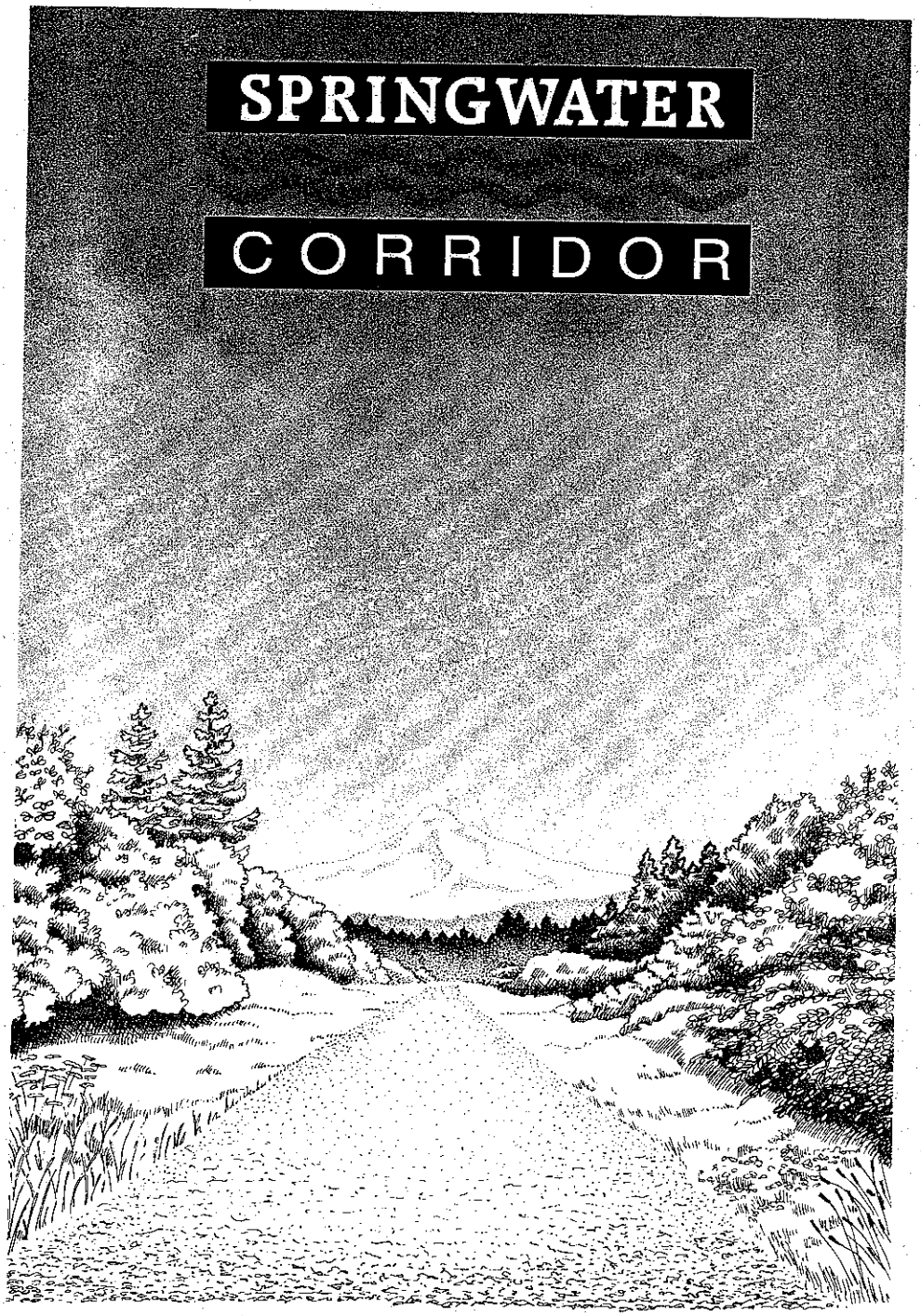
SPRINGWATER CORRIDOR



MASTER PLAN

NOVEMBER • 1992

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The Springwater Corridor Master Plan could not have been developed without the active participation of Portland's citizens. The Friends of Springwater Corridor has been an enthusiastic and helpful support group.

Information on the Springwater Corridor can be obtained from:
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VISION STATEMENT

The Springwater Corridor preserves natural surroundings in an area where few natural spaces remain. It creates a refuge from urban bustle and the dangers of automotive traffic by linking city neighborhoods and rural communities with trails designed for walking, bicycling and horseback riding. Meeting community needs, for beauty, recreation and safety, drives planning and upkeep of the Corridor.

The Corridor gives direct access to trails along the Willamette River and to a variety of parks in southeast Portland, Gresham and Boring, as well as to wilderness trails in the Mount Hood National Forest. Ultimately, it will connect to the Pacific Crest Trail.

The Springwater Corridor is more than a recreation resource: crossing Johnson Creek nearly a dozen times, it preserves an environment in which wildlife native to Johnson Creek, the last free-flowing stream in urban Portland, can thrive after years of neglect. Residents and visitors can better appreciate the heritage of nearby communities by enjoying historical markers along the Corridor which tell stories of the railroad, European settlers, and indigenous people who once depended on the land and Johnson Creek as a waterway and source of life.

The Corridor creates a major new non-motorized transportation route linking two counties and four cities together.

The Springwater Corridor invites residents and visitors of all ages to meet, play, contemplate nature, and learn more about the city we live in.

EXECUTIVE SUMMARY

This master plan sets the direction for development of the Springwater Corridor into the premier urban recreation and alternative transportation corridor in the State of Oregon, with an expected annual user count of over 400,000. With its connections to neighborhood, community and regional parks and open spaces, in addition to employment centers and residential neighborhoods, it will pull users from a region-wide area as well as the 150,000 people who live within a two-mile distance along the route of the Corridor.

The Corridor closes the last major gap in the 40 Mile Loop, and beyond that, makes it possible for a future direct link between the Willamette River and Mt. Hood National Forest. Development of this section of the Corridor will provide a direct separated pedestrian and bicycle connection between Oregon's first and fourth largest cities. The Corridor will be more than a functional, direct transportation route because the route it travels is a scenic one, encompassing Johnson Creek, wetlands and buttes, agricultural fields and pastures, residential and industrial neighborhoods. It runs close to Johnson Creek, one of the last free flowing creeks in the urban area, crossing it ten times in its course to the Willamette River. Because of this proximity, the Corridor can provide environmental education opportunities and greatly broaden the number of "stream keepers" who have ownership in Johnson Creek. The Corridor itself plays an important role in wildlife habitat protection, as it will provide a greenway connection as a wildlife corridor between the habitat resources (such as Powell Butte Nature Park) along the route.

Although the City of Portland owns the entire 16.5 mile long Corridor, many other jurisdictions have played an active role in securing the property and will sponsor implementation of the plan. These jurisdictions include the State of Oregon, the U.S. Forest Service, METRO, Multnomah County, Clackamas County, the City of Gresham, and the City of Milwaukie.

The Corridor has a long and colorful history as a transportation corridor; development of the Corridor for recreation will not lose sight of demonstrating how the mode of transportation and surrounding communities have evolved. Just as the railroad was the lifeblood of the communities it served, the Springwater Corridor will continue to tie neighborhoods together and celebrate each one's unique history and identity.

This plan was developed over a two year period and is the product of many citizens' input. Neighboring businesses and residents have had a direct influence through an early door-to-door survey. They and other citizens at large have had continuing involvement through meetings, newsletters, and work parties. Two steering committees, one consisting of affected jurisdictions, the other of appointed representatives of various special interest groups, have helped distill incoming information and concerns into a workable plan.

The essence of the plan is to provide a hard-surface, multi-purpose trail between Portland and Gresham. On the east side of Gresham, trail standards will reflect the more rural surroundings and will not have a hard-surface. A separated equestrian trail will be provided the entire length of the Corridor. Trailheads will be located approximately every two to two and one-half miles, except in the rural section east of Gresham. Signage will be used to direct, orient, and regulate users, but also to interpret the cultural and natural resources of the Corridor and to recognize donor contributions toward its implementation and upkeep.

Implementation of the plan will generally proceed west to east. The goal of Phase I improvements is to purchase all necessary remaining "missing links" and trailhead locations, and to provide trail improvements from McLoughlin Blvd. through Gresham. Prospects for funding through the Oregon Department of Transportation's Enhancement Program appear likely. A local match is required.

This plan also includes strategies for property management, property maintenance, and an evaluation process.

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CHAPTER 1
INTRODUCTION

The Springwater Corridor extends from SE McLoughlin Boulevard to the community of Boring; it was originally developed in 1903 for rail service. The Corridor was also known as the Portland Traction Company line, the Cazadero line, and the Bellrose line. It was acquired by the City of Portland Park Bureau in February, 1990 as part of the 40 Mile Loop.

The strategy for acquisition was innovative: prior to the sale of the property, the Oregon Department of Transportation (ODOT) was required to replace the Springwater Line rail bridge and to purchase easements along McLoughlin in order to widen the roadway.

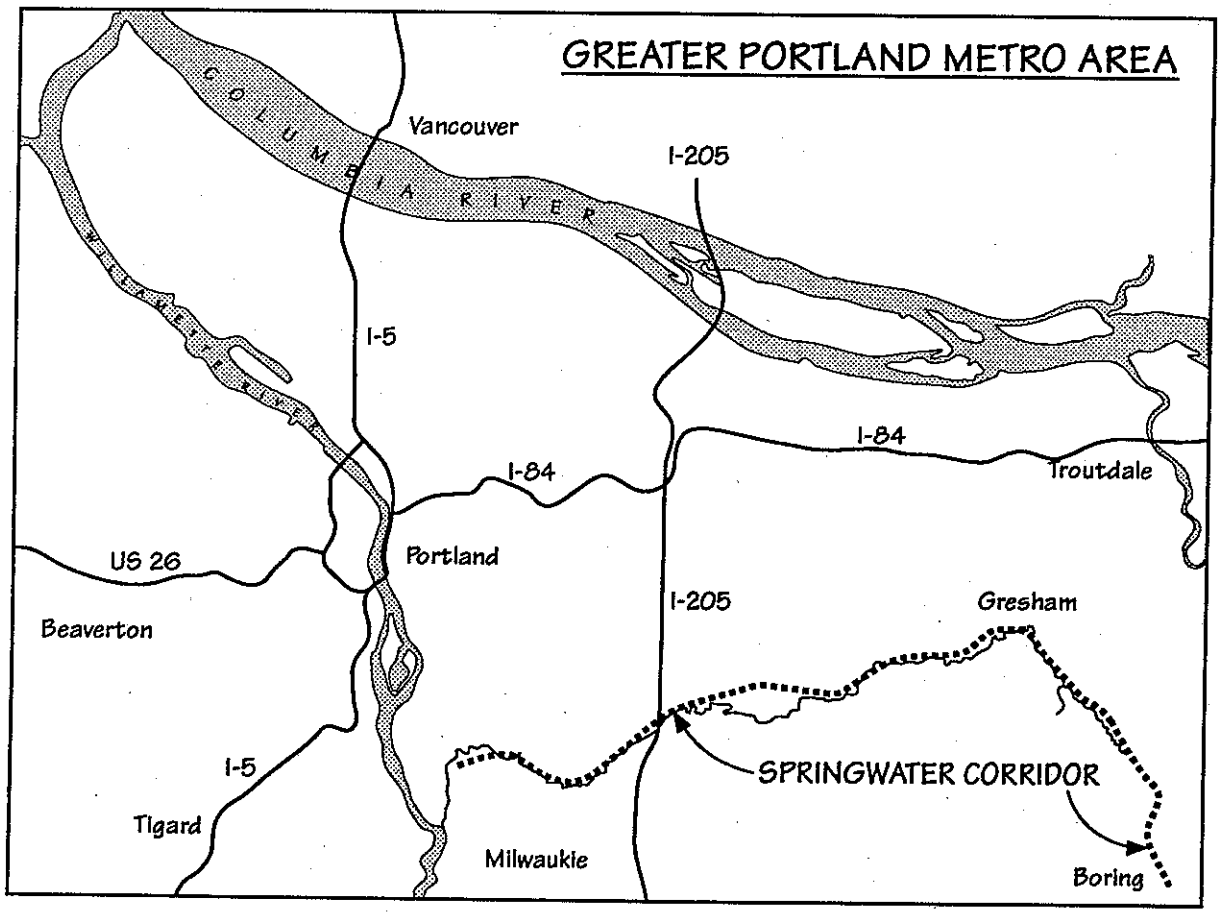

Figure 1. Location Map of the Corridor

Since abandonment of the rail line meant that these expenses were not needed, purchase of the entire right-of-way resulted in nearly $ 900,000 in savings. As part of the purchase agreement, ODOT turned the property over to the City of Portland. In addition, while still preserving the possibility of using the Corridor in the future for rail, the Portland Traction Company was able to abandon a line that showed increasing financial losses.

The Corridor is part of a much longer rail system that extended beyond McLoughlin and Boring: on the west side of McLoughlin it paralleled the Willamette River into downtown Portland (this section is currently an operating short line freight operation known as the East Portland Traction Company) and on the south side of Boring it continued to Estacada (this section was abandoned 60 years ago and is currently held by the State of Oregon).

Master planning for the Corridor began in 1991. The project was managed through the Park Bureau's Planning Section, with the active involvement of citizens, other agencies, Commissioner Lindberg's office, the Johnson Creek Corridor Committee, and the Operations Division of the Park Bureau.

A. Purposes of the Document

This document will:

- Guide the design and development of the Springwater Corridor toward becoming a premier recreation corridor;
- Establish policies that relate to managing and maintaining property within the Corridor;
- Record the history of the Corridor to date;
- Document the plan process and establish a schedule for review of the plan and its implementation;

B. The 40 Mile Loop & the Springwater Corridor

The 40 Mile Loop is a concept which dates back to 1903, when a group of Portland boosters hired the renowned landscape architectural firm of the Olmsted Brothers to develop a master plan for parks and boulevards in the city. The resulting Olmsted Plan formalized the city's early commitment to the development of parks and open spaces into a meaningful park system.

During the last 90 years, the Olmsted Plan has served both as a continuing inspiration and as the source of the park legacy we enjoy today. Laurelhurst Park, Mt. Tabor Park, and

Terwilliger Parkway, to name a few, were part of the Olmsted Plan. A key organizing element of that plan was the notion that the linkage between parks were just as important as the parks themselves. One of the primary linkages was a trail ringing the boundaries of the city. At that time, this was a distance of approximately 40 miles, hence the name, 40 Mile Loop. Today the 40 Mile Loop is more than 140 miles long.

After its initial conception, development of the Loop stalled for many years. Bits and pieces were added, but the concept was never fully embraced. It wasn't until the late 1970's that the idea resurfaced in force. At that time, the State Parks Division of the Oregon Department of Transportation convened a group of interested citizens, organizations, and local governments to see if the Loop could begin to meet existing and emerging recreation needs in the urban area.

Out of that assembly came the 40 Mile Loop Land Trust, a private, non-profit group organized specifically to guide the project toward completion and to function as a land trust for the purposes of assembling necessary land and/or easements. Its first action was

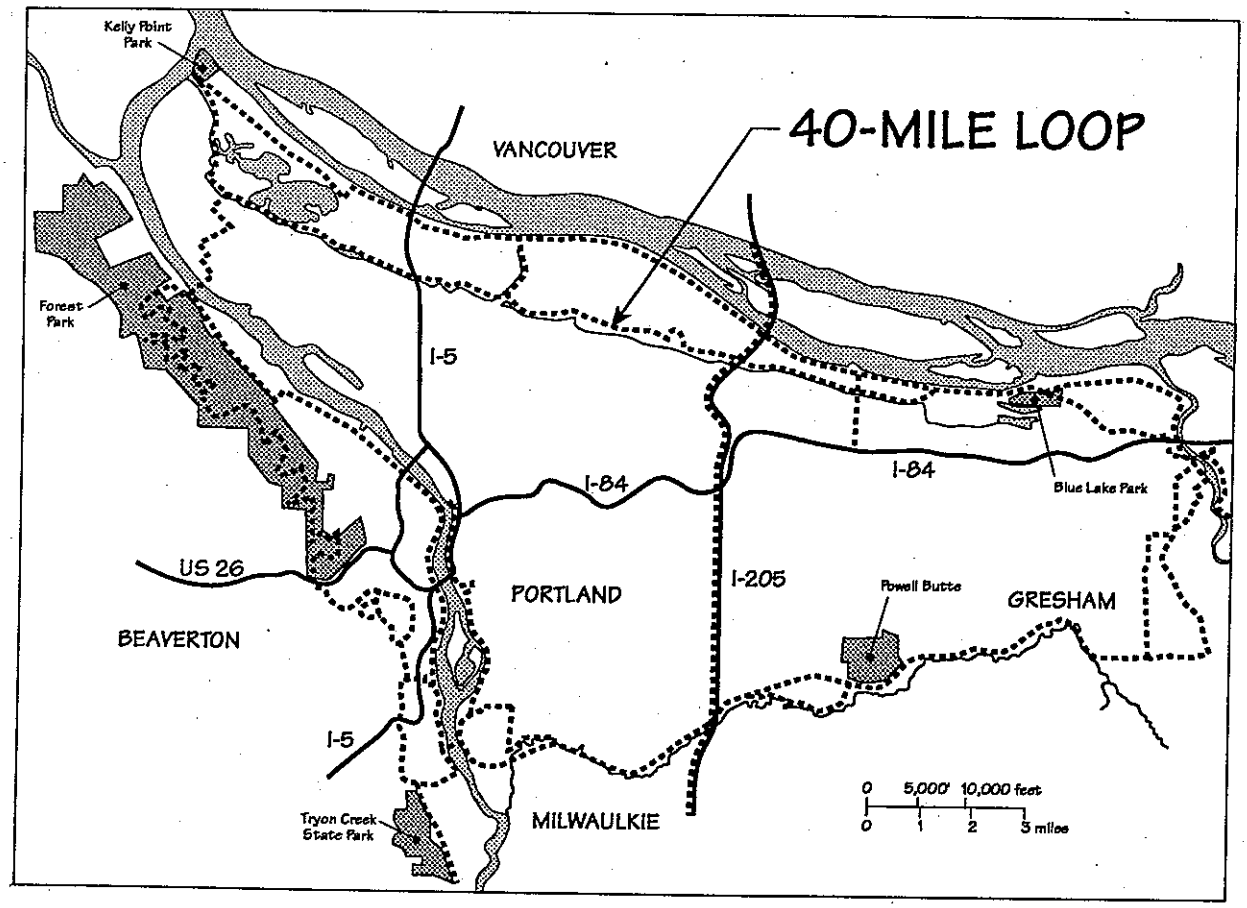

Figure 2. Map of the 40 Mile Loop

to develop a master plan for the Loop. The product of that effort was a system that wrapped around the urbanized portions of the Portland metropolitan area, taking advantage of scenic corridors and waterways.

By 1985, the Land Trust had laid the groundwork for the passage of a resolution by two of the major jurisdictions involved in the Loop, Portland and Multnomah County, calling for the implementation of the master plan by 1995. Even though the Loop is 100 miles longer than originally designed, the region has actually made substantial progress toward its development, with the Marine Drive Trail, the Wildwood Trail, Marquam Nature Park, and the Willamette Greenway being the most complete sections of the Loop.

With the addition of the property along the Springwater Corridor, the last major gap in the Loop was closed. The 16.5 mile-long Springwater Corridor will connect the southeast quadrant of the metropolitan area, paralleling Johnson Creek and extending the Loop from the Sellwood area through Gresham to Troutdale and Boring.

For many years, this part of the Loop has been the most challenging to complete. Until recently, the railroad was still operating in the Corridor. Johnson Creek, an alternate southern route, was designated by Portland's Comprehensive Plan as the location for the 40 Mile Loop, but it is almost entirely privately owned and developed with residential uses close to the creek.

The Springwater Line is ideal for providing a southeast connection. For the most part, it is well-separated from both road right-of-way and neighboring residential areas. The route it travels is a scenic one, encompassing wetlands and buttes, agricultural fields and pastures, residential and industrial neighborhoods. It runs close to Johnson Creek, one of the last free flowing creeks in the urban area, crossing it ten times in its course to the Willamette River. The parks and open spaces it passes next or near to include Oaks Bottom Wildlife Refuge, Oaks Amusement Park, Sellwood Riverfront Park, Johnson Creek Park, Sellwood Park, Tideman Johnson Nature Park, Beggar's Tick Marsh, the I-205 bike path, Leach Botanical Garden, Bundy Park, Powell Butte Nature Park, and Gresham Main City Park.

The smooth, even grade required for the passage of trains will be ideally suited to hiking and biking long distances. In addition, the grade will be easy for the elderly, for people with disabilities, and for parents pushing strollers. The right-of-way can accommodate a variety of uses, since it varies in width from 60' to 200'; most of it is 100' wide.

In addition, ownership of the 10.8 mile-long section south of Boring to Estacada is currently held by the State. This section of the Springwater Line was abandoned 60 years ago and acquired by the Oregon Department of Transportation 20 years ago. The Springwater Corridor, when linked with the State's section, not only serves the needs of the 40 Mile Loop, but also offers the real possibility of a trail connection from the Pacific

Crest Trail through the Mt. Hood National Forest, directly to downtown Portland. The section south of Boring is discussed for context purposes but is beyond the scope of this document.

C. Governing Jurisdictions

The City of Portland owns the Springwater Corridor, even sections that lie outside of the city limits. This arrangement was devised because of conditions applied during property acquisition; the rail line is protected from reversionary property interests because of an "interim trails use" clause applied during the rail abandonment process. The "interim trails use" clause protects against reversionary interests because technically, the line is not abandoned. It is to be used as a trail in the interim, but remains an intact rail corridor should the future need for rail service arise. This process was facilitated by having a single agency as the receiving party.

The City of Portland includes several policies in its Comprehensive Plan that relate to the Springwater Corridor, including:

- Policy 6.6, Urban Form: Street and pedestrian connections should be provided between new and existing neighborhoods and to activity centers.

- Policy 6.10, Barrier-Free Design: Transportation facilities shall be accessible to all people. All improvements to the transportation system (traffic, transit, bicycle and pedestrian) in the public right-of-way shall comply with the Americans with Disabilities Act of 1990.

- Policy 6.11, Pedestrian Network: Plan and provide for a pedestrian network in order to increase the modal share of pedestrian travel to 10 percent over the next 20 years.

- Policy 6.12, Bicycle Network: Plan and provide for a bicycle network in order to increase the modal share of bicycle travel to 10 percent over the next 20 years.

- Policy 6.22, Right-of-Way Opportunities: Preserve existing and abandoned rail rights-of-way and examine their potential for future rail freight, passenger service, or recreational trail uses.

In addition, the Far Southeast District Transportation Policy Statements include:

- Policy No. 3, Bicycles and Pedestrians: Promote pedestrian access throughout the District with emphasis given to provisions for arterial crossings. Street

improvements and traffic management improvements should be designed to accommodate bicyclists and pedestrians.

In addition, the Bureau of Parks & Recreation has an adopted parks master plan, titled *Parks Futures*, which includes the following policies that relate to the 40 Mile Loop:

- Policy 1.10: Coordinate and integrate the City's parks and trail system with plans for bikeways, street improvements, and mass transit.

