

# OREGON CITY

## TRAILS MASTER PLAN



OCTOBER 2004



# OREGON CITY TRAILS MASTER PLAN

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OREGON CITY, OREGON



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City of Oregon City

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OCTOBER 2004

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# I. Introduction

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## Plan Overview

Trails offer numerous aesthetic and recreational opportunities, as well as commuter options for traveling to and from destinations in Oregon City. Residents who desire to bicycle or walk to work, go for a family bicycle ride to the park, library, or along the Willamette and Clackamas rivers, or experience an undeveloped natural area will benefit from safe, connecting trails. Trails often help raise property values, provide common space for social interactions, improve overall community safety, and encourage healthy lifestyles. They can also improve over-use conditions in sensitive environmental areas when designed properly.

A high-quality trail system is a marker of a community that is truly great to live, work, and play in. The Oregon City Trails Master Plan (referred to as *the Plan*) uses the term ‘trail’ to describe shared use paths, multi-use trails, sidewalks, and hiking pedestrian paths designed for non-motorized usage. Sidewalks or paths directly adjacent to roadways are included when they provide a link between trails or between a trail and a destination. Trail users may include but are not limited to: bicyclists, non-motorized scooters, in-line skaters, users of other wheeled devices like Segways or electric assist-bicycles, roller skaters, wheelchair users (both non-motorized and motorized), walkers, runners, and, in some cases, equestrians and non-motorized water activities.

Oregon City has many opportunities to develop a quality trail system. Many of its parks and greenspaces have their own internal trails. Some of them have been formally developed and others have been created by user demand, where people have simply walked and created a path. Many streets in newer developments and older historic core have sidewalks. There are a number of opportunities to create a unique trail system on the Newell Creek Canyon rim and to develop trails as larger plots of land are subdivided into smaller residential areas.

As part of the development of the Plan, project staff analyzed the existing trail system and street network. The Plan recommends improvements that will upgrade the existing system where needed, fill in the missing gaps, and connect to significant environmental features, schools, public facilities, local neighborhoods, and business districts in Oregon City and throughout the region.





This Plan is intended to hold value for the next 50 to 100 years. By taking a long view, it includes projects that may be decades away and are dependent on a series of potentially major changes, which may or may not happen. This long view sets forth the vision, the implementation of which depends on City and resident leadership and support.

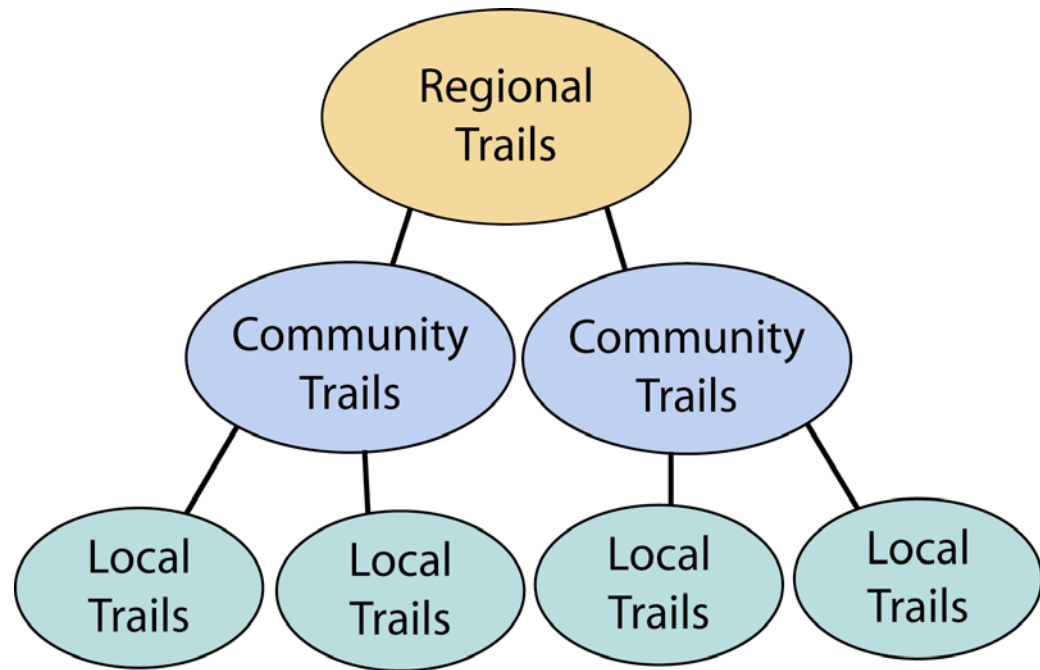


Figure 1. Trail Hierarchy Concept

### ***Vision***

The Plan proposes the development of a hierarchical trail system that integrates regional trails, community trails, and local trails (*Figure 1*) in a series of loops. This hierarchical system of trails—explained in more detail in the *Design Guidelines* and *Recommendations* sections—gives community members a wide variety of trail options throughout the city and to other parts of the metropolitan region.

The recommended trail network complements Oregon City’s rich indigenous and pioneer history, commerce, and ecology. The trail system will embody these icons of Oregon City as the trails travel along historic pioneer trails and obsolete railways; past rivers that have provided food, water, commerce, transportation and power for many generations; and through the varied ecological zones of the plateau hillside. Trails will connect parks, public facilities, open spaces and natural areas, and community centers to richly enhance Oregon City’s quality of life. Additionally, the proposed trail system provides a series of loops so that residents can use trails to travel to work, shop, and recreate.

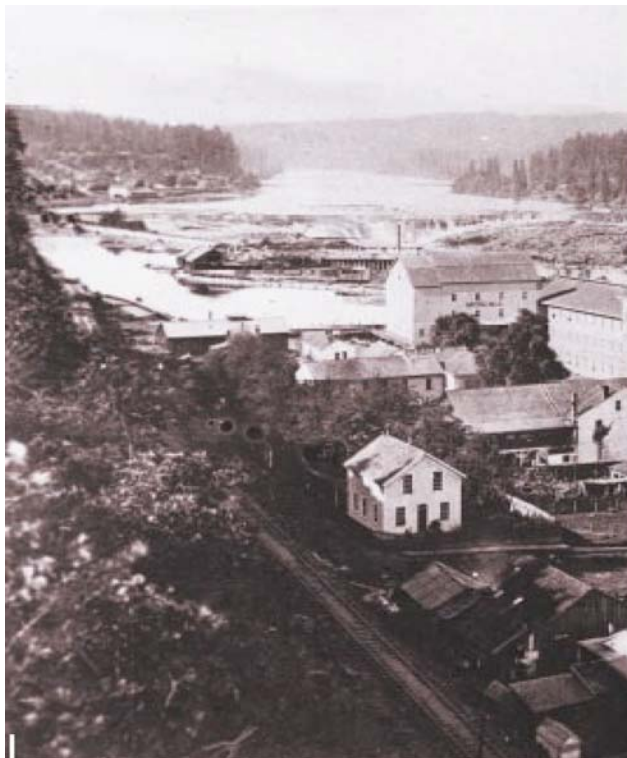


### Emphasizing History

History is an important part of Oregon City and the trail system proposed in this Plan. Many of the existing trails and demand pathways in the area grew out of seasonal hunting and fishing trails, pioneer wagon roads, logging skid roads, abandoned rail lines, wildlife trails accessing water and feeding areas, and along waterways. Before the first hunters and fur trappers arrived in Oregon, the site of Oregon City was the meeting place for a number of native tribes, including the Molallas, Calapooyas, Multnomahs, Teninos, and Chinooks. The natives fished salmon in the waters of the Clackamas and at Willamette Falls (known as Hyas Tyee Tumwater) and traded with one another. In 1815, white settlers came to the area and recognized the potential power generated by the falls. The area became known as Willamette Falls.

Oregon City was settled in 1829 as part of the Hudson Bay Company (HBC) by Dr. John McLoughlin. Oregon became part of U.S. Territory in 1849 and a state in 1859. McLoughlin bought out HBC's claim and platted the lower portion of Oregon City in 1847. Today, Oregon City is recognized as the oldest incorporated city west of the Mississippi.

Oregon City was the official end of the Oregon Trail, a 2000-mile pioneer wagon route forged from Missouri in the 1840's by the prospect of free land and opportunity, because it was the site of the American Provisional Government; anyone who wanted to claim their land had to first visit the claims office. The Barlow Road was the final overland segment of the Trail, linking The Dalles to



*"There are here three falls on a line of rocks extending across the river, which forms the bed of the upper channel. The water is precipitated through deep abraded gorges, and falls perhaps forty feet at an angle of about twenty degrees. It was a beautiful sight when viewed from a distance, but it became grand and almost sublime as we approached it nearer. I mounted the rocks and stood over the highest fall, and although the roar of the cataract was almost deafening, and the rays of the bright sun reflected from the white and glittering foam threatened to deprive me of sight, yet I became so absorbed in the contemplation of the scene, and the reflections which were involuntarily excited, as to forget every thing else for the time, and was only aroused by Captain W[yeth] tapping me on the shoulder, and telling me that every thing was arranged for our return."*

*John Townsend, a scientist who canoed up the Willamette River in 1834, looking at Hyas Tyee Tumwater (Willamette Falls)*



Oregon City over the southern flanks of Mount Hood. Most of the road has been relocated, removed, or paved over with more modern facilities west of the Cascades, though wagon ruts are still visible in eastern Oregon. Abernethy Green (site of the End of the Oregon Trail Interpretive Center) was a flat area east of the river where pioneers could temporarily accommodate their wagons and oxen until they received their land claim. Oregon City claims a number of firsts in the state of Oregon and all areas west of the Rocky Mountains including the first newspaper, location of the first Oregon capital for Provisional and Territorial governments, library, debate society, and jail.

It is important to recognize the history of Oregon City in the city's trail system. First, it provides a logical framework for trail corridors and destinations. The Barlow Road, Abernethy Green, Canemah, historic sites in the downtown core, native fishing, hunting, and trading trails, and the Willamette River were all existing travel corridors and destinations at one time and provide numerous trail opportunities. Secondly, residents of Oregon City respect and take pride in their historical roots. The historical theme is one that can be integrated with the trail system to develop a unique trail experience. Lastly, the trail system can help preserve the history of Oregon City. As the city continues to grow and develop, pieces of history are lost under new buildings and parking lots. A heritage trail system can help preserve the rich history and unearth buried pieces of the past. A network of heritage trails on city sidewalk and other paths should be developed to link these resources and the neighborhoods of Oregon City. The Clackamas Heritage Partners should play a role in developing this network, which can be used as an important part of the city's economic development strategy.

### **Creating Community**

The proposed trail system in the Plan will also help deepen residents' understanding of Oregon City's history and culture, promote and offer healthy recreation, transportation, and community-gathering options, boost regional economic growth, and improve community safety.

### **Encouraging Environmental Stewardship**

The proposed trail system has a significant number of earthen trails for hiking and, in some cases, bicycling and horse riding. These trails offer excellent opportunities to provide interpretive education and enhance residents' appreciation of the Willamette and Clackamas rivers, Newell Creek Canyon, Canemah Bluff, and other natural resources. The trail system also provides educational opportunities for people of all ages, so that residents and visitors can discover and appreciate the area's rich beauty, both now and into the future.



## Plan Scope and Public Involvement

The Plan followed a series of research, field, and public process activities from late Fall 2003 to late Spring 2004.

Research activities included:

- Assessment of existing bicycling and walking conditions and facilities in Oregon City.
- Evaluation of bicycle and pedestrian needs, such as safety problems, demographic and geographic population and employment demands, and facility deficiencies.
- Field assessment of missing gaps, system deficiencies, and trail opportunities.



**Examining frog habitat  
in Newell Creek Canyon**

Public outreach activities included:

- Four meetings with the Oregon City Technical Advisory Committee, a group with six group representatives (see inside cover.)
- A Visioning Workshop including 15 stakeholders (see inside cover).
- Information in *The Oregonian*, *Oregon City News* and on the City's website.
- Two public open houses (3/04 and 5/04).
- Meetings with Park Place Neighborhood Association and development consultant.
- Meeting(s) with Canemah residents.



**Gathering information from knowledgeable  
residents**

## Related Plans and Background Documents

A few adopted planning processes have helped guide the vision and development of the Oregon City Trails Master Plan. Below are summaries of the plans and their relevant goals, objectives, and policies:



### ***City of Oregon City Transportation System Plan (2001)***

The Oregon City Transportation System Plan (TSP) reviews the existing conditions of the transportation system, and provides a framework for transportation improvements in the future. The TSP recognizes the importance of multi-modal travel options and strives to improve the bicycle and pedestrian environment over time. The following statements reflect transportation policy goals and objectives from the TSP and the pedestrian system plan:

“Develop and maintain a transportation system that incorporates, provides for, and encourages a variety of multi-modal travel options to meet the mobility needs of all Oregon City residents.”

“Provide an interconnected and accessible pedestrian system that links residential areas, major pedestrian generators, employment centers, and the arterial and collector roadway network with one another.”

“Provide a well-defined and accessible bicycle network that links residential areas, major bicycle generators, employment centers, and the arterial and collector roadway network with one another.”

“Ensure the adequacy of pedestrian and bicycle connections to local, county, and regional trails.”

“Improve the safety of vehicular, rail, bicycle, and pedestrian crossings.”

“The most important existing pedestrian system needs in the City of Oregon City, as prioritized by the citizens, city staff, and advisory committees involved in the planning process, is the provision of sidewalks on arterials and collectors that provide connectivity to key activity centers (especially schools and transit facilities).”

“Pedestrian amenities such as curb extensions (to reduce the exposed crossing distance that pedestrians must walk), street planters, streetlights (to improve the visibility of pedestrians at night), and wide sidewalks all act as buffers and improve the safety of pedestrians throughout the city.”

### ***Oregon City Waterfront Master Plan (2002)***

The Oregon City Waterfront Master Plan presents a vision for the Willamette and Clackamas River waterfronts and how they tie into the historic downtown. The Plan includes several proposed trails that connect under and along Highway 99/McLoughlin Blvd and Interstate 205, and to the End of the Trail Interpretive Center.

“A waterfront trail system will link Clackamette Park to downtown to the south and the restored habitats of Clackamette Cove to the east.”





“Primary connections noted by the plan include the enhancement of 17<sup>th</sup> Street or other viable connections crossing the railroad tracks to promote circulation of tourists and visitors, and exploration of opportunities for pedestrian connections at the new passenger rail depot. In addition, the extension of a trail system north from the restored Clackamette Cove would complete pedestrian connections to the openspaces of Gladstone via the pedestrian river crossing on the Clackamas.”

### ***Oregon City Downtown Community Plan (1999)***

This Plan provides a vision for the future of the historic waterfront downtown of Oregon City. It provides design guidelines and new code language to protect and enhance the historic core. The Plan also lays out recommendations for better pedestrian facilities on McLoughlin Boulevard and guidelines to promote pedestrian-friendly development.

### ***Oregon City Parks and Recreation Master Plan (1999)***

The Parks and Recreation Master Plan provided a starting point for the Trails Master Plan by identifying several conceptual trail corridors in the plan.

## **Goals and Objectives**

The Oregon City Trails Master Plan aims to develop a comprehensive network of multi-purpose trails that link important pedestrian generators, environmental features, historic landmarks, public facilities, Town Centers, and businesses districts. The following goals were derived from existing plans and input from Technical Advisory Committee members, Workshop participants, and citizens of Oregon City.

### ***Goal 1: Trail Development and Regional Connections***

Provide a trail system around Oregon City to seamlessly connect regionally significant trails with local trails and ensure that new development and subdivisions connect to this system. Establish and enhance regional trail connections to the adjacent communities of Gladstone, West Linn, unincorporated Clackamas County and the greater Portland metropolitan region.

### ***Goal 2: Access***

Develop a trail system for people of all abilities, pedestrians, bicyclists, equestrians, boaters, and other non-motorized trail users. Create a complementary system of on-road bicycle routes for commuter, recreational, and touring enthusiasts using scenic, collector, and local road rights-of-way and alignments through Oregon City and the surrounding unincorporated areas.



***Goal 3: Transit Synergy***

Ensure that the trail system connects with current and future planned transit operations in Oregon City, and is designed to be complementary with transit and transportation systems.

***Goal 4: Community Linkages***

Link trails to residential neighborhoods, community facilities like the library and city hall, parks, schools, athletic facilities, swimming pools, historic districts, the downtown, as well as other commercial and retail activity centers in Oregon City. Provide heritage trails that link the cities historic, scenic and geologic resources.

***Goal 5: Amenities***

Locate trailheads at or in conjunction with park sites, schools, and other community facilities to increase local access to the trail system and reduce duplication of supporting improvements. Furnish trail systems with trailhead improvements that include interpretive and directional signage systems, benches, drinking fountains, restrooms, parking and staging areas, and other services.

***Goal 6: Maintenance and Emergency Access***

Develop trail design and development standards that are easy to maintain and access by maintenance, security, and emergency vehicles.

