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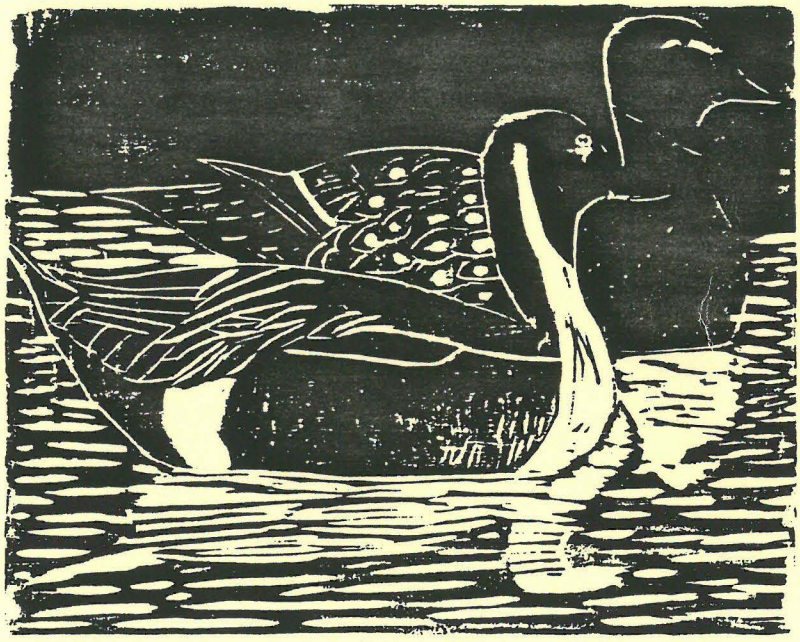
JOHNSON CREEK BASIN PROTECTION PLAN

Including

JOHNSON CREEK, REED LAKE, CRYSTAL SPRINGS
POWELL BUTTE, AND MT. SCOTT AREAS



INVENTORY, ANALYSIS, AND REGULATIONS

for the

CONSERVATION AND GENERAL MANAGEMENT OF WETLANDS, WATER BODIES, OPEN SPACES, AND WILDLIFE HABITAT AREAS

Bureau of Planning
City of Portland
Adopted by City Council July 17, 1991
Effective August 16, 1991

Portland City Council

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PURPOSE

The purpose of the *Johnson Creek Basin Protection Plan* is to identify, evaluate, and protect significant fish and wildlife habitats, ecologically and scientifically significant natural areas, open spaces, water bodies, wetlands, and the functions and values of the Johnson Creek basin as a whole, and to adopt management recommendations on specific ways to retain and restore the natural habitat areas and values. The plan is designed to comply with Statewide Planning Goal 5.

VISION

The Johnson Creek basin will be a beautiful natural resource that is carefully planned and nurtured, thanks to the collective efforts of residents, organizations, and the city. The creek will become a unique visual and functional unifying element to southeast Portland, providing neighborhood character and a sense of place, as well as a stormwater drainage system, wildlife corridor, recreation area, and source of pride for Portland.

Damage from high flood waters will be history. The quality of the water will be improved to the point that natural runs of anadromous fish will be re-established to levels of the past.

Development will be complementary to the needs of the creek basin, so that a harmonious balance between people and nature will exist. A sense of shared stewardship for all landowners and recreational users of the creek will reflect the pride and commitment upheld by those who recognize it as a natural resource to be preserved for all.

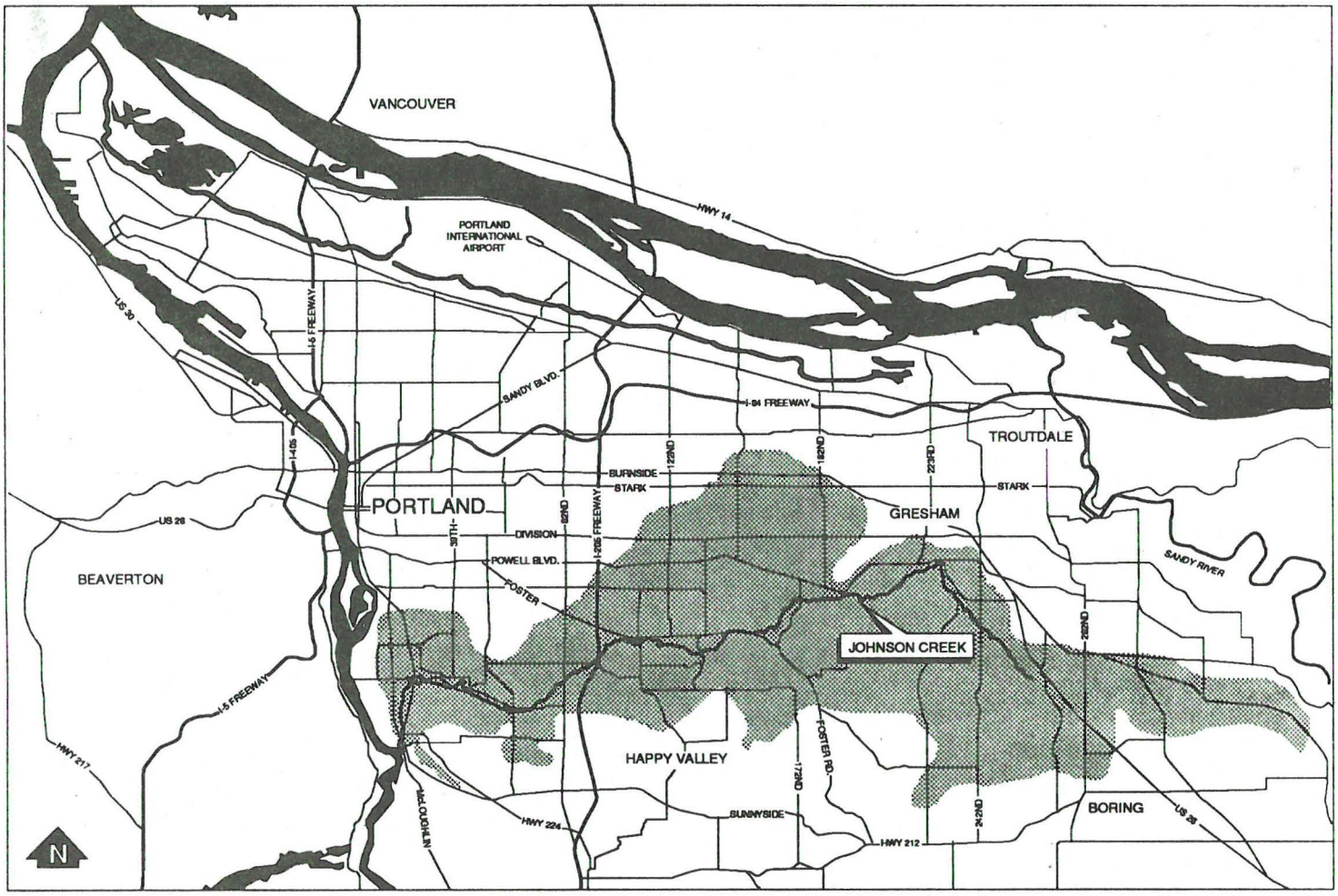
SUMMARY

Protecting identified natural resources in the Johnson Creek corridor will occur at various levels in the land use regulation hierarchy: adoption of Comprehensive Plan policies and objectives relating directly to the Johnson Creek basin, modification of base zone densities where appropriate, application of the Environmental Zone, relocation of the Recreation Trail designation from the edge of Johnson Creek to the newly-purchased Springwater Line (previously known as the Belrose Line) railroad right-of-way, and modification of the Powell Butte/Mt. Scott Plan District to apply to much of the Johnson Creek basin.

The plan district generally will protect the natural resources in three ways:

1 **Limit housing densities in areas that are difficult or hazardous to build on due to physical constraints such as floodways, steep slopes, floodplains, or wetlands.** The existing Powell Butte/Mt. Scott Plan District limits housing densities to 1.05 to 4.20 units per acre, depending on the presence of conditions which make building hazardous. The Johnson Creek Plan District expands the Powell Butte/Mt. Scott Plan District for the length of Johnson Creek within the Portland city limits.

2 **Expand plan district requirements to include protection of natural resource and neighborhood values.** In addition to the variable zoning density requirements, the plan district is amended to protect resource characteristics which have been identified as having water quality, environmental, or neighborhood value. These include: exemptions for certain activities in Environmental-zoned areas which are compatible with neighborhood character and protected resources; retention of treed areas and native landscaping to aid in groundwater recharge, provide more habitat, control erosion, and continue the semi-rural neighborhood character; and provision of stormwater detention or retention facilities to improve water quality, aid in groundwater recharge, and reduce peak flood levels.



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Johnson Creek Watershed

Johnson Creek Basin Plan District

JOHNSON CREEK WATERSHED

3 **Protect or restore habitat within the resource area as an approval criteria for new development.** This is accomplished either through environmental review for proposed development in Environmental zones, or plan district regulations. The level or threshold for improvements depends upon the amount of proposed development. Emphasis is on: protecting or restoring riparian areas along Johnson Creek, its tributaries, and drainageways; connecting upland resource areas such as parks, steep slopes, and major forested areas with the creek corridor to aid in the passage of wildlife; and promoting the use of native vegetation (especially trees) throughout the plan district.

BASIN STUDY AREA

Johnson Creek extends through the cities of Milwaukie, Portland, and Gresham, as well as portions of unincorporated Multnomah and Clackamas Counties. The total Johnson Creek drainage basin is about 54 square miles in size (of which only 44 square miles contribute runoff), and up to three miles wide. It also includes the cities of Cottrell, Boring, and Happy Valley. Within southeast, Portland Johnson Creek follows a generally east-west path parallel to Foster Road and the Springwater Line, a railroad right-of-way recently purchased by the City. The study area extends from SE 174th Avenue and SE Jenne Road west to Johnson Creek's confluence with the Willamette River in the City of Milwaukie, and from the southern city limits along the crest of the Boring Lava Hills northward, encompassing Powell Butte, Beggar's Tick Marsh, Crystal Springs Creek, Reed Lake, and other natural resources related to the creek. It includes the westerly 13 miles of the creek's total 25 mile length, its tributaries and riparian areas, as well as wetlands and well as uplands which add to the natural resource values of the basin.

As part of this plan, resource protection is for only those areas within the City of Portland jurisdictional limits, although resources outside city limits were inventoried. For example, there is stretch of the creek between SE 45th and SE 76th Avenues that has been inventoried but not analyzed because it is in either unincorporated Clackamas County or the City of Milwaukie. Between SE 117th and 145th Avenues the creek also "snakes" in and out of Multnomah County. As Portland annexes lands which are in the Johnson Creek basin, the inventory information will be used to aid in determination of appropriate base and overlay zones.

REGULATORY SETTING

State

Statewide Land Use Planning

Oregon's statewide land use planning program was established under Senate Bill 100, adopted by the Legislature in 1973 and included in the Oregon Revised Statutes (ORS) as Chapter 197. This legislation created the Land Conservation and Development Commission (LCDC) and gave it the authority to adopt mandatory Statewide Planning Goals. These goals provide the framework for Oregon's cities and counties to prepare comprehensive plans. There are nineteen Statewide Planning Goals, fifteen of which apply to the Johnson Creek Corridor.

After local adoption, comprehensive plans are submitted to the LCDC for review to ensure consistency with the Statewide Planning Goals. Portland's Comprehensive Plan was adopted by City Council in 1980, effective January 1, 1981, and was acknowledged by LCDC in May 1981.

Periodic Review

In 1981, the Legislature amended ORS 197 to require periodic review by the state of acknowledged comprehensive plans. As stated in state statute, the purpose of periodic review is to ensure that each local government's acknowledged comprehensive plan and land use regulations are in compliance with the Statewide Planning Goals and coordinated with the plans and programs of state agencies.

Under state law, four factors must be considered during periodic review. The second factor, "new Statewide Planning Goals or rules," relates to new Goals or rules adopted since a comprehensive plan was acknowledged such that the plan or its land use regulations no longer comply.

The specific requirement to complete Portland's natural resources inventory and analysis is based on LCDC's adoption, in the fall of 1981, of a new administrative rule for Statewide Planning Goal 5, Open Spaces, Scenic and Historic Areas, and Natural Resources. The *Johnson Creek Basin Protection Plan* updates the City's Comprehensive Plan inventory and analysis of wetlands, water bodies, open spaces, and wildlife habitat areas in the Johnson Creek watershed, and addresses the new administrative rule requirements.

The Statewide Planning Goal 5 and Administrative Rule

Statewide Planning Goal 5 requires cities and counties "to conserve open space and protect natural and scenic resources." When Portland's Comprehensive Plan was adopted in 1980, however, there was little guidance as to how the Goal requirements should be met.

In the fall of 1981, subsequent to acknowledgement of Portland's Plan, the Land Conservation and Development Commission adopted administrative rule, OAR 660, Division 16: Requirements and Application Procedures for Complying with Statewide Goal 5. The steps which a jurisdiction must go through in order to comply with Goal 5 include:

- inventoring resource sites;
- analyzing the economic, social, environmental and energy (ESEE) consequences of conflicting uses on the resource; and
- determining the level of protection required for the resource.

The inventory is done first and includes the location, quantity, and quality of the resources present. Location of a resource must include a map or description of the boundaries of the resource site, and be as accurate as available information allows. Resource quantity requires consideration of the relative abundance of the resource. Quality of a resource is determined by comparing the resources within categories.

If a resource is not important, it may be excluded from further consideration for purposes of local land use planning, even though state and federal regulations may apply. If information is not available or is inadequate to determine the importance of the resource, the local government must commit itself to obtaining the necessary data and performing the analysis in the future. At the conclusion of this process, all remaining sites must be included in the inventory and are subject to the remaining steps in the Goal 5 process.

The next step in the Goal 5 process includes the identification of conflicts with the protection of inventoried resources. This is done primarily by examining the uses allowed in broad zoning categories. A conflicting use, according to the Goal 5 Administrative Rule, is one which, if allowed, could negatively impact the resource. These impacts are considered in analyzing the economic, social, environmental and energy (ESEE) consequences.

If there are no conflicting uses for an identified resource, the jurisdiction must adopt policies and regulations to ensure that the resource is preserved. Where conflicting uses are identified, the ESEE consequences must be determined. The impacts on both the resource and on the conflicting use must be considered, as must other applicable Statewide Planning Goals. The ESEE analysis is adequate if it provides a jurisdiction with reasons why decisions are made regarding specific resources.

Other Statewide Planning Goals

There are nineteen Statewide Planning Goals. Fifteen apply to the Johnson Creek basin. Some of these goals establish a decision making process, such as Goal 1, Citizen Involvement, and Goal 2, Land Use Planning. These state mandated procedures were applied during the preparation, review, and presentation of the various drafts of this protection plan.

Other Statewide Planning Goals address specific topics. Examples include Goal 9, Economy of the State, Goal 10, Housing, and Goal 14, Urbanization. Uses addressed by these goals were identified as conflicting with natural resource protection and required analysis under the Goal 5 Administrative Rule. This protection plan incorporates the requirements of these goals with the ESEE analyses.

The Willamette River Greenway Goal, Statewide Goal 15, does not apply to Johnson Creek because the confluence is under the jurisdiction of the City of Milwaukie. Therefore, Goal 15 is not considered by this protection plan. Statewide Goals 16, 17, 18, and 19 address only coastal and ocean resources and therefore do not apply to Johnson Creek.

Oregon Department of Fish and Wildlife (ODFW)

ODFW has a Salmon and Trout Enhancement Program (STEP) which is in part being implemented on Crystal Springs where there is a STEP-sponsored, volunteer-operated fish hatchery.

Local

Portland Comprehensive Plan Goal 8 - Environment

The purpose of Portland's Environment Goal is to, "Maintain and improve the quality of Portland's air, water and land resources and protect neighborhoods and business centers from detrimental noise pollution." Policies and objectives of this goal generally meet or exceed the requirements of the Statewide Planning Goal 5. The City Council, city administrators, and city hearings officers make all decisions affecting the use of land in conformance with the policies of Portland's Comprehensive Plan. Since state approval in 1981, conformance with the Plan also means conformance with the Statewide Planning Goals.

Ordinances adopted through 1991 added new Comprehensive Plan Goal 8 policies committing the City to regulate development in groundwater areas, drainage ways, natural areas, scenic areas, wetlands, riparian areas, water bodies, uplands, wildlife habitats, aggregate sites, and in areas affected by noise and radio frequency emissions. These ordinances also established new Goal 8 objectives, which commit the City to controlling hazardous substances; conserving aquifers, drainage ways, wetlands, water bodies, riparian areas, and fish and wildlife habitat; prioritizing properties for public acquisition, coordinating City regulations with the regulations of state, federal, and other affected local governments; avoiding harm to natural resources; mitigating unavoidable harm to protected natural resources; maintaining vegetative cover; improving water quality; and preventing soil erosion and stormwater flooding.

The policies and objectives of Comprehensive Plan Goal 8 meet the requirements of Statewide Planning Goal 5 and are thus incorporated in the section of this protection plan which analyzes economic, social, environmental, and energy consequences.

Portland Comprehensive Plan Goal 10 - Housing

The housing densities that the City of Portland is responsible for providing per the City's adopted housing goal does not include areas located in a floodway, 100-year flood plain, or on hazardous hillsides. With the possible exception of portions of the Boring Lava Hills, essentially all areas recommended for environmental overlay zoning within the Johnson Creek Corridor Plan District fall into one of these three categories.

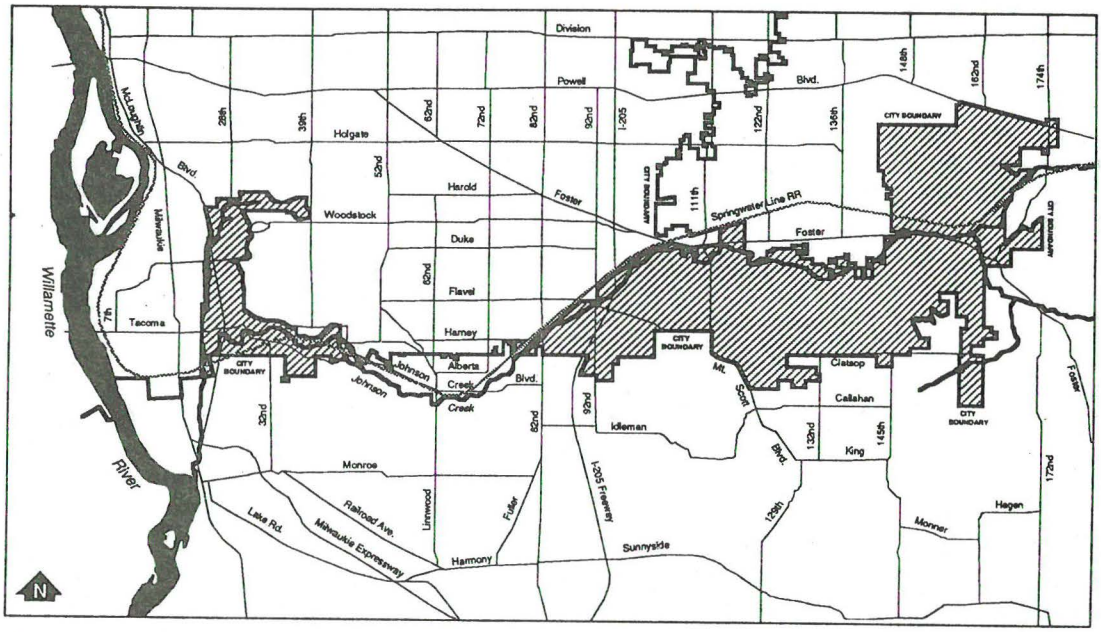
Other Portland Comprehensive Plan Goals

There are nine Portland Comprehensive Plan goals in addition to Goals 8 (Environment) and 10 (Housing). These goals address urban development, neighborhoods, economic development, transportation, energy, citizen involvement, metropolitan coordination, plan review and administration, and public facilities.

As with the Statewide Planning Goals, required procedures are addressed in the preparation, review, and presentation of the Plan. Applicable goals are addressed in the analyses of economic, social, environmental, and energy consequences.

Powell Butte Mt. Scott Plan District Chapter of the Portland Zoning Code

A major element of this Plan is replacement of the Powell Butte/Mt. Scott Plan District (PBMS) with the Johnson Creek Corridor Plan District. The PBMS Plan District was created as part of the zoning code rewrite project. Regulations were developed in 1974 as the Variable Density (V) Overlay Zone, which were later incorporated into the existing plan district with only minor modifications. The plan district applies to the areas for which it is named (Powell Butte and Mt. Scott).



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Plan District

Johnson Creek Basin Plan District

PLAN DISTRICT BOUNDARIES

The purpose of the PBMS Plan District is to provide for safe, orderly, and efficient development of lands subject to physical constraints such as steep and hazardous slopes, floodplains, wetlands, and that lack streets, sewers, and water services by further limiting densities on low density single dwelling (R10)-zoned land. All land in the plan district is divided into five land classifications, Classes I through V, as shown in the *Development Manual of the Powell Butte Mt. Scott Density Development Study*. Class I lands are generally the steepest sites having the greatest amount of natural hazards and least services, while Class V lands are generally flat without natural hazards or water features. Housing densities are limited to between 1.05 and 4.20 units per acre, depending on the presence of building and services constraints.

Scenic Resources

The Planning Commission has forwarded to the City Council for adoption a *Scenic Resources Protection Plan.*[1] This plan recommends that Johnson Creek be designated as a scenic corridor. It also recommends designation of the following sites within the Johnson Creek Study area as scenic sites: Leach Botanical Garden (Inventory Site 19); Reed Campus (Reed Lake is Inventory Site 1); and Beggar's Tick Marsh (Inventory Site 16OJ).[2] As part of the Plan new zoning code provisions for scenic resource protection are recommended. The recommended code describes the relationship of scenic and environmental protection measures:

> "When an environmental zone has been applied at the location of a designated scenic resource, the environmental review must include considerations of scenic qualities of the resource as identified in the economic, social, environmental, and energy consequences (Scenic Sites, Vol. V) analysis for scenic resources. The development standards of [the scenic protection chapter] ... should be considered as part of that review."[3]

The analysis of the *Scenic Resources Protection Plan* is incorporated by reference and is not repeated in the analysis section of the *Johnson Creek Basin Protection Plan.* Scenic value was only one factor weighed in the Bureau of Planning's decisions to recommend environmental protection for sites associated with Johnson Creek. Scenic corridor development standards have already been recommended by the *Scenic Resources Protection Plan.* These scenic standards are not repeated in the regulations section of this protection plan.

Mineral and Aggregate Sites

The City has completed its inventory, analysis, and recommendations for mineral and aggregate sites.[4] This inventory identified no potential aggregate sites in the City of Portland portion of the Johnson Creek basin. All decisions concerning the use of mineral and aggregate resources in the Johnson Creek basin have been made, so this protection plan does not address this use in the analyses of economic, social, environmental, and energy consequences.

Bureau of Buildings

The National Flood Insurance Act of 1968 was enacted by Title XIII of Housing and Urban Development and is implemented through the Federal Emergency Management Agency (FEMA). Its purposes are to discourage future unwise development in flood plains, and to offer insurance at subsidized rates to present flood plain occupants. To qualify for this coverage, the local government must enact adequate flood plain regulations. In Portland, these are enforced through the Bureau of Buildings.

FEMA has identified a 100-year flood plain which covers about 1600 acres of the Johnson Creek Basin. Much of it is in the *Johnson Creek Basin Protection Plan* area, although part extends beyond the plan boundaries. Included are about 820 acres of residential land, 120 acres of commercial , 400 acres of industrial, and 260 acres of parks or open space. Over 20,000 people live or work in the flood plain.

In effect, FEMA regulations prohibit development within the floodway unless it can be demonstrated that the areas subject to flooding will not be increased and that flood waters will not be impeded.

Bureau of Environmental Services

The Bureau of Environmental Services (BES), in cooperation with state and federal agencies, is analyzing water quality and flooding concerns in the Johnson Creek basin as part of their Clean Rivers Program, in a comprehensive effort to determine the extent of flooding and water quality problems in Johnson Creek. The final product is expected to be a resources management plan for Johnson Creek.

The water quality analysis includes identifying potential contaminant sources and determining how contaminants enter the creek, water quality impacts on fish populations and other aquatic life, and recreational uses of the creek. The management plan will include an evaluation of potential strategies for correcting flood and water quality problems. It is being developed through an extensive public involvement process. A Johnson Creek Corridor Committee provides coordination with interested citizens and other agencies. The goals of the management plan are attached as Appendix F.

The Bureau of Environmental Services project represents an opportunity for coordination of planning and resource protection efforts. The final product will provide technical data that can help to determine effective means of mitigation. The time frame for the BES project is a minimum of 24 months. Environmental Zone protective measures must be in place in early 1991. However, once the management plan for Johnson Creek is completed, it is expected to be integrated into the *Johnson Creek Basin Protection Plan.*

Bureau of Parks and Recreation

The Bureau of Parks and Recreation is working in conjunction with the Bureau of Environmental Services to develop a recreational trail and master plan for the newly-acquired Springwater Rail Line. The trail master plan is expected to be completed in late 1991, and will be a major component of the 40 Mile Loop system. Connections between this and selected points of Johnson Creek will be identified, and will occur through parks, public rights-of-way, or other public property.

As part of the *Johnson Creek Basin Protection Plan*, the east-west recreation trail designation contained in the Comprehensive Plan is shifted from along Johnson Creek bankline to the Springwater Rail Line right-of-way east of SE 71st Avenue.

Multnomah County Vector Control

Multnomah County Vector Control provides limited services related to Johnson Creek and habitat protection in terms of assisting property owners with information on identifying and removing nuisance plant and animal species.

Regional

The Metropolitan Greenspaces Study is underway to identify natural areas through the Metropolitan Service District (METRO) in the Portland metropolitan area, including Johnson Creek. METRO will make efforts to coordinate programs between cities and counties, and to provide a regional approach to resource conservation.

Federal

The U.S. Army Corps of Engineers is conducting a flood evaluation to identify the extent of flooding problems along Johnson Creek, and to determine if there is justification to provide federal funding for correction. The project began October 1989 and a draft report was completed December 1990. Local sponsorship of a project is required for federal involvement and funding. This project is preliminary and conceptual by nature, and the Cities of Portland and Gresham are local sponsors.

PUBLIC INVOLVEMENT

Bureau of Planning-sponsored public involvement in the planning process began in the summer of 1990, with two public meetings held prior to the analyses stage to explain the planning process and to provide opportunities for input. Those meetings were held in July and August 1990 at the Woodstock Community Center. A presentation was given to the Southeast Uplift, Land-Use Committee in October 1990. A public meeting to review the *Discussion Draft* was held November 1st at Precision Castparts at SE 45th Avenue and Johnson Creek Boulevard. Planning Bureau staff then met with neighborhood and citizen groups to discuss the purpose of the project, material and recommendations in the *Discussion Draft*, and possible changes. A *Proposed Draftt*, which was presented to the Planning Commission at a public hearing on March 26th, reflected many of the changes suggested in these meetings and subsequent correspondence. At this public hearing testimony was received from residents and property owners, neighborhood associations, and interested parties. On April 23rd the Planning Commission adopted the *Johnson Creek Basin Protection Plan* with amendments to reflect testimony received, and forwarded it to the City Council with a recommendation for approval.

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1 Portland Bureau of Planning, *Scenic Views, Sites, and Corridors: Scenic Resources Protection Plan*, Portland, Oregon, 1990 (nine parts, multiple volumes).

2 ibidem, Scenic Site, Volume V, pages 2, 12, and 24.

3 ibidim, part vi, proposed City Code section 33.480.050, page 6 (language in brackets is not part of the original).

4 Portland Bureau of Planning, *Mineral and Aggregate Resource Inventory*, Portland, Oregon, 1988.

CHAPTER 2

BACKGROUND

INTRODUCTION •

FLOODING •

GEOLOGY •

WATER QUANTITY AND QUALITY •

INTRODUCTION

Johnson Creek is a tributary of the Willamette River, roughly eighteen miles long, originating west of the Sandy River Canyon, east of the City of Gresham. It flows west through the City of Gresham, unincorporated east Multnomah County, the City of Portland, unincorporated north Clackamas County, and finally through the City of Milwaukie to its confluence with the Willamette River just north of Elk Rock Island. From its origin in rural lands east of the Portland metropolitan area, Johnson Creek flows through progressively more urbanized land.

Johnson Creek is one of the few free-flowing creeks within the Portland city limits, and the only major one on the east side. It links abutting natural areas, parks, and wetlands with highly urbanized residential and industrial areas. The creek is a continuum where differing land uses and their associated impacts and inputs can be seen and felt throughout its length. This very intricate relationship of the Johnson Creek basin (the area the stream drains and flows through); not only the entire channel and the abutting land uses, but also the wetlands, lakes, groundwater resources and other streams and rivers in the system, requires its treatment as a single management unit. Natural areas and water features in the study area were identified and inventoried in the 13-mile stream reach defined by the Portland-Gresham city limits to the east and the Portland-Milwaukie city limits to the west.

FLOODING

Due to its geographic features, Johnson Creek has historically been a "flashy" water body, with the potential for flood waters to rise quickly and either recede quickly or persist for some time. As a result, development patterns throughout its watershed have recognized the flood potential and responded to it in various ways.

Impermeable clay soils of the steep-sided Boring Lava hills to the south of the creek contribute rapid storm water runoff in the winter and as such have been a major cause of flooding. Early settlers on the floodplain sometimes welcomed and encouraged the floods. When a landslide occurred on Mt. Scott in 1921, covering portions of Johnson Creek near 112th Avenue, farmers took advantage of the event by diverting the creek, hoping to encourage flooding and subsequent silting of their fields.

In the 1930s, the Works Progress Administration (WPA) cleaned and lined the creek channel. However, the channel has not been consistently maintained, and no significant improvements to it have occurred since. The channel has been partially filled in many areas with silt washed off from adjacent rural and urban lands, and stands of trees and brush have now grown up on these silt deposits. The typical 1:1 riprapped slopes created by the WPA are not conducive to plant growth, and access to the creek is limited for wildlife. Water flow in the creek is severely restricted and flooding can be exacerbated by these channel restrictions.

As urban development progressed, an increasing proportion of the watershed area was covered with impervious surfaces such as driveways, streets, parking lots, and rooftops. This increase in impervious surface, coupled with the removal of native vegetation, resulted in the land surface becoming less permeable, further modifying stormwater runoff quantity and timing. Development activities and urban land uses have decreased infiltration of water through the soil and altered historic drainage patterns so that the quantity of runoff directly delivered to the stream has markedly increased.

The total drainage basin of Johnson Creek is 54 square miles, 44 of which contribute runoff. Major floods, especially an intermediate regional flood or a standard project flood, can cause substantial damage. During 1964, the creek crested in 36 hours, rising at an average rate of 0.3 feet per hour with a maximum rate of 1.3 feet per hour. It then remained above bankfull stage for 53 hours.

Attempts have been made to control increased runoff in localized situations. The use of percolation sumps (dry wells) are the primary drainage system in areas which are porous, such as those found north of the creek. Combination sewers are used to collect stormwater runoff in some northwest basin locations. However, in other areas north of the creek such as Interstate 205 freeway and Gresham, storm sewer pipelines directly discharge runoff. On the south side of the creek soils are more impervious with high potential for runoff and therefore are not capable of easily absorbing water with the use of sumps. Here storm sewer pipes are used to direct runoff to Johnson Creek and its tributary streams.

Recent basin-wide efforts to provide flood relief have failed, in part, because of lack of a local sponsor with implementation authority and an acceptable flood control plan. The cities of Portland, Gresham, Milwaukie, and Happy Valley, and Multnomah and Clackamas Counties share jurisdiction over the 23 mile-long creek basin as it flows the from the Cascade foothills to the Willamette. Until recently there has been no single jurisdiction willing to take overall responsibility. However, with recent annexations to the City of Portland, it is increasingly in Portland's interest to take a larger role in creek management. The Portland Bureau of Environmental Services has assumed a coordination role in the development of a management plan, to address flooding and water quality issues on a basin-wide, multi-jurisdictional level. Completion of this plan is expected in about two years, and may include local sponsorship of federal flood control projects. Upon adoption by the City, portions of the plan may be included, where applicable, as zoning and other land use regulations.

GEOLOGY

The majority of the Johnson Creek drainage basin is characterized by the geologic classification of alluvium. Alluvial deposits include all of the material in the channels of present-day streams, their flood plains, and abandoned channels. Alluvium consists of very poorly consolidated gravel and sand in the stream channels, gravel and sand lenses usually overlain by silt and minor clay on the flood plain, and organic material usually in abandoned channels beneath several feet of silt or clay.[1] Alluvial soils are deposited and subject to erosion and redeposition by water.

The thickness of the alluvium is variable. The sand and gravel is generally thin and rests on bed rock in small stream channels where gradients are high. The smaller flood-plain deposits of silt and gravel tend to be narrow, thinning out at the canyon sides, whereas the larger flood plains may contain recent alluvium up to 30 feet thick or more.

WATER QUANTITY AND QUALITY

Pollution in Johnson Creek has been an issue for several years. From 1970 to 1975 the Oregon Department of Environmental Quality studied the lower 17 miles of Johnson Creek and identified several water quality problems. It found high levels of nutrients (nitrogen or phosphorous based compounds) which can cause undesirable growths of algae and aquatic weeds. The study also noted a drop in the amount of oxygen during summer low flow conditions, a condition that may threaten fish and other aquatic life.[2]

Portland State University collected water quality data from Johnson Creek between fall of 1979 and spring of 1981. Water quality measurements and samples were collected during both high and low flow conditions, and provided information on contamination from human or animal wastes.[3]

The United States Geologic Society (USGS) investigated water quality along the lower 23 miles of Johnson Creek during 1988. This study identified concentrations of heavy metals and manmade organic compounds in bottom material during low flow conditions. Because many pollutants will attach to sediments, analysis of chemicals in bottom material collected during low flow is a useful technique for determining the general location of pollutant sources.[4]

Increased runoff and decreased infiltration during the winter has severely restricted ground water recharge. Rapid runoff over impermeable surfaces has had an effect on decreased groundwater levels necessary to provide streamflow to Johnson Creek during the drier months. Groundwater is the predominate source of streamflow in the summer. Decreasing summer flow as urbanization has occurred has caused local ponding, stagnation, and increased temperatures in some parts of the creek.

In addition, several major pollutants have been identified that affect the creek's water quality: sediment carried into the creek from urban and agricultural runoff; fecal contamination from failing cesspools and septic tanks in nearby areas; organic pollutants such as DDT and PCB, and heavy metals. These factors and other pollution sources have contributed to the deterioration of fish and wildlife habitat and decreased recreational potential in Johnson Creek.

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1 Donald A. Hull, State Geologist, Oregon Department of Geology and Mineral Industries, *Geology and Geologic Hazards of Northwestern Clackamas County*, Oregon, 1979.

2 Portland Bureau of Planning files, Memorandum, *Johnson Creek Water Quality and Flood Control*, August 30, 1989.

3 ibid

4 Portland Bureau of Environmental Services files, *Johnson Creek Sediment Report*, March 1989.

CHAPTER 3

COMPONENTS OF THE NATURAL RESOURCE AREA

INTRODUCTION

Natural resource components can be broken into three functional categories: wildlife habitat, natural hazards, and urban design. Within each category, components can be identified which singly or collectively contribute to the urban environment. The Johnson Creek basin is a complex system of natural resource components which, when combined, form a comparatively rich and valuable urban design element and ecosystem, considering its history of urbanization.

Resource value is also in the form and location of the basin, as well as the simple physical presence of individual components. This chapter gives a brief overview of the major components as they relate geographically, their interrelationships with one another, what is present, and what could be done to protect, enhance, or expand each.

The purpose of the *Johnson Creek Basin Protection Plan* is generally to identify these components, their importance, impacts of protecting or not protecting them, and a decision as to whether or not protection is warranted. Subsequent chapters identify and describe in greater detail individual components and their overall value in the urban environment, impacts of protection, and recommendations for protection.

COMPONENTS

Basin Geography

As described previously, the Johnson Creek basin is a linear corridor extending from rural lands well east of Gresham, through several major cities and unincorporated urbanized areas, to the Willamette River in the heart of the Portland metropolitan area. It connects the rural areas of the Cascade foothills to several major urban open spaces and natural areas, acting as a wildlife corridor for the introduction, recharge, and passage of species not normally observed in large cities, including deer, bear, and many woodland and meadow birds.

Steep, unstable slopes, potential flooding, and lack of services have discouraged urban development in major parts of the Johnson Creek basin, so there remain substantial areas that are either undeveloped or retain many of the historic native landscape ecosystem characteristics (native plants, deciduous/conifer mix, surface drainage, etc.). However, as development occurs, land is disturbed in a manner that promotes conditions for exotic plants, and commercial landscaping encourages the replacement of native plants with exotic and invasive species.

Existing pervious surfaces throughout the basin allow groundwater recharge, increasing overall water quality and the health of the creek. Natural drainageways also allow sediment trapping, protecting the main creek and related fish habitat.

To retain significant resource values, preservation or re-establishment of native plants and forest structure is important. Reducing development densities in hazard areas, encouraging planned unit developments to retain existing drainageways and forested areas, and retaining older native trees are all important actions in retaining basin and water quality values.

To protect urban development from natural hazards, development must be restricted in the flood plain and on steep slopes that are subject to landslides. Additionally, stormwater runoff may need to be retained or detained to decrease "flashiness" of the creek, and to stabilize or decrease flood levels.

Creek and Riparian Corridor

The Oregon Department of Environmental Quality (DEQ) has declared Johnson Creek a "water quality limited" stream, as certain pollutants exceed state standards. These standards have been set to protect both the public and wildlife of the state. According to the Portland Bureau of Environmental Services, organic pollutants such as DDT, PCB, and heavy metals are found in the water. The creek also receives high sediment loads and fecal coliform.

Certain activites, such as fishing or swimming, are used as goals or indicators of acceptable water quality. Fisheries resources are the primary water quality indicator in this plan.

Major water quality problems influencing fish resources in Johnson Creek appear to be suspended sediments, elevated water temperatures, low summer flows, toxic discharges from point sources, and occasional low dissolved oxygen levels. Historically, DEQ has reported the lowest dissolved oxygen readings between SE 92nd and SE 190th Avenues, attributing these low values to decomposition of organic material in stagnant pools. More recent data collected by the United States Geologic Survey (USGS) during low flow periods in 1988 showed a much higher dissolved oxygen level.

Fish Habitat

Little inventory or research work relating to fisheries habitat has been conducted in Johnson Creek. Johnson Creek has been viewed primarily in terms of flood control function rather than fisheries habitat since its channelization in the early 1930s by the WPA. A stream survey conducted in 1935 by United States Fish and Wildlife Service (USFWS) described the creek as "...scarcely more than a badly polluted slough with large areas of the bottom covered with mud, silt, and debris." A few spring Chinook and steelhead were reported to enter the creek during high water. However, the creek was described as having little value for salmon spawning due to "...the high degree of pollution, destruction, obstruction, flood control improvements, and the heavily populated surroundings which make the stream practically useless as a salmon producer."

Despite its history of being poor habitat for salmonids, several species currently inhabit Johnson Creek. Coho salmon, steelhead, cutthroat, and rainbow trout have been reported on occasion. Most are found high in the system (Gresham and upstream). Fall Chinook will, on rare occasion, stray from the Willamette River and enter the downstream portion of the creek (lower two miles). Spawning will occur if conditions are acceptable (adequate dissolved oxygen, moderate water temperature, sufficient flow, and unsilted gravel). The lower two miles is strongly influenced by Crystal Springs, which tends to moderate temperatures and improve water quality.

Sufficient numbers of adult steelhead are present in the upper system to maintain the population, but most steelhead fry die off in the summer during low flow periods, and when water temperatures reach or exceed 68 degrees. Typically fry do not survive downstream from Gresham.

In the recent past, local anglers have reported catching adult steelhead in the lower creek below Crystal Springs Creek near McLoughlin Boulevard, and above Crystal Springs near the Tacoma Street crossing. Residents of Johnson Creek recount that historically "...there were so many steelhead in Johnson Creek that you could walk across in the creek on their backs."[1]

Salmonid angling is focused primarily on catchable rainbow trout released by the Oregon Department of Fish and Wildlife (ODFW) between April and May of each year. Approximately 2,000 fish are released between Johnson Creek Park, at the confluence of Crystal Springs and Johnson Creeks, and SE 82nd Avenue. In most years, at least a few adult steelhead and Coho are caught above Gresham, based on "punch card" results.

Since the 1935 survey, which detailed stream habitat during the Works Progress Administration (WPA) channelization process, most fisheries inventory work in Johnson Creek has been in response to reported fish kills. Based on records kept by ODFW, Johnson Creek has populations of redside shiners, dace, suckers, lampreys, squawfish, and sculpins. Brown bullheads and crappie are rarely found but have been documented in past fish kills. These species are better suited to Willamette River conditions and may have entered from the lower creek or been released from private ponds.

The Salmon and Trout Enhancement Program (STEP) program maintains a hatch box in Crystal Springs Creek, a tributary to Johnson Creek. This program has been operating in Crystal Springs since 1981. The hatch box is operated by Clyde Brummel and the Sellwood-Moreland Improvement League (SMILE). Approximately 15,000 Coho and steelhead eggs are hatched annually. Most fingerlings remain in the creek for approximately one year, leaving the Johnson Creek system between spring and fall of the following year. Resident cutthroat trout reside above a dam at Reed College.

Fish Habitat Requirements

Various fish species are adapted to survival in different living environments. Separate characteristics which describe these environments can be placed in the general categories of water quality (chemical pollutants, sediment, dissolved oxygen, etc.), water temperature, flow, bottom conditions (gravel, sand, or silt), cover, and food.

Vegetation that borders most waterbodies, particularly rivers, streams and creeks, is referred to as riparian. Loss of riparian vegetation and its replacement with impervious surfaces affects water quantity and quality by increasing water temperature extremes, sediment loading and water runoff, and decreasing groundwater recharge.

Riparian vegetation influences water quality and quantity, having an important effect on the growth, density, and biomass of anadromous and resident fish. Roots of herbaceous and woody vegetation tend to stabilize streambanks, retard erosion, and in places, create overhanging banks which serve as cover for fish. Live trees with overhanging canopies provide shading and control water temperatures suitable for spawning, egg and fry incubation, and rearing of anadromous and resident salmonids, and warm water fish. Studies in the last decade have clearly shown how live trees along the streamside and their canopies directly control water temperatures. Additionally, riparian vegetation provides food as insects which drop into the creek from overhanging branches.

Removing the forest canopy adjacent to and within the riparian area produces higher summer and lower winter water temperatures. Not all the impacts are detrimental, as increased light reaching the stream can result in short-term increases in algae and invertebrates which form the diet of fish. The cumulative effects of extensive canopy removal, however, might cancel potential benefits by prolonged increase in water temperature and increasing sediment over the long run.

In summary, riparian vegetation plays an important role in protecting water quality. This streamside buffer of vegetation also strongly influences the quality of habitat for anadromous and resident fish as well as providing some of the most productive and diverse

habitat for terrestrial wildlife populations. Because there are many varied types of riparian vegetation buffer strips depending upon topography and stream order, there is no single descriptive definition. There is general agreement that these riparian buffer strips have certain common features. These features consist of a mix of native vegetation combining herbaceous ground cover, understory shrubs, and overstory trees The overstory trees may contain both deciduous and coniferous trees, generally dominated by deciduous species.

Wetlands also play an important role in the health of a water body such as Johnson Creek. General values have been well documented in previous studies by the City for establishment of the Environmental Zone and its application to the Columbia Corridor and Balch Creek basin. Under certain circumstances, they are the most biologically productive lands, serving as an interface between aquatic and terrestrial habitats. For the Johnson Creek basin, functional values of wetlands include flood control, erosion control, sediment trapping, water quality, groundwater recharge and discharge, fish and wildlife habitat, aesthetics, education, and recreation. Due to filling and urbanization, few wetlands remain along Johnson Creek. The larger ones within the Portland urban services boundary are Beggar's Tick Marsh at SE 111th Avenue, north of the Springwater Line (in unincorporated Multnomah County), one near the fish ladders at SE 42nd Avenue, north of the creek, and one at the headwaters of Crystal Springs Creek in the vicinity of Reed Lake. Smaller ones are usually along the creek or associated with tributaries or drainageways. Because of their rarity, retention of the remaining wetlands is critical to the overall environmental quality of the creek and basin as a whole.