- Policy 8.6: Develop and maintain a citywide trail system that links parks, open spaces, the Willamette Greenway, bikeways, the 40 Mile Loop, other trails, and public attractions.

In addition, Resolution No. 33937 was adopted by the City of Portland and Multnomah County with the intention to implement the 40 Mile Loop Master Plan by 1995.

Many other jurisdictions have played an active role in securing the property and will sponsor implementation of the plan. This section will describe the relationship between the jurisdictions and the role they play in managing the property.

The State of Oregon through its Parks and Recreation Department expects to use the Springwater Corridor as a model for an urban rail-trail conversion. The model includes the planning, design and development process for other possible rail-trail conversions in urban and suburban settings in Oregon.

In addition, as the Boring to Estacada section of the Springwater Corridor is under State ownership, the State will play a lead role in the development of that section. This will not occur until the Springwater Corridor is fully developed into Boring, and adjacent property owners south of Boring view recreational development of the Corridor as a positive change.

Through its Parks and Recreation Department, the State has designated the 40 Mile Loop as an Oregon Recreation Trail. The designation is codified in Oregon Administrative Rule 736-09-010(1). Oregon Revised Statutes (ORS) 390.950 to 390.990 authorize the department to declare regionally and statewide significant recreation trails as Oregon Recreation Trails. The Department has declared the 40 Mile Loop to be a regionally significant recreation trail.

While the designation brings no protective or financial commitment status by the state, the 40 Mile Loop is in the Oregon Recreation Trails System Plan. Therefore, it would receive priority consideration if and when state trail grants are forthcoming.

The U.S. Forest Service - Pacific Northwest Region has a goal of actively cooperating and working with Portland and other local communities to develop links between urban trails and transportation systems and National Forest trails and transportation systems.

The Mt. Hood National Forest plans to develop a physical link between the Pacific Crest National Scenic Trail and the Springwater Corridor trail via a planned trail along the Clackamas River. (See Figure 3). Planning and design for this linkage have started, with construction scheduled to begin in 1995. An eight mile section of the linkage trail is already in place between Fish Creek, a tributary of the Clackamas River, and Indian Henry Campground. Another five mile section is also in place between Rainbow and Riverside Campground along the Upper Clackamas River above Ripplebrook.

Tying the Clackamas River Forest Service trail with the State-owned Springwater right-of-way at Estacada will require an easement across land managed by Portland General Electric. The Mt. Hood Forest has begun negotiations with PGE, and started design work on this section.

The Mt. Hood National Forest is a mosaic of recreation opportunities scattered over one million acres of forest land draped over the north Oregon Cascade Mountains. Mt. Hood, at 11,235', is the dominant feature of the Forest. There are 1300 miles of trails in the Mt. Hood National Forest. These range from paved and "boardwalk" trails accessible to all users to primitive trails in the 187,000 acres of wilderness suitable to only the most hearty. The Mt. Hood National Forest is also working with the Chinook Trail Association to provide trail ties between the Forest and the Portland metropolitan area and other communities along the Columbia River within the Columbia Gorge Scenic Area.

The Gifford Pinchot Forest is also working with the Chinook Trail Association to provide trail ties between the Forest and the Vancouver urban area and other communities along the Columbia River within the Scenic Area. It is planned to tie the Washington segments of the Chinook Trail system to the Oregon segments, thus providing a link to the Portland metropolitan area.

The City of Gresham manages 4.5 miles of the Corridor that passes within Gresham city limits. Gresham was the first jurisdiction to gather funds for implementation through passage of a 1988 Parks Acquisition and Development bond measure. Portland and Gresham have signed an intergovernmental agreement that specifies roles and responsibilities for development, maintenance, and management of the Gresham section. Improvements within Gresham city limits were designed after an extensive master plan process that involved hundreds of citizens in early 1991. Gresham's Master Plan is included as Appendix A.

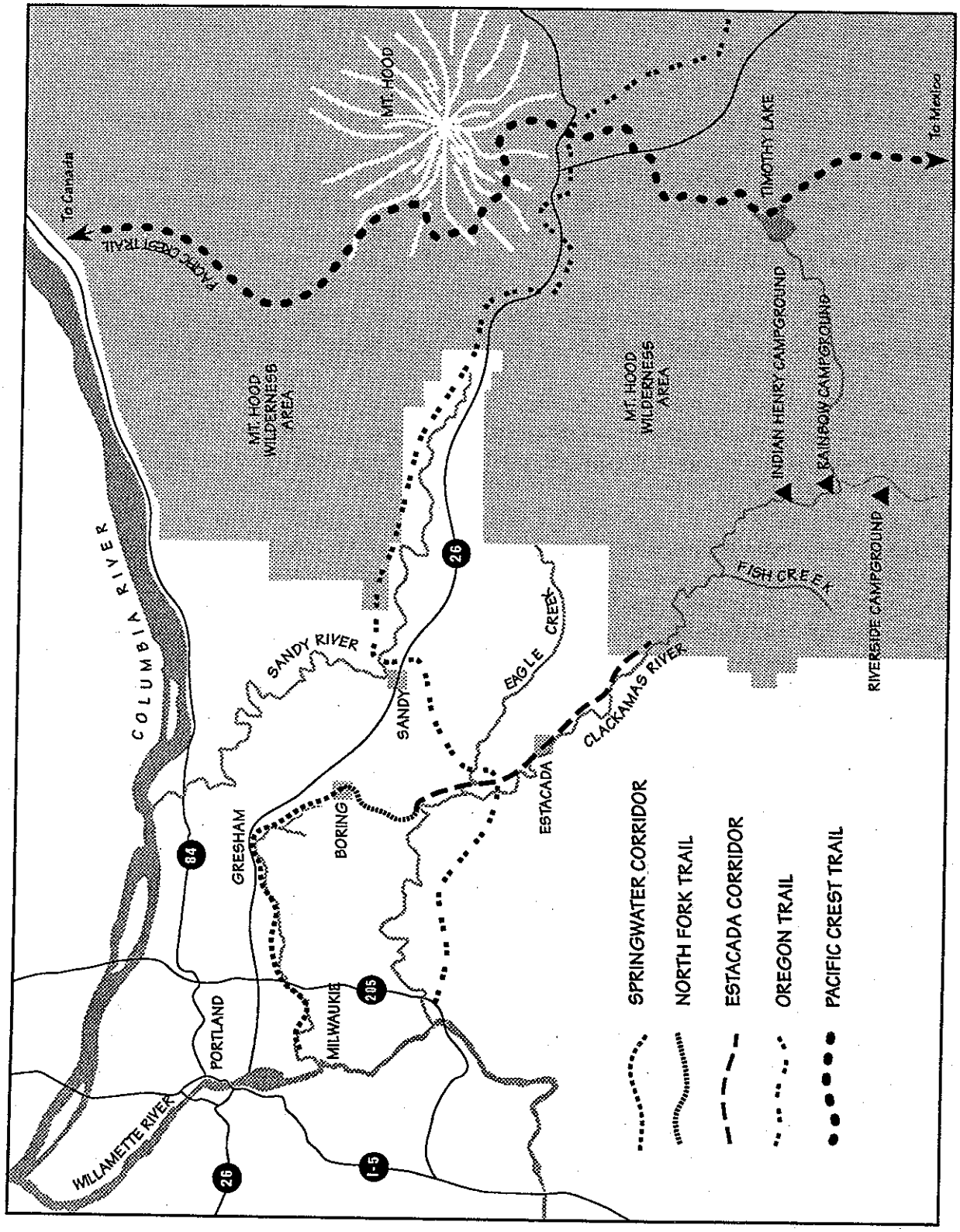

Figure 3. Corridor Link to Mt. Hood National Forest

The 40 Mile Loop is identified in three adopted documents:

- The 1987 Gresham Bicycle/Pedestrian Plan addresses bicycle planning programs that affect the city, including the 40 Mile Loop system of parks and trails, and describes improvements which will be needed to accommodate the demand for bicycle routes and pedestrian trails.

- The 1988 Gresham Park and Recreation Plan identifies the 40 Mile Loop as a major element of the network of bicycle routes and pedestrian trails planned throughout the city. Travelling along the north, east, and south sections of Gresham, the 40 Mile Loop connects the city with Portland, Milwaukie, Troutdale, Boring and unincorporated portions of Multnomah and Clackamas Counties. The future Gresham-Fairview Trail in west Gresham will connect the 40 Mile Loop along Johnson Creek in south Gresham with the 40 Mile Loop along Marine Drive in north Gresham.

- Policy I of the 1988 Gresham Community Development Plan identifies the 40 Mile Loop and provides implementation strategies, including:

  1. The city supports regional efforts to establish the 40 Mile Loop trail system within Gresham and shall coordinate with state, regional, and local agencies in planning and developing the 40 Mile Loop.

  2. The city's Park and Recreation Plan shall include provisions for a community-wide bicycle/pedestrian trails system, incorporating the 40 Mile Loop trail as a proposed Oregon Recreation Trail.

  3. The Community Development Standards Document shall contain provisions requiring easements to be granted for establishment and development of the 40 Mile Loop trail and other proposed trails as designated within the city's Park and Recreation Plan in connection with new development projects.

  4. The city will seek to acquire access easements along major power line corridors and abandoned railroad rights-of-way.

  5. The city will investigate opportunities to incorporate in its trail and park system any special or unique sites that can be used for nature trails, scenic walkways, exercise circuits, or other special purpose trails.

  6. The city will encourage the state to reconsider its restriction on the use of bicycle/pedestrian gas tax revenues for the funding of facilities outside public street rights-of-way.

7. The city shall develop bikeways and pedestrian facilities consistent with the 1987 Gresham Bicycle/Pedestrian Plan and the 1988 Gresham Park and Recreation Plan.

- The 1991 Springwater Trail Corridor Master Plan is the city's guideline for development and management of the Gresham section of the Corridor. Specific recommendations for policies and strategies regarding trail uses, safety, security, conflicts and management are provided. In addition to the overall trail layout plan, the document contains a description of the primary and equestrian trails, critical detail areas, trail heads, trail furnishings, cost estimates and phasing schedule. See Appendix A.

The City of Milwaukie has expressed interest in assisting the development of the Springwater Corridor, both inside and outside Milwaukie City limits. Very little of the Springwater Corridor is actually inside Milwaukie's City limits.

Several policies in Milwaukie's Comprehensive Plan relate to the 40 Mile Loop including:

- The City will participate with the appropriate agencies in implementing the proposed 40 Mile Loop system, a State Recreational Trail.

Under Milwaukie's Comprehensive Plan's Transportation Element, the Springwater Corridor is specifically referred to under this objective:

- To develop a pedestrian/bikeway system which connects local activity centers such as parks, schools and activity centers.

The following policy supports that objective:

- The City will support the proposed 40 Mile Loop as a means to meet regional needs for pedestrian paths and bikeways.

Under the Recreational Needs Element, the following policy is included:

- The Parks and Recreation Master Plan should address the idea of connecting the riverfront area to the proposed 40 Mile Loop trail system with a southern arm extending to North Clackamas Park.

North Clackamas Parks and Recreation District has completed draft plans for neighborhood parks within the district. A portion of the Springwater Corridor runs through the district in the Southgate/Town Center neighborhood. The neighborhood's Parks Advisory Board supported development of that portion of the Corridor in its area.

Clackamas County Planning and Economic Development Division supports planning for development of the Springwater Corridor. Plans for funding, development, operations and maintenance will be developed in coordination with affected county divisions and other jurisdictions.

Clackamas County contains policies in its Comprehensive Plan, Chapter 9, Open Space, Parks and Historic Sites, that relate to trails. Under Parks and Recreation, subsection 5.2, *Development Needs*:

> An urban trail system for both walking and bicycling, especially in conjunction with the development of neighborhood and community parks. Use should be made of open space linkages along creek and river banks, ridgelines, and existing right-of-ways. Open space dedication at the time of development will be used as a means of completing this trail system.

Multnomah County continues to be actively involved in planning and implementing segments of the 40 Mile Loop, including Springwater Corridor. The Springwater project is an outstanding example of a public partnership to realize a significant addition to the regional trail system.

Much of the 40 Mile Loop in East Multnomah County has been developed by the County Transportation Division. The County is working with the cities of Portland and Gresham to plan and develop Springwater. The Corridor will be made safer for users through signing and striping where it crosses County roads. A trailhead is being constructed as part of the County project to replace the old Hogan Road bridge at Johnson Creek (within Gresham city limits). Portions of Springwater located in Multnomah County but outside of incorporated cities can be developed cooperatively as funds become available.

Multnomah County's Bicycle Master Plan stresses working with other local, regional and state governments, and the 40 Mile Loop Land Trust to coordinate trail planning and development.

METRO is involved through the Metropolitan Greenspaces Program. In cooperation with local governments, it is engaged in planning a system of trails of regional significance throughout the Metropolitan Region. Using the 40 Mile Loop as a model, the regional system provides a series of continuous trails which encircle the urbanized area of the region. One of the major objectives of the Greenspaces Regional Trail System is to incorporate natural features in the landscape, define alignments along natural corridors, and to take advantage of interpretive and educational opportunities as part of the recreational experience.

The Metropolitan Greenspaces Master Plan identifies the Springwater as one of the premier trails in the region, and one which is high on the priority list for capital

improvements. It meets all of the criteria for regional significance and is consistent with all policies defined in the Greenspaces Master Plan. Metro staff is currently in the process of defining first steps in implementation of regional trails and greenways. While the final decision on the priorities will be made by the Greenspaces Technical Advisory Committee, cooperation with the City of Portland and Clackamas County on improvement of the urban and rural sections of the Springwater is clearly among the top priorities in the region.

The Metropolitan Greenspaces Trails and Corridors Working Group determined that there is a need to establish trail standards for various types of uses. Trail standards will assure consistency in development throughout the region and maintain similar construction and management techniques. The urban portion of the Springwater will certainly set the standard for high capacity multi-use recreational trails, and the rural portion could become a model for low impact multiple-use trails developed in a natural area setting.

CHAPTER 2

LOCATION & SETTING

A summary of the geography, history, and cultural setting of the Springwater Corridor follows.

A. Geographic Summary

Because the Corridor was established as a rail corridor, the alignment follows the route which would allow the least change in grade, paralleling Johnson Creek. For the most part, it follows the southern edge of the broad flat plain that makes up southeast Portland, skirting the northern edge of the Boring Lava formations (Mt. Scott, Gresham Butte) and then turns south at Gresham toward Boring. The maximum grade of the Corridor is 2%, in some cases achieving its flat grade with the help of deep cuts and high fills, especially at the western end in the Johnson Creek Canyon area.

Geology

"The geological story of the Portland basin is mostly one of deposition and erosion, followed by volcanism, subsidence, folding and faulting in that order of decreasing importance (Trimble, 1963). The last devastating events were repeated cataclysmic floods at the end of the Ice Age only 15,000 years ago."[1] A closely spaced cluster of 12 volcanoes near the town of Boring occurred 6 million years ago. They are now known as the Boring lava domes. During the Ice Age over 1-1/2 million years ago, terraces were formed along the Clackamas and Willamette Rivers by a fluctuating sea level. These are the "steps" that one climbs while driving east across the Portland basin. These terraces were covered by gravels and sands washed down the river from ice fronts far to the northeast. In the Portland-Vancouver Basin, these terraces are found at elevations of about 300, 200, and 100 feet. Trimble (1973) named the gravels in them (from highest and oldest to lowest and youngest) the Springwater, Gresham and Estacada Formations. During the last advance of the ice, a series of 40 - 100 floods originating in Montana inundated 16,000 square miles of the Pacific Northwest. Each of these floods is estimated to have been ten times the combined flow of all the present day rivers in the world, and 60 times that of the Amazon River. The surfaces of the older and higher terraces in the Portland Basin are almost completely covered by "Lacustrine (lake) Deposits" from 50 to 150 feet thick. These are coarse to fine gravels, sands, silts and clays deposited in numerous lakes as the currents of each flood abated and the waters drained out. Scouring

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[1] "Countdown to the Present", the geologic story of the Portland Basin by John Eliot Allen, an unpublished paper

from the floods formed the depressions or sinks within the Johnson Creek watershed known as "Holgate Lake."

Johnson Creek

Because the Corridor parallels Johnson Creek, the geography of the creek and its attendant floodplain are an important element of the Corridor. Of paramount importance are remaining wetlands:

> "Wetlands are lands transitional between terrestrial and aquatic systems that are inundated or saturated by surface or ground water at frequency and duration sufficient to support vegetation adapted to saturated soil conditions. Wetlands provide important functional values that include stormwater retention and flood control, bank stabilization and erosion control, sediment retention, groundwater recharge, fish and wildlife habitat, and contaminant removal, among others. Many wetlands within the Johnson Creek watershed have been filled, drained or degraded as a result of urbanization, flood control efforts and agricultural development. Most remaining wetlands occur within the upper watershed and are associated with the smaller tributaries and drainageways. Significant wetlands occur at Beggar's Tick Marsh, near the fish ladder at 42nd Avenue, and between Hogan Road and 184th Avenue in Gresham. Forested wetlands, typically dominated by ash, alder, willow, and cottonwood, and emergent wetlands, typically dominated by reed canary grass, are common in the watershed. Shrub-scrub wetlands, dominated by willows, are uncommon throughout the Portland area; thus sites such as Beggar's Tick Marsh are important from a diversity standpoint." [2]

Degradation of water quality has resulted from several factors including high sediment concentration; toxic spills; high nutrient run-off from agriculture, feed lots, lawns and septic systems; and loss of riparian vegetation resulting in reduced stream shading which in turn raises water temperatures in summer. The water quality aspects of the Creek itself and its propensity to flood on a regular basis have been the subject of much concern and numerous studies. Most notably, a recent effort to develop and recommend implementation of a basin-wide Resources Management Plan that takes advantage of opportunities and solves problems in the Johnson Creek watershed is underway by the Johnson Creek Coordinating Committee (JCCC). At this time, Johnson Creek is listed as "water quality limited" by the DEQ because of consistently high fecal-coliform levels which violate Clean Water Act standards for recreational contact. Violations are also

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[2] from the "Johnson Creek Resources Management Plan Background Report", the Natural Resources, Fish and Wildlife chapter, p. 3-9, written by BEAK Consultants, Draft Report dated May 1992

suspected for metals, cyanide, pesticides and PCBs in sediment or in-stream. The goals of the JCCC include improving water quality, restoring its habitat as a fishery, minimizing flooding, preserving natural areas, and providing recreational opportunities.

In addition to the wetland aspects of the creek and its floodplain, its importance as a wildlife corridor must not be underestimated. The presence of water and the variety of habitat to be found along the creek link "islands" or larger nodes of open space that are like giant green beads along a 16-mile long watery necklace.

Wildlife

The following assessment of existing wildlife is taken from the "Johnson Creek Resources Management Plan Background Report":

> "Wildlife within urbanized areas of the lower watershed are typified by those species capable of coexisting with high levels of human disturbance and exploiting small habitat patches or suburban landscapes. Many of these species are often non-native and are considered less desirable by society (e.g., European starling, Norway rat). In the more rural portions of the upper watershed, the more urbanized wildlife community undergoes transition to include species which require a more "natural" habitat setting with less human interference. Even wildlife resources of the upper watershed are strongly influenced by past and continuing land-use practices, such as forest management and agricultural practices....Common wildlife species include, for example, the American crow, American robin, European starling, song sparrow, Bewick's wren, housefinch, cedar waxwing, violet-green swallow, belted kingfisher, great blue heron, mallard, wood duck, bushtit, black-capped chicakdee, raccoon, opossum, nutria, and mole species in the lower reaches. Less developed areas probably support a much greater diversity of wildlife species characteristic of farm and forest land, including black-tailed deer, coyote, deer mouse, voles, bats, western flycatcher, black-headed grosbeak, orange-crowned warbler, and woodpecker. The distribution of species which are rarer in occurrence or more secretive in habits are less understood. This group often includes those wildlife populations which are declining at unacceptable rates and are at risk."[3]

Aquatic wildlife within Johnson Creek has also suffered from the effects of urbanization. Once host to salmon and steelhead runs, fish runs have all but disappeared from Johnson Creek. The Oregon Department of Fish and Wildlife stocks Johnson Creek each spring at

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[3] Ibid., p. 3-10 - 3-11

Johnson Creek each spring at SE 45th with rainbow trout. The exclusive purpose of the release is for the children's fishing program.

Channelization of the creek in the mid 1930's eliminated bends and deep pools in the creek along with much of the edge riparian vegetation resulting in a loss of prime fish habitat areas. Increased development along Johnson Creek has resulted in increased non-permeable surfaces causing extremes in water flow. All of these factors have contributed to the loss of most aquatic wildlife.

Vegetation

Vegetation along the Springwater Corridor has undergone widespread historical alteration since initial European settlement in the mid 1800s. "Extensive old growth coniferous forests were harvested for timber, settlers cleared fertile lowlands and prairies for agriculture, and small residential communities grew to form large urban complexes. Today the Corridor encompasses a mosaic of vegetation types as it moves through a rural setting near Boring through the urbanized lands of the Portland metropolitan area. Remnants of the historical vegetation communities are uncommon, especially within the boundaries of the Corridor, replaced by a diverse assemblage of upland forests, riparian and wetland habitats, agricultural lands and urban/suburban landscapes."[4] When the Corridor was owned by the railroad, maintenance included an annual spraying of a non-selective herbicide to control vegetation. By far, the predominant plant species is Himalayan blackberry, an invasive non-native. Also present within the Corridor are snowberry, elderberry, indian plum, hawthorn, and red osier dogwood. Groundcover is typically weedy and overwhelmed by non-native invasives. Because of PGE's requirements to maintain clearance under their overhead wires, no full size trees can be found within the Corridor boundaries.

Scenic Qualities

The Corridor passes through a variety of land uses and offers many scenic vistas. Some of the views capture rural panoramas, others offer a glimpse into the heart of urban neighborhoods. Although they aren't scenic by conventional standards, the ones that show an insider's view of industrial operations have cultural and community interest.

One of the most scenic views along the Corridor is visible heading east near Powell Butte. The alignment of the Corridor is centered on Mount Hood; the surrounding landscape is an especially scenic pastoral vista.

Some of the views of wetlands and open spaces along the Corridor are also noteworthy. The raised railbed affords an elevated viewpoint from which one can enjoy the natural

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[4] Ibid., p. 3-6

qualities inherent in Tideman Johnson Nature Park and Beggar's Tick Marsh; the trestles offer a bird's eye view of Johnson Creek.

The community of Boring is an interesting small town. It boasts several buildings of historical architectural merit at the historic Boring Junction site.

The proposed extension of the Corridor on the west side of SE McLoughlin Boulevard has great scenic potential. It passes Johnson Creek Park and a brick trolley barn before it turns north and follows the Willamette River shore. Views of Sellwood Riverfront Park, Oaks Amusement Park and Oaks Bottom Wildlife Refuge are remarkable.