***Goal 7: Preservation***

- Provide trail access to and preserve view corridors and viewsheds at vantage points.
- Preserve existing public rights-of-way and other easements for future trails and accessways, particularly powerline and utility corridors.
- Preserve sensitive natural areas by designing and planning trails so that the natural area can be experienced without impacting or degrading the environment.



## II. Design Guidelines

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### Plan Concept

The Trails Master Plan uses the trail hierarchy concept (*Figure 1, on page 2*) to create a series of interconnected loops throughout the city (*Figure 2*). This concept enables trail users to connect to most destinations on a variety of trails; from earthen walking trails to sidewalks and bicycle lanes to paved shared use paths. The loop concept also allows recreational trail users to create personal loops, depending on how long or far they wish to travel.

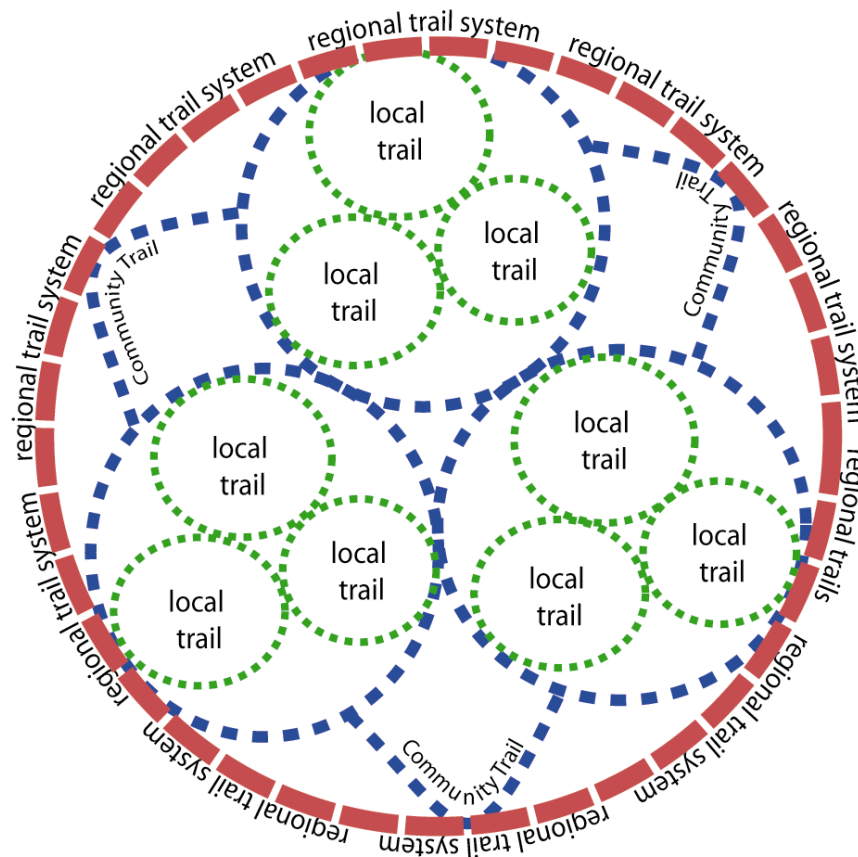


Figure 2. Oregon City Trail Loop Concept

## The Oregon City Loop Trail

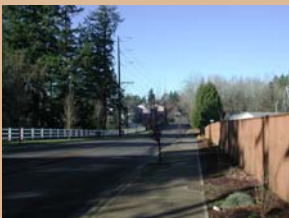
Most of the regional trails planned by Metro take advantage of established rights-of-way, like historic interurban train lines, utility corridors, waterways and greenways, providing a continuous, off-street travel experience.

The Oregon City Loop Trail in part utilizes an old Willamette Valley Southern Railway line that carried passengers and wood products through Newell Creek Canyon to Molalla and Mount Angel from 1915 to 1938.

Southern portions of the Oregon City Loop Trail take on a different character as it travels around Oregon City through parks, future subdivisions, and on local roadways.



Douglas Fir trees have grown on the edges of the railroad berm in Newell Creek Canyon



Meyers Road would be an important segment for the southern portion of the Oregon City Loop Trail

## Regional Trails

Regional trails connect Oregon City to adjacent communities – Gladstone, West Linn, unincorporated Clackamas County, and the greater Portland metropolitan region – and to regionally significant features such as the Willamette and Clackamas Rivers, Beaver Lake, and the historic Barlow Road. There are five planned regional trails and one existing regional trail in the Oregon City area. The following proposed trails are in Metro's Regional Transportation Plan (RTP) and are eligible for regional funding.

- **Oregon City Loop Trail**, which would create a loop around Oregon City, utilizing the east side of the Newell Creek Canyon and linking to the Beaver Lake Trail.
- **Beaver Lake Trail**, as part of the Oregon City Loop Trail, would begin at the End of the Oregon Trail Center and travel on the east side of Newell Creek Canyon to Beaver Lake.
- **Oregon Trail-Barlow Road Trail**, which would roughly follow the pioneer wagon trail created by Sam Barlow from the End of the Oregon Trail Center to the Cascades.
- **Willamette Greenway Trail**, which would follow the Willamette River from Clackamette Park in Oregon City to Canby.
- **Trolley Trail Bridge**, which crosses the Clackamas River from Gladstone.
- **Clackamas River Water Trail**, where amenities like boat ramps, interpretation sites, and information would be provided for non-motorized boat users.

The **I-205 Corridor Trail**, which is a major north-south connection for non-motorized users, is the only existing regional trail in the city. The I-205 Corridor Trail ends on the Oregon City Bridge and utilizes existing roadways, pathways, and sidewalks through Oregon City.

Regional trails generally have their own right-of-way. Users should have minimal conflict with automobile traffic. These trails must be designed to meet the Americans with Disabilities Act (ADA) standards, American Association of State Highway and Transportation Officials (AASHTO) and the Manual on Uniform



Traffic Control Devices (MUTCD) standards, Oregon Department of Transportation (ODOT) standards and other State and Federal guidelines. Regional trails serve bicyclists, pedestrians, wheelchair users, skaters, and others.

### ***Community Trails***

Community trails link important Oregon City land uses and areas of interest, including retail areas, schools, parks, transit centers, churches, employment districts, libraries, and other desirable areas. They also connect users to adjacent communities and the regional trail system.

The designs of community trails vary according to the functional classification of the facility as well as the average daily traffic (ADT) on the adjacent roadway. Most community trails in Oregon City are either off-street shared use paths or separate facilities (i.e., a sidewalk or pathway for pedestrians and on-street bike lanes for bicyclists) that meet State and Federal standards. Safety for bicyclists and pedestrians on these routes is paramount, as they often parallel or intersect busy roadways. However, some community trails follow neighborhood streets, in which case pedestrians are accommodated with a sidewalk or shared use path and bicyclists share the roadway with vehicles. The majority of community trails are on arterial and collector streets and will be implemented when the roadway is widened or improved.

### ***Local Trails***

Local trails primarily serve pedestrians with safe and direct connections to and within local features, such as schools, parks, natural areas, waterways, and community centers. Some local trails may also be appropriate for bicycling, skating, and equestrians. There are three categories of local trails: City Trails, Natural Trails and Accessways.



#### **City Trails**

City trails are typically paved or made of a smooth surface to accommodate most trail users. These trails are typically found in developed parks and recreational areas, like Hillendale Park and Singer Creek Park. Some city trails may not be able to maintain a 5% grade to accommodate disabled users due to topographical constraints (steep grades, constrained widths, etc.). At least one trail in the park should be constructed to ADA standards to provide for all trail users.







### Natural Trails

Natural trails are soft-surface trails typically found in undeveloped parks and natural areas and aim to provide a natural outdoor experience. These trails are usually for pedestrians only, but some trails could be open to mountain bikes and/or equestrians. Most of the trails in Newell Creek Canyon and on Canemah Bluff will be of this variety.



**Oregon City accessway**



**Wooden stairway**  
*(photo: Metro)*

### Accessways

Accessways are specifically defined by Oregon City code (OCC §12.24.020) as being “any off-street path or way which is intended for the primary use of pedestrians and bicyclists and which provides direct routes between residential areas, retail and office areas, institutional facilities, industrial parks, transit streets, neighborhood activity centers, and transit oriented developments where such routes are not otherwise provided by the street system.” These routes are intended to provide safe, direct, and convenient connections to reduce out-of-direction travel and make walking and bicycling easier.

Accessways can also be unique. They can be stairs, an elevator, bridge, alley or passage connecting gardens, courtyards, or other urban spaces. Oregon City has a number of opportunities to use different types of accessways, particularly in the historic downtown area and to connect the various levels of the city.



### Waterway Trails

Waterway trails are water corridors dedicated to no wake water activities augmented with special features, like small craft boat ramps, interpretive areas, and public beach sites for camping and picnicking. The intent of the water trail is to create awareness, preserve public access to the waterway, and provide a natural experience.



## Trail Design Types

The following table provides a quick reference chart for the various types of trails and the accepted standards.

|               | Regional Trail   | Community Trail   |   | Local Trail   |   |  |  |
|---------------|--|---|---|---|---|--|--|
|               |  | On-street   | Off-street  | City Trail  | Natural Trail   | Accessway  |  |
| Facility Type | Shared use path  | Sidewalk/pathway  | Shared use path   | Shared use path   | Soft surface trail  | Shared use path  | Stairs, elevator, incline, bridge, alley, etc. |
|               |  | Bicycle lane  |   |   |   |  |  |
|               |  | Shared roadway  |   |   |   |  |  |
| Users         | bicyclists<br>pedestrians<br>wheelchairs<br>baby strollers<br>equestrians<br>skaters | bicyclists<br>pedestrians<br>wheelchairs<br>baby strollers<br>skaters | bicyclists<br>pedestrians<br>wheelchairs<br>baby strollers<br>equestrians<br>skaters* | bicyclists<br>pedestrians<br>wheelchairs***<br>baby strollers<br>equestrians<br>skaters**** | bicyclists**<br>pedestrians<br><br>equestrians              | bicyclists<br>pedestrians<br>wheelchairs<br>baby strollers<br>equestrians<br>skaters | depends on facility type                       |
| Width         | 10' - 12'<br><br>2' soft shoulders   | 5' - 12' sidewalk   | 8' - 12'  | 6' - 12'  | 2' - 12'  | 7'   | depends on facility type                       |
|               |  | 5' - 6' bicycle lanes   |   |   |   | 4' shoulders<br>5' in greenways  |  |
| Surface       | Paved or other smooth-rolling surface to accommodate all trail users                 | Concrete  | Paved or other smooth-rolling surface to accommodate all trail users                  | Paved or other smooth-rolling surface to accommodate all trail users                        | Earth, gravel, wood shavers, or other soft surface material | Concrete   | depends on facility type                       |
|               |  | Asphalt   |   |   |   | Gravel in greenways  |  |

\* Depends upon chosen trail surface -- inline skates and skateboards will not roll well on surfaces other than asphalt or concrete.

\*\* Mountain bikes, if allowed.

\*\*\* Paved park trails may still be too steep to safely accommodate wheelchair and other disabled users.

\*\*\*\* Depends upon chosen trail surface -- inline skates and skateboards will not roll well on surfaces other than asphalt or concrete.

Table 1. Trail Design Types and Standards



## Trail Designs

The following cross sections illustrate standard treatments for the primary trail design opportunities in Oregon City. There are also a few innovative designs, like swales (shallow, wide depressions adjacent to roadways and trails that collect stormwater runoff) and other “green street” concepts, that can be used in some situations. This section should be supplemented with other trail design documents, including ODOT’s Bicycle and Pedestrian Master Plan, Metro’s “Green Trails: Guidelines for Building Environmentally Friendly Trails,” AASHTO, and the MUTCD.

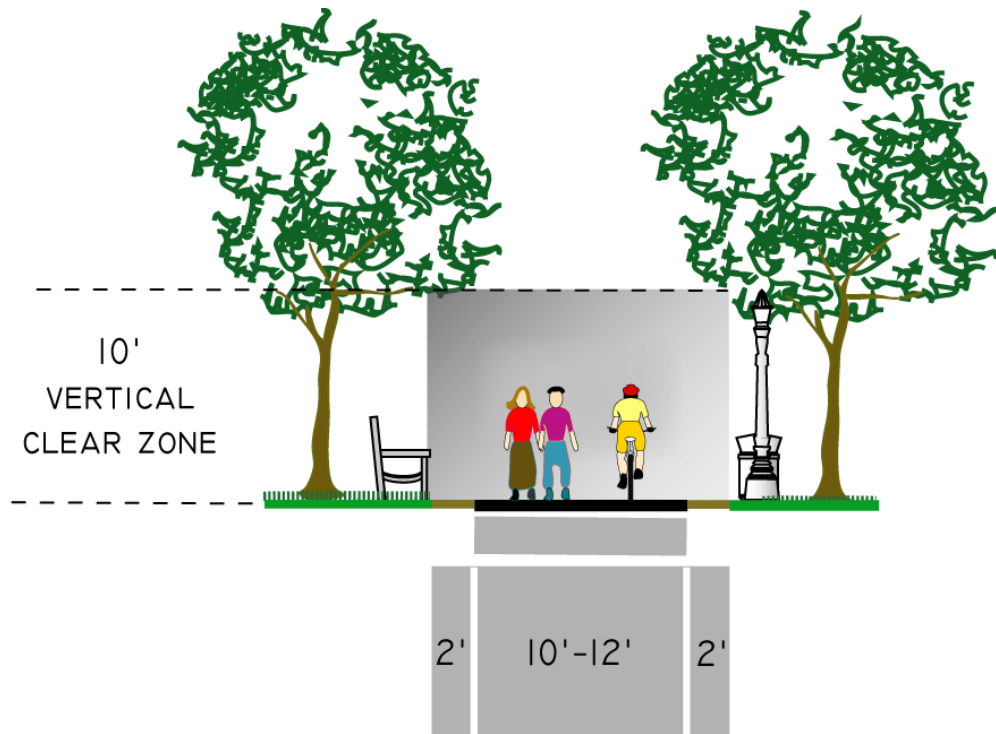


Figure 3. Regional Trail

### *Regional Trail*

Figure 3 illustrates a typical shared use path design that is appropriate for regional trails and some community trails. This trail is designed to accommodate two-way bicycle and pedestrian traffic, typically has its own right-of-way, and can accommodate maintenance and emergency vehicles. This type of trail is typically paved (asphalt or concrete) but can also be a surface that provides a smooth surface, as long as it meets ADA requirements. Wider soft shoulders should be provided for equestrians and runner/joggers if space allows.

*Community Trail: High Volume Roadways*

On roadways with 3,000 or more vehicles a day, bicycle lanes should be used to improve bicyclist safety and comfort. A buffer or curb must separate the shared use path or sidewalk from the roadway for pedestrian safety. The width of the bicycle lane, buffer, and sidewalk or path should appropriately reflect the volume and speed of the vehicles using the roadway. Roadways with higher traffic volumes and speeds should have wider bicycle and pedestrian facilities or greater separation.

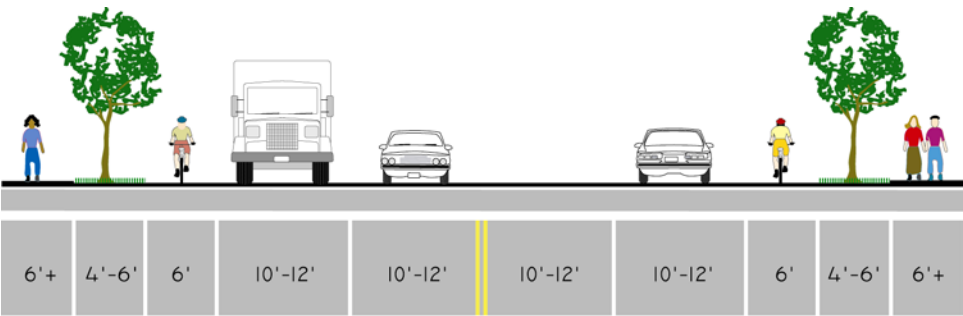


Figure 4. Community Trail on a High-Volume, High-Speed Roadway

Figure 4 illustrates typical bicycle and pedestrian trail accommodation in urbanized areas. The width of the sidewalk should depend on anticipated use; more users warrant a wider walkway. Sidewalks should be a minimum of 6' with a 4' minimum planter or 6' minimum tree well. Bicycle lanes should be 5' to 6'; 4' minimum is allowed under certain circumstances.

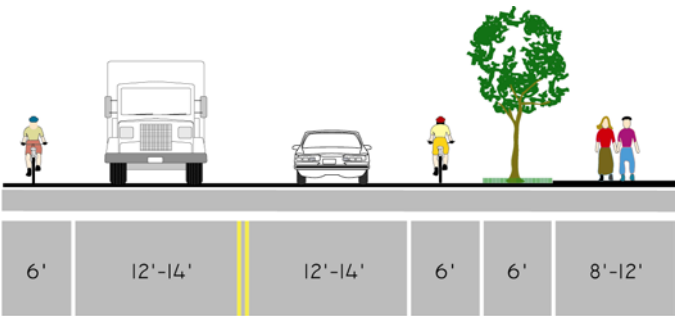


Figure 5. Community Trail Option 1 (Shared Use Path with Bike Lanes) on a High-Volume, High-Speed Roadway

Some arterials and major collectors can accommodate a shared use path on one side of the roadway and on-street bicycle lanes for commuter bicyclists (Figure 5). The shared use path provides a comfortable walking space for pedestrians and enables children and recreational bicyclists to ride without the discomfort of riding in a busy street. This configuration works best along roadways with limited driveway crossings and with services primarily located on one side of the roadway.