Sediment can affect fish survival if the concentrations are high enough. Excessive deposited sediment has serious impacts upon salmonid production by limiting the flow of intragravel water. This limits the supply of oxygen available to incubating eggs and alevins. If concentrations are high and persistent, silt may accumulate on the gill filaments of adult fish actually inhibiting the ability of the gills to aerate the blood, eventually causing death by anoxemia and carbon dioxide retention. Vegetation, particularly in wetlands, drainageways, and riparian areas can significantly reduce sedimentation in the creek bed through either filtering the particulates out as water passes through, or slowing flow velocities and allowing particulates to precipitate out.

Historically, large trees in the riparian buffer strip were the source of large debris (tree trunks and large limbs). The importance of large organic debris in streams has only recently been recognized as being an abundant and important part of natural forested streams. The fallen trees and logs provide highly productive side channels for food, resting pools, cover, and the accumulation of spawning gravel. Logs in the stream bed decay over time and serve as a basic food source for invertebrates, which in turn then become part of the available fish food.

Terrestrial Wildlife Habitat and Uplands

Riparian systems contain the three critical habitat components: water, cover, and food. Due to the variety of plant composition and structure, this natural resource element can encompass a great diversity of wildlife. A buffer strip of riparian vegetation left along streams to maintain suitable water temperatures for aquatic life and reducing impairment of water quality is considered excellent wildlife habitat. The value of a given riparian habitat varies from species to species, and even seasonally for the same species. In practice, it is very difficult to separate all the possible influences on a species habitat preferences. The composition and structure of the upper canopy may exert the greatest influence for some species, while other species may select nesting and foraging areas on the basis of the understory, size of branches, extent of herbaceous ground cover, or the intermingling of several of these factors.

Many wildlife species use riparian zones but there is a scarcity of information on the habitat requirements for most of them. Songbird concentrations in riparian zones are often noted as being very high. Possibly because most species are diurnal and conspicuous by song or sight, there have been more riparian bird and habitat association studies than for any other wildlife group. Forested riparian vegetation is considered excellent songbird habitat and is often inhabited by species with specific habitat requirements. Riparian areas are important not only to breeding bird populations but to winter residents and migrants as well. Breeding bird densities in riparian communities are dependent upon specific riparian vegetative type and, as a result, are generally higher than in the surrounding habitat.

The specific width or size of the forest buffer strip necessary for songbirds is difficult to determine. Territory sizes and shapes vary with vegetative structure, population density, richness of habitat, food resources and bird species. Manual (in press) found species richness of bird populations in Montana were related to the width of the riparian strip and the complexity of the vegetation. His study suggested the width of the riparian buffer strip and the volume of vegetation could be important in determining the bird species composition.

Uplands also play an important role in overall wildlife habitat of the basin, as well as having a direct influence on the creek corridor. Because uplands are rarely inundated, plant species differ from those in wetlands and riparian areas. This diversity provides different habitat characteristics, attracting or helping to support a greater variety of wildlife.

There is much evidence that the selection of habitat by many species of wildlife is primarily related to the structure of the vegetation. This structure translates into many different resources for the different groups of animals that use them. These resources may be foraging sites, nesting sites, or protection from the weather and predators.

SUMMARY

A review of the literature suggests that vegetative and structural features within the creek, riparian zone, and adjacent uplands are all important for water quality and fish habitat, as well as for habitat for terrestrial wildlife. These features are recognized as containing a mix of natural vegetation consisting of herbaceous understory, shrubs, and deciduous and coniferous trees. This comes from the recognition that native wildlife and fish evolved with the natural vegetation that once covered western Oregon. If these features have been degraded, altered, or removed it is important to enhance and recreate these areas if levels of water quality and fish and wildlife habitat are to be maintained or improved.

The environmental value of the Johnson Creek basin is not in simply the creek itself, but in ecosystem components located throughout the entire basin. They are interrelated and largely inseparable, and must be understood and addressed as a whole. All components must be protected in a balanced fashion or degradation will occur. Loss of one element in the ecosysystem can have a "cascading" effect, causing environmental damage beyond the immediate area. Conversely, improvement of one can have a geometric effect on overall enhancement. Approaching conservation of the water body and adjacent natural resource values includes addressing vegetation, erosion control, and degrading upland portions of the basin through urbanization, as well as retention, maintenance, and enhancement of remaining wetlands, riparian areas, and water bodies.

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1 Portland Bureau of Planning staff conversation with a resident of SE Harney Street, October 24, 1990.

CHAPTER 4

NATURAL RESOURCE AREA INVENTORY PROCESS

INTRODUCTION •

SITE SELECTION •

METHODOLOGY •

SUMMARY •

INTRODUCTION

For a jurisdiction to meet Statewide Planning Goal 5 standards, the location, quantity, and quality of a resource must be determined. The previous chapter identified general resource components and their importance in the overall ecosystem. This chapter describes how each resource site was chosen, inventoried, and rated for these components.

SITE SELECTION

All of the City has the potential to provide wildlife habitat potential to varying degrees. Because of both the impracticality of conducting a total inventory of all properties, and the understanding that this extensive an inventory was not the intent of Statewide Planning Goal 5 dictated that only areas with a high probability of containing valuable natural features and located within the Portland urban services boundary were selected. The urban services boundary was chosen for inventory purposes instead of the present city limits, because it represents the ultimate incorporated limits of the City of Portland. Landowners of unincorporated areas which have been inventoried will benefit by being made aware of any potential Statewide Planning Goal 5-related issues, and can make a more informed decision on the cost-effectiveness and timing of possible annexation and development than if forced to wait for the results of a future inventory and evaluation.

Because of the great number of variables involved in identifying wildlife habitat inventory areas citywide, several methods were used by the Bureau of Planning and the results were reviewed several times before acceptance. In 1986, a technical advisory committee of wildlife experts representing conservation groups, private industry, and public agencies suggested the initial list of areas. Aerial photos were reviewed to find additional major areas of vegetation. Parks and public lands were also initially included. Finally, local wildlife literature was consulted and various city agencies and special interest groups were contacted.

Brief site visits to all areas on the list were conducted by field biologists hired for the inventory process in 1986 and 1987, and the list was modified to reflect their observations. This list was again reviewed by the technical advisory committee for completeness prior to the commencement of scheduled, detailed field work. As an additional review mechanism, letters were sent to neighborhood associations and special interest groups informing them of the study and asking if there were any additional sites which should be included. Responses were received from several groups. To update this information, brief site visits were again made in 1990 and 1991, and further information collected.

Chapter 8 summarizes sites inventoried throughout the Johnson Creek basin for the wildlife, plant, and habitat values. The study area was divided into thirteen sites initially, and then divided further into a total of thirty-one sites in order to conduct a more detailed analysis. The sites are numbered downstream-to-upstream, starting from Reed Lake on the Reed College Campus, south through Cyrstal Springs and its confluence with Johnson Creek (near SE 21st Avenue and Clatsop St.), south to Johnson Creek's confluence with the Willamette River in the City of Milwaukie. Twenty-three additional sites extend along Johnson Creek to the the city limits at SE 174th Avenue. Four additional areas abutting Johnson Creek were inventoried and included in this report Beggars Tick Marsh (Site 16-OJ); Powell Butte (Site 29), and the portion of the Boring Lava Hills that is within the City (Sites 30 and 31). Each site was scored using the Wildlife Habitat Assessment form (Appendix E). Narrative information about each site was recorded on the Natural Areas Inventory Field Notes form. Summaries are included in Chapter 8 of this plan.

METHODOLOGY

The study area was divided into subareas chosen to encompass the variation in environmental characteristics, vegetation, geology, and soil over the subarea of concern. Sites were visited once or twice in February-March of 1986, and some again in June-August in 1990 and observed in a random manner. Sites were evaluated by biologists Michael Jennings and Esther Lev. Field notes, as well as habitat rating sheets, were completed and are on file in the Planning Bureau offices. Information was collected on the vegetation and wildlife of each area. A narrative description of the site, including information on weather, topography, vegetation, wildlife, habitat function, human use, and management potential, was completed for each site. A standard inventory form for field notes (see Appendix E for an example and explanation) was used at each site.

Sites were rated numerically for wildlife habitat value. A standard rating sheet, originally developed by the City of Beaverton and subsequently modified with the input from a number of state and federal agencies and the Audubon Society of Portland, was used. The rating system was also used by the City of Portland for an inventory of natural areas along the Willamette Greenway, and has been used with minor modifications by Gresham, Milwaukie, Multnomah County, Eugene, Springfield, Hillsboro, and other jurisdictions in the state.

The rating included evaluation of the presence and availability of water, food, and cover for wildlife. Values for human and physical disturbance, interspersion with other natural areas, and the scenic and educational opportunities, and unique or rare occurrences of plant and animal species were also noted. The total number of possible points was less because scenic and educational values were taken off the sheet. Scores given by field biologists for all sites within the City ranged from a low of six to a high of 106, with the vast majority lying in the 30-80 point range. Inventory site scores for Johnson Creek ranged from a low of 18 to a high of 83, with a mean of 53. A large number of the sites were in the 30-50 numerical scale. Sites that scored over 50 included Reed Lake, Boring Hills, Beggars Tick Marsh, Bundee Park, Powell Butte, as well as some stretches of the creek itself.

The site inventory summaries contained in this document represent material gathered during field visits, as well as technical and other data collected from additional sources. Sites are arranged by natural area, and by subarea (if any), with a description of common characteristics, their history and merit.

SUMMARY

The methodology used for determining the location, quantity, and quality of identified natural resources is one which provides an acceptable base of information, while allowing augmentation from other sources. It has been used in the same general form with success by other jurisdictions in the state, and provides a means to complete the Goal 5 inventory work with a minimum of technical expertise.

CHAPTER 5

INVENTORY OF NATURAL HAZARD COMPONENTS

INTRODUCTION

Historically, natural hazards have had major influence on development in the Johnson Creek basin. Because land values were relatively low, it was often less expensive to build on geologically stable lands out of the flood plain and accept lower densities, rather than attempting to control the elements. Undeveloped hazard-prone areas have, to a large degree, retained their natural character, and represent many of the natural resources which are inventoried for this plan.

CLASSIFICATION OF ELEMENTS

Natural hazards within the Johnson Creek basin are primarily slides and flooding. The potential for slides is largely because of a combination of soil type, topography, and weather. Slide hazard areas are generally in the vicinity of Powell Butte and south of Johnson Creek, along steep slopes and where soils are finer than the rocky, well-drained soils of mid-Multnomah County.

Flood-prone areas are primarily along Johnson Creek, although localized ponding and flooding occurs along tributaries and drainageways, and in low-lying lands throughout the basin. The Federal Emergency Management Agency (FEMA) has mapped major flood hazard areas. Copies of the most recent maps are on file with the Portland Bureau of Buildings.

EXISTING REGULATIONS

Separate regulations control development within landslide and flood hazard areas in the Johnson Creek basin. Various portions of each are also administered through separate city bureaus.

Landslide Hazard Areas

The Powell Butte/Mt. Scott Plan District chapter of the zoning code (Title 33) requires a reduction in allowed residential development densities, based upon a formula which takes into account, in part, soil type and slope. The Bureau of Buildings may also require an engineering analysis of proposed structures, to ensure structural integrity in slide-prone areas. Location of landslide hazard areas regulated by the plan district are identified in the *Development Manual of the Powell Butte/Mt. Scott Density Development Study* available at the Bureau of Planning.

Flood Hazard Areas

Flood hazard areas have been incorporated in the Powell Butte/Mt. Scott Plan District. A reduction in residential development densities is based, in part, on location within the flood plain. Location of flood hazard areas regulated by the plan district are identified in the *Development Manual of the Powell Butte/Mt. Scott Density Development Study.*

Additionally, the Bureau of Buildings enforces FEMA regulations, which regulate fills and other land uses and activities within identified flood hazard areas. Flood plain identification is by FEMA-prepared maps available for review at the Bureau of Buildings.

SUMMARY

Major flood and landslide hazard areas are found in the Johnson Creek basin. Land use regulations are now in place which provide some protection for new development subject to these hazards. However, the regulations do not address other values these areas may have, such as habitat, recreation potential, urban design, and aesthetics.

CHAPTER 6

INVENTORY OF URBAN DESIGN COMPONENTS

INTRODUCTION •

HISTORY •

URBAN DESIGN COMPONENTS •

CLASSIFICATION OF ELEMENTS •

SUMMARY •

CLASSIFICATION OF ELEMENTS

Urban design elements can generally be classified into five categories: paths, edges, districts, nodes, and landmarks. Good urban form takes advantage of these elements in defining and shaping neighborhoods, providing distinct identity, character, and a "sense of place." Use of these elements can also be a unifying force, tying neighborhoods together into a coherent district.

Paths are channels along which a person moves. They include streets, walkways, or railroads. In the Johnson Creek basin, paths influenced by the natural landscape are Foster Road and the Springwater Rail Line. Other paths of note cross the basin in a north-south direction, and include McLoughlin Boulevard, SE 82nd Avenue, and SE 162nd Avenue.

Edges are boundaries (but not paths), and can vary in ability to be penetrated. They can either be a barrier and set regions apart from each other, or can be a "seam" to join or relate two regions to each other. Johnson Creek (ironically, a wildlife "path") is an example of an edge. Along its length, it acts both as a barrier, separating industrial and commercial uses from residential neighborhoods, and as a seam, drawing residential areas together. Steep hillsides also act as edges, becoming visual as well as physical barriers.

Districts are medium-to-large areas of a city which are recognizable as having a common, identifying community character. Within Portland, neighborhoods could be identified as districts, although they tend to be too small. Eastmoreland, with its unique street pattern and trees, is a good example of a district and neighborhood. The Johnson Creek basin, with its unifying natural resource elements of the creek, hills, and vegetation, could be considered a district. Along with paths, districts often act as a dominant element in urban form.

Nodes are crossing points or concentrations of activity. They are something a person can enter into. Traditionally, commercial activities are examples of nodes. However, within the Johnson Creek basin, functioning nodes are almost exclusively related to the natural environment. Westmoreland Park and Powell Butte Nature Parks are examples of nodes, as are Reed College and Leach Botanical Gardens.

Landmarks are another type of reference point that provide immediate identification, like a tower or hill. Landmarks give a sense of place or direction. Powell Butte is an example of a landmark.

SUMMARY

Natural resource components within the Johnson Creek basin either dominate as urban design elements or, in the case of paths, exert a strong historic influence on their form. Conservation of the natural resource values of the creek and its tributaries, wetlands, open spaces, and wildlife habitat areas provide opportunities for accommodating these elements in the urban landscape as design elements, tying together all southeast neighborhoods from Westmoreland to the Powell Butte. With little additional consideration, natural resources can become multiple-use elements, serving both human and natural resource needs, and further Portland's reputation for integration of natural resources into the urban landscape.

INTRODUCTION

Many residents participating in the public involvement portion of this plan have made a conscious decision to live in the creek basin because of the presence of natural resource components that make it an enjoyable or desirable place. They enjoy the relatively low-density residential development and distance between dwellings and other uses. They tolerate adverse impacts, such as flooding or unstable hillsides, because, as a whole, the natural resources provide a special value to their lifes. This chapter identifies some of those components which have been mentioned, their function as urban design element, and their functional values.

HISTORY

During the initial settlement of the Johnson Creek area, man-made elements were shaped by the environment. Roads ran along Johnson Creek and its tributaries, crossing only at selected points where the water was shallow and could be forded, or where it was narrow and could be bridged. Transportation was by foot or horse-drawn wagon, so roads were level whenever possible, winding around hills and skirting flood plains, forests, and other areas with adverse topography or geography. Railroads, although freed from some of these limitations by more advanced technology, still were limited to relatively flat grade. Economics also placed an emphasis on the need to minimize creek crossings, as well as the distance to various destinations (hence the relative straightness of tracks). Early development form, therefore, paralleled Johnson Creek in a generally west-east direction, connecting the farmlands of Clackamas and Multnomah Counties with the markets and transshipment points of Milwaukie, and later Portland. Historic design elements of this era can still be seen in Foster Road and other older streets, and in the Springwater Rail Line.

As technology advanced and the Portland metropolitan area grew, urban form was no longer so constrained by nature. The grid street pattern was imposed on the landscape, leading to more creek crossings. Creek banks were stabilized to reduce erosion and meandering, allowing greater urban encroachment into the historic flood plain. Forests and farmlands were converted into residential areas for people still wishing to live in a rural or semi-rural atmosphere.

URBAN DESIGN COMPONENTS

Many residents continue to value the neighborhoods in the Johnson Creek basin for their natural, semi-rural character. In spite of its present condition, Johnson Creek still provides natural resource values for fishing, wildlife viewing, and other forms of recreation. It is a backyard to many homes, often maintained and cared for by residents with little help from local governments. Wooded hillsides of Powell Butte, the Boring Hills, and Mt. Scott provide a visual backdrop and terminus for the City of Portland. Westmoreland Park, Reed College, Leach Botanical Gardens, and the Powell Butte Nature Park provide the area with various activities, often relating to the creek or the surrounding environment. Farmlands, isolated wetlands, and open spaces with native vegetation continue to be dominant elements in the Johnson Creek basin.

ANALYSIS OF ECONOMIC, SOCIAL, ENVIRONMENTAL, AND ENERGY CONSEQUENCES

CHAPTER 7

GENERAL ANALYSIS OF NATURAL RESOURCE VALUES and ECONOMIC, SOCIAL, ENVIRONMENTAL and ENERGY CONSEQUENCES OF RESOURCE PROTECTION

INTRODUCTION

Statewide Planning Goal 5 states that "programs shall be provided that will 1) insure open space, 2) protect scenic and historic areas and natural resources for future generations, and 3) promote healthy and visually attractive environments in harmony with the natural landscape character." According to Oregon Administrative Rules (OAR), the next step after an inventory of natural resources in the Goal 5 process is identification of potential land use conflicts with inventoried resources. This is done primarily by examining the uses allowed in broad zoning categories. A conflicting use is one which, if allowed, could negatively impact the resource. These impacts are considered in analyzing the economic, social, environmental and energy (ESEE) consequences.

If there are no conflicting uses for an identified resource, OAR requires the jurisdiction to adopt policies and regulations ensuring preservation of the resource. Where conflicting uses are identified, the ESEE consequences must be determined. Impacts on both the resource and conflicting use must be considered. Other applicable Statewide Planning Goals are also considered in the discussion of impacts. The ESEE analysis is adequate for purposes of meeting OAR standards if it provides a jurisdiction with reasons why decisions are made regarding the protection of specific resources.

Oregon Administrative Rules lay out the steps to be followed in complying with Goal 5, but provides little direction in determining what factors should be considered as having potential economic, social, environmental or energy consequences. This lack of guidance is because relevant ESEE factors vary greatly, depending on the type of resource that is being evaluated and potential conflicting uses that are allowed.

The following section is a description of land uses and activities permitted by existing zoning. Included is a discussion of general consequences to both the resource and existing or potential land uses in the Johnson Creek basin which may result from resource protection. Additional site-specific impacts are discussed in the next chapter, which summarizes individual resource sites and their values. It is the combination of these general and individual site consequences which is used to arrive at the conclusions in this protection plan regarding the level of resource protection for resource sites, and the Johnson Creek basin as a whole.

ECONOMIC CONSEQUENCES

Property Values and Development Potential

Property values are largely determined by demand. Market demand, in turn, is a product of many factors, including development potential and aesthetics, character, and desirability of a property and surrounding neighborhood.

In simplistic terms development potential can be looked at as how much development can be placed on a property. Protecting natural resources may reduce development potential if the development could not be redistributed elsewhere on site through such mechanisms as clustering or planned unit development. All zones except for IG1, IG2, and IH (General and Heavy Industrial) have floor area ratios or unit density limits which allow transfers or redistribution to take place on site. Development potential on General and Heavy Industrial properties is related to land area, so reduction in area directly available for development represents a loss in development potential. Properties within the Johnson Creek basin

which are zoned General or Heavy Industrial and which also contain inventoried natural resources are located between I-205 and SE 112th Avenue, and southwest of the Eastmoreland Golf Course, near SE McLoughlin Boulevard.

Industrial needs for the City of Portland and Portland metropolitan area have been described in detail in the *Inventory and Analysis of Wetlands, Water Bodies, and Wildlife Habitat Areas for the Columbia Corridor*, adopted by the City of Portland in April 1989 (pages 127-134). It concludes that the need for industrial land in the metropolitan area by the year 2005 is about 5,192 acres. About 19,070 acres of vacant, suitable land exist within the metropolitan urban growth boundary, 10,483 of these are vacant and uncommitted and have no development constraints. This provides a market ratio of over 2:1 for the estimated need for presently-unconstrained land, and a ratio of almost 4:1 for all vacant industrial land. In addition, there are about 9,700 acres of vacant industrial land within Multnomah County and, according to the 1989 publication by the Bureau of Planning *1987 Vacant Land Report*, 5,731 acres of vacant industrial land within the City of Portland (page 30).

Industries which are highly locationally-dependent, such as deep-draft shipping or air freight facilities may face shortages. Industrially-zoned lands in the Johnson Creek basin are near major streets, but existing industries are not necessarily tied to the need to remain located at that particular site.

Aesthetics, character, and amenity value are more intrinsic values, and are difficult to quantify. They represent amenity values that increase demand, and therefore land prices, in a particular area. Districts in Portland acknowledged as desirable and commanding higher average residential dwelling prices than the average citywide (Eastmoreland, Alameda, Overlook, the West Hills, etc.) all have natural resources as major amenities (street trees, parks and open spaces, creeks, views). Protection of these amenities can result in increased property values over areas having no natural resource amenities. Even in industrial areas such as the Koll Business Center in Washington County, natural resource amenities have been integrated into the development in such a way as to increase its desirability, and therefore its value.

Tax Base

Tax base to local jurisdictions is, as a result of Measure 5, directly related to market value of land. As property values fluctuate, property taxes will vary in direct proportion. Property value consequences are discussed in the previous section, and are directly applicable to the subject of property taxes.

Tourism and Convention-Related Impacts

The Johnson Creek basin is not a resource which tourists visit Portland for, nor is it a major reason for conventions. However, it is an element in the overall network of open spaces and natural areas in the City which determines its character as one of integration of natural elements into the urban form. Protection of natural resources in a way which makes them easily accessible to visitors provides additional unique destinations within the city limits for sightseeing or simply relaxing.

Conferences related to Environmental issues are often held in Portland because of easily-accessed natural resources within the city limits. The 1990 Country in the City Symposium, attracting international participants, used the Willamette River and Balch, Fanno, and Johnson Creeks as field locations for sessions.

Dollar expenditures on tourism and convention-type activities are difficult to identify. However, in 1988, Defenders of Wildlife conducted a survey of Oregon households on non-game wildlife economic impact and concluded that an average household expenditure of about $348 was attributed to travel and over $600 to photography and optical equipment directly related to wildlife enjoyment. Activities related to these expenditures could occur in the City within natural resource areas from tourist or convention-related activities.

In summary, natural resources within the City of Portland can provide a reason for locating a conference or convention, or provide a local destination for tourists. This increase in conference and tourism can bring significant money into the local economy.

Infrastructure and Flood Control

Limiting development within areas of natural hazards, which are largely natural resource areas, will reduce the need for costly hazard protection infrastructure, such as flood control structures. Retention of open space helps reduce or maintain flooding levels. Not aggravating or worsening the flooding situation by preventing direct stormwater discharge will contain the amount of property damage done. Not increasing flood levels can have the effect of reducing storm drainage infrastructure costs. Flood control along Johnson Creek could have the effect of making more land available for development.

Development in landslide-prone areas requires more expensive solutions for initial construction, as well as increased maintenance costs. By clustering development away from steep slopes, as well as floodplains, the expenditures for construction and maintenance of infrastructure would be reduced, lessening demand of tax dollars for given services.

Water Quality

Johnson Creek does not meet state water quality standards for various pollutants, and has been classified as a "water quality limited" stream. Continuation of this may result in fines to the City and state-mandated cleanup measures which may stress time rather than cost. Both will result in adverse economic impacts to the City. Additionally, property owners may have site improvement requirements imposed which will emphasize costly but time-efficient technology, again imposing economic hardship. By developing a plan which emphasizes natural and low technology pollution control measures, requires that it be incorporated into new development, provides for long-term inclusion of resource protection actions into existing land uses as redevelopment occurs, and encourages an educational, neighborhood-participatory program through the Bureau of Environmental Services' efforts, water quality levels exceeding state standards can be achieved in a manner which will not impose undue economic hardship on existing development.

Recreation

According to a 1988 survey conducted for the Defenders of Wildlife, Oregon households spent an average of over $8,600 on non-game wildlife recreation activities. Of these expenditures, over $2,300 (photographic and optical equipment, bird seed, clothing, magazines and books, landscaping for wildlife, boats, etc.) could be used on wildlife-related activities in Portland, and $1,100 (same as previously except for boat-related expenditures) within the Johnson Creek basin.

Summary

Protection of natural resources in the Johnson Creek basin will have both positive and negative economic impacts. Positive impacts will result from increased amenities, resulting in higher property values, attraction for tourists and related activity, and more efficient use of public services and utilities, and increased recreation potential.

Negative impacts are greatest in General and Heavy Industrial zones, where development potential is limited more by land area than floor-area ratios or number of units per given area. However, projected needs for industrial land in the City or even the Portland Metropolitan area is far less than the amount of land presently zoned for industrial uses and located out of hazard areas.

SOCIAL CONSEQUENCES

Recreational and Educational Opportunities;

There are no other natural resources of the size, type, and quality of the Johnson Creek basin in east Portland. It provides a unique educational opportunity for schools in southeast Portland, providing convenient access to a wide variety of native vegetation and wildlife that was once common in the Willamette Valley. The next closest similar resource area is Forest Park in Northwest Portland.

Recreational opportunities afforded by the continued protection of Johnson Creek basin resources relate primarily to Powell Butte and the 40-Mile Loop Trail along the Springwater Line, although fishing, limited boating, children's play areas, and local hiking to selected resource locations are important. Disappearance of resource values would curtail all these activities. Additionally, formal recreation activities along the creek such as golfing at the Eastmoreland Golf Course and picnicking at Westmoreland and other parks would be adversely affected. Especially impacted would be the reason for choosing this route for the 40-Mile Loop, the linear resource provided by Johnson Creek, and the connected natural resource and activity "islands" in the form of parks, wetlands, and informal open spaces, as well as the pastoral nature of much of the creek basin.

Historic, Heritage, Cultural, and Aesthetic Values

Many residents in the Johnson Creek basin have chosen to live in the area because of the presence of natural resources such as the creek and wooded hillsides, and the semi-rural atmosphere provided by them. Protection of critical natural resource components would continue this aesthetic and cultural value, adding to neighborhood stability. Removal of components would mean resource degredation and elimination of resource values, possibly resulting in increased desire to move to more rural areas outside the urban growth boundary, adding pressures for rural resource degradation. Property values may also decline with loss of semi-rural character.

Heritage values are also found in the Manor House and grounds at Leach Botanical Garden, the Works Progress Administration (WPA) rockwork, and a possible archaeological site at Tideman-Johnson Park. Development that destroys the natural resources of the Johnson Creek basin would place these land uses out of context with their surroundings, losing intrinsic heritage value.

Visual Variety

Much of East Portland is flat, with little visual relief except for isolated buttes. Hills which form an integral part of the Johnson Creek basin form a backdrop and southern edge to the City. Natural resources such as the trees accentuate this form, as well as providing a natural foreground element when viewing the Cascade Mountains to the east. On a smaller scale, the riparian strip along Johnson Creek provides a strong sense of orientation, and an edge or seam between neighborhoods and land uses.

From west to east, as one travels away from the city center, development becomes less intense, largely because of the presence of natural resources. This "tapering off" provides visual variety, and the feeling of natural resources being integrated into the urban fabric.

Preservation and enhancement of natural resources will continue to integrate natural resources into the City and provide variety in landscape form, while their loss will result in greater monotony.

Urban Design and Image of the City

As discussed in the section on urban design in Chapter 6, Inventory of Urban Design Components, protection of natural resources in the Johnson Creek basin will provide a sense of definition, location, and uniqueness to southeast Portland. It also serves to connect neighborhoods, and form a physical and psychological edge to the southern boundary of Portland. Conservation and enhancement of natural resources contributes to the image of Southeast Portland neighborhoods, while their destruction would result in the reduction of identity and, therefore, their uniqueness, character, and value.

Screening and Buffering of Incompatible Uses

Natural resources act as an edge to different land uses, separating and buffering them from each other by both distance and visually. Protection of natural resources allows for incompatible land uses to locate more closely, with less potential for conflicts, while their removal would either require major changes in land uses to resolve issues of incompatibility, or the creation of artificial buffers, many of which simply duplicate elements found in natural resource buffers.

Health, Safety, and Welfare

Protection of natural resources located in the flood plain and on steeply-sloped hillsides will protect the general public from possible natural disasters. This protection reduces potential demand on disaster relief agencies and bureaus (and subsequent demands on tax dollars), as well as reducing individual expenses of replacing destroyed property and the costs of treatment for injuries.

Continued degradation of Johnson Creek, which will occur if protection measures are not instituted, would bring health risks such as fecal and chemical contamination.

Summary

Protection of natural resources in the Johnson Creek basin will result in generally positive benefits in terms of increased protection from natural disasters, decreased disaster relief costs, increased protection from incompatible land uses, increased sense of place, uniqueness, visual diversity and aesthetics, and greater education and recreation opportunities.

ENVIRONMENTAL CONSEQUENCES

Water Quality and Quantity

Natural resources, including upland vegetation, riparian fringes, wetlands, and creeks and drainageways provide major contributions toward improving water quantity and quality. Soils allow water to filter downward to the groundwater reservoir, adding volume to surface waters during low flow periods. Groundwater recharge in turn reduces surface runoff, and accompanying erosive forces. Other areas allow groundwater discharge in the form of springs or seeps, providing water sources for surface water drainageways. Wetlands, water bodies, and other lowlands provide flood storage and desynchronization, reducing overall flood levels. Vegetation traps sediment from surface flow and provides soil anchoring, as well as absorption of certain hazardous chemicals and heavy metals, reducing water pollution. Additionally, erosive forces from water flow are dissipated by vegetation, allowing deposition of suspended solids and increasing bank stabilization, both of which increase water quality.

Development which removes the natural resources of the Johnson Creek basin will result in decreased summer creek flows and higher water temperatures, destroying fish and water-related wildlife habitat. It reduces groundwater recharge and increases immediate stormwater runoff, exacerbating flood levels, contributing to more erosion, carrying pollutants directly to the creek, and reducing overall water quality.

Protection of natural resources will help stabilize flood flows by retaining open space and allowing groundwater recharge. This action will allow continued water supply for summer flow. A continued groundwater source will also help keep the water temperatures of Johnson Creek and its tributaries down, as will shading of the creek by streamside vegetation. Riparian vegetation and wetlands adjacent to the creek traps sediment and other pollutants from sheetflow, aiding in overall water quality. Limiting stormwater outfalls and sheet runoff from developed lands through the use of on-site retention facilities reduces point and non-point sources of pollution. Prevention of direct runoff also provides for filtering of certain pollutants as water percolates through the soil, rather than flowing directly to the creek.

Fish and Wildlife Habitat

The Johnson Creek Corridor is a mosaic of vegetative communities and human uses integrated with the water course ecosystem which provides food, shelter, breeding and rearing areas for aquatic and terrestrial animals and birds. Fish and wildlife need food, water, cover, and places to perch, rest, breed, and nest. Any changes in these requirements, whether man-induced (development, channelization, removal of vegetation) or natural (flooding, windstorms, drought or insect infestations), will affect fish and wildlife habitats. The changes may be beneficial to some wildlife species and detrimental to others. Changes and losses in the quality, quantity and availability of food, water, cover and living space have the greatest detrimental effects on wildlife.

The most important aspect of habitat and habitat protection within the Johnson Creek basin is water. Water exists in the form of creeks, ponds, wetlands, or groundwater. A review of the impacts on water resources in the basin from conflicting uses provides justification for protecting the two other basic habitat components: food and cover. For example, the removal of vegetative cover affects water quality by increasing erosion and silting. Increased siltation affects the turbidity level of the water and the ability of fish to spawn. Removal of vegetation causes warming of the creek. High summer water temperatures is

the major factor limiting fish diversity in Johnson Creek. The removal of vegetation reduces nesting cavities and shelter for birds and insects. A reduction in insects causes a decrease in the bird and small mammal populations.

Throughout the basin and along Johnson Creek and Crystal Springs (ie. Reed Lake) there are wetlands. These wetlands are valued because of their rarity and great plant and animal diversity common to wetlands. Upland protection is warranted because of the rarity and species diversity, despite the fact that most of the wetlands have been modified and disturbed by fill and invasion of non-native species. Wetlands and undeveloped land provide permeable soils for groundwater recharge, flood storage, and to trap sediment from entering the creeks. Maintaining areas for groundwater and flood storage help reduce peak flooding which in turn helps decrease the amount of habitat and personal damage destroyed annually by flooding.

Plants provide food and cover for fish and wildlife. Their roots, bark, foliage, nuts and fruits provide food for a variety of wildlife species. Twigs, leaves, and bark are used for nest building and insulation. Large trees, especially snags, are prime perch sites for hawks and owls which feed on small mammals on the ground below. Although plants are at the bottom of the food chain, they are a crucial element of the entire system. Algae in Johnson Creek is eaten by tiny macro-invertebrates, which are in turn eaten by fish which may be eaten by herons, kingfishers or other birds. On land, crickets, beetles, small mammals, and rabbits feed on vegetation and, in turn, provide food for coyotes and raptors.

When vegetation begins to die and decay, it becomes home and food to mites, earthworms, fungi and millipedes which aid in the decomposition process. Hollow trees laying on the ground provide cover for rabbits and raccoons, salamanders and snakes. Tree trunks lying partially submerged in a creek or pond provide cover and shading for fish, attachment sites for aquatic insects, sunning areas for western pond turtles, snakes and other insects (dragonflies).

The vegetative cover and waterways provide travel corridors for the fish and animals. Safe access to and along the waterways is crucial. Even in the reaches where there is little vegetation and exposure to summer heat is high, the creek serves to connect habitats and as a passageway between habitats.

Water is the other component required by wildlife species. Safe access to a clean water source is crucial, such as a healthy riparian system providing connectivity between upland habitats and a water supply.

Urbanization and development have greatly impacted the state and health of the aquatic, riparian and upland habitats of the Johnson Creek basin. Some habitat has been destroyed and others created. As these changes occur, more aggressive and adaptive species survive, resulting in a loss of bio-diversity.

The following general characteristics provide good overall fish and wildlife habitat:

- Native plant communities and landscapes;
- Convenient access to water, food, and cover for wildlife;
- Spawning and breeding areas for fish and wildlife;
- Presence of an adequate pool-to-riffle ratio for adequate oxygenation of creek water;
- Insects, worms, and other small organisms which provide food for birds, fish, and small mammals;

- Connections between natural resources to provide for interspersion of plants and animals to provide recharge of populations and to enhance and increase wildlife diversity;
- Continuity of the creek, riparian fringe, and adjacent uplands as a wildlife corridor; and
- Perching sites for raptors and other birds.

The following general land uses and activities degrade natural resources:

- Garbage and littering;
- High levels of human and domestic animal activity;
- Toxic deposition of sewage and industrial waste;
- Excessive herbicides, pesticides, fertilizers from agricultural fields or domestic use;
- Fences and streets which limit wildlife access; and
- Noise, light at night, and other development impacts.

Air Quality

Vegetation traps particulates which are then deposited on the ground with rainfall. Leaves also absorb carbon dioxide during photosynthesis. Removal of vegetation would result in increased air pollutants.

ENERGY CONSEQUENCES

Decisions on resource protection will have impacts on city form. Development densities may have to be altered to take resource protection into account. Development form and location will, in turn, impact energy consumption in both construction and ongoing maintenance of human uses and activities. Following is a general discussion of energy consequences of resource protection:

Heating and Cooling of Structures

Energy consumption (heating and cooling structures) as a result of resource protection is impacted in two ways: building form and presence of vegetation. If resource sites are protected from development, that same development has to occur elsewhere. Needed development could be provided for through expanding urban boundaries and using the same building form, which would result in no change in energy consumption for heating or cooling. However, if it is desirable or necessary to locate the development on or near the same site as the resource, increased intensity would result. This could be accomplished through clustering of buildings, resulting in more common wall construction and reduced surface area for a given volume. Heat transfer between indoors and outdoors would be reduced, resulting in an energy savings.

Vegetation provides a moderating effect on climate, both on a macro and micro scale. Trees provide shade on nearby buildings in the summer, reducing energy demands for cooling. Plants also absorb sunlight and transpire during growing seasons, reducing ambient air temperatures. This moderating effect can reduce energy needs for cooling of nearby development.

Trees and shrubbery can also act as a wind break during winter. By slowing or diverting winter winds, heat loss in structures from infiltration and convection is reduced, resulting in lower energy needs.

In summary, energy needs for heating or cooling would generally be positively impacted as a result of resource protection. A positive impact would result from clustering, while a lesser, but still positive, impact would result from expanding urban boundaries, as development surrounding the resource would continue to benefit from resource vegetation. A positive impact would result from wind protection and summer shading on nearby development whether the urban area were expanded to allow for needed development, or increased densities were encouraged on nearby sites. The extent of energy saving is dependent on many factors beyond the scope of this report, including type of resource protected, proximity of resource to development, structure type, heating source, construction materials, design, activities, etc.

Transportation

Energy expenditures for transportation are related primarily to distance of travel between origin and destination, and mode of transportation available. Both of these variables can be affected by natural resource protection. The Johnson Creek basin has major employment and commercial areas at either end: the Gresham city center on the east, and downtown Portland, near eastside industrial and commercial lands (including McLoughlin), and Milwaukie on the west. Smaller, less defined activity areas are located along Johnson Creek at about SE 45th Avenue in Milwaukie, SE 82nd and 122nd Avenues, and at SE 162nd Avenue and SE Powell Boulevard, at the base of Powell Butte. If resource protection precluded future needed residential development, and it were not replaced with increased densities nearby, people shopping or working in these locations may have to use more energy for traveling between home and employment or shopping.

The availability of natural resources within the Johnson Creek basin provides opportunities for wildlife observation, recreation, and education purposes to residents of the area. Because resources are closer to users, less transportation energy is used in reaching them.

When the 40-Mile Loop is relocated to the Springwater Line right-of-way, a greater range of transportation modes, including bicycling and walking, can be used to reach and use the corridor. Separation of pedestrian and bicycle routes from roadways may increase safety, and therefore make alternative forms of transportation more attractive. Proximity to natural resources along Johnson Creek, as well as landscape treatment to the Springwater Line right-of-way, may also make travel more pleasant.

In summary, the impact of resource protection on transportation energy costs depend upon where needed potential land uses displaced by protected resources will relocate. If increased land use densities are allowed nearby to offset protected areas, or if uses are located more closely to employment centers, a net positive benefit from protection should result. If urban boundaries were expanded to allow development far from employment, commercial, and recreation destinations to compensate for lost development opportunities, more energy would be required for commuting. Protection of natural resources will also encourage the use of energy-efficient travel, such as bicycling and walking, by enhancing routes for these modes.

Infrastructure

Clustering development outside of natural resource areas in an efficient manner will result in less infrastructure needed to serve sewer, water, transportation, and other needs. If done away from flood and landslide hazard areas, additional construction considerations or hazard control structures would not be needed to the same extent. The result would be a savings in infrastructure materials and maintenance, of which a major component is energy.

Summary

Considerable energy savings can be achieved through natural resource protection, particularly in terms of infrastructure provision and heating and cooling of structures. Transportation-related savings can also be substantial if needed residential development were located near destination points and alternative energy-efficient travel modes were integrated into the natural resource protection plan.

SUMMARY

The outcome of a plan following Oregon Administrative Rules for LCDC Goal 5 compliance is one of three decisions for each inventoried resource:

1 **Allowing the conflicting use fully**
This action occurs in areas where the conflicting use, notwithstanding the impact on the resource, is sufficiently important to warrant allowing the uses fully and without restrictions.

2 **Limiting conflicting uses in a manner which protects the resource**
This action occurs in areas where both the resource and the conflicting uses are important relative to each other, and restrictions are placed on conflicting uses which would protect resource values while at the same time allowing some or all conflicting uses.

3 **Protecting the resource fully**
This action occurs in areas where the resource, relative to the conflicting use, is sufficiently important that the resource should be protected and all conflicting uses prohibited.

Within urban areas it is almost inevitable that conflicts between natural resources and other forms of land uses and activities exist. Both the resources and conflicting uses are of value to the urban environment. It is a balancing of these values in an innovative manner that allows multiple use of lands that will benefit the City in the greatest manner. The following section summarizes the general land use impacts on natural resources within the Johnson Creek basin and identifies approaches to accommodating the conflicting use while protecting resource values. The goal is to integrate the resource with conflicting uses and throughout the basin to create a unique identity for southeast Portland and that will benefit the neighborhood and City as a whole.

Compatible Uses

Compatible uses are those that can be conducted in a manner which will not result in resource degradation. Three uses allowed by present zoning are compatible in the Johnson Creek basin:

1 Aesthetic enjoyment of natural features from existing roads and trails, including the Springwater Line segment of the 40-Mile Loop;

2 Educational use of areas by individuals and groups; and

3 Creek restoration projects in conformance with management guidelines set forth in this plan.

Conflicting Uses

Conflicting uses are those which are incompatible with resource protection but are allowed by present City of Portland zoning. If these uses actually occurred at the intensities and during the times allowed by existing City land use regulations, they would diminish or destroy the identified values of one or more resource areas in the Johnson Creek basin.

Uncontrolled residential, commercial, industrial, recreational, or agricultural uses can result in the removal, destruction, or degradation of the natural habitat.

Conflicting Residential Uses

About three-quarters of the study area is zoned residential. About half the residential land is either vacant or under-built based on allowed densities. Unregulated residential development has the effect of causing environmental changes that generally contribute to degradation of the ecology of the Johnson Creek basin. Activities associated with residential development which are generally detrimental to resource values include:

- Reducing vegetation;
- Replacing native plants and structural diversity with lawns and/or ornamentals;
- Replacing vegetation with impervious surfaces (buildings, driveways, parking lots, etc.);
- Isolating vegetation horizontally and vertically;
- Removing dead vegetation in all strata (creek corridor, ground, and tree canopy);
- Increasing bank erosion and deterioration;
- Compacting soil;
- Riprapping the stream channel and bank;
- Littering and dumping in the creek
- Increasing the uncontrolled presence of cats, dogs, and human activity (trails, fishing);
- Increasing human population density and noise; and
- Leaching of pollutants, including herbicides, pesticides, and fertilizers from agricultural fields, lawns, and gardens.

Conflicting Commercial Uses

There are eight areas of commercially-zoned land in the Johnson Creek basin. Six abut or span Johnson Creek. They are:

- **SE McLoughlin Boulevard, between SE Nehalem and Umatilla Streets** (Site 3) This area is about four acres in size, and is zoned CG, General Commercial. A number of commercial uses occupy the site, generally oriented to auto traffic along McLoughlin Boulevard.
- **SE 45th Place and SE Johnson Creek Boulevard** (Site 7) This area is about four acres in size, and is zoned CG, General Commercial. Development is generally neighborhood service in character.
- **SE 82nd Avenue, between the Springwater Line and Multnomah/ Clackamas County boundary** (Site 10) This area is part of the strip commercial development along SE 82nd Avenue, and is about ten acres in size. Uses include a mobile home park.
- **SE 92nd Avenue south of SE Flavel Street** (Site 12) This is an area of about two acres in size and is zoned CN2, Neighborhood Commercial.

- **SE 108th Avenue and SE Foster Road** (Site 15) This is an area of less than one acre, made up of two properties. It is zoned CN2, Neighborhood Commercial.
- **SE Foster Road, from SE 110th Avenue to about SE 116th Avenue** (Sites 15 and 17) This is an area of strip commercial development of about eight acres. Land west of NE 112th Avenue is zoned CN2, Neighborhood Commercial, while the remainder is CG, General Commercial.

The remaining two are not near Johnson Creek, but are located in the existing Powell Butte/Mt. Scott Plan District. They are:

- **SE 174th Avenue and Powell Boulevard** (Site 29) This area is about 22 acres in size, and is zoned CG, General Commercial. It has been recently developed as a shopping center.
- **SE Jenne Road and SE Foster Road** (Site 30) This is about one acre in area, and is zoned CG, General Commercial.

Activities associated with commercial development which are detrimental to the resource are generally the same as for residential development. Impacts may be greater than those of residential development. When sites are filled and leveled, large areas are paved or covered with buildings, and existing landscaping is reduced Impacts include reduced flood storage capacity, soil compaction, accelerated storm runoff and peak flooding, and loss of permeable soil for vegetative growth to protect and provide food to the creek. Protecting resources from these impacts is particularly important along the creek.