Within Portland City limits, the Corridor is being analyzed for areas of scenic value deemed worthy of protection under the *Scenic Resources Protection Plan*, as part of the Scenic Addendum Project. This project will result in a staff report and recommendation to the Planning Commission in February 1993. It is too early in the process to report on specific scenic protection measures. However, the Scenic Review Committee has expressed interest in considering the entire Corridor within City limits as a scenic corridor and recognizing the sequential views of Mt. Hood between SE 130th and SE 158th Avenues. Powell Butte to the north provides a recreational destination and environmental protection to a major section of the Corridor. Further west, Tideman Johnson Nature Park and Beggar's Tick Marsh are destinations.

B. Historic Summary

The Springwater Corridor can be viewed as a series of overlays through time with each layer enriching the cultural heritage of the Corridor. The Corridor passes through diverse landscapes ranging from industrial neighborhoods to pastoral farm land to natural wildlife areas. Each of these landscapes tells a story of a significant way of life and period of time. Interpretive opportunities should be utilized to reveal the story behind these places. The trail users should have an opportunity to learn about who traveled along this route before them.

Johnson Creek

The presence of Johnson Creek roughly paralleling the Springwater Corridor has had the most significant impact on the local area. The creek was once host to abundant native fish populations, providing a readily available food source for Native Americans and early European settlers. Initially, the Johnson Creek basin was rich with timber. The creek provided a source of power and a transportation system for logging operations.

Subject to seasonal flooding, the creek was responsible for the depositing fine silts along the valley floor, creating ideal soils for agriculture. The creek provided a readily available

source of water for irrigation. Once the land had been cleared by logging, it was ideal for agriculture.

In 1934, the Works Progress Administration (WPA), undertook a major effort to control flooding of the creek. The creek was channelized using cut basalt stone from the local area. Part of this work included the fish ladder and waterfall close to 45th and Harney. Though the channelization had a hand crafted rustic quality about it, its flood control function lasted only about ten years. Ongoing maintenance of the channel had not been considered in the channel design. Silt lined the channel way, trapping additional debris. Water currents undercut the stone work and the channel gave way in some sections.

Unfortunately, the channelization work had also required the removal of all riparian vegetation along the creek edge. This resulted in dramatic changes in water temperature and a severe decline in fish population. Industrial and agricultural development compounded the problems. Johnson Creek has deteriorated significantly over the last 100 years but interest in the Creek has been revitalized through the efforts of the Johnson Creek Corridor Committee.

Native Americans

Details of Native Americans in the Springwater Corridor area are sketchy at best. Local residents have reported finding Native American artifacts south of the Corridor at the base of Mt. Scott and there have been some reports of findings along Johnson Creek in the Tideman Johnson Nature Park area. Wapato root, a popular Indian food, is found naturally in wetland areas such as Oaks Bottom. Salmon, an important part of local native diet and culture, were once abundant in Johnson Creek. The presence of these two food sources is supporting evidence that the Spingwater Corridor was host to Native Americans.

Early European Settlement

The abundant timber and game, fertile ground and the Willamette River attracted the first European settlers to the area. The Willamette provided settlers with a readily available food source, irrigation, transport, fresh water and power. About the mid 1800's, when prime waterfront real estate on the Willamette began to get scarce, settlement began to move to smaller tributaries such as Johnson Creek. The Donation Land Claim Act of 1850, offering one half square mile to single persons and one square mile to married couples, brought an increase in competition for waterfront land to the area. Settlement along Johnson Creek started at the mouth of the Willamette River and headed east and south towards Boring.

The present site of the Waverly Golf course, just north of the mouth of Johnson Creek at the Willamette River, was the location of the first settlement in the Johnson Creek basin. In 1847, a man named Wilson cleared five acres and built a cabin at this location. Shortly thereafter, annoyed with "Indian problems," Wilson sold his land to Henderson

Luelling and his family. Luelling came to Oregon with the specific intent of starting a fruit orchard and carried with him approximately 350 trees. Some of the accomplishments of the Luelling family included development of the Black Republican and Bing Cherry varieties, the latter of which was named after the Luelling's Chinese foreman, Ah Sit Bing. Henderson Luelling, working with his brother-in-law, William Meek, also constructed a dam on Johnson Creek at the present crossing of Highway 224 and started a sawmill.

Several other settlers followed suit in the lumber business. Much of the harvested timber was shipped south to satisfy the needs of the miners in the California Gold rush. The first sawmill with a planer was built by George Wills in 1849 near the confluence of Johnson Creek and Crystal Springs. The planer had a 60 horse power motor powered by Johnson Creek and turned out the first milled lumber in the Northwest. Also notable, in 1869, Wills deeded a 60 foot wide right-of-way to the Oregon Railway and Navigation Company, the first of what would become a long history of rail occupation in the basin. In return Wills was promised a track that would serve his mill. This right-of-way provided a rail connection from Portland to Canby.

Perry Lent settled in Oregon in 1852, in the vicinity of 92nd Avenue and the Springwater Corridor. In 1883, Lent established a sawmill on Johnson Creek close to 100th and Foster.

The Johnson family, namesakes of the Creek, settled at the current Publisher's Paper site in 1847. After trying their hand at the California gold rush, William Johnson built a sawmill in the vicinity of Deardorff Road. Jacob Johnson, William's son, later staked a claim at about 134th, also established a sawmill on Johnson Creek, taking advantage of the abundant fir and cedar.

Further east along the Corridor, land claims and homesteads were set up by settlers whose names are familiar in today's landscape, such as Philip Foster in 1847, John and Elizabeth Linneman in 1852, Jackson and James Powell also in 1852, and Willard H. Boring in the late 19th century.

Springwater Division Line

In 1871 Ben Holladay operated a horse car service on the streets of Portland. The Portland Street Railway Company, as it was called, was the only available transportation service at the time. In 1891, Albina and East Portland consolidated with Portland. The population reached 88,200. Bridges linked the east side of town to the west side and housing spread away from the river's edge. Ben Holladay's rail company was acquired by the Consolidated Street Car Company in 1895 and expanded to 40 miles of track boasting electric cars. The company had plans of expanding service south to Oregon City and ultimately to Eugene. Though the company succeeded in establishing a line to Gladstone, economic conditions as well as two major accidents lead to the acquisition of

the company by the Portland City and Oregon City Railway company owned by Fred Morris.

A major management objective of this new railway was to expand service from Portland to Gresham via a route that headed south along the Willamette River, turning east at Sellwood, paralleling Johnson Creek and tying into Gresham. C.F. Tiffany was named superintendent of the new Portland City and Oregon Railway and a man named Stuart from California was hired as dispatcher. After numerous head-on collisions, strained labor relationships that lead to a worker's strike, management of the line was replaced. Throughout these difficulties and on the verge of bankruptcy, Morris remained focused on the idea of expanding service east to Gresham. On June 5, 1902, Morris, joined by several other investors, formed the Oregon Water Power and Railway Corporation. The added objective to this corporation was to not only expand service east to Gresham, but also include expansion along the Clackamas River for the purpose of constructing hydroelectric dams and transmission lines feeding electricity into Portland. The corporation took out a $5 million mortgage to pay for the expansion.

Late that summer, construction began on the line to Gresham and a site on the Clackamas River was purchased for the dam. In fall, the route along the river to Sellwood was acquired. The first trains to Gresham began running in January of 1903. Construction of the line continued towards Boring and to Cazadero, the site of the hydroelectric dam. On September 28, 1903, the line was complete and took 900 passengers to the Cazadero dam site.

The 36 mile line was noted for the high engineering standards of its sweeping curves and its solid construction. The line had 54 stops and included major stations at Golf Junction, Stanley, Lents Junction, Gresham, Boring Junction, Eagle Creek, Estacada and Cazadero. In 1905, plans were laid to extend the Cazadero Line along the Clackamas River and over the mountains to eastern Oregon. To encourage week-end use, the rail corporation developed destination parks along the line such as Oaks Amusement Park on the banks of the Willamette River in Sellwood. These parks became major attractions drawing thousands of passengers each weekend.

By 1906, two companies bought out the profitable Oregon Water and Power Railway. A merger united this joint venture and the line was now owned by Portland General Electric and the Portland Railway Light and Power Company. It was under this ownership that the line reached its peak. By 1910, the company had 6 electric plants and 161 miles of rails, carrying 16,000,000 passengers each year on the city-wide system. Additional power plants were underway at Faraday and Oak Grove Dam. The cars were all painted an elegant combination of maroon body, cream trim and black top. In addition to passengers, the rail hauled farm produce into markets in Portland. It was at this time that the line acquired the name "Springwater Line," probably because of the planned connection to the community of Springwater on the Clackamas River.

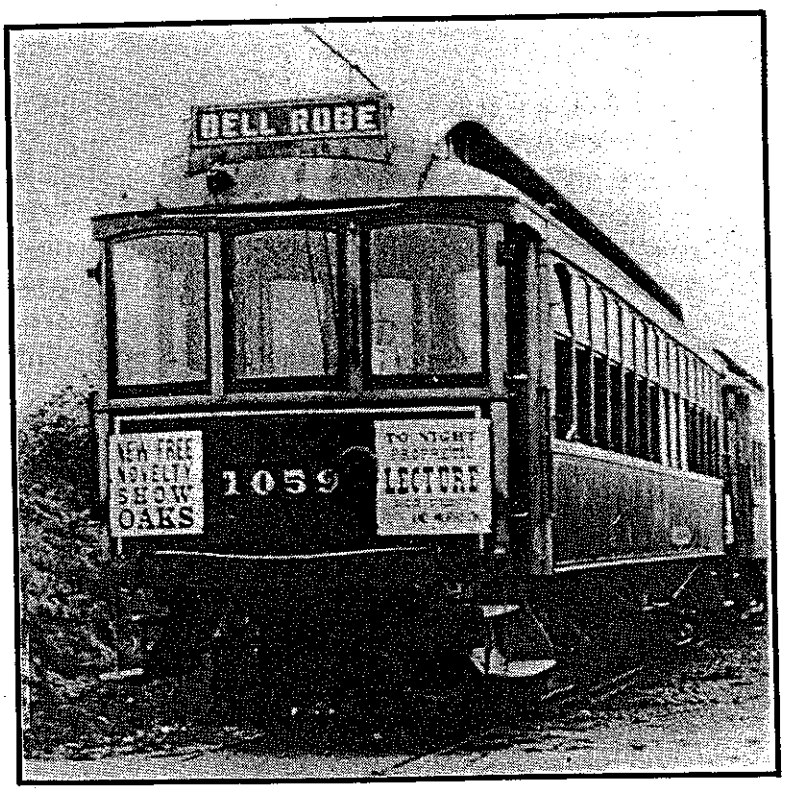
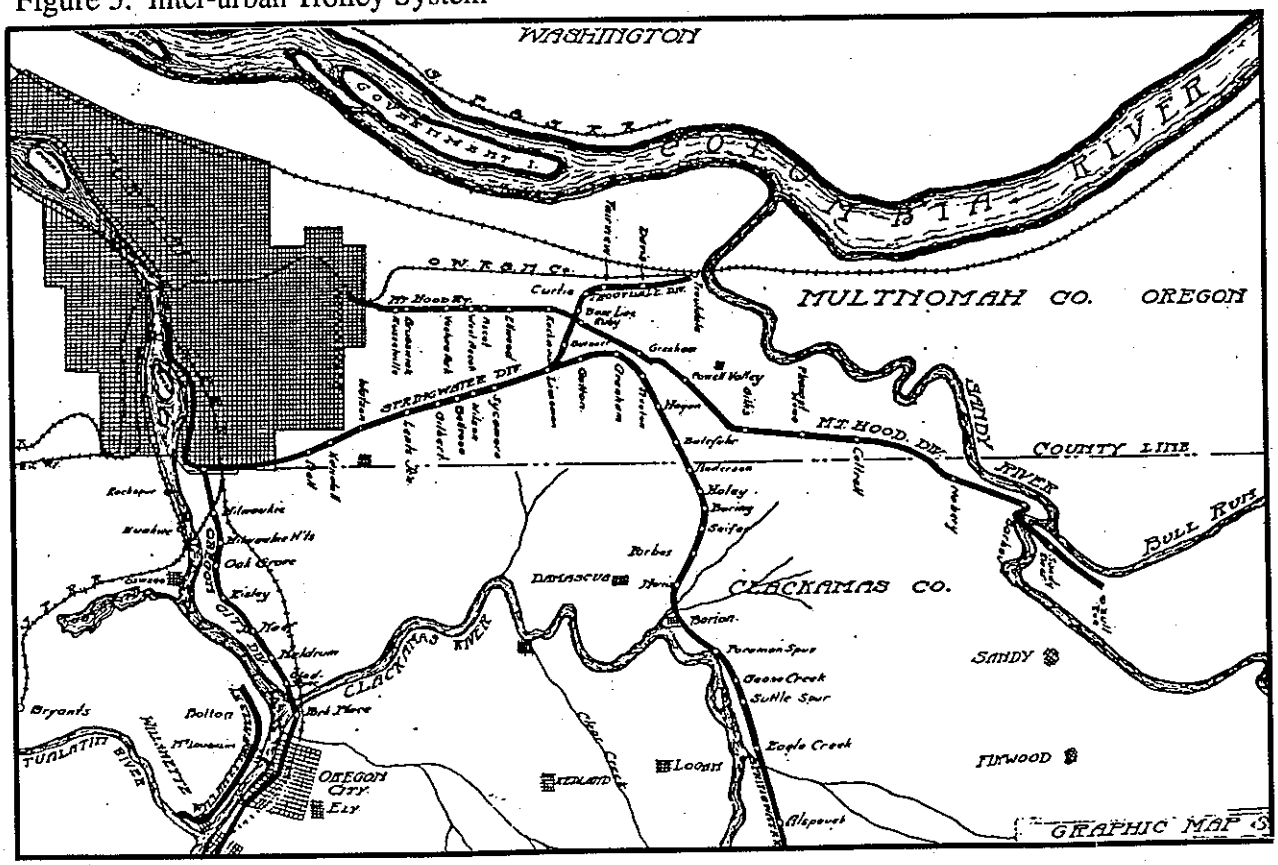


Figure 4. Bellrose Trolley Car

Figure 5. Inter-urban Trolley System



After World War I, passenger service declined due to the popularity of the automobile. The depression of 1930 led to a further decline in the ridership of the line. Though several attempts were made to revive business, all failed. In 1932, the line from Boring to Cazadero was terminated. The State of Oregon purchased the right-of-way. In 1949, service was further cut and service was provided only to the Bellrose station. In 1958, all interurban passenger service was suspended. Southern Pacific and Union Pacific acquired the line in 1962 to operate the line as a freight service. Freight service was terminated in 1989, at which time it was acquired by the Oregon Department of Transportation who in turn transferred ownership to the City of Portland.

Communities

As is typical of the development of transportation routes, several communities sprang up along the Springwater Line. Many of these communities carry the names of their founders. Heading west to east, these include Sellwood, Waverly Heights, Eastmoreland, Woodstock, Errol Heights, Lents, Powellhurst-Gilbert and Pleasant Valley. Towns that developed along the line include Milwaukie, Gresham, Boring, Eagle Creek, Estacada and Cazadero. During the peak of the rail line era, the Springwater Line was the lifeblood to these communities.

- Sellwood

Located on the banks of the Willamette River, the town of Sellwood gets its name from Reverend John Sellwood, who purchased land from the Eddy family in 1866. Sellwood had hopes of starting a religious community in the area, but ended up selling to T.A. Wood, who platted the town of Sellwood in 1882. In 1887, the town was incorporated and had a population of about 800. A ferry boat ran across the Willamette River at the base of Umatilla Street. This area was popular among Portlanders. A horse race track was operated at the present site of Sellwood Park and the area had one of the finest sandy beaches along the banks of the Willamette. Oaks Park was built in 1905 by the Oregon Water Power and Railway Company. Oaks Park was built to attract week end ridership and to promote the virtues of electricity. The park remains in operation today and retains much of its original character.

- Waverly Heights

Known locally for its fine golf course, Waverly Heights sits on the former Luelling family homestead. Purchased in 1890 by a group of Portland's social and business leaders, the intent for the site was to build an exclusive community amongst a pastoral, golf course setting. The original community included only 16 lots overlooking the clubhouse. The vision was a success and many of the original mansions are still in existence today. The site was also home to the Portland Polo club.

- Eastmoreland

Eastmoreland was platted in 1909 by Ladd Estate Company, formed by William Ladd. Ladd had previously developed Westmoreland, and chose the name after a Multnomah

County judge, Julius Caesar Westmoreland. The neighborhood was built in close proximity to the recently completed Reed College. This became a selling point for the Ladd Estate Company as potential home buyers were shown photographs of upper-crust neighborhoods surrounding a college modelled on East Coast Ivy League schools.
To the south of Eastmoreland and directly on the Springwater Corridor, is the former site of a bustling industrial area, where sawmills turned out 10,000 board feet of lumber per day.

Further east along the Corridor lies Tideman Johnson Nature Park. The park is named after the Johnson family, (no relation to William Johnson, the Creek's namesake) whose original land claim included the park land. The site is unique because it represents one of the few areas along Johnson Creek that is within a gorge. The Johnson's encouraged public use of their property for recreation purposes. They sponsored 4th of July picnics and fireworks open to all who desired to attend. The site was donated to the City of Portland in 1942 and remains in a natural state today as a refuge for wildlife.

• Woodstock
The Woodstock neighborhood was platted in 1889 and was named after a Sir Walter Scott novel. Originally, all of the streets in the Woodstock area carried the names of characters in the novel. Woodstock is within the eastern end of the gorge area. Of particular note in this area is the fish ladder and waterfall at 45th and Harney, constructed by the Works Progress Administration in 1934.

• Brentwood-Darlington (Errol Heights)
Brentwood-Darlington, formerly known as Errol Heights, was originally named after a sailing ship, Errol, that carried Joseph A. Strowbridge to America from England. Strowbridge settled on property between 45th and 82nd Avenue. His heirs later subdivided his land and formed the Strowbridge Estate Company. The company was responsible for establishing Errol Station on the Springwater Line. A plat was filed in 1910 and the neighborhood promoted itself as a suburban, bedroom community, where the low cost of land was a chief draw. Many of the residents from the neighborhood worked with the WPA throughout the 1930's.

• Lents
The town of Lents is named after the Lents family who originally settled the area around 92nd Avenue. The town was officially platted in 1892 and was serviced by steam trains and later electric trolleys along the Springwater Line. The town has been through severe changes as business suffered from development along 82nd Avenue and the construction of I-205.

Points of interest along the Corridor in Lents include William Johnson's original settlement location at 100th and Foster, the former site of Indian Rock at the base of Mt. Scott, Lents Junction and the PGE substation at 102nd and Woodstock.

• David Douglas Area (Powellhurst-Gilbert and Pleasant Valley)
Settlers came to the David Douglas area because of the rich soils deposited by regular flooding of Johnson Creek. This particular area of the Johnson Creek basin is notably narrower than most of the basin, making it especially susceptible to flooding. The Springwater Line served the farmers in this area with stations at Arnaud (112th), Kirpatrick (117th), Gilbert (122nd), Ramapo (128th), Bellrose (136th), Wilson (141st), and Sycamore (Jenne Road). Gilbert station had loading dock facilities to handle produce for transport to Portland.

Points of interest along the Corridor in the David Douglas area include Beggar's Tick Marsh at 111th and Harold; and Powell Butte Nature Park at Powell and 162nd, a 569 acre nature area situated on one of the Boring Lava domes. Also just south of the Corridor along SE 122nd lies Leach Botanical Garden. The garden has an excellent collection of native plants and is located on the banks of Johnson Creek.

• Milwaukie
Founded in 1847, the town of Milwaukie lies at the western end of the Spingwater Corridor. Both the Leuelling settlement and the mouth of Johnson Creek are within the City of Milwaukie. During the late 1800's, Milwaukie rivaled with Portland as the key shipping port on the Willamette River. Industries such as sawmills, ship building and gristmills sprung up in the area.

In the 1930's, the Springwater Line was a daily part of most Milwaukie residents. The line served passengers and hauled industrial goods into Portland. The Wichita Feed Store on Johnson Creek Boulevard began business during this time. It served as a hub to the community selling agricultural products and hardware. The building remains in the original family's ownership and the interior has changed little since it was opened.

Bell Station, located at Johnson Creek Boulevard and Bell Avenue, was built in 1902 and is on the Clackamas County Inventory as well as the National Register of Historic Places. The name is misleading as the building has never been a rail station but rather a store. It currently houses a deli and grocery business. The actual Bell Station train stop had a small shelter directly across the street to the west of the store.

• Gresham
Early settlers came to the Gresham area because of abundant timber and fertile soils. The close proximity to Portland created a strong market for these goods. Crops were brought into Portland via Powell Boulevard, a former Indian trail, later named after the Powell family that first settled the area. With the railway completion in 1903 running through the center of Gresham, transportation became much easier and Gresham's population grew. The main rail station was located at the current Main City Park. A secondary station was located at Linneman Junction and named after the Linneman family who settled the area in 1852. The station building still remains and plans are now underway

by the City of Gresham to move the structure to its original location and convert it to a rail museum.

Cedarville Park, also know as Club Paesano, is immediately adjacent to Linneman Station and the Springwater Corridor. The privately-owned park was named after the abundant cedar trees in the area. The park was established in 1910 and is still popular today as a week end picnic spot.

Gresham began sponsoring annual fairs in 1906 and was chosen as the site for the Multnomah County Fair in 1926. These attracted visitors to the area many of whom came back to settle in Gresham.

Between 1970-1980, the population in Gresham tripled as it became a "bedroom" community to Portland. Additional growth was spurred on by the completion of light rail in 1986.

Also of notable interest along the Springwater Corridor are three pioneer cemeteries dating back to the 1860's; Ambleside community at Hogan Road which is a planned summer resort community dating back to 1904; and Columbia Brick Works, a brick factory established in 1906 and still in operation.

- Boring

The town of Boring is at the eastern end of the Springwater Corridor. It was named after Willard H. Boring, the first pioneer in the area. Because of the hilly terrain, farming was difficult and land claims were few. Livestock, lumber and grains were the main products of the area. Boring began to develop a town center with the arrival of the Springwater Line in 1903. Boring Junction was built as the official station for the town. A store with apartments quickly followed, then a post office and drug store were built in 1910. Many of these building are still in active use and have been placed on the Clackamas County Historic Inventory. The station building still stands but is in need of repair.

C. Socio-economic Summary

The Springwater Corridor in its current undeveloped condition offers some use to people living nearby. When developed, local use will increase as well as regional use. The Corridor will serve to meet the recreational needs projected to arise from increases in population and housing growth. Development of the Corridor will provide a significant alternative route for equestrian, non-motorized, and foot transportation. The Corridor will eventually provide an important link for future trail development between the downtown urban center, 40 Mile Loop, Mt. Hood National Forest, and the Pacific Crest Trail.

Adjacent Land Use and Zoning:

The 16.5 miles of the Springwater Corridor occupies 190.8 acres of land. It begins in an urban setting within the City of Milwaukie and ends in a rural area of the town of Boring. The Corridor lies within the Urban Growth Boundary for most of its length, with the exception of a small pocket near Jenne Road, and east of Hogan Road. Along its course the trail passes through several types of zoning designations. Land uses along the Corridor are generally consistent with the zoning designations with some exceptions at scattered parcels. The majority of surrounding land, (36%), is zoned for residential use and extends along the entire length of the Corridor.