Sometimes a shared use path can provide trail accommodation on high-volume, high speed roadways (Figure 6). This type of trail works best in corridors where there are limited driveway/intersection crossings and few desirable destinations on the side of the roadway without the trail, like along Highway 213 or along local roadways with access management and minimal driveway use. The trail should be at least 8' wide (preferable 12') with a 6' or greater vegetated buffer.

*Note: This treatment should be used only after a detailed analysis of the corridor has been conducted by a registered engineer. Driveway/uncontrolled intersection crossings should not exceed 4 for each quarter-mile.*

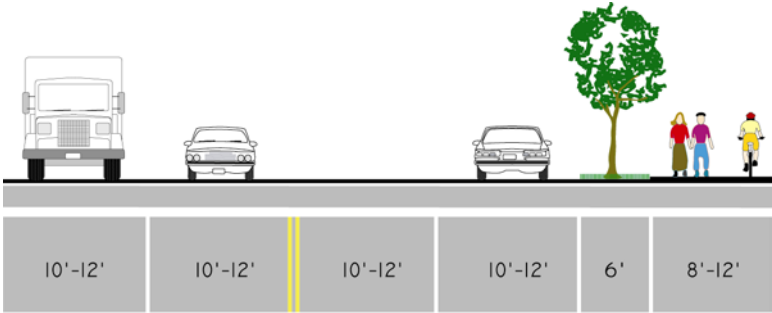


Figure 6. Community Trail Option 2 (Shared Use Path) on a High-Volume, High Speed Roadway

**Community Trail: Moderate Volume Roadways**

Some urban roadways can accommodate bicyclists with a wide outside travel lane if there is no shoulder or insufficient space for a bicycle lane. The lane should be wider on roadways with steep grades where bicyclists need more maneuvering space. If space is constrained, the wider lane should be provided on the uphill side of the roadway.

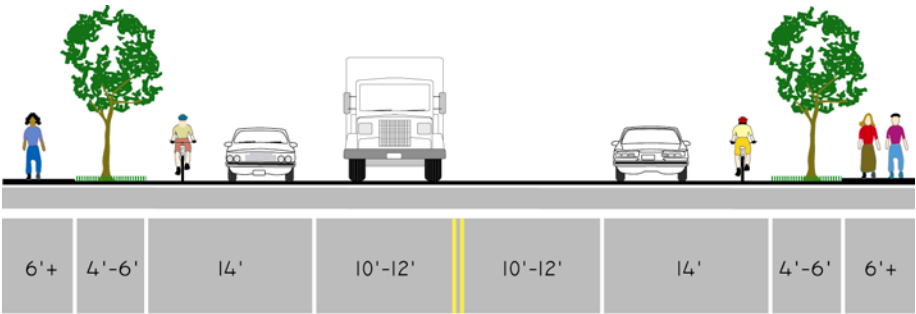


Figure 7. Community Trail (wide outside lanes) and a Sidewalk



### *Community Trail: Low Volume Roadways*

On a low volume, low speed roadway (i.e., residential or neighborhood streets), many bicyclists can safely share the road with vehicles. Pedestrians should be separated from the roadway with a buffer or a curb. A curb must be present if there is insufficient space for a buffer. The width of the sidewalk or trail should depend on the traffic volume and speeds of the adjacent roadway.

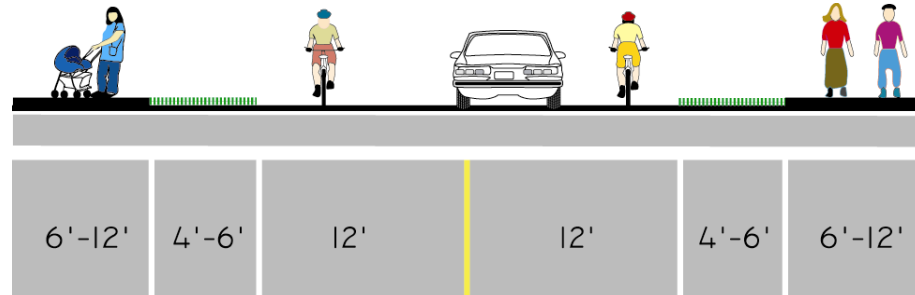


Figure 8. Community Trail on a Low Volume, Low Speed Roadway

### *Local Trail: City Trail*

City trails provide access for most, if not all, trail users within neighborhoods, parks, greenspaces, and other recreational areas. They are similar to regional trails in that they typically have their own right-of-way and serve only non-motorized users. These trails should be at least 6' wide and at least 8' wide if bicycle use is anticipated. All efforts should be made so that at least one ADA accessible trail is available and serves the most desirable parts of the area (i.e., picnic areas, viewpoints, playground equipment, etc.)

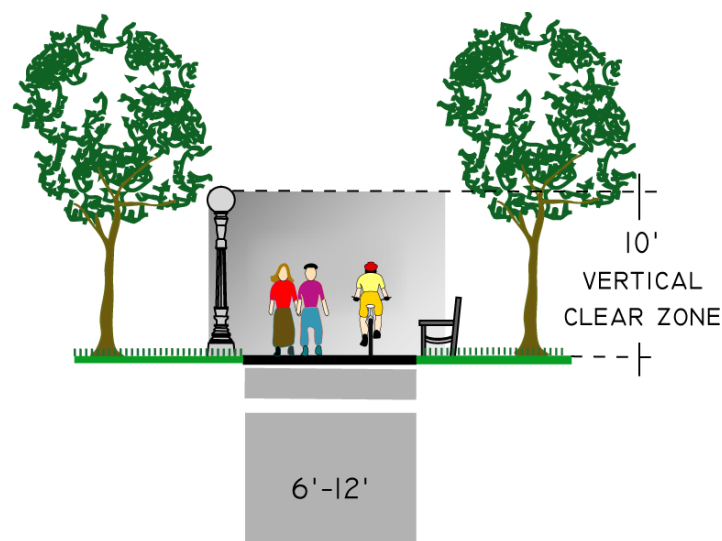


Figure 9. Paved City Trail

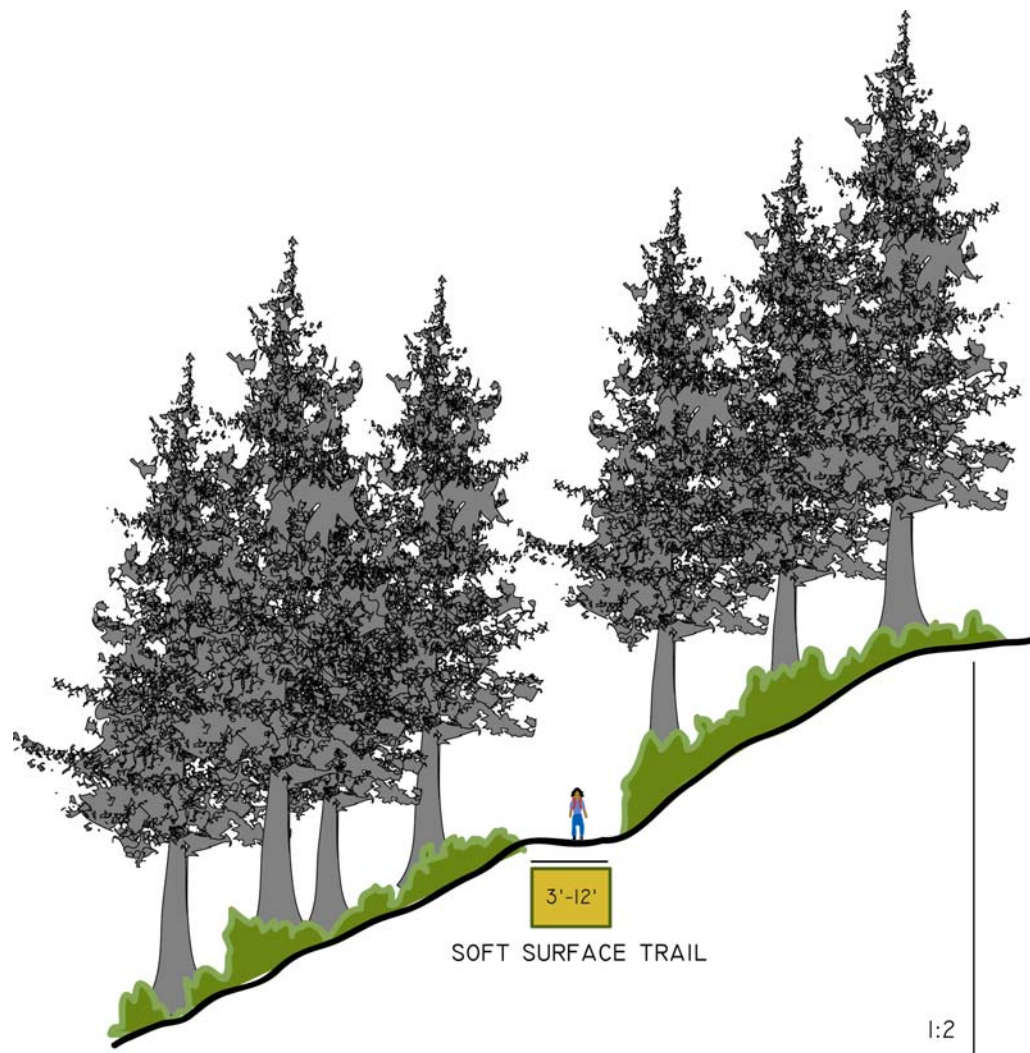
*Local Trail: Natural Trail*

Figure 10. Natural Trail

Natural trails are usually considered when a trail is desired next to a natural resource. Trail width will vary depending on the existing topographic and environmental conditions. Natural trails should take into account issues like drainage, erosion, compaction/impaction from anticipated use, presence of waterways and sensitive riparian areas, habitat areas, environmental guidelines, such as “Green Trails” Guidelines for Environmentally Friendly Trails” by Metro, and regulations, like Oregon City’s code for trails in water quality resource areas.

Trail width will depend on intended users. For example, narrower widths should be used in environmentally constrained areas with only hiking uses intended. Wider widths are desirable for shared bicycle and/or equestrian use. Areas with natural trails (i.e., natural parks and greenspaces) should have a complimentary accessible route that meets or exceeds ADA standards in addition to the natural trails.

## Local Trail: Accessway

Accessways provide direct connections for trail users to schools, parks, community centers, retail areas, neighborhoods, and other trails. They are intended to be short, direct connections to reduce unnecessary out-of-direction travel for bicyclists and pedestrians. Oregon City Code (§12.24.040) requires accessways to have a 15' right-of-way with a centered 7' wide paved surface and two 4' planter strips. The City encourages the use of pervious surface materials, like pervious concrete and interlocking pavers. The accessway should not exceed 5% slope to accommodate all users. Accessways in parks, greenways, or other natural resource areas may have a 5' wide gravel path with wooden, brick or concrete edgings.

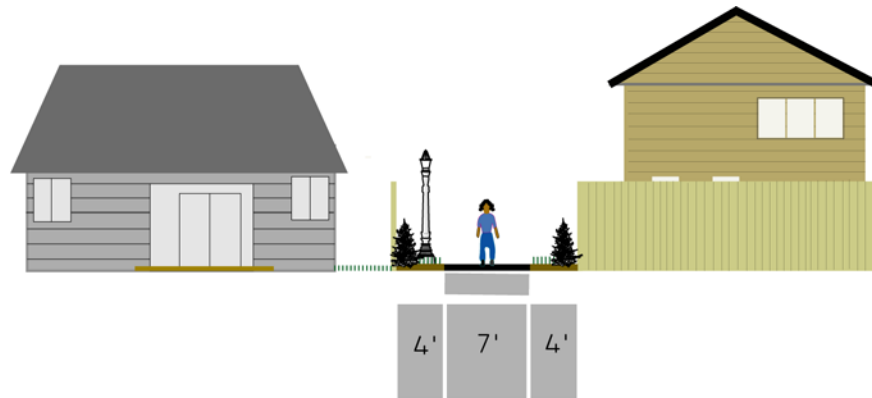
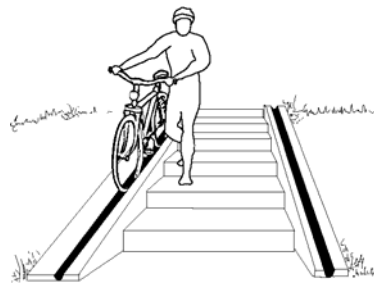


Figure 11. Bicycle and Pedestrian Accessway

### *Innovative Accessways*

There are also other innovative ways to provide direct access, particularly in topographically constrained areas (i.e., on steep hills, over waterways, etc.) Stairs, alleyways, bridges, and elevators can provide quick and direct connections throughout the city and can be designed so they are safe, inviting, and accessible to most trail users. For example, stairways can have wheel gutters so that bicyclists can easily roll their bicycles up and down the incline and boardwalks can provide access through sensitive wet areas and across small waterways.



Bicycle wheel gutters on stairs



Boardwalk bridge

## Innovative Roadside Trail Treatments

Filter strips and bio-swales are innovative ways to retain and treat stormwater from impervious surfaces and work well with roadside trails. The design guidelines for filter strips and swales are similar; both methods use grassy vegetation or aggregate to remove sediment from stormwater runoff. Use of filter strips and swales can be limited in retrofit situations due to slope, soil, and right-of-way conditions. Existing underground utility conflicts may increase cost and complexity.

### *Filter Strips*

Filter strips (*Figures 12 and 13*) are gently sloped grassy and aggregate areas that are used to treat small quantities of sheet flow runoff. They are often used to pretreat stormwater flow of minimal depth (.5 inches) as it passes from an impervious area, like a parking lot or roadway, into a swale or infiltration area. Sidewalk width illustrated is a minimum.

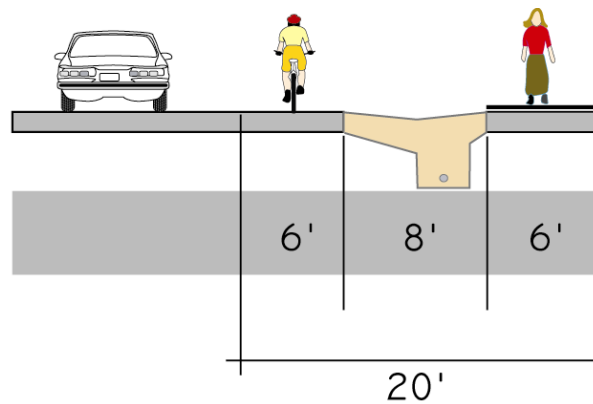


Figure 12. Aggregate Filter Strip

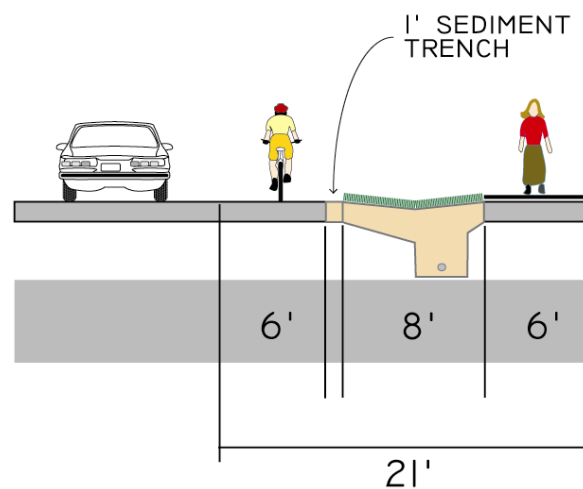


Figure 13. Grass Filter Strip

Swales

Swales (Figure 14) are shallow, wide depressions adjacent to roadways and trails that collect stormwater runoff over vegetation to slowly settle sediments and particulate matter. The pollutants are filtered out, settled, or removed by plants, causing fewer pollutants to enter ecologically sensitive water bodies. For more information and further design guidelines for swales and other Green Street concepts, consult Metro’s “Green Streets” guidebook.

