722 **Implementation**

3723 The Puget Sound region has responded commendably to the listing of Puget Sound Chinook. In King County,
3724 more than 40 jurisdictions have joined together to cooperatively lead salmon recovery in the ~~((C))~~ county's
3725 watersheds. In the ~~((10))~~ 17 years since the plans were adopted (2006-~~((2015))~~ 2022), King County has
3726 implemented ~~((65))~~ 80 priority salmon restoration capital projects within its jurisdiction ~~((and has initiated work
3727 on an additional 33))~~ in addition to dozens of small habitat projects, such riparian restoration on private lands.
3728 King County has identified nearly 100 additional capital projects for future implementation. ~~((In))~~ Since 2011,
3729 NMFS has conducted ~~((a))~~ several five-year assessments of progress to implement the Puget Sound Salmon
3730 Recovery Plan. The assessments have repeatedly concluded that good habitat projects are being implemented
3731 across Puget Sound, but that the pace of salmon recovery implementation is too slow primarily due to
3732 insufficient funding. This is true in King County, as well; though, in recent years King County has developed
3733 significant additional sources of local revenue to advance restoration. ~~((The salmon recovery plans for the
3734 Snoqualmie portion of WRIA 7, WRIA 8 and WRIA 9 hit their ten year mark in 2015-))~~ King County has
3735 renewed interlocal agreements with its ~~((43))~~ 44 jurisdictional partners to continue to fund salmon recovery
3736 coordination in those watersheds ~~((for the next decade))~~ through at least 2025, with the expectation of renewal
3737 for another 10 years beyond that date.

3738
3739 Key conclusions and recommendations from the five-year assessments ~~((completed in 2011))~~ include:

- 3740 • Habitat continues to decline, and the region needs to increase its scrutiny of the sources of habitat
3741 decline and the tools used to protect habitat sites and ecosystem process.
- 3742 • Habitat protection needs improvement, and salmon recovery lead entities and regional groups should
3743 advocate for stronger regulatory programs to protect habitat.
- 3744 • While extensive habitat work has taken place across King County and in the broader Puget Sound,
3745 funding has fallen well short of the need as identified in the work plans that have been developed in
3746 each watershed. Moreover, most sources only fund on-the-ground projects rather than the staffing that
3747 is needed to plan and coordinate overall recovery efforts.
- 3748 • ~~((Adaptive Management Plans are not completed: A process should be established to recognize
3749 changes that are being made to Recovery Plan strategies as implementation proceeds-))~~

3750
3751 Although Water Resource Inventory Area plans are Chinook salmon-focused, they are expected to also provide
3752 the basis for recovery planning for other listed aquatic species, including Orcas, steelhead and bull trout.
3753

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3754 **E-706** King County should work with other Water Resource Inventory Area salmon
3755 recovery plan partners to establish a program (framework and methodology) for
3756 monitoring project specific and cumulative effectiveness of King County
3757 salmonid recovery actions. This program should include data collection and
3758 analysis and should provide information to guide an adaptive management
3759 approach to salmonid recovery.

3760
3761 **E-707** King County shall continue to coordinate with other governments, agencies,
3762 Indian tribes, non-governmental organizations and others to develop and
3763 implement regional and watershed-based Monitoring and Adaptive Management
3764 programs focused on achieving salmon recovery goals. The programs shall
3765 continue to include monitoring of salmon populations and habitat status and
3766 trends over time in order for the ((e))County and its partners in salmon recovery
3767 to be able to access the overall trajectory of salmon recovery efforts.

3768

3769 **~~((D-))~~ Effectiveness of Critical Areas Regulations**

3770 Under the Growth Management Act, all counties and cities are required to periodically review their
3771 comprehensive plans and development regulations, including critical area regulations, for consistency with the
3772 Growth Management Act. Growth Management Act also requires local governments to include best available
3773 science in the development of land use policies and regulations to protect the functions and values of critical
3774 areas. Washington State Department of Commerce procedural criteria for adoption of comprehensive plans and
3775 development regulations provide direction on how local governments should include best available science in
3776 their critical area regulations ((Washington Administrative Code)) Chapter 365-195 Washington Administrative
3777 Code). The procedural criteria call for the use of a precautionary approach, in which development and land use
3778 activities are strictly limited until the uncertainty is sufficiently resolved, where the science is uncertain.

3779

3780 Coupled with this precautionary approach should be an adaptive management program that allows for changes
3781 to regulations as new information comes in to address uncertainties. ((The a))Adaptive management program is
3782 dependent upon a monitoring program that is designed to obtain the information needed to determine the
3783 effectiveness of regulations.

3784

3785 **E-708** King County should implement a framework for effectiveness monitoring of
3786 critical areas regulations, and use monitoring data to inform the future review
3787 and updates of its critical areas policies and regulations.

3788