Industrial designations make up 14.3% of zoning adjacent to the Corridor. Most industrial lands are between the western end of the Corridor in the City of Milwaukie east to Foster Road near 120th Avenue. The remainder of industrial lands occur in the town of Boring.

Manufacturing zoning, (7.5%), and commercial zoning, (1%), are also dispersed within the industrial areas. Manufacturing lands exists in two areas: between Luther Road and Flavel Street; and between the I-205 Freeway and 111th Avenue. Almost all the commercial lands are concentrated near 82nd Avenue in the form of strip development.

East of Powell Butte Nature Park much of the trail passes through a rural area with the exception of the City of Gresham. Most of the land is zoned as agricultural, transitional timber, and farm. This type of zoning and land use constitutes approximately 10% of the lands surrounding the Corridor.

Along the trail are several natural resource and open spaces that total 685.3 acres. These natural resource and open space areas occupy 3.2% of the land use adjacent to the Corridor.

The above zoning and land uses account for 78% of the surrounding land adjacent to the Corridor that is under the jurisdiction of the City of Portland. The remaining 28% of land is within the 4.5 mile jurisdiction of the City of Gresham. Land within Gresham consists of residential, commercial, and open space zoning designations.

Demographics:[5]

The Springwater Corridor passes through four cities or towns and two counties, Multnomah and Clackamas. The counties are divided into sub-areas which are subdivided into census tracts. The Corridor passes through six sub-areas and a total of twenty census tracts. All the census tracts, with the exception of #233 in sub-area #19, lie within the urban growth boundary. A common boundary for the sub-areas and census tracts is the Multnomah/Clackamas County line and the Willamette River for sub-areas #2 and #6. Table 1 lists the settings, types of land use, populations of census tracts adjacent to the Corridor within the sub-areas. *See map on following page for reference to the Corridor, census tracts, and sub-areas.*

Table 1. Census Tract Information

Sub-area	Census Tract	Setting	Land Use	Population
2	2	Urban	Industrial	13,429
	3.02		Residential	4.4% of
	6.01		Commercial	sub-area
	6.02		Manufacturing	
	86			
	88			
4	85	Suburban	Residential	21,327
	89		Manufacturing	28.1% of
	90			sub-area
	91			
5	98.02	Urban	Residential	30,577
	99	Suburban	Commercial	35.2% of
	100	Rural	Natural/Open	sub-area
	104.04			
		Sub-total population for Multnomah County		65,333
6	208	Urban	Industrial	16,564
	209		Residential	26% of
	210		Commercial	sub-area
	216.01		Manufacturing	
7	222.01	Suburban	Residential	2,317
			Commercial	11.8% of
				sub-area
19	233	Rural	Residential	4,583
			Agricultural	6% of
			Timber Trans.	sub-area
			Industrial	
		Sub-total population for Clackamas County		23,464

[5] Data taken from 1989 METRO Regional Forecast

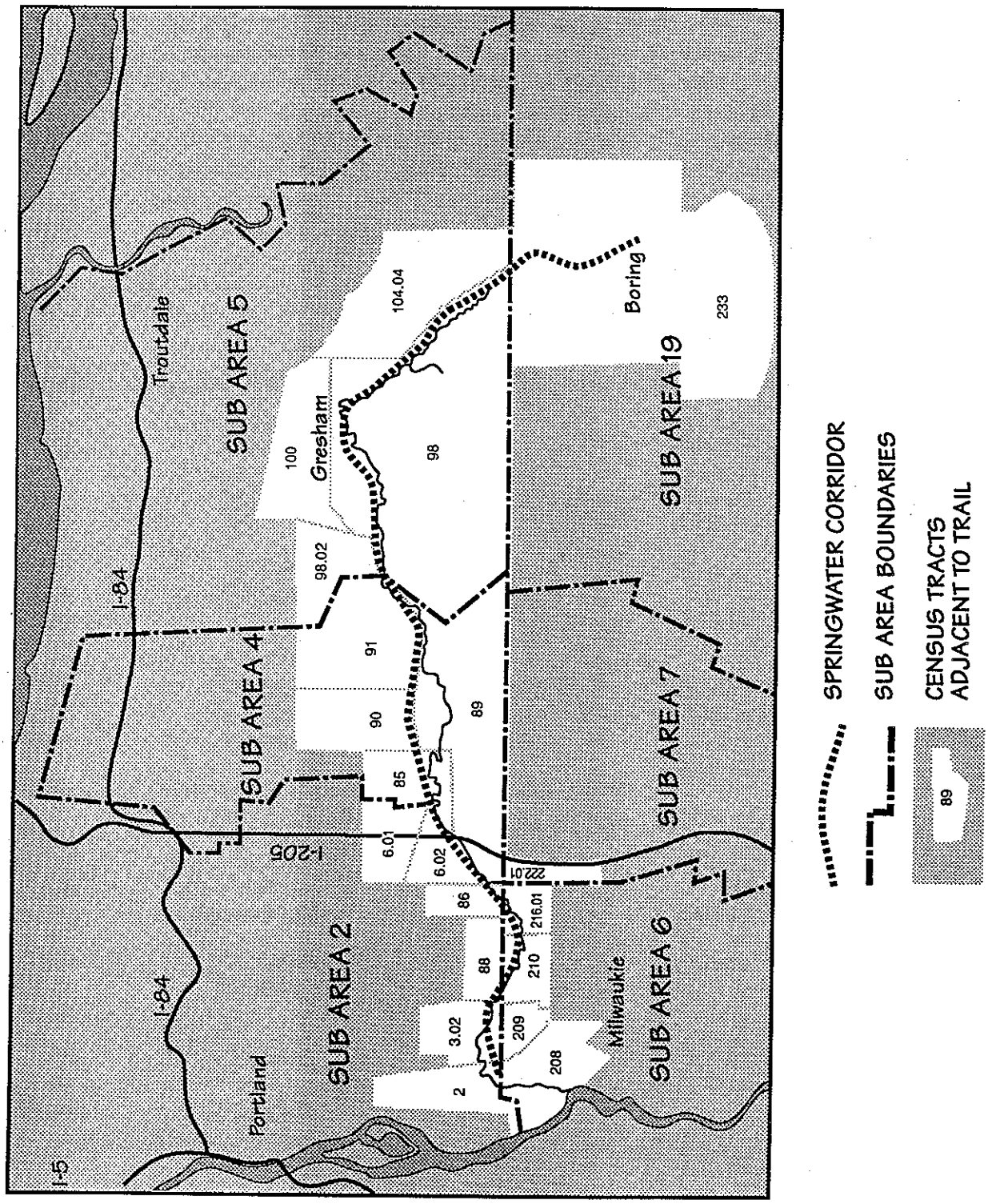


Figure 6. Map of Census Sub Areas

The fourteen census tracts in sub-areas #2, #4, and #5 are in Multnomah County and have a population of 65,333 people. This is 14% of the total population for the three sub-areas. The six census tracts in sub-areas #6, #7, and #19 are in Clackamas County with a combined population of 23,464 people. This is 14.8% of the total population of 88,797 people for the three sub-areas.

The population adjacent to the Corridor resides in 41,889 housing units. These units are divided into single-family and multi-family dwellings. The average split along the Corridor is 73% single-family and 27% multi-family dwellings.

Population Growth and Housing: [6]

Population along the Springwater Corridor is projected to experience changes involving growth and decline by the year 2010. Some parts of the area are expected to see a decline of 10% in population, others an increase by as much or more than 150%.

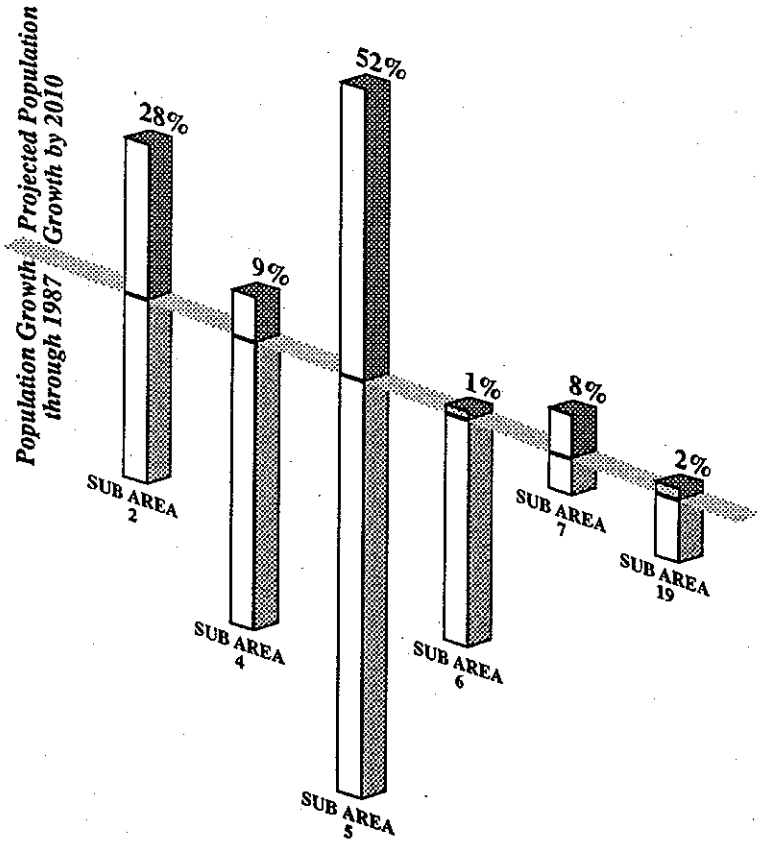


Figure 7. Census Tract Population - Anticipated Change

[6] Data from 1989 METRO Regional Forecast

The total population growth along the Corridor by the year 2010 is projected to reach 131,164 people, an increase of 47.7%. Census tracts in sub-areas closest to the urban center are projected to show the least growth while census tracts in sub-areas farthest from the urban center are projected to show the greatest growth. Most of the population increases are projected to occur east of the I-205 freeway. A large increase is expected to be in the area of Gresham from the Multnomah county line north to Burnside Road and between Foster Road to 282nd Avenue. This increase is projected at 22% to 140% depending on census tracts. The area around Happy Valley is projected for the largest increase in population at 152%. The area around Boring, which is outside the Urban Growth Boundary, is projected for only a moderate amount of growth, (17%), as is the area around Powell Butte Nature Park.

Changes in population along the Corridor are likely to result in changes in housing units as well. The types of units, single-family or multi-family units, will depend upon land use and zoning along the Corridor. Currently, land zoned along the Corridor as residential is designated as low to medium density. Multi-family units are projected to grow in urban areas, while single-family units are projected to grow in more rural areas. The suburban areas in between are projected to have an increase in both single and multi-family units. The greatest increase in single-family units is expected to occur east of I-205 out to Gresham between the Multnomah/Clackamas county line and the Springwater Corridor.

The projection for multi-family units shows growth in several different areas along the trail, but the largest growth is expected to be around Gresham and west of Happy Valley along I-205. The land in these areas are zoned as low density residential with some medium density included. The projected demand for multi-family units may result in a need for upzoning in density levels.

Population Served:

In the next several years the area around the Springwater Corridor will experience significant growth. With the growth will come increases in population density, thus increasing the demand for open space and recreation opportunities. This growth will lead to some areas becoming "park deficient" according to Oregon's State Comprehensive Outdoor Recreation Plan (SCORP).

The *State Comprehensive Outdoor Recreation Plan (SCORP)* defines the desired size of parks and recreation sites. The plan matches the size of the site with the size of the service area and the population of the service area. In accordance with the *SCORP* many of the neighborhoods and recreation sites in the metropolitan region are deficient. The Springwater Corridor when developed will help to meet the goals of the plan. The Corridor will serve as a linear park and will help increase the ability of the region to meet the *SCORP* goals.

The City of Portland Bureau of Parks and Recreation's master plan, *Park Futures,* defines one of its goals as the completion of the 40 Mile Loop. A significant issue is the continuity of the trail system. Little of the Loop has been developed on the southeast side of the metropolitan area, despite a high level of demand. The Springwater Corridor, when completed, will close a large portion of the gap in the Loop.

Development of the Springwater Corridor will offer the following types of recreation and activities: a place for organized walking, hiking, and running groups; casual hiking, jogging, and walking; bicyclists (both on and off-road types), commuters, and equestrians. The Corridor offers a wide variety of uses and access to other recreational sites. It will also act as a destination in itself where people will able to go and unwind or relax, be close to nature, be by themselves, or just pass the time.

The Springwater Corridor is not limited to usage by nearby residents. Citizens from other areas around the metropolitan region will be able to access the Corridor. The *Park Futures* telephone survey of residents region wide showed that many of the activities that people regularly participated in will be provided by the Corridor. The most popular includes walking for recreation, picnicking, day hiking, bicycling, and jogging. Some other benefits offered by the Springwater Corridor are:

- Naturalists, environmental education classes, and bird watchers will be offered a diversity of landscapes from urban to rural habitats in addition to the many open spaces, green spaces, and nature parks accessible from the Corridor.

- Disabled citizens will be able to enjoy many of the benefits offered by the Corridor because of hard surfacing.

- Bicycle commuters will be offered a safe and direct link to employment and shopping centers.

- Bicyclists will be able to connect into the 16-mile I-205 bike path that extends from Vancouver, Wash. to Gladstone, Ore. raising the total of off-street bike paths to over 37 miles.

- Equestrians will be able to enjoy a recreational area extending the length of the Corridor.

- All users will benefit from a safe recreational environment without having to contend with motor vehicles, with the exception of intersections.

- Residents in "park deficient" neighborhoods will be able to access other parks and recreational facilities more safely and easily.

- Recreational users will be offered scenic views and access to areas with scenic views such as those on Powell Butte.

The Springwater Corridor can be accessed via public transportation which runs twelve bus routes and one light rail route. Currently, there are six bus routes that intersect the Springwater Corridor providing service to either downtown Portland or Gresham. Another two bus routes pass nearby that provide service to downtown Portland. Passing close by the Corridor, MAX Light Rail system runs from Gresham to Portland. A preliminary study of extending the light rail system to Milwaukie is underway. Recommendations about these possible extensions will be made in the spring of 1993. All but two of the routes have lifts for disabled citizens but only bus routes #31 and #71 are currently equipped with racks for bicycles.

Comparative user survey results from the I-205 bike path, *Park Futures*, the Burke-Gilman trail in Seattle, as well as counts from *The Impact of Rails-Trails* by the National Park Service form the basis for projections of usage and user groups on the Springwater Corridor. A variety of locations and settings is included in order to show the potential range of number of users and percentage of user groups. These results do not take future population growth into account.

Table 2. Comparative User Survey Results

Trail Name	Daily	Monthly	Annually	Percentage of Users
Dyersville, Iowa: Rural Heritage Trail	375	11,249	134,986	
Bicycling	244	7,312	87,741	65%
Walking	112	3,375	40,496	30%
Jogging	11	337	4,050	4%
Equestrian	4	112	1,350	1%
Contra Costa County, Calif.: Urban Lafayette/Moraga Trail	1,136	34,079	408,950	
Bicycling	239	7,157	85,880	21%
Walking	738	22,151	265,818	65%
Jogging	148	4,430	53,164	13%
Equestrian	-	-	-	-
Portland, Ore.: Urban I-205 Bike Trail	218	6,545	78,540	
Bicycling	144	4,330	51,960	66%
Walking	74	2,215	26,580	34%
Jogging	-	-	-	-

Seattle, Wa.: Urban				
Burke-Gilman Trail	1,558	46,740	560,880	
Bicycling	1,262	37,859	454,313	81%
Walking	125	3,739	44,870	8%
Jogging	156	4,674	56,088	10%
Other	16	467	5,609	1%
Park Futures Plan	3,576	107,274	1,287,288	
Bicycling	710	21,305	255,658	20%
Walking	2,378	71,338	856,056	67%
Jogging	501	15,018	180,216	14%
Portland, Ore.: Varied				
Springwater Corr.	**1,219**	**36,575**	**438,903**	
Bicycling	**683**	**20,482**	**245,786**	**56%**
Walking	**439**	**13,167**	**158,005**	**36%**
Jogging	**110**	**3,292**	**39,501**	**9%**
Equestrian	**37**	**1,097**	**13,167**	**3%**

Relation to Other Recreation Sites:

The Springwater Corridor is located only a few miles away from several major recreational areas, such as the Willamette River, Oaks Amusement Park, the Clackamas River, the Sandy River, the Columbia River, and Oxbow State Park. The Portland metropolitan area is wealthy in terms of recreational areas and the Springwater Corridor plays an integral part as a connector.

The Springwater Corridor acts as a hub for many recreational sites and facilities within a half-mile to a one mile distance of the Corridor. Located within a one-half mile of the Corridor are 38 parks and facilities, four of which are privately owned. The public areas vary from as small as a 2.4 acre undeveloped park site to as large as the 569 acre Powell Butte Nature Park. The total acreage for all 38 sites and facilities is 1023.4 acres. The 38 sites consist of four community parks, nine neighborhood parks, and three recreational facilities. Included are seven natural resource/open spaces and eight undeveloped park sites. A listing of parks, their jurisdictions, size and type, and distance from the Springwater Corridor can be found in Appendix B of this master plan.

An inventory of these sites and facilities is as follows:

Recreation Facilities	Total Number	Recreation Facilities	Total Number
Ballfields	22	Golf Course	1
Tennis Courts	6	Benches	78
Stadiums	2	Picnic Tables	131
Parking Spaces	650	Game Courts	17
Restrooms	12	Play Equipment	94
Soccer Fields	1		

There are currently 20.99 miles of bicycle routes that are within one-half mile of the Corridor. Partially included in this total is the I-205 bicycle route that runs from Vancouver to Gladstone. Of the 20.99 miles, one-third are off-street bike routes, most of which are located within Powell Butte Nature Park.

Existing hiking trails and pedestrian paths near the Springwater Corridor total 8.73 miles. The majority of these trails are located within Powell Butte Nature Park.

Besides hiking and bicycle routes, there are 4.67 miles of designated trails for equestrian use, all located within Powell Butte Nature Park. Strong support by various equestrian clubs has demonstrated a demand for an equestrian trail along the entire length of the Springwater Corridor.

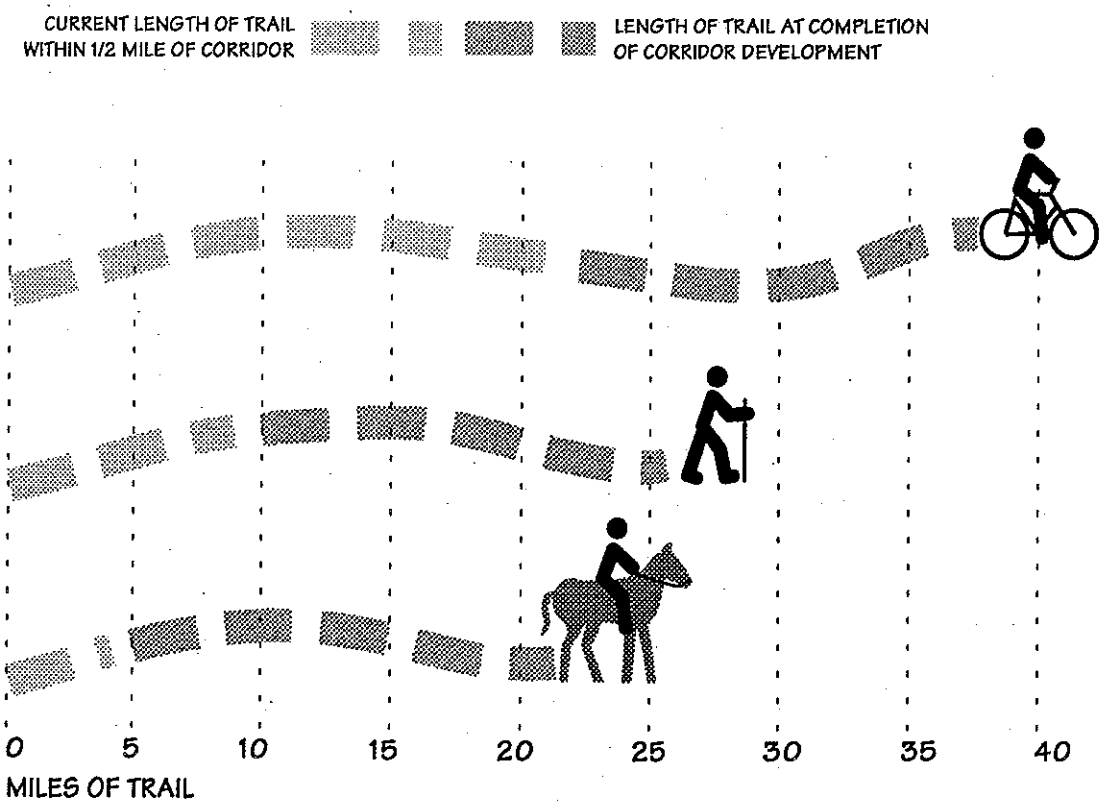


Figure 8. Increased Trail Length

CHAPTER 3

CITIZEN INVOLVEMENT

Citizen involvement has been a key element in the development of this plan. The public was involved in several different ways, as outlined below:

A. Advisory Committees

Early in the planning process, a citizen steering committee was appointed by the Project Managers in order to guide the decision-making process. This committee included one or two representatives from all of the various user groups that would be expected to have an interest in the final result of the plan: hikers, runners, bicyclists, mountain bikers, equestrians, the 40 Mile Loop Land Trust, Friends of Johnson Creek, the Johnson Creek Corridor Committee, neighborhood activists, adjacent property and business owners, and people with disabilities.

The role of the committee was to help synthesize input from the public-at-large, review the planning process and direct its results. Many of the innovative ideas for the plan and its implementation were originated by the thoughtful people who participated on the steering committee.

In addition, an agency committee was appointed in order to merge the efforts being expended by each agency toward the common goal of development of a plan and the plan's implementation. This committee included representatives of law enforcement agencies, Oregon State Parks and the U.S. Forest Service in addition to each of the jurisdictions most directly affected: METRO, Milwaukie, Gresham, Multnomah County and Clackamas County.

B. Public Process

The public was involved in the development of this plan in many ways. The Bureau employed the following methods of outreach:

Signage:
As soon as ownership of the property was transferred to the Bureau of Parks and Recreation, temporary signage was installed throughout the Corridor at street and bridge crossings. These signs offered a place to contact for further information, outlined use limitations ("No motorized vehicles. No dumping.") and dangers inherent in the existing conditions. Dozens of citizens contacted the City as a result of these signs.

Newsletter:
A quarterly newsletter has been issued since May 1991. The newsletters are mailed to a mailing list of approximately 3000, which includes all properties located within 500' of the Corridor, elected officials, and people who called for more information. Newsletters are used to update citizens on progress, upcoming hearings, and issues of interest. They were also used to gather input on condition of the trail.

Surveys:
Two surveys were conducted in 1991. The first was a door-to-door survey of all the residential properties located within 500' of the Corridor. Students from Portland State University designed the questionnaire, conducted the survey, and analyzed the results. A follow-up survey was mailed to commercial properties located within 500' of the Corridor. Questions were patterned very closely after the residential survey. These results were analyzed by the Bureau of Parks.