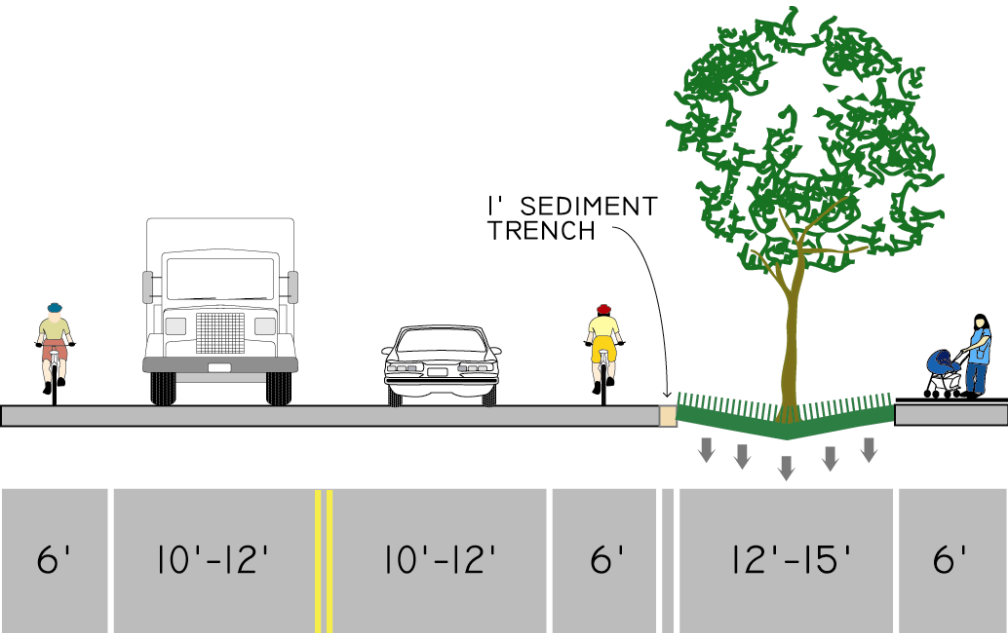


Figure 14. Bio-Swale



Bio-Swale

| Bio-Swale Guidelines<br>(Metro, “Green Streets”) |            |
|--|------------|
| Optimal Length                                   | 200-250 ft |
| Slope of sides (optimal)                         | 1% - 2%    |
| Slope of sides<br>(minimum, maximum)             | 1%, 6%     |
| Optimal water depth                              | 3 inches   |
| Optimal width                                    | 12 ft      |



## Trails and Environmental Regulation/Permitting

### *City of Oregon City*

#### Water Quality Resource Areas

The City of Oregon City regulates development in Water Quality Resource Areas (WQRAs) that are delineated in the Oregon City Local Wetland Inventory (LWI), and on the Water Quality and Flood Management Areas Map. The general locations of streams, riparian areas and wetlands were verified in the field as part of the LWI, but the precise boundaries of WQRAs would need to be field delineated, flagged and surveyed prior to trail construction. Water Quality Resource Areas include the protected water feature (e.g. stream, wetland) and the associated vegetated corridor. The width of the vegetated corridor around the water resource depends on slope or designation as an anadromous fish-bearing stream (Ch. 17.49.050). WQRAs with steep slopes have a wider protected corridor than streams with more moderate or no slopes. The vegetated corridor is measured as the horizontal distance from either the two-year flood elevation or from one foot above (vertically) the Ordinary High Water Mark (a distinct mark in the soil or vegetation from normal water action).

Streams considered anadromous fish-bearing streams have a 200-foot vegetated corridor. The City relies on information from the Oregon Department of Fish and Wildlife (ODFW) for determining which streams are anadromous fish-bearing streams.

#### *Trails in Water Quality Resource Areas*

Proposed walkways and shared use paths are considered provisional uses within Water Quality Resource Areas and are subject to the application and development standards of Ch. 17.49.050 G and H(5). In general, setbacks will be required for trail development to protect the integrity of the water resource. Walkways and bike paths, either earthen or paved, should not be within 10 feet of the protected water feature. Where practicable, no more than 50 percent of earthen trails and no more than 25 percent of paved trails should occur between 30 and 10 feet of the protected water feature. A maximum trail width of 12 feet is recommended.

As an important note, the Oregon City Trails Master Plan process allows flexibility in the design and location of trails in situations where development criteria cannot be met. This should be kept in mind for areas where setback requirements or other criteria are difficult to achieve.

#### *Grading and Clearing*

Any grading or clearing within the Water Quality Resource Area will require mitigation. Mitigation for paved trails in WQRAs will likely require mitigation at a 1:1 ratio. For example, if a paved trail removes 50 square feet of vegetation, then 50 square feet must be added to the vegetated corridor. The City of Oregon City is open to considering “pre-mitigation” - mitigation completed before impacts occur as a means of reducing mitigation requirements (Tony Konkol, Oregon City, 2004).



Mitigation requirements are flexible and are determined on a case-by-case basis. Mitigation requirements will also vary slightly according to the quality of the Water Resource Area (See Table 17.49-2 in the Water Resources Overlay District). Mitigation should occur on-site and generally consists of installing native plants, removing non-native invasive plant species, removing debris, and seeding bare soil. Trail development that impacts the protected water feature (but not the vegetated corridor) will require concurrent review with the Department of State Lands (DSL).

Stormwater treatment may be required for paved trails in WQRAs. The City will need specific details on the design, materials, and location of proposed trails to determine the applicability of stormwater treatment (Tony Konkol, Oregon City, 2004).

### **Floodplain Management**

Trail development in floodplain areas (near Clackamas Cove or Abernethy Creek) will require review under the floodplain management areas district. Trail projects will require balanced cut and fill within the 100-year floodplain or extent of the 1996 flood.

### **Steep Slopes**

The City of Oregon City regulates development in areas with unstable soils and hillside constraints. Areas with steep slopes are identified on a slope map available at the planning department. In general, trail development should avoid areas with slopes greater than 35 percent to the maximum extent practicable; however, trail development in such areas may be allowed if the applicant can demonstrate that erosion or landslides will not occur. Trail development proposed on hillsides with slopes greater than 25 percent (or in areas prone to landslides) will require review by the City. Application materials will likely include: grading plan, a soil erosion control plan, a description of existing topography and soil characteristics, engineering geology report, and hydrology report. The reviewing engineer may waive some requirements depending on project details (Tony Konkol, Oregon City, 2004). The Master Plan process will provide the opportunity to clarify the required application materials for steep slope areas.

## ***Clackamas County***

### **River and Stream Conservation Areas**

Clackamas County regulates development in River and Stream Conservation Areas (RSCA) (Section 704, special district). RSCAs are the protective corridor around streams and vary according to size of the stream. The stream conservation area is measured at a horizontal distance from the mean high water line and is 100 feet for large streams (Abernethy Creek), 70 feet for medium streams (Newell Creek), and 50 feet for small streams (tributaries to Beaver Creek). The size classification of streams is identified on Water Protection Rule Classification Maps available at the county planning office.



The RSCA special district requires setbacks for structures, but does not specify setbacks for recreational trails. The County is willing to consider trails an allowable use within RSCAs (Greg Fritts, Clackamas County, 2004), but more discussion with the County is needed to establish development standards and potential mitigation for trails in stream conservation areas. Proposed trail development will need to meet the objective of protecting the natural condition of the stream corridor.

### **Conservation Wetland District**

Based on National Wetland Inventory mapping, wetland areas do not appear to overlap with proposed trail alignments in Clackamas County (USFWS, 1981). Most of the wet areas identified on NWI mapping are perennial and intermittent streams, or wetlands strictly associated with these drainages. Because an in-depth field review of potential wetland areas was not conducted, there may be wetlands not identified on NWI mapping that occur in areas where trails are proposed.

Alterations, developments, and enhancements proposed in wetland areas would require review by Clackamas County, and permitting by DSL and/or the U.S. Army Corps of Engineers (Corps). Proposed activities within wetland buffers (25 feet of the wetland boundary) will require review and approval by the County. The DSL and the Corps do not regulate activities in wetland buffers. According to the Conservation Wetland District regulations, “Public trails and boardwalks may be constructed within buffer areas when consistent with a North Clackamas Parks and Recreation District or other adopted local government Plan” (Section 705.05). Compensatory mitigation may be required depending on the disturbance to the wetland and the buffer area. Mitigation may include enhancing or creating wetland areas. Areas disturbed for trail development will need to be revegetated with approved plant species.

### **Floodplain Management District**

Clackamas County regulates uses in the 100-year floodplain. “Hiking and horseback riding trails” are permitted uses within the 100-year floodplain; however, filling, grading, and paving of trails within the 100-year floodplain (e.g. adjacent to Abernethy Creek) will require development review under the floodplain management district. Trail development will likely be required to achieve balanced removal and fill within the floodplain. Mitigation requirements are not specified in the text of the floodplain management district.

### **Stormwater Drainage**

Clackamas County requires storm drainage and erosion control for all “significant residential, commercial, industrial and recreational development” (Section 1008, Zoning and Development Ordinance). The County does not, however, have specific requirements for treating stormwater from trail surfaces. Stormwater treatment requirements will need to be clarified with the County during development review.

### **Steep Slopes**

Clackamas County regulates development on steep slopes and unstable soils. The development standards (Section 1003) require an engineering geologic study for areas



with slopes greater than 20 percent; however, this may be waived for trail development depending on project details. Trail development standards and potential mitigation requirements on steep slopes should be clarified with the County during development review.

### *Oregon State Regulations*

Proposed trail construction that requires the fill or removal of more than 50 cubic yards of material in Waters of the State (i.e. streams and wetlands) will require a permit from the Department of State Lands (DSL). Waters of the State are defined as "natural waterways including all tidal and nontidal bays, intermittent streams, constantly flowing streams, lakes, wetlands and other bodies of water in this state, navigable and nonnavigable, including that portion of the Pacific Ocean that is in the boundaries of this state." For streams that are designated "essential salmon habitat" by DSL, a permit is required if any fill or removal is proposed within the Ordinary High Water Mark (OHWM). Streams with essential salmon habitat include Abernethy Creek, Newell Creek, and lower Livesay Creek (near its confluence with Abernethy Creek) (DSL, 2004).

The project would most likely qualify for a General Authorization (GA) permit from DSL for all the proposed stream crossings (Steve Morrow, DSL, 2004). A GA is a streamlined permit that is processed within 40 days of a technically complete application and does not require a permit fee. All stream crossings for the project should be reviewed under one permit application. The GA would be for certain transportation related structures (OAR 141-089-0170) which allows the fill or removal of up to 5,000 cubic yards in waters of the state or the fill of up to 0.5 acres of wetland for the construction of new bicycle, pedestrian or other lanes or trails.

If more than 5,000 cubic yards of fill/removal or more than 0.5 acres of wetland fill/removal are proposed, then the project would require an individual permit from DSL. The individual permit process is similar to a GA permit, but it takes longer to process and includes an application fee.

Compensatory mitigation would be required for both a GA permit or an individual permit from DSL. For non-wetland waters, there are no standardized mitigation ratios. Mitigation is established on a case-by-case basis for impacts to non-wetland waters of the state but may include planting native vegetation, day-lighting a portion of a stream, removing a culvert, or improving fish habitat. Pre-mitigation is not recognized by DSL as a means to reduce mitigation requirements.

Stream crossings requiring work below the OHWM would be reviewed by the Oregon Department of Fish and Wildlife (ODFW) as part of the DSL permit process and would be subject to in-water work guidelines. Work below ordinary high water of Abernethy Creek and its tributaries would need to be completed between July 15 and September 30 to protect Coho salmon, winter steelhead, and cutthroat trout (ODFW, 2000). A variance can be requested for conducting work outside of the approved window, but the applicant will need to propose additional



mitigation measures or complete field surveys to determine if protected fish and or habitat are present.

If stream crossings can be completed without any fill or removal in wetlands or below the ordinary high water mark of streams, or without any in-water work, then the project will not need a permit from DSL or concurrent review by the ODFW.

### ***Federal Regulations***

At this time, both the DSL and the Corps have jurisdiction over proposed activities in wetlands and a permit application would need to be submitted to both agencies. The application form is the same for both agencies and is available on-line. The Corps, however, does not regulate “isolated” wetlands as of 2002. The Corps and DSL are in the process of dividing jurisdiction over wetlands that may take effect as early as fall of 2004 (Larry Devroy, DSL, 2004).

Proposed trail development that requires fill in Waters of the U.S. (e.g. wetlands) will require review and permitting by the Corps. Depending on the amount of fill proposed (if less than 0.25 or 0.5 acres), the project may qualify for a Nationwide Permit, a programmatic permit. If impacts are greater than 0.5 acres, then an individual permit and alternatives analysis would be required. The issuance of a federal permit will likely require informal consultation with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NOAA Fisheries) under Section 7 of the Endangered Species Act. Section 7 informal consultation with the agencies would also be required if federal funding or an equivalent federal nexus is necessary to construct the proposed trails.





## Trail-Roadway Crossings

Like most trails in built urban areas, Oregon City's trails must cross roadways at certain points. These roadway crossings may be designed at-, below-, or above-grade. At-grade crossings create a potentially high level of conflict between trail users and motorists. However, well-designed crossings have not historically posed a safety problem, as evidenced by the thousands of successful trails around the United States with at-grade crossings. Designing safe grade crossings is a key to safe implementation of this Plan.

Trail-roadway crossings should comply with the AASHTO, ODOT, and MUTCD standards.

In some cases, a required trail crossing may be so dangerous or expensive (e.g., to build an undercrossing or overcrossing) as to affect the feasibility of the entire alignment. However, in most cases, trail crossings can be properly designed at-grade to a reasonable degree of safety and to meet existing traffic and safety standards.

Evaluation of trail crossings involves analysis of vehicular and trail user traffic pattern, including speeds, street width, traffic volumes (average daily traffic, peak hour traffic), line of sight, and trail user profile (age distribution, destinations). This plan identifies the most appropriate crossing options given available information, which must be verified and/or refined through the actual engineering and construction document stage.

### *Basic Crossing Prototypes*

The proposed intersection approach in this plan is based on established standards, published technical reports, and the experiences from existing facilities. Virtually all crossings fit into one of four basic categories:

- *Type 1: Unprotected/Marked*  
Unprotected/marked crossings include trail crossings of residential, collector, and sometimes major arterial streets or railroad tracks.
- *Type 2: Route Users to Existing Intersection*  
Trails that emerge near existing intersections may be routed to these locations, provided that sufficient protection is provided at the existing intersection.
- *Type 3: Signalized/Controlled*  
Trail crossings that require signals or other control measures due to traffic volumes, speeds, and trail usage.
- *Type 4: Grade-separated*  
Bridges or undercrossings provide the maximum level of safety but also generally are the most expensive and have right-of-way, maintenance, and other public safety considerations.



### *Type 1: Unprotected/Marked Crossings*

An unprotected crossing (Type 1) consists of a crosswalk, signing and often no other devices to slow or stop traffic. The approach to designing crossings at mid-block locations depends on an evaluation of vehicular traffic, line of sight, trail traffic, use patterns, vehicle speed, road type and width and other safety issues such as the proximity of schools. The following thresholds outlined recommend where unprotected crossings may be acceptable:

- Install crosswalks at all trail-roadway crossings
- Maximum traffic volumes:
  - $\leq 9,000$ -15,000 ADT
  - up to 15,000 ADT on two-lane roads, preferably with a median.
  - up to 12,000 ADT on four-lane roads with median.
- Maximum travel speed
  - 35 mi/h
- Minimum line of sight:
  - 25 mi/h zone: 155 feet
  - 35 mi/h zone: 250 feet
  - 45 mi/h zone: 360 feet

On two lane residential and collector roads below 15,000 ADT with average vehicle speeds of 35 mi/h or less, crosswalks and warning signs (“Bike Xing”) should be provided to warn motorists, stop signs and slowing techniques (bollards/geometry) should be used on the trail approach. Care should be taken to keep vegetation and other obstacles out of the sight line for motorists and trail users. Engineering studies should be done to determine the appropriate level of traffic control and design.



**Type 1 Crossing**



**Raised Crosswalk**

On roadways with low to moderate volumes of traffic (< 12,000 ADT) and a need to control traffic speeds, a raised crosswalk may be the most appropriate crossing design to improve pedestrian visibility and safety.

The crosswalks are raised 150 mm above the roadway pavement, similar to speed humps, to an elevation that matches the adjacent sidewalk. The top of the crosswalk is flat and typically made of asphalt, patterned concrete, or brick pavers. Brick or unit pavers should be discouraged because of potential problems related to pedestrians, bicycles and ADA requirements for a continuous, smooth,

vibration-free surface. Tactile treatments are needed at the sidewalk/street boundary so that visually impaired pedestrians can identify the edge of the street. Costs can range from \$5,000 to \$20,000 per crosswalk, depending on the width of the street, the drainage improvements affected, and the materials used for construction.

A flashing yellow beacon costing between \$15,000 and \$30,000, may be used, preferably one that is activated by the trail user rather than operating continuously. Some jurisdictions have successfully used a flashing beacon activated by motion detectors on the trail, triggering the beacon as trail users approach the intersection. This equipment, while slightly more expensive, helps keep motorists alert.

Crossings of higher volume arterials over 15,000 ADT may be unprotected in some circumstances – for example, if they have 85<sup>th</sup> percentile speeds of 30 mi/h or less and have only two lanes of traffic. Such crossings would not be appropriate, however, if a significant number of school children used the trail.



### *Type 2: Route Users to Existing Intersection*

Crossings within 250 feet of an existing signalized intersection with pedestrian crosswalks are typically diverted to the signalized intersection for safety purposes. For this option to be effective, barriers and signing may be needed to direct trail users to the signalized crossings. In most cases, signal modifications would be made to add pedestrian detection and to comply with the ADA. In many cases, such as on most community trails parallel to roadways, crossings are simply part of the existing intersection and are not a significant problem for trail users.

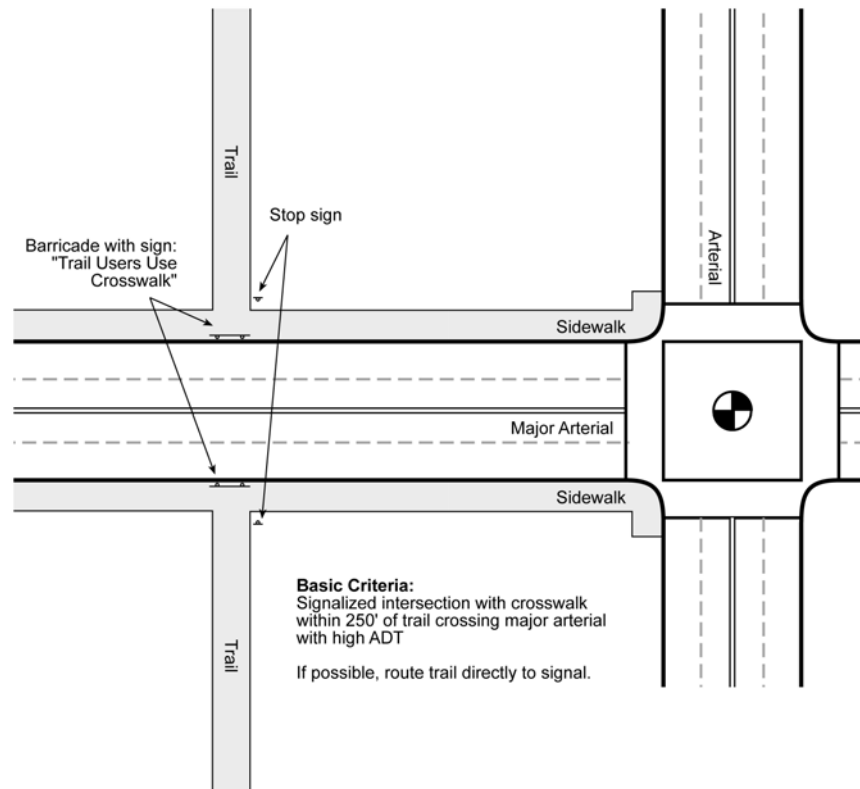


Figure 15. Type 2 Roadway Crossing Schematic

### *Type 3: Signalized/Controlled Crossings*

New signalized crossings are recommended for crossings more than 250 feet from an existing signalized intersection and where 85th percentile travel speeds are 40 mi/h and above and/or ADT exceeds 15,000 vehicles. Each crossing, regardless of traffic speed or volume, requires additional review by a registered engineer to identify sight lines, potential impacts on traffic progression, timing with adjacent signals, capacity and safety.

Trail signals are normally activated by push buttons, but also may be triggered by motion detectors. The maximum delay for activation of the signal should be two minutes, with minimum crossing times determined by the width of the street. The

signals may rest on flashing yellow or green for motorists when not activated, and should be supplemented by standard advanced warning signs. Typical costs for a signalized crossing range from \$150,000 to \$250,000.

#### ***Type 4: Grade-separated Crossings***

Practically all the crossings needed for this Plan can and should be accommodated at-grade. In one location, (crossing McLoughlin from the top of the Bluff), a Type 4, grade-separated crossing will likely be needed.

Grade-separated crossings may be needed where ADT exceeds 25,000 vehicles, and 85th percentile speeds exceed 45 mi/h. Safety is a major concern with both overcrossings and undercrossings. In both cases, trail users may be temporarily out of sight from public view and may have poor visibility themselves. Undercrossings, like parking garages, have the reputation of being places where crimes occur. Most crime on trails, however, appears to have more in common with the general crime rate of the community and the overall usage of the trail than any specific design feature.

Design and operation measures are available which can address trail user concerns. For example, an undercrossing can be designed to be spacious, well-lit, equipped with emergency cell phones at each end and completely visible for its entire length prior to entering.

Other potential problems with undercrossings include conflicts with utilities, drainage, flood control, and maintenance requirements. Overcrossings pose potential concerns about visual impact and functional appeal.



**Type 3 Crossing**



**Type 4 Grade-Separated Undercrossing**



**Type 4 Grade-Separated Overcrossing**





## Signing and Striping

Crossing features for all roadways include warning signs both for vehicles and trail users. The type, location, and other criteria are identified in the Manual for Uniform Traffic Control Devices (MUTCD). Adequate warning distance is based on vehicle speeds and line of sight. Signage should be highly visible; catching the attention of motorists accustomed to roadway signs may require additional alerting devices such as a flashing light, roadway striping or changes in pavement texture. Signing for trail users must include a standard stop sign and pavement marking, sometimes combined with other features such as bollards or a kink in the trail to slow bicyclists. Care must be taken not to place too many signs at crossings lest they overwhelm the user and lose their impact.

Directional signing may be useful for trail users and motorists alike. For motorists, a sign reading “Bicycle Trail Xing” along with an Oregon City trail emblem or logo helps both warn and promote use of the trail itself. For trail users, directional signs and street names at crossings help direct people to their destinations.

The directional signing should impart a unique theme so trail users know which trail they are following and where it goes. The theme can be conveyed in a variety of ways: engraved stone, medallions, bollards, and mile markers. A central information installation at trailheads and major crossroads also helps users find their way and acknowledge the rules of the trail. They are also useful for interpretive education about plant and animal life, ecosystems, and local history.

A number of striping patterns have emerged over the years to delineate trail crossings. A median stripe on the trail approach will help to organize and warn trail users. The actual crosswalk striping is a matter of local and State preference, and may be accompanied by pavement treatments to help warn and slow motorists. The effectiveness of crosswalk striping is highly related to local customs and regulations. In communities where motorists do not typically yield to pedestrians in crosswalks, additional measures may be required.

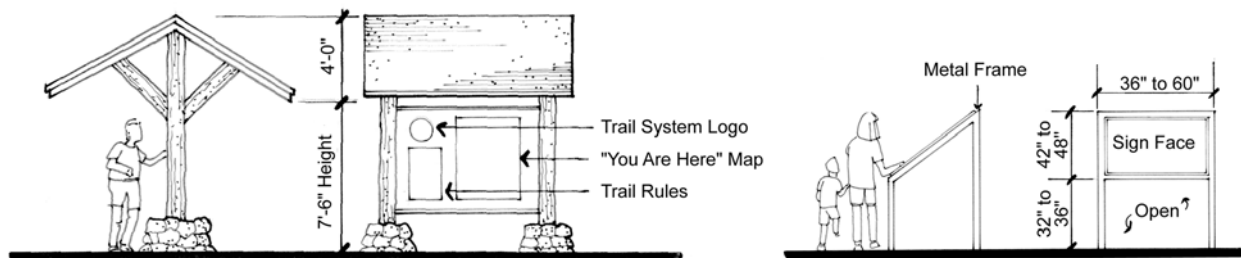


Figure 16. Trailhead information installation examples



Sample informational and directional signage



Wooden bollard with directional information



Inlaid medallions



Stone mile marker

## Trail Features

There are a number of amenities that make a trail inviting to the user. Below are some common items that make trail systems stand out.



### Interpretive Installations

Interpretive installations and signs can enhance the trail experience by providing information about the history of Oregon City. Installations can also discuss local ecology, environmental concerns, and other educational information.



### Water Fountains and Bicycle Parking

Water fountains provide water for people (and pets, in some cases) and bicycle racks allow trail users to safely park their bikes if they wish to stop along the way, particularly at parks and other desirable destinations.



### Pedestrian-Scale Lighting and Furniture

Pedestrian-scale lighting improves safety and enables the trail to be used year-round. It also enhances the aesthetic of the trail. Lighting fixtures should be consistent with other light fixtures in the city, possibly emulating a historic theme.

Providing benches at key rest areas and viewpoints encourages people of all ages to use the trail by ensuring that they have a place to rest along the way. Benches can be simple (e.g., wood slates) or more ornate (e.g., stone, wrought iron, concrete).



### Maps and Signage

A comprehensive signing system makes a trail system stand out. Informational kiosks with maps at trailheads and other pedestrian generators can provide enough information for someone to use the trail system with little introduction – perfect for areas with high out-of-area visitation rates as well as the local citizens.



### Art Installations

Local artists can be commissioned to provide art for the trail system, making it uniquely distinct. Many trail art installations are functional as well as aesthetic, as they may provide places to sit and play on.



## Developing Trail Themes



**Basalt is used throughout Oregon City in walls and other structures**

A design theme is significant for any trail system. A theme can create a unique and enriching experience for the trail user, help strengthen the community's identity, and provide a recognizable continuity to the trail system.

The name "Oregon City" conjures up a defined image. Willamette Falls, basalt cliffs and pioneers are key elements of this image. Oregon City has a place in American history as the end of the Oregon Trail, a 2000-mile route that carried a mass migration of emigrants westward in what is no doubt the most significant event in Oregon history. In 1845, Samuel K. Barlow and Joel Palmer proposed and built an overland route that could

be used by emigrants in lieu of the treacherous Columbia River route. This became known as the Barlow Road and moved through the Holcomb Valley area and ended in Oregon City. Though there is no evidence of this historic route in Oregon City today, there is good documentation of the emigrants' experience through their written journals, and known stopping spots or activity areas of the emigrants in Oregon City.

The geologic formations and topography remain as dominate feature of Oregon City. Willamette Falls remains a visual attraction, and fishing is a common activity during the fall and spring Chinook runs, just as it was for the original Native American inhabitants of the area. Columnar basalt is still a dominant landscape feature.

The trail system in Oregon City should be designed around a historic theme that blends with this existing cultural and geologic history present in the City. Materials should be used in simple and elegant ways, but should shy away from being rustic in character. Key elements of this theme should include:

- Incorporation of the pioneer image in the trail system logo.
- Interpretation of the Oregon Trail and early development of Oregon City.
- Use of basalt as a design element on the trail in the form of retaining walls, guardrails and bollards.
- Use of heavy, cut, timbers in wood structures, such as benches, picnic shelters, bridges.
- Use of plank textured concrete as a trail design element at key trail entry points.

Equally important, creation of a trail system presents an opportunity for environmental enhancement and stewardship. As the system is developed, opportunities should be captured to enhance wildlife habitat, improve water quality and groundwater infiltration, and improve the native plant community.







# III. Existing Conditions

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## Summary of Existing Conditions



**Historic Downtown**



**Older residential area above the Bluff**



**Newer development on the plateau**

At 8.1 square miles, Oregon City is geographically compact. However, within its boundaries is a geographically diverse and historically rich landscape that can provide an excellent foundation for the development of a comprehensive and unique trail system.

The city is characterized by its pioneer history, topography and landforms, and its proximity to the Willamette and Clackamas rivers. The majority of the city lies on three distinct levels: the river-front historic downtown, the venerable residential areas above the first bluff, and the commercial and newer residential areas on the plateau. Other portions of the city sit on small bluffs above the Clackamas River and on rolling hills to the east. Commanding views of Mount Hood, Cascade foothills, Willamette Falls, and the rivers provide inspiring vistas and visual connections to the larger region. The city's proximity to rural land provides quick escape from the urban environment. Newell Creek Canyon is a valuable local and regional resource and adds to the quality of life of Oregon City.

Oregon City is recognized as a Regional Center in Metro's 2040 Growth Concept Plan. West Linn and Gladstone are nearby Town Centers.

The City currently has a small system of trails, mostly located in parks. The most recognized trail is the McLoughlin Promenade located at the top of the Bluff and the stairway running past the Singer Creek waterfalls. There are many informal "demand trails" located in Newell Creek Canyon, Clackamette Park, Waterboard Park, Singer Creek Park, Old Canemah Park, and on Canemah Bluff. Many of these trails provide pleasant walking opportunities for those who are able-bodied, particularly in small loops. But there are many gaps and challenging conditions to address, as many of the trails are on private land and traverse steep hillsides.

Many of the existing paved trails are in poor condition, do not feel safe or inviting to trail users, and do not provide larger community connections. Demand trails have created erosion problems and soil instability in many of the parks, particularly Newell Creek Canyon.



Motorized dirt bikes and other motorized vehicles are known to use many of the trails on Canemah Bluff, adding to the instability of the hillside. Topography presents a challenge as much of Oregon City, particularly the older part of town, sits on the north face of a steep slope facing the Willamette River.

The existing trail system as a whole poorly serves residents with disabilities. It also poorly serves bicyclists, as there are few striped bicycle lanes and many of the paved paths in the parks are narrow and covered with moss/debris.

Rapid growth and trail accommodation is perhaps the most pressing challenge. Using the most recent figures from Portland State University's Population Research Center, the population of Oregon City has increased 91.2% since 1990 – from 14,698 people to 28,100 people (*Annual Oregon Population Report, 2003*). U.S. Census figures from 2000 are slightly different, showing an increase in population of 75% (*US Census, 1990 and 2000*). Over 2,300 people moved to Oregon City between 2000 and 2003. Figure 17 shows general development patterns in the City from 1900 – 2001. Nearly half of the development has occurred in the last 20 years. Thirty-five percent of all development has occurred since 1990.

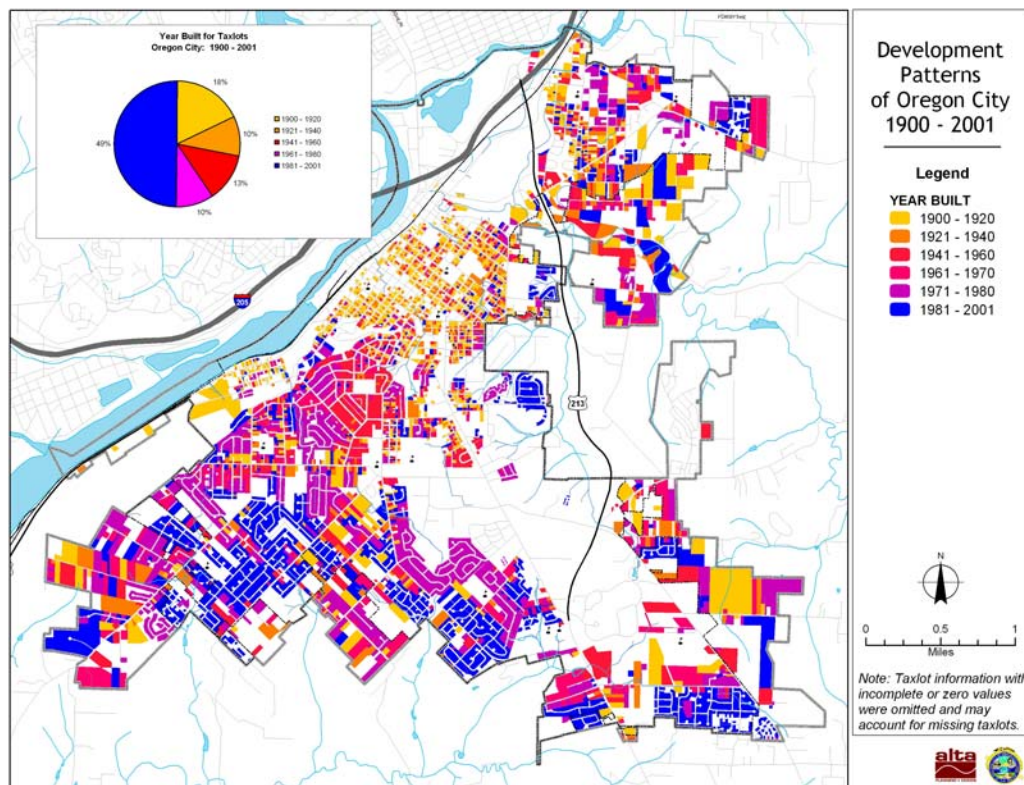


Figure 17. Development Patterns from 1900 - 2001 in Oregon City

With few exceptions, development has been radial from the historic downtown and suburban in nature. As the City continues to grow and subdivide its older, larger,

more rural lots into smaller, more suburban lots, it will be critical to integrate trails with the growth patterns before the opportunities are lost.

Despite these drawbacks, the existing trail system provides a good starting point for the city to develop a comprehensive trail system. This Plan intends to focus on how to upgrade and connect existing trails with new and planned trails, and ensure that they serve multiple users with a variety of interests.



### *Existing Trails*

There are several types of trails in Oregon City: on-road shoulders, sidewalks, bicycle lanes, paved park trails, informal or “demand” pedestrian trails, and accessways.

There are pathways in some sections of Oregon City that are designed as **on-road shoulders**, characterized by a 3’ – 6’ wide shoulder, sometimes on one side of the roadway. The shoulder pathway is demarcated by a wide fog line or the addition of humps or reflectors to discourage automobiles from driving in the pathway. Signs also accompany some of the pathways telling motorists not to park in the shoulder.

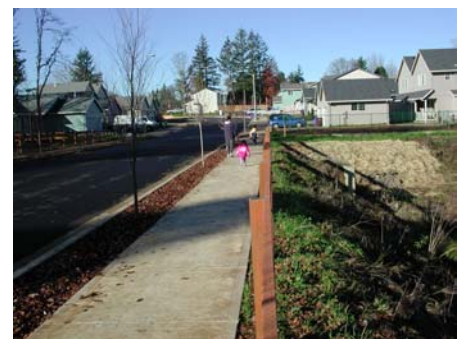
**Sidewalks** are distinguished from shoulder pathways in that they usually have a curb and are physically elevated from the roadway. Sidewalk connections for pedestrians are fairly comprehensive in downtown Oregon City and throughout many of the newer (1990 on) neighborhoods. Sidewalks are largely absent in many of the older neighborhoods and on the fringe of the community.



“No Parking on Pathway” sign on Linn



Shoulder pathway on Holcomb



Sidewalk and vegetated buffer in a new development





**Bicycle lanes** are often located on roadways with a traffic volumes exceeding 3000 ADT. Bicycle lanes currently exist on parts of Molalla Avenue, Highway 213 from I-205 to Glen Oak, Glen Oak, Beaver Creek Road, and on sections of Washington Street. The City's Transportation System Plan identifies a number of other streets for future bicycle lanes:

- 7<sup>th</sup> Street
- Beaver Creek Road: Molalla Avenue to UGB
- Molalla Avenue
- Singer Hill
- South End Road
- Warner Milne Road
- Anchor Way
- Central Point Road
- Division Street
- Gaffney Lane
- Holmes Lane
- Leland Road
- Main Street Extensions
- Monroe Street
- Partlow Road
- 12<sup>th</sup> Street
- Center Street: 2<sup>nd</sup> to 7<sup>th</sup>
- Clackamette Drive
- Front Avenue
- Glen Oak
- Holcomb Blvd.
- Jackson: 15<sup>th</sup> to 12<sup>th</sup>
- Meyers Road
- Taylor Street: 12<sup>th</sup> to 7<sup>th</sup>
- Davis Road
- Cleveland Street
- Clackamas River Drive
- Abernethy Road
- Fir Street



Existing bicycle facilities on Beaver Creek Road



Oregon City bicyclist on Beaver Creek Road

Oregon City residents have indicated that they wish to see improved and additional bicycle lanes on primary routes through town, particularly connecting the upper plateau to the historic downtown and shopping areas (*Public Meeting, March 10, 2004*).







Hillendale Park paved trails



McLoughlin Promenade



Singer Creek Park natural “demand trail”



Natural trail surrounding the wetland at Metro’s recycling facility

**Paved city trails** and **earthen trails** are found throughout many of Oregon City’s parks, like Hillendale Park and Singer Creek Park. Informal earthen trails are found in Newell Creek Canyon and Singer Creek Park. Other places with paved city trails and earthen trails include:

- Old Canemah Park
- Mountainview Cemetery
- Chapin Park
- Atkinson Park
- Rivercrest Park
- McLoughlin Promenade
- End of the Trail Interpretive Center
- Park Place Park
- Clackamette Park
- Wesley Lynn Park (future)
- Canemah Bluff
- Canemah Cemetery
- Barclay Park
- Clackamas Community College
- Environmental Learning Center

**Accessways** are required for all new development and provide short, direct connections to local roads, schools, parks, and other community destinations. There are a number of good accessways in Oregon City. Older subdivisions (1960 – 1992) were not required to provide accessways and connectivity is poor for bikes and pedestrians in these areas. Also, some newer developments have not provided accessways.

**Waterway trails** do not formally exist, though boaters frequently float on the Clackamas and Willamette rivers and in Clackamette Cove. The City is currently planning to install a small boat launch in Clackamette Cove. Currently, most boaters enter the rivers from Clackamette Park and adjacent to Sportcraft Marina.

For additional descriptions and recommended standards and designs, refer to Table 1 in the Design Guidelines section of this document.



## Challenges and Opportunities

### Access

There are several small trail systems located in parks and along the bluffs in Oregon City. However, much of the sidewalk and bicycle lane network is incomplete or non-existent, making it difficult to walk or bicycle to these trails, particularly for disabled users. Many of the existing trails lack amenities like lighting, signage, and benches to invite users which, in turn, lead residents to believe that the trails are unsafe or not meant for public use (*Public meeting, March 10, 2004*).

### Maintenance

The 1999 Oregon City Parks and Recreation Master Plan concluded from a household survey that “maintaining existing parks, open space areas and trails” was where the City should focus its efforts. This is apparent from the field survey, as many of the existing park trails and facilities are in poor condition. Many of the existing trails in parks are covered in moss, cracked, and in poor repair from tree roots pushing up the trail surface. Mossy trail surfaces are slippery and can be hazardous, particularly for bicyclists and skaters. Cracks and undulations in the surface are tripping hazards and are difficult for disabled users.



Moss on trails in Old Canemah Park



Trail damage from tree roots and water



Roots push up trail surfaces and make them hazardous for trail users, particularly those with disabilities



Narrow trails become narrower when the edges of asphalt trails start decomposing



### **Limited Public Rights-of-Way and Encroachment**

Oregon City, like many well-established communities, has the challenge of accommodating and balancing the needs of different roadway users within limited public rights-of-way. Pedestrians and bicyclists are often left without proper facilities. Even more problematic is the issue of private property encroachment into the public right-of-way, such as a property owner placing trees, shrubs, fences, or walls in the public right-of-way. This is particularly true in older residential areas without sidewalks, where there is no visual delineation between private property and the public right-of-way. There are numerous examples like this throughout Oregon City. Although it is within the City's right to reclaim this space, it can be politically challenging to do so, particularly if the residents perceive that a trail or improved facility will bring more people through the area.

### **Limited Trail Development Opportunity**

Much of Oregon City has been subdivided and developed in the last 20 years. The character of the development has been suburban in nature with poor street connectivity and minimal dedicated public open space and parks. It is only within the last ten years that sidewalks or other pedestrian facilities have been required as part of development standards. The opportunity to develop trails through most of these neighborhoods has been lost and future trails will rely heavily on undeveloped parcels of land that are slated for development.

### **Topography and Rivers**

Basalt cliffs, steep hillsides, and sensitive fish-bearing stream corridors with dense vegetation present challenges to trail development and implementation. There are federally listed fish species (Steelhead and Chinook salmon) and habitat in the Clackamas River, Willamette River, Abernethy Creek, Newell Creek, and lower Livesay Creek. Abernethy Creek, Newell Creek and lower Livesay Creek are designated as "essential salmon habitat" by the Department of State Lands. These waterways provide excellent opportunities but trail development will be restricted in these areas and must be developed to the highest standards available.



**Topography is a strong characteristic of Oregon City**



**Abernethy Creek**





### **Demand Trails**

Demand trails or “desire lines” are footpaths created by people where there are no formal existing facilities. These trails usually indicate that a facility is needed.

Demand trails are often present along roadways without sidewalks or trails, and in natural areas without a formal trail system (*see photos below*). These trails can be especially problematic in environmentally sensitive areas. Demand trails can destabilize slopes, promote erosion and channeling, trample sensitive vegetation in riparian areas, and disrupt wildlife nesting and feeding sites, among other things. They also often have a number of spur trails that exacerbate the problems.



**Urban demand path on the side of Beaver Creek Road – this pedestrian prefers to walk in the bicycle lane.**



**Natural demand trail in Clackamette Park**



**Demand trail due to poor connectivity on Canemah Bluff**



**Demand trail on the Metro property on Canemah Bluff**

However, demand trails can be an opportunity for trail development, as the trail has already indicated where people would like to go and provided a route to get there. Demand trails can be difficult to close and rehabilitate once they have been identified as a link. In these cases, it may be best to develop the trail and mitigate any problems that may have developed due to people informally using the area.

### *Environmental Conditions of Trail Target Areas*

The project team visited three specific target areas as a sample of the greater area to assess existing environmental conditions in greater detail. These target areas included the headwaters of Livesay Creek (in the Park Place neighborhood), the confluence of Abernethy Creek and Newell Creek, and a potential boardwalk area in the headwaters of Mud Creek (a tributary of Beaver Creek) south of Meyers Road. Newell Creek Canyon is also discussed in this section.

#### Livesay Creek

Environmental issues along Livesay Creek include Water Quality Resource Areas (the creek and associated wetlands), steep slopes, and listed fish habitat in the lower reach. Livesay Creek is considered a WQRA and trail development would be subject to review under the Water Quality Resource Areas overlay district. Permitting from the DSL and the Corps may also be required. A series of wetlands are mapped along Livesay Creek and its tributaries (Shapiro, 1999). These wetlands were verified in the field as part of the LWI completed for Oregon City, but for the most part, the mapped boundaries of LWI wetlands are only accurate within 25 feet and have not



**Upper Livesay Creek**

been surveyed. During the April 8 site visit, the project team observed a flagged wetland boundary in the upper reach of Livesay Creek that was probably part of a formal wetland delineation for adjacent residential development. Wetlands in the lower reaches of the creek will likely need to be delineated in the field, flagged, and surveyed. Field delineation of wetlands will need to follow the methodology outlined in the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory, 1987). Permits from the DSL and Corps (if necessary) and approval by the City of Oregon City will be required before trail construction begins.

Steep slopes are mapped in several areas on both sides of Livesay Creek. Trail development along the hillsides of Livesay Creek (in areas with slopes greater than 25 percent) will require review under the City's Unstable Soils and Hillside Constraints overlay district. While steep slopes do not preclude trail development, greater scrutiny of soil suitability and drainage is advised. The mapped soil unit around Livesay Creek is Xerochrepts and Haploxerolls, 20 to 60 percent slopes (Gerig, 1985). These soils are prone to slumping, especially if cuts are made in steeper areas. It is recommended that a qualified soil scientist, geologist, or engineer review the suitability of these soils for trail development.

The lower portion of Livesay Creek would most likely be considered an anadromous fish-bearing stream by the City and therefore would have a buffer of 200 feet. The potential for disturbance from trail development is greater in a larger WQRA, therefore, more mitigation will likely be required than in a narrower WQRA.



According to DSL, the lower portion of the creek contains essential salmon habitat and any amount of fill or removal below the OHWM of the creek would require a permit from DSL.

### **Confluence of Abernethy Creek and Newell Creek**

Environmental issues near the confluence of Abernethy Creek and Newell Creek include listed fish species in Abernethy Creek, steep slopes, floodplain areas, and preserving native riparian habitat. Proposed trail development affecting steep slopes (greater than 20 percent), flood-prone areas, and the creeks will require review by Clackamas County. DSL considers the two creeks essential salmon habitat and would regulate any fill or removal of material below the OHWM of the creeks.



**Newell Creek Canyon**

One area assessed in the field was a narrow finger of land between Abernethy Creek and Newell Creek. This finger of land should be further evaluated for erosion potential from periodic scouring and natural movement of the streams. Trail design considerations to minimize disturbance to the surrounding riparian habitat include installing soft trails, restricting bicycle use, planting native vegetation densely in areas to discourage off-trail use, and avoiding the use of lights.

The soils mapped in this area include Xerochrepts and Haploxerolls, very steep; and Woodburn silt loam, 3 to 8 percent slopes (Gerig, 1985). According to the soil survey, Woodburn silt loam has “moderate” potential for erosion if developed for recreational trails (Gerig, 1985). As stated above, it is recommended that a qualified soil scientist, geologist, or engineer review the suitability of soils for trail development in steep areas.

Newell Creek Canyon is an important habitat area that supports a multitude of resident and migratory species. Although much of the canyon is owned by Metro, the area is also within the jurisdiction of Clackamas County and private property owners. Ideally, Metro and Clackamas County would work in partnership with property owners and amongst themselves on trail projects through Newell Creek Canyon.

Trails would most likely be located at the top of the canyon due to topographical constraints. In that case, trail development would be outside of the jurisdiction of DSL and the Corps, but may be regulated under the Clackamas County River and Stream Conservation Area special district. Newell Creek is identified as a “medium” stream with a 70-foot buffer. Setbacks are required for structures within river conservation areas, but are not specified for trails. Setback requirements and





potential mitigation will need to be clarified with Clackamas County during the development review stage of the project.

Metro has prepared a draft of the *Green Trails: Guidelines for Environmentally Friendly Trails* that will be finalized by the end of summer 2004 (Jennifer Budhabhatti, Metro, 2004). This is a planning tool for trail design and does not include regulatory standards.

Stormwater run-off is identified as a concern for Newell Canyon in the *Newell Creek Watershed: Restoration and Conservation Strategy* (John Inskeep Environmental Learning Center, 2003). Trail design considerations for minimizing adverse impacts from run-off include: installing gravel, wood chip, or semi-pervious trails, decreasing the trail width in certain areas, and directing runoff away from the canyon.

### **Mud Creek**

A trail crossing is proposed for Mud Creek, a tributary to Beaver Creek, just southwest of South Myers Road. This area of Mud Creek consists of a broad depression adjacent to residences and appears to be within Oregon City limits.

According to the Oregon City LWI, wetlands are mapped in association with the creek (Shapiro, 1999).

As stated previously, the boundary of the wetland area(s) will need to be delineated in the field, flagged, and surveyed. Field delineation of the wetland boundary will need to adhere to the methods outlined in the Corps' 1987 manual. Trail development in this area will most likely require review and permitting by Oregon City, DSL, and possibly the Corps.



**Mud Creek wetland**



# IV. Recommended Trail Network and Implementation Measures

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## Recommended Strategy

The recommended trail network fulfills the vision and goals of this Plan. It provides a comprehensive network of trails that connect to every school, park, community center, business district, library, and natural resource. It connects to Oregon City's immediate neighbors: West Linn, Gladstone, and portions of unincorporated Clackamas County. It serves multiple users, multiple interests, and improves access for residents of varying physical capabilities, ages, and skill levels.

The following details of the network should be noted:

- The **Conceptual Trails Plan Map** includes both existing (shown as solid lines) and recommended trails (shown as dashed lines). Many community trail projects call for improvements to existing but substandard facilities.
- “Accessways” – those providing a direct connection from cul-de-sacs and other disconnected developments – will be determined through development review and permitting processes. Since accessway locations cannot be known until the development applicant provides a site plan, most accessways are not shown on the map. The proposed accessways currently shown on the map are desirable local connections but are subject to redevelopment and/or subdivision of private property. Therefore, the actual trail location may change.
- The trails shown are largely conceptual. Most need to be further studied and designed. The location of the trail may change as a result.
- Some sidewalks are shown as local trails because they fulfill the needs of local pedestrian circulation and connections.
- Some local connections are on quasi-public property (e.g., through private open space owned/managed by a neighborhood association).

## *Development*

Many of the trails shown on the **Conceptual Trails Map**, particularly local trails located along roadways or intended as accessways, will be developed over time by Oregon City property owners and new development, much like the sidewalk system and the current accessway system has been developed. In some cases, the City will



be able to require the property owner to construct the trail as part of the development review process. In other cases, the City will work with the property owner to ensure the City can develop the trail itself in the future.

## Improvement Selection Criteria

With the goal of developing a high quality system of multi-purpose trails, improvements must not only meet the residents' expectations, but exceed them. There are essentially two types of improvements for the Oregon City network.

### *Develop new facilities*

New facility provisions are needed for regional trails, community trail corridors, local trails, and to connect residential and commercial areas if:

- there are no existing facilities;
- facilities currently only serve one user group but are intended to serve multiple user groups;
- in parks, no ADA compliant facilities are available.

### *Upgrade existing facilities*

Facilities will need to be upgraded if they currently support multiple uses but are not constructed to Federal and State standards, have obstructions, or are in poor condition.

## *Selection Criteria*

There are four different categories of trails, but three different sets of selection and ranking criteria (accessways are not included due to their development requirement). Depending on the type of trail, the criteria include (100 total points possible):

**Ease of Implementation (25 points):** How difficult will it be to implement this project? This criteria takes into account topographical, environmental, political, and economic constraints.

**User Generators (20 points):** How many user generators does the project connect to within  $\frac{1}{4}$  -  $\frac{1}{2}$  miles of the project, such as schools, parks, transit centers, employment and commercial districts, Town Centers, churches, etc.? Relative to other projects, does this serve special needs populations, like children and the elderly?

**Connectivity (25 points):** To what degree does this project fill in a missing gap in the trail system?

**Hazard Mitigation (20 points):** To what degree does this project mitigate safety problems, such as speed, road width, and dangerous roadway crossings?

**Equity (10 points):** Have projects been evenly dispersed throughout the city? Is this project in an under-served area?



## Project Priorities and Phasing

The projects in each category were ranked based on a weighted scoring system with the selection criteria described previously. Project scores were based on the information obtained from site visits and field work, City staff, and from the public. As a result, the projects have been grouped by trail classification (regional and local) into Tier 1, Tier 2, and Tier 3 project priorities (*Tables 3 and 4*).<sup>1</sup> Community trails have been omitted from this process because all of the projects are in the Oregon City Transportation System Plan and have gone through their own priority process. Refer to the TSP for those priority rankings.

**Tier 1** projects are the top priority trail projects for short-term project implementation and are targeted for completion in the next five to ten years.

**Tier 2** projects are mid-term projects planned for implementation between ten and 25 years. These projects comprise the bulk of the trail system.

**Tier 3** projects are long-term projects recommended for implementation between the next 25 and 50 years from Plan adoption. These are projects that generally supplement the trail system or may provide potential trails over a longer period of time as land uses and regional planning boundaries change.

The short, mid- and long-term schedule may change according to available funds, changing priorities, new roadway projects that coincide, new development and redevelopment opportunities, or other factors.

It should be noted that the purpose of this exercise is to understand the relative priority of the projects so that the City may apportion available funding to the highest priority projects. Medium and long-term projects also are important, and may be implemented at any point in time as part of a development or public works project. The ranked lists should be considered a “living document” and should be frequently reviewed to ensure they reflect current Oregon City priorities.

**Table 2. Regional Trail Priorities**

| <b>Tier 1: 5-10 years</b> | <b>Tier 2: 10-25 years</b> | <b>Tier 3: 25+ years</b> |
|---------------------------|----------------------------|--------------------------|
| Clackamas River Trail     | Trolley Trail Bridge       | Beaver Lake Trail        |
| Newell Creek Canyon Trail | Willamette Greenway Trail  | Barlow Road Trail        |
| Oregon City Loop Trail    |                            |                          |

<sup>1</sup> Numerical ranking information is on file in the Oregon City Parks & Recreation Department.



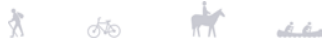
Table 3. Local Trail Priorities

| Tier 1: 5-10 years           | Tier 2: 10-25 years                    | Tier 3: 25+ years               |
|------------------------------|--|---------------------------------|
| Holcomb Ridge Loop Trail     | Park Place School Trail                | Thimble Creek Trail             |
| Barclay Park Connection      | Park Place Creek Loop                  | Livesay Creek Trail             |
| Holcomb School Connection    | Abernethy Creek Trail                  | Abernethy Creek Extension Trail |
| Swan Avenue                  | Hunter Spur Trail                      | Stadium Loop Trail              |
| Rivercrest Loop Trail        | Waterboard - Singer Creek Connection   | Waterboard Rim Trail            |
| Parks Trail                  | Waterboard Park Trail                  | Newell Creek Trail System       |
| Hillendale South Trail       | Center Street                          | BPA Powerline Trail             |
| Wesley Lynn - Chapin Trail   | Old Canemah - McLoughlin Connection    | Canemah Bluff Trail             |
| Chapin - South End Connector | Glacier Court Trail                    | Finnegan's Trail                |
| Lazy Creek Trail             | Coffee Creek Trail (Canemah Connector) | Central Point Trail             |
| Powerline Trail              | Canemah Bluff Access Trail             |                                 |
| Park Place Park Trail        | Parkland Trail                         |                                 |
| King Trail                   |  |                                 |





| Projects        |                                  |  |  |  |   | Implementation Measures              |  |  |   |                |                |                        |  |          |  | Planning Estimate Capital Costs (Excludes Property Acquisition/Easement) |
|-----------------|----------------------------------|--|--|--|---|--------------------------------------|--|--|---|----------------|----------------|------------------------|--|----------|--|--|
| ID              | Trail                            | From - To  | Type                                     | Description  | Adopted Plan(s)   | In Water Quality Resource Zone?      | Acquisition/ Easement  | Right-of-Way Improvement   | Other   | Crossings      | Length (miles) | Ease of Implementation | Lead Responsibility  | Priority | Trail Costs (See Cost Estimate Worksheet for Cost Breakdown) |  |
| REGIONAL TRAILS |                                  |  |  |  |   |                                      |  |  |   |                |                |                        |  |          |  |  |
| R1              | Clackamas River Trail            | High Rocks Bridge - Oregon City Bridge                                       | Shared use path, on-street               | Regional trail would connect to existing I-205 path over the High Rocks Bridge and follow the Clackamas River, traverse Clackamette Cove, and link to on-street facilities on Main Street and the proposed McLoughlin Blvd. Promenade to the Oregon City bridge. | Oregon City Downtown Community Plan, Oregon City Waterfront Master Plan | Yes                                  |  | Main St., McLoughlin Blvd.   |   | Type 1, Type 3 | 2.3            | Easy                   | Oregon City, Clackamas County, ODOT, Metro   | 1        | \$501,401  |  |
| R2              | Newell Creek Canyon Trail (East) | Hwy. 213 and Redland Rd. - Beavercreek Rd.                                   | Shared use path, some on-street          | Regional trail would follow the Oregon City-Molalla interurban railroad bench on the east side of Newell Creek Canyon.   | Metro Regional Transportation Plan                                      | No                                   | Private property owners that front Holly Road and who are adjacent to the railroad easement. | Holly Lane widening to accommodate wide shoulders and/or bicycle lanes or a trail.             | Improvements to the Hwy 213 right-of-way.               | Type 1         | 2.7            | Moderate - Difficult   | Metro, Clackamas County  | 1        | \$2,709,180  |  |
| R3              | Oregon City Loop Trail           | Beavercreek Rd. - Hwy. 213 (excludes Newell Creek Canyon Trail section)      | Shared use path, on-street, boardwalk    | Regional trail would generally follow the Oregon City UGB on a collection of local roads, through new development, along powerline right-of-way, and down the bluff to link up with the Promenade in downtown Oregon City.                                       | Metro Regional Transportation Plan                                      | Yes - more than 50% of trail in WQRZ | New development, easements on Canemah Bluff,   | High St., Central Point Rd., Meyers Rd., Beavercreek Rd., Redland Rd., Abernethy Rd., 15th St. | Boardwalk from Meyers to Frontier Pkwy.                 | Type 1, Type 2 | 9.5            | Difficult              | Oregon City, Clackamas County, Metro   | 1        | \$2,469,331  |  |
| R4              | Beaver Lake Trail                | Clackamas Community College Oregon City UGB limits                           | Shared use path                          | Regional trail would travel from Clackamas Community College through the Oregon City High School Freshman Campus to the airstrip. The trail would skirt the golf course and continue on to Beaver Lake.  | Metro Regional Transportation Plan                                      | Small portion                        | New development easements south of Loder Rd.   |  |   |                | 1.02           | Moderate               | Metro, Clackamas County, Oregon City Parks and Recreation                                      | 3        | \$368,820  |  |
| R5              | Barlow Road Trail                | Abernethy Rd. - Oregon City Limits   | Shared use path, on street               | Regional trail would follow the perceptive alignment of the historic Barlow Road from Abernethy Green to the Oregon City UGB. The trail would primarily utilize existing and proposed roadways.  | Metro Regional Transportation Plan                                      | Yes - more than 50% of trail in WQRZ |  |  |   | Type 1+        | 1.7            | Difficult              | Metro, Clackamas County, Oregon City Parks and Recreation                                      | 3        | \$913,904  |  |
| R6              | Trolley Trail Bridge             | Portland Ave. (Gladstone) - Oregon City limits                               | Shared use path                          | Regional trail would connect the proposed regional Trolley Trail to the Clackamas River Trail via an old railroad bridge spanning the Clackamas River.   | Metro Regional Transportation Plan                                      | Yes                                  | Union Pacific bridge   |  | Safety improvements (railings, screens, etc.)           |                | 0.08           | Moderate to Difficult  | Metro, Oregon City Parks and Recreation, City of Gladstone, Oregon City Public Works           | 2        | Unknown  |  |
| R7              | Willamette Greenway Trail        | Clackamette Park to Canby (Oregon City limits for the purpose of this study) | Shared use path, sidewalk, bicycle lanes | Regional trail would follow the Willamette River from the confluence of the Clackamas and Willamette rivers to Canby. Some portions would be a rail with trail, others will be a shared use path or on-street facilities.  | Metro Regional Transportation Plan                                      | Yes                                  | Union Pacific easement   | Highway 99E  | Improvements to existing sidewalks, tunnel improvement, | Type 2         |                | Difficult              | Metro, Clackamas County, Oregon City Parks and Recreation, Oregon Department of Transportation | 2        | \$1,119,825  |  |



| Projects  |               |                                      |                          |  |  | Implementation Measures         |                       |                          |       |           |                |                        |                          |          |  | Planning Estimate Capital Costs (Excludes Property Acquisition/Easement) |
|---|---------------|--------------------------------------|--------------------------|--|--|---------------------------------|-----------------------|--------------------------|-------|-----------|----------------|------------------------|--------------------------|----------|--|--|
| ID  | Trail         | From - To                            | Type                     | Description  | Adopted Plan(s)                        | In Water Quality Resource Zone? | Acquisition/ Easement | Right-of-Way Improvement | Other | Crossings | Length (miles) | Ease of Implementation | Lead Responsibility      | Priority | Trail Costs (See Cost Estimate Worksheet for Cost Breakdown) |  |
| COMMUNITY TRAILS  |               |                                      |                          |  |  |                                 |                       |                          |       |           |                |                        |                          |          |  |  |
| *Note: All Community Trails are located in the City of Oregon City Transportation System Plan (TSP) and have their own internal ranking system. Please refer to the TSP for detailed information on Community Trails not listed here. |               |                                      |                          |  |  |                                 |                       |                          |       |           |                |                        |                          |          |  |  |
| C1  | South End     | Oregon City UGB - 2nd St.            | Bike lanes and sidewalks | Bike lanes from UGB to Barker and sidewalks throughout. Provides critical pedestrian and bicycle access from the plateau to historic downtown and the river. | Oregon City Transportation System Plan | n/a                             | n/a                   | See description.         |       |           | 2.9            |                        | Oregon City Public Works |          | \$3,535,500  |  |
| C2  | Partlow       | South End - Central Point            | Bike lanes and sidewalks | Bike lanes and sidewalks from South End Rd. to Central Point Rd.   | Oregon City Transportation System Plan | n/a                             | n/a                   | See description.         |       |           | 0.5            |                        | Oregon City Public Works |          | \$930,000  |  |
| C3  | Central Point | Oregon City UGB - Warner-Parrott Rd. | Bike lanes and sidewalks | Bike lanes from Warner Parrott to the UGB and sidewalks from Roundtree Drive to the UGB  | Oregon City Transportation System Plan | n/a                             | n/a                   | See description.         |       |           | 1.5            |                        | Oregon City Public Works |          | \$3,721,250  |  |
| C4  | Pease         | S. McCord Rd. - Leland Rd.           | Bike lanes and sidewalks |  | Oregon City Transportation System Plan | n/a                             | n/a                   | See description.         |       |           | 0.73           |                        | Oregon City Public Works |          |  |  |
| C5  | Leland        | Warner-Milne - Oregon City UGB       | Bike lanes and sidewalks | Bike lanes and sidewalks from Warner Milne to the UGB  | Oregon City Transportation System Plan | n/a                             | n/a                   | See description.         |       |           | 0.9            |                        | Oregon City Public Works |          | \$2,700,750  |  |
| C6  | Meyers        | Leland Rd. - Hwy. 213                | Bike lanes and sidewalks | Bike lanes from Highway 213 to Beavercreek Rd. and sidewalk from Leland Rd. to Gaffney Lane  | Oregon City Transportation System Plan | n/a                             | n/a                   | See description.         |       |           | 1.48           |                        | Oregon City Public Works |          | \$443,000  |  |
| C7  | Gaffney       | Meyers Rd. - Molalla Rd.             | Bike lanes and sidewalks | Bike lanes and sidewalks from Molalla Avenue to Meyers Road  | Oregon City Transportation System Plan | n/a                             | n/a                   | See description.         |       |           | 0.72           |                        | Oregon City Public Works |          | \$1,695,250  |  |
| C8  | Molalla       | Hwy. 213 - Holmes St.                | Bike lanes and sidewalks | Bike lanes from 7th to Highway 213 and spot improvements for sidewalks. Curb ramps should be provided at each corner.  | Oregon City Transportation System Plan | n/a                             | n/a                   | See description.         |       |           | 1.26           |                        | Oregon City Public Works |          | \$32,480   |  |
| C9  | Division      | Molalla Rd. - Redland Rd.            | Bike lanes and sidewalks |  | Oregon City Transportation System Plan | n/a                             | n/a                   | See description.         |       |           | 1.15           |                        | Oregon City Public Works |          |  |  |
| C10   | Taylor        | 7th - 12th                           | Bike lanes and sidewalks | Bike lanes from 12th Street to 7th Street  | Oregon City Transportation System Plan | n/a                             | n/a                   | See description.         |       |           | 0.29           |                        | Oregon City Public Works |          | \$2,000  |  |



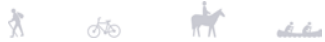
| Projects |              |                          |  |  |  | Implementation Measures         |                       |                          |       |           |                |                        |                          |          | Planning Estimate Capital Costs (Excludes Property Acquisition/Easement) |
|----------|--------------|--------------------------|--|--|--|---------------------------------|-----------------------|--------------------------|-------|-----------|----------------|------------------------|--------------------------|----------|--|
| ID       | Trail        | From - To                | Type                                     | Description  | Adopted Plan(s)                        | In Water Quality Resource Zone? | Acquisition/ Easement | Right-of-Way Improvement | Other | Crossings | Length (miles) | Ease of Implementation | Lead Responsibility      | Priority | Trail Costs (See Cost Estimate Worksheet for Cost Breakdown)             |
| C11      | 7th          | Taylor - High St.        | Bike lanes and sidewalks                 | Bike lanes from High Street to Taylor Street                                   | Oregon City Transportation System Plan | n/a                             | n/a                   | See description.         |       |           | 0.6            |                        | Oregon City Public Works |          | \$30,000   |
| C12      | 12th         | John Adams - Taylor      | Bike lanes and sidewalks                 | Bike lanes from Highway 99E to Taylor Street                                   | Oregon City Transportation System Plan | n/a                             | n/a                   | See description.         |       |           | 0.51           |                        | Oregon City Public Works |          | \$3,000  |
| C13      | Linn         | 4th - Warner-Milne       | Bike lanes and sidewalks                 | Bike lanes and sidewalks from Jackson to Warner Milne                          | Oregon City Transportation System Plan | n/a                             | n/a                   | See description.         |       |           | 1.16           |                        | Oregon City Public Works |          | \$502,000  |
| C14      | Warner-Milne | Molalla - Warner-Parrott | Bike lanes                               | Bike lanes from Linn Ave to Molalla  | Oregon City Transportation System Plan | n/a                             | n/a                   | See description.         |       |           | 0.7            |                        | Oregon City Public Works |          | \$10,150   |
| C15      | Redland      | Hwy. 213 - UGB           | Bike lanes and sidewalks                 | Bike lanes and sidewalks from Highway 213 to the UGB                           | Oregon City Transportation System Plan | n/a                             | n/a                   | See description.         |       |           | 1.76           |                        | Oregon City Public Works |          | \$754,500  |
| C16      | Holcomb      | Redland Rd. - UGB        | Shared use path, sidewalk, bicycle lanes | Bike lanes and sidewalks or trail from Abernethy Rd. to the UGB                | Oregon City Transportation System Plan | n/a                             | n/a                   | See description.         |       |           | 1.93           |                        | Oregon City Public Works |          | \$772,500  |
| C17      | Beavercreek  | Molalla - UGB            | Bike lanes and sidewalks                 | Bike lanes from Molalla to the UGB and sidewalks from Warner Milne to the UGB  | Oregon City Transportation System Plan | n/a                             | n/a                   | See description.         |       |           | 2.6            |                        | Oregon City Public Works |          | \$987,550  |
| C18      | Glen Oak     | Quinalt - Beavercreek    | Bike lanes and sidewalks                 | Bike lanes and sidewalks from Highway 213 to Beavercreek Road                  | Oregon City Transportation System Plan | n/a                             | n/a                   | See description.         |       |           | 0.25           |                        | Oregon City Public Works |          | \$203,000  |
| C19      | Front        | Holcomb - Forsyth        | Bike lanes and sidewalks                 | Bike lanes and sidewalks from Forsythe to Holcomb                              | Oregon City Transportation System Plan | n/a                             | n/a                   | See description.         |       |           | 0.64           |                        | Oregon City Public Works |          | \$504,000  |
| C20      | Holmes       | Molalla - Davis          | Bike lanes and sidewalks                 | Bike lanes from Telford to Molalla and sidewalks from Molalla to Reliance Lane | Oregon City Transportation System Plan | n/a                             | n/a                   | See description.         |       |           | 0.72           |                        | Oregon City Public Works |          | \$243,000  |
| C21      | Cleveland    | Swan Ave. - Front Ave.   | Bike lanes and sidewalks                 | Bike lanes and sidewalks or trail from Front Avenue to Swan Avenue             | Oregon City Transportation System Plan | n/a                             | n/a                   | See description.         |       |           | 0.31           |                        | Oregon City Public Works |          | \$41,072   |
| C22      | Davis        | Holmes - Linn            | Bike lanes and sidewalks                 | Bike lanes from Telford to Linn Ave.   | Oregon City Transportation System Plan | n/a                             | n/a                   | See description.         |       |           | 0.18           |                        | Oregon City Public Works |          | \$2,000  |



| Projects     |                              |                                      |                                    |  |  | Implementation Measures         |   |                                      |                 |                |                |                        |  |          | Planning Estimate Capital Costs (Excludes Property Acquisition/Easement) |
|--------------|------------------------------|--------------------------------------|------------------------------------|--|--|---------------------------------|---|--------------------------------------|-----------------|----------------|----------------|------------------------|--|----------|--|
| ID           | Trail                        | From - To                            | Type                               | Description  | Adopted Plan(s)                        | In Water Quality Resource Zone? | Acquisition/ Easement   | Right-of-Way Improvement             | Other           | Crossings      | Length (miles) | Ease of Implementation | Lead Responsibility  | Priority | Trail Costs (See Cost Estimate Worksheet for Cost Breakdown)             |
| C23          | Washington                   | 4th - Abernethy                      | Bike lanes                         | Bike lanes and improved sidewalks from 4th Avenue to the newly built sections just before Abernethy Road.  | Oregon City Transportation System Plan | n/a                             | n/a   | See description.                     |                 |                | 0.65           |                        | Oregon City Public Works   |          |  |
| C24          | Center Street                | 7th - 2nd                            | Bike lanes                         | Bike lanes and improved sidewalks from 7th Avenue to 2nd St.   | Oregon City Transportation System Plan | n/a                             | n/a   | See description.                     |                 |                | 0.31           |                        | Oregon City Public Works   |          |  |
| C25          | Fir                          | 7th - 2nd                            | Bike lanes                         | Bike lanes and improved sidewalks from Molalla to Beavercreek.   | Oregon City Transportation System Plan | n/a                             | n/a   | See description.                     |                 |                | 0.52           |                        | Oregon City Public Works   |          |  |
| LOCAL TRAILS |                              |                                      |                                    |  |  |                                 |   |                                      |                 |                |                |                        |  |          |  |
| L1           | Thimble Creek Trail          | Redland Rd. - Beavercreek Rd.        | Earthen trail                      | Earthen hiking trail that would follow Thimble Creek out of the UGB limits and connect to the Beaver Lake Trail at Beavercreek Road.   | Parks and Recreation Master Plan       | Yes                             | Numerous private property easements   |                                      | Sensitive areas | Type 1, Type 3 | 4.5            | Difficult              | Oregon City Parks and Recreation   | 3        | \$1,071,900  |
| L2           | Holcomb Ridge Loop Trail     | Holcomb Elementary                   | Paved trail, earthen hiking trail  | A series of trails that would follow the perimeter of Holcomb Elementary school and the UGB to the future Park Place development. The trails would then connect through the Holcomb Ridge development on existing roadways and trails and connect back to the elementary school on Holcomb Blvd. |  | Small portion                   | Easements as part of new development, easements if some parcels are not developed |                                      |                 |                | 3.4            | Moderate               | Oregon City Parks and Recreation, OC Public Works, Clackamas County, Park Place Neighborhood Association | 1        | \$729,281  |
| L3           | Park Place School Trail      | Front St. - Washington St.           | Paved trail                        | A short connection utilizing undeveloped street right-of-way adjacent to Park Place Elementary School. This off-street path would provide a traffic-free pathway and a direct connection for children going to school.   |  | No                              |   | Develop trail in public right-of-way | Grade issues    |                | 0.52           | Moderate - Difficult   | Oregon City Schools, Oregon City Parks and Recreation, Park Place Neighborhood Association               | 2        | \$121,511  |
| L4           | Park Place Park Trail System | Cleveland St. - Front St.            | Paved trail                        | A paved trail would provide a direct connection from Cleveland to the Park Place Park. A smaller system of earthen hiking trails could be developed on the hillside behind the park facilities.  |  | No                              | None  |                                      |                 |                | 0.17           | Easy                   | Oregon City Parks and Recreation   | 2        | \$92,286   |
| L5           | Park Place Creek Loop        | Park Place development - Redland Rd. | Earthen hiking trails, paved trail | A series of earthen trails would provide access to the stream corridor and connect to paved trails on the perimeter which would lead to new development and a community park.  | Parks and Recreation Master Plan       | No                              | Easements as part of new development  |                                      |                 |                | 0.95           | Easy                   | Oregon City Parks and Recreation   | 2        | \$157,613  |

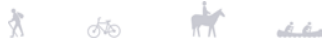


| Projects |  |  |                                  |   |  | Implementation Measures         |  |                                 |   |                                 |                |                                       |  |          |  | Planning Estimate Capital Costs (Excludes Property Acquisition/Easement) |
|----------|--|--|----------------------------------|---|--|---------------------------------|--|---------------------------------|---|---------------------------------|----------------|---------------------------------------|--|----------|--|--|
| ID       | Trail                                    | From - To                              | Type                             | Description   | Adopted Plan(s)                            | In Water Quality Resource Zone? | Acquisition/ Easement                                | Right-of-Way Improvement        | Other   | Crossings                       | Length (miles) | Ease of Implementation                | Lead Responsibility  | Priority | Trail Costs (See Cost Estimate Worksheet for Cost Breakdown) |  |
| L6       | Park Place Development Trail System      | TBD                                    | Paved trail                      | A collection of trails traversing the Park Place development providing connections to Redland Rd., proposed parks and open space, and adjacent subdivisions.  |  | No                              | Easements as part of new development                 |                                 |   |                                 | n/a            | Easy                                  | Oregon City Parks and Recreation, OC Planning                                | N/A      | \$0  |  |
| L7       | Livesay Creek Trail                      | Holcomb Ridge Trail to Redland Rd.     | Earthen hiking trail             | A stream-side walking trail following a Class 4 waterway down Holcomb ridge.  | Parks and Recreation Master Plan           | Yes                             | Private property easements along the stream corridor |                                 | Environmental, slope, water quality issues. Private property issues.  | Type 3 crossing of Redland Rd.  | 1.23           | Difficult                             | Oregon City Parks and Recreation   | 3        | \$229,500  |  |
| L8       | Abernethy Creek Trail                    | 15th and John Adams to Abernethy Rd.   | Earthen or paved trail           | A trail connecting 15 <sup>th</sup> and John Adams and the Oregon City property on the north side of Abernethy Creek. The trail would then travel east on the north side of the creek to the Clackamas County Facilities property, until it can rejoin the Clackamas County property on the south side of the creek..   | Parks and Recreation Master Plan           | Yes                             |  |                                 |   | Type 1, 2 bridges               | 0.75           | Moderate)                             | Oregon City Parks and Recreation, Clackamas County                           | 2        | \$331,144  |  |
| L9       | Abernethy Creek Extension Trail and Loop | Abernethy Creek to Atkinson Park       | Earthen trail                    | A trail would switchback up the steep hillside to connect to an existing trail on undeveloped public right-of-way just beneath Atkinson Park. The trail would remain on Clackamas County property. An earthen trail from Aktinson Park would connect down the hill from McLoughlin through the 16 <sup>th</sup> Street ROW to Jefferson Street and reconnect to John Adams and 15 <sup>th</sup> |  | Yes                             |  | Sidewalks on 15th               | Environmental, slope, water quality issues. Nature trail will need to be hand built on the steep slopes in the 16 <sup>th</sup> Street ROW; boardwalk / catwalk connection needed to connect to Jefferson |                                 | 0.45           | Easy – Moderate – Difficult (terrain) | Oregon City Parks and Recreation, Oregon City Public Works, Clackamas County | 3        | \$74,550   |  |
| L10      | Stadium Loop Trail                       | Jackson St. and 14th                   | Earthen or paved trail           | An earthen or paved trail would travel up 14th St., around the track, and follow existing demand trails around the Oregon City High School.   | Newell Creek Conservation Strategy (DRAFT) | Small portion                   |  | Sidewalks on 14th               |   |                                 | 0.45           | Easy                                  | Oregon City Schools, Oregon City Parks and Recreation                        | 3        | \$104,782  |  |
| L11      | Barclay Park Connection                  | Abernethy Creek to Barclay Park        | Sidewalk                         | Add a sidewalk on John Adams so pedestrians can connect to Barclay Park   |  | Yes                             |  | Sidewalks on John Adams         | Slope   | Type 1                          | 0.23           | Easy                                  | Oregon City Public Works   | 1        | \$30,181   |  |
| L12      | Holcomb School Connection                | Swan Ave. to Holcomb Elementary School | Paved trail                      | Trail would skirt the perimeter of the Oregon City View Manor and provide a connection to Swan Ave. if/when the private parcel adjacent to the Manor is developed.  |  | Very small portion              | Easements as part of new development                 | Sidewalk on Swan Ave.           |   |                                 | 0.69           | Moderate                              | Oregon City Parks and Recreation, Clackamas County                           | 1        | \$146,459  |  |
| L13      | Swan Ave.                                | Forsythe to Holcomb                    | Sidewalk or paved roadside trail | This trail would provide critical north/south user access, as Swan one of two roads that connect to Forsythe in this area.  | TSP  | Yes                             |  | Sidewalk or trail along roadway |   | Type 1+ at Holcomb and Forsythe | 0.52           | Easy - Moderate                       | Oregon City Public Works Department  | 1        | \$170,230  |  |





| Projects |                                      |                                      |                       |   |                                  | Implementation Measures         |   |   |  |                         |                |                        |  |          |  | Planning Estimate Capital Costs (Excludes Property Acquisition/Easement) |
|----------|--------------------------------------|--------------------------------------|-----------------------|---|----------------------------------|---------------------------------|---|---|--|-------------------------|----------------|------------------------|--|----------|--|--|
| ID       | Trail                                | From - To                            | Type                  | Description   | Adopted Plan(s)                  | In Water Quality Resource Zone? | Acquisition/ Easement   | Right-of-Way Improvement                          | Other  | Crossings               | Length (miles) | Ease of Implementation | Lead Responsibility  | Priority | Trail Costs (See Cost Estimate Worksheet for Cost Breakdown) |  |
| L14      | Hunter Spur Trail                    | Forsythe to Swan Ave.                | Paved trail           | This trail would utilize existing public right-of-way adjacent to the South Fork Water property to provide a connection through the neighborhood.   |                                  | Very small portion              | Easement needed for portion of trail west of Hunter                     |   | Slope  | Type 1 crossing on Swan | 0.26           | Moderate - Difficult   | Oregon City Parks and Recreation, Oregon City Public Works | 2        | \$594,151  |  |
| L15      | Waterboard - Singer Creek Connection | Waterboard Park to Singer Creek Park | Signage, paved trail  | This route would rely on way finding signage to Linn Ave. and then follow Singer Creek to existing paved trails within the park.  | Parks and Recreation Master Plan | Yes                             | Easement needed to cross taxlot 22E31DD04600                            |   | Environmental, water quality issues.                                 | Type 3 crossing on Linn | 0.14           | Easy - Moderate        | Oregon City Parks and Recreation                           | 2        | \$87,893   |  |
| L16      | Waterboard Rim Trail                 | Terrace Ave. to McKinley             | Paved trail           | This trail would travel along the rim of Waterboard Park providing outstanding views of downtown and the Willamette River. The existing trail needs to be maintained/upgraded, and a new portion will have to be constructed on the unpaved portions of the rim in public right-of-way. |                                  | No                              |   |   | Diplomatic measures with neighborhood to use unimproved right-of-way |                         | 0.27           | Easy - Moderate        | Oregon City Parks and Recreation, Oregon City Public Works | 3        | \$76,604   |  |
| L17      | Waterboard Park Trail                | McKinley Ave. to Center St.          | Earthen trail         | This trail would switchback down the steep hillside and connect to Center St. The trail would periodically intersect Waterboard Park Rd.  |                                  | No                              |   |   | Slope issues   | Type 1+ at Center       | 0.41           | Moderate               | Oregon City Parks and Recreation                           | 2        | \$73,062   |  |
| L18      | Center Street                        | Telford to S. 2nd Ave.               | Sidewalk              | This trail follows Center St. and connects downtown Oregon City to the top of the plateau. The trail would also provide access to Waterboard Park trails and the sections of the Oregon City Loop Trail.  | TSP                              | No                              |   | Sidewalks on both sides of the roadway            | Slope issues   | Type 1+ at Sunset       | 0.61           | Moderate - Difficult   | Oregon City Public Works                                   | 2        | \$84,823   |  |
| L19      | Old Canemah - McLoughlin Connection  | Old Canemah Park to Tumwater         | Paved trail, sidewalk | A paved trail would extend through Old Canemah Park to the PGE substation and connect to McLoughlin Blvd. Sidewalks would provide facilities to High Street, where trail users would meet up with the Regional Trail.   |                                  | Yes                             | Easements needed to cross PGE property to McLoughlin Blvd.              | Sidewalks on McLoughlin, Tumwater, and S. 2nd St. |  | Type 1 at High          | 0.31           | Moderate               | Oregon City Parks and Recreation, Oregon City Public Works | 2        | \$60,361   |  |
| L20      | Rivercrest Loop Trail                | McKinley Ave. to Linn                | Sidewalk              | An on-street loop trail would provide a connection to Singer Creek Park, Waterboard Park, and Rivercrest Park. Trail would travel through small public open spaces.   | Park Drive in TSP                | Small portion                   |   | Sidewalks on McKinley, Brighton, Charman and Park | Encroachment issues  | Type 1+ at Linn         | 0.96           | Easy - Moderate        | Oregon City Public Works, Oregon City Parks                | 1        | \$213,114  |  |
| L21      | Parks Trail                          | Singer Creek Park to Hillendale Park | Paved trail           | This trail would link various parcels of public and quasi-public land to provide an off-street north/south connection linking schools, county buildings, and parks.   | Parks and Recreation Master Plan | Small portion                   | Easements needed to cross PGE properties, McLoughlin Memorial, cemetery |   | Trail will travel through school property                            | Type 2                  | 1.3            | Moderate - Difficult   | Oregon City Parks and Recreation, Clackamas County         | 1        | \$492,917  |  |
| L22      | Hillendale South Trail               | Hillendale Park to Gaffney Lane      | Sidewalk, paved trail | This trail would utilize sidewalks to connect to the Powerline Trail and then continue south on a paved trail through school property.  | Parks and Recreation Master Plan | No                              |   | Sidewalks on Wassail, Eastborne, Clairmont        | Trail will travel through school property                            | Type 1                  | 0.48           | Easy                   | Oregon City Public Works, Oregon City Parks and Recreation | 1        | \$162,942  |  |



| Projects |                                  |  |  |   |  | Implementation Measures         |   |  |  |  |                |                        |  |          | Planning Estimate Capital Costs (Excludes Property Acquisition/Easement) |
|----------|----------------------------------|--|--|---|--|---------------------------------|---|--|--|--|----------------|------------------------|--|----------|--|
| ID       | Trail                            | From - To  | Type                                   | Description   | Adopted Plan(s)                            | In Water Quality Resource Zone? | Acquisition/ Easement   | Right-of-Way Improvement                         | Other  | Crossings  | Length (miles) | Ease of Implementation | Lead Responsibility  | Priority | Trail Costs (See Cost Estimate Worksheet for Cost Breakdown)             |
| L23      | Wesley Lynn - Chapin Trail       | Wesley Lynn Park to Chapin Park                  | Paved trail                            | This trail would connect two community parks via public right-of-way and undeveloped parcels of land.   |  | Very small portion              | Easements as part of new development  |  |  |  | 1.01           | Easy - Moderate        | Oregon City Parks and Recreation, Oregon City Public Works | 1        | \$300,413  |
| L24      | Newell Creek Canyon Trail System | Newell Creek Trail system                        | Earthen trails, paved on-street trails | A series of hiking trails that would access various parts of the eastern slope in Newell Creek Canyon. The trails would lead to potential interpretive stations and viewpoints, as well as connect along the rim. Paved trails would utilize existing public street right-of-way. | Newell Creek Conservation Strategy (DRAFT) | Yes                             | Easements needed to cross taxlot, easements as part of development (Wal-Mart) | Sidewalk improvements on Barclay                 | Sensitive areas, existing demand trails will need to be closed and repaired. | Type 4 tunnel under Highway 213; boardwalk / bridge crossing Newell Creek                                | 32             | Easy - Difficult       | Oregon City Parks and Recreation, Metro                    | 3        | N/A  |
| L25      | Chapin - South End Connection    | Chapin Park to South End Rd.                     | Paved trail                            | This trail would connect South End Rd. to Chapin Park via the small public property parcel to the public right-of-way on Gentry Way.  |  | No                              |   |  |  | Type 1 crossing on Boynton, Type 1+ on South End   | 0.35           | Easy                   | Oregon City Public Works Department                        | 1        | \$57,380   |
| L26      | Glacier Court Trail              | Chapin Park to South End Rd.                     | Sidewalk                               | A sidewalk connection would provide better access to Chapin Park. