

Chapter 7: Environment and Watershed Health

What is this chapter about?

The goals and policies in this chapter convey the City's intent to:

- Recognize the economic, health, and intrinsic values of nature, and the importance of community stewardship.
- Preserve natural resources and the beneficial functions and services they provide.
- Improve air quality and watershed health, including hydrology, water quality, fish and wildlife habitat, and biodiversity.
- Recognize the city's impact on global climate change, and opportunities to reduce carbon emissions.
- Recognize the importance of a healthy urban forest and natural systems in reducing the impacts of natural hazards, such as landslides and flooding, and in adapting to climate change.
- Prevent incremental environmental degradation including the spread of invasive species, loss of habitat, and adverse impacts of additional impervious surfaces.
- Ensure that environmental protection programs and regulations reflect current data, science, and evaluation of impacts to under-served and under-represented communities.
- Advance good decisions and adaptive management through better data collection.
- Provide guidance that addresses the distinct ecological issues of specific watersheds.
- Ensure that plans and investments are coordinated with relevant policies from other City plans such as the Portland Watershed Management Plan, Urban Forest Management Plan, Climate Action Plan, and Natural Hazard Mitigation Plan.

Why is this important?

Located at the confluence of two major rivers, between two mountain ranges, and adjacent to some of the most fertile agricultural land in the world, Portland's wealth of natural resources provides an array of ecologically, economically and aesthetically valuable ecosystem services. Our rivers, streams and floodplains convey and store water and provide critical habitat for native fish and aquatic species. Our wetlands, trees, and vegetation clean and cool Portland's air and water, stabilize hillsides, soak up rainwater and provide habitat for an abundance of birds and other wildlife. These resources also trap carbon and reduce urban heat island effects, which are increasingly important given the potential impacts of climate change. These natural resources are key contributors to Portland's identity, reputation and sense of place.

The City has a long-standing commitment to maintaining a high-quality environment; however many of Portland's natural resources have been lost over time or are currently at risk. Urbanization has filled floodplains, contributing to seasonal flooding damage. Stormwater runoff from paved areas and rooftops has eroded our stream channels and polluted our streams, many of which are unable to support healthy fish populations. There is concern that anticipated growth and development will result in substantial tree removal, continued habitat loss, and negative impacts on at-risk plant and animal species.

The City's land use plans and investments have been, and will continue to be, instrumental in helping contribute to improvements in air and water quality over time, and in preserving natural resources. In addition, the City and community have made substantial investments of time and money to restore our watersheds. The goals and policies in this chapter protect these investments and help the City meet various regulations to protect public health and the environment. With thoughtful guidance, we can achieve and sustain healthy watersheds and a healthful environment as the city grows.

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Goals

Goal 7.A: Climate

Carbon emissions are reduced by 50% below 1990 levels.

Goal 7.B: Healthy watersheds and environment

Ecological and ecosystem functions are maintained and watershed conditions have improved over time.

Goal 7.C: Resilience

Portland's built and natural environments function in complementary ways and are resilient in the face of climate change, and natural hazards.

Goal 7.D: Environmental equity

All Portlanders have access to clean air and water, can experience nature in their daily lives, and benefit from development designed to lessen the impacts of natural hazards and environmental contamination.

Goal 7.E: Community stewardship

Portlanders actively participate in efforts to maintain and improve the environment, including watershed health.

Policies

Planning for natural resource protection

Portland's quality of life depends on maintaining clean air, water, soil, and a healthy environment overall. The policies in this section will preserve and maintain environmental quality by emphasizing protection of natural resources and their functions, consistent with widely accepted ecological principles and scientific literature. These policies call for an up-to-date natural resource inventory and actions to protect air, water, soil, climate, biodiversity, and existing significant natural resources. They also call for consideration of tradeoffs in developing environmental protection programs.

- Policy 7.1 Environmental quality.** Protect air, water, and soil quality and associated benefits to public and ecological health and safety.
- Policy 7.2 Climate action.** Update and implement the Climate Action Plan to reduce carbon emissions and resilience through policy, regulations, investment, and behavior change.
- Policy 7.3 Biodiversity.** Maintain self-sustaining populations of native plants, native resident and migratory fish, and wildlife species, including at-risk species and beneficial insects such as pollinators.
- Policy 7.4 Natural resource protection.** Protect the quantity, quality, and function of significant natural resources identified in the City's natural resource inventory, including:
- Rivers, streams, sloughs, and drainageways.
 - Floodplains.
 - Riparian corridors.
 - Wetlands.
 - Groundwater.
 - Native and other beneficial vegetation species and communities.
 - Aquatic and terrestrial habitats, including special habitats or habitats of concern, including large anchor habitats, habitat complexes and corridors, rare and declining habitats such as wetlands, native oak, bottomland hardwood forest, grassland habitat, shallow water habitat, and habitats that support special-status or at-risk plant and wildlife species.
 - Other resources identified in natural resource inventories.
- Policy 7.5 Natural resource inventory.** Maintain an up-to-date inventory by identifying the location and evaluating the relative quantity and quality of natural resources.

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- Policy 7.6** **Environmental protection programs.** Adopt environmental protection plans and regulations that specify the significant natural resources to be protected and the types of protections to be applied, based on the best data and science available, and on an evaluation of the potential consequences of allowing conflicting uses.
- Policy 7.7** **Environmental protection program updates.** Improve the effectiveness of environmental protection plans and regulations. Updates will reflect current data and science, consider impacts on under-served and under-represented communities, and meet multiple city goals.
- Policy 7.8** **Land acquisition priorities and coordination.** Maintain a prioritized list of natural resource types, target areas, or properties desirable for public acquisition to support long-term natural resource protection, and establish a process for coordinating acquisition with other programs including strategies to maintain employment land capacity, programs to protect water quality, and programs to reduce exposure to flooding hazards.

Protecting natural resources in development situations

The following policies provide guidance for land use regulations that address significant natural resources where new development is proposed. They will help ensure that the potential adverse impacts of development are well understood, and avoided where practicable. These policies also call for an evaluation of design alternatives to minimize impacts, and mitigation approaches that fully mitigate unavoidable impacts.

- Policy 7.9** **Impact evaluation.** Evaluate the potential adverse impacts of proposed development on significant natural resources, their functions, and the ecosystem services they provide.
- Policy 7.10** **Regulatory hierarchy: avoid, minimize, mitigate.** Require that the potential adverse impacts of new development on significant natural resources and their functions first be avoided where practicable, then minimized, then lastly mitigated.
- Policy 7.11** **Mitigation effectiveness.** Encourage mitigation approaches that maximize the intended natural resource-related benefits. Require on-site mitigation unless off-site mitigation within the same watershed will improve mitigation effectiveness.
- Policy 7.12** **State and federal coordination.** Coordinate implementation of these policies to ensure consistency with state and federal permitting authorities.
- Policy 7.13** **Ecosystem services.** Consider the benefits provided by healthy ecosystems that contribute to the livability and economic health of the city.

Improving environmental quality and preventing degradation

The following policies are intended to support improving environmental quality over time as the city grows. They provide direction to enhance the condition, capacity, and resilience of Portland's air and water. They support Portland's watershed plan goals to restore hydrology, water quality, habitat and biological communities. These policies call for more effectively preventing incremental environmental degradation, including the spread of invasive species, soil loss, habitat fragmentation, and introduction of hazards to wildlife. They support a healthy urban forest and recognize that healthy natural systems reduce natural hazard risks. They also help the City mitigate and adapt to climate change.

Like preventive medicine, preventing additional environmental degradation will be more successful and cost-effective than addressing problems as they increase in severity. These policies will help the City avoid exacerbating adverse and disproportionate impacts on under-served and under-represented communities. While some of the impact areas listed below are regulated by other agencies, the City's land use plans and investments can help avoid or reduce impacts, while also improving conditions over time.

Policy 7.14 Air quality. Ensure that plans and investments are consistent with and advance efforts to improve air quality and reduce exposure to air toxics, criteria pollutants, and urban heat island effects. Consider air quality related health impacts on all Portlanders, with an emphasis on under-served and under-represented communities.

Policy 7.15 Hydrology. Ensure that plans and investments are consistent with and advance efforts to improve watershed hydrology by achieving more natural flow and enhancing conveyance and storage capacity in rivers, streams, floodplains, wetlands, and groundwater aquifers. Minimize impacts from development and associated impervious surfaces, especially in areas with poorly infiltrating soils and limited public stormwater discharge points, and encourage restoration of degraded hydrologic functions, where practicable.

Policy 7.16 Water quality. Ensure that plans and investments are consistent with and advance efforts to improve water quality in rivers, streams, floodplains, groundwater, and wetlands, including reducing toxics, bacteria, temperature, metals, and sediment pollution. Consider water quality related health impacts on all Portlanders, especially under-served and under-represented communities.

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Policy 7.17 **Habitat and biological communities.** Ensure that plans and investments are consistent with and advance efforts to improve the diversity, quantity, and quality, of fish and wildlife habitat and habitat corridors, especially rare and declining habitat types and habitats that support at-risk plant and animal species and communities.

Policy 7.18 **Habitat connectivity.** Ensure that plans and investments are consistent with and advance efforts to improve terrestrial and aquatic habitat connectivity for fish and wildlife by:

- Preventing habitat fragmentation.
- Improving habitat quality.
- Weaving habitat into sites as new development occurs.
- Enhancing or creating habitat corridors that allow fish and wildlife to safely access and move through and between habitat areas.

Policy 7.19 **Urban forest.** Ensure that plans and investments are consistent with and advance efforts to improve the quantity, quality, and equitable distribution of Portland’s urban forest:

7.19.a. Require or encourage preservation of large healthy trees, native trees and vegetation, tree groves, and forested areas as an element of discretionary land use reviews.

7.19.b. Coordinate plans and investments with efforts to improve tree species diversity and age diversity.

7.19.c. Support progress toward meeting City tree canopy targets.

7.19.d. Invest in tree planting and maintenance, especially in low canopy areas, neighborhoods with under-served or under-represented communities, and within and near urban habitat corridors.

7.19.e. Require native trees and vegetation in significant natural resource areas.

7.19.f. Encourage planting of native trees and vegetation generally, and especially in urban habitat corridors.

7.19.g. Identify priority areas for tree preservation and planting in land use plans.

Policy 7.20 **Soils.** Coordinate plans and investments with programs that address human-induced soil loss, erosion, contamination, or other impairments to soil quality and function.

- Policy 7.21** **Invasive species.** Ensure that plans and investments are consistent with and advance efforts to prevent the spread of invasive plants, and support efforts to reduce the impacts of invasive animals and insects.
- Policy 7.22** **Natural hazards.** Prevent development-related degradation of natural systems and associated increases in landslide, wildfire, flooding, and earthquake risks, especially as they affect under-served and under-represented communities.
- Policy 7.23** **Low-impact development and best practices.** Encourage use of low-impact development, habitat-friendly development, bird-friendly design, and green infrastructure, especially for City-owned, managed, or funded facilities.
- Policy 7.24** **Impervious surfaces.** Limit impervious surfaces to reduce impacts on hydrologic function, air and water quality, habitat connectivity, and tree canopy.
- Policy 7.25** **Hazards to wildlife.** Encourage building, site, and infrastructure design and practices that provide safe fish and wildlife passage, and reduce or mitigate hazards to birds, bats, and other wildlife.
- Policy 7.26** **Access to nature.** Promote equitable, safe, and well-designed physical and visual access to nature while also protecting significant natural resources, fish, and wildlife. Provide access to major natural features, including:
- Water bodies, such as the Willamette and Columbia rivers, Smith and Bybee Lakes, creeks, streams, and sloughs.
 - Major topographic features, such as the West Hills, Mt. Tabor, and the East Buttes.
 - Natural areas, such as Forest Park and Oaks Bottom.
- Policy 7.27** **Carbon sequestration.** Enhance the capacity of Portland’s urban forest, soils, and water bodies to serve as carbon reserves.
- Policy 7.28** **Climate adaptation and resilience.** Enhance the ability of rivers, streams, wetlands, floodplains, urban forest, habitats, and wildlife to temper and adapt to climate-exacerbated flooding, landslides, wildfire, and urban heat island effects.
- Policy 7.29** **Brownfield remediation.** Improve environmental quality and watershed health by promoting and facilitating brownfield remediation and redevelopment that incorporates ecological site design and resource enhancement.

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- Policy 7.30 Adaptive management.** Evaluate trends in watershed and environmental health using current monitoring data and information to guide improvements in the effectiveness of City plans, regulations, and infrastructure investments.
- Policy 7.31 Restoration partnerships.** Coordinate plans and investments with other jurisdictions, air and water quality regulators, watershed councils, soil conservation organizations, and community organizations and groups to maximize the benefits and cost-effectiveness of watershed environmental efforts and investments.
- Policy 7.32 Coordinated stormwater management.** Coordinate transportation and stormwater system planning in areas with unimproved or substandard rights of way to improve water quality, pedestrian safety, and enhance neighborhood livability.
- Policy 7.33 Community stewardship.** Encourage voluntary cooperation between property owners, community organizations, and public agencies to restore or re-create habitat on their property, including removing invasive plants and planting native species.

Other policies in Chapters 3 and 4 are essential counterparts to the policies in the section above.

Aggregate resources

- Policy 7.34 Aggregate resource protection.** Protect aggregate resource sites for current and future use, where there are no major conflicts with urban needs, or where these conflicts may be resolved.
- Policy 7.35 Aggregate resource development.** Ensure that development of aggregate resources minimizes adverse environmental impacts and impacts on adjacent land uses.
- Policy 7.36 Mining site reclamation.** Ensure that reclamation of mining sites protect public health and safety, restore the site to adequate watershed conditions and functions, and is compatible with the surrounding land uses and conditions of nearby land.

Watershed specific policies

The policies above guide planning, actions, and investments citywide. The following policies are intended to augment the citywide Watershed Health and Environment policies, by providing additional guidance relating and responding to the characteristics within each of Portland's distinctive watersheds. They address watershed-specific habitat types, hydrology, water quality issues, and stormwater management challenges. Together, the citywide and watershed-specific policies support the close coordination of watershed health and land use programs, guiding land use planning-related activities and future infrastructure investments. While these watersheds are not entirely within Portland's urban services boundary, Portland's actions can have significant benefits for the watershed as a whole.

Columbia River Watershed

- Policy 7.37 In-water habitat.** Enhance in-water habitat for native fish and wildlife, particularly in the Oregon Slough and near-shore environments along the Columbia River.
- Policy 7.38 Sensitive habitats.** Enhance grassland, beach, riverbanks, wetlands and other key habitats for wildlife traveling along the Columbia River migratory corridor, while continuing to manage the levees and floodplain for flood control.
- Policy 7.39 Flood protection coordination.** Coordinate plans and investments with special districts and agencies responsible for managing and maintaining certification of levees along the Columbia River.
- Policy 7.40 Floodplain protection and restoration.** Promote restoration and protection of floodplain habitats as a flood protection strategy.

Willamette River Watershed

- Policy 7.41 Fish habitat.** Provide adequate intervals of ecologically-functional shallow-water habitat for native fish along the entire length of the Willamette River within the city, and at the confluences of its tributaries.
- Policy 7.42 Stream connectivity.** Improve stream connectivity between the Willamette River and its tributaries.
- Policy 7.43 River bank conditions.** Preserve existing river bank habitat and encourage the rehabilitation of river bank sections that have been significantly altered due to development with more fish and wildlife friendly riverbank conditions.

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- Policy 7.44** **South Reach ecological complex.** Enhance habitat quality and connections between Ross Island, Oaks Bottom, and riverfront parks and natural areas south of the Central City, to enhance the area as a functioning ecological complex.
- Policy 7.45** **Contaminated sites.** Ensure that plans and investments are consistent with and advance programs that facilitate the cleanup, reuse, and restoration of the Portland Harbor Superfund site and other contaminated upland sites.
- Policy 7.46** **Sensitive habitats.** Protect and enhance grasslands, beaches, floodplains, wetlands, remnant native oak, bottomland hardwood forest, and other key habitats for native wildlife including shorebirds, waterfowl, and species that migrate along the Pacific flyway and the Willamette River corridor.
- Policy 7.47** **Riparian corridors.** Increase the width and quality of vegetated riparian buffers along the Willamette River where practicable.
- Policy 7.48** **Connected upland and river habitats.** Enhance habitat quality and connectivity between the Willamette riverfront and upland natural resource areas.
- Policy 7.49** **Forest Park.** Enhance Forest Park as an anchor habitat and recreational resource.

Columbia Slough Watershed

- Policy 7.50** **Fish passage.** Restore in-stream habitat and improve fish passage within the Columbia Slough, including for salmonids in the lower slough.
- Policy 7.51** **Flow constriction removal.** Reduce constriction, such as culverts, in the slough channels, to improve the flow of water and water quality.
- Policy 7.52** **Riparian corridors.** Increase the width and quality of vegetated riparian buffers along Columbia Slough channels where practicable, while also managing the slough for flood control.
- Policy 7.53** **Sensitive habitats.** Enhance grasslands and wetland habitats in the Columbia Slough, such as those found in the Smith and Bybee Lakes and at the St. Johns Landfill site, to provide habitat for sensitive species, and for wildlife traveling along the Columbia and Willamette river migratory corridors.
- Policy 7.54** **Connected rivers habitats.** Enhance upland habitat connections to the Willamette and Columbia rivers.

Policy 7.55 Contaminated sites. Ensure that plans and investments are consistent with and advance programs that facilitate the cleanup, reuse and restoration of contaminated sites that are adjacent, or that discharge stormwater to the Columbia Slough.

Fanno and Tryon Creek Watersheds

Policy 7.56 Stream connectivity. Encourage the daylighting of piped portions of Tryon and Fanno creeks and their tributaries.

Policy 7.57 Riparian and habitat corridors. Protect and enhance riparian habitat quality and connectivity along Tryon and Fanno creeks and their tributaries. Enhance connections between riparian areas, parks, anchor habitats, and areas with significant tree canopy. Enhance in-stream and upland habitat connections between Tryon Creek State Natural Area and the Willamette River.

Policy 7.58 Reduced hazard risks. Reduce the risks of landslides and streambank erosion by protecting trees and vegetation that absorb stormwater, especially in areas with steep slopes or limited access to stormwater infrastructure.

Johnson Creek Watershed

Policy 7.59 In-stream and riparian habitat. Enhance in-stream and riparian habitat and improve fish passage for salmonids along Johnson Creek and its tributaries.

Policy 7.60 Floodplain restoration. Enhance Johnson Creek floodplain functions to increase flood-storage capacity, improve water quality, and enhance fish and wildlife habitat.

Policy 7.61 Connected floodplains, springs, and wetlands. Enhance hydrologic and habitat connectivity between the Johnson Creek floodplain and its springs and wetlands.

Policy 7.62 Reduced natural hazards. Reduce the risks of landslides, streambank erosion and downstream flooding by protecting seeps, springs, trees, vegetation, and soils that absorb stormwater in the East Buttes.

Policy 7.63 Greenspace network. Enhance the network of parks, trails, and natural areas near the Springwater Corridor Trail and the East Buttes to enhance habitat connectivity and nature-based recreation in East Portland.

For additional policy guidance regarding geographically-specific issues and opportunities, see Chapter 4 —Design and Development.

Figure 7-1. Portland's Watersheds