The survey revealed that neighbors are very supportive of recreational development along the Corridor. Results were quite similar between residential and commercial neighbors. When asked directly if they would like to see the Corridor developed, over three-quarters (77%) said they would in both surveys.

Among residential neighbors, recreation, nature watching, and beautification were indicated by 67%, 59%, and 58% respectively of those desiring development. Those not wanting to see the Corridor developed (23%) showed little agreement regarding specific reasons for opposing development. Concerns with vandalism, privacy, noise, litter, danger from others, and funding were quite minimal ranging from 10% to 16% of those opposed to development. The percentage of people who expect to use the Corridor exceeds the percentage who want development, and varies by location within the Corridor, from 79% between SE 39th - 82nd, to 89% between SE 82nd - I-205.

Among commercial neighbors, wildlife habitat improvements ranked highest at 68%, followed by bike trails and regular security patrols (65%) and trail connections to other parks at 61%. Again, similar to the residential results, the percentage of respondents that claim they will use the Corridor if developed (81%) exceeds the respondents wanting development. Walking was the greatest anticipated use, followed closely by biking and nature watching. Approximately 86% of the respondents anticipate that between one and 10 of their employees will use the Corridor daily. Those opposed to development cited concern over vandalism and loss of privacy as reasons for the opposition. Litter and noise from the Corridor were also cited as concerns.

A full analysis of the surveys is included as Appendix C.

Public Meetings:
Three rounds of public meetings were sponsored by the Bureau during the development of this plan. The first round, in October of 1991, was used to explain the project and the schedule, and develop goals and a list of concerns. Approximately 60 citizens attended these meetings. Their input on goals was synthesized and adopted by the citizen steering committee. A list of their concerns is included in Appendix D.

The second round, in May of 1992, was the forum for a presentation of the draft master plan. Approximately 40 citizens took part in three workshop sessions. Conceptual plans for trailhead design and locations, trail surfacing, points of interest, and a phasing schedule were introduced. Citizen input was summarized (see Appendix E) and the plans were modified as directed by the citizen steering committee. Modifications that resulted from these sessions included extension of the equestrian facilities to McLoughlin, revised trailhead locations, and additional interpretive opportunities.

The final public meeting was held in October, 1992, to present revisions to the master plan. Approximately 20 citizens attended. Citizen input was summarized (see Appendix F), and minor revisions were made to the master plan.

In the fall of 1992, this master plan was adopted by each affected jurisdiction. See Appendix G for a list of adoption dates.

C. Continuing Public Involvement

This master plan is to be considered a starting point only. Because demographics and land uses, and how the Corridor is used will change after it is developed, there will be a need to re-visit and refine the master plan.

The biggest anticipated change probably will come because of user conflict. This Corridor, once developed, will undoubtedly be very popular. Not all user groups will co-exist harmoniously. User etiquette and regulations may need to be modified.

When this is considered, a similar steering committee and simplified public process should be conducted, in accordance with the goals adopted by this master plan.

CHAPTER 4

THE PLAN

A. Goals

The development of the Springwater Corridor Master Plan is in direct response to a set of goals established from citizens' input at the first round of public meetings. These goals are as follows:

- Preserve the linear integrity of the Corridor. Acquire new lands adjacent to the Corridor as available and as appropriate.
- Minimize conflicts between user groups as much as possible through design and a management plan.
- Celebrate and interpret the cultural and geographic history of the Corridor.
- Enhance and preserve the natural resources of the Corridor.
- Allow the Corridor to serve as an alternative transportation route.
- Provide a safe and inviting environment throughout the Corridor. Provide a high standard of maintenance.
- Serve the widest possible array of compatible user groups.
- Utilize the Corridor to join the communities and recreation sites it travels through, by maximizing involvement opportunities in planning, developing and maintaining the Corridor.
- Maintain positive impacts to adjacent properties.
- Provide for a range of recreational activities throughout the Corridor.
- Create funding options and develop a phasing plan to complete development as soon as possible.
- Develop a clear and comprehensive signage system in order to orient and educate users.

- Encourage responsible use of the Corridor with respect for adjacent properties.
- Incorporate the Corridor into the Metropolitan Greenspaces Trail System, sharing management responsibilities with appropriate jurisdictions.

Establishing these goals provides a means of addressing the wide array of community concerns received from public input and addressing those within the master plan development.

B. Plan Illustrative

See the Master Plan fold-out, page 1.

C. Description of Major Plan Features

Design Theme

The general design theme will focus on showcasing the use of local materials, using recycled materials when possible. This Corridor will be distinctly Northwest, showing the use of local stone, plant materials, and workmanship.

Trails

• Multi-purpose Trail:

A twelve foot wide, multi-purpose, hard surface trail with two 2' wide soft shoulders (one on each side) will extend from the western end of the Corridor east to Palmblad Road, the eastern edge of Gresham. The hard surface trail shall be designed to facilitate a wide range of uses including bicycles, wheelchairs, hiking, jogging, strollers, and walkers.

• Equestrian Trail:

An equestrian trail will be developed along the entire length of the Corridor. Wherever possible the equestrian trail will be separated from the multi-purpose trail and reserved exclusively for equestrian use. This will reduce accidents between equestrians and faster moving bicyclists or other trail activities. A visible clear zone should be provided where the equestrian trail joins or intersects with the multi-purpose trail. The equestrian trail will be native soil topped with a bark peelings surface. West of 128th, special signage should be used to warn equestrian of hazardous road crossings at 122nd, Foster Road, 82nd and Johnson Creek Boulevard.

The intent of providing an equestrian trail the length of the Corridor is to accommodate a number of equestrians who live or board their horses close to the western terminus of the Corridor. Secondly, there is a future potential connection across the Sellwood bridge (when it is re-built) to Tryon Creek State Park, a popular destination for equestrians.

The equestrian trail should have a minimum horizontal clearance of 5'-0" and a minimum vertical clearance of 10'-0". All vegetation such as tree limbs, stumps, etc. should be cleared from this area. At bridge crossings, a special rubberized matting should be used over the wood decking for improved safety of equestrians.

• Combined Multi-purpose and Equestrian Trail:
In a limited number of locations, the multi-purpose trail will need to merge with the equestrian trail. This happens at bridge crossings, wetland areas, and steep canyon areas. In these situations, the multi-purpose trail will be reduced to a ten foot width paralleled by a six foot wide soft surface equestrian trail.

• Soft Surface Trail:
A ten foot wide soft surface trail will extend from Palmblad Road south to Boring. This portion of the Corridor passes through a rural, agricultural landscape that is in sharp contrast to the urbanized western end of the Corridor. The development intent in this section is to harmonize with the surrounding rural character, minimize development impacts while providing a safe and useable Corridor. Palmblad Road provides a convenient route for touring bicycles to join with the Highway 26 bike route, so a hard surface is not necessary. User groups are anticipated to include hikers, joggers, mountain bikers, and equestrians. Selection of a soft surfacing material for this section is dependant on the outcome of the surfacing experiments underway near I-205.

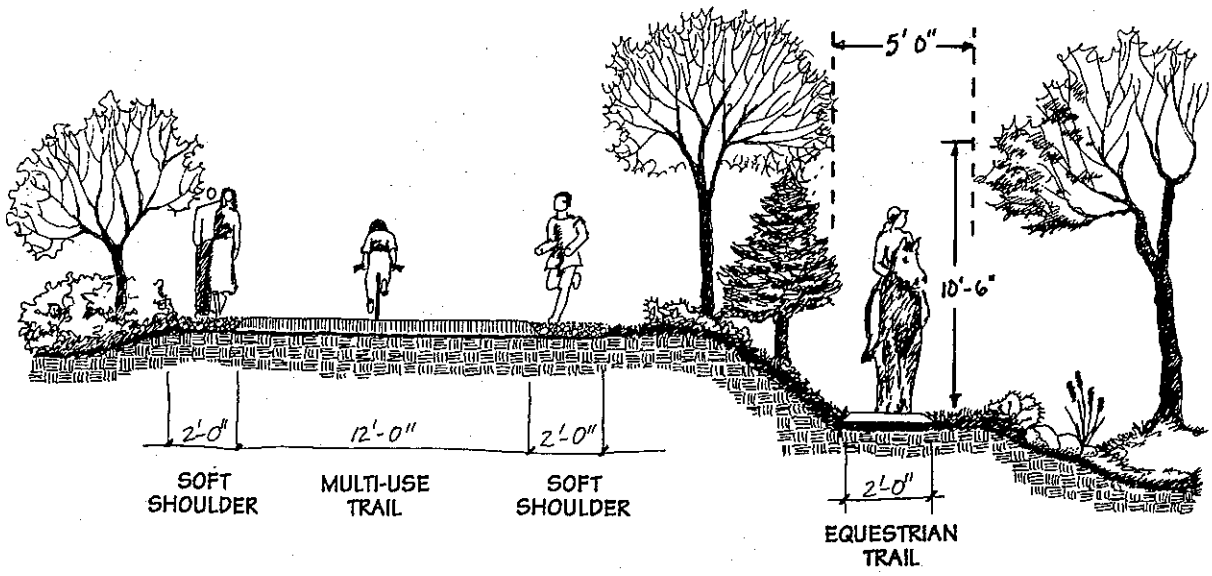


Figure 9. Trail Section Diagram

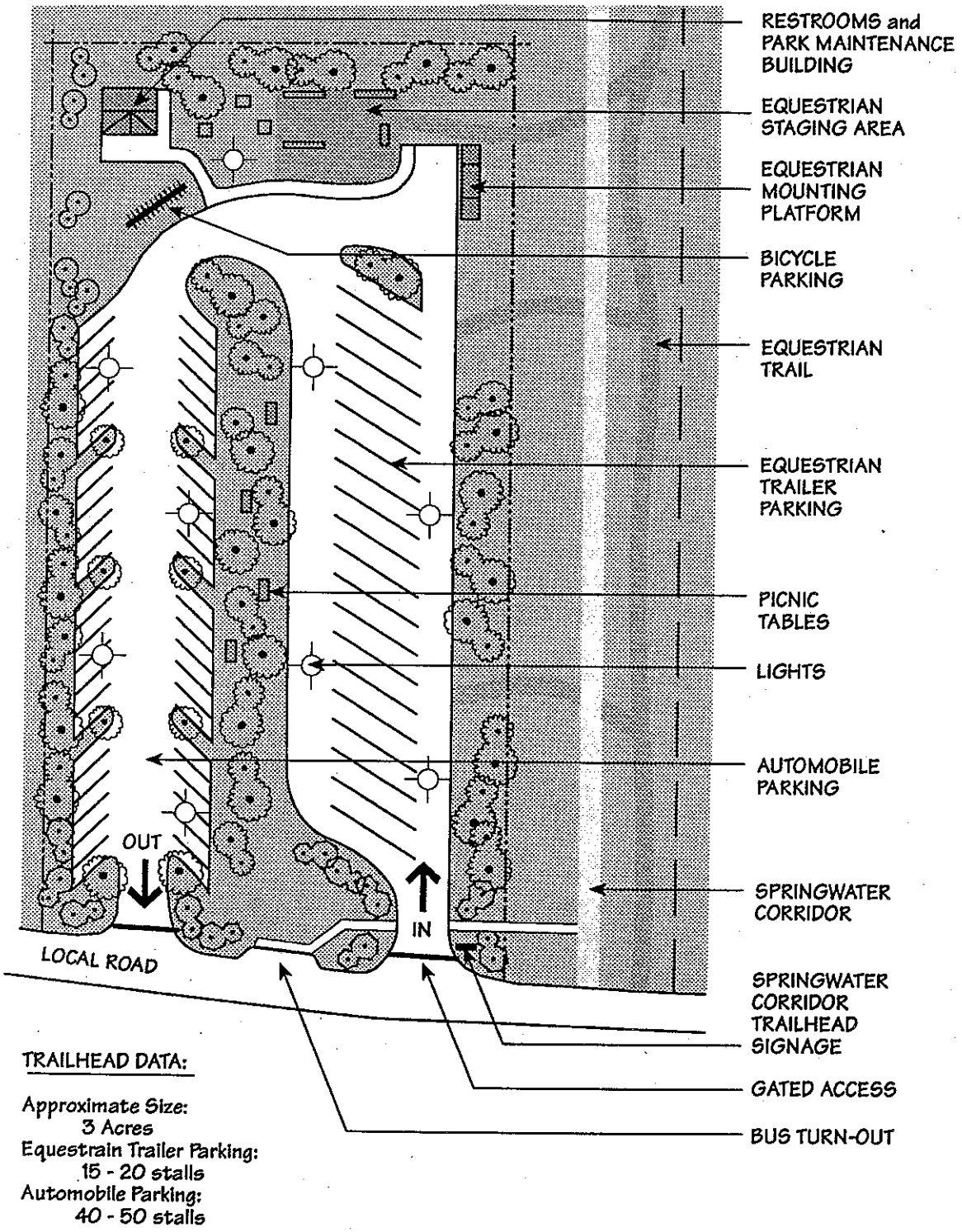


Figure 10. Trailhead with Equestrian Facilities

Trailheads and Facilities

In order to provide public access and serve a wide diversity of users, trailheads ideally should be located approximately two and one-half miles apart along the Corridor and in close proximity to public transportation. The one exception to this is the rural section between Palmblad Road and Boring, where minimum development is desirable. A total of eight trailheads are being proposed along the Corridor. Four of these are within the Gresham city limits and are located at Linneman Junction, 10th Street, Main City Park and Hogan Road. Of these, the 10th Street trailhead will accommodate equestrians. Outside of Gresham, trailheads are proposed in the general proximity of the following street crossings: SE 45th Avenue (at Johnson Creek Boulevard), near I-205, SE 136th Avenue, and at Boring Junction. Of these trailheads, equestrian facilities will be provided at the SE 136th Avenue site and at Boring Junction. An existing trailhead on top of Powell Butte with equestrian facilities will provide additional access to the Springwater Corridor. Powell Butte has numerous hiking, mountain biking and equestrian trails that link directly with the Springwater Corridor. In addition, Beggar's Tick Marsh Natural Area may have an opportunity for limited shared parking and a small trailhead facility.

Trailheads will include automobile parking, restrooms/changing rooms with maintenance/storage areas, lighting, a drinking fountain, at least two path connections to the Corridor, picnic tables, garbage cans (with encouragement to recycle at home), bicycle parking, telephone and plantings for shade and aesthetics. Equestrian trailheads will have additional facilities including a staging area, horse watering trough, hitching posts, trailer parking, horse mounting ramps for physically challenged equestrians and horse waste composting bins. A separate equestrian trail should extend from the trailhead to the Corridor to allow horses to "shake themselves out" before entering the main trail.

Site improvements at trailheads should be designed with people with disabilities in mind. In addition to disabled parking spots, elements such as drinking fountains, curb cuts, picnic tables, vegetation, and signage must meet the requirements of the Americans with Disabilities Act.

For security purposes, trailheads should be highly visible from the public right-of-way, located close to compatible businesses, (ideally with around-the-clock hours). Joint usage of trailheads with community policing efforts should be encouraged. Parks staff presence at the trailheads is a further security protection, so maintenance storage and facilities should be built into the program.

One of the trailheads should be considered a "signature" trailhead. The signature trailhead will be advertised as the central entry point to the Corridor, and will be designed to be especially welcoming to new users. Ideally, this trailhead will be larger, have more picnic facilities, and be centrally located (as near to I-205 as possible).

In addition to trailheads, several neighborhood access points exist. These serve as informal access, primarily serving the immediate neighborhood and providing a limited amount of on-street parking. These typically occur where residential streets end at the Corridor. The location of these areas will not be publicized. Minor improvements such as development of a connecting trail, vegetation management and minor signage will occur at these sites. These locations include: SE 28th, Tideman Johnson Nature Park, SE Linwood, SE Flavel, SE 158th, and Jenne Road.

Resource Interpretation

Visitor/Interpretive Centers are proposed at the Johnson Creek Boulevard trailhead and at the Boring Junction trailhead site. These centers will orient the trail users and interpret the natural and cultural resources along the Corridor.

The Boring Junction site will be the interim terminus of the Corridor. There is great interest in developing an historic theme park by local interest groups, such as the Boring Community Association. As the name implies, the Boring Junction site has roots closely intertwined with the railroad. The site served as a rail stop from 1903 to 1949. Most of the surrounding buildings at this site have local historical significance. The United Methodist Pioneer Chapel, noted for its early contributions to the community, will be moved to the site. The cultural resource interpretation opportunities will be developed at this site.

The Johnson Creek Boulevard site provides access to Johnson Creek at its western end. A waterfall and fish ladder built by the WPA are located at this site. The presence of

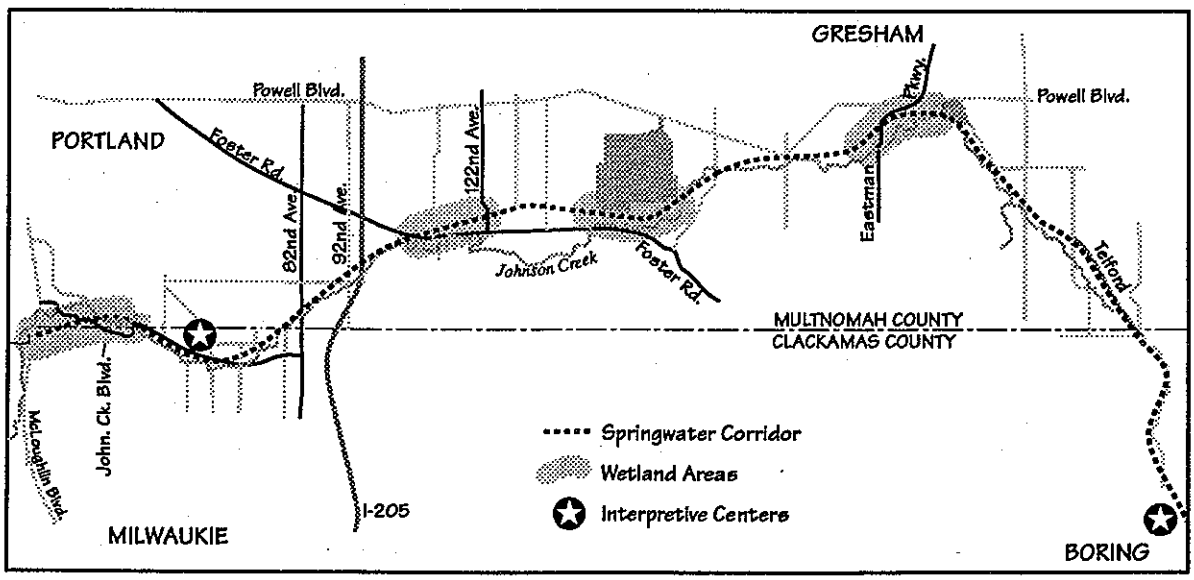


Figure 11. Map of Interpretive Centers

Johnson Creek in this dense urban area is a unique resource and presents an excellent opportunity to interpret this natural resource ("the canyon"). In addition, the ODF & W trout stocking program at this location makes the site an ideal recreation spot for fishing.

Signage

Interpretive, directional and regulatory signage will form the basis of a comprehensive signage system. The design of signage should be coordinated as much as possible with the existing signage along the Gresham section. The Springwater Corridor logo should be incorporated as appropriate.

For signs to be effective, they must be clearly readable and easy to understand. Sign shape, color contrast, text and graphic choices, viewing distance and purpose of sign should all be considered in the signage design. Content should be simple and concise. Signs should complement the trail experience, not dominate it. Interpretive signs should be placed at least four feet off of the main trail to allow groups of people a safe reading area with minimum disruption on the trail. The number of signs should be held to a minimum along the trail. Signs should be grouped together.

- Interpretive Signs

These will be installed at trailheads and at points of interest to raise the public's awareness to the numerous cultural, historic, and natural resources found on the Corridor. These will be the largest signs used on the Corridor. Signs at major access points will have two panels: one panel will be devoted to Johnson Creek and the Springwater Corridor. Phone numbers for further information will be included. A "You are Here" map, which includes other destinations, will be incorporated into this panel. The remainder of the sign will be devoted to the interpretation of the specific site. Other locations may include only one panel if they are not major access points. Interpretative stations will be developed for the following features:

A. The history of Tideman Johnson Nature Park will be interpreted. The contribution of the Tideman Johnson family to the area along with the natural amenities of the gorge area will be included.

B. The story of Johnson Creek will be told. This will cover the changes of the creek including native fish species, flooding, man's use of the creek, water quality and current efforts to improve Johnson Creek.

C. The historic Bell Station, representing a historic building built in character with the railroad, will be acknowledged.

D. The William Johnson Family Settlement at the Publisher's Paper site, including the naming of Johnson Creek and the numerous ways the land has been used, will be interpreted.

E. Natural areas, such as Beggars Tick Marsh, wetland enhancement projects along the creek, and Powell Butte will be interpreted. These areas represent current thinking on the value of natural areas.

F. The story of the Native Americans and their relationship with Johnson Creek will be interpreted.

G. Powell Butte is a 569 acre nature park with spectacular views that borders the Corridor. It is home to a great variety of species of wildlife because of its diverse habitat of open meadows, springs, old orchards, and forests. Wildlife and the significance of the park will be interpreted.

H. The Springwater Line, its development and significant role it played to the region will be interpreted. The story of the power transmission lines should be included. Original names for railroad sidings, and stops will be retained and explained. Include, where possible, some of the rail artifacts, such as cross-bucks.

I. Interpretive opportunities at Boring Junction include the buildings, the rail line,and the "First to Walk" event sponsored by the Friends of Springwater Corridor. The remaining station building should be renovated and integrated into the theme park.

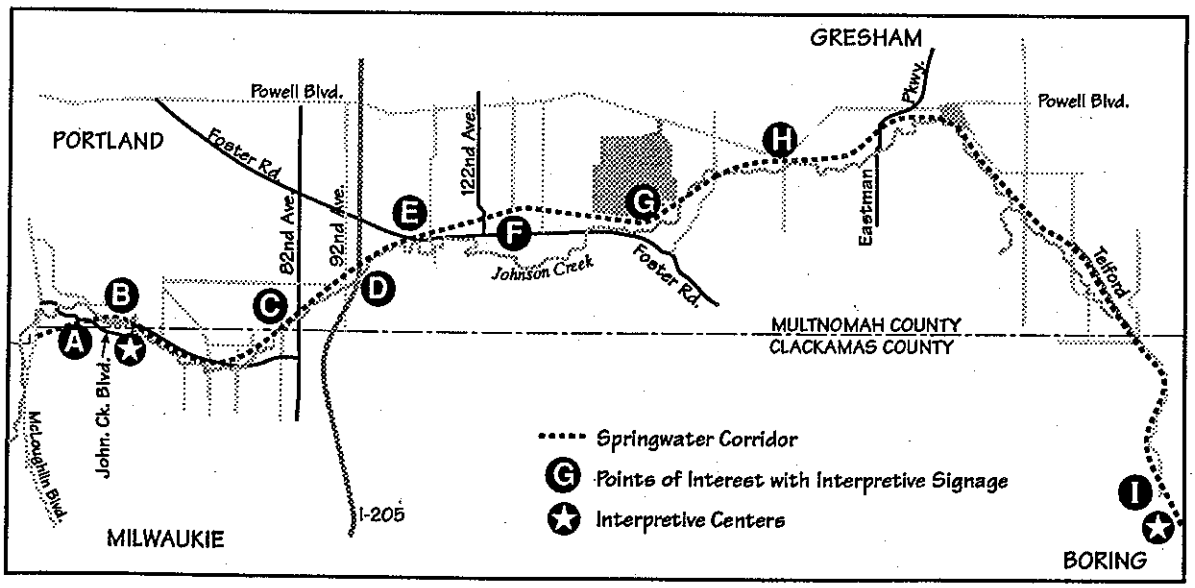


Figure 12. Location of Interpretive Opportunities

• Directional Signage

This will inform the trail users of significant trail connections to adjacent recreation sites such as Powell Butte, Johnson Creek Park and the I-205 bicycle route. Directional signage should guide trail users to and through the Corridor. These standards are part of the 40 Mile Loop signage program.