Conflicting Industrial Uses

Although industrial land accounts for only about ten percent of the plan area, it is located along roughly one-third of the length of Johnson Creek. Industrially-zoned land is included on Sites 2, 3, 7, 9, 10, 13-15, 17, and 29. Unregulated industrial development can have the same negative impacts as discussed under Conflicting Commercial Uses. Additional impacts may be caused by outdoor storage, spills of hazardous materials, assembly, and other activities.

Conflicts With Developed Open Space

About 15 percent of the Johnson Creek Basin Plan District is designated for open space. This area includes the parks and golf course associated with Crystal Springs, Johnson Creek Park, Tideman-Johnson Park, Leach Botanical Garden, and Powell Butte. There are no restrictions in the zoning code against removal of trees and natural vegetation within Open Space-zoned areas. Urban treatment of the open space areas includes parking lots, streets, recreational fields, etc. These improvements can have the same negative environmental effects as other types of urban development listed above.

Conflicting Recreational Uses

The Springwater Line follows Johnson Creek for much of the plan area. Railroad tracks are presently being removed in anticipation of the development of a bicycle path and major link in the 40-Mile Loop regional trail system. The Springwater Line is included in many of the site inventories and identified as a recreational resource. It is not inventoried as a natural resource since there is presently little vegetation or water resources integrated with the rail line.

Conflicting Agricultural Uses

Pollutants enter the creek as runoff from agricultural lands. The runoff decreases water quality and increases turbidity, which effects fisheries values. Removal of vegetation for agricultural practices decreases wildlife, food, and cover. Animal fecal contamination can also occur as a result of pasture use.

Consequences of Resource Protection

The Johnson Creek basin includes ponds, creeks, wetland, meadows, and uplands intermeshed with existing development. The mixture of habitat types increase the number and diversity of wildlife species. Allowing conflicting uses fully will result in loss of habitat areas which provide food, water, and cover for fish and wildlife. It will also continue to degrade water quality.

Protecting resources fully would not necessarily have an adverse impact on Portland's ability to technically meet its Comprehensive Plan housing obligations, as lands within flood and landslide hazard areas are excluded from calculations of needed land. However, precluding development under all conditions would reduce opportunities of choice in the market place, possibly driving up housing costs throughout the metropolitan area due to unmet demand. Additionally, the ability to develop would be removed from full properties, possibly resulting in legal challenges.

By fully protecting critical resources, protecting resource values of other important resources, and allowing development throughout the remainder of the Johnson Creek basin in a manner which will have minimal impact on the overall resource, urban development densities can be achieved in a manner which will conserve resource values, provide unique character, amenities, pride, and additional value to Southeast Portland neighborhoods, and continue Portland's and Oregon's reputation for living with nature.

CHAPTER 8

INVENTORY SITE SUMMARIES and SITE ANALYSIS OF NATURAL RESOURCE VALUES Including the SITE-SPECIFIC ANALYSIS of ECONOMIC, SOCIAL, ENVIRONMENTAL, and ENERGY CONSEQUENCES OF RESOURCE PROTECTION

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INTRODUCTION

This chapter contains a summary of the natural resource information gathered for each natural resource site in the Johnson Creek basin. It describes the general location, quantity, and quality of the resource. It augments, and does not necessarily replace, information contained elsewhere in this document. With each inventoried resource site is a site-specific analysis of economic, social, environmental, and energy consequences of resource protection where unique conditions of the site warrant, along with recommendations regarding resource protection. If the resource at a given location is such that a particular resource value or enhancement action is desirable, it is suggested under Management Recommendations. The purpose is to guide mitigation efforts resulting from Environmental Zone review.

HOW TO USE THIS CHAPTER

Each natural resource site in the Johnson Creek basin was inventoried for resource location, quantity, and quality. Each site description is arranged in a similar manner. Following is a description of the headings of each section:

- **Site** The site number refers to one of 31 separate resource sites within the Johnson Creek basin inventoried. Locations are described further in this chapter, and maps of the sites are contained in Appendix I.
- **Unit** This is a name describing general location of the site.
- **Maps** This refers to the Multnomah County Assessor's quarter section map numbers, which also are the City of Portland Official Zoning Map numbers.
- **Site Size** This is an estimate of the number of acres contained in the site.
- **Location** This is a general description of site boundaries, using streets or geographic landmarks. For specific boundaries, see maps in Appendix I
- **Neighborhood** This lists the officially-recognized neighborhoods in which the site is located.
- **Date of Inventory** This lists the dates inventory information was obtained for this study. These are not necessarily the only dates the site was visited by City personnel for this study.
- **Habitat Classification** This classifies the resource site according to characteristics developed by the US Fish and Wildlife Service, and is typically used in natural resource analyses.
- **General Description** This is a brief description of the resource, land uses and activities in and near the site, and other information which may be pertinent to the study. This is not an exhaustive description. Other site information, including land use maps, various studies and literature, site visits, etc. were used in the course of this study.
- **Significant Resource Values** These are resource values within the site to be protected by regulations of the Environmental Zone and the Johnson Creek basin Plan District.
- **Quantity of Resource** This is a brief and general description of size or proportion of the site which contains certain land uses or resources. Other site information, including land use maps, various studies and literature, site visits, etc. were used in the course of this study.
- **Quality of Resource** This is a summary of the types of resources and resource values found at the site. It describes certain site-specific resource characteristics which are of note. It augments, and does not replace, information elsewhere in this document. Other site information, including land use maps, various studies and literature, site visits, etc. were used in the course of this study.

- **Management Recommendations** These are site-specific recommendations for treatment of the resource, and are in addition to general recommendations located elsewhere in this document.
- **Amount of Land Affected by Proposed Environmental Zones** This is an estimate of the number of acres within each base zone present in the site which will have the Environmental Protection Zone applied. Zone designations are described in Appendix I
- **Site-Specific ESEE Comments** These are comments related to the site-specific economic, social, environmental, and energy consequences of resource protection. They are in addition to general ESEE consequences contained in Chapter 5. Absence of this section does not mean that there are no ESEE consequences. It simply means that Chapter 5 discusses them at the appropriate level.
- **Site-Specific Compatible Uses and Activities** Base zone regulations are modified by the Environmental Zone. Plan district regulations may refine base and/or Environmental Protection Zone regulations to become more or less restrictive, depending on the purpose of the district. Resources at a given site may be of such a nature that, given the ESEE consequences, a level or type of development which differs from other sites may be allowed. Recommendations for site-specific resource management and compatible uses contained in this chapter are a further refinement of plan district and Environmental Zone regulations described in Chapter 8 and must be used in conjunction with these and other land use regulations. Resource Management and Compatible Uses sections, in essence, become part of the plan district regulations, guiding land use development and activities in a manner which will protect significant natural resources in conformance with the Comprehensive Plan and LCDC Goal 5.

SITE 1 **Unit:** Reed Lake **Maps:** 3533, 3633, 3634,

SITE SIZE: 60 acres
LOCATION: SE Harold (N); SE 28th Ave. (E); SE Ellis (SW) SE Knight (SW)
NEIGHBORHOOD: Eastmoreland; Reed
DATE OF INVENTORY: February 1987, June 1990

HABITAT CLASSIFICATION

- Riverine, Lower Perennial, Unconsolidated Bottom
- Riverine, Lower Perennial Artificial, Rocky Shore
- Palustrine, Upland Forest Coniferous/Deciduous, Seasonally Flooded

GENERAL DESCRIPTION

Reed Lake is a year-round pond located on the Reed College Campus. It has an associated wetland and upland area. Single family development is located in the eastern portion of the site. Surrounding property consists generally of the college campus to the immediate south, and single and multi-family residential neighborhoods further south and to the east, north, and west.

A master plan for the Reed College campus was recently approved by the City which considered the resource (CU 41-90).

SIGNIFICANT RESOURCE VALUES

Water, storm drainage, scenic (adopted as a City of Portland Scenic Resource), fish and wildlife habitat, aesthetics, heritage, flood storage, pollution and nutrient retention and removal, sediment trapping, recreation, and education

QUANTITY OF RESOURCES

The total 60-acre site provides relatively high quality habitat. The lake is about four acres in size, with the remaining site consisting of wetland and contiguous upland areas. Reed Lake is significant in terms of quantity in part because it is the only naturally-occuring pond (or lake) remaining in the inner-city area.

QUALITY OF RESOURCES

Reed Lake is a year-round pond located on the college campus with associated wetland and upland areas. The high structural vegetative and species diversity provides habitat for many passerine, woodpecker, waterfowl (wintering and breeding), kingfisher and raptor species.

Reed Lake, by way of Crystal Springs, feeds the lower mile of Johnson Creek year-round. The source of water is ground water which emerges from the Portland Terraces. The Portland Terraces occupy 19 square miles of the Johnson Creek drainage basin and consist of silt deposits eroded during the Pleistocene flooding.[1] A large proportion of the summer water flow into Johnson Creek is provided by this aquifer, drainage system, creating a water quantity and quality suitable for year-round fisheries on the lower portion of the Johnson Creek.

Site interspersion with Johnson Creek, Crystal Springs, and Oaks Bottom/Willamette River increases the value of this site. The canyon is a mixture of deciduous/coniferous riparian vegetation with small pockets of vegetated emergent islands. Large Grand Fir, Western

Red Cedar, Douglas Fir, Bigleaf Maple, and Red Alder form the overstory canopy. Elderberry, spirea, and willow form a shrub layer immediately adjacent to portions of the creek. The small islands are vegetated by spirea, cattail, and nightshade with pondweed on the surface of the water. Nest boxes have been installed throughout the canyon. Good amphibian habitat is provided by the numerous downed logs within the creek.

Reed Lake has scenic values which are enhanced by the 100-foot drop from the top of the canyon walls to the lake. With the exception of late winter, when there are no leaves on the deciduous trees, the canyon is completely enclosed with little visual intrusion from surrounding properties.

The lake environment serves as an "outdoor classroom" for Reed College students, as well as for passive and active recreation including bird watching, picnicking, walking, canoeing and boating.

There has been some invasion of non-native plant species into the canyon. Water quality has been degraded with the loss of infiltration caused by surface and piped stormwater runoff, as well as general pollution from urbanization. As recent as 1976, residents along the Portland Terrace used the ground water for domestic use.[2] The same source of information notes that portions of the Portland Terrace served by septic contributes to the degradation of the water and contamination problem. In summary, overall the resource is of high quality, although urbanization has reduced the quantity and quality of water recharge and vegetation.

Score for Wildlife Habitat Value: 83	**Range for All Sites** =18 to 83
Vegetation	
Food (variety):	high
Cover (structural diversity):	high
Human Disturbance:	medium
Interspersion:	high

MANAGEMENT RECOMMENDATIONS

Protect significant upland forested areas, as well as water bodies. Except as provided for in the recently-approved master plan for the Reed College campus, retain the resource in its present condition with exception to removal of non-native, invasive plants such as blackberry and reed canary grass (listed in the Portland Plant List as nuisance species) and replacement with native species. Active wildlife management such as the placement of bird nest boxes would help increase wildlife.

LAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES

Zones within Site	Area Affected by EC Zone	Area Affected by EP Zone
R2*	40 acres	15 acres
R5**	14	1.5

* Land owned by Reed College

** Portions owned by Reed College

SITE-SPECIFIC ESEE COMMENTS

Conflicting Uses: Identified conflicting uses within this site area would be expansion of the Reed College Campus or residential development for which the area is zoned.

Consequences of Allowing Conflicting Uses: Loss of high quality habitat and educational resource within the inner city, loss of impervious surfaces resulting in less ground water recharge and filtration of storm water, and decreased water flow into Cyrstal Springs effecting the fisheries, and possibly degradation to the water quality caused by hillside erosion and siltation during site construction .

Consequences of limiting or prohibiting Conflicting Uses: The portion of the site that is located on Reed Campus is intended to remain in a natural condition according to the City-approved, Reed College master plan. About 3.5 acres of protected land is outside of the Reed campus, in the northeast corner, most of which is already developed at the R5 base zone density. New residential construction would be required to mitigate for lost resource values.

SITE-SPECIFIC COMPATIBLE USES AND ACTIVITIES

- Uses specified under the Reed College master plan (CU 41-90)

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1 Ethan Seltzer, *Citizen Participation in Environmental Planning: Context and Consequence, A Dissertation in Urban Planning*, 1983

2 R.A. Redfern, *Portland Physiographic Inventory, A Study of the Physical Environment and Implications to Planning and Development*, December 1976

SITE: 2 **UNIT:** Crystal Springs **Maps:** 3632; 3633; 3732; 3733; 3832; 3833

SITE SIZE: 101 acres
LOCATION: SE Ellis (N); SE Nehalem and Tacoma (S); SE McLoughlin and SE 22nd Ave. (W); and SE 28th Ave. (E).
NEIGHBORHOOD: Eastmoreland and Sellwoood-Moreland
DATE OF INVENTORY: February 1987, June and August 1990

HABITAT CLASSIFICATION

- Riverine, Lower Perennial, Unconsolidated Bottom
- Riverine, Lower Perennial Artificial, Rocky Shore
- Palustrine, Scrub-Shrub, Broad-leafed Deciduous, Seasonally Flooded
- Palustrine, Emergent Persistent, Seasonally Flooded (Crystal Springs)

GENERAL DESCRIPTION

This highly modified site is a flat, historic floodplain is now primarily a landscaped City park (Westmoreland Park), a municipal garden (Rhododendron Gardens), and a golf course (Eastmoreland). Crystal Springs and the Rhododendron Gardens provide scenic values and the later, also provides educational value. Golf course and park activities take advantage of the creeks, riparian areas, and wetlands primarily from an aesthetic standpoint. Single and multi-family residential development is also within small portions at the northwest, southwest, and southeast corners, and a single commercial lot on the corner of SE McLoughlin Boulevard and SE Tacoma is also included. Both Cyrstal Springs and Johnson Creek are located within this site. The area includes water bodies, two creek channels, fisheries, and extensive permeable surfaces (open grass) that provides rain infiltration and limited habitat.

SIGNIFICANT RESOURCE VALUES

Water, storm drainage , scenic, fish and wildlife habitat, aesthetics, heritage, flood storage, recreation, and education

QUANTITY OF RESOURCES:

The overall wildlife habitat quality of this site is limited due to the extensive lawn cover. Ninety percent of this, 101-acre site area has permeable surfaces which contribute to groundwater recharge and reduction in peak flooding. About 25 acres of the site are water bodies, with most of the remainder in highly modified open space.

QUALITY OF RESOURCES:

The water quality of Crystal Springs has been studied by the USGS in 1989 and 1990. The creek is known to support coho, steelhead, cutthroat trout, and some migrating fall chinook. Crystal Springs is primarily spring fed, has a year-round flow, and receives little surface runoff.

Native vegetation is limited, with more than 90% of the site being landscape lawn. However, the golf course's cultivated grass provides food for resident and wintering waterfowl. In 1986, higher concentrations of both American and European widgeons were observed at Eastmoreland than anywhere else in Portland. This combination of grassland and adjacent water bodies provides important wintering habitat for waterfowl within the urban environment.

Rhododendron gardens consisting of azaleas, rhododendron, and other flowering shrubs provide food and nesting for hummingbirds and warblers in the spring and early summer. Golf course ponds and Crystal Springs Lake provide food and cover for wintering waterfowl. Mallards, wigeons, mergansers, shovelers wood ducks, and coot can commonly be observed. The Rhododendron gardens receive regular human use on a year-round basis, with higher numbers of visitors in spring and summer. The adjacent Eastmoreland Golf Course is used daily.

The creek channels provide aquatic habitat for steelhead, trout, and coho salmon. Crystal Springs, which flows into Johnson Creek just south of this site, is one of the few creeks within the Portland Metro area that still supports a population of native cut throat trout and steelhead. These fish spawn and migrate up Johnson Creek no farther than the Tideman-Johnson Park area.[1] A fish hatchery is located along Cyrstal Springs within this site. It is operated by a private volunteer and sponsored by the Oregon Department of Fish and Wildlife and stocked with Cutthroat Trout and Coho Salmon fry.

The relatively large amount of permeable surfaces on this site help maintain the infiltration capacity of the ground and ground recharge.

The Site 2 portion of Johnson Creek flows through the Eastmoreland Golf Course and Johnson Creek Park. The channel is mostly riprapped. Blackberry and willow grow in a narrow strip along the bank adjacent to the golf course green. Vegetation overhangs the creek, providing some local temperature regulation of the stream for fish and limited habitat for passerine species and small mammals. The riparian fringe functions as a corridor for some wildlife in a densely urbanized area that lacks the necessary natural vegetation and water required to attract wildlife.

Fences along the creek separating properties may inhibit travel by some mammal and herptile species throughout the length of the site. Bird species using Reed Lake probably travel regularly between the two sites.

Score for Wildlife Habitat Value: 39	**Range for All Sites** = 18 to 83
Vegetation	
Food (variety)	medium
Cover(structural diversity)	low
Human Disturbance:	high
Interspersion:	low

MANAGEMENT RECOMMENDATIONS: Increase native plant materials throughout site. Incorporate a wildlife habitat management program into groundskeeping practices for these three public facilities; Rhododendron Garden, Cyrstal Springs (West Moreland Park); and Eastmoreland Golf Course.

LAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES:

Zones	Area Affected by EC Zone	Area Affected by EP Zone
IG1	<1 acres	<1 acres
OS	39	25
R1	<1	
R2	1	1
R5	10	1
CG	1	

SITE-SPECIFIC ESEE COMMENTS

Conflicting Uses: Residential development and urban park expansion. Commercial and industrial development that impacts water quality or removes tree shading from the creek.

Consequences of Allowing Conflicting Uses: Because 90% of this site is publicly owned and in park or golf course use it is likely that there will be no redevelopment of these open spaces. There could however, be an intensification of recreation and ancillary uses which decrease the amount of open space area. Residential and Industrial development could remove creekside vegetation, add pollutants to the creek from stormwater runoff, and introduce excessive human activity.

Consequences of Limiting or Prohibiting Conflicting Uses: Application of the p, Environmental Protection, Zone should have minimal effect on residential or industrial development, as it is only within the creek floodway in these zones. Impact of the EC, Environmental Conservation, Zone would probably require either a reduction in overall residential densities or creation of planned unit developments. Few lots in this site are now vacant, a major exception being an R2-zoned property along the southwest border of Westmoreland Park. Implementation of the recommended plan district management plan may help foster groundskeeping practices that are compatible or more supportive of wildlife through increased native plantings for cover, food, and shade, and a reduction or more sensitive application of pesticides and herbicides. New construction would be required to mitigate for lost resource values.

SITE-SPECIFIC COMPATIBLE USES AND ACTIVITIES

- Removal of concrete channel lining of Crystal Springs Creek and reestablishment of the native riparian strip and shallow wetland planting.
- Approved land use actions, including the Eastmoreland Racquet Club and Eastmoreland Golf Course activities.

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1 Phone conversation with Wayne Bower, staff biologist for Oregon Department of Fish and Wildlife, July 1990

SITE: 3 **UNIT:** City of Portland/Milwaukie Limit **Maps:** 3832, 3833, 3932

SITE SIZE: 87 acres
LOCATION: SE 21st Avenue (W), SE SE Nehalem and Tacoma Streets (N), SE 33rd Avenue (E), and the Multnomah County boundary (S)
NEIGHBORHOOD: Ardenwald and Sellwood-Moreland
DATE OF INVENTORY: June 1988; September 1990

HABITAT CLASSIFICATION:

- Riverine, Lower Perennial, Unconsolidated Bottom
- Riverine, Lower Perennial Artificial, Rocky Shore
- Palustrine, Scrub-Shrub, Broad-leafed Deciduous, Seasonally Flooded

GENERAL DESCRIPTION

This site comprises the lower portion of Crystal Springs Creek, its confluence with Johnson Creek, and about one and one-quarter miles of Johnson Creek downstream from Johnson Creek Canyon. Adjacent lands are almost fully developed with a wide variety of land uses including single and multi-family housing, commercial, and industrial facilities. With the exception of residences abutting Crystal Springs Creek and Johnson Creek Park at the confluence of Crystal Springs and Johnson Creeks, water resources are virtually ignored.

SIGNIFICANT RESOURCE VALUES

Water, storm drainage, scenic, fish and wildlife habitat, aesthetics, heritage, flood storage, recreation, and education

QUANTITY OF RESOURCES

This site borders the Milwaukie city limits and is ninety percent developed with primarily industrial and commercial land uses leaving the natural habitat diminished. At this point creek channel is generally, 30-50 feet wide with a 10 ft. riparian strip. Johnson Creek Park is park of about 10 acres, with about one-third (including the waterways) in natural condition.

QUALITY OF RESOURCES

The resource area of Site 3 is the creek channel and floodway. The floodway varies from 90 to 300 feet wide and has a 10-50 foot strip of vegetation along the steep banks. Throughout this site Himalayan blackberry and reed canarygrass are the dominant plant species with scattered stands of black cottonwood, alder, and willow. Creek banks have a 1:1 slope, limiting access to the creek by mammal and herptile species. Lawns, parking areas, and roads are immediately adjacent to the narrow riparian vegetation. Lack of canopy cover and shade, and stormwater runoff from paved surfaces limit habitat quality for fish and aquatic invertebrates.

This stretch of Crystal Springs and Johnson Creeks provides limited wildlife habitat, and is primarily used by urban-adapted wildlife species. It serves as a travel corridor for spawning cuthrout trout and steelhead between the Willamette River to Reed Lake and other areas along Johnson Creek. Johnson Creek Park is a small open space resource located within this site. It is about 10 acres, located at the confluence of Cyrstal Springs and Johnson Creek, near SE 21st Avenue and SE Clatsop Street.

Score for Wildlife Habitat Value: 31	Range for All Sites =18 to 83
Vegetation	
Food (variety)	low
Cover(structural diversity)	low
Human Disturbance:	high
Interspersion:	low

MANAGEMENT RECOMMENDATION

To encourage greater wildlife use, terrace creek banks away from the creek and revegetate to create a wider riparian area using native tree, shrub, and ground cover species. This will also provide greater volume within creek banks, reducing width of the floodplain.

LAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES:

Zones	Area Affected by EC Zone	Area Affected by EP Zone
IG1	5 acres	4 acres
OS	8	2
R1	<1	<1
R2	5	1
R5	1	<1
CG	2	7

SITE-SPECIFIC ESEE COMMENTS

Conflicting Uses: Urban development, particularly stormwater runoff, human activity, noise, and light.

Consequences of allowing Conflicting Uses: The condition and treatment of the creek edges would remain in the same degraded state, continuing flooding patterns. Continued development and redevelopment would result in parking lots, buildings, and fill within the narrow habitat area. Pollution from stormwater runoff would continue.

Consequences of Limiting or Prohibiting Conflicting Uses: Restoration of the creeks, including banks would be required as development and redevelopment occurs. This would help improve water quality for fisheries and at the same time provide additional cover and food for wildlife using the creek edges. As paved areas are improved, oil separators, sediment traps, and on-site retention or detention facilities can reduce surface water pollution.

SITE: 4 OJ* **UNIT:** Milwaukie Confluence
*OJ= Other jurisdiction (City of Milwaukie)

LOCATION: SE Sherrett St. (N); Willamette River confluence (S) and (W);
NEIGHBORHOOD: City of Milwaukie
DATE OF INVENTORY: June 1988; Sept. 1990

HABITAT CLASSIFICATION

- Riverine, Lower Perennial, Unconsolidated Bottom.
- Riverine, Lower Perennial Artificial, Rocky Shore.
- Palustrine, Scrub-Shrub, Broad-leafed Deciduous, Seasonally Flooded.

GENERAL DESCRIPTION

This portion of the creek flows through industrial and commercial areas, and is largely ignored by development.

SIGNIFICANT RESOURCE VALUES

Public access, water, storm drainage , scenic, fish and wildlife habitat, aesthetics, heritage, flood storage, recreation, scenic beauty, and education

QUANTITY OF RESOURCES

The actual resource area is the floodway channel and a narrow 10 ft. strip of vegetation along the steep banks with the exception to the confluence of Johnson Creek with the Willamette River where there is about a 5-acre wetland.

QUALITY OF RESOURCES

Himalayan Blackberry and Reed Canarygrass are dominant plant species, with scattered stands of black cottonwood, alder and willow. The banks are very steep, limiting access to the creek by mammals and herptiles. Lawns, parking areas and roads are immediately adjacent to the narrow riparian strip. There is limited canopy cover and shade, and probable runoff from adjacent uses limit habitat quality for fish and aquatic invertebrates. The resource has been degraded by channelization, replacement of riparian vegetation with paving up to the top of the creek bank. Presence of streets, lighting, and noise associated with urban development decrease wildlife value.

This site provides habitat for urban adapted wildlife species and includes the confluence of Johnson Creek with the Willamette River. It serves as a link between the Willamette River, Elk Rock Island, Ross Island, Oaks Bottom, and the rest of the Johnson Creek Basin for fisheries and avian wildlife. Public access, recreation, scenic beauty, and environmental education is provided at Johnson Park located on this site.

Score for Wildlife Habitat Value: 45	**Range for All Sites** =18 to 83
Vegetation	
Food (variety)	low
Cover(structural diversity)	medium
Human Disturbance:	high
Interspersion:	high

MANAGEMENT RECOMMENDATION

Terracing and revegetating creek banks and widening the riparian zone using native trees, shrubs, and ground cover would enhance the site and encourage greater wildlife use.

SITE SIZE : 39 acres
LOCATION: SE Johnson Creek Boulevard (S); SE Berkeley Way (unimproved,right-of-way) and SE Crystal Springs Boulevard (N); SE 32nd Avenue, (W); and 39th Avenue (E).
NEIGHBORHOOD: Eastmoreland
DATE OF INVENTORY: February 1987, June 1990, and August 1990

HABITAT CLASSIFICATION:
- Creek Bank & Channel: Riverine, Lower Perennial, Unconsolidated Bottom
- Palustrine, Emergent Persistent, Seasonally Flooded
- Palustrine, Scrub-Shrub, Broad-leafed Deciduous, Seasonally Flooded, Upland Forest-Shrub Slope

GENERAL DESCRIPTION
Site 5 includes the Johnson Creek channel and riparian zone in the vicinity of Tideman-Johnson Park. Land on both sides of the canyon are developed single family residential neighborhoods. This site is thirty-nine acres of an approximately 117-acre wilderness canyon area, associated upland and adjacent wetland area, wildlife and fisheries travel corridor, gradual creek bank allowing access by animals, possible archaeological resources, and City park providing public access, scenic, and educational values.

SIGNIFICANT RESOURCE VALUES
Public access, water, storm drainage , scenic, fish and wildlife habitat, flood storage, recreation, scenic beauty, and education

QUANTITY OF RESOURCE
The 39-acre site is about 80% undeveloped, including about one-third of all parcels. Of the privately-owned vacant parcels, most are on the steep slopes of the southern canyon wall.

QUALITY OF RESOURCE
This site is the west end of one of two canyons in the study area, and the least urbanized of sites west of NE 117th Avenue. There are no roads into the site, and the canyon walls create a contiguous urban wilderness. One-third of the parcels within this study area are vacant and eighty percent of the total area remains undeveloped. The canyon as a whole has high scenic value.

This site includes Tideman-Johnson Park, a six acre parcel located near SE 39th Avenue on the north side of Johnson Creek. This park site was donated to the City of Portland in 1942 and remains relatively undeveloped. The lower elevations, or creek terrace, is cultivated with lawn and shade trees interspersed with native vegetation (cedar, fir, cottonwood, and oak).

The south bank vegetation of Johnson Creek is dominated by blackberry, maple, and alder. The southern canyon wall that rises 75 to 100 feet up to Johnson Creek Boulevard is an upland forest of Douglas Fir, Western Red Cedar, and Bigleaf Maple with some intrusion of introduced plants. The slope of the north canyon wall is more gentle, providing easier access by wildlife species. It rises 60 feet above the flat, terraced area that is the center of Tideman-Johnson Park. Springs are located along the north and south canyon walls, providing moisture to the plant species and a minor water source to the creek.

At the eastern end of the park adjacent the creek channel there is 40-inch diameter cottonwood tree. This tree is a native, estimated at over 100 years old, and provides habitat for Great Blue Heron and owls.

A sanitary sewer line runs at grade and parallel to and in the creek channel for about fifty feet within Tideman-Johnson Park. The concrete sewer line is a barrier to fish migration. It is to this point that salmonids reportedly travel from the Willamette River and spawn .

Creek vegetation is primarily blackberries overhanging the channel, mixed with willow, cottonwood, grasses, and nettle. Small amounts of sedges and rushes line the littoral zone. Riparian vegetation provides food, nesting, and cover for passerine species and small mammals. The channel is suitable for feeding/resting by small fish. Reptiles and amphibians probably use the stream and riparian area. Waterfowl use the area for feeding and resting. Structural diversity on both sides of the creek is limited, but some food, cover, and nesting is provided by dense patches of shrubby vegetation and trees. Species observed include pileated woodpecker, downy woodpecker, kestrel, green backed heron, gray squirrel and garter snake.

Interspersion with other natural areas is medium. The site is influenced by urban surroundings with some fishing and swimming activity.

There have been arrowheads found in this area, giving evidence that that Indians once occupied this area.[1]

Score for Wildlife Habitat Value: 67	**Range for All Sites** =18 to 83
Vegetation	
Food (variety)	medium
Cover(structural diversity)	medium
Human Disturbance:	high
Interspersion:	medium

MANAGEMENT RECOMMENDATIONS

- Removing non-native plant species (particularly Himalayan Blackberry) and replacing with native plants such as red osier dogwood, elderberry, willow, sword ferns.
- Continuing wildlife management practices such as placing nest boxes in Tideman-Johnson Park to encourage use by cavity-nesting bird species.
- Investigating restoration of the creek through the Oregon Department of Fish and Wildlife STEP Program, to increase fisheries.
- Constructing a fish ladder or other means to allow passage over sewer interceptor located in Tideman-Johnson Park.
- Assisting annual creek clean-ups with citizen and volunteer help.
- Retaining upland tree cover as development occurs.
- Considering public overlooks of the canyon from higher elevations such as along SE Johnson Creek Boulevard.

LAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES

Zone	Area Affected by EC Zone	Area Affected by EP Zone
R5	16 acres	6 acres
R7	7	2
OS	3	2

SITE-SPECIFIC ESEE COMMENTS

Conflicting Uses: Residential and urban park development, and any roadway within the canyon or along Johnson Creek

Consequences of allowing Conflicting Uses: The natural habitat and character of the canyon would be diminished and irretrievably altered if not protected. The character of the park would be changed. Damage to the fisheries would result from removal of shade and dietrus material over the creek. Siltation caused during construction would further degrade the water quality and the springs on the canyon walls would be altered, resulting in a change in plant communities to one more tolerant of drier conditions which have less habitat value.

Consequences of limiting or prohibiting Conflicting Uses:
Economic Consequences: Seven acres of this 39-acre site would have a reduction in housing density from R5 and R7 densities to 1 unit per 1.05 acres.

Property values may not proportionately drop with the loss of density, as scenic qualities and close proximity to the park and creek would influence the property value.

It should be noted again that under the City's adopted Housing Goal, (Goal 10) the loss of density on the seven-acre area located floodways, 100-year floodplains, and on "hazardous" hillside were not included in the needed housing calculations adopted by the City Council and accepted by the Department of Land Conservation and Development Commission. All lands being recommended for no development within the site fall into one of these three categories so, in effect, there is no loss of land needed to meet housing goals due to the infeasibility of developing on these highly physically constrained sites.

Social Consequences: Full protection of the floodway and adjacent riparian strip and partial protection of the upland area would preserve the scenic character of the canyon. Residents of Portland would continue to enjoy recreation or living in an urban wilderness.

Environmental Consequences: With protection, there would be a decrease in allowed density, more trees and natural vegetation retained, and less disturbance to hillsides. Despite the decrease in density, infill housing would have the appearance and character of an R5 development, as it would be clustered on the upland areas. Houses on smaller (ie. 5,000 square foot) lots would be consistent with the zoning pattern of the area.

Energy Consequences: Clustering development is more energy efficient; less land and infrastructure is used. In the case of "zero lot line" development, there is an even greater energy saving because of the common-wall construction that reduces heating and cooling costs.

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1 Steve Johnson, *A Special Place*, 1979

SITE: 6 **UNIT:** 39th-42nd Wetland **Map:** 3834, 3835

SITE SIZE: 10 acres
LOCATION: SE 39th Avenue (W); Springwater Line (S); Crystal Springs Boulevard (N); and NE 42nd Avenue (E)
NEIGHBORHOOD: Woodstock, Ardenwald, Eastmoreland
DATE OF INVENTORY: February 1987, June and September 1990

HABITAT CLASSIFICATION:

- Riverine, Lower Perennial, Permanently Flooded, Unconsolidated Bottom.
- Palustrine, Emergent Persistent; Seasonally Flooded
- Palustrine, Scrub-Shrub; Broadleafed-Deciduous, Semi-Permanent Seasonal Flooding

GENERAL DESCRIPTION

This site includes a small wetland adjacent to Johnson Creek to the northeast of Tideman-Johnson Park. The site has slopes on the north and west sides which separate it from the adjacent residential neighborhood. Dense Himalayan blackberry, willow, and red osier dogwood dominate the site with some variation in the riparian area. Shrubs and trees provide good structural diversity for habitat for birds and small mammals. Interspersion with other natural areas is good. Dense blackberries severely limit use of this site by humans. However, this area is probably used by dogs and cats.

SITE RESOURCE VALUES

Water, storm drainage, water quality, fish and wildlife habitat, interspersion, flood storage, scenic beauty, and education

QUANTITY OF RESOURCES

This site includes a 9-acre wetland that is adjacent a 6-acre undeveloped park site and nearby upland forest. Although, much of this site is being taken over by Himalayan blackberry and reed canarygrass, the scarcity of wetlands along Johnson Creek makes it important. In this situation the dense Himalayan blackberry surrounding the wetland provide a buffer from human use.

QUALITY OF RESOURCES

The site rating of 72 is high. This wetland and associated upland provide a biological and hydrological link to the creek corridor. The wetland provides habitat for redwing blackbirds, common yellowthroats, and other wildlife species. It also provides storm water retention, groundwater recharge, and water quality filtration to the adjacent Tideman-Johnson Park and Johnson Creek. Himalayan blackberry and reed canarygrass reduce the habitat quality from what it would be if native plants occurred rather than the aggressive exotic plant species.

Score for Wildlife Habitat Value: 72	**Range for All Sites** = 18 to 83
Vegetation	
Food (variety)	medium
Cover(structural diversity)	medium
Human Disturbance:	medium
Interspersion:	medium

MANAGEMENT RECOMMENDATIONS

It is important to protect the wetland to the greatest extent possible. Invasive and exotic species should be replaced by native plants through mitigation or enhancement actions, providing greater diversity, and higher quality habitat and amenity value.

ALAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES

Zones	Area Affected by EC Zone	Area Affected by EN Zone
R5(R2.5)	3 acres	5 acres
R5	2	<1

SITE-SPECIFIC ESEE COMMENTS

Opportunities to locate development above the wetland area exists, so development and resource protection can both occur. The wetland enhances the wildlife value of adjacent Tideman-Johnson Park.

Conflicting Uses: Residential development. This site is zoned R5, with 80% of the site designated R2.5 by the comprehensive plan (appropriate for future attached single-family residential development).

Consequences of allowing Conflicting Uses: Degradation of the site would occur to the extent that the habitat resources would be lost. Fill would have to be placed to lift the area above the flood plain, causing additional localized flooding nearby. Water quality benefits would also be lost.

Consequences of limiting or prohibiting Conflicting Uses:

Economic Consequences: Protection as proposed would result in a loss of potential housing units. About five acres would have a reduction in allowed density to one unit per 1.05 acres for the R5(R2.5) areas recommended for EP, environmental protection zone where no development would be allowed. The density could be transfered to other portions of the site. The drop in property values would be offset somewhat by scenic qualities and desirability of living in an urban natural resource. The resource value of Tideman-Johnson Park would be increased if the surrounding properties were left in a natural condition.

Social Consequences: Civic pride and enjoyment of living within this urban wilderness area would be continued. Character of the neighborhood and City as a whole would be enhanced.

Environmental Consequences: This wetland would continue to provide wildlife habitat diversity, animal access to the creek, groundwater storage, and sediment trapping.

Energy Consequences: Combined with the adjacent park, this site provide the opportunity for residents of the area to view wildlife while avoiding the fuel and expense of car travel.

SITE: 7 **UNIT:**WPA Fish Ladder Unit (42nd & Harney) **Map:** 3835

SITE SIZE: 32 acres
LOCATION: City limits near Johnson Creek Blvd.(S); South of SE Cyrstal Springs Boulevard (N); near SE 45th Avenue (E); and SE 39th Avenue (W).
NEIGHBORHOOD: Woodstock
DATE OF INVENTORY: August; September 1990

HABITAT CLASSIFICATION

- Riverine, Lower Perennial, Unconsolidated Bottom.
- Palustrine, Emergent Persistent, Seasonally Flooded.
- Palustrine, Scrub-Shrub, Broad-leafed Deciduous, Seasonally Flooded.

GENERAL DESCRIPTION

The resource site is either low density single-family residential development or vacant. Johnson Creek divides just west of the SE 45th Avenue bridge, forming an island which makes up much of the site. Access is by a small bridge on SE Harney Street. Residential neighborhoods are located to the north and west, while commercial and industrial activities are to the east and south.

TYPES OF RESOURCE VALUES

Historic, fish and wildlife habitat; public park land; wetland; and scenic

QUANTITY OF RESOURCE

About half of the site area is developed, while the remainder is creek and bank, wetlands, and slopes along the northern portion of the site which separate it from the neighborhood to the north.

QUALITY OF RESOURCE

An oxbow at this section of the creek was created by the WPA in the 1930's. The WPA also built a fish ladder, rock bridge, and waterfall. This stretch of the creek provides moderate to high wildlife habitat value. The water is usually shallow and slow moving through the oxbow. Portions of the the creekbed adjacent to the oxbow have been riprapped. There are large pieces of concrete in the creek. The tree canopy is approximately 60% closed, dominated by alder and cottonwood. Shrub and herb canopies are denser, about 90% closed with willow and hawthorne. The ground cover consists primarily of the non-native species of reed canarygrass, blackberry, and tansy. There is one large snag within the site that is being used by downy woodpecker and red breasted nuthatch.

The fish ladder and waterfall attract human visitation, resulting in garbage and broken glass scattered throughout the site. The site is also being used for yard debris disposal. The riparian strip is about 25 -30 feet wide, with good shading over the creek. There are some good fish holes and the creek is well shaded, regulating the water temperature, enhancing the habitat for fish, and other aquatic species. Riprapping, steep banks, garbage, yard debris, and human use lessen the wildlife habitat use of this stretch of the creek. This is one of the few places along the creek where a (vertical) snag was observed. Interspersion is good, linking the adjacent wetland and Tideman-Johnson Park.

Score for Wildlife Habitat Value: 66	Range for All Sites =18 to 83
Vegetation	
Food (variety)	medium
Cover(structural diversity)	medium
Human Disturbance:	medium
Interspersion:	medium

MANAGEMENT RECOMMENDATIONS

Garbage and solid waste in creek should be removed. Portions of the creek banks should be regraded away from the creek to a shallower angle for easier access by wildlife. Property owners should be made aware of habitat value and ways to maintain and enhance it, including the importance of maintaining shade cover over the creek, removal of invasive or non-native plants, and of degradation caused by disposal of yard debris in the habitat area.

LAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES

Zones	Area Affected by EC Zone	Area Affected by EP Zone
OS	1	
R7	5	
R5(R2.5)	3	7
R5(M2)	5	
R5	<1	
CG	<1	
IG1	7	1

SITE-SPECIFIC ESEE COMMENTS

Conflicting Uses: Residential and commercial development and urban park expansion.

Consequences of allowing Conflicting Uses: Infill housing development would likely continue as it is today on the island, where homes are constructed on stilts to avoid flood damage and to meet the FEMA regulations administered by the Bureau of Buildings.

The southwest corner of the site is zone R7. No protection would allow removal of the natural vegetation and further development to a density of up to one house per 7,000 square feet of lot area. This would change the wilderness character of the canyon, accelerate rates of erosion, reduce flood storage and groundwater recharge, and lose habitat.

The vacant industrial parcel to the north of the Springwater Line could be developed to the top of bank. This setback would have the negative impact of destroying the creek-side, riparian vegetation. The industrial zone parcels located to the south of the Springwater line appear fully developed. With no protective measures, sites like this will continue to have runoff from the parking lots and buildings empty directly into the creek without oil separation.

Consequences of limiting or prohibiting Conflicting Uses: These consequences are the same as are contained in Chapter 5.

SITE: 8 OJ* **UNIT:** Clackamas Co. (45th - 77th Ave.) **Maps:** 3935; 3936; 3937; 3938
*OJ= Other jurisdiction

Note: The inventoried site includes less than the Unit area, only the creek and a small adjacent shrub wetland at 72nd Avenue

LOCATION: SE 45th Avenue (W); Railroad Tracks (N); SE 77th Avenue (E); and SE Overland Street (S)
DATE OF INVENTORY: June 1988, June 1990

HABITAT CLASSIFICATION

- Riverine, Permanently Flooded, Unconsolidated Bottom
- Palustrine, Scrub-Shrub, Broad-leaved Deciduous, Seasonally Flooded

SIGNIFICANT RESOURCE VALUES

Fish and wildlife habitat providing food, nesting, and cover for birds, reptiles, amphibians, and beaver, historic, open space, scenic, recreational, educational; and 1,600 foot-long strip of mature Cottonwood trees.

QUANTITY AND QUALITY OF RESOURCES

This site provides limited wildlife habitat value, primarily for those species that adapt to urbanization. Heavy human use and garbage disposal along this stretch of the creek inhibit use by wildlife. Although separated from other habitat areas along Johnson Creek, this site does function as a travel corridor for wildlife .

Willows dominate the vegetation community with some blackberry and grasses. This small area represents a portion of the natural riparian vegetation which existed along Johnson Creek prior to urbanization. The scrub-shrub wetland provides food, nesting, and cover for birds, reptiles, amphibians, and beaver. Streambank vegetation is disturbed by human trails and fishing activity. Litter and garbage are present. Interspersion with other natural areas is low, as it is separated by railroad tracks and surrounded by industrial and residential development.

Score for Wildlife Habitat Value: 48	**Range for All Sites** =18 to 83
Vegetation	
Food (variety)	medium
Cover(structural diversity)	medium
Human Disturbance:	high
Interspersion:	low

SITE SIZE: 17 acres
LOCATION: SE 78th Avenue (W); SE Clatsop Street/City Limits (S); S. of Crystal Springs Boulevard (E); and SE 82nd Avenue (E).
NEIGHBORHOOD: Brentwood-Darlington
DATE OF INVENTORY: June, August 1990

HABITAT CLASSIFICATION

- Riverine, Permanently Flooded, Unconsolidated Bottom.
- Palustrine, Scrub-Shrub, Broad-leaved Deciduous, Seasonally Flooded.

GENERAL DESCRIPTION

This is an area of agricultural activity along most of the creek, surrounded largely by industrial activity.

SIGNIFICANT RESOURCE VALUES

Fisheries, wildlife travel corridor, and water source for wildlife

QUANTITY OF RESOURCES

This stretch of Johnson Creek has a very steep, 1:1 riprapped slope. Where present, the riparian, tree-covered strip is narrow, only 10 ft wide. The primary ground cover is blackberry plus 10% big leaf maple and 30% willow. The substrata is rocky with a lot of additional large garbage and debris. Bank erosion is problematic in the areas where the vegetation has been removed. All of the creekside vegetation has been removed and the creek bank has been pushed to the extreme edge of the creek in order to maximize upland use of the land except for a 10-foot wide strip. Except for about 40% of the 10-foot strip that has trees, the creek is exposed to direct sunlight and heating.

QUALITY OF RESOURCES

The wildlife habitat quality of this stretch of the creek is limited. Wildlife species that adapt well to urbanization, proliferation of introduced plant species, and poor water quality are the most common resource characteristics found here.

Score for Wildlife Habitat Value: 43	**Range for All Sites** = 18 to 83
Vegetation	
Food (variety)	medium
Cover(structural diversity)	medium
Human Disturbance:	medium
Interspersion:	medium

MANAGEMENT RECOMMENDATION

Creek banks should be regraded away from the creek to create better animal access and slopes that will not be so susceptible to erosion. The riparian strip and creek bank should be planted with native vegetation, particularly trees and shrubs, to create cover and shade.

Planting of major trees such as western red cedars and other plantings on both sides of SE 82nd Avenue can indicate creek location from the roadway and create a gateway into the City.

LAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES

Zones	Area Affected by EC Zone	Area Affected by EP Zone
GM	4 acres	3 acres
HM	1	2

SITE-SPECIFIC ESEE COMMENTS

Conflicting Uses: Agricultural and urban development has created the present poor state of creek channel and creek edge.

Consequences of Allowing Conflicting Uses: Continued heat exposure to the creek during the summer months will contribute to the decline of fish. Water temperatures exceeding sixty-eight degrees are difficult on fish; exceeding the mid-seventies is lethal to fisheries.

Consequences of limiting or prohibiting Conflicting Uses: There would be a 5-acre reduction in development area, of which most is floodway area. Development in the floodway is already limited by FEMA regulations.

SITE SIZE: 10 acres
LOCATION: SE 82nd Avenue (W); S. of SE Harney Street (S); Springwater Line (N); and SE 84th Avenue (E)
NEIGHBORHOOD: Lents
DATE OF INVENTORY: June, August 1990

HABITAT CLASSIFICATION

- Riverine, Permanently Flooded, Unconsolidated Bottom.
- Palustrine, Scrub-Shrub, Broad-leaved Deciduous, Seasonally Flooded.

GENERAL DESCRIPTION

This site is, with the exception of the creek, in commercial, trailer park, and industrial use. The wildlife habitat value of this stretch of Johnson Creek has been severely affected by adjacent land uses. A trailer park immediately adjacent to the south bank of the creek limits wildlife access to the creek. (On one visit several of the trailers were hanging over the bank). The steep banks are dominated by Himalayan blackberry and reed canarygrass growth. There is an abundance of garbage and grocery shopping carts throughout this stretch. The creek is exposed with little shade provided from the few scattered ash and big leaf maple trees. Remnants of an old bridge abutment still remain in the creek, acting as a garbage trap.

SIGNIFICANT RESOURCE VALUES

Water, interspersion, fisheries

QUANTITY OF RESOURCES

Properties abutting the creek are mostly paved, leaving an unpaved area of about 50-feet wide between each bank. The riparian vegetation is sparse. In its current condition, the primary resource is the creek itself. It serves as a travel corridor. The floodway, which occupies more than one-third of the site, represents a potential habitat area as redevelopment occurs. The floodway is over 200 feet wide across most of the site, widening to 470 feet at the eastern end. With the exception to a less than one acre tract next to Harney Street, the remainder of the ten-acre site is within the 100-year flood plain.

QUALITY OF RESOURCES

This site is greatly degraded and very little impervious surface remains. As with the rest of Johnson Creek, this section functions as a travel corridor for wildlife moving up and down the creek, as well as linking some upland sites with the creek. This site received 26 points, one of the lowest ratings for wildlife habitat value along Johnson Creek. In addition to the removal of native vegetation, SE 82nd Avenue, a major arterial street, degrades habitat value of the site because of the traffic noise and debris generated from the street.

Score for Wildlife Habitat Value: 26	**Range for All Sites** = 18 to 83
Vegetation	
Food (variety)	low
Cover(structural diversity)	low
Human Disturbance:	high
Interspersion:	med.

MANAGEMENT RECOMMENDATIONS

Removal of garbage, terracing slopes, revegetation, and creation of a buffer between the resource area and the adjacent land use would greatly enhance the habitat value of the site.

SE 82nd Avenue can be reinforced as a historic and current major route into the City by creating a gateway with trees that will be large at maturity.

LAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES

Zones	Area Affected by EC Zone	Area Affected by EP Zone
R10(R5)	<1 acre	<2 acres
IG2	<1	<1
EG	<1	4
SC	<1	

SITE-SPECIFIC ESEE COMMENTS

Conflicting Uses: Residential, commercial, and industrial development along the creek channel and floodway.

Consequences of allowing Conflicting Uses: Continued degradation of fisheries and wildlife habitat.

Consequences of limiting or prohibiting Conflicting Uses: The existing trailer court would become a non-conforming use.

SITE SIZE: 13 acres
LOCATION: SE 84th Avenue (W); SE 87th Ave. (E), Springwater Line (N); and North of SE Harney Street (S)
NEIGHBORHOOD: Lents
DATE OF INVENTORY: June, September 1990

HABITAT CLASSIFICATION
- Upland Forest; coniferous, deciduous.

GENERAL DESCRIPTION
This is an unusual forested area, bordered on the east and south by single-family development, industrial and commercial activities on the west, and the Springwater Line on the north. Johnson Creek passes through it. Much of the site is within the floodway, and all is within the 100-year flood plain.

SIGNIFICANT RESOURCE VALUES
Water, interspersion, wildlife and fisheries habitat, aesthetics, storm drainage and flood storage, recreation, and education

QUANTITY OF RESOURCE
The forested portion of the site covers about ten of the 13-acre site. The forest has a 90% closed tree canopy, making it relatively dense. There are no other forested uplands near or adjacent the creek within several miles each side of this site. There are very few forests or woodlot pockets at the lower elevations on the east side of the City.

QUALITY OF RESOURCE
The rarity of a forested upland along Johnson Creek and on the east side of the City make this an important site. The forest is dominated by Douglas fir, red alder, and Bigleaf maple with a shrub layer of Oregon hazel, vine maple, and Himalayan blackberry. There is very little ground cover with large expanses of bare ground. The areas surrounding the forest is dense blackberry, making access to the site difficult. The trees and shrubs provide food for towhees, robin, black capped chickadees, kinglets and western wood peewees. The surrounding area is under-developed with large, half-acre parcels and a small 15-lot subdivision bordering the southeast corner of the forest. Use by domestic animals is high, which may limit use by wildlife species. Interspersion with other sites is gained by the adjacency of this forest to Johnson Creek.

Although the structural diversity of this forest has been decreased by the removal of much of the understory vegetation, the forest plays an important role in the Johnson Creek ecosystem by providing habitat for birds, mammals, and herptile species that require forested areas adjacent to the creek for cover, food, resting and breeding.

Score for Wildlife Habitat Value: 62	**Range for All Sites** =18 to 83
Vegetation	
Food (variety)	high
Cover(structural diversity)	high
Human Disturbance:	medium
Interspersion:	medium

MANAGEMENT RECOMMENDATION

Removing blackberries and garbage, limiting unnecessary human intrusion, and reestablishing the under and overstory with native plantings would increase resource value significantly.

LAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES

Zones	Area Affected by EC Zone	Area Affected by EP Zone
LR-10	1 acre	4 acres
LR-7	3	3

SITE-SPECIFIC ESEE COMMENTS

Conflicting Uses: Residential development.

Consequences of allowing Conflicting Uses: An important resource "island" between Tideman-Johnson Park and the Mt. Scott area would be lost, decreasing interspersion value of the creek corridor for terrestrial species.

Consequences of limiting or prohibiting Conflicting Uses: Residential development would be limited to EC-designated areas (4 acres of the 11-acre site) or outside the resource, requiring clustering and possible overall reductions in density.

SITE SIZE: 35 acres
LOCATION: Springwater Line (N); I-205 (E); SE 92nd Avenue (W);
NEIGHBORHOOD: Lents
DATE OF INVENTORY: June, September 1990

HABITAT CLASSIFICATION

- Riverine, Permanently Flooded, Unconsolidated Bottom.
- Palustrine, Scrub-Shrub, Broad-leaved Deciduous, Seasonally Flooded.

GENERAL DESCRIPTION

This site is primarily single and multi-family development or cleared open space.

SIGNIFICANT RESOURCE VALUES

Water, stormwater, interspersion, fisheries

QUANTITY OF RESOURCE

Outside of the creek corridor, little resource is present. The steep banked section of Johnson Creek is vegetated by a closed canopy scrub, shrub-willow and blackberry community. There are no trees present along this stretch of the creek. The area was probably cleared and filled during construction of the I-205 interchange. The riparian strip is only about 10 feet wide. Interspersion with other areas is limited by the roads and interstate on all sides. There is a small island covered with reed canarygrass in the middle of the creek, providing potential nesting area for waterfowl.

QUALITY OF RESOURCES:

This is one of the lowest rating stretches for wildlife habitat value along Johnson Creek. In it's present state, the scenic value of Johnson Creek is almost non-existent at this point. Because of the unresponsive surrounding urban design there is little indication of the creek's presence.

As the rest of Johnson Creek, this section functions as a travel corridor and water source for wildlife moving up and down the creek.

Score for Wildlife Habitat Value: 30	**Range for All Sites** =18 to 83
Vegetation	
Food (variety)	low
Cover(structural diversity)	medium
Human Disturbance:	high
Interspersion:	medium

MANAGEMENT RECOMMENDATIONS

Removing garbage, terracing slopes, and revegetating with native species to establish an under and overstory of plant materials would increase existing resource values significantly. Creating a treed riparian fringe for drivers viewing the City from I-205 would increase the visual presence of Johnson Creek and reinforce the notion of the livability of Portland.

LAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES:

Zones	Area Affected by EC Zone	Area Affected by EP Zone
LR10	<1	3
R2	1	<1
LR7	1	1
CN	<1	<1

SITE-SPECIFIC ESEE COMMENTS

Conflicting Uses: Industrial, residential, commercial development.

SITE SIZE: 26 acres
LOCATION: Springwater Line (N), SE 92nd Avenue (E), SE 87th Avenue (W); and SE Crystal Springs Boulevard (S)
NEIGHBORHOOD: Lents
DATE OF INVENTORY: June, September 1990

HABITAT CLASSIFICATION

- Riverine, Permanently Flooded, Unconsolidated Bottom.
- Palustrine, Scrub-Shrub, Broad-leaved Deciduous, Seasonally Flooded.

GENERAL DESCRIPTION

Natural resources are confined almost entirely to the creek and bank, unpaved portions of the I-205 right-of-way, and a large field on the southern portion of the site. The site is bounded by I-205 on the east and south, industrial activities along the north and northwest, and milti-family development to the southwest. Industrial activities also occupy the land between Johnson Creek and the Springwater Line.

SIGNIFICANT RESOURCE VALUES

Water, stormwater, interspersion, fisheries

QUANTITY OF RESOURCE

Significant remaining resources are located almost entirely within the creek and banks.

QUALITY OF RESOURCE

This section of the creek was lined with concrete during construction of I-205. In spite of this, riparian shrubs are being reestablished, providing limited shading of the creek. As with the rest of Johnson Creek, this section functions as a travel corridor and water source for wildlife moving up and down the creek.

Score for Wildlife Habitat Value: 30		**Range for All Sites** =18 to 83
Vegetation		
Food (variety)	low	
Cover (structural diversity)	low	
Human Disturbance:	low	
Interspersion:	high	

MANAGEMENT RECOMMENDATIONS

Removing garbage, terracing slopes, revegetating, and creating a buffer between the resource area and the adjacent land use would greatly enhance the habitat value of the site. Large trees at this site and the east side of I-205 would provide a visual gateway into southeast Portland, and "showcase" the creek corridor.

LAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES

Zones	Area Affected by EC Zone	Area Affected by EN Zone
IH	<1 acre	<1 acre
IG2	<1	
R10(R2)	<1	1

ESEE COMMENTS

Conflicting Uses: Residential and future neighborhood commercial development south of SE Flavel Street, and general industrial use to the north.

SITE: 14 UNIT: I-205 East Map: 3740; 3741, 3840

SITE SIZE: 121 acres
LOCATION: I-205 (W); Springwater Line (N); SE Knapp Street (S); SE 105th Avenue (E)
NEIGHBORHOOD: Lents
DATE OF INVENTORY: February 1987, September 1990

HABITAT CLASSIFICATION

- Riverine, Lower Perennial, Permanently Flooded, Unconsolidated Bottom
- Palustrine, Emergent, Persistent, Seasonally Flooded
- Urban Hardtop

GENERAL DESCRIPTION

This is a large industrial site that has been vacant for a number of years. Most of it is open. It is surrounded by single-family residential development to the east and on Mt. Scott to the south. I-205 is its west border, while industrial and mixed residential development is to the north, between the Springwater Line and SE Foster Road.

SIGNIFICANT RESOURCE VALUES

Water, storm drainage, fish and wildlife habitat, aesthetics, flood storage, pollution and nutrient retention and removal, sediment trapping, and interspersion.

QUANTITY OF RESOURCE

This 121-acre site is a flat bottomland (Publisher's Paper) with moderate seasonal watercourses and depressions. A wetland of about five acres is located in the northwest corner of the site, next to I-205. The Johnson Creek channel is lined with intermittent stands of cottonwood, blackberry, and grasses. Eighty-to-ninety percent of the site is weedy, disturbed vegetation, and about two-thirds within the 100-year flood plain. The floodway is uniformly 200 feet wide through the site.

This site has great potential for habitat restoration. In its present condition this section functions as a travel corridor for wildlife moving up and down the creek, and to and from the adjacent, Mt. Scott upland which borders to the south.

A small flat grassland bordered by trees and blackberries is adjacent to the drainageway in the northeast corner of the site. Ten-to-fifteen percent of the total site is hardtop surface. The combination of hardtop and weedy vegetation provides very limited cover or habitat except for some urban adapted wildlife species such as starlings, pigeons, and crows. The small grassland with tree border increase the food/cover for a greater diversity of potential species such as flickers, black-capped chickadees, song sparrows, rabbits, etc.

A 10-acre wooded strip about 200 feet deep along the south boundary slopes steeply upward as the base of Mt. Scott at its northern edge there is a drainageway which directs stormwater to the west and into Johnson Creek near I-205.

QUALITY OF RESOURCES

The site provides limited value for wildlife along Johnson Creek, except for those species that adapt well to urbanization. The wetland in the northwest corner is isolated, and provides some protection to wildlife.

There is speculation that much of the site is overlayed with several feet of sawdust from historic use of the site as a sawmill. Sawdust draws nitrogen from the soil, making it generally a poor planting or growing medium.

From an urban design standpoint, natural resources on this site have much to offer. To the south, Mt. Scott provides a scenic backdrop and edge to any future development. Johnson Creek also provides an edge for the large southern portion, or a seam (unifying element) for the entire site. The wetland in the northwest corner can serve as a landmark and gateway into the Lents neighborhood and Portland for those traveling north on I-205.

Score for Wildlife Habitat Value: 41	**Range for All Sites** =18 to 83
Vegetation	
Food (variety)	medium
Cover(structural diversity)	low
Human Disturbance:	high
Interspersion:	low

MANAGEMENT RECOMMENDATIONS

Because of its size, location, and relatively undeveloped state, the site has more management potential for water resources and wildlife than any other site along Johnson Creek. It also has much development potential, although constrained by the flood plain, access, and load bearing limitations of the soil, if there is a high organic content as previously speculated. Many uses have been suggested for the site by neighbors, including a dam and stormwater detention, multi-family residential development, a park (including RV facilities), and employment-intensive industrial or commercial activity. All could be compatible with existing resources, although the existing Comprehensive Plan designation and zoning would preclude residential and most commercial activities.

Following are recommendations for resource protection and ways the resource could be incorporated into any future development:

- Retain the forested slope along the southern site boundary to provide a backdrop for future development;
- Consider enhancement of the drainageway on the southern boundary at the foot of the slope, possibly extending it eastward into the next site and connecting to Johnson Creek at NE 112th Avenue to serve as an overflow channel;
- Consider incorporating stormwater detention or retention facilities throughout future development as amenities such as ponds, wetlands, or open lawns or fields;
- Establish a forested riparian strip along the creek for both wildlife and to increase the visual presence of the waterway;
- Use the creek corridor as a major unifying design element for the entire site; and
- Protect and enhance the wetland in the northwest corner, to serve as a refuge for wildlife and a gateway feature for drivers entering Portland along I-205.

LAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES

Zones	Area Affected by EC Zone	Area Affected by EN Zone
IH	16 acres	21 acres
IG2	1	5

SITE-SPECIFIC ESEE COMMENTS

Conflicting Uses: Industrial development

SITE SIZE: 66 acres
LOCATION: SE 105th Avenue (W); SE 112th Avenue (E); SE Foster Road (N), and the base of Mt. Scott, North of SE Knapp Street (S)
NEIGHBORHOOD: Lents, Informal neighborhood group known as Land Owners And Friends of Johnson Creek (LOAF)
DATE OF INVENTORY: March 1987, September 1990

HABITAT CLASSIFICATION

- Riverine, Lower Perennial, Permanently Flooded, Unconsolidated Bottom
- Riverine, Lower Perennial, Seasonally Flooded, Artificial Rocky Shore

GENERAL DESCRIPTION

This is a well-defined neighborhood of primarily single-family homes. To the west is the Publisher's Paper site, SE Foster Road and industrial properties along the north side, SE 112th Avenue to the east, and the toe of the northern slope of Mt. Scott to the south. Small conforming and nonconforming commercial and industrial uses are located along SE Foster Road and throughout the site. Roads are unimproved and, although a sewer interceptor runs along the southern boundary, few properties are connected. Most of the area is within the 100-year flood plain.

SIGNIFICANT RESOURCE VALUES

Water, storm drainage, scenic, fish and wildlife habitat, pollution and nutrient retention and removal, sediment trapping, recreation

QUANTITY OF RESOURCES

A major portion of the 65-acre site is in the designated floodway. The creek winds through the site with four major bends in the creek, creating about 3,400 feet of creek channel across the 2,000-foot wide site. In some portions of the creek, the lack of vegetation (trees, shrubs, and groundcover) reduces habitat area and increases summer water temperatures.

QUALITY OF RESOURCE

Prior to 1921 the Johnson Creek channel was located at the foot of Mt. Scott. In 1921 the hillside was clearcut. Later that winter it slid and diverted the creek to its present course. Annual flooding was encouraged by local farmers to deposit the creek's rich silt. The stream channel was lined during the early 1930's WPA project, some of which is visible today. According to residents, land near the historic channel at the foot of Mt. Scott is lower than along the present creek, causing ponding to occur during periods of heavy rainfall. This area drains generally to the west, to the southern drainageway of Site 14.

Most of the site is dominated by a residential landscape treatment of lawn and garden up to the creek banks. There is some blackberry, willow, and alder growing in the riprap but native vegetation is minimal. Despite extensive human use, the stream and existing riparian vegetation provide habitat for beaver and muskrat. There are also signs that the cut bank along the stream provides nesting habitat for swallows. The wooded hillside of Mt. Scott is connected to the creek corridor loosely by vegetation throughout the neighborhood, allowing travel between the uplands and water. Litter and garbage are present.

The upland and stream habitat is degraded. The site provides limited value for wildlife along Johnson Creek, except for those species that adapt well to urbanization. However, habitat for beaver and muskrat exists.

From an urban design standpoint, the site has much to offer. It has well-defined boundaries and access points, giving a strong sense of place. Like Site 14 to the immediate west (Publisher's Paper), Mt. Scott provides a strong visual backdrop, as well as upland habitat value. Johnson Creek is near SE Foster Road, and forms a strong northern boundary which must be crossed to enter into the neighborhood on NE 106th and 108th Avenues.

Score for Wildlife Habitat Value: 50	**Range for All Sites** =18 to 83
Vegetation	
Food (variety)	medium
Cover(structural diversity)	medium
Human Disturbance:	medium
Interspersion:	medium

MANAGEMENT RECOMMENDATIONS

- Through restoration and revegetation, this site could be enhanced for its wildlife habitat value.
- To reduce water temperature, plant trees to shade the creek.
- Plant trees along the riparian strip to enhance visual impact, edge to the neighborhood, and "sense of place."
- Consider establishing an overflow channel from where the creek crosses SE 112th Avenue, west along the toe of Mt. Scott, to connect with the south drainageway at Publisher's Paper, to reduce flooding and bank erosion along the serpentine main channel;
- Regrading to create shallower banks reduce erosion, help stabilize the banks while reducing siltation into the creek.
- Because of high visibility, lack of paved roads, and relative ubiquity, consider using this site as a test area for alternative road construction or drainage treatment techniques that reduce surface runoff and control pollution.

LAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES:

Zones	Amount Affected by EC Zone	Amount Affected by EP Zone
EG2	1	<1
CN	<1	<1
R10	7	6

ESEE COMMENTS

Conflicting Uses: Residential, Commercial, light industrial

Consequences of allowing Conflicting Uses:
According to residents, recent channel improvements have reduced flooding considerably (the last reported event was in 1982). However, much of the site continues to remain in the 100-year flood plain, according to FEMA. Because of the broad flat nature of this site, when flooding does occur, large areas can be inundated. In its present condition this site provides flood storage and decreases the storm water velocity during flooding, possible resulting in less downstream flooding, erosion, and property damage (at the expense of this site).

Allowing continued development without reducing the flood threat would simply subject continually greater investment to possible flood damage. Additionally, present regulations limit residential densities within the flood plain to half of what they would be out of it.

Consequences of limiting or prohibiting Conflicting Uses
Limiting conflicting uses along the creek corridor and reducing flood potential through use of a bypass, detention system, or a combination would actually increase development potential in the residential area, as the plan district would allow a doubling of density for lands removed from the flood plain. This results in major economic gain.

Retention and enhancement of the riparian strip would separate and buffer light industrial and commercial uses fronting SE Foster Road from the residential area, protecting and increasing livability of the neighborhood.

SITE-SPECIFIC COMPATIBLE USES

Repair or replacement of existing (but not new) pedestrian bridges serving property under the same ownership but divided by the creek if:

- A maximum riparian area of 10 feet on each bridgehead is disturbed;
- There is no enlargement or relocation of bridge piers;
- There is no filling or blocking of the floodway; and
- They are elevated to the height required by FEMA regulations.

SITE: 16 OJ* **UNIT:** Beggar's Tick Marsh **Maps:** 3641
*OJ= Other jurisdiction is Multnomah County

SITE SIZE: 20 acres
LOCATION: West of SE 111th Avenue north of SE Foster Road.
DATE OF INVENTORY: March 1987, July 1990, September 1990

HABITAT CLASSIFICATION

- Palustrine, Emergent Persistent (plants), Permanently, Semipermanently, and Seasonally Flooded.
- Palustrine, Scrub-Shrub, Semipermanently and Seasonally Flooded.

GENERAL DESCRIPTION

This is the highest-rated site in the Johnson Creek basin. It is located in and maintained by Multnomah County as a wildlife habitat preserve. Its primary significance is the plant diversity, which in turn supports a greater wildlife diversity.

Beggar's Tick is a 20-acre marsh surrounded by residential and industrial development. The littoral is a dense growth of blackberry, willow, and hawthorne. About 20% of the inundated area consists of emergent cattail, spike-rush, sedge, and spirea. The marsh provides resting area and food for a large diversity of wintering waterfowl, as well as habitat for reptile, amphibian, and aquatic mammal (muskrats, beavers) species. More than one hundred ducks were counted during a January visit to the site. The surrounding vegetation provides food, cover, nest, and perching habitat for passerine, raptor, pheasant, and small mammal species. This high quality natural area serves as an island refuge for diverse wildlife species which formally occupied the surrounding urban region. The diversity and number of birds observed illustrate the importance of the marsh as a habitat for wintering species.

The educational potential is extremely high. The marsh is surrounded on all sides by residential and commercial/industrial development. People with horses ride through the marsh in the summer months when water levels are low. Some bird watching and fishing occurs. Local residents could be educated about source and non-point source pollution, storm water retention, and the flora and fauna of a wetland.

Beggars Tick Marsh has been included in this inventory because of its proximity to Johnson Creek, as an example of an undisturbed and relatively large wetland, and because of its hydrologic connection to Johnson Creek (which is presently not well understood but being studied).

QUANTITY OF RESOURCES

Wetland sites of 20 acres within the urban area are rare and provide important habitat for many songbird, waterfowl, mammal and herptile species. The diversity of the scrub/shrub and emergent wetland promotes greater wildlife species diversity.

QUALITY OF RESOURCES

Beggar's Tick Marsh is one of the highest ranking sites for wildlife habitat value within the City of Portland. It has been designated as one of the model sites for this study, representing a predominantly native wetland plant community. It is hoped that other sites within the basin can be modeled after Beggar's Tick Marsh in terms of plant species diversity, design, and creation of wetland, restoration, or enhancement projects.

Score for Wildlife Habitat Value: 83	**Range for all sites** = 18 to 83
Vegetation	
Food (variety)	high
Cover(structural diversity)	high
Human Disturbance:	medium
Interspersion:	medium

ESEE COMMENTS

This site is owned and in the jurisdiction of Multnomah County. The site was acquired by the County in 1968 to serve as flood storage. In 1987, the County rezoned the property from light industrial to low density residential in order to preserve its natural qualities. It has recently been zoned as Open Space, and the County has taken steps to protect the natural resource values. The City of Portland has no authority to control zoning or protection of this habitat area.

The mangement plan for Beggar's Tick Marsh prepared by Multnomah County states that contaminants from surrounding industrial land uses adversly impact the resource, as do garbage dumping and inappropriate recreation uses like horseback riding through the marsh.

SITE: 17 **UNIT:** 112th-117th Meadow **Map:** 3741

SITE SIZE: 27 acres
LOCATION: Springwater Line (N), SE 110th Avenue (W), extension of SE 117th Avenue (E), and SE Brookside Drive (S).
NEIGHBORHOOD: Powellhurst-Gilbert
DATE OF INVENTORY: March 1987, July and August 1990, April and July 1991

HABITAT CLASSIFICATION

- Riverine, Lower Perennial, Permanently Flooded, Unconsolidated Bottom.
- Palustrine, Emergent Persistent, Seasonally Flooded.

GENERAL DESCRIPTION

This site includes an abandoned, 16-acre pasture and wetland that is presently dominated by reed canarygrass, blackberry, and willow. The streambank is overgrown with blackberries and small strips of willow. On the southern boundary of the site there is approximately a 50-foot wide strip of deciduous trees that buffer this site from the adjacent and relatively new, residential subdivision. Land bordering SE Foster Road is zoned commercial and industrial, and is presently generally a mix of this and low-density residential uses. A drive-in theater is located on the northern side of SE Foster Road, south of the Springwater line.

Large expanses of reed canarygrass provide habitat for birds and small mammals. Adjacent forests bordering on the east provide perch sites for raptors who feed on small mammals. This site provides an important function of providing flood storage during peak flooding.

SIGNIFICANT RESOURCE VALUES

Water, storm drainage, scenic, fish and wildlife habitat including connection between Johnson Creek and Beggar's Tick Marsh, pollution and nutrient retention and removal, sediment trapping, recreation

QUANTITY OF RESOURCES

Only about five of the twenty-seven acres on this site are developed. The combination of wetland, open grassland, deciduous trees, and adjacent coniferous forest is uncommon within the Johnson Creek Basin. This range of habitat type supports a diversity of species. The curvilinear character of the creek and gradual grades result in a floodway that extends over two-thirds of the site. The floodway or wetland area is up to 400 feet wide, narrowing to 70 feet at the eastern edge. Three-fourths of the remainder of the site is in the 100-year flood plain.

The open space north of SE Foster Road acts as a wildlife corridor, allowing the potential for wildlife recharge from Johnson Creek to Beggar's Tick Marsh, a significant natural resource fully protected by Multnomah County.

QUALITY OF RESOURCES

Although the wetland area along Johnson Creek has been disturbed and is dominated by Himalayan blackberry and reed canarygrass, it provides an important wildlife habitat function within the the Johnson Creek basin. The combination of meadow, wet meadow, forest, riparian and creek habitat allows use and travel by a large diversity of wildlife species. Since none of the property within the floodway is developed there is little or no property damage caused by flooding.

A small pond with an island has been created in the north-central portion as mitigation for wetland fill in the southwest, adjacent to SE Brookside Drive. This provides still water and a relatively protected spot for birds from neighborhood pets.

Adjacent residential development has provided pedestrian access easements to an open space strip that borders the creek property. This allows the opportunity for viewing wildlife and suggests use of the area by children and domestic animals.

The combination of habitats is an uncommon and valued resource within the Johnson Creek basin. The diversity of habitats present supports a diversity of species.

Score for Wildlife Habitat Value: 71* **Range for All Sites** = 18 to 83

Vegetation	
Food (variety)	medium
Cover(structural diversity)	medium
Human Disturbance:	medium
Interspersion:	medium

* Because of structural similarities, the open space portion of the site north of SE Foster Road was inventoried as part of Site 16OJ (Beggar's Tick Marsh), but because it is within the city limits, it has been included inside Site 17.

MANAGEMENT RECOMMENDATIONS

Retaining and enhancing the existing habitats will add to the aesthetic and economic value of the nearby residential properties. Undeveloped and vacant land, particularly the wetland and open space directly west of the Foster Drive-In and the drive-in itself, should be considered for flood retention or detention areas, as well as continuing to function as a wildlife corridor.

LAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES:

Zones	Area affected by EC Zone	Area Affected by EP Zone
EG2	1 acre	<1 acre
CG	2	<1
IG2	2	0
R10	8	6

ESEE COMMENTS

Conflicting Uses: Single family residential development to the south and west, commercial and light industrial development north of Johnson Creek, along the south side of SE Foster Road. General industrial development along the north side of SE Foster Road.

Consequences of allowing Conflicting Uses: Not protecting the resource would likely result in development that would be subject to annual flooding damage similar to the site to the west. There would also be a loss of habitat and habitat diversity that is rare within the Johnson Creek drainage basin. Beggar's Tick Marsh, a wildlife refuge that is fully protected by Multnomah County, may lose wildlife species and population over time due to the loss of a corridor connection for population recharge between it and Johnson Creek.[1]

Consequences of limiting or prohibiting Conflicting Uses: About 80% of the four acres zoned Commercial General on this site is in the floodway. Protecting the resource will result in a loss of this potentially developable land. In order to protect the resources while achieving the comprehensive plan, residential density, it will be necessary to have attached, clustered units. This can be done on the filled land adjacent to SE Brookside Drive.

Protection of open space created by this habitat area would have a positive economic effect on the value of the existing Northern Lights subdivision because of proximity and access to view wildlife. There are four pedestrian access easements from Northern Lights to a part of this open space area (see zoning map).

Protection of resources north of SE Foster Road would remove land from potential industrial development. Use of it for stormwater retention or detention in conjunction with an overall flood control plan for the Johnson Creek basin would, however, result in greater development opportunities throughout lands in the existing flood plain.

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1 The January 1987 issue of the Natural Arteas Journal contains several articles on habitat fragmentation, patch dynamics, and the values of wildlife corridors. Additionally, Michael Soule's article "Land Use Planning and Wildlife Maintenance", Journal of the American Planning Association, Summer 1991, describes wildlife population and species impacts resulting from habitat fragmentation, corridor destruction, and adverse urban impacts.

SITE SIZE: 41 acres
LOCATION: Near SE Foster Place (N); SE Brookside Drive and SE 122nd Avenue (S); SE 128th Avenue (E); and SE 117th Avenue (W).
NEIGHBORHOOD: Pleasant Valley
DATE OF INVENTORY: February 1987, June and September 1990

HABITAT CLASSIFICATION

- Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded.
- Palustrine, Forested, Deciduous/Conifer, Seasonally Flooded and Saturated.

GENERAL DESCRIPTION

The entire site, as well as surrounding area, is zoned and developed in single family residential or recreation (Leach Botanical Garden) use. The canyon provides a secluded, forested setting which is taken advantage of in the botanical garden development.

The creek channel is rip-rapped and overgrown with blackberry. Dominant vegetation influencing the channel is a mixed forest of Douglas fir, cedar, alder, cottonwood, maple, willow, and various ornamental trees, as well as lawns and gardens.

Interspersion of this area is high, lying near large forested areas such as Powell Butte north of the creek, the Lava Boring Hills south, and the developed and undeveloped portions of Leach Botanical Garden and Bundee Park (SE 142nd and Cooper). This juxtaposition of the creek channel with large forested natural areas and parks provides not only an important source of water to animals that use the larger forested areas, but also serves as a corridor providing cover and food for movements and dispersals between the areas.

Leach Botanical Garden, straddles Johnson Creek and is located in this site area at 6704 SE 122nd Avenue. It is a historic and environmental education resource and designated as a "scenic resource" by the City. It has a Rank 1 status on the City of Portland's, Historic Inventory and is eligible for the National Register. The colonial revival-styled home was built in 1933 by John and Lilla Leach. Mrs. Leach was a nationally known botanist with particular interest in native plants and Mr. Leach was a local pharmacist and civic leader. The property is now owned by the City of Portland and operated by a non-profit organization. Environmental education programs are offered, and the creek and garden are used as outdoor classrooms.

SIGNIFICANT RESOURCE VALUES

Water, storm drainage, scenic, fish and wildlife habitat, aesthetics, heritage, flood storage, pollution and nutrient retention and removal, sediment trapping, recreation, and education

QUANTITY OF RESOURCES

This site is made up of half-acre-plus sized lots that are occupied with homes constructed in the 1950's. The oversized lot sizes have allowed for the natural growth of Douglas Fir and Western Red Cedars trees to remain. The forest canopy is intact and the surrounding low-density residential provides a quiet setting that is conducive to wildlife.

Natural understory areas have been replaced with lawns and exotic garden plants. The riparian area on each side of the creek is generally less than 30-feet wide, dominated by blackberries, willows, and alders. Due to the steepness of the canyon walls, the floodway is confined to a narrow strip that is generally 100 feet wide, with the 100-year flood plain somewhat less.

From SE 117th Avenue east, Johnson Creek follows the base of the north slope of Mt. Scott. The canyon walls rise 70 feet from the creek channel with 20% slopes. Interspersion of this area is high, being near large forested areas such as Powell Butte to the north of the creek, the Lava Boring Hills to the south, and the developed and undeveloped parks of Leach's Botanical Garden and Bundee Park (SE 142nd Avenue and SE Cooper Street).

QUALITY OF RESOURCES

This site received a score of 69, which is a relatively high rating. The forest overstory remains, but the riparian understory has been largely replaced with residential gardens, reducing the quality and amount of habitat area.

Score for Wildlife Habitat Value: 69	**Range for All Sites** =18 to 83
Vegetation	
Food (variety)	medium
Cover(structural diversity)	medium
Human Disturbance:	high
Interspersion:	medium

MANAGEMENT RECOMMENDATIONS

To enhance this site for both wildlife and recreation, native vegetation should be planted along the entire channel in the riparian zone and within the forest canopy area to shade and control the water temperature extremes of Johnson Creek and to replace habitat lost by infill development. Riprapping should be removed to increase the amount of area for plant growth, nesting, and fish spawning. Replacement of lawn with riparian plant species would increase habitat diversity.

LAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES:

Zone	Area Affected by EC Zone	Area Affected by EP Zone
R10	4 acres	3 acres
OS	6	2

SITE-SPECIFIC ESEE COMMENTS

Consequences of allowing Conflicting Uses: The parcels in this area are characteristically, half-acre lots with over 300 feet of depth making them suitable for partitioning into two lots. Due to the oversized lots, it appears that infill development and resource protection can occur simultaneously. Consideration will need to be given to preventing erosion during site construction and to retention of vegetation. In some cases the location of existing homesites will limit infill development.

Property values in the area would likely drop if the native vegetation particularly, the Douglas fir and western red cedar, were removed as infill development occurs. It is the canyon slopes, creek, and forest cover that creates the unique neighborhood character.

Consequences of limiting or prohibiting Conflicting Uses: Protection will reinforce the social and economic value placed on the natural beauty of this neighborhood. Protecting the forest and creek habitat in this area will reinforce the character of Leach Botanical Garden and the public investment made there.

SITE-SPECIFIC COMPATIBLE USES AND ACTIVITIES

- Development in conformance with the *Resource Management Plan for Leach Botanical Garden.*

SITE SIZE: 34 acres
LOCATION: SE 127th Avenue (W); SE SE 131st Avenue (E); North of Flavel St. (S).
NEIGHBORHOOD: Pleasant Valley
DATE OF INVENTORY: February 1987, September 1990

HABITAT CLASSIFICATION

- Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded.
- Palustrine, Forested, Deciduous/Conifer, Seasonally Flooded and Saturated.

GENERAL DESCRIPTION

The site is a mix of developed and undeveloped single family residential land, surrounded by similar uses. Areas which have not been subdivided are largely open fields or are forested.

SIGNIFICANT RESOURCE VALUES

Water, storm drainage, fish and wildlife habitat, aesthetics, scenic, flood storage, pollution and nutrient retention and removal, sediment trapping

QUANTITY OF RESOURCES

The creek and canyon character are the same as the site to the west (Site 19). There are 20%-sloped canyon walls that rise 70 feet above the creek. Sixty percent of the 34-acre site has a mixed, deciduous/coniferous forest cover, 30% is open pastureland, and about ten percent is developed with homes. There are no roads through this site to cut-off or disrupt animal access to the creek. Steep slopes may imped animal access to the creek in some areas.

QUALITY OF RESOURCES

Other than past logging and conversion of forest land to agricultural land, this site has little disturbance. This mid-section of the (second) Johnson Creek canyon has relatively high quality due to the combinations of habitats that are adjacent to one-another, including riparian strip, open grassland, upland, and mixed forest. No roads and the few homes (five or so) provide a relatively, quiet, natural area with cover and food, and where wildlife can move freely.

Interspersion of this area is high, lying near large forested areas such as Powell Butte to the north of the creek, the Lava Boring Hills to the south and the developed and undeveloped parks of Leach Botanical Garden and Bundee Park (SE 142nd and Cooper).

Score for Wildlife Habitat Value: 67	**Range for All Sites** =18 to 83
Vegetation	
Food (variety)	medium
Cover(structural diversity)	medium
Human Disturbance:	medium
Interspersion:	medium

MANAGEMENT RECOMMENDATIONS

To enhance this site for both wildlife and recreation, it is suggested that native vegetation be encouraged along the entire channel in the riparian zone and forest canopy be retained and expanded, to shade and control summer water temperature of Johnson Creek.

LAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES:

Zone	Area Affected by EC Zone	Area Affected by EP Zone
R10	4 acres	3 acres
R10 SEC	2	1

SITE-SPECIFIC ESEE COMMENTS

Consequences of allowing Conflicting Uses: The whole site is zoned R10, low density residential. Allowing unchecked residential development would result in continued degradation of the water quality caused by erosion of the highly erodible, clayey soils. Indiscriminate removal of vegetation would reduce habitat area, affect water temperature, and reduce dietrus material for fisheries.

Consequences of limiting or prohibiting Conflicting Uses: This site is part of the Powell Butte Mt. Scott Plan District area, where consideration is given to protecting more-difficult-to-build-on areas of the site. Planned-unit development is an option where density is transferred from one area of the site(s) to another. Limiting residential development to flatter, more upland areas, away from stream and creek drainages will help keep development costs lowered, thus reducing housing costs while also protect habitat areas and limit soil erosion into Johnson Creek.

SITE: 20 **UNIT:** Deardorf Road (West) **Map:** 3744

SITE SIZE: 22 acres
LOCATION: Near 131st Avenue (W); South of SE Knapp Street (S); SE Deardorf Road (E); and near SE Blackberry Circle (N.)
NEIGHBORHOOD: Pleasant Valley
DATE OF INVENTORY: February 1987, September 1990

HABITAT CLASSIFICATION

- Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded.
- Palustrine, Forested, Deciduous/Conifer, Seasonally Flooded and Saturated.

GENERAL DESCRIPTION

Most of this site is undeveloped, with single family subdivisions to the north and south. The creek bisects the site in an east-west direction.

SIGNIFICANT RESOURCE VALUES

Water, storm drainage, fish and wildlife habitat, aesthetics, flood storage, pollution and nutrient retention and removal, sediment trapping

QUANTITY OF RESOURCES

Two-thirds of this 22 acre site is forested with a mixed deciduous/coniferous forest. On the north side of the creek there is an intermittent stream that runs through an undeveloped, eight-acre parcel that is parallel and west of Deardorf Rd. The grades are relatively steep on the both sides of the creek, ranging from 10 to 20%. The dryer north side appears ready for development. There is a relatively new street surrounded by a four acres of open, grass-covered land.

QUALITY OF RESOURCES

The channel is riprapped and overgrown with blackberry. Dominant vegetation influencing the channel is a mixed forest of Douglas-fir, cedar, alder, cottonwood, maple, willow, and various ornamental trees, as well as lawns and gardens. The creek is well-shaded throughout this stretch with some pools, providing habitat for fish and other aquatic species. Interspersion of this area is high, lying near large forested areas such as Powell Butte to the north of the creek, the Lava Boring Hills to the south and the developed and undeveloped parks of Leach Botanical Garden and Bundee Park (SE 142nd and Cooper). This juxtaposition of the creek channel with large forested natural areas and parks provides not only a potential important source of water to animals that use the larger forested areas, but also acts as a corridor providing cover and food, and movements and dispersal between sites.

This site shows the impacts of human use (residential development and riprap) on the stream corridor. A covered bridge along Deardorf Road crosses the creek at this section. There is a lot of garbage along and in the creek on both sides of the road.

Score for Wildlife Habitat Value: 65	**Range for All Sites** =18 to 83
Vegetation	
Food (variety)	medium
Cover(structural diversity)	medium
Human Disturbance:	medium
Interspersion:	medium

MANAGEMENT RECOMMENDATIONS

To enhance this site for both wildlife and recreation it is suggested that natural vegetation be encouraged along the entire channel in the riparian zone and encourage a forest canopy to shade and control the water temperature extremes of Johnson Creek.

LAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES:

Zone	Area Affected by EC Zone	Area Affected by EP Zone
R10	11 acres	1 acre

ESEE COMMENTS

Consequences of allowing Conflicting Uses: The whole site is zoned R10, low density residential. Allowing unchecked, residential development would result in continued degradation of the water quality caused by erosion of the clayey soils. Indiscriminate removal of vegetation would reduce habitat area and adversely impact the temperature and condition of the stream and reduce dietrius material for fisheries.

Consequences of limiting or prohibiting Conflicting Uses: The majority of the 22-acres is undeveloped land. R10 density can be achieved while protecting the habitat if there is careful site analysis and construction, and clustering of units. In order to disrupt the least amount of ground and habitat, attached units are the best solution. Attached units would have an energy savings benefit created by common wall construction. There would be a social benefit of providing a housing type other than single-family residential, while also having the enjoyment of natural surroundings.

SITE SIZE: 13 acres
LOCATION: SE Deardorf Rd. (W); 750 feet west of SE Deardorf Rd. (E); City Limits east of SE Glenwood Dr. (N); and north of SE Clatsop Street (N)
NEIGHBORHOOD: Pleasant Valley
DATE OF INVENTORY: February 1987, September 1990

HABITAT CLASSIFICATION

- Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded.
- Palustrine, Forested, Deciduous/Conifer, Seasonally Flooded and Saturated.

GENERAL DESCRIPTION

The present condition of the site is undeveloped with only two homes and upland northern and southern halves of the site in a agricultural uses. The more severely sloping areas on each side of the creek have at least a 200-foot wide area that is in forest cover.

SIGNIFICANT NATURAL RESOURCES

Water, storm drainage, fish and wildlife habitat, aesthetics, flood storage, pollution and nutrient retention and removal, sediment trapping

QUANTITY OF RESOURCE

This 13-acre site is made up of two parcels that are both occupied with homes and used partially for agricultural uses. Half of the site is in a natural condition with second growth mixed deciduous/coniferous forest, and the rest is open field and pastureland located on the flatter, upland areas away from the creek. Land north of the site is in single family residential development, while the other sides are bordered by forests or agricultural uses.

QUALITY OF RESOURCES

The channel is rip-rapped and overgrown with blackberry. The dominant vegetation influencing the channel are a mixed forest of Douglas-fir, cedar, alder, cottonwood, maple, willow, and various ornamental trees, as well as lawns and gardens. The creek is shaded throughout this site and has some pools, providing relatively good habitat for fish and other aquatic species. Interspersion of this area is high, lying near the large forested areas of Powell Butte to the north of the creek, the Lava Boring Hills to the south and the developed and undeveloped parks of Leach Botanical Garden and Bundee Park (SE 142nd Avenue and SE Cooper Street). This juxtaposition of the creek channel with large forested natural areas and parks provides not only a potential important source of water to animals that use the larger forested areas but also acts as a corridor providing cover and food, and for movements and dispersals between areas.

The canyon is begins to open up within this stretch of the creek, and adjacent agricultural uses are present. These agricultural uses decrease the habitat quality through chemical runoff, clearing of vegetation, and sedimentation.

The covered bridge crossing Deardorf Road crosses the creek at this section. There is a lot of garbage along and in the creek on either side of the road.

Score for Wildlife Habitat Value: 63	Range for All Sites = 18 to 83
Vegetation	
Food (variety)	medium
Cover(structural diversity)	medium
Human Disturbance:	low
Interspersion:	medium

MANAGEMENT RECOMMENDATIONS

To enhance this site for both wildlife and recreation, it is suggested that native vegetation be encouraged along the entire channel in the riparian zone and a forest canopy shade Johnson Creek.

LAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES

Zone	Area Affected by EC Zone	Area Affected by EP Zone
R10	5 acres	1 acre

SITE-SPECIFIC ESEE COMMENT

Consequences of allowing Conflicting Uses: There is a potential for about forty-two additional housing units on this site. Allowing unchecked, residential development would result in continued degradation of the water quality caused by erosion of the clayey soils. Indiscriminate removal of vegetation would reduce habitat area, shading of the creek, and the amount of dietrus material for fisheries.

Consequences of limiting or prohibiting Conflicting Uses: Residential density can be achieved while protecting the habitat through careful site analysis, construction, and clustering of units. In order to disrupt the least amount of ground and habitat, attached units would be the best solution. Attached units would have an energy savings benefit created by the common-wall construction. There would also be the social benefit of providing a housing type other than single-family residential, while also having the enjoyment of natural surroundings.

SITE SIZE: 14 acres
LOCATION: Bundee Park and areas east on SE Cooper Street, and Tract C of Eastridge Park Subdivision
NEIGHBORHOOD: Pleasant Valley
DATE OF INVENTORY: February1987, June 1990

HABITAT CLASSIFICATION

- Palustrine, Emergent Persistent Permanently, Semipermanently, and Seasonally Flooded.
- Palustrine, Forested, Semipermanently and Seasonally Flooded.

GENERAL DESCRIPTION

Bundee Park , a well-kept secret, is a 3.6-acre City park accessible only be a narrow dirt road (SE 141st Avenue) off SE Foster Road. The rest of the site is open space or undeveloped property abutting the park.

SIGNIFICANT RESOURCE VALUES

Water, storm drainage, fish and wildlife habitat, aesthetics, flood storage, pollution and nutrient retention and removal, sediment trapping, recreation, education

QUANTITY OF RESOURCE

This site (Bundee Park, Tract C, and privately-held properties) is undeveloped and a remnant of what much of the Johnson Creek riparian corridor looked like prior to alterations and removal of forested vegetation. Structural diversity is high, characterized by a Western Red Cedar and Douglas Fir overstory and a well-developed native shrub and herbaceous layer understory. Plant species diversity is high and primarily comprised of native plants.

Eastridge Subdivision's Tract C is on a north facing slope above the creek. It is an undeveloped 1.5 acre site that is a part of the Boring Lava Hills and surrounding undeveloped forested area. It has similar vegetative cover and habitat attributes as Bundee Park.

QUALITY OF RESOURCES:

Bundee Park is one of the few areas of primarily-native riparian vegetation left intact within the Johnson Creek basin. Bundee Park has been chosen as a model site to demonstrate the structure and species diversity of a primarily-native riparian forest. This is a high quality habitat site.

Score for Wildlife Habitat Value: 81		**Range for All Sites** =18 to 83
Vegetation		
Food (variety)	high	
Cover(structural diversity)	high	
Human Disturbance:	low	
Interspersion:	high	

MANAGEMENT RECOMMENDATIONS

Riparian restoration projects within the Johnson Creek basin should look to Bundee Park as an example a primarily native riparian forest that has a well-defined structure and species diversity. Bundee Park should be developed as a natural area for residents of the area to enjoy rather than as an urban neighborhood park. The small site size of the park makes it more suitable for a natural area.

LAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES:

Zone	Area Affected by EC Zone	Area Affected by EP Zone
R10	<1 acre	2 acre
OS		4

SITE-SPECIFIC ESEE COMMENT

Conflicting Uses: Identified conflicting uses within this site area would be urban park development with extensive paved surfaces and removal of trees for park landscaping, play fields, play equipment, or axillary park facilities such as parking lots and restrooms. The residential development intended for the portion of the site southeast of the park also presents a conflict.

Consequences of Allowing Conflicting Uses: Both Bundee Park and the Tract C could be lost to urban park-type development without some level of protection; resulting in further degradation of the creek corridor through loss of vegetation that provides food, cover, and shade.

In order to construct one of the three housing units possible within the resource area it would be necessary to demonstrate that the FEMA regulations were being met. This would likely result in no construction or construction on stilts for one unit. The remaining potential two units (created through land division) would be within 50 feet of the floodway and with in 100 feet of the center of the creek channel. This close proximity to the creek would result in a loss of habitat and flood storage area.

Consequences of limiting or prohibiting Conflicting Uses: Placing overlay zoning on the two open space sites would limit any park design and function. A likely result of the zoning would be a "natural treatment" of both areas limiting park uses to passive activities.

For the remainder of the site, which is zoned R10 and is part of the Powell Butte/Mt. Scott Plan District, there would be no loss of development potential on privately-held lots, although environmental review to ensure protection of the Johnson Creek corridor would be required.

SITE SIZE: 28 acres
LOCATION: South of SE Foster Road, spanning SE Barbara Welch Road for a distance of about 1,200 feet, to SE Cooper Street
NEIGHBORHOOD: Pleasant Valley
DATE OF INVENTORY: February 1987, July 1990

HABITAT CLASSIFICATION

- Palustrine, Emergent Persistent (plants), Permanently, Semipermanently, and Seasonally Flooded.
- Palustrine, Forested, Semipermanently and Seasonally Flooded.

GENERAL DESCRIPTION

This site is located in an area of low-density single family homes and undeveloped forested or cleared lots. It is at the base of the Boring Hills.

NATURAL RESOURCE VALUES

Water, storm drainage, fish and wildlife habitat, aesthetics, flood storage, pollution and nutrient retention and removal, sediment trapping,

QUANTITY OF RESOURCE

The floodway is uniformly about 70-feet wide through this site, with a narrow 100-year flood plain (0' to 120' wide) on each site of the creek. The riparian strip and tree covered area corresponds to the floodway, and are also only about 70 feet wide. The once-gradual slopes are now filled, and drop at a 1:1 slope 30 feet to the creek channel. This site has a geologic hazard rating of moderate-severe, severe, and extremely severe, with a major portion of the site classified as severe. West of the creek the grades smooth out where filling has occurred. To the east of Barbara Welch Road the grades continue at a 1:1 slope. The southeast portion of this site is part of what is suspected to be an ancient, inactive, deep-rooted large landslide area.

QUALITY OF RESOURCES

This stretch of Johnson Creek has been filled and altered within the past twenty years. The banks are steep, high, and vegetated with young alder, willow, bigleaf maple, and Himalayan blackberry. The floodway is narrow and well-shaded at this point. There are roads and buildings immediately adjacent both sides of the creek. Runoff and erosion are potential problems.

Resource value in this portion of the creek is limited, due to adjacent land uses which have negatively modified the creek habitat by removing vegetation and creating steep banks. Interspersion with other areas is high, proximity to Powell Butte and Bundee Park. This section of the creek functions with the rest of Johnson Creek as a travel corridor for wildlife up and down the creek as well as a connector to the adjacent upland sites.

Score for Wildlife Habitat Value: 45	**Range for All Sites** =18 to 83
Vegetation	
Food (variety)	medium
Cover(structural diversity)	medium
Human Disturbance:	medium
Interspersion:	high

MANAGEMENT RECOMMENDATIONS

Continuation and enhancement of the riparian strip and erosion control are major actions which would protect the resource.

LAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES:

Zone	Area Affected by EC Zone	Area Affected by EP Zone
R5	1 acre	1 acre
R10	20	<1

ESEE COMMENTS

Conflicting Uses: Residential development at both R5 (about 7 acres) and R10 density

Consequences of allowing Conflicting Uses: Loss of forest canopy and connection of the forested uplands to the creek would occur with uncontrolled urban development.

Consequences of limiting or prohibiting Conflicting Uses: Clustering of units on the R5-zoned property would probably be required in order to achieve full densities.

SITE: 24 **UNIT:** SW of Powell Butte (145th Ave. East) **Map:** 3645

SITE SIZE: 21 acres
LOCATION: North of SE Foster Road and south of the Springwater Line; between SE 145th Avenue and 900' east of SE Barbara Welch Road
NEIGHBORHOOD: Pleasant Valley
DATE OF INVENTORY: February 1987, July 1990

HABITAT CLASSIFICATION:
- Palustrine, Forested, Deciduous/Conifer, Seasonally Flooded, Saturated
- Palustrine, Emergent, Persistent, Seasonally Flooded

GENERAL DESCRIPTION
This site is the westernmost portion of a broad valley between Powell Butte and the Boring Hills. It is in and surrounded by low density single family and agricultural development.

NATURAL RESOURCE VALUES
Water, storm drainage, fish and wildlife habitat, aesthetics, flood storage, pollution and nutrient retention and removal, sediment trapping

QUANTITY OF RESOURCES
The riparian strip in this area is generally, 50-feet wide (and up to 100-feet) but only occurs for half the creek length. Native vegetation in the remaining area has been replaced with lawns. SE Foster Road, bordering to the south, is the where the forested canyon area located on the north face of Boring Lava Hills ends and where the low-lying, floodplain of Johnson Creek located south of Powell Butte begins. In this area the creek floodway widens to 250 feet, and the 100-year flood plain extends over the whole site except for 10-50-foot wide band of along Foster Road. On the northern edge of the site adjacent the Springwater Line there is a 2-acre stand of deciduous trees.

QUALITY OF RESOURCES
This area is a mosaic of low density residential consisting of small farms, pasture land, and forests with seasonally saturated soils with some ponding. Patches of young-to-medium-aged forests, primarily Douglas-Fir, Western Red Cedar, and shrubs (small blackberry patches) provide potential food, cover, perch, and nest sites for passerines, woodpeckers, raptors, small mammals, and reptiles. Some properties along this stretch have manicured lawns to the edge of the creek channel, which is a 1:1 sloped, riprapped channel. This treatment of the creek and creek edge limits wildlife access to and use of the creek. This area is juxtaposed with Powell Butte, the Boring Lava Hills, and Johnson Creek channel providing a diversity of habitat types.

Despite the low density of development human use of this area is high with a mixture of roads, houses, fences, power lines, railroad tracks, and drainage ditches. Bridges serving properties fronting on SE Foster Road cross the creek. The Springwater Line (site of the recreation trail) is immediately north.

Trees provide some habitat for bird and mammal species, but do not have as high of value for wildlife as the stretches of Johnson Creek directly to the east. The eastern stretches have more structural and species diversity and age class diversity, presence of a few snags, and water thermo-regulation through shade.

This area is juxtaposed with Powell Butte, Bundee Park and the Johnson Creek channel, providing a diversity of habitat types and a travel corridor between these upland and riparian areas.

Score for Wildlife Habitat Value: 49	**Range for All Sites** = 18 to 83
Vegetation	
Food (variety)	medium
Cover(structural diversity)	medium
Human Disturbance:	medium
Interspersion:	medium/high

MANAGEMENT RECOMMENDATIONS

Retain R20 zoning to maintain maximum area for flood storage. Consideration for increase in density to R10 would be more appropriate once solution for flooding and water quality information is determined as a part of the Bureau of Environmental Services plan.

The riparian strip should be reestablished, and further human intrusion (such as any recreation trail) discouraged. Since access to many properties must be across the creek, maintenance of existing bridges to serve existing dwellings should be allowed, as long as existing resources are protected.

LAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES:

Zone	Area Affected by EC Zone	Area Affected by EP Zone
R20(R10)	3 acres	2 acres

ESEE COMMENT

Conflicting Uses: Residential development, grazing, and agricultural uses

Consequences of allowing Conflicting Uses: Allowing conflicting uses results in the removal of native vegetation, pesticides use, and possibly use of the creek for irrigation. Use of the creek for irrigation reduces the summer water flow and increases the stream temperatures, diminishing the fishery resources.

SITE-SPECIFIC COMPATIBLE USES

Rebuilding and replacement of existing bridges to minimum building code requirements if:

- a maximum of 25 feet of riparian vegetation on each side of the creek is disturbed;
- there is no filling;
- there are no new piers or abutments, or enlargement of existing ones; and
- the bridge will serve only the dwelling or dwellings served at the time of adoption of this plan.

SITE: 25 **Unit:** South of Powell Butte **Maps:** 3645, 3646

SITE SIZE: 31 acres
LOCATION: South of SE Martin Street/Springwater Line, north of SE Foster Road, between SE 158th Avenue and 900 feet east of SE Barbara Welch Road
NEIGHBORHOOD: Pleasant Valley
DATE OF INVENTORY: February 1987, July 1990

HABITAT CLASSIFICATION

Palustrine, Emergent, Persistent, Seasonally Flooded
Palustrine, Scrub-Shrub, Broad-leaved Deciduous, Seasonally Flooded
Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded

GENERAL DESCRIPTION

This site is a large cultivated grazed pasture to the west of Johnson Creek and on the southeast side of Powell Butte. Willows and blackberry overhang the stream. The cultivated and grazed riparian zone provides poor habitat for wildlife and little sediment and erosion control for the bank. The pasture is extensively grazed by livestock.

NATURAL RESOURCE VALUES

Water, storm drainage, fish and wildlife habitat, aesthetics, flood storage, pollution and nutrient retention and removal, sediment trapping

QUANTITY OF RESOURCE

With the exception of two stands of trees in the northwest and north-central portions of the site, significant resources are confined to the creek corridor.

QUALITY OF RESOURCES:.

Grazing of this area limits its value for wildlife. Grasses and other forbe species are eaten to the ground, leaving very little food or cover for non-domestic animals. Dense blackberry and willow overhanging the stream, provide habitat for urban-adapted birds. Portions of the creek within this stretch are well shaded, keeping the water temperature cooler and better habitat for fish and aquatic species.

Score for Wildlife Habitat Value: 32	**Range for All Sites** =18 to 83
Vegetation	
Food (variety)	medium
Cover(structural diversity)	low
Human Disturbance:	medium
Interspersion:	medium

MANAGEMENT RECOMMENDATIONS

Retain R20 zoning to maintain maximum area for flood storage. Consideration for increase in density to R10 would be more appropriate once solution for flooding and water quality information is determined as a part of the Bureau of Environmental Services plan.

The riparian strip should be reestablished, and further human intrusion (such as any recreation trail) discouraged. Since access to some properties are across the creek, maintenance of existing bridges to serve existing dwellings should be allowed, as long as existing resources are protected.

LAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES:

Zone	Area Affected by EC Zone	Area Affected by EP Zone
R20 (R10)	5 acres	3 acres

ESEE COMMENTS:

Conflicting Uses: Residential development, grazing and agricultural uses, and recreation

Consequences of allowing Conflicting Uses:

Allowing conflicting uses results in the removal of native vegetation, pesticides use, and possibly use of the creek for irrigation. Use of the creek for irrigation reduces the summer water flow and increases the stream temperatures, which diminish fishery resources.

SITE-SPECIFIC COMPATIBLE USES

Rebuilding and replacement of existing bridges to minimum building code requirements if:

- a maximim of 25 feet of riparian vegetation on each sid of the creek is disturbed;
- there is no filling;
- there are no new piers or abutments, or enlargement of existing ones; and
- the bridge will serve only the dwelling or dwellings served at the time of adoption of this plan.

SITE: 26 **Unit:** SE of Powell Butte **Maps:** 3646, 3647

SITE SIZE: 70 acres
LOCATION: Between the Springwater Line and SE Foster Road, west of Jenneyland Acres, and east of SE 158th Avenue
NEIGHBORHOOD: Pleasant Valley

GENERAL DESCRIPTION

This site is the eastern end of the valley between Powell Butte and the Boring Lava Hills. It is a mixture of low-density residential, agricultural, and undeveloped uses, surrounded by the same.

SIGNIFICANT RESOURCE VALUES

Water, storm drainage, fish and wildlife habitat, aesthetics, flood storage, pollution and nutrient retention and removal, sediment trapping

QUANTITY OF RESOURCE

In the western portion of the site, significant natural resources are largely confined to the bed and banks of the creek. Toward the east, forested areas away from the creek hold significant values.

QUALITY OF RESOURCES:

This is a historic, forested floodplain with some present-day wetland. There are occasional small forest stands of cedar/alder (10-60 year old) mixed with low density residencies and small farms with seeded pasture and livestock. The site includes the channel of Johnson Creek to the southeast side of Powell butte. The riparian zone contains blackberries overhanging the channel interspersed with lawns, western red cedar and willow. The stream flows through an urbanized forest in the central portion of the site. Dense blackberries scattered throughout provide cover and nesting habitat for passerines and small mammals. Large cedar and Douglas fir trees interspersed with willow and alder provide important habitat for many bird species including chickadees, nuthatches, kingfisher, and warblers. This section of creek is an important wildlife travel corridor and link to Powell Butte, upland buttes in Gresham, the Boring Lava Hills and other sections of Johnson Creek.

Human use along the creek is high. The western portion is primarily a residential area with more of a rural than urban atmosphere, and a classic pattern of human settlement along waterway bottomlands.

Minus the blackberry and other introduced species, the cedar/alder forest can serve as a model of structural and species diversity of native riparian habitat for future restoration or riparian creation projects.

Score for Wildlife Habitat Value: 64	**Range for All Sites** =18 to 83
Vegetation	
Food (variety)	medium
Cover(structural diversity)	medium
Human Disturbance:	medium
Interspersion:	medium

MANAGEMENT RECOMMENDATIONS

R20 zoning should be retained to maintain maximum area for flood storage. Consideration for increase in density to R10 would be more appropriate once solution for flooding and water quality information is determined as a part of the Bureau of Environmental Services plan.

The riparian strip should be continued or reestablished, and further human intrusion (such as any recreation trail) discouraged.

LAND AFFECTED BY ENVIRONMENTAL OVERLAY ZONES:

Zone	Area Affected by EC Zone	Area Affected by EP Zone
R20(R10)	19 acres	3 acres

SITE-SPECIFIC ESEE COMMENT:

Conflicting Uses: Agricultural, residential.

SITE-SPECIFIC COMPATIBLE USES

Rebuilding and replacement of existing bridges to minimum building code requirements if:

- a maximum of 25 feet of riparian vegetation on each sid of the creek is disturbed;
- there is no filling;
- there are no new piers or abutments, or enlargement of existing ones; and
- the bridge will serve only the dwelling or dwellings served at the time of adoption of this plan.

SITE: 27 **UNIT:** Jenne Road-Northwest **Map:** 3647

SITE SIZE: 40 acres
LOCATION: East of SE Jenne Road and north of SE McKinley Road
NEIGHBORHOOD: Pleasant Valley
DATE OF INVENTORY: February 1987, June 1990

HABITAT CLASSIFICATION
- Agricultural

GENERAL DESCRIPTION
This is a large farm, contributing to the visual character of the area. Zoning is R20 with a Comprehensive Plan designation of R10.

SIGNIFICANT RESOURCE VALUES
Groundwater recharge, aesthetics, pollution and nutrient retention and removal, sediment trapping

SITE QUANTITY AND QUALITY
This site holds little resource value, although it affects nearby creek-related resources such as water quantity and quality.

MANAGEMENT RECOMMENDATIONS
Control water quality

SITE-SPECIFIC ESEE COMMENTS
Conflicting Uses: Agricultural and housing

SITE: 27OJ **UNIT:** SE Jenne Road-Southwest **Map:** 3547
Multnomah County Jurisdiction

LOCATION: Both sides of SE Jenne Lane, between the Springwater Line and SE Jenne Road
JURISDICTION: Multnomah County
DATE OF INVENTORY: February 1987, June 1990

HABITAT CLASSIFICATION:

- Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded.
- Palustrine, Forested, Needle-leaved Evergreen, Seasonally Flooded.

SIGNIFICANT RESOURCE VALUES

Water, storm drainage, fish and wildlife habitat, aesthetics, flood storage, pollution and nutrient retention and removal, sediment trapping

TYPE OF RESOURCES: Within this site shrubs are sparse along the channel banks and ferns are the dominant herb component. The riparian zone is primarily forested with Douglas-fir and western red cedar providing shade for the stream channel and food, roosting, perching, and nesting habitat for passerines and woodpeckers. The stream bank integrity has more or less been maintained in conjunction with low density residential development. This is a fairly scenic reach of Johnson Creek.

QUALITY OF RESOURCES

This is a high value wildlife habitat area along Johnson Creek. Much of the riparian vegetation is still intact with comparatively little invasion by alien, introduced plant species. The dense canopy cover shades the creek through this stretch, increasing the habitat value for fish and other aquatic animals. This site includes a forest canopy of primarily Douglas-fir and western red cedar mixed with alder and maple retained in a small acreage residential area with open pasture and buildings. Several small snags were noted providing some woodpecker and nuthatch habitat. Woody debris are absent on the forest floor. The habitat that occurs now is functional for primarily urban adapted species such as starlings and house sparrows. Some ground foraging by Towhees, Robins, and wrens may occur. Domestic animals are present. Interspersion here is high due to close proximity to Powell Butte and Johnson Creek channel.

The cedar alder forest can serve as a model of the structural and species diversity of this native riparian habitat for future restoration or riparian creation projects.

This section of creek is an important wildlife travel corridor and link to Powell Butte, upland buttes in Gresham, the Boring Lava Hills and other sections of Johnson Creek.

Continued maintenance of forest canopy will retain the native character of the site. The current residential density is compatible with some wildlife use such as an access corridor for animals traveling to and from Johnson Creek and Powell Butte.

Score for Wildlife Habitat Value: 54	**Range for All Sites** =18 to 83
Vegetation	
Food (variety)	medium
Cover(structural diversity)	medium
Human Disturbance:	high
Interspersion:	high

SITE SIZE: 600 acres (570 ac. in public ownership)
LOCATION: East of SE 136th Avenue, west of SE 174th Avenue, north of the Springwater Line, and south of SE Powell Boulevard
NEIGHBORHOOD: Powellhurst
DATE OF INVENTORY: February 1987, June 1990

HABITAT CLASSIFICATION
- Forested Deciduous/Conifer
- Open meadow

GENERAL DESCRIPTION
This site is the top and southern portions of Powell Butte, a large part of which was once a dairy but is now owned by the City of Portland. Urban development is on the west, north, and east, while natural resource sites 24-26 are to the south.

SIGNIFICANT RESOURCE VALUES
Water, storm drainage, aesthetics, scenic, pollution and nutrient retention and removal, sediment trapping, recreation, education, heritage

QUANTITY OF RESOURCES
This site is a major butte surrounded by residential development at its base to the north, west, and south, but with relatively non-intensive residential development on the east side. This is one of the more unique uplands in southeast Portland and perhaps within the Urban Growth Boundary. This butte consists of primarily two major habitat types: an open grassland (2/3) and a mid-serial stage forest (1/3).

The forest consists of mature deciduous trees (maple, alder) and 30-50 year old conifers (Douglas fir). Snags are common and there is some downed dead wood from windthrow. The grassland is an abandoned ungrazed and unharvested pasture with some invading hawthorne trees. There was a vernal pond noted within this grassland during the time of the first inventory (2/20/87).

QUALITY OF RESOURCES
Powell Butte provides very important wildlife habitat within Johnson Creek and the Portland metropolitan area. There are very few upland meadows left in the metropolitan area. The large size and combination of upland meadow, forest, and adjacency to Johnson Creek is rare and provides habitat for a large diversity of bird, large and small mammal, and reptile species.

This combination of forest and grassland provides potential for good quality habitat. The forest provides foraging, perching, roosting, and nesting habitat for hawks, falcons, owls, and bats. The grassland provides nesting habitat for birds such as meadowlarks and sparrows. The grass sod and thatch provide high quality habitat for small mammal production. The grassland/forest ecotone provides a valuable edge effect to wildlife, potentially supporting greater densities than other habitat types.

Powell Butte has very high scenic quality with a panoramic view of the Cascade mountains, Columbia River, and the Portland metropolitan area.

The site also shows signs of historical disturbance in forms of logging and farming; however, it now shows less sign of human use.

Score for Wildlife Habitat Value: 73	Range for All Sites =18 to 83
Vegetation	
Food (variety)	medium
Cover(structural diversity)	medium
Human Disturbance:	high
Interspersion:	high

MANAGEMENT RECOMMENDATIONS

Retain the variety of habitat, including the meadow. Protect the forested perimeter. Develop the park area to take advantage of its natural attributes. As a condition of any future water reservoir expansion, require an alternative or modified practice of water release that is compatible with the goals and objectives of the *Johnson Creek Basin Protection Plan.*

LAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES

Zone	Area Affected by EC Zone	Area Affected by EP Zone
OS	400	170
R20(R10)	30	

ESEE COMMENTS

Conflicting Uses: Residential development, removal of trees for firewood (or any other reason), some aspects of the park use (both incompatible recreation and overuse of compatible recreation), and Water Bureau operations which discharge water into Johnson Creek in large amounts over short periods of time.

Consequences of allowing Conflicting Uses: The Powell Butte Master Plan was adopted in 1987. It gives considerable protection to the natural resource aspects of the park that are in public ownership. The master plan intends that Powell Butte will develop as a natural, regional park providing generally passive activities. The master plan recognizes the value of the natural resources. With the master plan in place, application of the Environmental Zone is less important on the publicly owned lands, which is about 570 acres of Powell Butte.

SITE-SPECIFIC COMPATIBLE USES

- Park development approved under the 1987 conditional use

SITE: 30 UNIT: Boring Lava Hills **Maps:** 3647, 3547, 3646, 3546, 3446, 3445; 3645; 3545

SITE SIZE: Approx. 1,370 acres
LOCATION: I-205 east to City Limits near SE Foster Road, natural resource sites along Johnson Creek south to the southern City Limits
NEIGHBORHOOD: Pleasant Valley

HABITAT CLASSIFICATION

- Palustrine, Forested, Deciduous/Conifer, Seasonally Flooded, Saturated
- Upland Deciduous/Conifer Mixed Forest

SIGNIFICANT RESOURCE VALUES

Water, storm drainage, wildlife habitat, aesthetics, scenic, flood storage, pollution and nutrient retention and removal, sediment trapping

TYPES OF RESOURCES: This site is composed of steep sloping hillsides known as the Lava Boring Hills. It is a forested area of mosaic pattern resulting from logging practices and urban development. The area is dominated by forests of mixed conifer and deciduous trees (Douglas fir,western red cedar, red alder, and big leaf maple). This forested habitat provides roosting, perching, feeding, and nesting habitat for some passerine species, woodpeckers, and perhaps small owls. The forest litter and soils provide burrowing habitat for some mammals.

This site is an important component of the Johnson Creek watershed. Several seasonal creeks drain these slopes to Johnson Creek.

QUALITY OF RESOURCES: This site is an important component of the Johnson Creek watershed. Several seasonal creeks drain these slopes to Johnson Creek. The steep slopes covered by clayey, impermeable soils contribute significant winter stormwater runoff. Substantial forest clearing and surface conversion would significantly affect the hydrology of Johnson Creek by increasing stormwater runoff.

The Boring Lava Hills are a link to many of the forested buttes and upland sites in Gresham, Mt. Scott and East Portland. Johnson Creek functions as the travel corridor between many of these upland sites.

Score for Wildlife Habitat Value: 78	**Range for All Sites** =18 to 83
Vegetation	
Food (variety)	medium
Cover(structural diversity)	high
Human Disturbance:	medium/low
Interspersion:	high

MANAGEMENT RECOMMENDATIONS

Encourage planned unit developments and clustering of housing to conserve forested lands, retain groundwater recharge, and control stormwater runoff.

LAND AREA AFFECTED BY ENVIRONMENTAL OVERLAY ZONES:

Zone	Area Affected by EC Zone	Area Affected by EP Zone
R10	approx. 800 acres	

PROTECTION PLAN

CHAPTER 9

PROTECTION MEASURES for the JOHNSON CREEK BASIN

INTRODUCTION •

PROTECTION PLAN POLICIES AND OBJECTIVES •

COMPREHENSIVE PLAN AMENDMENTS •

APPLICATION OF THE ENVIRONMENTAL ZONE •

JOHNSON CREEK CORRIDOR PLAN DISTRICT •

GUIDELINES •

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INTRODUCTION

Natural resources within the Johnson Creek basin vary greatly in type and location. All are interrelated, forming a blend of components supporting the travel corridor and sustaining habitat for survival of many non-native urban species introduced into the City, and creating a unique urban identity for southeast Portland.

The *Johnson Creek Basin Protection Plan* promotes conservation and enhancement of existing significant natural resource sites, and encourages creation of others throughout the Johnson Creek basin. The result is a natural resource area which will become part of, not be separated from, the urban fabric of Portland. The plan encourages human activity in locations that can sustain such activity, and guides conflicting uses away from more sensitive resources. It provides for innovative solutions and a range of alternatives, many of which will be presented in the near future as part of the Bureau of Environmental Services' Johnson Creek water quality management plan. It forms a closer partnership between property owners and the City in developing solutions to conflicts between resource conservation and urbanization. It identifies and protects natural resource elements valued by residents in a cohesive, overall manner which will conserve wildlife habitat, provide urban identity through design, and protect urban development from natural hazards. Finally, it recognizes that development throughout the entire basin affects major resources such as the creek, and provides solutions that address the causes and not just the symptoms.

Protection measures for Johnson Creek basin are in the categories of regulations and goals or concepts. The protection plan recognizes that conflicts between uses and activities will occur, and provides a regulatory process to resolve those conflicts. This is in the form of environmental zone land use review and plan district requirements. To provide further guidance and a greater level of certainty for landowners, guidelines are provided at the end of this chapter which are to be considered for all activities within the plan district, particularly those in significant natural resource sites.

Major actions in this report that provide protection and restoration to the inventoried natural resources in the study area are:

1 Adopting a Comprehensive Plan policy which identifies specific natural resource values and the means by which they are protected;

2 Adopting as part of the *Johnson Creek Basin Protection Plan* management goals and implementation strategies to guide resource mitigation and enhancement;

3 Protecting significant natural resources through application of environmental zones on isolated distinct resource features;

4 Replacing the Powell Butte/Mt. Scott Plan District with an enlarged Johnson Creek Basin Plan District. The new plan district would address development which may impact important resource values in the creek basin which are part of the overall ecosystem or affect the more significant resources protected by the Environmental Zone;

5 Moving the Public Recreation Trail designation from its present Johnson Creek location to the newly-acquired Springwater Line.

PROTECTION PLAN POLICIES AND OBJECTIVES

Overall Policy

Protect significant natural resources and preserve resource values of the Johnson Creek basin, to preserve and enhance the ecosystem and the livability for residents and visitors of Portland.

Natural Resource Policy

Protect significant natural resources through continued improvement in water quality and quantity, re-establishment of native plant communities throughout the basin, and protection of selected areas from unnecessary and deleterious human activities and land uses.

The entire Johnson Creek basin forms an ecosystem, providing habitat and a travel corridor for many fish and terrestrial species between the urban areas of Portland along the Willamette River and the foothills of the Cascade Mountains. Not only does the creek corridor need to be protected to retain these values, but certain resource characteristics need to be integrated into the urban fabric throughout the basin.

The following objectives are intended to protect significant resources and resource values while allowing urban development to continue:

1 Retain or develop riparian strips of vegetation along the creek;

2 Protect fully the creek and riparian vegetation, and significant wetlands and upland resources that provide food, water, and cover for wildlife;

3 Establish plan district regulations which encourage retention and enhancement of native plant communities and protect water quantity and quality; and

4 Develop demonstration projects and public informational programs to protect natural resource values and meet other neighborhood goals.

Development Policy

Integrate natural resource values and human uses in a balanced fashion into the urban fabric.

The Johnson Creek basin is a mosaic of vegetative communities and human uses integrated with a water course ecosystem. It is important to identify compatible and incompatible human and natural resource uses within the corridor. Once identified, development can be guided in a way which is economically viable while celebrating the creek and bringing greater public awareness, while protecting and enhancing identified wildlife and watershed systems values.

The following objectives can integrate development, neighborhood projects, and natural resource restoration and enhancement:

1 Leave undisturbed vegetation before, during, and after construction, except where actual construction activities are involved. This objective applies especially to native vegetation, but the retention of non-native vegetation is important until a proper restoration plan is put in place;

2 Retain or develop buffer strips of vegetation along the creek;

3 Provide for diversity of native plant species with varying flowering and fruiting seasons in community and backyard landscaping;

4 Reduce frequent mowing of lawns, permitting native wildflowers and herbs to grow, especially around edges between two different habitats or land uses;

5 In park-like areas characterized by tall trees and closely-trimmed ground cover and lawns, plant native shrub and herbaceous species as an understory;

6 Avoid construction projects within the floodplain;

7 Avoid unnecessary erosion by prompt reseeding and revegetation, and construction of sediment catchment basins or swales;

8 Carefully remove topsoil inlarg intact units and replace them after construction is completed;

9 Remove garbage, excess fill, and construction debris from construction sites promptly;

10 Remove Himalayan blackberries, reed canarygrass and other invasive non native species by cutting, digging, and selectively applying herbicides when necessary. Herbicides should comply with integrated pest management goals;

11 Design permanent.stormwater control basins using non-structural and soil bio-engineering solutions whenever practical in a manner which also provides habitat for wildlife species;

12 Use soil bio-engineering or similar non-structural techniques (vegetation on shallow slopes) to stabilize banks instead of riprapping steep slopes;

13 Avoid large expanses of closely-trimmed lawn to the edge of the creek bank. Encourage buffering or structural diversity (trees or shrubs) between the lawn and the creek;

14 Avoid lights which shine directly into natural resource areas;

15 Encourage passive non-consumptive recreation and environmental education in selected areas along the creek. Avoiding human impact on fragile or environmentally-sensitive areas of the creek; and

16 Avoid fences along the creek to allow wildlife passage.

Livability Policy

Re-establish the Johnson Creek Corridor as a Major linear design element and scenic resource which connects southeast Portland neighborhoods. Recognize this and the landscaped, treed hillsides throughout the basin as major design elements which make significant contributions to the livability of the area.

The Johnson Creek corridor spans Southeast Portland from Gresham to Sellwood and Westmoreland. It forms an edge to neighborhoods, providing definition and community identity, important urban design elements. Reestablishment of the riparian strip will intensify the edge element, as well as provide a sense of place and orientation, for travelers on nearby roads.

Trees and other vegetation on hillsides provide a visual backdrop to Southeast Portland, and provide a semi-rural atmosphere. This is an important neighborhood value, appropriate to the basin's location on the edge of the City.

The following are development strategies which can be used to retain and enhance scenic and urban design qualities of natural resource elements:

1 Retain and re-establish full riparian vegetation, including tree canopy, along Johnson Creek and its tributaries;

2 When new bridges are needed or existing ones improved, design them to allow viewing of the creek as it is crossed, thereby providing aesthetic value and orientation;

3 Establish native vegetation along the Springwater Line recreation corridor, reinforcing the linear nature of the Johnson Creek basin;

4 Retain and enhance native vegetation, particularly evergreen trees, along steep slopes of the basin hillsides; and

5 Retain native vegetation, particularly evergreen trees, throughout development.

Recreation Policy

Recognize Johnson Creek and related resources as a passive recreation opportunity related to the 40-Mile Loop.

The long-standing location of the Southeast Portland segment of the 40 Mile Loop along the Johnson Creek corridor is in recognition of the value of this natural resource as a recreation pathway and destination. Recent purchase of the Springwater Line allows implementation of this trail segment in the near future. Use of it also moves major human activity from the creekside, where it could interfere with both resident's desire for privacy and sensitive wildlife habitat areas.

The following objectives can guide development of a recreation trail system throughout the Johnson Creek basin:

1 Utilize the Springwater Line right-of-way as the major bicycle, pedestrian, and equestrian route along Johnson Creek to provide access to and between parks, and as a major component of the 40-Mile Loop;

2 Recognize the Powell Butte Nature Park as both a significant natural resource and a nature-oriented recreational center for Portland, promote passive use including hiking, bicycling, and horseback riding; and

3 Provide access to Johnson Creek at selected points for passive recreation opportunities while minimizing potential conflicts with private property or environmentally sensitive areas;

- Using existing improved and unimproved public rights-of-way wherever possible;
- Emphasizing passive recreation relating to the waterway in existing and future parks along the Johnson Creek corridor. Limiting physical improvements to support this; and
- Working with surrounding property owners in the design and development of recreation areas to be sensitive to neighborhood character, security needs, and overall livability.

Natural Hazards Policy

Reduce the potential for damage from flooding or landslides by limiting development in areas subject to hazards and providing comprehensive public works projects which will reduce flooding.

Portions of the Johnson Creek basin are subject to natural disasters and hazards such as flooding and landslides. Often these hazard-prone areas also provide significant natural resource values. Regulations are now in place which discourage development within some hazard-prone areas, but for reasons of cost, not resource protection. The protection plan integrates these hazard areas into an overall, basin-wide approach for resource protection.

The following are objectives which can protect existing and future development from flood and landslide hazards in the Johnson Creek basin, and at the same time retain or enhance natural resource values:

1 Continue reduced allowable housing density in areas subject to landslides or flooding;

2 Continue to enforce federal flood control regulations by limiting land development and activities within flood-prone areas;

3 Increase vegetation on developed land to increase ground stabilization and groundwater recharge, and to reduce flooding;

4 Develop a comprehensive public works improvement plan which will reduce flooding and increase water and habitat quality;

5 Discourage additional direct stormwater discharge to creeks and requiring, where appropriate, stormwater retention;

6 Require compensatory flood storage mitigation measures for all fill and construction activities that reduce storage capacity within the 100-year flood plain; and

7 Require conservation easements as a condition of substantial development along creeks and major drainageways which will allow access by the City for creek corridor flood control and restoration projects that have been approved through the Environmental Zone review process.

Water Supply Policy

Develop programs which improve water quality and quantity in a manner which will support other goals and objectives of this protection plan.

Flood control, reduction in levels of water pollution, and protection of wildlife habitat can all be products of water quality improvement in Johnson Creek. The following objectives can be used to improve water quantity and quality, thereby achieving protection of both natural resources and affected land uses and activities:

1 Increase creek flow during summer periods;

2. Enhance fish habitat through additional planting of streamside vegetation to provide shade and help lower water temperature, retention and enhancement of existing native vegetation and reduction of impervious surfaces to provide a more balanced water regime with greater summer flows and reduced flooding and erosion;

3 Regulate cooling water discharges into the creek to help lower summer water temperature;

4 Reduce sediment entering the creek;

5 Reduce or eliminating contaminant discharges into the creek which degrade water quality;

6 Provide filtration of stormwater prior to entry into the creek; and

7 Reduce flood levels.

COMPREHENSIVE PLAN AMENDMENTS

Two Comprehensive Plan amendments are necessary to recognize natural resource values in the Johnson Creek basin, and recent acquisition of the Springwater Line for the 40 Mile Loop. Following are those amendments:

1 AMEND THE COMPREHENSIVE PLAN TO ADD POLICY 8.11C:

Protect and preserve the scenic, recreation, fishery, wildlife, flood control, water quality, and other natural resource values of the Johnson Creek basin through application of environmental overlay zones and implementation of the *Johnson Creek Basin Protection Plan*.

2 AMEND THE COMPREHENSIVE PLAN AND ZONING MAPS TO REPLACE THE RECREATION TRAIL DESIGNATION ALONG JOHNSON CREEK WITH A DESIGNATION ALONG THE SPRINGWATER RAIL LINE EAST OF SE 71ST AVENUE.

Mapping of the Recreation Trail designation is contained in a separate accompanying document, Appendix I.

APPLICATION OF THE ENVIRONMENTAL ZONE

The Johnson Creek plan applies environmental zones (City Code Chapter 33.430) to directly protect significant natural resources from adverse impacts. It is applied to the resource itself and areas necessary to protect the resource, and requires environmental review for a wide range of development or activities. Environmental zones would apply to the areas of the Johnson Creek basin where mapped, and include wetlands, the creek, riparian strips, and upland areas. There are two Environmental Zone designations: the "p", Environmental Protection, Zone, which is the most restrictive allowing no development in most cases; and the "c", Environmental Conservation, Zone, which allows development with review and mitigation.

Within the Environmental Zone there are few exceptions to the requirement for environmental review. However, there are a few additional activities which could occur under certain circumstances in and adjacent to identified resources without adverse impacts, so environmental review is unnecessary. These activities, along with conditions under which they can occur, are listed in the Johnson Creek Basin Plan District regulations.

The "p" Environmental Protection, designation is generally applied to the floodway portions of Johnson Creek, its main tributaries, significant wetlands, creek banks, and very high quality upland resources, particularly on Powell Butte and steep slopes on Mt. Scott and the Boring Hills. This level of protection will insure the continuation of critical wildlife habitat elements, protect existing and future development from certain natural hazards such as flooding and landslides, and retain certain design elements that provide identity to the Johnson Creek basin.

The "c" Environmental Conservation, designation is applied to land surrounding the "p"-designated resources necessary to protect the resources, and to resources which are of value to the overall system but could be altered to allow development with mitigation. Most upland resources and smaller drainageways are protected in this manner.

The Environmental Zone chapter of the adopted City Code Title 33 (Portland Zoning Code) is contained in Appendix C of this report, for reference purposes. Mapping of the Environmental Zone is contained in Appendix I.

JOHNSON CREEK BASIN PLAN DISTRICT

Natural resource elements in the Johnson Creek basin include both those which are isolated distinct features and those which occur at lower intensity throughout large areas, often being included in existing development. Johnson Creek is an example of a distinct resource. An evergreen overstory retained in an existing subdivision or parking lot landscaping is an example of the other, less intense, type. Both have natural resource values which, when considered together, provide an important ecosystem. Resources also provide an important social value to the area, creating identity, uniqueness, and sense of place in the urban environment.

All land within the Johnson Creek basin affects the creek to a certain degree. Paving and sewering of stormwater directly to the creek increases the "flashiness" of flood events, and prevents groundwater recharge. The result is higher winter water flows with increased erosion and lower summer water flows with subsequent fisheries resource degradation. Reduction of native landscaping through both development and replacement with exotic species reduces or eliminates wildlife habitat. This is especially true for larger native trees.

A plan district is a type of zoning tool that can provide specific and tailored regulations within the plan district boundary. Use of a plan district to aid in resource protection softens the boundary between resources and urbanization, and acts as a form protection for the resource. Without this, larger formal areas of protection would have to be placed along Johnson Creek and around significant resources (such as the 75' along the Columbia Slough). Because of existing lot patterns, ownership, and development, a large formal area of protection would create greater hardship on residents and property owners. The plan district also addresses external impacts on resources, such as stormwater discharge and groundwater recharge. It addresses the cause of resource degradation, not just the symptoms.

The unique character and natural resource values of the Johnson Creek basin require additional regulations beyond those contained in the environmental zones. Restrictions imposed by such natural hazards as flooding and steep slopes require lower densities than presently found. In addition, emphasis needs to be placed on preserving natural areas and directing development to areas with fewer hazards or habitat values.

The Johnson Creek Basin Plan District has its own set of development standards that are specific to the Johnson Creek basin, and serve in addition to the Environmental Zone. The plan district supersedes Environmental Zone regulations in the case of conflicting requirements.

Replacement of the Powell Butte/Mt. Scott Plan District with an enlarged Johnson Creek Basin Plan District is intended to protect neighborhood and natural resource values, and limit development in areas with potential for natural catastrophes in the following ways:

1 Continue density regulations now contained in the Powell Butte/Mt. Scott Plan District to protect development from natural hazards, and expand application throughout the new plan district;

2 Prohibit all above-surface structures and non-residential outdoor storage and activities within the Johnson Creek floodway;

3 Require at least half of each lot to be kept pervious (not paved or built upon), to encourage groundwater recharge and reduce surface runoff;

4 Allow removal of trees greater than six inches in diameter only when they are diseased or pose an immediate danger;

5 Require on-site stormwater retention systems for all new subdivisions and non-residential development, to allow for groundwater recharge;

6 Allow no additional direct stormwater discharge into Johnson Creek or its tributaries unless it can be shown that water quality and seasonal quantity will not be affected;

7 Require all natural resource actions, including mitigation, to meet Johnson Creek Basin Plan Policies;

8 Require natural resource mitigation and enhancement actions to conform to Johnson Creek Basin Objectives;

9 Exempt the following uses and activities from environmental review, as they are compatible with neighborhood character and should not adversely impact natural resource values:

- Removing trees that are detrimental to flood passage within the Johnson Creek channel below ordinary high water;
- Changing crop type or farming technique on existing farms;
- Mowing, trimming, and normal maintenance of vegetation within the Transition Area of the EC, Environmental Conservation, Zone, and the outer 25 feet of the portion of a Resource Area of an EC zone necessary to protect the resource if the Parking and Truck Area, Exterior Storage and Display, and Construction Management Standards of 33.430.200 are met;
- Planting native vegetation in a manner consistent with the guidelines;
- Removing dead, dying, or diseased plants which pose a hazard;
- Constructing structures within the Transition Area (outer 25 feet) of a "c", Environmental Conservation, Zone in single-family residential zones if the Building Placement Standards and Lighting Standards of subsection 33.430.200 are met.

The Powell Butte/Mt. Scott Plan District chapter of the adopted zoning code and amendments to change to the Johnson Creek Basin Plan District is contained in Appendix B of this report. Boundaries of the Johnson Creek Basin Plan District, which would replace the Powell Butte/Mt. Scott Plan District, are shown on maps in a separate accompanying document, Appendix I.

GUIDELINES

Introduction

The following guidelines apply to proposed developments within the Johnson Creek Basin Plan area. Proposals for development must follow the applicable guidelines listed below. The guidelines are organized by type of site including creek frontage sites, floodplain sites, upland sites, and guidelines for large-scale development. In the case that a site development has all four characteristics, all of the guidelines should be met. For the purposes of these guidelines large scale development is defined as a development that takes place on a site that is over 5 acres in size.

Guidelines

1. Creek Frontage Sites

   a. Provide vegetative cover over the creek, the single most effective thing that can be done to restore Johnson Creek or its tributaries. For small scale site developments, increased tree and shrub cover over the creek may be the only restoration requirement necessary. This is particularly important for those creek areas that currently exist without vegetative cover;

   b. Increase width and length of riparian strip by planting native riparian plant species;

   c. Remove invasive, non-native plants such as blackberry and reed canary grass. Replace with willow, dogwood, and other native plant species as listed in the *Portland Plant List.*;

   d. Encourage interspersion and connectivity between creek and adjacent natural areas;

   e. Terrace creek slopes in to allow easy animal access to the creek(s);

   f. Sustain and enhance native fish populations (coho salmon, fall chinook salmon, cutthroat trout, steelhead, and other resident fish species) in Johnson Creek;

   g. Increase aquatic vegetation growth along the stream banks through planting;

   h. Retain buffer strips along property boundaries to the extent practical to serve as cover and travel corridors for wildlife;

   i. Maanage lawn areas near the creek in such a way to provide animal cover. In some cases no mowing would be appropriate;

j. Limit the amount of impervious surfaces in order to improve the groundwater recharge potential of the creek during drier times of the year;

k. Leave snags left standing unless they pose public health or safety hazards;

l. Stabilize creek banks in order to decrease water turbidity. Use soil bio-engineering or other techniques that will not inhibit wildlife use and access; and

m. Remove garbage in the creek as necessary.

2. Floodplain Sites

(For floodplain location FEMA maps are available at the Permit Center).

a. Do not disturb native vegetation that is protected by regulation. Avoid removal and cutting back of dead and decaying trees, shrubs, and forest litter;

b. Limit fences and other barriers to allow wildlife movement;

c. Limit stormwater from directly entering into the creek(s);

d. Apply erosion control methods during contsruction;

e. Increase width and length of riparian strips by planting native riparian plant species;

f. Plant a diversity of native vegetation to provide ground, shrub, and tree cover where required or feasible;

g. Shield outdoor lights from habitat areas;

h. Increase the densities of native coniferous and deciduous shrubs and trees on portions of the site where necessary;

j. Remove invasive, non-native plants such as blackberry and reed canarygrass. Replace with willow, dogwood, and other native plant species as listed in the *Portland Plant List*;

k. Encourage interspersion and connectivity between natural areas and creek;

l. Replace ornamental plants with native vegetation where desirable;

m. Retain buffer strips along property boundaries to the extent practical to serve as cover and travel corridors for wildlife;

n. Maintain lawn areas near creeks in such a way to provide animal cover. In some cases no mowing would be appropriate;

o. Limit the amount of on-site impervious surfaces in order to improve the groundwater recharge potential of the creek during drier times of the year; and

p. Leave snags standing unless they pose public health or safety hazards.

3. Upland Sites and Large-Scale Developments

Note: Upland sites are those Sites above the floodplain. Large-scale development is that which takes place on a site that is over 5 acres in size.

a. Restore, create, or retain upland meadows. Upland meadows are characterized by native, grassland plant species;

b Increase bird habitat by installing nesting boxes for cavity nesting birds in upland and riparian habitat areas;

c. Do creek restoration when the profile of the creek is modified on large-scale projects. In these cases the Oregon Department of Fish and Wildlife can provide guidance on the specific standards to determine the ideal pool/riffle ratio sizes and depths for Johnson Creek. Developers will be required to identify existing critical spawning and rearing habitat along Johnson Creek which will be impacted by the proposed development. Restoration and creation of new spawning areas in other suitable areas along the creek will also be required;

d. Create island habitats within the creek to provide breeding areas safe from predators for large-scale projects;

e. Limit domestic animals to leashes in common open space areas of new residential developments;

f. Shield outdoor lights from habitat areas in new or expanding developments; and

g. Prohibit leaching of toxic materials, herbicides, pesticides, fertilizers from agricultural fields and deposition of sewage and industrial waste.

Background on Development of Guidelines

The Johnson Creek basin is a mosaic of vegetative communities and human uses integrated with the water course ecosystem which provides food, shelter, breeding and rearing areas for aquatic and terrestrial animals and birds.

Riparian corridors are much more than a conduit for the conveyance of water. They are ecosystems where all of the many elements are interrelated and act together to sustain the life dependent on these habitats. A change in one element can effect the entire system. Some elements are more closely related to one another than others, but all interact and to some degree are affected. Water, soil, substrate, terrestrial and aquatic plants and animals are the main elements of a riparian corridor.

Over time changes in the environment will affect habitats of fish and wildlife. Any changes, whether man-induced (development, channelization, removal of vegetation) or natural (flooding, windstorms, drought or insect infestations), affect wildlife. These changes may be beneficial to some species and detrimental to others. Changes and losses in the quality, quantity and availability of food, water, cover and living space have the greatest effects on wildlife.

Habitat diversity and connectivity between the habitats is the key to a healthy riparian ecosystem, and a major objective of this study. Decaying logs laying on the ground provide cover for rabbits, raccoons, and other mammals. Ground covers of ferns, grasses, and wildflowers provide habitat for shrews, moles, raccoons, and other ground foragers. Algae in Johnson Creek is eaten by tiny macro-invertebrates, which are in turn eaten by mink and beaver. These species require hiding areas in aquatic vegetation along and in

creeks. The ground cover ferns, grasses, and wildflowers provide habitat for salamanders and snakes Native groundcover and riparian vegetation should be planted in order to provide the habitat and materials required by some salamander, snakes, and frog species.

Urbanization and development have greatly impacted the state and health of the aquatic, riparian and upland habitats of the Johnson Creek basin. Some habitat has been destroyed and others created. As these changes occur animals must adapt to the new conditions, leave the area, or die. More aggressive, adaptive species will survive.

The loss or reduction of native plant, fish and wildlife species, biodiversity and the dominance by fewer, more aggressive species are the most noticeable changes to the Johnson Creek ecosystem as influenced by environmental changes listed above. Habitat enhancement and restoration are the key to increasing the diversity of wildlife species along Johnson Creek.

The Role of Native Plant Communities

Plants are at the bottom of the food chain, and are a crucial element of the entire system. Habitat diversity and connectivity between the habitats is the key to a healthy riparian ecosystem, providing habitat for fish and wildlife species. Although the vegetative communities found along Johnson Creek today do provide habitat for some wildlife species, areas with greater plant species diversity, where one type of vegetation merges with another to create edge habitat there are likely to be more kinds of wildlife than those of a single cover type. Diversity also insures elasticity of populations, if there is a natural or man-made catastrophe, greater species diversity lessens chances of loosing everything. The same is true of forested areas. A forested area with a mixture of broadleafed deciduous and coniferous trees is likely to support a greater diversity of wildlife species. A forest composed of uneven-aged trees with a variety of layers of vegetation above the forest floor is suitable for many more wildlife species than an area of tall trees of the same age with a mowed grass ground cover. Native plant species are often more disease resistant and valuable to wildlife than ornamentals and exotics.

Environmental Influences on Fisheries

The primary loss of fish populations in Johnson Creek is due to summertime water temperatures greater than 70° F. Removal of trees and shrubbery from the banks cause water to heat up through increased exposure to the sun. The vegetative loss causes temperature increases which result in aquatic deaths, pollution, and algal bloom, greater sediment in the creek, higher levels of carbon dioxide due to faster moving water, concentrations of chemicals combined with sediment that are detrimental to aquatic and plant life, and increased flooding. Fish become more sluggish and susceptible to disease in high water temperatures. The planting of riparian vegetation along the creek that overhangs the water will protect the water from direct sun and heat. A combination of black cottonwood, alder, willow, creek dogwood, grasses and sedges are the appropriate to plant along the creek's edge.

Fish require water free of pollutants, phosphates and sedimentation. Clearing vegetation and resculpting and grading the landscape within the Johnson Creek Watershed often result in increased soil erosion and sedimentation, in turn affecting the water quality. Erosion of the banks adds sediment to the creek, run-off from farming alter the creek's chemical balance, building and paving of urban development replace water-absorptive ground, and storm sewers channel add run-off into the creek. Sediment carried by the runoff water has the potential to cover spawning beds of fish, suffocate eggs, or directly harm fish and other aquatic organisms.

Higher water levels in the summertime are needed in Johnson Creek. Rainfall contributes to surface water and the groundwater table. Portland's weather pattern includes more rainfall in fall, winter, and spring than in the summer. Surface waters are naturally low in summer and higher during the rest of the year. Adjacent land use activities and development change the natural hydrologic cycle. Clearing, grading, filling, excavation, compaction, covering with impervious surfaces, construction and installation of pipe drainage systems all decrease the land's ability and capacity to absorb and retain water and the groundwater recharge potential. Therefore, impervious surfaces within the basin should be limited in order to improve the groundwater recharge potential of the creek during drier times of the year.

Fish require resting and hiding places to escape predators. Downed logs, large boulders and even riprapping with some holes for fish to swim behind can provide sheltered areas. Tree trunks lying partially submerged in the creek provide cover and shading for fish, and attachment sites for aquatic insects (fish food). Duckweed, and sedge provide hiding areas for fish.
The ideal pool/riffle ratio sizes and depths for Johnson Creek is proportional to the stream gradient and substrate within a given segment of the creek. The Oregon Department of Fish and Wildlife can provide guidance on the specific standards.

Environmental Influences on Insect Populations

Good structural diversity in all vegetative layers is required to promote increased and diverse insect populations. Insects abound in the top of the forest canopy providing food for warbler, flycatcher, oriole, and other species. When vegetation begins to die and decay, it becomes home and food to mites, earthworms, fungi and millipedes which aid in the decomposition process. Insects found on the leaves, bark and decaying wood are eaten by warblers, woodpeckers and other insect eating birds.

Many insects live in the moist ground beneath a riparian or upland forest floor. These insects are the food of moles, shrews and other animals. Dead and decaying vegetation becomes home and food to mites, earthworms, fungi, and millipedes which aid in the decomposition process. Insects found on the leaves, bark, and decaying wood are eaten by bats, small mammals, and native amphibian and reptile (red legged frog and western pond turtle) species.

Environmental Influences on Cavity & Branch Nesters, Waterfowl, and Shorebirds

Tree cavities formed through decay or woodpeckers provide nesting and resting areas for raccoon, squirrels, bats, woodpeckers, wood ducks and other bird species. Twigs, leaves, and bark are used for nest building and insulation. The shrub layer is important nesting area for warblers, grosbeaks and other bird species. The ground cover-ferns, grasses, and wildflowers provide habitat for thrushes, towhees, and other ground forages.

Algae in Johnson Creek is eaten by tiny macro-invertebrates, which are in turn eaten by fish which may be eaten by herons, kingfishers or other birds. Waterfowl and shorebirds require hiding and nesting areas in aquatic vegetation along and in creeks. Island habitats are often safer for these birds from predators. Greater structural and habitat diversity will provide a continuous source of food for residents as well as migrants.

Environmental Influences on Butterflies

There are approximately fifty species of butterflies found in Multnomah County. The mixture of wetlands, open space, riparian and upland forests in the Johnson Creek watershed potentially support several dozen species at any one time. Larval host plants are the critical factor for the continued presence of butterfly species. Red alder, black cottonwood, big leaf maple, willow, snowberry, violets, thistles, grasses and mustards are known preferred larval host plants for butterflies. Planting of these species should be encouraged.

Butterfly species require open meadows in both the larval and adult stages. There are no undisturbed upland meadows remaining in the Johnson Creek basin. Prairie grasslands once occupied much of the Willamette Valley prior to settlement. Many of these early prairies are now forested, although many new grasslands have been created through agricultural practices. Intensive agriculture, grazing, absence of fire, and urbanization have almost eradicated any native prairies within the area.

MODEL AREAS CONCEPT

Creation, restoration, and enhancement of wetland, riparian forest, upland meadow, and upland forest habitats along Johnson Creek is encouraged. In order to better understand the components of recreating landscapes which are supportive of wildlife, four areas within Johnson Creek have been selected as model sites. The sites are intended to be examples, and possibly serve as seed and plant material sources. Although none of the four model areas are pristine, they each have a predominance of native plant species, good structural diversity, and represent a native habitat type.

Model Area 1: Beggar's Tick Marsh

This Multnomah County Wildlife Refuge is a wetland located at SE 111th Avenue and SE Foster Road. Dominant plant species are:

Trees	Shrubs:	Ground Covers:
Pacific Willow (Salix lasiandra)	Douglas Spirea (Spirea douglasii)	Cat-tail (Typha latifolia) Duckweed (Lemna sp.) Reed Canarygrass (Phalaris arundinacea)* Rush sp. (Juncus sp.) Sedge (Carex sp.) Smartweed (Polygonum sp.)* Spike-rush (Eleocharis palustris) Beggar's Tick (Bidens frondosa)

* These species are invasive and/or non-native and, as such, should not be used when planting in or near environmental zones.

Model Area 2: Top of Powell Butte

This Portland Bureau of Parks Regional Park is an upland meadow site located between SE 136th and 174th Avenues, and SE Powell Boulevard and SE Foster Road. The entire site has been disturbed, and there are very few native species growing. However, it is the largest upland meadow in the Johnson Creek watershed.

Model Area 3: Johnson Creek Canyon at Deardorf Road and Bundee Park (SE 141st Avenue and SE Foster Road)
These two sites are examples of riparian vegetation. Dominant plant species are:

Trees:	Shrubs:	Ground Cover:
Big-leaf Maple (Acer macrophyllum)	Creek Dogwood (Cornus stolonifera)	Foxtail (Hordeum brachyantherum)*
Black Cottonwood (Populus trichocarpa)	Evergreen Blackberry (Rubus laciniatus)*	Horsetail (Equisetum arvense)*
Douglas Fir (Pseudotsuga menziesii)	Himalayan Blackberry (Rubus discolor)*	Lady-fern (Athyrium filix-femina)
Oregon White Ash (Fraxinus latifolia)	Indian Plum (Oemleriaia cerasiformis)	Rush (Juncus sp.)
Red Alder (Alnus rubra)	Ninebark (Physocarpus capitatus)	Sedge (Carex obnupta)
Western Red Cedar (Thuja plicata)	Snowberry (Symphoricarpos albus)	Sword-fern (Polystichum munitum)
Willow (Salix lasiandra, Salix sessilifolia)		
Cascara (Rhamnus purshiana)		

Model Area 4: Powell Butte and the Boring Lava Hills
These are upland broad-leaved deciduous/coniferous forests.

Trees:	Shrubs:	Ground Cover:
Douglas Fir (Pseudotsuga menziesii)	Baldhip Rose (Rosa gymnocarpa)	Bedstraw (Galium spp.)
Big-leaf maple (Acer macrophyllum)	Black Hawthorn (Crataegus douglasii)	Bracken Fern (Pteridium aquilinum)
Red Alder (Alnus rubra)	Common Snowberry (Symphoricacarpos albus)	Oregongrape (Berberis nervosa)
Western Red Cedar (Thuja plicata)	Indian Plum (Oemleria cerasiformis)	Salal (Gaultheria shallon)
	Ocean-spray (Holodiscus discolor)	St. John'swort (Hypericum perforatum)*
	Oregongrape (Berberis aquifolium)	Sword-fern (Polystichum munitum)
	Red Huckleberry (Vaccinium parvifolium)	Thimbleberry (Rubus parviflorus)
	Saskatoon Serviceberry (Amelanchier alnifolia)	Trailing Blackberry (Rubus ursinus)*
	Vine Maple (Acer circinatum)	Trillium (Trillium spp.)
	Western Hazelnut (Corylus cornuta)	Wood Strawberry (Fragaria vesca)

* These species are invasive and/or non-native and, as such, should not be used when planting in or near environmental zones.

APPENDICES

Appendix A

GLOSSARY OF COMMON TERMS USED FOR THE CITY OF PORTLAND INVENTORY OF WETLANDS, WATER BODIES, AND WILDLIFE AREAS

BANK	The rising ground surrounding a lake, river, or other water body.
CHANNEL	The bed where a stream of water runs.
COVER	Vegetation that serves to protect animals from excessive sunlight, drying, or predators.
DOMINANT	The species controlling the environment.
EDGE EFFECT	The opportunities afforded along the boundary (also ECOTONE) between two plant communities for animals that can feed in one and take shelter in the other.
ENHANCE	To raise to a higher degree; improve quality or available capacity; intensify; magnify.
EMERGENT VEGETATION	Various aquatic plants usually rooted in shallow water and having most of their vegetative growth above water, such as cattails and bullrushes.
EUTROPHICATION	The process by which a lake becomes rich in dissolved nutrients and deficient in oxygen.
GALLERY FOREST	A strip of forest bordering a river or lake where tree growth is supported by water flowing through the soil for a short distance.
GOAL 5	A portion of the Oregon Land Conservation and Development Commission land use goals, dealing with the protection and conservation of open spaces, scenic and historic areas, and natural resources.
HABITAT	Place where a plant or animal species naturally lives and grows; its immediate surroundings.
HYDRIC SOILS	Soil that is wet long enough to periodically produce anaerobic conditions, thereby influencing the growth of plants.
HYDROPHITE	A vascular plant that grows in water with its buds below the water surface.
INTERSPERSION	The proximity and interaction of one natural area to other adjacent areas.
INUNDATE	To flood; overspread with water; overflow.

LACUSTRINE	Related to or within lakes.
LITTORAL	Relating to, situated in or near a shoreline.
LIMNIC	Relating to or inhabiting a marshy lake.
MESIC	Of or pertaining to, or adapted to an environment having a balanced supply of moisture; being neither extremely wet nor dry.
MITIGATE	To make less severe. "Mitigation" includes: (a) Avoiding the impact altogether by not taking a certain action or parts of an action; (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; (e) Compensating for the impact by providing substitute resources or environments.
PALUSTRINE	Wetlands dominated by trees, shrubs, persistent emergent herbs, emergent mosses or lichens.
PASSERINE	Birds of the Order Passeriformes, comprising more than half of all bird species, and typically having feet adapted for perching (sparrows, warblers, etc.).
RAPTORS	Birds of the families Accipitridae, Falconidae, Tytonidae, and Strigidae; birds of prey equipped with long hooked bills and strong talons (hawks, eagles, falcons, and owls).
RIPARIAN	Relating to, living, or located on the bank of a natural water course (stream, river, etc.).
RIVERINE	Related to, formed by, or resembling a river.
SATURATED	Soaked, impregnated, or imbued thoroughly (soils).
SERAL STAGE	A characteristic association of plants and animals during succession and before climax.
SHOREBIRD	Birds of the Families Charadridae and Scolopacidae that are generally mud feeders and shore inhabiting.
SLOUGH	Usually a channel containing water which may or may not be moving, and often alluvial in nature.

SMALL MAMMALS	Fur covered animals that bear their young alive and nurse, those of the Orders Rodentia and Insectivores (mice, voles, shrews, etc.).
STRUCTURAL	Different habitat types within a Natural Area (i.e., Diversity; grasslands,, forest, open water, etc.).
WATERFOWL	Birds of the Family Anatidae. Aquatic, web-footed, gregarious birds ranging from small ducks to large swans, including geese.
WETLANDS	Lands transitional between terrestrial and aquatic where the water table is usually at or near the surface or the land is covered by shallow water. Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. For a more detailed description, refer to the discussion on Wetlands in the main body of the report.
XERIC	Of, pertaining to, or adapted to a dry environment.

Appendix B

INTRODUCTION

The Powell Butte/Mt. Scott Plan District is now applied to lands in southeast Portland generally east of I-205. The Johnson Creek Basin Plan District replaces these regulations in a manner that not only protects development from hazards such as landslides and floods, but, in conjunction with application of the Environmental Zones, also protects significant natural resources which offer certain values, including wildlife habitat, water quality, flood control, aesthetics, and neighborhood identity and character.

Deletions to present regulations are ~~crossed out~~, while additions are shown in *italics*. Notes to clarify or provide examples of appropriate actions are contained in *[italicised brackets]*. These notes will not appear in Title 33.

CHAPTER 33.~~566~~ 535
~~POWELL BUTTE / MT. SCOTT~~ *JOHNSON CREEK BASIN* PLAN DISTRICT

Contents

General

33.~~566~~*35*.010 Purpose

The *Johnson Creek Basin* ~~Powell Butte/Mt Scott~~ plan district provides for the safe, orderly, and efficient development of lands which are subject to a number of physical constraints, including *significant natural resources,* steep and hazardous slopes, floodplains, wetlands, and the lack of streets, sewers, and water services. The density of development is limited by applying special regulations to new land division proposals ~~on R10 zoned land~~. ~~In addition,~~ Class I and II lands are given priority for designation as common open space in PUDs and cluster subdivisions, and

existing vegetation on Class I, II, and III lands is encouraged to be preserved. *In addition, restrictions are placed on all new land uses and activities to reduce stormwater runoff, provide groundwater recharge, reduce erosion, enhance water quality, and retain and enhance native vegetation throughout the plan district.*

This plan district is intended to be used in conjunction with environmental zoning placed on significant natural resources in the Johnson Creek basin, to protect resources in conformance with Goal 8 of the Comprehensive Plan and statewide planning Goal 5. Where there are conflicts between this plan district and the environmental zone regulations, the regulations of the plan district apply.

33.~~56~~635.020 Where the Regulations Apply
The plan district regulations apply to lands ~~that were zoned R10V prior to the implementation of the plan district. The boundaries of the plan district are~~ shown on Map 5~~6~~635-1 at the end of this chapter and on the Official Zoning Maps. The boundary of the plan district is based on the *Johnson Creek Basin Plan District document* ~~Powell Butte/Mt Scott study area shown in the Development Manual of the Powell Butte/Mt. Scott Density Development Study. The study is available for review at the zoning counter of the Permit Center.~~

Development Standards

33.535.100 Items Subject to These Regulations
Unless exempted in 33.566.026, the following are subject to the developmentt standards and required reviews of this chapter:

A. New development and exterior alterations;

B. New above or below ground utilities that are not in public rights-of-way; and

C. Removal of trees greater than six inches in diameter.

33.535.110 Items Exempt from These Regulations
The following items are exempt from the development regulations and required reviews stated in this chapter:

A. Changing crop type or farming technique on existing agricultural land;

B. Planting native vegetation; and

C. Mowing, trimming, and normal maintenance of vegetation in the Transition Area of an EC Environmental Conservation zone and in the outer 25 feet of a resource area of an EC Environmental Conservation zone, if the following standards of the Environmental zone regulations are met:

1. 33.430.200 B - Parking and truck areas;

2. 33.430.200 D - Exterior storage and display; and

3. 33.430.200 J - Construction Management.

33.535.120 Additional Development Standards

The following development standards apply as specified in 33.535.100:

*A. **Structures in the Floodway** Above-ground structures are not allowed within the Johnson Creek floodway as delineated by the Federal Emergency Management Agency (FEMA) on July 1, 1991. An exception to this is fences, which are allowed subject to standards set by the Bureau of Environmental Services;*

*B. **Maximum Lot Coverage** No more than 50 percent of any site can be developed in impervious surface;*

[note: uncovered slatted decks, concrete pavers, "grasscrete," and similar items can be exempt]

*C. **Tree Removal** Trees greater than six inches in diameter can be removed only when they are diseased or pose an immediate danger, or are within ten feet of an existing or proposed building or five feet of a paved surface;*

*D. **Stormwater Systems** Stormwater collection systems shall allow no greater volume of stormwater flow off the site than 110% of what would occur under existing conditions. There shall be no increase in peak flows leaving the site, including during construction. Infiltration facilities shall be required for stormwater disposal except in soils identified as Cascade by the most recent soils map published by the Soil Conservation Service. Systems shall meet adopted Bureau of Environmental Services and Bureau of Buildings design and construction standards;*

*E. **Water Quality** Water discharge to Johnson Creek or its tributaries shall not increase the existing level of Priority Pollutants as defined by the United States Environmental Protection Agency, sediment, temperature, or fecal enterococcus in the receiving water body. Systems shall meet adopted Bureau of Environmental Services and Bureau of Buildings design and construction standards;*

*F. **Water Discharge** Release of water from Powell Butte reservoirs into Johnson Creek is prohibited unless there is a system malfunction or when the release would result in no more than a 10% increase in water volume at any point in the creek during the release period. Water discharged during scheduled release periods must be dechlorinated; and*

*G. **Erosion and Sediment Control** All vegetation removal activities must be surrounded or protected in a manner to prevent erosion and sediment from leaving the altered site; and*

Land Division Standards

33.~~566.030~~ *535.200* Land Classifications

All land in the plan district is divided into five land classifications, Classes I through V, as shown in the *Land Classification for the Johnson Creek Basin Protection Plan* Class I lands are generally the steepest sites having the greatest amount of natural hazards and water features, while Class V lands are generally flat without natural hazards or water features. This land classification system is the basis for the regulations of this chapter.

[This land classification document has not been produced, but will be a compilation of the two existing documents: Development Manual of the Powell Butte Mt. Scott Density Development Study and Johnson Creek Basin Protection Plan]

33.~~566.040~~ *535.210* Maximum Density for PUDs and Cluster Subdivisions
The maximum allowed density of development for *residential* PUDs and cluster subdivisions is determined by calculating the number of acres in each land classification and multiplying those figures by the following units per acre:

Land Class		Density
Class I and II lands	~~1.05 units per acre~~	*One-fourth the minimum density allowed in the base zone*
Class III lands	~~2.10 units per acre~~	*One-half the minimum density allowed in the base zone*
Class IV and V lands	~~4.20 units per acre~~	*Minimum density allowed in base zone*

33.~~566.050~~ *535.220* Minimum Lot Sizes for Subdivisions and Partitions
The following minimum lot sizes apply for all subdivisions and major partitions, excluding PUDs, cluster subdivisions, and minor partitions. Minor partitions must meet the minimum lot sizes of the base zone.

A. **Up to 50 percent Class I, II, III.** If up to 50 percent of the site area is classified as Class I, II, and III lands, the minimum lot size is *the minimum lot size allowed in the base zone* ~~10,000 square feet~~.

B. **More than 50 percent Class I, II, III.** If more than 50 percent of the site area is classified as Class I, II, and III lands, the following minimum lot sizes apply:

1. If less than 20% of the site area is classified as Class I and II lands, the minimum lot size is ~~20,000 square feet~~ *two times the minimum lot size allowed in the base zone*;

2. If 20% to 50% of the site area is classified as Class I and II lands, the minimum lot size is ~~30,000 square feet~~ *three times the minimum lot size allowed in the base zone*;

3. If more than 50% of the site area is classified as Class I and II lands, the minimum lot size is ~~40,000 square feet~~ *four times the minimum lot size allowed in the base zone.*

33.~~566.060~~ *535.230* Conservation of Class I, II, and III Lands
When designing PUDs and cluster subdivisions, Class I and II lands *must* ~~should~~ be given first priority for designation as common open space and *are to* be maintained in a natural state. Existing *non-nuisance plants* ~~vegetation~~ *as listed in the Portland Plant List* on Class I, II, and III lands should be preserved where practical. The purpose of these requirements is to conserve significant natural areas, decrease the potential for erosion, decrease the amount of surface water runoff, and help stabilize areas prone to landslides.

33.~~566.070~~ *535.240* Contesting the Land Classification Designation
The land classification for a property shown in the *Land Classification for the Johnson Creek Basin Protection Plan* ~~Development Manual of the Powell Butte Mt.Scott Density Development Study~~ may be contested through a Type III procedure. The landowner must include supporting materials prepared by a qualified engineering geologist, proving that the land classifications shown in the Development Manual for that property are incorrect. The pre-application conference is waived in these instances.

Relationship to Environmental Zone Regulations

33.535.300 Items Exempt from Environmental Review
The following items are exempted from environmental review within the Plan District, as they are compatible with the purposes of the Plan District and will not adversly impact significant natural resource:

A. Removing trees within Johnson Creek below the ordinary high water level;

B. Changing crop type or farming technique on existing agricultural land;

C. Mowing, trimming, and normal maintenance of vegetation in the Transition Area of an EC Environmental Conservation zone and in the outer 25 feet of a resource area of an EC Environmental Conservation zone, if the following standards of the Environmental zone regulations are met:

1. 33.430.200 B - Parking and truck areas;

2. 33.430.200 D - Exterior storage and display; and

3. 33.430.200 J - Construction Management.

D. Planting native vegetation in a manner consistent with the Guidelines of the Johnson Creek Basin Protection Plan; and

E. Constructing structures in the Transition Area of an EC Environmental Conservation zone in the RF through R2.5 zones, if the standards of subsection 33.430.200 A - Building Placement, and subsection 33.430.200 G - Lighting are met;

F. Items and conditions listed in the Johnson Creek Basin Protection Plan document as "Site-Specific Compatible Uses and Activities" in Chapter 8, Inventory Site Summaries;

G. Constructing a public recreation trail and support facilities within the Springwater Line right-of-way;

H. Maintenance within existing rights-of-way including road widening, rebuilding of bridges, resurfacing, and installation of curbs and sidewalks;

I. Modification of existing structures if the following standards are met:

1. There is no enlargement of the footprint of the structure;

2. Subsection 33.430.200 A - Building Placement; and

3. Subsection 33.430.200 G - Lighting.

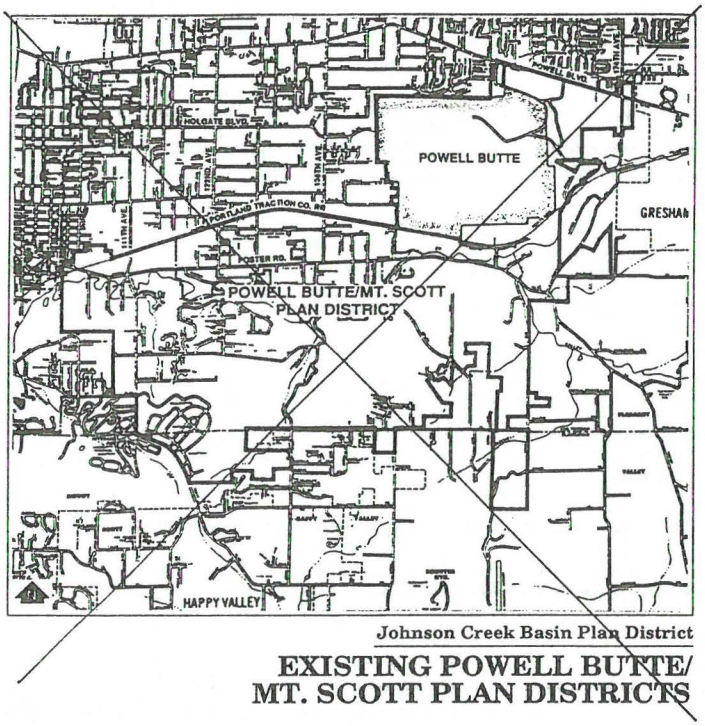
33.535.310 Items Subject to Modified Environmental Review
When located in an Environmental Protection zone in the plan district, new construction of bridges within public rights-of-way are allowed subject to the review for compliance with Approval Criteria for development within the Environmental Conservation zone, subsections 33.430.340 A through E, as replacement is compatible with the purposes of the plan district and, with appropriate mitigation, will not adversly impact significant natural resources.

33.535.320 Additional Approval Criteria

In addition to the requirements of 33.430, all land uses and activities subject to environmental review must consider the Guidelines of the Johnson Creek Basin Protection Plan .

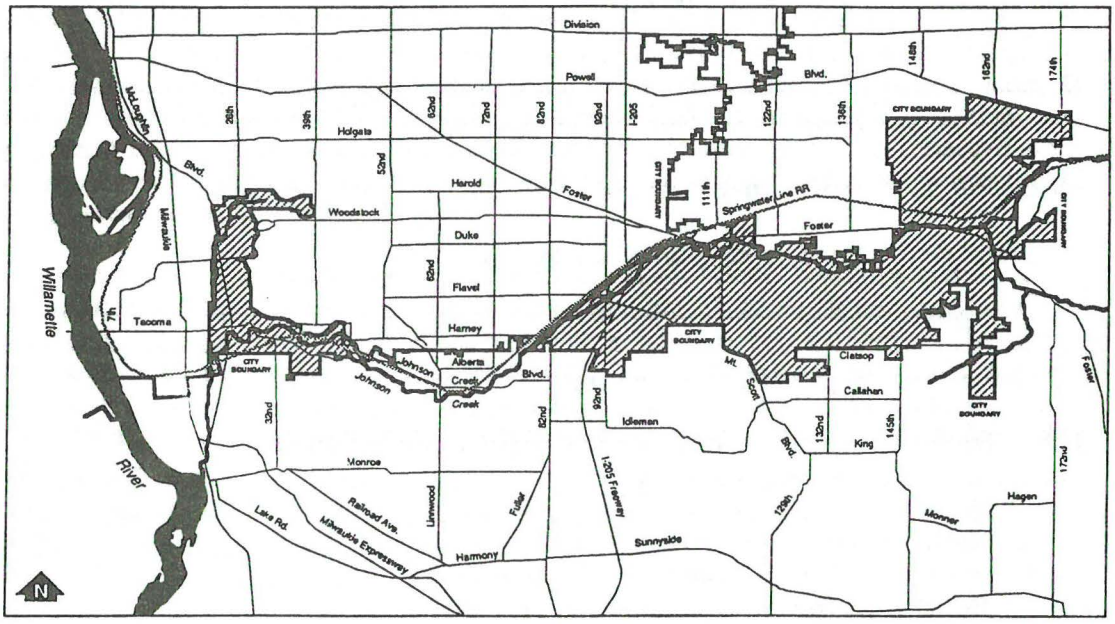
33.~~566.080~~ *535.400* Review for Timeliness

The regulations of this chapter will be reviewed for timeliness before *July 1, 2001* ~~December 31, 1999~~.



Johnson Creek Basin Plan District

EXISTING POWELL BUTTE/ MT. SCOTT PLAN DISTRICTS



Legend

Plan District

Johnson Creek Basin Plan District

PLAN DISTRICT BOUNDARIES

Appendix C

INTRODUCTION

The Environmental Zone regulations were adopted by Portland in 1987, to be applied to significant resources throughout the City in order to meet Comprehensive Plan Goal 8 (Environment) and Statewide Planning Goal 5 (Open Spaces, Scenic and Historic Areas, and Natural Resources). No changes are being made to these regulations as a result of the *Johnson Creek Basin Plan District.* However, these regulations may be modified by Plan District regulations, as long as purposes of the Environmental Zone, Comprehensive Plan goals, and Statewide Planning Goal 5 are met.

CHAPTER 33.430
ENVIRONMENTAL ZONES

General

33.430.010 Purpose

The purpose of the Environmental zones is to:

- Protect the City's inventoried significant natural resources and their functional values, as identified in the Comprehensive Plan;
- Implement the Comprehensive Plan environmental policies and objectives; and
- Encourage coordination between City, county, regional, state, and federal agencies concerned with natural resources.

33.430.020 Overlay Zones

A. General. The City has identified and inventoried natural resources and their public value. Some natural resource areas have been determined by the City to have greater public benefits than others. There are two overlay zones with different emphases to reflect two levels of natural resource areas.

1. The Environmental Protection overlay zone is applied to areas with the highest functional values and where the City has determined the natural resource to be of such significant value that almost all development would have a detrimental impact. The regulations of the Environmental Protection zone are intended to be very stringent and are designed to preserve the resource and its values.

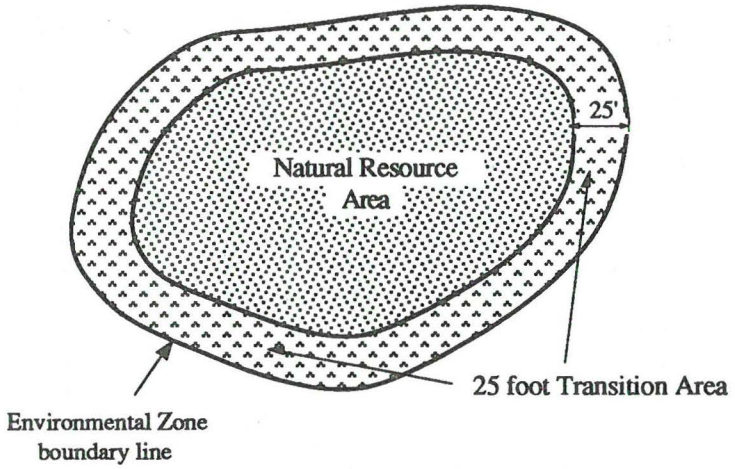
2. The Environmental Conservation overlay zone is applied to areas with high functional values where the City has determined that development may be allowed if adverse impacts are mitigated. The regulations of the Environmental Conservation zone are intended to conserve the resource and its values.

B. Subareas of the environmental zones. Each Environmental zone consists of the natural resource area and a transition area surrounding the natural resource area. The purpose of the transition area is to protect the adjacent natural resource. The transition area provides a buffer between the natural resource area and impacts of adjacent development.

1. Natural resource area. This is the land containing the natural resource to be protected and the lands surrounding it where development and activities would degrade the resource.

2. Transition area. This is the land around the edges of the natural resource area that constitutes a transition area for the natural resource area. The first 25 feet of the Environmental zone, measured inward from the zone boundary, is the transition area. See Figure 430-1.

Figure 430-1
Environmental Zone Subareas



33.430.030 Short Names and Map Symbols

The Environmental zones are also referred to in this Title by the short names listed below and are shown on the Official Zoning Maps with the symbols listed below. Collectively, the zones are called the Environmental zones.

Full Name	Short Name	Map Symbol
Environmental Conservation	EC	c
Environmental Protection	EP	p

33.430.040 Natural Resources and Functional Values

A. **Natural resources.** A natural resource is the physical resource itself. An Environmental zone may be placed on a site when one or more of the natural resources listed below have been identified as significant;

1. Wetlands;

2. Water bodies and riparian areas;

3. Fish and wildlife habitat areas; or

4. Ecologically and scientifically significant natural areas.

B. **Functional values.** Significant natural resources are important because of their functional values. The functional value may be physical, aesthetic, scenic, educational, or some other nonphysical function, or a combination of these. For example, two values of a wetland could be it's ability to provide stormwater detention for *x* units of water draining *y* acres, and it's ability to provide food and shelter for *z* varieties of migrating waterfowl.

As another example, an unusual native species of plant in a natural resource area would be of educational, heritage, and scientific value. Most natural resources will have many functional values. Some general categories of functional values are:

- Groundwater recharge and discharge;
- Flood storage and desynchronization;
- Domestic water supplies;
- Shoreline anchoring and dissipation of erosive forces;
- Sediment trapping;
- Nutrient retention and removal;
- Pollution control (to maintain water quality);
- Habitat for fish and wildlife;
- Recreational opportunities;
- Visual and scenic amenities and character; and
- Heritage value.

C. Additional site information. The City's adopted Goal 5 inventories and related economic, social, environmental, and energy (ESEE) analyses contain additional information about the natural resources and their values at individual sites.

33.430.050 Items Subject to These Regulations
Unless exempted in 33.430.060 below, the following are subject to the development standards and required reviews of this chapter, as specified in Section 33.430.070:

A. Change of use where there are concurrent exterior alterations to buildings or the site;

C. New development;

D. Exterior alteration of any building and any site expansions or modifications, including increased cultivated area, grazing area, or other agricultural activities;

E. Changes to the land, including all fills and excavations, grading, and any modification of drainage patterns;

F. New above or below ground utilities that are not in public rights-of-way;

G. The dedication or extension of public and rail rights-of-way;

H. Removal of trees and removal, cutting, or mowing of noncultivated vegetation including herbicide application. Removal of vegetation identified as nuisance plants on the Portland Plant List is not subject to this provision. The Portland Plant List is available at the Permit Center; and

I. Resource enhancement activities.

33.430.060 Items Exempt From These Regulations
The following items are exempt from the development standards and required reviews stated in this chapter:

A. Sale of property or change of ownership of a business;

B. Changes to the interior of a building;

C. Normal repair and maintenance of structures and development, including landscaping (only when replacing with in-kind materials), flood control, and irrigation;

D. Customary dredging and channel maintenance of existing drainage facilities. This includes vegetative maintenance for access and stormwater/flood control purposes within and adjacent to drainageways, but not the placement of fill or dredge spoils except for temporary storage outside a wetland or water body;

E. Temporary emergency procedures necessary for the safety or protection of property;

F. Single utility poles required to provide service to the local area;

G. Public right-of-way dedication and improvement projects that are subject to the National Environmental Policy Act (NEPA) of 1969 and that the City finds, through the NEPA and Oregon Action Plan process, that the project complies with the Comprehensive Plan;

H. Groundwater monitoring wells when constructed to standards approved by the City.

I. Right-of-way dedications for widening existing rights-of-way, when additional right-of-way is needed to ensure a contiguous width.

33.430.070 Applicable Development Standards and Approval Criteria

A. **Recreational trails.** Required recreational trails are subject to the development standards of Chapter 33.272, Public Recreational Trails, and the approval criterion of 33.430.340.A. In addition, they must be constructed to City standards. Other trails, rest points, view points, and facilities for the enjoyment of the natural resource are also subject to the approval criterion of 33.430.340.A.

B. **Resource enhancement projects.** Resource enhancement projects, including approved mitigation plans, are reviewed against the approval criteria of 33.430.340.B. They are not subject to the development standards of 33.430.200.

C. **All other development.** All other development is subject to the development standards of 33.430.200 and the environmental review approval criteria of 33.430.340. The applicable environmental review approval criteria will depend on whether the proposal is in a transition area, an EC natural resource area, or an EP natural resource area. In addition, development in a natural resource area must include an impact evaluation and may require a mitigation plan, as stated in 33.430.350 and 33.430.360.

D. **Natural resource management plans.** Development in areas subject to a natural resource management plan must conform to the requirements of the plan. See 33.430.370. The development standards of the plan may be more liberal or more stringent than the environmental zone standards. The requirements for review, the procedure, or the approval criteria may also be superceded by the requirements of the management plan. The environmental zone development standards apply unless the management plan states otherwise.

33.430.080 Other Regulatory Agencies

This chapter contains the City's regulations for areas within the environmental zones. The regulations of other agencies may also apply to individual sites and they may be more restrictive than the City's regulations. Possible affected agencies include: U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, Oregon Division of State Lands, Oregon Department of Fish and Wildlife, Oregon Department of

Environmental Quality, and local drainage districts. City approval does not imply approval by other agencies. Applicants are encouraged to contact all appropriate regulatory agencies for information and advice before their development plans are completed.

Use Regulations

33.430.100 Uses Allowed

A. Review required. Uses and development allowed by the base zone, overlay zone, and plan district regulations are allowed in the environmental zones if they comply with the development standards and are approved through an environmental review. The amount and placement of development may be restricted to ensure conformance with the regulations of this chapter.

B. Hazardous substances. Hazardous substances greater than the consumer commodity quantity are prohibited in the environmental zones. See 33.140.120 for descriptions of hazardous material quantities.

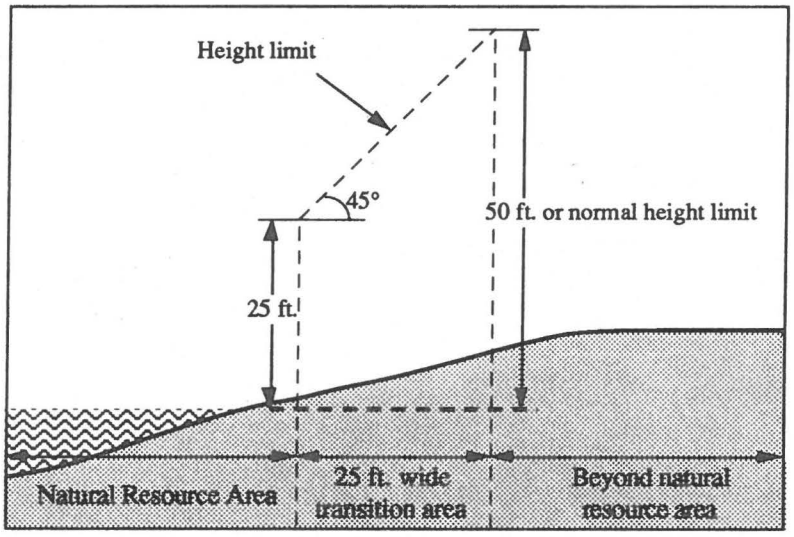
Development Standards

33.430.200 Development Standards

The development standards of this section apply to all transition and natural resource areas.