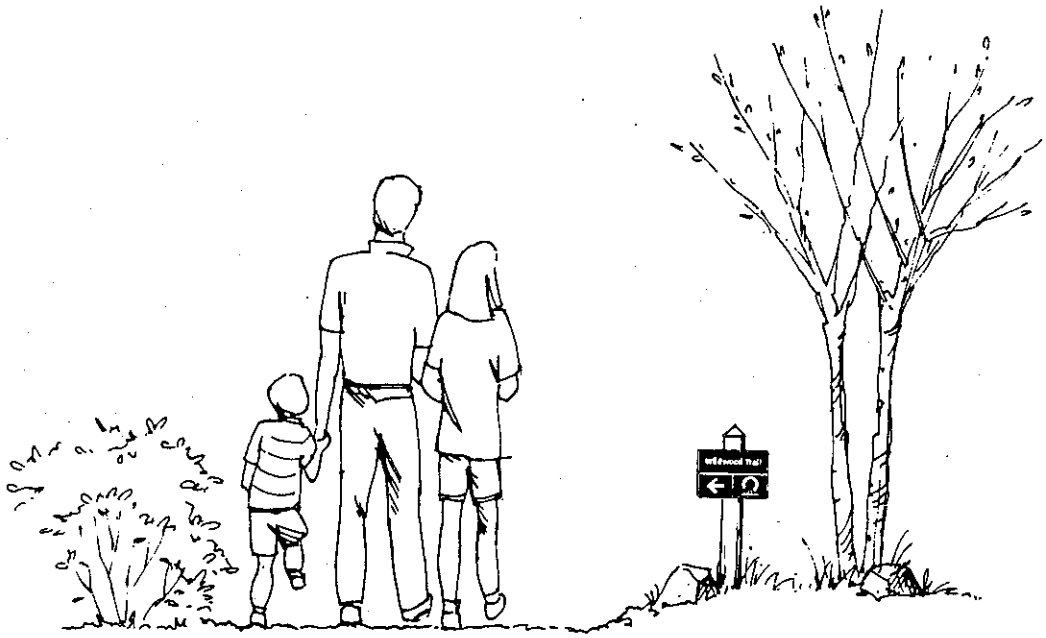


Figure 13. Directional Signage

• Regulatory Signage

To ensure a greater level of public safety, potential hazard signs will be placed at road crossings and bridges. Stop signs and stop ahead signs will be used on all road crossings, except private drives. Yield signs will be used on private drives (the trail users will have the right-of-way). Caution signs will be placed on other areas of the trail where potential hazards exist. Standard shapes and colors will be used for regulatory trail signs (a red octagon to be used for "stop", a red triangle for "yield", etc.), but the signs will be proportionately smaller to be consistent with the scale and design speed of the trail. These signs should borrow from the standardized shapes, colors and wording from transportation signs. The IMBA (International Mountain Biking Assn.) yield triangle will be used to specify who yields to whom among user groups. It is critical that regulatory signs be placed in a visually clear area with good sight distance.

Bridges will require special signage because all users, including equestrians, must share a single width. Trail etiquette signage will be used throughout the Corridor, but especially at bridges, using text and graphics for the clearest message.

Signs that convey rules will contain a very brief reason for the rule. Rules will be stated in terms of a polite request to convey a tone which supports good behavior through willing observance of rules.

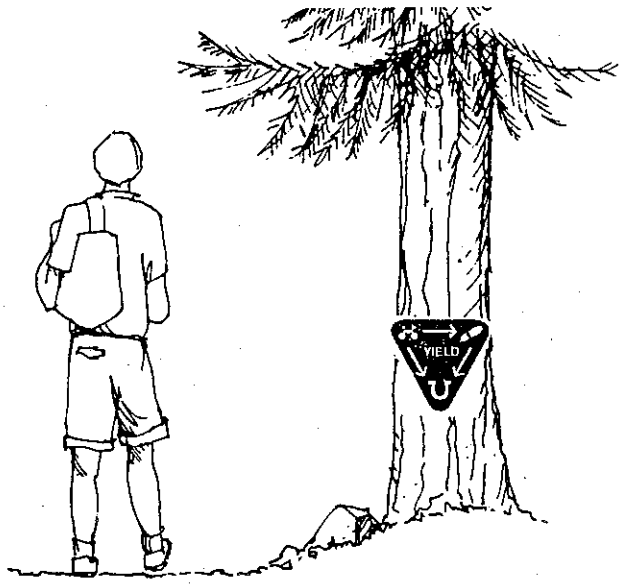


Figure 14. Trail Etiquette Signage

• Mileage Markers

Markers will be placed at one-half mile intervals, based upon the historic rail mile markers. These will provide the trail user's with a sense of orientation along the entire route of the Corridor. These will be located at the edge of the trail and routed into a 6" X 6" post.

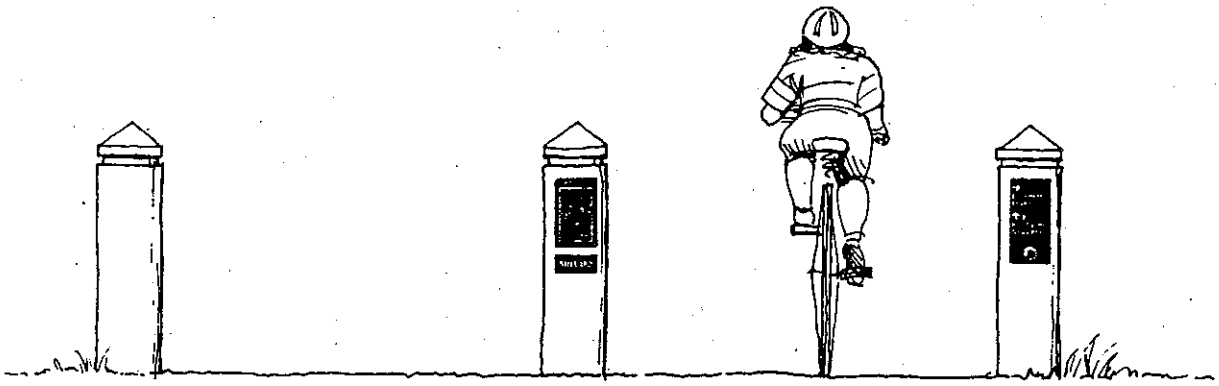


Figure 14. Mileage Marker

• Donor Signage
Individuals or businesses who have made a significant contribution toward the development or maintenance (through an "adopt-a-trail" program) of the Corridor will be recognized through signage or plaques as appropriate.

Johnson Creek Access
The Springwater Corridor roughly parallels Johnson Creek and crosses it ten times. In most cases however, Johnson Creek is not within the Corridor right-of-way. Access to the creek is limited by steep banks and wetland areas. Due to the sensitive nature of the creek edge, physical access will not be encouraged. Visual access to the creek and opportunities for environmental education will be encouraged. The one exception to limiting physical access will be at SE 45th where spring fishing will be accommodated. The ODF & W stocks the Creek with rainbow trout at this location.

Fish and Wildlife
The Corridor has an average width of one hundred feet and has been significantly altered by human intervention. Despite Johnson Creek's proximity, the Creek and its associated wetland areas have been subjected to the forces of urbanization, flood control efforts and agricultural development, compromising the Corridor's functional value to wildlife. However, perhaps even more significant to wildlife than the Corridor itself is the natural areas that it passes along in its 16.5 mile length.

Within the urbanized southeast Portland area, the Corridor links together several significant open space/natural areas. These include from west to east, the Willamette River, Tideman Johnson Nature Park, Beggar's Tick Marsh Natural Area, and Powell Butte Nature Park. Additionally, the Corridor passes by numerous smaller undeveloped sites that provide wildlife habitat.

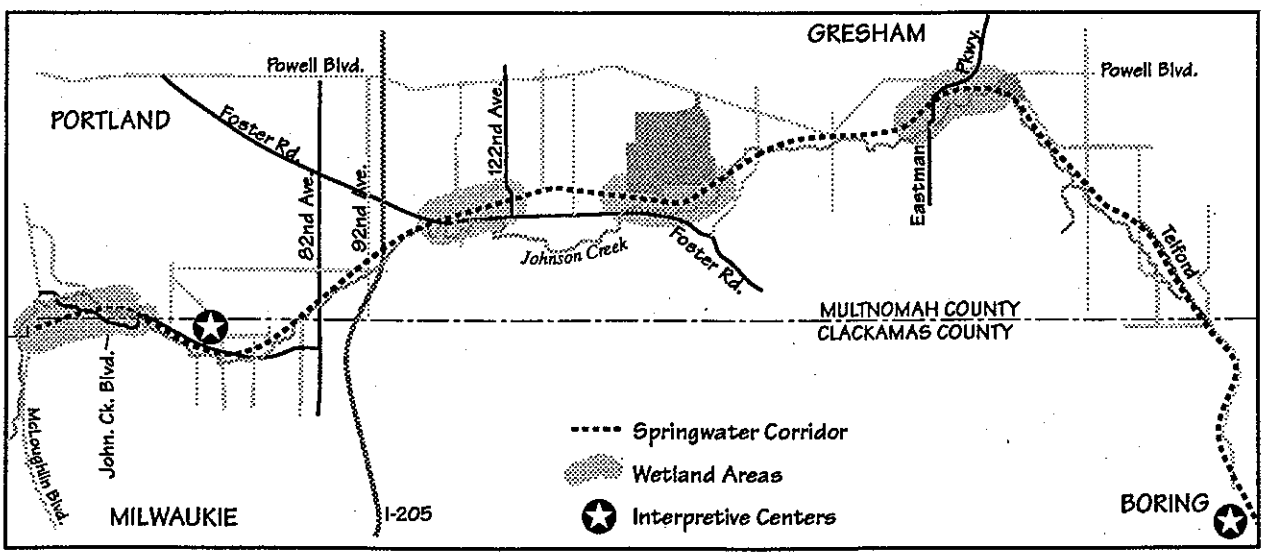


Figure 16. Map of Wetland Areas

With rapid loss of remaining open space to urbanization, the Corridor plays an increasingly vital role to wildlife. Forming a link between these natural areas, the Corridor supplements the remaining open space and serves as a wildlife migration corridor. This link creates an opportunity for wildlife to move from one open space area to another and thereby maintain a healthier gene pool than would otherwise occur if restricted to isolated pockets.

A few designated wildlife observation areas will be carefully located in ecologically rich areas such as wetlands and the creek edge so as not to disturb the wildlife being observed. Habitat enhancement projects will be undertaken in these areas. Interpretive signage will play an important role in public education at these sites. However, many wildlife areas will be buffered with vegetation to prevent human disturbance along much of the Corridor length.

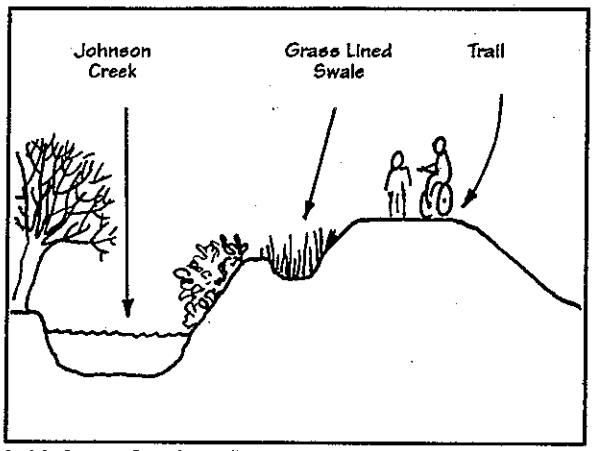
Integration with Johnson Creek Resources Management Plan

Current efforts are underway by the City of Portland, Bureau of Environmental Services and the Johnson Creek Corridor Committee (JCCC) to improve the water quality, flood control and ecological balance of Johnson Creek. The Springwater Corridor roughly paralleling Johnson Creek along its entire length provides the recreational component to this effort. The existence of the Springwater Corridor increases the exposure of Johnson Creek to the public, thereby increasing the number of "stream-keepers."

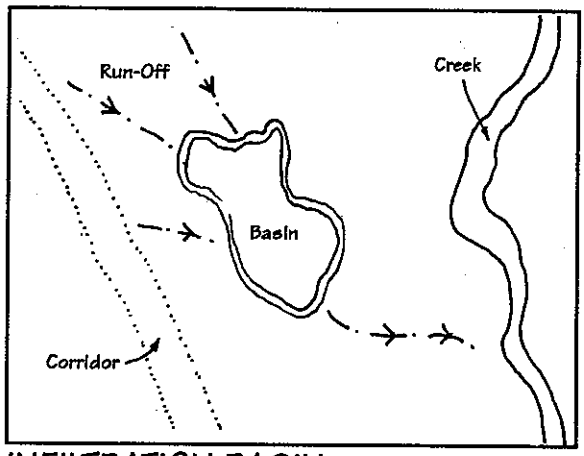
Throughout the Corridor there are opportunities to help alleviate some of the flooding and water-quality problems that plague the entire basin. Water-quality swales (to filter run-off that flows into the Creek), infiltration basins (to allow some of the run-off to filter into the ground instead of into the Creek), high-flow by-pass channels (to protect flood-prone developed areas), removing trestle obstructions (to prevent flood debris from blocking the channel) and multi-stage channels (to provide more room for flood waters) are some of the environmental techniques that could be used along the Corridor. Each of these techniques will be considered and incorporated as appropriate into the construction details of the Corridor and trailheads.

Vegetation

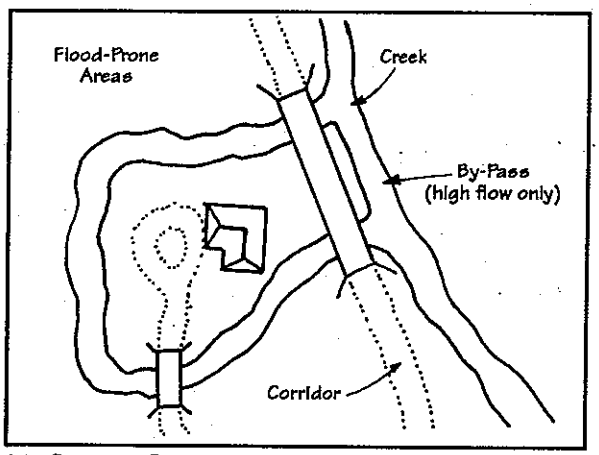
Portland General Electric (PGE) maintains two overhead power lines on the perimeter of both sides of the Corridor, running its entire length. Over the years, PGE's maintenance program has been to cut down any vegetation reaching a height of 15'. This practice is necessary for safety reasons, but has resulted in a lack of any large trees along the Corridor. PGE will maintain this practice indefinitely. In the long term, burying the lines underground should be pursued. Currently this option is not considered feasible by PGE, due to cost considerations.



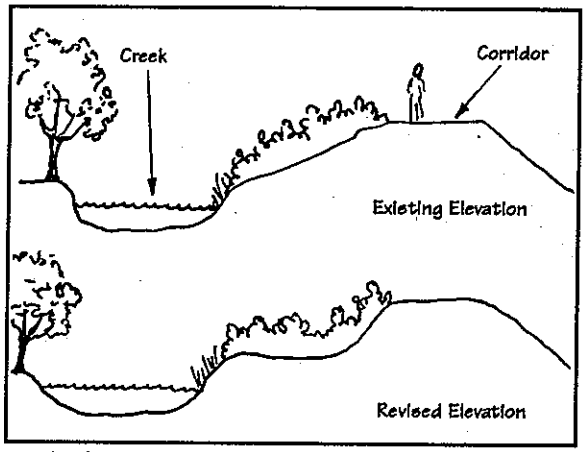
WATER QUALITY SWALES



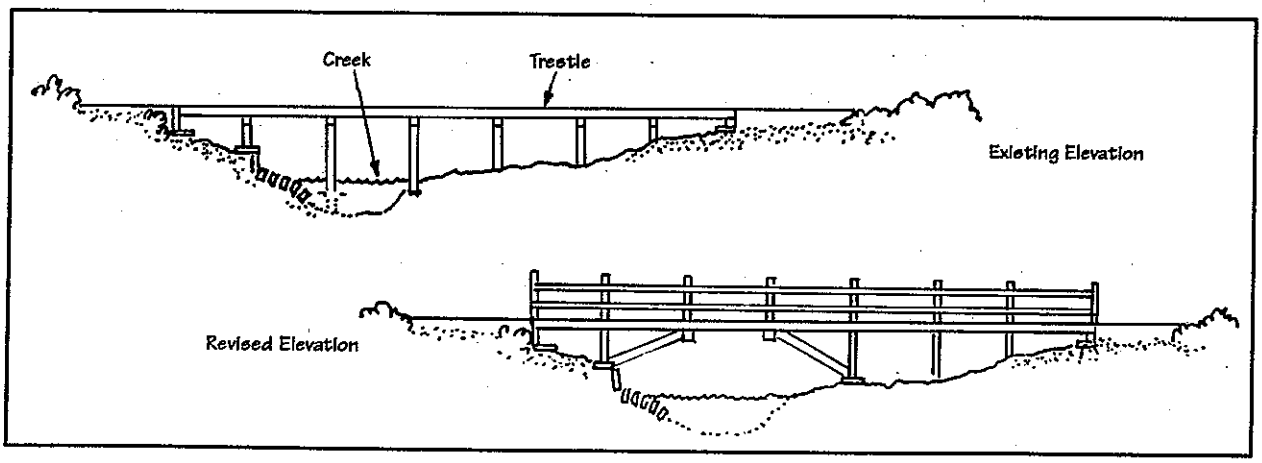
INFILTRATION BASIN



HIGH-FLOW BY-PASS CHANNEL



MULTI-STAGE CHANNEL



REMOVAL OF TRESTLE OBSTACLES

Figure 17. Integration with Johnson Creek Resources Management Plan

Himalayan Blackberry is the resulting dominant vegetation type along the Corridor, thriving in open, disturbed landscapes. It is resilient and presents an ongoing maintenance challenge. Its rapid growth is capable of overgrowing and closing off the Corridor in a single growing season. Blackberries serve a minor role in providing wildlife habitat, but due to the maintenance burden they create, they should be removed as much as possible. Replanting with low growing native vegetation will attract a greater diversity of wildlife and not interfere with the overhead PGE lines. Use of native trees and shrubs of limited height will be emphasized. Lowered maintenance costs are a further benefit for the use of native plant material. (See the Portland Plant List, Appendix H, for a comprehensive list of native and nuisance plants.) Additionally, in conjunction with the JCCC's efforts to restore Johnson Creek, riparian plantings along the creek should be re-established.

The main design theme of the Corridor will be the riparian corridor. This feature ties together historic and on-going values of the Creek. It will be a wonderful opportunity to educate the public about the diverse and attractive plants that are native to the area. Despite the strong emphasis on native plants, the palette will not be strictly limited to natives. For example, some of the more urbanized sections of the Corridor may require a more diverse design treatment, to be in context with their surroundings. For example, the heavily urbanized section along Johnson Creek Boulevard may require non-natives for hedge material or ornamental purposes.

Vegetation will also help to define the Corridor's boundaries and protect the privacy of our neighbors. Plants can be effective screens and are more visually appealing than a long line of fences.

Bridges

There are eleven trestles along the 16.5 mile length of the Corridor. Almost all of these trestles have been retro-fitted with basic safety improvements including decking and handrails. Based on an engineers report (see Appendix J) the sub-structure to these trestles are sound. Design loads for the decking have been figured on the basis of accepting loads of maintenance and emergency vehicles. Bridges numbers 5 and 6, adjacent to Tideman Johnson Park have concrete slab sub-decking and are currently surfaced with gravel. These two bridges will be hard surface treated to match the multi-purpose trail hard surface treatment. All bridges will need to accommodate equestrian usage. Recycled rubber matting will be placed on a portion of these bridge surfaces to accommodate the added wear from equestrians. Railings will extend perpendicular to the ends of the bridges since these areas have abrupt drop-offs from the bridge abutments.

Intersections

The Springwater Corridor is unusual because it does not fall into a road right-of-way. This eliminates conflicts between trail users and automobiles as found on most roadway bike lanes. The Corridor does, however, intersect with several roads. These intersections must be addressed in order to increase trail user safety and minimize conflicts. With the

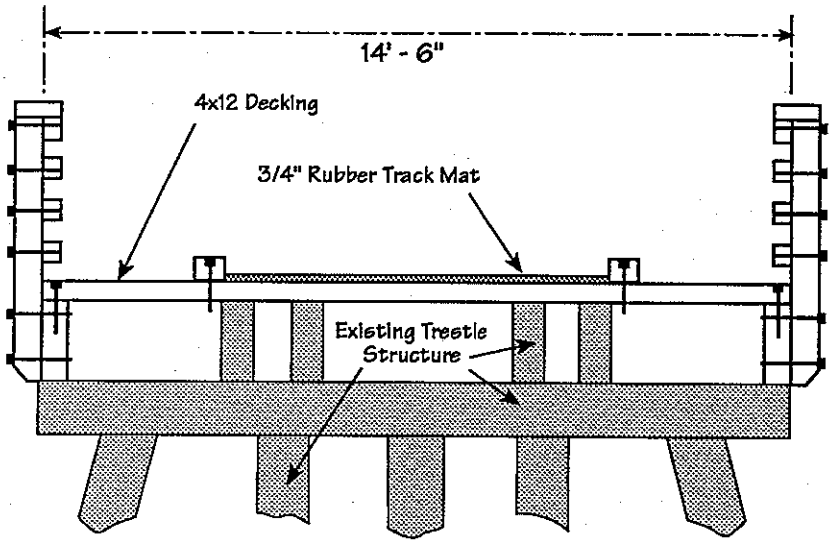


Figure 18. Typical Bridge Improvement

anticipated growth in the Portland metropolitan region and resulting increased automobile traffic, this situation will only become more aggravated.

All intersections pose a degree of hazard to the public and therefore reduce the quality experience of the trail user. As a general rule, the total number of crossings along the route of the Corridor should be held to an absolute minimum.

Minimal improvements at all intersections shall include: vehicle control bollards, center bollard removable for maintenance and emergency vehicles, removal or thinning of vegetation to increase visibility, use of natural basalt boulders as needed to control vehicle access around the intersection, stop signs, striping and "XING" wording.

• Major Intersections:
There are six major intersections along the Springwater Corridor. These are located at Johnson Creek Boulevard (SE 45th), 82nd Avenue, 92nd Avenue, Foster Road, 122nd Avenue and Eastman Parkway (which is in Gresham). These are considered major intersections because of the high volume of traffic they receive and the resulting high degree of difficulty in crossing. Major safety improvements at this type of intersection shall include well-marked pedestrian cross walks, signage forewarning motorists of the approaching Corridor as well as signage forewarning trail users of the approaching

intersection, pedestrian activated signal crossings and where roadway width allows, pedestrian refuge median islands.

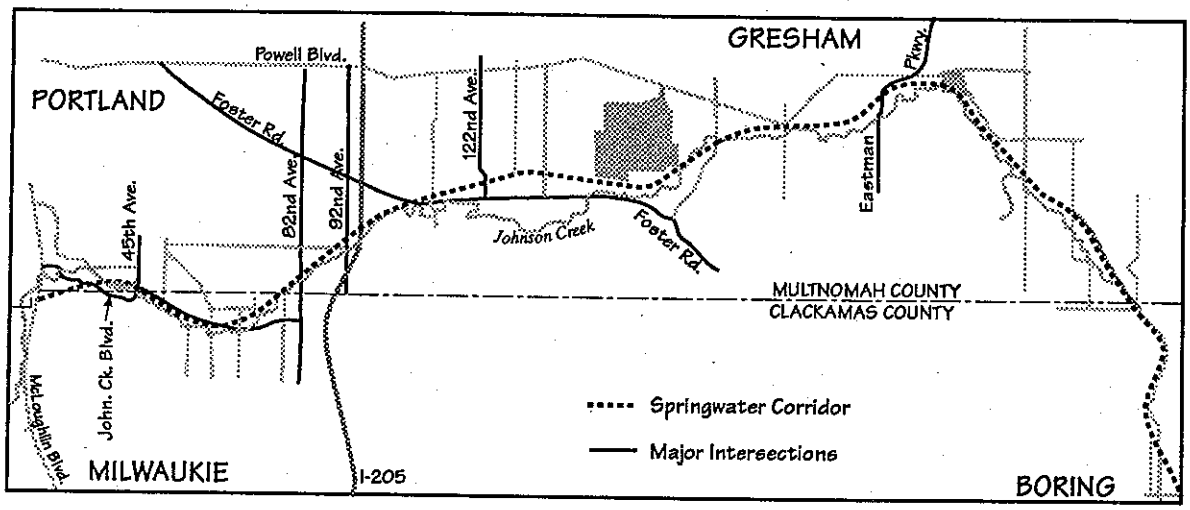


Figure 19. Major Intersections

Foster Road is particularly troublesome because of the extreme angle at which the two intersect. In ideal circumstances, the trail system should meet the roadway at a 90 degree angle, if possible.

In the long term, grade change separations should be developed at these intersections.

• Minor Intersections:
There are 28 minor intersections along the Springwater Corridor. Minor intersections are defined as crossings at public roadways that, due to their low traffic volume and minimal width, present a low degree of difficulty in crossing. These intersections will be treated like major intersections with the deletion of the pedestrian activated signals. Some of the more challenging to cross intersections in this category will receive flashing warning lights.

The intersections are (listed by order of jurisdiction):

City of Portland: SE Harney St (west of 82nd), Crystal Springs, Lambert, Flavel, and SE 111th.

Multnomah County: SE 128th, 136th, 174th, 252nd (Palmblad).

Clackamas County: SE 55th, Stanley Ave (south of JC Blvd), Wichita Ave (south of JC Blvd), Linwood Ave (south of JC Blvd), Bell Ave, Luther Ave (at 77th), SE 267th Ave (north of Rugg Rd), and SE Haley Rd (near 272nd/Telford Rd).

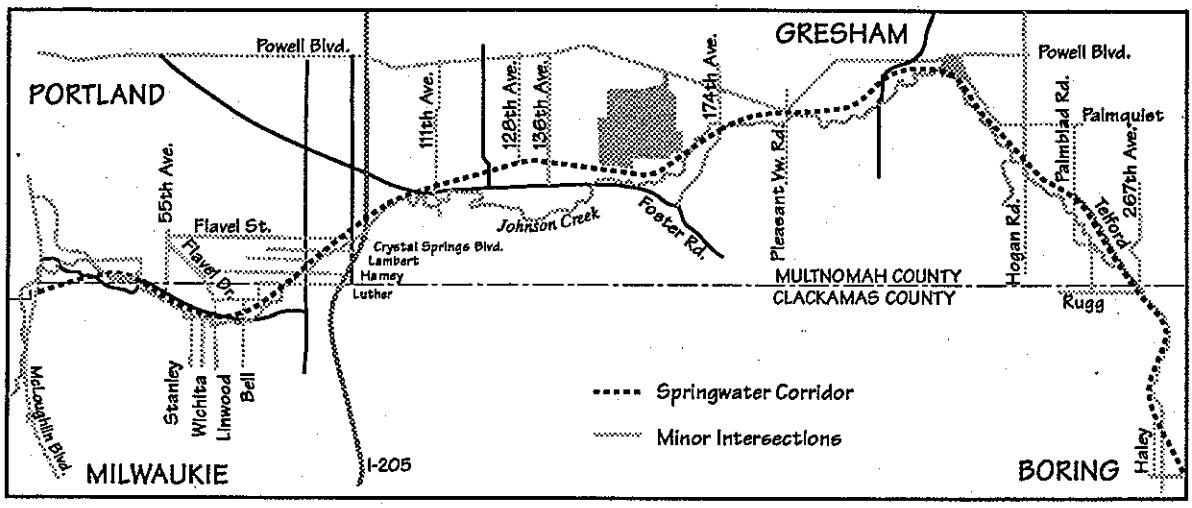


Figure 20. Minor Intersections

• Private Drives:

Private drives are defined as vehicle crossings that serve a private citizen or a group of citizens, typically providing access to private property. Where these are deemed necessary, the party filing the crossing permit shall make all necessary safety improvements for the crossings. These improvements shall include but not be limited to removable bollards, stop signs (with the driveway user stopping), raised trail surface with warning striping and placement of basalt boulders as needed to control unauthorized vehicle access. Individuals are urged to contact their local transportation department for additional requirements. (See Chapter 5A, "Property Management").

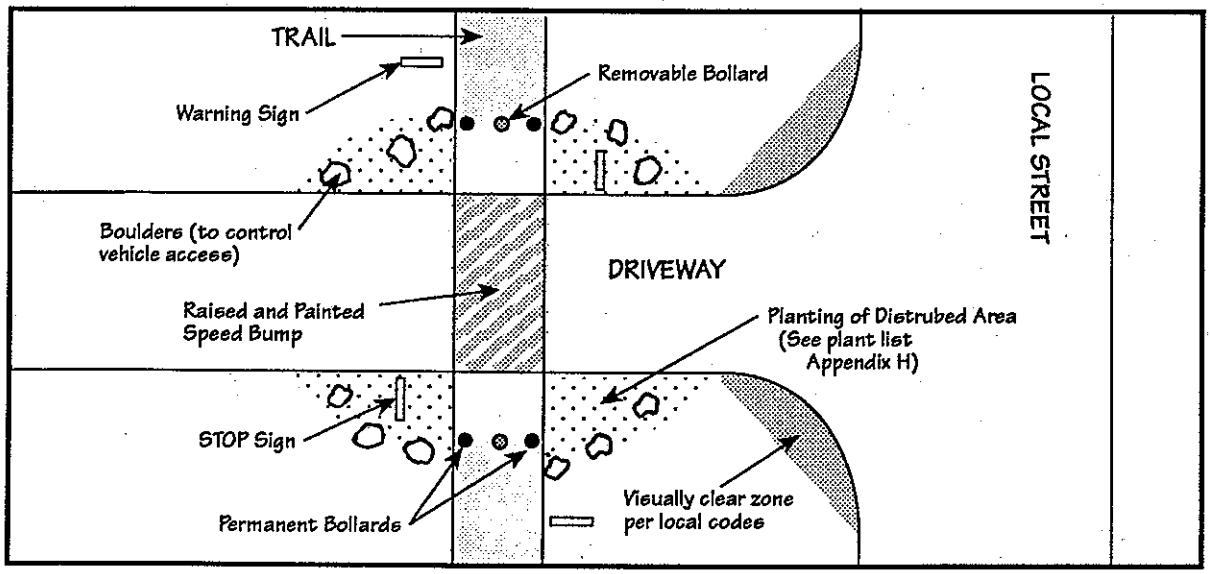


Figure 21. Private Drive Crossings

Site Furniture
Benches should be located along the trail at strategic locations, to capitalize on views and to provide a rest station. Ideally, some benches will be sited at cool, shady locations. Benches, trash receptacles, etc., will be made of vandal-resistant materials, emphasizing the use of metal to reflect the inter-urban train era. Trash receptacles at trailheads will encourage recycling at home through the curb-side program. A "pack it out" trail etiquette concept will be promoted.

Public Outreach
Throughout the master plan development, public input opportunities have been maximized and the final master plan is a direct result of this input. Public outreach will continue upon completion of the construction phase of the Corridor. It is a high priority to the Park Bureau and to governing jurisdictions that the built project fulfills the needs of the trail users. Survey boxes will be installed at trailhead locations to get updated input from trail users. Park staff will have an on-site presence at the trail interpretive centers to talk directly with trail users. An informational brochure will be developed and distributed to the public to raise public awareness of the Corridor.

D. Implementation

Relationship Between Local Jurisdictions
The Corridor passes through five local jurisdictions which include Clackamas County, Multnomah County, Gresham, Portland and Milwaukie. East of Boring, the Springwater Corridor is under State Parks jurisdiction and beyond Estacada the Corridor is under the jurisdiction of Mt. Hood National Forest. Specific agencies from these jurisdictions that have been actively involved in the master plan development of the Corridor include Transportation, Environmental Services, Police, and Parks and Recreation.

The cities of Gresham and Portland have an inter-governmental agreement in place that defines roles and responsibilities for each city in regards to the Springwater Corridor. Agreements between Portland and the other involved jurisdictions will occur as funding possibilities become more defined.

The Metropolitan Service District has increased involvement of local jurisdictions through their quarterly Parks Forum meetings and the Greenspaces program. Systems such as natural resources and extensive trail systems are especially important to plan on a regional basis.

Development Priorities
Safety improvements are the immediate priority for development on the Corridor. Specifically, the bridges and intersections along the Corridor will receive needed improvements as soon as possible.

In general terms, trail development shall proceed from a west to east direction. The western end of the Corridor passes through a dense urban area and has the greatest potential to serve a wide segment of the population. The one exception to this "west to east rule" is the portion of Corridor within Gresham's city limits. Gresham has secured funding through a bond measure and is proceeding with development of its 4.5 miles of trail beginning the summer of 1992.

Phased development will occur over time as resources are secured. An implementation phasing plan is as follows:

- Immediate, Summer 1992
  - Gresham: grading, intersection improvements, and equestrian trail along 4.5 miles, full Corridor improvements along 1.75 miles
  - Bridge decking and handrails throughout Corridor
  - Street crossings signage throughout Corridor

  Surfacing Experiment:
  - Install six different surfaces and a survey user box between I-205 and SE 92nd

- Summer 1993
  - Trail development between Powell Butte and Gresham

Immediate Phase

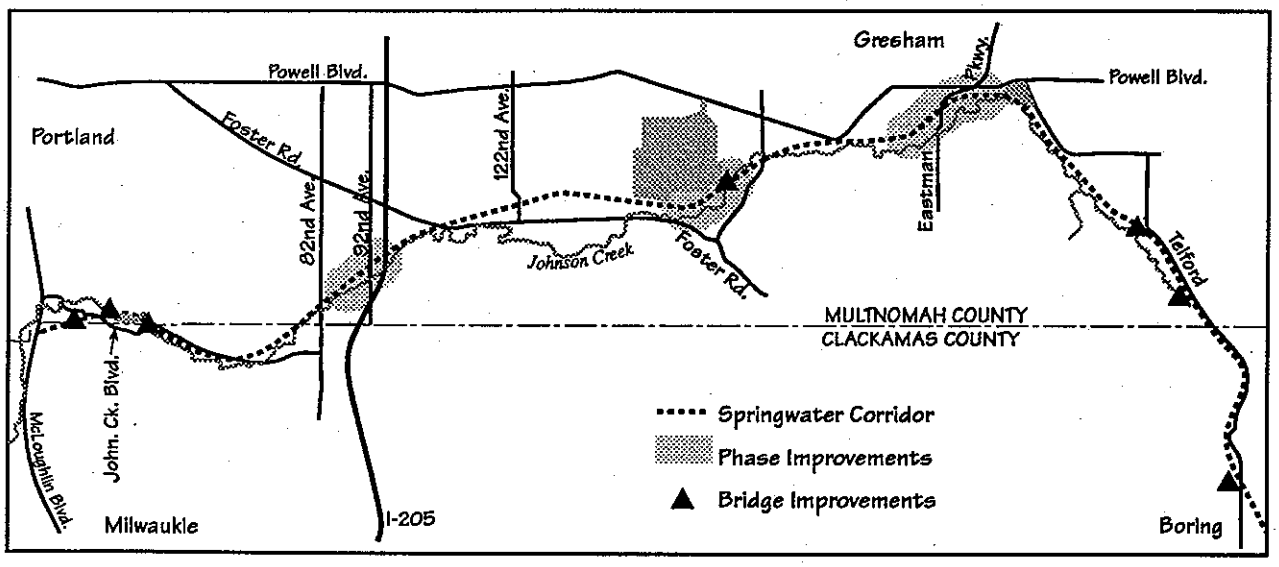


Figure 22. Immediate Phase

- Phase I of III
  Basic Safety Improvements
  - Bollards at intersections
  - Signalized crossings

  Acquisitions
  - Missing link in Boring
  - Missing link between McLoughlin and SE 17th
  - Trailhead locations

  Basic user improvements
  - Multi-purpose trail surfacing between McLoughlin and Powell Butte
  - Equestrian trail development between McLoughlin and Powell Butte
  - Signage between McLoughlin and Powell Butte
  - Planting between McLoughlin and Powell Butte
  - Development of centrally located "Signature Trailhead"
  - Complete development of trail and two trailheads within Gresham city limits

Phase I of III

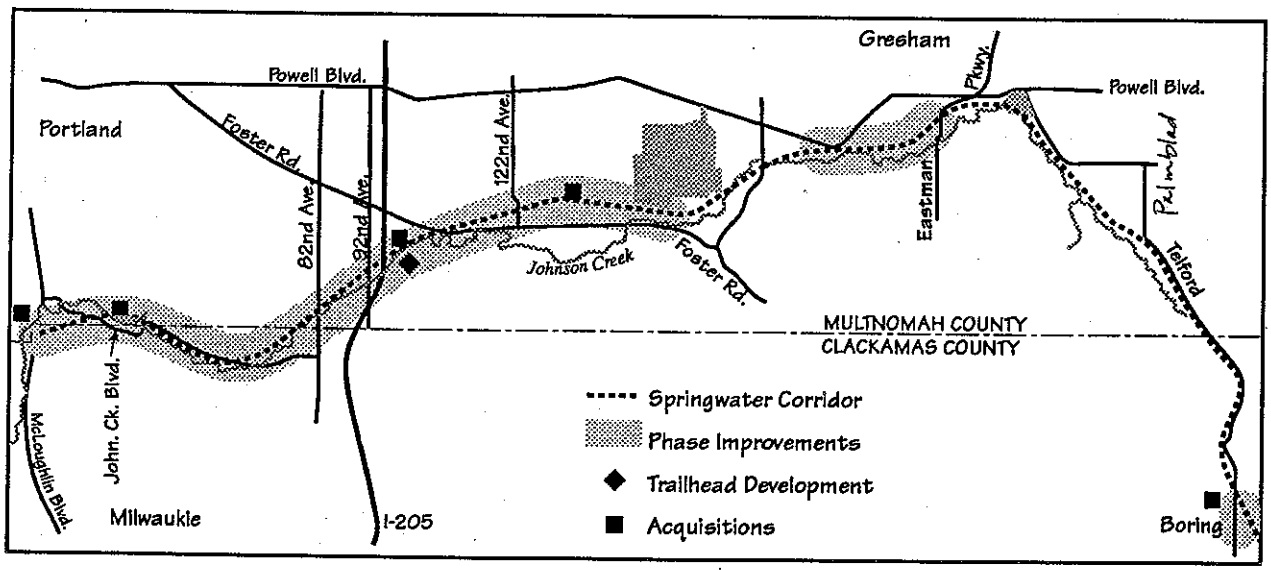


Figure 23. Phase I of III

- Phase II of III
  Corridor Development
  - Improvements at two trailheads
  - Equestrian trail between Boring and Powell Butte
  - Soft surface trail between Gresham and Boring
  - Signage between Gresham and Boring
  - Planting between Gresham and Boring

Phase II of III

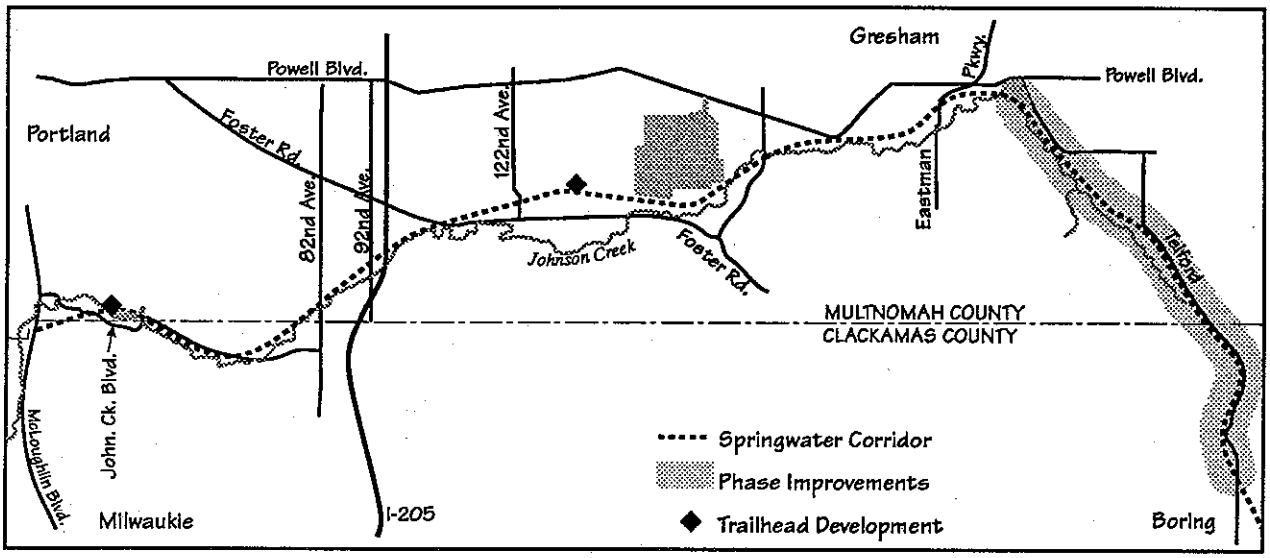


Figure 24. Phase II of III

- Phase III of III
  Corridor Development
  - Improvements at one trailhead
  - Connection to Willamette Greenway

Phase III of III

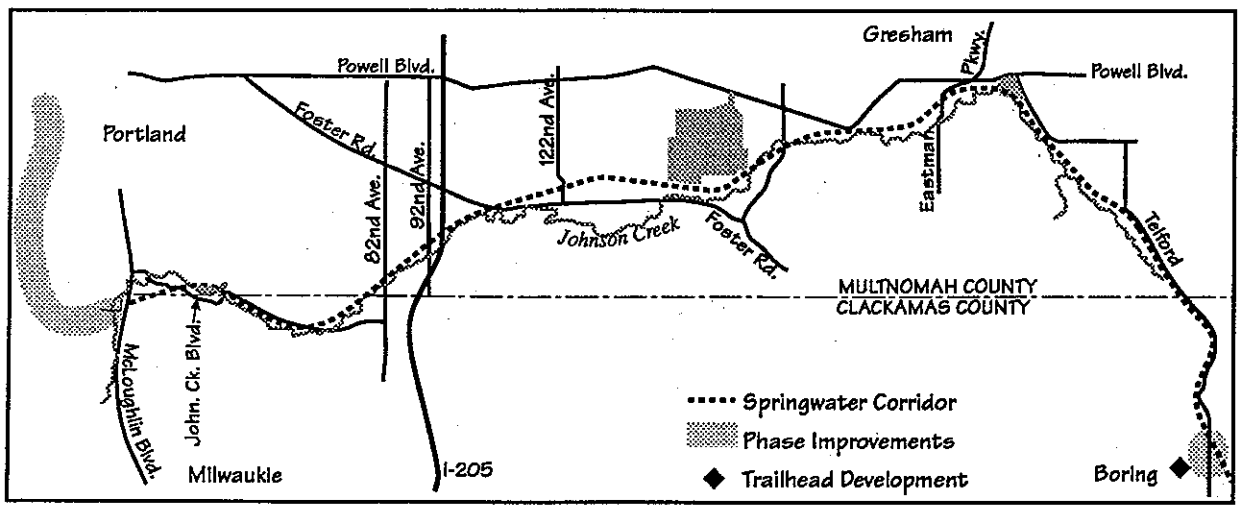


Figure 25. Phase III of III

Funding Strategies

Some federal grants are available, sometimes from unlikely sources. Both Gresham and Portland have been successful in securing small Land & Water Conservation Fund grants for development of the Springwater Corridor. A potentially large amount of federal money may become available for Springwater from Federal Highway funds through the Oregon Department of Transportation for newly eligible "enhancement activities" (one of which is rails-to-trails conversions). This source, known as the Intermodal Surface Transportation Efficiency Act (ISTEA) was initiated by Congress in late 1991 and is presently the most likely source of funding for development. Projects from around the state will be ranked by priority in late 1992; the Springwater Corridor was submitted to the Oregon Department of Transportation as the #1 priority of the metropolitan area by METRO's JPACT (Joint Policy Advisory Committee on Transportation). If funding is approved, it will provide 80% or more of the requested Phase 1 improvements; the remainder must be supplied by local sources. All local jurisdictions will contribute toward this match.

The cities of Gresham and Portland have each been successful in passing parks bond issues or levies within the last five years. In a general way, these have provided the funds for many regional park projects, such as the Springwater Corridor and Gresham's greenway system. Unfortunately, Portland's levy was a three year serial levy that has now expired. Neither city is proposing another levy in the near future. General obligation bonds are the most likely, or possibly the only Portland funding source at this time. This would require a vote.

The North Clackamas Parks & Recreation District was formed in November, 1990, by voter approval of a permanent addition to the tax base. Funds from this tax are being used for NCPRD's park planning effort, some site acquisition, and development of an aquatic center and regional park. The funds will also be used for some operations and maintenance costs.

The Metropolitan Service District (Metro) proposed a general obligation bond measure on the November, 1992 ballot. The measure was not successful, but it may be placed on a future special election. If it passes, it will provide $ 200 million for natural area acquisition and trails development throughout the region. The Springwater Corridor is recognized as a regionally significant trail system in the Greenspaces Plan. The main thrust of the measure is to secure funds for acquisition of significant natural resource/open spaces; approximately 25% of the generated amount will be distributed among local jurisdictions for local unrestricted use.

Other possibilities include more entrepreneurial activities that are compatible with park development. An example of this would include rental payments from utility companies for underground fiber optic cables within the Corridor. Funding through private

foundations or friends groups donations, and federal block grant funds are other possibilities.

Friends groups and volunteers provide a source of donated labor. A Youth Conservation Corps (YCC) crew spent one summer assisting with maintenance operations such as brush control and litter pick-up along the Corridor. Future support from the YCC will be sought. A Marine reserve unit was responsible for installing decking and hand-rails on several of the bridges.

Cost Estimate

The following is a "ball park figure" for construction based upon the implementation phasing plan previously covered:

- Immediate Phase

Item	Qty & Unit Cost	Total
Trail development - Powell Butte to Gresham	63,360 SF @ $1.75/SF	110,880
Surface Experiment	31,680 SF @ $1.50/SF	47,520
Trestle Repairs	Engineer's estimate	165,000
Gresham 1.75 miles full trail dev. and basic imp. throughout		660,000
	TOTAL IMMEDIATE PHASE	$ 983,400

- Phase I

Item	Qty & Unit Cost	Total
Trailhead site acquisition	4 @ $130,000	520,000
Land acquisition (Boring)	Allowance	100,000
Land acquisition (SE 17th)	Allowance	400,000
Intersection control bollards	256 @ $225 each	57,600
Intersection crossing:		
Striped only	14 @ $6,000 each	84,000
Flashing light	14 @ $15,000 each	210,000
Full signal	4 @ $60,000 each	240,000
Hard surface trail (6 miles @ 12')	390,000 SF @ $1.75/SF	682,500
Signage	Allowance	25,000
Planting (trees and shrubs)	Allowance	124,100
Trailhead Parking	1 @ $50,000	50,000
Restroom	1 @ $110,000	110,000
Lighting	12 @ $2,800	33,600
Equestrian Trail Development	29,040 LF @ $1.55/SF	45,000
Gresham's improvements	Allowance	712,200
• *includes 2.75 miles of asphalt trail, bridge undercrossing, planting, 2 trailheads and trail furnishings*		
Planning/Consultant	Allowance (15% of const. cost)	356,000
	TOTAL - PHASE I	**$3,750,000**

- Phase II

Item	Qty & Unit Cost	Total
Hard surface trail (6 miles @ 12')	390,000 SF @ $1.75/SF	682,500
Equestrian trail (5.5 miles)	29,040 LF @ $1.55/LF	45,012
Interpretive center building	Allowance	200,000
Trailhead parking	2 @ $40,000 each	80,000
Restrooms	2 @ $110,000 each	220,000
Lighting (parking areas)	24 @ 2,800 each	67,200
Signage	Allowance	25,000
Planting	Allowance	240,000
Gresham's completion	Allowance	$868,800
	TOTAL - PHASE II	**$2,428,512**

- Phase III

Item	Qty & Unit Cost	Total
Shared use of E. Portland Traction Co:		
Fencing	23,760 LF @ $20/LF	475,200
Hard surface trail	285,120 SF @ $2.25/SF	641,520
Trailhead parking	1 @ $40,000	40,000
Interpretive center building	Allowance	200,000
Restrooms	1 @ $110,000	110,000
Lighting (parking areas)	12 @ $2,800 each	33,600
Signage	Allowance	25,000
Tideman Johnson Park To Johnson Creek Pk:		
Street system	Allowance	1,000
	TOTAL - PHASE III	**$1,526,320**

GRAND TOTAL - ALL PHASES **$7,704,832**

CHAPTER 5

MANAGEMENT

"A successful rail trail involves more than simple acquisition of a rail corridor and initial preparation of the roadbed and structures for one or more varieties of trail use; it also entails managing the corridor to maximize its recreational and conservation benefits for the public and to protect it from various kinds of incompatible encroachments. Because of the "stringbean" nature of the corridor, a rail trail park is especially prone to pleas and threats from potentially deleterious non-park uses. Protecting the park accordingly poses a challenge, and requires careful attention to policies and procedures relating to non-rail trail and non-park uses."[7]

In addition, a high standard of maintenance is a key ingredient in a successful project that cannot be over-stressed. Goal #5 states, "provide a safe and inviting environment throughout the Corridor. Provide a high standard of maintenance." The psychological effect of good maintenance can be a highly effective deterrent to vandalism and littering.

A. Property management

A separate set of policies and procedures that outline the details of property management for the Springwater Corridor is being developed and will be presented to City Council for consideration and adoption. Elements of the policy are summarized below:

Crossings

Each motorized vehicle crossing of the Corridor presents an interruption to the Corridor users and a potential hazard. For this reason, approval for new crossing agreements will be limited to those that are absolutely necessary, such as adjacent property owners with no other access to their property. Existing crossings will be formalized with new agreements, and where possible, will be consolidated with other crossings. Existing and new crossing agreements will be considered and charged a fee based on land value and impact.

New public road easements will be issued to local units of government for road purposes provided grade separation is maintained. The grade separation requirement may be waived by the City under extenuating circumstances.

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[7] from "Protecting Your Rail Trail: Management Considerations and Strategies" , an unpublished report from the Rails to Trails Conservancy, January 1990.

Acquisition

Development of the Corridor to its full potential requires acquisition of some key additional property. One important purpose is to close two "missing links", one at each end of the City-owned section: between SE McLoughlin and SE 17th to connect to the Willamette Greenway, and between D Street in Boring and the beginning of the State-owned section. The other important purpose is to provide trailhead facilities at selected locations. It is important to acquire additional property as soon as possible since real estate prices generally increase each year and potential sites are limited.

LAND ACQUISITION POTENTIALS

Missing links	SE McLoughlin to SE 17th	2.25 Ac. (approx)
	Boring	0.25 Ac.
Trailheads	near SE 45th	
	near SE 82nd	
	near I-205	
	near SE 136th	

Initial acquisition strategies will focus on any tax delinquent property, or property owned by another public agency. For example, this strategy will be used to develop a small potential trailhead at Beggar's Tick Marsh, which is owned by Multnomah County.

Private agreements with adjacent property owners are another potential strategy. The result can be projects of mutual benefit to a landowner and to the City.

Finally, where outright purchase is necessary, the City will consider sales from willing sellers. A donation will be requested before cash is spent for property. Selling land to the City will follow a carefully structured procedure based on independent appraisals of fair market value.

Encroachments

Given the public nature of the Corridor, private encroachments can no longer be overlooked. The City of Portland, as property owner, considers it a priority to work with affected parties to resolve problems of encroachment.

Pre-existing agreements with the Portland Traction Company will be reviewed and, if appropriate, re-negotiated. In cases where the land has historically been used for permanent structures, new agreements can be considered appropriate because the cost of moving these structures is usually high. Land exchange may be an equitable and permanent solution for all parties based on the concept of value for value.

Utilities / Shared Usage

Compatible utility and shared usage agreements may be of benefit to both the Springwater Corridor and the requesting party. For example, underground fiber optic cables will not interrupt use of the Corridor while providing an annual rental fee for maintenance of the Corridor. Utilities will not be granted exclusive use of the Corridor but would be expected to share use with other compatible and even competing utilities.

Rules and Enforcement

In general, the initial set of rules proposed for the Corridor will stress courtesy and cooperation with other users rather than a restrictive set of edicts. The rules are outlined below:

- Motorized vehicles prohibited (except wheelchairs)
- Keep all pets on a short leash
- Stay to the right except when passing
- Pass slower traffic on their left; yield to oncoming traffic
- Travel at a reasonable speed in a consistent and predictable manner
- Always look ahead and behind before passing
- Give a clear warning signal when passing
- Yield when entering and crossing the trail
- Move off the trail when stopped to allow others to pass
- As a courtesy to trail neighbors, refrain from loitering near adjacent homes
- No alcoholic beverages or illegal drugs on the trail
- Firearms, fireworks and fires are not permitted on the trail
- All trail users should use a light and reflectors after dusk and before dawn

This trial set of rules is based on successful projects in other areas. At this time, it is not proposed to adopt a speed limit or a set of hours for the Corridor to be open. Trailheads, however, will be closed and locked consistent with the hours for City parks. Gresham has adopted sunset-to-sunrise closure hours.

The most effective and most visible enforcement on the Springwater Corridor will be other trail users. A citizen's foot patrol has already been at work along the Corridor, stopping motorcycle use and preventing illegal use before the Corridor is developed. The foot patrol is backed up by a group from PUMP (Portland Urban Mountain Pedalers). A patrol's primary function is to provide assistance and information, not to apprehend criminals. If a serious crime does occur, members of the patrol can get assistance from the emergency 911 network.

Patrol personnel should perform positive trail functions as much as possible--distributing maps and brochures, providing information, offering bicycle safety checks for children and performing other service-oriented activities. Security personnel should use a bicycle, their feet, or horse to patrol a trail, not a motorized vehicle. Users respond more favorably to someone whose appearance is more like a "trail user" than a law enforcement officer.

In addition, the Multnomah County Mounted Posse is negotiating for a home base location on or near the Springwater Corridor. They have committed to making regular patrols of the Corridor. The sheriff's office in each county along the Corridor will be asked to aid in control of trail use. The Parks Bureau Trail Manager will also be a regular presence on the Corridor. Adjacent landowners and trail users are encouraged to report violations to either the Trails Manager or the local law enforcement agencies.

The rules and regulations will be posted conspicuously at trailheads and any other necessary locations along the Corridor. Trail brochures, "safety days" (which involve volunteer user group presentations), and meetings with user groups will also help inform users of the regulations.

B. Property Maintenance

Maintenance is as important in property management as property acquisition and development. It includes such activities as pavement stabilization, landscape maintenance, facility upkeep, sign replacement, fencing, mowing and pest control. However, the effects of a good maintenance program are not limited to the physical and biological features of the Corridor:

- A high standard of maintenance is an effective way of helping advertise and promote the Corridor as a regional and state recreational resource (word of mouth advertising is best);

- The psychological effect of good maintenance can be an effective deterrent to vandalism, litter, and encroachment;

- Good maintenance is necessary to preserve positive public relations between the adjacent landowners and government;

- Good maintenance can help make enforcement of regulations in the Corridor more efficient. Local clubs and interest groups will take pride in "their" trail and will be more apt to assist in the protection of the Corridor.

A successful maintenance program requires continuity and a high level of citizen involvement. Regular, routine maintenance on a year-round basis will not only ensure trail safety, but will also prolong the life of the trail. Maintenance activities required for safe trail operation should always receive top priority. The following tasks should be part of a maintenance checklist:

Surfacing

At this point in time, a final selection for the multi-purpose hard surface paving material has not been made. The selection will be based on the results of a user survey of a variety of innovative materials that are installed in the Corridor after the test samples have been in place for six months. See Appendix K for specifications on the surfacing materials. The materials under consideration include a soil stabilizer, a concrete mix, a fly ash mix, a clay mix, and crushed stone. These materials should produce a hard surface that is accessible to a variety of users, less expensive than asphalt, and less expensive to repair (they may even be repaired by volunteer crews). The unknown factor at this time is their durability, especially under wet conditions and heavy use.

No matter what material is chosen, cracks, ruts, and water damage will have to be repaired periodically. In addition, vegetative control will be necessary on a regular basis. Some of the innovative surfaces may require an annual dragging.

Erosion control of the railbed will be necessary in several areas that have drainage problems. It may be necessary to maintain ditches and culverts to help drain these areas and prevent water from pooling in heavy rains. Checks for erosion should be made monthly during other regular maintenance activities, and especially during the winter months.

The surface will have to be kept free of debris, especially broken glass and other sharp objects, loose gravel, leaves and stray branches. Trail edges will have to be swept frequently to keep them from ravelling.

Pest and Vegetation Management

On-going efforts will be made to reduce the amount of Himalayan blackberries growing throughout the Corridor, but it is recognized that total control is beyond the resources of governing agencies and volunteers. An annual mowing along both sides of the center line is necessary to help check invasion. For long term weed control, native vegetation and

other plants will be reestablished on the Corridor by mechanical seeding and planting to shade out undesirable weed species and improve wildlife habitat.

Wherever possible, weed control will be accomplished by mechanical methods. Innovative weed control methods such as controlled grazing (sheep controlled by a shepherd) and steaming should be explored. The application of chemical sprays will be limited to use on those plants listed as *Harmful Plants* on *Portland Plant List* (see Appendix H), including Poison-hemlock, Golden chain tree, Poison Oak, Garden Nightshade, and Stinging Nettle. In any case, Integrated Pest Management (IPM) techniques will be followed to minimize the use of chemical control.

In addition, vegetation that intrudes on the equestrian trail must be controlled. A minimum 10' vertical clearance must be maintained.

Litter and Illegal Dumping

Litter along the Corridor will be removed by Parks or volunteer crews. Litter receptacles will be placed at access points and trailheads. Litter will be picked up twice a week during summer months, (just before and after a weekend) and once a week during the winter.

Illegal dumping will be controlled by vehicular barriers, regulatory signage and fines, as much as possible. When it does occur, it will be removed as soon as possible in order to prevent further dumping. Neighborhood volunteers, SOLV (Stop Oregon Litter and Vandalism), Alternative Community Service crews and inmate labor will be used in addition to Parks crews.

Signage

Signage will be replaced along the Corridor on an as-needed basis. A monthly check on the status of signage should be performed with follow-up as necessary.

Trestles

An engineer's report on the structural capacities of the existing wood trestles (see Appendix J) recommends an annual visual inspection of each of the trestles.

Culverts

All of the existing culverts should be cleared of vegetation and debris once annually. The inspection should take place before the onset of winter rains.

Fencing

The use of fencing for boundary control is strongly discouraged. The first preference will be to plant shrubs, trees, and use temporary fencing to establish privacy. As the need arises, governing jurisdictions will evaluate fencing requests. Property lines will be surveyed and marked in a way that is useful to Parks staff and our neighbors.

Trailheads
The specialized facilities at trailheads will require frequent inspection and maintenance. Restrooms must be cleaned on a daily basis. Site furniture and lighting should be kept in good repair. Trash receptacles should be emptied daily during high use periods.

Public Involvement
Trail user organizations, community groups, civic organizations and businesses should be invited to provide periodic maintenance work along the Corridor as a means of improving trail safety, keeping maintenance costs down and building good will with people living adjacent to the trail.

Trail users and neighbors can be encouraged to monitor and report maintenance problems and requests along the Corridor. "Improvement Request Forms" should be available at trailheads, from user organizations and at bicycle shops. Request forms should include the same maintenance items that are covered in the routine maintenance check list.

Maintenance / Operations Implications
Currently, the Springwater Corridor is being minimally maintained by Portland Parks Bureau personnel on an "asset protection" basis, with assistance from a Youth Conservation Corps and volunteer crews. This is not intended as a long-term arrangement. As Corridor development is completed, a Trails Manager should be assigned to the Corridor. The primary duties of this position would be to regulate trail use, coordinate volunteers, and maintain the trail. The Trails Manager would report to a maintenance supervisor. A seasonal laborer and the necessary equipment should be assigned under this position also. The personnel assigned to the Corridor would be based at a trailhead / information center.

On-going maintenance could be partially offset if adequate utility lease agreements are arranged, or license or easement fees are available. Other possibilities include "adopt-a-trail" sections by adjacent businesses, business associations, or community service organizations. Volunteer labor has been extensively used in the past and can be counted on for continued support, especially with items such as litter control and planting parties.

One other possibility is a "trail use fee day", where volunteers charge for use of the Corridor (on a voluntary basis) in order to establish a maintenance endowment fund.

CHAPTER 6

EVALUATION

A. User Satisfaction

Throughout the master plan development of the Springwater Corridor, public input has been sought in order to identify public needs and concerns and arrive at a design that best addresses these needs. The Park Bureau views this project as the beginning of a long term relationship with the adjacent communities. This effort will continue upon completion of the construction phase of the project. Though a great deal of survey data has been gathered to anticipate the type of activities the trail will receive, the real test will happen after the trail is built. It is critical to the success of the trail that after it is constructed an on-going post construction evaluation process begins. This will provide important data as to the actual use versus anticipated use of the Corridor and begin to reveal what works and what doesn't work.

The following is a partial list of questions that should be answered by this evaluation process:

- What are the trail user characteristics?
- What are the trail use patterns and how do they vary along different sections of the trail?
- What user conflicts are there, if any? (Between trail users groups, neighbors, vehicles, etc.)
- How has the trail impacted surrounding neighborhoods and other land uses?
- How has public use of the trail impacted Johnson Creek?
- What is the reaction to the physical nature of the trail?
- Are additional access points needed?

Evaluation Strategies

In order to determine existing use of the trail, a trail traffic count will need to be conducted. The following evaluation methodology is loosely based on a study, *King County, Commuting & Recreational Trail Use Analysis: Burke-Gilman Trail, Sammamish River Trail*, prepared by the International Bicycle Fund, in 1985. The trail monitoring procedure will consist of observing and counting trail users within a discrete time frame and location. Month, day of week and time of day should be recorded as well as weather conditions. The count should make record of the type (biker, walker, jogger, etc.), description (age, sex) and number of users, direction of travel and surface traveled on. These trail user counts could be done by volunteer groups such as the Friends of Springwater Corridor or arrangements could be made with local college survey/sociology

classes. Monitoring should take place at varying days of the week, time of day and at different locations along the trail.

Trail Use Patterns, Conflicts and Impacts
To obtain data on specific trail use patterns, a questionnaire should be developed that has the following objectives:

- Determine the purpose of the trip
- Determine where the user began and ended trip
- Determine how far users tend to travel on the trail and the pattern of traffic flow
- Determine the frequency and type of accidents occurring on the trails
- Determine the socio-economic characteristics of users of the trail
- Collect comments and criticisms about the physical nature of the trail from those using them and adjacent residents

During the early phases of the master plan development, Portland State University students were very effective in conducting a door to door survey of adjacent residents. A similar means of distribution could be used for this post construction evaluation questionnaire. Direct, on-trail distribution could also be utilized.

Public Input
To a large extent, satisfaction of both the adjacent land owners and trail users will determine the trail success. These citizens should have an opportunity to voice concerns and solicit comments to be included in the evaluation process. An annual or biennial meeting should be held with these user groups to gather input into the ongoing management of the trail.

B. Environmental Impacts

Trail Surfacing
The experimental trail surfacing to be constructed in the immediate construction phase should be monitored for any hazardous leachate materials. This test section will extend from the I-205 bike route to SE 92nd and proposes the use of several trail surfacing materials that have not been used extensively in the past. Each trail surfacing section should be monitored and the results of this monitoring should weigh heavily in the final trail surfacing selection.

Public Impacts
With the development of the Corridor, and the arrival of trail users, the potential of public misuse of the creek may increase. The presence of water acts as a natural draw for most people. But due to the environmental sensitivity of the creek and associated wetland, access is discouraged. Loss of fragile riparian vegetation, bank erosion, contamination of

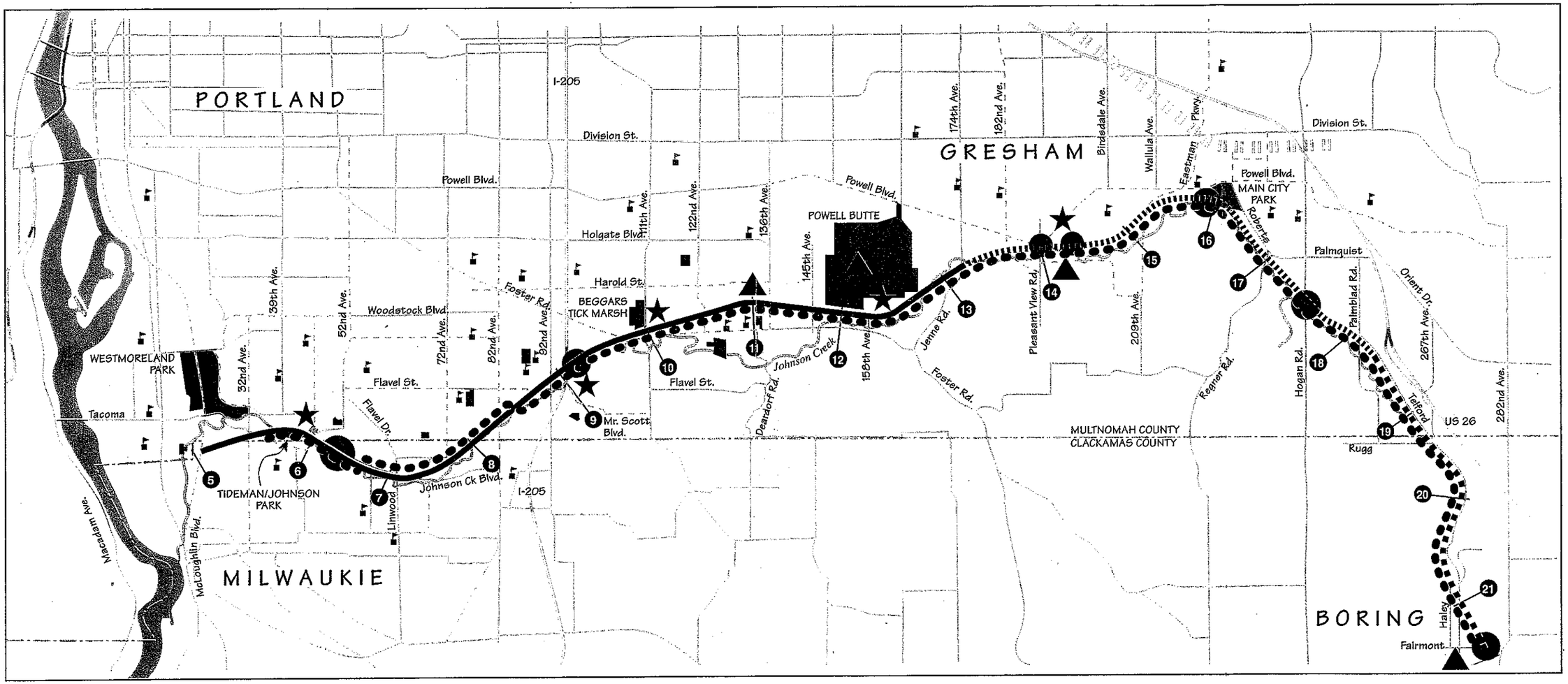
creek water from excessive fecal material and introduction of exotic fish and wildlife species into the creek are a few of the potential impacts. Close, ongoing monitoring of the creek will be needed to limit these impacts.

C. Modifications

Based upon the post construction evaluation data, problems with the trail can be clearly identified, solutions proposed and changes made as needed to improve the public experience of the Corridor.

MASTER PLAN

SPRINGWATER CORRIDOR



LEGEND

Springwater Corridor Trails:
- Multi-Purpose
- Soft Surface
- Gresham's Portion
- Equestrian

- Trailhead/Interpretive Center
- Proposed Trailhead Location
- Points of Interest
- Trailhead/Equestrian Facility

- Freeways
- Arterials
- Trimet Routes
- MAX Light Rail

- Parks
- Schools
- County Boundary
- Mile Markers