A. Building placement. This standard is intended to protect adjacent natural resource areas by allowing for solar access and controlling the scale and bulk of buildings near natural resources. A building or structure up to 25 feet in height may be placed up to the boundary of the natural resource area. A setback from the natural resource area boundary of at least 1 foot for every 1 foot in height over 25 feet is required. See Figure 430-2.

Figure 430-2
Building Heights in Transition Areas



B. **Parking and truck areas.** These regulations are intended to provide a transition between the natural resource area and development, to assist in controlling runoff, and to protect the visual amenity values of the natural resource.

1. Auto and light truck areas. Parking areas for autos and light trucks must be set back at least 10 feet from natural resource area boundaries. The setback must be landscaped to at least the L2 standard, as stated in Chapter 33.248, Landscaping and Screening.

2. Medium and heavy truck areas. Parking, loading, and maneuvering areas for medium and heavy trucks must be set back at least 10 feet from natural resource area boundaries. The setback must be landscaped to at least the L3 standard.

C. **Exterior work activities.** Exterior work activities are prohibited unless in conjunction with a river-related or river-dependent use.

D. **Exterior storage and display.** Exterior storage and display areas must be set back at least 10 feet from resource area boundaries. The setback must be landscaped to at least the L3 standard.

E. **Drainage and topography.**

1. The site must be contoured, planted, or developed to prevent erosion, pollution, and sedimentation into the adjacent natural resource area.

2. The Bureau of Environmental Services may require water pollution mitigation measures as a condition of approving the discharge of runoff into a natural resource or into a stormwater drainage facility which discharges into a natural resource. Preferred treatment is with natural pollution control systems compatible in character with the natural resource. The type of mitigation measure or facility, will be determined by the Bureau of Environmental Services.

F. **Landscape materials.**

1. The first 10 feet of landscaping, measured from the natural resource boundary line, must be planted with plant species native to the Willamette Valley or to the Pacific Northwest. Allowable plant species are described in Section IV.C, Landscaping, of the Willamette Greenway Plan. This requirement applies to all landscaping whether required or optional.

2. The standard in Paragraph 1. above does not apply where the identified natural resource does not include native plant species as a characteristic or value. In these cases, landscaping may be similar in type and character to that in the natural resource area.

G. **Lighting.** Exterior and interior lights must be placed so that they do not shine directly into natural resource areas.

H. **Trash collection areas.** Outdoor trash collection areas are prohibited.

I. **Noise.** Buildings must be placed and constructed to meet the noise standards for nonresidential development adjacent to residential zones. See Title 18, Nuisance Abatement and Noise Control.

J. **Construction management.** Construction must be done in a manner which will ensure that the remainder of the site with Environmental zoning will not be adversely impacted.

Environmental Review

33.430.300 Purpose of the Review

Environmental review of uses and development in the Environmental zones is intended to provide adequate protection for the identified natural resources. The review provides for flexibility and reasonable development opportunities when development is sensitive to the special environmental concerns of the site.

33.430.310 Modifying Environmental Zone Boundaries

Environmental zone boundaries may be modified by the City as the result of and concurrent with approving development in a natural resource area. The boundaries may be modified for either of the two situations stated below. All other requests for boundary changes are processed as a change of an overlay zone, as stated in Chapter 33.855, Zoning Map Amendments.

A. **Creation of new resource areas.** The Environmental zone boundary may be expanded as part of the environmental review to include areas identified for enhancement in a mitigation plan.

B. **Loss of existing resource areas.** The Environmental zone boundary may be removed from a portion of an existing natural resource area where approved development will eliminate natural resource. The boundary will not be removed until after all required mitigation measures have been completed.

33.430.320 Procedures

A. **Transition areas.** Environmental review in a transition area is processed through a Type II procedure in both the EC and EP zones.

B. **Natural resource areas.** Environmental review in a natural resource area is processed through a Type II procedure in the EC zone and a Type III procedure in the EP zone. An exception to this in the EP zone is a review of a recreational trail located in a natural resource area but not in the natural resource itself. When locating outside the natural resource, recreational trails are processed through a Type II procedure. A pre-application conference is required for all Type II and III procedures in both zones.

C. **Special evaluation by a trained professional.** The Planning Director may hire a professional to evaluate proposals and make recommendations upon finding that additional expertise is warranted due to exceptional circumstances. The professional may have expertise in the applicable natural resource or expertise in the potential adverse impacts on the natural resource. This provision may be applied only to proposals to develop in the natural resource area. A fee for these services will be charged to the applicant in addition to the application fee.

33.430.330 Supplemental Application Requirements

All of the information listed below must be included with an environmental review application, in addition to the standard application requirements of 33.730.060.

A. Special site plan requirements.

1. The site plan must clearly show the boundaries of the natural resource area and the transition area at a scale of at least 1inch for every 100 feet. Location of the environmental zone is based upon the maps adopted with the ESEE analysis for the area.

2. Additional site plan requirements. In addition, the site plan must show:

   - Proposed site contouring;
   - Proposed stormwater management and disposal;
   - Existing or proposed, above or below ground utilities;
   - Proposed right-of-way dedication;
   - All trees greater than six inches in diameter measured at five feet above the ground. As an option to showing all trees greater than 6 inches in wooded areas not being disturbed, the crown cover outline can be shown;
   - Other vegetation cover types, general distribution, and identification of vegetation affected by the proposed project;
   - Existing floodplains and elevations;
   - Proposed sanitary waste disposal systems; and
   - Proposed recreational trails, viewpoints, and outdoor recreational spaces.

B. Additional plans and analyses. The following information is required in either a site plan or narrative form, or in a combination of the two:

1. A construction management plan showing enough detail to fully address the concerns described in 33.430.210.J. above. The plan should address the handling of construction equipment, construction materials, excess fill, runoff, erosion, how trees and vegetation will be protected, and similar items;

2. If the development is proposed for a transition area, a detailed description of any proposed on-site or off-site mitigation measures;

3. An impact evaluation if the development is proposed for a natural resource area, See 33.430.350. If the impact evaluation shows that there will be a degradation or loss of functional values, a mitigation plan will also be required. See 33.430.360.

33.430.340 Approval Criteria

An environmental review application will be approved if the review body finds that the applicant has shown that all of the applicable approval criteria stated below are met.

A. Recreational trails.

1. Which approval criteria apply. Recreational trails to be located outside of a natural resource area are subject to the approval criterion stated in Paragraph 2. below. Recreational trails to be located in a natural resource area in the EP and EC zones are subject to the approval criteria stated in Subsection E. below.

2. Approval criterion. Trails, rest points, view points, and other facilities constructed for the enjoyment of the natural resource limit and balance significant detrimental environmental impacts with the potential for enjoyment of the natural resource.

B. Resource enhancement projects. Resource enhancement projects must have adequate mitigation measures to ensure that there will be no net loss of natural resources and functional values and that the objectives of the enhancement project will be achieved.

C. Excavations and fills. Excavations and fills are subject to the approval criteria of Subsections D, E, or F below and the approval criteria for excavations and fills stated in Chapter 33.830, Excavations and Fills.

D. Development in transition areas.

1. Development within the the transition area will have no significant detrimental environmental impacts on adjacent natural resource areas due to any change of drainage patterns, erosion, sedimentation, hazardous material spills, litter, or exterior lighting.

2. Existing trees and other vegetation are retained to the greatest extent possible.

3. The proposed construction management plan is adequate to protect the adjacent natural resource area.

E. Development in natural resource areas in the EC zone.

1. The proposal has as few significant detrimental environmental impacts on functional values as is practical.

2. All identified significant detrimental environmental impacts on the functional values will be compensated for through a mitigation plan.

3. Proposed construction management measures are adequate to protect remaining natural resource areas during the construction period.

F. Development in natural resource areas in the EP zone.

1. There are no alternative sites available within the City that are suitably zoned to allow the proposal and that would have less impact on natural resources.

2. The applicant's analysis of the economic, social, environmental, and energy consequences (ESEE) of the proposal is able to show that the City's prior ESEE analysis for the site is no longer valid due to a change in the factors considered. The applicant's ESEE analysis also clearly demonstrates that there is a public need for the proposal in the natural resource, and that the public benefit resulting from the proposal outweighs the significant detrimental environmental impacts on the natural resource.

3. All significant detrimental environmental impacts on the functional values will be compensated for through a mitigation plan.

4. Proposed construction management measures are adequate to protect remaining natural resource areas during the construction period.

33.430.350 Impact Evaluation

An impact evaluation is required for all proposals in a natural resource area. The following steps describe the process for evaluating the impacts of a proposal.

A. The natural resources are identified.

B. The functional values of the identified natural resources are defined by characteristics and quantity.

C. Alternative locations, design modifications, or alternative methods of development on the subject property which would reduce the impacts on natural resources are identified and evaluated.

D. The impacts of the proposal on the natural resources and functional values are determined, including an economic, social, environmental, and energy (ESEE) analysis for proposals in the EP zone.

E. If there is any resulting degradation or loss of functional values from the proposal, a mitigation plan is required which will compensate for the degradation or loss. See 33.430.360 below.

33.430.360 Mitigation Plans

A. **Description.** A mitigation plan is a plan to compensate for the degradation or loss of a site's functional values identified in the impact evaluation process. It may also be a plan to improve a natural resource area through the enhancement of functional values. It is a comprehensive and long range plan.

B. **Purpose.** Mitigation plans are intended to preserve functional values while providing some flexibility for development within a natural resource area. Development within a natural resource area has the potential of degrading or destroying the natural resource and its functional values. If development outside of the natural resource area is not practical, the negative impacts must be eliminated or compensated for through mitigation. In evaluating proposals for mitigation, the following order of locational and resource preference applies:

1. On the resource site, with the same kind of resource;

2. Off-site, with the same kind of resource;

3. On-site, with a different kind of resource; and

4. Off-site, with a different kind of resource.

C. **Location of mitigation measures.** Mitigation must be done within the City limits and preferably in the same local watershed.

D. **Preparation and implementation** It is recommended that, based upon the functional values to be mitigated and the complexity of the project, the mitigation plan be prepared and implemented with the guidance of professionals with experience and credentials in the applicable natural resource areas and values. These professionals may include wildlife biologists, ecologists, hydrologists, foresters, and wetland scientists. The property owner of the affected site is responsible for the design and/or implementation of each element of the plan.

E. **Elements of a mitigation plan.** A mitigation plan must contain at least the following elements:

1. Documentation in written and mapped form of the existing natural resource and functional values on both the site to be impacted and the mitigation site.

2. The objectives of the mitigation plan, including functional values that are being conserved;

3. Information showing how the mitigation measures will ensure that there is no net loss of the functional values;

4. Information describing the coordination efforts with, and requirements of any other local, State, and Federal regulatory agencies;

5. A site plan which includes at least the following items:

   a. Applicable elements required by the environmental review application;

   b. The species, size, and spacing of any vegetation;

   c. Any water bodies, including depths;

   d. Any water sources, including volumes; and

   e. Any dams, weirs, or other structures relating to mitigation;

6. A construction plan for the mitigation measures, including timetables and assurances for performance;

7. A management plan for ongoing maintenance, including assurances for performance.

8. A monitoring plan for during and after implementation.

9. Assurances to rectify any mitigation actions which are not successful. This may include bonding or other surety.

33.430.370 Natural Resource Management Plans

A. **Purpose.** Natural resource management plans provide an alternative approach to individual environmental reviews. The plan may be either comprehensive in its treatment of natural resources within the management plan area, or it may be a functional plan which addresses a single or limited range of natural resources and functional values. Examples of a functional plan might be a 40-Mile Loop implementation plan or a drainageway development plan. Plans should cover large natural resources, such as a creek or slough, which may pass through many ownerships, or large areas which may have many protected natural resources and many ownerships. The plan provides a means for a single environmental evaluation and review of a large ecosystem. This process is not intended for small parcels. The process allows for coordination with other local, state, and federal agencies to provide consistency in implementation of environmental regulations. A natural resource management plan will also result in more certainty for land owners and in more rapid processing of development requests.

B. What is covered in a plan.

1. A natural resource management plan must cover all significant natural resources protected by the environmental zone(s) within the plan boundaries which are relevant to the scope of the plan. The plan must address all of the identified functional values of the natural resource areas which are significantly affected by actions or developments addressed in the plan.

2. The plan may also address concerns of other governmental agencies if the plan is being developed to be used concurrently by other agencies.

3. Management objectives which maintain or enhance identified functional values should be included.

C. Details and content of the plan.

1. The plan must be of adequate detail, description and mapping to provide site specific certainty to property owners and to allow City staff to review all development proposals for compliance with the plan.

2. The plan may include additional development standards or exemptions from the development standards of this chapter.

3. The plan must also identify:

   a. Where development is and is not allowed and the types of development allowed;

   b. The location and type of any mitigation measures;

   c. The timing of development, mitigation measures, and other improvements;

   d. The procedure for City review of allowed development; and

   e. The manner in which all requests for adjustments or amendments to an approved plan will be processed.

D. Adoption procedure for a plan. Adoption of a natural resource management plan is processed through a legislative procedure. A natural resource management plan may be implemented in several ways including but not limited to a plan district, urban renewal district, or master plan. Formulation of the plan may be done by the City, another government agency, or affected property owners.

E. Approval criteria for adoption of a plan. A natural resource management plan will be adopted if it is found that:

1. The plan is consistent with the purpose of the environmental zones;

2. The plan complies with the requirements for natural resource management plans stated in this section; and

3. The plan meets the relevant environmental review approval criteria stated in 33.430.340.A through F.

Appendix D

CHAPTER 33.258
NONCONFORMING USES AND DEVELOPMENT

Sections:

33.258.010 Purpose
Nonconforming uses and development are created when the application of a specific zone to a site changes, or a zoning regulation changes. As part of the change, existing uses or development might no longer be allowed. The intent of the change is not to force all noncomplying situations to be immediately brought into conformance. Instead, the intent is to guide future uses and development in a new direction consistent with City policy.

This chapter provides a method to review and limit nonconforming situations when changes to those situations are proposed. The intent is to protect the character of the area by reducing the negative impacts from nonconforming situations. At the same time, the regulations assure that the uses and development may continue and that the zoning regulations will not cause unnecessary burdens.

Nonconforming situations that have a lesser impact on the immediate area have fewer restrictions than those with greater impacts. Nonconforming uses in residential zones are treated more strictly than those in commercial, employment or industrial zones to protect the livability and character of residential neighborhoods. In contrast, nonconforming residential developments in residential zones are treated more liberally because they do not represent a major disruption to the neighborhood and they provide needed housing opportunities in the City.

33.258.020 Status and Documentation of a Nonconforming Use or Development
(Amended by Ord. No.163697, effective 1/1/91.) The nonconforming use and development regulations apply only to those nonconforming situations which were allowed when established or which were approved through a land use review. Nonconforming situations which were not allowed when established have no legal right to continue (often referred to as "grandfather rights") and must be removed. The applicant must provide evidence to show that the nonconforming situation was allowed when established (using building permits) and was maintained over time (using utility bills, tax records, business licenses, or telephone directory listings). The Director will determine whether the evidence is satisfactory. If the applicant wishes to provide evidence other than those identified above in parentheses, a Type II process will be used to determine whether the evidence is satisfactory.

33.258.030 Types of Nonconforming Situations
A specific site may be nonconforming because it contains either a nonconforming use, an allowed residential use that exceeds the allowed density, a nonconforming development, or a combination of these. Nonconforming uses, nonconforming residential densities, and nonconforming development are defined in Chapter 33.900, Definitions.

33.258.040 Regulations that Apply to All Nonconforming Situations

A. Ownership. The status of a nonconforming situation is not affected by changes in ownership.

B. Change to a conforming situation. A nonconforming situation may be changed to a conforming situation by right. Once a conforming situation occupies the site, the nonconforming rights are lost and a nonconforming situation may not be re-established.

C. Change to conditional use. A nonconforming use may change to a conditional use if approved through a conditional use review. Once a conditional use occupies the site, the nonconforming rights are lost and a nonconforming use may not be re-established.

D. Maintenance. Normal maintenance and repair of nonconforming situations is allowed.

33.258.050 Nonconforming Uses (Amended by Ord. No.163697, effective 1/1/91.)

A. Continued operation. Nonconforming uses may continue to operate. Changes in operations are allowed. However, nonconforming uses in residential zones may not extend their hours of operation into the period of 11 pm to 6 am.

B. Change of use. A change to another use in the same use category is allowed by right, provided that the off-site impact standards of Chapter 33.262, Off-Site Impacts, are met. The applicant must document in advance that the nonconforming use will meet the off-site impact standards. For changes of use within the same use category which do not meet the off-site impact standards, the change may be allowed through a nonconforming use review. A change to a use in a different use category which is prohibited by the base zone may be allowed through a nonconforming use review. See 33.258.080.

C. Floor Area Expansions.

1. OS and R zones. The standards stated below apply to all nonconforming uses in OS and R zones.

   a. Floor area expansions on the same site may be approved through a nonconforming use review. See 33.258.080. The development standards of the base zone must be met.

   b. Expansion of the nonconforming use onto another site is prohibited.

2. C, E, and I zones. The standards stated below apply to all nonconforming uses in C, E, and I zones.

   a. Floor area expansions on the same site may be approved through a nonconforming use review. See 33.258.080. The development standards of the base zone must be met for the expansion.

   b. Expansion of the nonconforming use onto another site is prohibited, except in the following situation:

      (1) The site is abutting the site of the nonconforming use; and

      (2) The site was in the same ownership as the nonconforming site when it became nonconforming; and

(3) The prior zoning regulations on the expansion site would have allowed the use; and

(4) The expansion is approved through a nonconforming use review. See 33.258.080.

c. The addition of new residential units to a nonconforming residential use is prohibited.

D. Loss of nonconforming use status.

1. Discontinuance. If the site of a nonconforming use is vacant for 2 continuous years, the nonconforming use rights are lost and the re-establishment of a nonconforming use is prohibited. If the site is vacant for less than 2 continuous years, the nonconforming use rights are maintained.

2. Accidental destruction. When a structure containing a nonconforming use is damaged by fire or other causes beyond the control of the owner, the re-establishment of the nonconforming use is prohibited if the repair cost of the structure is more than 75 percent of its assessed value.

3. Intentional destruction. When a structure containing a nonconforming use is intentionally damaged by fire or other causes within the control of the owner, the re-establishment of the nonconforming use is prohibited.

33.258.060 Nonconforming Residential Densities

A. Changes to dwellings. Existing dwelling units may continue, may be removed or enlarged, and amenities may be added to site. There may not be a net increase in the number of dwelling units and the building may not move further out of compliance with the base zone development standards.

B. Discontinuance and damage.

1. Building unoccupied but standing. Nonconforming residential density rights continue even when a building has been unoccupied for any length of time.

2. Damage or destruction.

a. When a residential structure that contains nonconforming residential units is damaged or destroyed by fire or other causes beyond the control of the owner the nonconforming residential density rights are maintained if the structure is rebuilt within 5 years. The structure may be rebuilt with the old number of units, but if the repair cost is more than 75 percent of its assessed value, the structure must comply with the development standards (except for density) of the R2 zone or of the base zone, whichever is less restrictive. If not rebuilt within 5 years, the lot is considered vacant and is subject to the base zone density standards.

b. If a house on a substandard lot is damaged or destroyed by fire or other causes beyond the control of the owner, and the repair cost is 75 percent or less of its assessed value,the structure may be rebuilt. If the repair cost is more than 75 percent of its assessed value, the structure may be rebuilt by right if it is rebuilt within 5 years. In these cases, the base zone standards apply and a substandard lot

review is not required. If the structure is not rebuilt within 5 years, the lot is considered vacant and is subject to the substandard lot regulations of Chapter 33.291.

33.258.070 Nonconforming Development (Amended by Ord. No. 163697, effective 1/1/91.)

A. **Purpose.** This section is primarily aimed at upgrading nonconforming development elements that affect the appearance and impacts of a site. It is not intended to require extensive changes that would be extremely impractical such as moving or lowering buildings.

B. **Continued operation.** Nonconforming developments may continue unless specifically limited by Subsection D. below or other regulations in this Title.

C. **Changes.** Changes may be made to the site which are in conformance with the base zone development standards. Proposed changes that are not in conformance, are subject to the adjustment process unless prohibited.

D. **Development which must be brought into conformance.** The regulations of this subsection are divided into two types of situations, depending upon whether the use is also nonconforming or not. These regulations apply except where superceded by more specific regulations in the code.

1. Nonconforming development with a new nonconforming use. When there is a change to a different nonconforming use, the following nonconforming development must be brought into compliance with the development standards that apply to the site (base, overlay, plan district, special use):

   a. Exterior display, storage, and work activity areas, including landscaping;

   b. Landscaped setbacks for surface parking and exterior development areas;

   c. Interior parking lot landscaping;

   d. Landscaping in existing building setbacks;

   e. Minimum landscaped area (where land is not used for structures, parking, or exterior improvements);

   f. Screening; and

   g. Paving of surface parking and exterior storage and display areas.

2. Nonconforming development with an existing nonconforming use, allowed use, limited use, or conditional use. Nonconforming development associated with an existing nonconforming use, an allowed use, a limited use, or a conditional use, must meet the requirements stated below. When alterations are made which are over the threshold of Subparagraph a. below, the site must be brought into conformance with the development standards listed in Subparagraph b. up to the limits stated in Subparagraph c.

   a. Thresholds triggering compliance. The standards of Subparagraph b. below must be met when the value of the proposed alterations on the site are 35 percent or greater than the assessed value of all improvements on the site. On sites with

multiple tenants in one or more buildings, the threshold applies to any alteration that is 35 percent or greater of the assessed value of all improvements on the site. The threshold is not cumulative.

b. Standards which must be met. Development not complying with the development standards for the following standards must be brought into conformance or receive an adjustment.

(1) Landscaped setbacks for surface parking and exterior development areas;

(2) Interior parking lot landscaping;

(3) Landscaping in existing building setbacks;

(4) Minimum landscaped area (where land is not used for structures, parking, or exterior improvements);

(5) Screening; and

(6) Paving of surface parking and exterior storage and display areas.

c. Caps on the cost of required improvements. The standards listed in Subparagraph b. must be met for the entire site. However, required improvements costing over 10 percent of the value of the proposed alterations do not have to be made. It is the responsibility of the applicant to document that the value of the required improvements will be greater than 10 percent of the value of the proposed alterations. When all required improvements are not being made, the priority for which improvements to make is the same as the order of improvements listed in Subparagraph b. above.

E. Loss of nonconforming development status.

1. Discontinuance. If a nonconforming exterior development, such as an exterior storage area, is vacant for 2 years, the nonconforming rights are lost and a nonconforming exterior development may not be re-established. If the exterior development is vacant for less than 2 years, a nonconforming exterior development may be re-established, unless stated otherwise in Subsection D. above.

2. Destruction. When a structure which has nonconforming elements is removed or intentionally destroyed, replacement structures and other nonconforming development must comply with the development standards of the base zone. When a structure which has nonconforming elements is partially or totally damaged by fire or other causes beyond the control of the owner, the structure may be rebuilt using the same structure footprint. An adjustment is required to allow the replacement structure to be more out of compliance with the development standards than the previous structure. However, garages in residential zones are subject to the provisions for detached accessory structures of 33.110.250 and 33.120.280 (Single-Dwelling and Multi-Dwelling chapters respectively).

F. Sites that are nonconforming in parking spaces. When a site is nonconforming in the number of required parking spaces, this subsection applies. If changes to a use or building are made that increase the number of required parking spaces over the existing situation, only the number of spaces relating to the increase need to be provided.

G. Nonconforming signs. These regulations apply to nonconforming signs in all zones.

1. Nonconforming permanent signs may continue to exist.

2. Maintenance, repairs, and changing of permanent sign faces is allowed so long as structural alterations are not made. A new painted wall sign painted on top of an existing painted wall sign is considered a replacement of the permanent sign, and is regulated by Paragraph 3. below.

3. Permanent signs and sign structures which are moved, replaced, or structurally altered must be brought into conformance with the sign regulations. However, nonconforming signs required to be moved because of public roadway improvements may be re-established.

4. Nonconforming temporary signs must be removed.

33.258.080 Nonconforming Use Reviews

A. Procedure. A nonconforming use review is processed through a Type II procedure in the C, E, and I zones, and through a Type III procedure in an OS or R zone.

B. Approval criteria. The request will be approved if the review body finds that the applicant has shown that all of the following approval criteria are met:

1. With mitigation measures, there will be a net decrease in overall detrimental impacts (over the impacts of the previous use or development) on the surrounding area taking into account factors such as:

   a. The hours of operation;

   b. Vehicle trips to the site and impact on surrounding on-street parking;

   c. Noise, vibration, dust, odor, fumes, glare, and smoke;

   d. Potential for increased litter; and

   e. The amount, location, and nature of any outside displays, storage, or activities; and

2. If the nonconforming use is in an OS or R zone, and if any changes are proposed to the site, the appearance of the new use or development will not lessen the residential character of the OS or R zoned area. This is based on taking into account factors such as:

   a. Building scale, placement, and facade;

   b. Parking area placement;

   c. Buffering and the potential loss of privacy to abutting residential uses; and

   d. Lighting and signs; and

3. If the nonconforming use is in a C, E, or I zone, and if any changes are proposed to the site, the appearance of the new use or development will not detract from the desired function and character of the zone.

Appendix E

PORTLAND PLANT LIST

INTRODUCTION

The Portland Plant List is divided into four sections — Introduction, Native Plants, Nuisance Plants, and Prohibited Plants.

Description of Lists

The Native Plants section is a listing of native plants found in the City of Portland. The list divides the plants into three groups — trees, shrubs, and groundcover. For each group, the list includes the Latin name, common name, and the habitat types it is most likely to be found in. The habitat types are: wetland, riparian, forest, forested slopes, thicket, grass, and rocky.

The Nuisance Plants section is a listing of plants found in the City of Portland which can be removed without requiring an environmental review or greenway review. These plants may be native, naturalized, or exotic. They are divided into two groups — plants which are considered a nuisance because of their tendency to dominate plant communities, and plants which are considered harmful to humans.

Being on this list is not an indication that the City of Portland necessarily prohibits or discourages the use of these plants; merely that they can be controlled without having to go through one of the land use review procedures identified above. Being on this list also does not exempt the applicant from having to obtain any necessary regional, state, or federal approvals before removing these plants. Unless included on the nuisance plant list, the removal of all plants in the environmental and greenway zones require a review.

The Prohibited Plants section is a listing of plants which the City of Portland prohibits being used in required landscaping situations. At present, there are no plants on this list, although there may be adopted plans which prohibit certain species in specific areas or situations.

Modification of Lists

The process for adding or removing plants from the Native Plants and Nuisance Plants list is as follows. When a request is received, the City of Portland will consult with three or more knowledgeable persons with a botany, biology, or landscape architecture background to determine whether the plant in question should be added to or deleted from either list. This decision will be forwarded to the applicant and will be final. The primary source for native plant determination is the five volume set, Flora of the Pacific Northwest by Hitchcock & Cronquist.

Adding or removing plants from the Prohibited Plants list will be conducted through the legislative procedures as stated in Title 33.

NATIVE PLANTS

The native plant list in this section is a listing of native plants historically found in the City of Portland. The list divides plants into three groups: trees, shrubs, and groundcover. For each group, the list includes the Latin name, common name, and the habitat types where the plant is most likely to be found.

The habitat types are: wetland, riparian, forest, forested slopes, thicket, grass, and rocky. "Wetland" includes all forms of wetlands found in Portland. "Riparian" includes the riparian areas along the Willamette River, Columbia River, and other streams in Portland. "Forest" refers to upland forested areas with little or no slope. "Forested slopes" refers to much of the west hills and various buttes found in Portland. "Thicket" refers to edges of forests and meadows and includes hedgerows and clumps of vegetation that may be found in meadows. "Grass" refers to open areas or meadows. It may also include clearings in forested areas. "Rocky" refers to rocky upland areas, and may include cliffs.

Native Plants

Scientific Name	Common Name	Habitat Type						
		Wetland	Riparian	Forest	F. Slopes	Thicket	Grass	Rocky
Trees								
Abies grandis	Grand Fir	X	X	X	X			
Acer macrophyllum	Big-leaf Maple			X	X			
Alnus rubra	Red Alder		X	X	X			
Arbutus menziesii	Madrone			X				
Cornus nuttallii	Western Flowering Dogwood			X	X			
Crataegus douglasii douglasii	Black Hawthorn (wetland form)	X	X					
Crataegus douglasii suksdorfii	Black Hawthorn (upland form)	X	X	X	X	X		
Fraxinus latifolia	Oregon Ash	X	X					
Pinus ponderosa	Ponderosa Pine			X	X			
Populus trichocarpa	Black Cottonwood	X	X					
Prunus emarginata	Bitter Chokecherry		X		X	X		
Pseudotsuga menziesii	Douglas Fir			X	X			
Quercus garryana	Garry Oak			X	X		X	
Rhamnus purshiana	Cascara		X	X	X			
Salix fluviatilis	Columbia River Willow	X	X					
Salix lasiandra	Pacific Willow	X	X					
Salix piperi	Piper's Willow	X	X					
Salix rigida, var. macrogemma	Rigid Willow	X	X					
Salix scouleriana	Scouler Willow	X	X	X				
Salix sessilifolia	Soft-leaved Willow	X	X					
Salix sitchensis	Sitka Willow	X	X					
Taxus brevifolia	Western Yew, Pacific Yew		X	X	X			
Thuja plicata	Western Red Cedar	X	X	X	X			
Tsuga heterophylla	Western Hemlock		X	X	X			

Scientific Name	Common Name	Habitat Type						
		Wetland	Riparian	Forest	F. Slopes	Thicket	Grass	Rocky
Shrubs								
Acer circinatum	Vine Maple			X	X		X	
Amelanchier alnifolia	Western Serviceberry			X	X	X		
Berberis aquifolium (Mahonia a)	Tall Oregongrape			X	X			
Berberis nervosa (Mahonia n)	Dull Oregongrape			X	X			
Ceanothus sanguineus	Oregon Tea-tree			X	X	X	X	
Ceanothus velutinus laevigatus	Mountain balm			X		X	X	
Cornus stolonifera occidentalis	Red-osier Dogwood	X	X			X		
Corylus cornuta	Hazelnut			X	X	X		
Holodiscus discolor	Ocean-spray			X	X	X		
Mahonia aquifolium [Berberis a]	Tall Oregongrape			X	X			
Mahonia nervosa [Berberis n]	Dull Oregongrape			X	X			
Menziesia ferruginea	Fool's Huckleberry			X				
Oemleria cerasiformis	Indian Plum		X	X	X	X		
Philadelphus lewisii	Mockorange			X	X	X		
Physocarpus capitatus	Pacific Ninebark		X	X		X		
Prunus virginiana	Common Chokecherry		X	X		X		
Pyrus fusca	Western Crabapple		X	X		X		
Rhododendron macrophyllum	Western Rhododendron							
Rhus diversiloba*	Poison Oak*			X	X		X	
Ribes bracteosum	Blue Currant		X	X				
Ribes divaricatum	Straggly Gooseberry			X	X			
Ribes laxiflorum	Western Black Currant		X	X				
Ribes sanguineum	Red Currant		X	X	X	X	X	
Ribes viscosissimum	Sticky Currant		X	X				
Rosa gymnocarpa	Baldhip Rose			X	X			
Rosa nutkana v. nutkana	Nootka Rose				X			
Rosa pisocarpa	Swamp Rose		X		X			
Rubus leucodermis	Blackcap		X	X	X			
Rubus parviflorus	Thimbleberry		X	X	X			
Rubus spectabilis	Salmonberry		X					
Rubus ursinus	Pacific Blackberry	X	X	X	X	X	X	
Sambucus cerulea	Blue Elderberry		X	X				
Sambucus racemosa	Red Elderberry		X	X	X			
Spirea douglasii	Douglas's Spirea	X	X			X		
Symphoricarpos albus	Common Snowberry			X	X	X		
Symphoricarpos mollis	Creeping Snowberry			X		X		
Vaccinium alaskaaense	Alaska Blueberry		X	X				
Vaccinium membranaceum	Big Huckleberry				X			
Vaccinium ovatum	Evergreen Huckleberry			X				
Vaccinium parvifolium	Red Huckleberry			X	X			

Scientific Name	Common Name	Habitat Type						
		Wetland	Riparian	Forest	F. Slopes	Thicket	Grass	Rocky
Ground Cover								
Achillea millefolium	Yarrow						X	
Achlys triphylla	Vanillaleaf			X	X			
Actaea rubra	Baneberry			X	X			
Adenocaulon bicolor	Pathfinder			X	X			
Adiantum pedatum	Northern Maidenhair Fern		X	X	X			
Agoseris grandiflora	Large-flowered Agoseris				X		X	
Alisma plantago-aquatica	American Water-plantain	X					X	
Allium amplectens	Slim-leafed Onion						X	
Allium cernuum	Nodding Onion							X
Alopecurus geniculatus	Water Foxtail, March Foxtail	X						
Anaphalis margaritacea, V. Occidentalis	Pearly-everlasting						X	
Anemone deltoidea	Western White Anemone			X	X			
Anemone lyallii	Small wind-flower			X	X			
Anemone oregana	Oregon Anemone			X	X			
Angelica arguta	Sharptooth Angelica	X	X				X	
Apocynum androsaemifolium	Spreading Dogbane				X		X	
Aquilegia formosa	Red Columbine		X	X		X	X	
Arenaria macrophylla	Bigleaf Sandwart			X	X			
Arnica amplexicaulis piperi	Clasping Arnica		X	X				
Artemisia douglasiana	Douglas's Sagewort		X					
Artemisia lindleyana	Columbia River Mugwort		X					
Aruncus sylvester	Goatsbeard		X	X	X			
Asarum caudatum	Wild Ginger			X	X			
Asplenium trichomanes	Maidenhair Spleenwort			X				
Aster chilensis hallii	Common California Aster						X	
Aster curtus	White-topped Aster						X	
Aster modestus	Few-flowered Aster			X	X			
Aster oregonensis	Oregon White-topped Aster			X				
Aster subspicatus	Douglas's Aster	X	X	X		X	X	
Athyrium filix-femina	Lady Fern		X	X				
Azolla filiculoides	Duckweed	X						
Bergia texana	Bergia	X	X					
Bidens cernua	Nodding Beggars-tick	X						
Bidens frondosa	Leafy Beggars-tick	X						
Bidens vulgata	Western Beggars-tick	X						
Blechnum spicant	Deer Fern	X	X	X				
Bolandra oregana	Bolandra		X					
Botrychium multifidum	Leathery Grape-fern			X	X			
Boykinia elata	Slender Boykinia		X	X				
Boykinia major	Greater Boykinia		X				X	
Brasenia schreberi	Water-shield	X						
Brodiaea howellii	Howell's Brodiaea						X	
Bromus carinatus	California Brome-grass		X	X			X	
Bromus sitchensis	Alaska Brome		X	X			X	
Bromus vulgaris	Columbia Brome						X	
Callitriche hetrophylla	Different-leaf Water-starwort	X						
Calypso bulbosa	Fairy Slipper			X	X			

Scientific Name	Common Name	Habitat Type						
		Wetland	Riparian	Forest	F. Slopes	Thicket	Grass	Rocky
Camassia leichlinii	Leichtlin's Camas						X	
Camassia quamash	Common Camas						X	
Campanula scouleri	Scouler's Bellflower			X	X			
Cardamine angulata	Angled Bittercress		X	X				
Cardamine oligosperma	Little Western Bittercress		X	X			X	
Cardamine penduliflora	Willamette Valley Bittercress	X	X					
Cardamine pensylvanica	Pennsylvania Bittercress			X				
Cardamine pulcherrima	Slender Toothwort			X	X			
Carex amplifolia	Big-leaf Sedge	X		X				
Carex aperta	Columbia Sedge	X	X					
Carex arcta	Clustered Sedge	X	X				X	
Carex atherodes	Awned Sedge	X	X					
Carex athrostachya	Slenderbeaked Sedge	X					X	
Carex canescens	Gray Sedge	X					X	
Carex cusickii	Cusick's Sedge	X						
Carex deweyana	Dewey's Sedge	X	X	X				
Carex hendersonii	Henderson's Wood Sedge	X		X				
Carex interior	Inland Sedge	X						
Carex leporina	Hare Sedge			X	X			
Carex livida	Pale Sedge	X		X				
Carex obnupta	Slough Sedge	X	X				X	
Carex praticola	Meadow Sedge	X						
Carex rostrata	Beaked Sedge	X						
Carex sitchensis	Sitka Sedge	X						
Carex stipata	Sawbeak Sedge	X						
Carex vesicaria	Inflated Sedge	X						
Castilleja levisecta	Golden Indian-paintbrush						X	
Ceanothus sanguineus	Oregon Tea-tree			X	X			
Ceratophyllum demersum	Coontail	X						
Chrysosplenium glechomaefolium	Pacific Water-carpet			X				
Cimicifuga elata	Tall Bugbane						X	
Circeae alpina	Enchanter's Nightshade			X	X			
Clematis ligusticifolia*	Western Clematis*			X	X	X		
Collinsia grandiflora	Large-flowered Blue-eyed Mary						X	
Collinsia parviflora	Small-flowered Blue-eyed Mary						X	
Collomia grandiflora	Large-flowered Collomia			X			X	
Collomia heterophylla	Varied-leaf Collomia			X		X		
Comandra umbellata californica	Bastard Toad-flax			X				
Conyza canadensis glabrata	Horseweed						X	
Coptis laciniata	Cutleaf Goldthread			X				
Corallorhiza maculata	Pacific Coral-root			X	X			
Corallorhiza mertensiana	Coral-root			X	X			
Corallorhiza striata	Hooded Coral-root			X	X			
Cornus canadensis	Bunchberry			X				
Cryptantha intermedia grandiflora	Common Forget-me-not						X	

Scientific Name	Common Name	Habitat Type						
		Wetland	Riparian	Forest	F. Slopes	Thicket	Grass	Rocky
Cynoglossum grande	Pacific Hound's-tongue			X	X			
Cystopteris fragilis	Brittle Bladder Fern							X
Delphinium leucophaeum	Pale Larkspur							X
Delphinium menziesii pyramidale	Menzies' Larkspur			X			X	
Delphinium nuttallii	Nuttall's Larkspur						X	
Deschampsia cespitosa	Tufted Hair grass	X						
Dicentra formosa	Pacific Bleedingheart		X	X	X			
Disporum hookeri	Hooker Fairy-bell			X	X			
Disporum smithii	Large-flowered Fairy-bell			X	X			
Dodecatheon dentatum	White Shooting Star		X			X		
Draba verna	Spring Whitlow-grass						X	
Dryopteris austriaca	Spreading Wood Fern			X	X			
Dryopteris filix-mas	Male fern		X					
Eburophyton austiniae	Snow-orchid, Phantom orchid			X	X			
Echinochloa crusgalli	Large Barnyard-grass	X	X					
Elatine triandra	Three-stamen Waterwort	X	X					
Eleocharis acicularis	Needle Spike-rush	X						
Eleocharis palustris	Creeping Spike-rush	X						
Elodea densa	South American Waterweed	X						
Elymus glaucus	Blue Wildrye			X	X	X	X	X
Epilobium angustifolium	Fireweed	X	X	X		X	X	
Epilobium glandulosum	Common Willow-weed	X	X	X			X	
Epilobium watsonii	Watson's Willow-weed	X	X	X			X	
Equisetum arvense	Common Horsetail	X	X					
Equisetum hyemale	Common Scouring-rush	X	X					
Equisetum palustre	Marsh Horsetail	X	X					
Equisetum telemateia	Giant Horsetail	X	X				X	
Erigeron annuus	Annual Fleabane						X	
Erigeron decumbens decumbens	Willamette Daisy						X	
Erigeron philadelphicus	Philadelphia Fleabane						X	
Eriophyllum lanatum	Woolly Sunflower							X
Erysimum asperum	Prairie Rocket						X	X
Erythronium oregonum	Giant Fawn-lily			X	X			
Eschscholzia californica	Gold Poppy						X	
Euonymus occidentalis	Western Wahoo		X	X				
Festuca occidentalis	Western Fescue-grass		X	X				
Festuca rubra v. rubra	Red Fescue-grass				X	X	X	X
Festuca subulata	Bearded Fescue-grass		X	X				
Festuca subuliflora	Coast Range Fescue-grass		X	X			X	
Fragaria vesca bracteata	Wood Strawberry		X	X			X	
Fragaria vesca crinita	Wood Strawberry		X	X			X	
Fragaria virginiana	Broadpetal Strawberry			X			X	
Fritillaria lanceolata	Mission Bells						X	X
Galium aparine	Cleavers			X	X	X	X	
Galium trifidum	Small Bedstraw	X						
Galium triflorum	Sweetscented Bedstraw			X	X			
Gaultheria shallon	Salal			X	X			
Gentiana amarella	Northern Gentian		X	X				

Scientific Name	Common Name	Habitat Type						
		Wetland	Riparian	Forest	F. Slopes	Thicket	Grass	Rocky
Gentiana sceptrum	Staff Gentian	X	X					
Geum macrophyllum	Oregon Avens	X	X	X			X	
Gilia capitata	Bluefield Gilia	X					X	
Glyceria occidentalis	NW Manna-grass	X						
Gnaphalium palustre	Marsh Cudweed	X					X	
Goodyera oblongifolia	Giant Rattlesnake-plantain			X				
Habenaria dilatata	White Bog-orchid	X						
Habenaria elegans	Elegant Rein-orchid		X					
Habenaria saccata	Slender Bog-orchid							
Habenaria unalascensis	Alaska Rein-orchid			X	X			
Heracleum lanatum	Cow-parsnip	X	X	X			X	
Heuchera glabra	Smooth Alumroot		X	X				X
Heuchera micrantha	Smallflowered Alumroot		X	X				X
Hieracium albiflorum	White-flowered Hawkweed			X			X	
Howellia aquatilis	Howellia	X						
Hydrophyllum tenuipes	Pacific Waterleaf			X	X			
Iris tenax	Oregon Iris			X			X	
Juncus balticus	Baltic Rush	X						
Juncus brachyphyllus	Short-leaved Rush	X						
Juncus bufonius	Toad Rush	X						
Juncus effusus	Common Rush	X						
Juncus ensifolius	Dagger-leaf Rush	X					X	
Juncus tenuis	Slender Rush	X						
Lemna minor	Water Lentil	X						
Ligusticum apiifolium	Parsley-leaved Lovage			X	X	X	X	
Ligustucum grayii	Gray's Lovage				X		X	
Lilium columbianum	Columbia Lily			X	X		X	
Limosella aquatica	Mudwort	X						
Linanthus bicolor	Bicolored Linanthus						X	
Linnaea borealis	Twinflower			X	X			
Listera caurina	Western Twayblade			X	X			
Listera cordata	Heart-leafed Listera			X	X			
Lomatium utriculatum	Common Lomatium							X
Lonicera ciliosa	Trumpet Vine			X				
Lonicera involucrata	Black Twinberry	X	X				X	
Lotus denticulatus	Meadow Lotus						X	
Lotus formosissimus	Seaside Lotus						X	
Lotus micranthus	Small-flowered Deervetch						X	
Lotus purshiana	Spanish Clover			X				X
Lupinus bicolor	Two-color Lupine						X	
Lupinus latifolius	Broadleaf Lupine						X	
Lupinus laxiflorus	Spurred Lupine						X	
Lupinus lepidus	Prarie Lupine						X	
Lupinus micranthus	Field Lupine						X	
Lupinus microcarpus	Chick Lupine						X	
Lupinus polyphyllus	Large-leaved Lupine						X	
Lupinus rivularis	Stream Lupine		X	X				
Lupinus sulphureus	Sulfur Lupine						X	
Luzula campestris	Field Woodrush			X			X	

Scientific Name	Common Name	Habitat Type						
		Wetland	Riparian	Forest	F. Slopes	Thicket	Grass	Rocky
Luzula parviflora	Small-flowered Woodrush			X				
Lysichitum americanum	Skunk Cabbage	X	X					
Lysimachia ciliata	Fringed Loosestrife						X	
Lysimachia thyrsiflora	Tufted Loosestrife	X						
Madia glomerata	Cluster Tarweed						X	
Madia sativa	Chile Tarweed						X	
Maianthemum dilatatum	Deerberry			X	X			
Marah oreganus	Manroot					X	X	
Matricaria matricarioides	Pineapple Weed						X	
Melica geyeri	Geyer's Oniongrass			X	X			
Mentha arvensis	Field Mint		X					
Menyanthes trifoliata	Buckbean	X						
Mertensia platyphylla	Western Bluebells		X	X				
Microsteris gracilis	Microsteris						X	
Mimulus alsinoides	Chickweed Monkey-flower							X
Mimulus guttatus	Yellow Monkey-flower						X	
Mimulus moschatus	Musk-flower	X	X					
Mitella caulescens	Leafy Mitrewort			X	X		X	
Mitella pentandra	Five-stamened Mitrewort		X	X	X		X	
Monotropa uniflora	Indian-pipe			X				
Montia diffusa	Branching Montia			X				
Montia fontana	Water Chickweed		X					
Montia linearis	Narrow-leaved Montia			X			X	
Montia parvifolia	Streambank Springbeauty			X				X
Montia perfoliata	Miner's Lettuce		X	X				
Montia sibirica	Siberian Montia		X	X			X	
Navarretia squarrosa	Skunkweed						X	
Nemophia parviflora	Small-flowered Nemophia			X	X			
Nemophila menziesii	Baby Blue-eyes			X	X			
Nuphar polysepalum	Yellow Water-lily	X						
Oenanthe sarmentosa	Pacific Water-parsley	X	X			X	X	
Orthocarpus hispidus	Hairy Owl-Clover						X	
Osmorhiza chilensis	Mountain Sweet-root			X	X			
Oxalis oregana	Oregon Oxalis			X	X			
Oxalis suksdorfii	Western Yellow Oxalis			X				
Oxalis trilliifolia	Trillium-leaved Wood-sorrel			X	X		X	
Panicum capillare occidentale	Old-witch Grass	X	X					
Penstemon ovatus	Broad-leaved Penstemon		X					
Petasites frigidus	Sweet Coltsfoot	X	X	X			X	
Phacelia nemoralis	Shade Phacelia			X		X		
Plagiobothrys figuratus	Fragrant Plagiobothrys						X	
Plectritis congesta	Rosy Plectritis						X	
Poa annua	Annual Bluegrass						X	
Poa compressa	Canada Bluegrass			X			X	
Poa grayana	Gray's Bluegrass		X				X	
Poa howellii	Howell's Bluegrass						X	
Poa pratensis	Kentucky Bluegrass			X			X	
Polygonum amphibium	Water Smartweed	X						
Polygonum aviculare	Doorweed		X				X	

Scientific Name	Common Name	Habitat Type						
		Wetland	Riparian	Forest	F. Slopes	Thicket	Grass	Rocky
Polygonum coccineum	Water Smartweed	X						
Polygonum douglasii	Douglas' Knotweed		X				X	
Polygonum hydropiperoides	Common Waterpepper	X						
Polygonum kelloggii	Kellogg's Knotweed	X	X				X	
Polygonum nuttallii	Nutall's Knotweed						X	
Polygonum punctatum	Water Smartweed	X						
Polygonum spergulariaeforme	Fall Knotweed		X					
Polypodium glycyrrhiza	Licorice Fern		X	X	X			X
Polypodium hesperium	Licorice Fern			X	X			X
Polystichum munitum	Sword Fern			X	X			
Potentilla glandulosa	Sticky Cinquefoil			X			X	
Potentilla palustris	Marsh Cinquefoil	X						
Pteridium aquilinum	Bracken			X			X	
Ranunculus alismaefolius	Water-plaintain Buttercup	X						
Ranunculus cymbalaria	Shore Buttercup	X						
Ranunculus flammula	Creeping Buttercup	X	X					
Ranunculus macounii oreganus	Macoun's Buttercup	X					X	
Ranunculus occidentalis	Western Buttercup	X					X	
Ranunculus orthorhyncus	Straightbeak Buttercup		X				X	
Ranunculus pensylvanicus	Pennsylvania Buttercup	X	X					
Ranunculus uncinatus	Little Buttercup		X				X	
Rorippa columbiae	Columbia Cress		X				X	
Rumex occidentalis	Western Dock	X					X	
Sagina occidentalis	Western Pearlwort						X	
Sagittaria latifolia	Wapato	X						
Sanguisorba occidentalis	Annual Burnet						X	
Sanicula crassicaulis	Pacific Sanicle			X	X			
Satureja douglasii	Yerba Buena			X				
Saxifraga ferruginea	Rusty Saxifrage		X					X
Saxifraga integrifolia	Swamp Saxifrage						X	
Saxifraga occidentalis rufidula	Western Saxifrage						X	
Scirpus acutus	Hardstem Bulrush	X						
Scirpus heterochaetus	Pale Great Bulrush	X						
Scirpus microcarpus	Small-fruited Bulrush	X		X			X	
Scirpus olneyi	Olney's Bulrush	X						
Scirpus validus	Softstem Bulrush	X						
Scoliopus hallii	Oregon Fetid Adder's-tongue			X				
Scrophalaria californica	California Figwort	X						
Scutellaria galericulata	Marsh Skullcap	X					X	
Sedum lanceolatum	Lanceleaved Stonecrop							X
Sedum oreganum	Oregon Stonecrop							X
Sedum spathulifolium	Spatula-leaf Stonecrop							X
Selaginella densa	Compact Selaginella							X
Selaginella douglasii	Selaginella			X	X			
Selaginella oregana	Selaginella			X	X			
Senecio bolanderi var. harfordii	Bolander's Groundsel			X	X			

Scientific Name	Common Name	Habitat Type						
		Wetland	Riparian	Forest	F. Slopes	Thicket	Grass	Rocky
Sidalcea campestris	Meadow Sidalcea						X	
Sisyrinchium angustifolium	Blue-eyed grass	X					X	
Smilacina racemosa	Western False Solomon's Seal	X		X				
Smilacina stellata	Starry False Solomon's Seal			X				
Solanum nigrum*	Garden Nightshade*						X	
Solidago canadensis	Canada Goldenrod						X	
Spiranthes romanzoffiana	Ladies-tresses	X					X	
Stachys cooleyae	Cooley's Hedge-nettle	X	X					
Stachys mexicana	Great Betony	X	X				X	
Stachys palustris v. pilosa	Swamp Hedge-nettle	X					X	
Stellaria crispa	Crisped Starwort	X					X	
Streptopus amplexifolius	Clasping-leaved Twisted-stalk		X	X	X			
Sullivantia oregana	Sullivantia							X
Synyhyris reniformis	Snow Queen			X	X			
Tellima grandiflorum	Fringecup			X	X			
Teucrium canadense	Wood Sage	X	X					
Thalictrum occidentale	Western Meadowrue		X	X			X	
Thelypteris nevadensis	Wood Fern		X	X	X			
Tiarella trifoliata	Laceflower		X	X	X			
Tolmiea menziesii	Pig-a-Back		X	X	X			
Tonella tenella	Small-flowered Tonella						X	
Trientalis latifolia	Western Starflower			X	X			
Trillium chloropetalum	Giant Trillium			X	X			
Trillium ovatum	Western Trillium		X	X	X			
Typha latifolia	Common Cattail	X						
Urtica dioica*	Stinging nettle*	X	X	X	X			
Utricularia vulgaris	Common Bladderwort	X					X	
Vancouvèria hexandra	White Inside-out Flower		X	X	X		X	
Veratrum californicum	False Hellebore		X				X	
Verbena hastata	Wild Hyssop	X					X	
Veronica americana	American Brooklime	X	X				X	
Vicia americana	American Vetch			X			X	
Viola adunca	Early Blue Violet						X	
Viola glabella	Johnny jump up		X	X	X			
Viola hallii	Hall's violet			X	X		X	
Viola howellii	Howell's violet			X			X	
Viola palustris	Marsh Violet	X					X	
Viola sempervirens	Evergreen Violet			X	X			
Whipplea modesta	Yerba de Selva			X				
Xanthium spinosum	Spiny Cocklebur						X	
Xanthium strumarium	Common Cocklebur						X	

* These plants have been placed on the Nuisance Plant List, as they have been determined to be either dominating or harmful. As such, their introduction or continuation may be inappropriate.

NUISANCE PLANTS

Plants on this list can be removed without environmental or greenway review. These plants may be native, naturalized, or exotic. They are divided into two groups - plants which are considered a nuisance because of their tendency to dominate plant communities, and plants which are considered harmful to humans. Being on this list is not an indication that the City of Portland necessarily prohibits or discourages the use of these plants; merely that they can be controlled without land use reviews identified above. Being on this list does not exempt the applicant from having to obtain any necessary regional, state, or federal approvals before removing plants.

Nuisance Plant List

Latin Name	Common Name
Dominating plants	
Chelidonium majus	Lesser Celandine
Cirsium arvense	Canada Thistle
Cirsium vulgare	Common Thistle
Clematis ligusticifolia	Western Clematis
Clematis vitalba	Traveler's Joy
Convolvulus arvensis	Field Morning-glory
Convolvulus nyctagineus	Night-blooming Morning-glory
Convolvulus seppium	Lady's-nightcap
Cortaderia selloana	Pampas grass
Cytisus scoparius	Scotch Broom
Daucus carota	Queen Ann's Lace
Erodium cicutarium	Crane's Bill
Geranium robertianum	Robert Geranium
Hedera helix	English Ivy
Hypericum perforatum	St. John's Wort
Leontodon autumnalis	Fall Dandelion
Lythrum salicaria	Purple Loosestrife
Myriophyllum spicatum	Eurasian Watermilfoil
Phalaris arundinacea	Reed Canarygrass
Polygonum convolvulus	Climbing Bindweed
Rubus discolor	Himalayan Blackberry
Rubus laciniatus	Evergreen Blackberry
Senecio jacobaea	Tansy Ragwort
Solanum dulcamara	Blue Bindweed
Solanum sarrachoides	Hairy Nightshade
Taraxacum officinale	Common Dandelion
various genera	Bamboo sp.
Harmful Plants	
Conium maculatum	Poison-hemlock
Laburnum watereri	Golden chain tree
Rhus diversiloba	Poison Oak
Solanum nigrum	Garden Nightshade
Utica dioica	Stinging Nettle

PROHIBITED PLANTS

The Prohibited Plants section is a listing of plants which the City of Portland prohibits being used in required landscaping situations. At present, there are no plants on this list, although there may be adopted plans which prohibit certain species in specific areas or situations.

Appendix F

WILDLIFE HABITAT ASSESSMENT

for sites with surface water features

SITE NUMBER	TOTAL HABITAT SCORE AS EXISTING	POTENTIAL HABITAT SCORE IF ENHANCED	TOTAL ACRES

SITE LOCATION	FIELD DATES	FIELD OBSERVERS

GENERAL COMMENTS

	HABITAT COMPONENT	DEGREE PRESENT			SCORE EXISTING	SCORE ENHANCED	SPECIFIC COMMENTS
WATER	QUANTITY & SEASONALITY	NONE 0	SEASONAL 4	PERENNIAL 8			
	DIVERSITY STREAMS, PONDS, ETC.	ONE 2	TWO 4	THREE 8			
	PROXIMITY TO COVER	NONE 0	NEAR 4	ADJACENT 8			
	QUALITY FLUSHING FREQUENCY	STAGNENT 0	SEASONAL 3	CONTINUOUS 6			
FOOD	QUANTITY & SEASONALITY	NONE 0	LIMITED 4	YEAR ROUND 8			
	VARIETY	LOW 0	MEDIUM 4	HIGH 8			
	PROXIMITY TO COVER	NONE 0	NEAR 4	ADJACENT 8			
COVER	STRUCTURAL DIVERSITY	LOW 0	MEDIUM 4	HIGH 8			
	VARIETY	LOW 0	MEDIUM 4	HIGH 8			
	SEASONALITY	NONE 0	LIMITED 2	YEAR ROUND 4			
	NESTING DENNING, ETC.	LOW 0	MEDIUM 2	HIGH 4			
	ESCAPE	LOW 0	MEDIUM 2	HIGH 4			
OTHER VALUES	PHYSICAL DISTURBANCE	PERMANENT 0	TEMPORARY 2	NONE 4			
	HUMAN DISTURBANCE	HIGH 0	MEDIUM 2	LOW 4			
	INTERSPERSION WITH OTHER HABITATS	LOW 0	MEDIUM 3	HIGH 6			
UNIQUE FEATURES	HABITAT TYPE	0	-	4			
	FLORA	0	-	4			
	FAUNA	0	-	4			

City of Portland, Oregon
Bureau of Planning

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Gene Herb - Oregon Department of Fish and Wildlife
Jack Broome - Wetlands Conservancy
Diana Hwang - U.S. Fish and Wildlife Service

Appendix G

JOHNSON CREEK CORRIDOR COMMITTEE

DRAFT 2/8/91

Mission

1. The mission of the Johnson Creek Corridor Committee (JCCC) is to recommend a basin wide resources management program and to advocate and coordinate its implementation to take advantage of opportunities and solve problems in the Johnson Creek watershed.

The Resources Management Program Goals

2. The Program is to be a multi-objective, basin-wide management program with an implementation system which, when implemented, will meet the following goals in a way that is realistic in respect to feasibility and cost:

* Improve water quality
  -Maintenance of minimum stream flow
  -Meet state and federal water quality standards and deadlines

* Enhance fisheries

* Reduce flood impacts
  -Flood reduction
  -Maintenance of minimum stream flow

* Preserve natural areas
  -Protect and restore environmental resources

* Provide recreational opportunities
  -Allow and develop recreational opportunities as appropriate, including fishing

* Provide economic development opportunities

* Preserve heritage value
  -Protect and restore cultural and historic resources

* Promote shared stewardship
  -Educate public, residents, industrial neighbors, children, of area on uses and significance of long-term value of Creek

  -Work with adjacent property owners and all in watershed (continuous information sharing) to identify problem areas (pollution sources) as a basis for implementation, acquisition, tax deferrals

* Enhance Aesthetics

* Promote Resource eness and Education

5. OPEN SPACES, SCENIC AND HISTORIC AREAS, AND NATURAL RESOURCES

GOAL

To conserve open space and protect natural and scenic resources.

Programs shall be provided that will (1) insure open space, (2) protect scenic and historic areas and natural resources for future generations, and (3) promote healthy and visually attractive environments in harmony with the natural landscape character. The location, quality and quantity of the following resources shall be inventoried:

a. Land needed or desirable for open space;
b. Mineral and aggregate resources;
c. Energy sources;
d. Fish and wildlife areas and habitats;
e. Ecologically and scientifically significant natural areas, including desert areas;
f. Outstanding scenic views and sites;
g. Water areas, wetlands, watersheds and groundwater resources;
h. Wilderness areas;
i. Historic areas, sites, structures and objects;
j. Cultural areas;
k. Potential and approved Oregon recreation trails;
l. Potential and approved federal wild and scenic waterways and state scenic waterways.

Where no conflicting uses for such resources have been identified, such resources shall be managed so as to preserve their original character. Where conflicting uses have been identified the economic, social, environmental and energy consequences of the conflicting uses shall be determined and programs developed to achieve the goal.

Cultural Area — refers to an area characterized by evidence of an ethnic, religious or social group with distinctive traits, beliefs and social forms.

Historic Areas — are lands with sites, structures and objects that have local, regional, statewide or national historical significance.

Natural Area — includes land and water that has substantially retained its natural character and land and water that, although altered in character, is important as habitats for plant, animal or marine life, for the study of its natural historical, scientific or paleontological features, or for the appreciation of its natural features.

Open Space — consists of lands used for agricultural or forest uses, and any land area that would, if preserved and continued in its present use:

(a) Conserve and enhance natural or scenic resources;
(b) Protect air or streams or water supply;
(c) Promote conservation of soils, wetlands, beaches or tidal marshes;
(d) Conserve landscaped areas, such as public or private golf courses, that reduce air pollution and enhance the value of abutting or neighboring property;
(e) Enhance the value to the public of abutting or neighboring parks, forests, wildlife preserves, nature reservations or sanctuaries or other open space;
(f) Enhance recreation opportunities;
(g) Preserve historic sites;
(h) Promote orderly urban development.

Scenic Areas — are lands that are valued for their aesthetic appearance

Wilderness Areas — are areas where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. It is an area of undeveloped land retaining its primeval character and influence, without permanent improvement or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) may also contain ecological, geological, or other features or scientific, educational, scenic, or historic value.

GUIDELINES

A. PLANNING

1. The need for open space in the planning area should be determined, and standards developed for the amount, distribution, and type of open space.

2. Criteria should be developed and utilized to determine what uses are consistent with open space values and to evaluate the effect of converting open space lands to inconsistent uses. The maintenance and development of open space in urban areas should be encouraged.

3. Natural resources and required sites for the generation of energy (i.e. natural gas, oil, coal, hydro, geothermal, uranium, solar and others) should be conserved and protected; reservoir sites should be identified and protected against irreversible loss.

4. Plans providing for open space, scenic and historic areas and natural resources should consider as a major determinant the carrying capacity of the air, land and water resources of the planning area. The land conservation and development actions provided for by such plans should not exceed the carrying capacity of such resources.

5. The National Register of Historic Places and the recommendations of the State Advisory Committee on Historic Preservation should be utilized in designating historic sites.

6. In conjunction with the inventory of mineral and aggregate resources, sites for removal and processing of such resources should be identified and protected.

7. As a general rule, plans should prohibit outdoor advertising signs except in commercial or industrial zones. Plans should not provide for the reclassification of land for the purpose of accommodating an outdoor advertising sign. The term "outdoor advertising sign" has the meaning set forth in ORS 377.710 (20).

B. IMPLEMENTATION

1. Development should be planned and directed so as to conserve the needed amount of open space.

2. The conservation of both renewable and non-renewable natural resources and physical limitations of the land should be used as the basis for determining the quantity, quality, location, rate and type of growth in the planning area.

3. The efficient consumption of energy should be considered when utilizing natural resources.

4. Fish and wildlife areas and habitats should be protected and managed in accordance with the Oregon Wildlife Commission's fish and wildlife management plans.

5. Stream flow and water levels should be protected and managed at a level adequate for fish, wildlife, pollution abatement, recreation, aesthetics and agriculture.

6. Significant natural areas that are *historically, ecologically or scientifically unique,* outstanding or important, including those identified by the State Natural Area Preserves Advisory Committee, should be inventoried and evaluated. Plans should provide for the preservation of natural areas consistent with an inventory of scientific, educational, ecological, and recreational needs for significant natural areas.

7. Local, regional and state governments should be encouraged to investigate and utilize fee acquisition, easements, cluster developments, preferential assessment, development rights acquisition and similar techniques to implement this goal.

8. State and federal agencies should develop statewide natural resource, open space, scenic and historic area plans and provide technical assistance to local and regional agencies. State and federal plans should be reviewed and coordinated with local and regional plans.

9. Areas identified as having non-renewable mineral and aggregate resources should be planned for interim, transitional and "second use" utilization as well as for the primary use.

Appendix I

OREGON ADMINISTRATIVE RULES
CHAPTER 660, DIVISION 16 — LAND CONSERVATION AND DEVELOPMENT COMMISSION

DIVISION 16

REQUIREMENTS AND APPLICATION PROCEDURES FOR COMPLYING WITH STATEWIDE GOAL 5

Inventory Goal 5 Resources

660-16-000 (1) The inventory process for Statewide Planning Goal 5 begins with the collection of available data from as many sources as possible including experts in the field, local citizens and landowners. The local government then analyzes and refines the data and determines whether there is sufficient information on the location, quality and quantity of each resource site to properly complete the Goal 5 process. This analysis also includes whether a particular natural area is "ecologically and scientifically significant", or an open space area is "needed", or a scenic area is "outstanding", as outlined in the Goal. Based on the evidence and local government's analysis of those data, the local government then determines which resource sites are of significance and includes those sites on the final plan inventory.

(2) A "valid" inventory of a Goal 5 resource under subsection (5)(c) of this rule must include a determination of the location, quality, and quantity of each of the resource sites. Some Goal 5 resources (e.g., natural areas, historic sites, mineral and aggregate sites, scenic waterways) are more site-specific than others (e.g., groundwater, energy sources). For site-specific resources, determination of *location* must include a description or map of the boundaries of the resource site and of the impact area to be affected, if different. For non-site-specific resources, determination must be as specific as possible.

(3) The determination of *quality* requires some consideration of the resource site's relative value, as compared to other examples of the same resource in at least the jurisdiction itself. A determination of *quantity* requires consideration of the relative abundance of the resource (of any given quality). The level of detail that is provided will depend on how much information is available or "obtainable".

(4) The inventory completed at the local level, including options (5)(a), (b), and (c) of this rule, will be adequate for Goal compliance unless it can be shown to be based on inaccurate data, or does not adequately address location, quality or quantity. The issue of adequacy may be raised by the Department or objectors, but final determination is made by the Commission.

(5) Based on data collected, analyzed and refined by the local government, as outlined above, a jurisdiction has three basic options:

(a) Do Not Include on Inventory: Based on information that is available on location, quality and quantity, the local government might determine that a particular resource site is not important enough to warrant inclusion on the plan inventory, or is not required to be included in the inventory based on the specific Goal standards. No further action need be taken with regard to these sites. The local government is not required to justify in its comprehensive plan a decision not to include a particular site in the plan inventory unless challenged by the Department, objectors or the Commission based upon contradictory information.

(b) Delay Goal 5 Process: When some information is available, indicating the possible existence of a resource site, but that information is not adequate to identify with particularity the location, quality and quantity of the resource site, the local government should only include the site on the comprehensive plan inventory as a special category. The local government must express its intent relative to the resource site through a plan policy to address that resource site and proceed through the Goal 5 process in the future. The plan should include a time-frame for this review. Special implementing measures are not appropriate or required for Goal 5 compliance purposes until adequate information is available to enable further review and adoption of such measures. The statement in the plan commits the local government to address the resource site through the Goal 5 process in the post-acknowledgment period. Such future actions could require a plan amendment.

(c) Include on Plan Inventory: When information is available on location, quality and quantity, and the local government has determined a site to be significant or important as a result of the data collection and analysis process, the local government must include the site on its plan inventory and indicate the location, quality and quantity of the resource site (see above). Items included on this inventory must proceed through the remainder of the Goal 5 process.

Stat. Auth.: ORS Ch. 183 & 197
Hist: LCD 5-1981(Temp), f. & ef. 5-8-81; LCD 7-1981, f. & ef. 6-29-81

[ED. NOTE: The text of Temporary Rules is not printed in the Oregon Administrative Rules Compilation. Copies may be obtained from the adopting agency or the Secretary of State.]

Identify Conflicting Uses

660-16-005 It is the responsibility of local government to identify conflicts with inventoried Goal 5 resource sites. This is done primarily by examining the uses allowed in broad zoning districts established by the jurisdiction (e.g., forest and agricultural zones). A conflicting use is one which, if allowed, could negatively impact a Goal 5 resource site. Where conflicting uses have been identified, Goal 5 resource sites may impact those uses. These impacts must be considered in analyzing the economic, social, environmental and energy (ESEE) consequences:

(1) Preserve the Resource Site: If there are no conflicting uses for an identified resource site, the jurisdiction must adopt policies and ordinance provisions, as appropriate, which insure preservation of the resource site.

(2) Determine the Economic, Social, Environmental, and Energy Consequences: If conflicting uses are identified, the economic, social, environmental and energy consequences of the conflicting uses must be determined. Both the impacts on the resource site and on the conflicting use must be considered in analyzing the ESEE consequences. The applicability and requirements of other Statewide Planning Goals must also be considered, where appropriate, at this stage of the process. A determination of the ESEE consequences of identified conflicting uses is adequate if it enables a jurisdiction to provide reasons to explain why decisions are made for specific sites.

Stat. Auth.: ORS Ch. 183 & 197
Hist: LCD 5-1981(Temp), f. & ef. 5-8-81; LCD 7-1981, f. & ef. 6-29-81

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Develop Program to Achieve the Goal

660-16-010 Based on the determination of the economic, social, environmental and energy consequences, a jurisdiction must "develop a program to achieve the Goal". Assuming there is adequate information on the location, quality, and quantity of the resource site as well as on the nature of the conflicting use and ESEE consequences, a jurisdiction is expected to "resolve" conflicts with specific sites in any of the following three ways listed below. Compliance with Goal 5 shall also be based on the plan's overall ability to protect and

conserve each Goal 5 resource. The issue of adequacy of the overall program adopted or of decisions made under sections (1), (2) and (3) of this rule may be raised by the Department or objectors, but final determination is made by the Commission, pursuant to usual procedures:

(1) Protect the Resource Site: Based on the analysis of the ESEE consequences, a jurisdiction may determine that the resource site is of such importance, relative to the conflicting uses, and the ESEE consequences of allowing conflicting uses are so great that the resource site should be protected and all conflicting uses prohibited on the site and possibly within the impact area identified in OAR 660-16-000(5)(c). Reasons which support this decision must be presented in the comprehensive plan, and plan and zone designations must be consistent with this decision.

(2) Allow Conflicting Uses Fully: Based on the analysis of ESEE consequences and other Statewide Goals, a jurisdiction may determine that the conflicting use should be allowed fully, not withstanding the possible impacts on the resource site. This approach may be used when the conflicting use for a particular site is of sufficient importance, relative to the resource site. Reasons which support this decision must be presented in the comprehensive plan, and plan and zone designations must be consistent with this decision.

(3) Limit Conflicting Uses: Based on the analysis of ESEE consequences, a jurisdiction may determine that both the resource site and the conflicting use are important relative to each other, and that the ESEE consequences should be balanced so as to allow the conflicting use but in a limited way so as to protect the resource site to some desired extent. To implement this decision, the jurisdiction must designate with certainty what uses and activities are allowed fully, what uses and activities are not allowed at all and which uses are allowed conditionally, and what specific standards or limitations are placed on the permitted and conditional uses and activities for each resource site. Whatever mechanisms are used, they must be specific enough so that affected property owners are able to determine what uses and activities are allowed, not allowed, or allowed conditionally and under what clear and objective conditions or standards. Reasons which support this decision must be presented in the comprehensive plan, and plan and zone designations must be consistent with this decision.

Stat. Auth.: ORS Ch. 183 & 197
Hist: LCD 5-1981(Temp), f. & ef. 5-8-81; LCD 7-1981, f. & ef. 6-29-81

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Post-Acknowledgment Period

660-16-015 All data, findings, and decisions made by a local government prior to acknowledgment may be reviewed by that local government in its periodic update process. This includes decisions made as a result of OAR 660-16-000(5)(a), 660-16-005(1), and 660-16-010. Any changes, additions, or deletions would be made as a plan amendment, again following all Goal 5 steps.

If the local government has included in its plan items under OAR 660-16-000(5)(b), the local government has committed itself to take certain actions within a certain time frame in the post-aknowledgment period. Within those stated time frames, the local government must address the issue as stated in its plan, and treat the action as a plan amendment.

Stat. Auth.: ORS Ch. 183 & 197
Hist: LCD 5-1981(Temp), f. & ef. 5-8-81; LCD 7-1981, f. & ef. 6-29-81

[ED. NOTE: The text of Temporary Rules is not printed in the Oregon Administrative Rules Compilation. Copies may be obtained from the adopting agency or the Secretary of State.]

Landowner Involvement

660-16-020 (1) The development of inventory data, identification of conflicting uses and adoption of implementing measures must, under Statewide Planning Goals 1 and 2, provide opportunities for citizen involvement and agency coordination. In addition, the adoption of regulations or plan provisions carries with it basic legal notice requirements. (County or city legal counsel can advise the planning department and governing body of these requirements.) Depending upon the type of action involved, the form and method of landowner notification will vary. State statutes and local charter provisions contain basic notice requirements. Because of the nature of the Goal 5 process as outlined in this paper it is important to provide for notification and involvement of landowners, including public agencies, at the earliest possible opportunity. This will likely avoid problems or disagreements later in the process and improve the local decision-making process in the development of the plan and implementing measures.

(2) As the Goal 5 process progresses and more specificity about the nature of resources, identified conflicting uses, ESEE consequences and implementing measures is known, notice and involvement of affected parties will become more meaningful. Such notice and landowner involvement, although not identified as a Goal 5 requirement is in the opinion of the Commission, imperative.

Stat. Auth.: ORS Ch. 183 & 197
Hist: LCD 5-1981(Temp), f. & ef. 5-8-81; LCD 7-1981, f. & ef. 6-29-81

[ED. NOTE: The text of Temporary Rules is not printed in the Oregon Administrative Rules Compilation. Copies may be obtained from the adopting agency or the Secretary of State.]

Policy Application

660-16-025 OAR 660-16-000 through 660-16-025 are applicable to jurisdictions as specified below:

(1) Category 1: Compliance with OAR 660-16-000 through 660-16-025 is required prior to granting acknowledgment of compliance under ORS 197.251 and OAR 660-03-000 through 660-03-040 for those jurisdictions which:

(a) Have not submitted their comprehensive plan for acknowledgment as of the date of adoption of this rule;

(b) Are under denial orders as of the date of adoption of this rule;

(c) Are not scheduled for review prior to or at the June 1981 Commission meeting.

(2) Category 2:

(a) Compliance with OAR 660-16-000 through 660-16-025 is required as outlined below for those jurisdictions which:

(A) Are under continuance orders adopted pursuant to OAR 660-03-040;

(B) Are scheduled for review at the April 30/May 1, May 29 or June 1981 Commission meetings.

(b) For these jurisdictions a notice will be given to all parties on the original notice list providing a 45-day period to object to the plan based on OAR 660-16-000 through 660-16-025.

(c) OAR 660-16-000 will be applied based on objections alleging violations of specific provisions of the rule on specific resource sites. Objections must be filed following requirements outlined in OAR 660-03-000 through 660-03-040 (Acknowledgment of Compliance Rule). Where no objections are filed or objections are not specific as to which elements of OAR 660-16-000 through 660-16-025 have been violated, and on what resource sites, the plan will be reviewed against Goal 5

standards as they existed prior to adoption of OAR 660-16-000 through 660-16-025.

(3) Jurisdictions which receive acknowledgment of compliance (as outlined in ORS 197.251) at the April 30/May 1, 1981 Commission meeting will not be subject to review procedures outlined above, but will be treated as other previously acknowledged jurisdictions.

Stat. Auth.: ORS Ch. 183 & 197
Hist: LCD 5-1981(Temp), f. & ef. 5-8-81; LCD 7-1981, f. & ef. 6-29-81

[ED. NOTE: The text of Temporary Rules is not printed in the Oregon Administrative Rules Compilation. Copies may be obtained from the adopting agency or the Secretary of State.]

shall thereafter apportion the amount of tax so received among the several counties in which the company operates rural telephone exchanges. The part to be apportioned to a county shall bear the same ratio to the total of the tax so received as the number of wire miles of the rural telephone exchanges or parts thereof in the county bears to the total number of wire miles of all rural telephone exchanges or parts thereof operated by the company in this state. The part apportioned to each county shall be remitted to the treasurer of the county and shall be distributed among the code areas of the county on the basis of wire miles in each code area and among the districts in each code area in the proportion that the rate of tax levy in each district as shown by the tax levy filed with the assessor for the year last in process of collection bears to the total tax rate of the levies of all such taxing bodies for such year.

(2) Whenever the department determines that the use of wire miles under subsection (1) of this section does not fairly apportion the tax, it may apportion the tax to the counties in which the property of the rural telephone exchange is situated in such manner as the department deems reasonable and fair. The department shall advise each assessor of the value apportionment of the companies' properties within the county of the assessor for purposes of distribution of taxes to the taxing district in the county. [1957 c.628 §7; 1963 c.238 §2; 1965 c.492 §1; 1967 c.226 §1; 1969 c.595 §12]

308.730 Tax as a lien; delinquency date; action to collect. (1) The tax imposed under ORS 308.710 (2) shall be a debt due and owing from the company and shall be a lien on all the property, real and personal, of the company on and after February 1 of each year. Interest shall be charged and collected on any tax so imposed and not paid when due at the rate of one percent per month or fraction of a month until paid. The taxes so imposed shall be delinquent if not paid within one year following the due date thereof.

(2) The Department of Revenue shall enforce collection of the tax imposed under ORS 308.710 (2) and immediately after the delinquency date thereof may institute an action for the collection of the taxes, together with interest, costs and other lawful charges thereon. The department shall have the benefit of all laws of this state pertaining to provisional remedies against the properties, either real or personal, of such companies, without the necessity of filing either an affidavit or undertaking, as otherwise provided by law. [1957 c.628 §8; 1981 c.623 §5]

OPEN SPACE LANDS

308.740 Definitions for ORS 308.740 to 308.790. As used in ORS 308.740 to 308.790, unless a different meaning is required by the context:

(1) "Open space land" means:

(a) Any land area so designated by an official comprehensive land use plan adopted by any city or county; or

(b) Any land area, the preservation of which in its present use would:

(A) Conserve and enhance natural or scenic resources;

(B) Protect air or streams or water supply;

(C) Promote conservation of soils, wetlands, beaches or tidal marshes;

(D) Conserve landscaped areas, such as public or private golf courses, which reduce air pollution and enhance the value of abutting or neighboring property;

(E) Enhance the value to the public of abutting or neighboring parks, forests, wildlife preserves, nature reservations or sanctuaries or other open space;

(F) Enhance recreation opportunities;

(G) Preserve historic sites;

(H) Promote orderly urban or suburban development; or

(I) Retain in their natural state tracts of land, on such conditions as may be reasonably required by the legislative body granting the open space classification.

(2) "Current" or "currently" means as of next January 1, on which the property is to be listed and valued by the county assessor under ORS chapter 308.

(3) "Owner" means the party or parties having the fee interest in land, except that where land is subject to a real estate sales contract, "owner" shall mean the contract vendee. [1971 c.493 §2]

308.745 Policy. The legislature hereby declares that it is in the best interest of the state to maintain, preserve, conserve and otherwise continue in existence adequate open space lands and the vegetation thereon to assure continued public health by counteracting pollutants and to assure the use and enjoyment of natural resources and scenic beauty for the economic and social well-being of the state and its citizens. The legislature further declares that it is in the public interest to prevent the forced conversion of open space land to more intensive uses as the result of economic pressures caused by the assessment thereof for purposes of property taxation at val-

ues incompatible with their preservation as such open space land, and that assessment practices must be so designed as to permit the continued availability of open space lands for these purposes, and it is the intent of ORS 308.740 to 308.790 to so provide. [1971 c.493 §1]

308.750 Application for open space use assessment; contents of application; filing; reapplication. An owner of land desiring current open space use assessment under ORS 308.740 to 308.790 shall make application to the county assessor upon forms prepared by the Department of Revenue and supplied by the county assessor. The owner shall describe the land for which classification is requested, the current open space use or uses of the land, and shall designate the paragraph of ORS 308.740 (1) under which each such use falls. The application shall include such other information as is reasonably necessary to properly classify an area of land under ORS 308.740 to 308.790 with a verification of the truth thereof. Applications shall be made prior to December 31, 1971, for classification for the assessment year commencing January 1, 1972, and thereafter applications to the county assessor shall be made during the calendar year preceding the first assessment year for which such classification is requested. If the ownership of all property included in the application remains unchanged, a new application is not required after the first assessment year for which application was made and approved. [1971 c.493 §3]

308.755 Submission of application for approval of local granting authority; grounds for denial; approval; withdrawal of application. (1) Within 10 days of filing in the office of the assessor, the assessor shall refer each application for classification to the planning commission, if any, of the governing body and to the granting authority, which shall be the county governing body, if the land is in an unincorporated area, or the city legislative body, if it is in an incorporated area. An application shall be acted upon in a city or county with a comprehensive plan in the same manner in which an amendment to the comprehensive plan is processed by such city or county, and by a city or county without a comprehensive plan after a public hearing and after notice of the hearing shall have been given by three consecutive weekly advertisements in a newspaper of general circulation in the city or county, the third published at least 10 days before the hearing. Each advertisement for one or more hearings shall be no smaller than three column by five inches in size. In determining whether an application made for classification under ORS 308.740 (1)(b) should be approved or disapproved, the granting authority shall weigh the benefits to the general welfare of preserving the current use of the property which is the subject of application against the potential loss in revenue which may result from granting the application.

(2) If the granting authority in so weighing shall determine that preservation of the current use of the land will:

(a) Conserve or enhance natural or scenic resources;

(b) Protect air or streams or water supplies;

(c) Promote conservation of soils, wetlands, beaches or tidal marshes;

(d) Conserve landscaped areas, such as public or private golf courses, which enhance the value of abutting or neighboring property;

(e) Enhance the value to the public of abutting or neighboring parks, forests, wildlife preserves, nature reservations, sanctuaries, or other open spaces;

(f) Enhance recreation opportunities;

(g) Preserve historic sites;

(h) Promote orderly urban or suburban development; or

(i) Affect any other factors relevant to the general welfare of preserving the current use of the property;

the granting authority shall not deny the application solely because of the potential loss in revenue which may result from granting the application.

(3) The granting authority may approve the application with respect to only part of the land which is the subject of the application; but if any part of the application is denied, the applicant may withdraw the entire application. [1971 c.493 §4]

308.760 Notice to assessor of approval or denial; recording approval; assessor to record potential additional taxes on tax roll; appeal from denial. (1) The granting authority shall immediately notify the county assessor and the applicant of its approval or disapproval which shall in no event be later than April 1 of the year following the year of receipt of said application. An application not denied by April 1 shall be deemed approved, and shall be considered to be land which qualifies under ORS 308.740 to 308.790.

(2) When the granting authority determines that land qualifies under ORS 308.740 to 308.790, it shall enter on record its order of approval and file a copy of the order with the county assessor within 10 days. The order shall state the open space use upon which approval was based. The

county assessor shall, as to any such land, assess on the basis provided in ORS 308.765, and each year the land is classified shall also enter on the assessment roll, as a notation, the assessed value of such land were it not so classified.

(3) Each year the assessor shall include in the certificate made under ORS 311.105 a notation of the amount of additional taxes which would be due if the land were not so classified.

(4) On approval of an application filed under ORS 308.750, for each year of classification the assessor shall indicate on the tax roll that the property is being specially assessed as open space land and is subject to potential additional taxes as provided by ORS 308.770, by adding the notation "open space land (potential add'l tax)".

(5) Any owner whose application for classification has been denied may appeal to the circuit court in the county where the land is located, or if located in more than one county, in that county in which the major portion is located. [1971 c.493 §5]

308.765 Determination of true cash value of open space lands. In determining the true cash value of open space land which has been classified as such under ORS 308.740 to 308.790, each year the assessor shall, notwithstanding the provisions of ORS 308.205:

(1) Assume the highest and best use of the land to be the current open space use, such as park, sanctuary or golf course, and the assessor shall not consider alternative uses to which the land might be put.

(2) Value the improvements on the land, if any, as required by ORS 308.205. [1971 c.493 §6]

308.770 Change in use of open space land; notice to assessor; withdrawal from classification; collection of additional potential taxes. (1) When land has once been classified under ORS 308.740 to 308.790, it shall remain under such classification and it shall not be applied to any other use than as open space unless withdrawn from classification as provided in subsection (2) of this section, except that if the use as open space land changes from one open space use to another open space use, such as a change from park purposes to golf course land, the owner shall notify the assessor of such change prior to the next January 1 assessment date.

(2) During any year after classification, notice of request for withdrawal may be given by the owner to the county assessor or assessors of the county or counties in which such land is situated. The county assessor or assessors, as the case may be, shall withdraw such land from such classification, and immediately shall give written notice of the withdrawal to the granting authority that classified the land; and additional real property taxes shall be imposed on such land in an amount equal to the total amount of potential additional taxes computed under ORS 308.760 (3) during each year in which the land was classified, together with interest at the rate of two-thirds of one percent a month, or fraction of a month, from the dates on which such additional taxes would have been payable had the land not been so classified, limited to a total amount not in excess of the dollar difference in the value of the land as open space land for the last year of classification and the market value under ORS 308.205 for the year of withdrawal.

(3) If the owner fails to give the notice required under subsection (1) of this section during the period of classification, upon withdrawal under subsection (2) of this section, the assessor shall add to the tax extended against the land previously classified, an amount, if any, equal to the additional taxes that would have been collected had the assessor valued the classified land on the basis of the changed open space use, together with interest at the rate of two-thirds of one percent a month, or fraction of a month, from the dates on which such additional taxes would have been payable. [1971 c.493 §7]

308.775 Withdrawal by assessor when use changed; notice to granting authority; imposition of additional taxes; interest; penalty; exception in case of certain sale of land. (1) When land which has been classified and assessed under ORS 308.740 to 308.790 as open space land is applied to some use other than as open space land, except through compliance with ORS 308.770 (2), or except as a result of the exercise of the power of eminent domain, the owner shall within 60 days thereof notify the county assessor of such change in use. The assessor or assessors shall withdraw the land from classification and immediately shall give written notice of the withdrawal to the granting authority that classified the land; and additional real property taxes shall be imposed upon such land in an amount equal to the amount that would have been due under ORS 308.770 if notice had been given by the owner as of the date of withdrawal, plus a penalty equal to 20 percent of the amount so determined.

(2) If no notice is given as required by subsection (1) of this section, the assessor, upon discovery of the change in use, shall compute the amount of taxes, penalty and interest described in subsection (1) of this section, as though notice had been given, and shall add thereto an additional penalty equal to 20 percent of the total

amount so computed, for failure to give such notice.

(3) The limitation described in ORS 308.770 (2) applies only to the computation of taxes and interest, and not to the penalties described in subsections (1) and (2) of this section.

(4) The provisions of subsections (1) and (2) of this section shall not apply in the event that the change in use results from the sale of a least 50 percent of such land classified under ORS 308.740 to 308.790 within two years after the death of the owner. [1971 c.493 §8]

308.780 Prepayment of additional taxes; extending taxes on tax roll; collection; distribution. (1) The amount determined to be due under ORS 308.770 or 308.775 may be paid to the tax collector prior to the completion of the next general property tax roll, pursuant to ORS 311.370.

(2) The amounts under ORS 308.770 or 308.775 shall be added to the tax extended against the land on the next general property tax roll, to be collected and distributed in the same manner as the remainder of the real property taxes. [1971 c.493 §9; 1979 c.350 §9]

308.785 Reports from owner to assessor; effect of failure of owner to make report upon request. The assessor shall at all times be authorized to demand and receive reports by registered or certified mail from owners of land classified under ORS 308.740 to 308.790 as to the use of the same. If the owner shall fail, after 90 days' notice in writing by certified mail to comply with such demand, the assessor may immediately withdraw the land from classification, give written notice to the granting authority of the withdrawal, and apply the penalties provided in ORS 308.770 and 308.775. [1971 c.493 §10]

308.790 Rules and regulations. The Department of Revenue of the State of Oregon shall make such rules and regulations consistent with ORS 308.740 to 308.790 as shall be necessary or desirable to permit its effective administration. [1971 c.493 §11]

GROSS EARNINGS TAX ON MUTUAL OR COOPERATIVE DISTRIBUTION SYSTEMS

308.805 Mutual and cooperative electric distribution systems subject to tax on gross earnings. (1) Every association of persons, wholly mutual or cooperative in character, whether incorporated on unincorporated, the principal business of which is the construction, maintenance and operation of an electric transmission and distribution system for the benefit of the members of such association without intent to produce profit in money and which has no other principal business or purpose shall, in lieu of all other taxes on the transmission and distribution lines, pay a tax on all gross revenue derived from the use or operation of transmission and distribution lines (exclusive of revenues from the leasing of lines to governmental agencies) at the rates prescribed by ORS 308.807. The tax shall not apply to or be in lieu of ad valorem taxation on any property, real or personal, which is not part of the transmission and distribution lines of such association.

(2) The Department of Revenue, pursuant to ORS 308.505 to 308.655, shall assess for ad valorem taxation all the real and personal property of such associations which is not a part of "transmission and distribution lines," as defined in subsection (3) of this section. All other property subject to ad valorem taxation shall be assessed in the manner otherwise provided by law, by the assessor of the county in which such property has a tax situs.

(3) As used in ORS 308.805 to 308.820:

(a) "Transmission and distribution lines" shall include all property that is energized or capable of being energized or intended to be energized, or that supports or is integrated with such property. This includes, but is not limited to, substation equipment, fixtures and framework, poles and the fixtures thereon, conductors, transformers, services, meters, street lighting equipment, easements for rights of way, generating equipment, communication equipment, transmission lines leased to governmental agencies, construction tools, materials and supplies, office furniture and fixtures and office equipment. This shall not include such property as parcels of land, buildings, and merchandise held for resale.

(b) "Wire mile" means a single conductor one mile long installed in a line, but not including service drops. [Amended by 1957 c.637 §1; 1959 c.109 §4; 1969 c.492 §1]

308.807 Rate of tax. (1) For payments due February 1, 1970, the tax imposed by ORS 308.805 shall be at the rate of two and one-half percent.

(2) For payments due February 1, 1971, through February 1, 1983, the tax imposed by ORS 308.805 shall be at the rate of three percent.

(3) For payments due February 1, 1984, through February 1, 1991, the tax imposed by

Appendix K

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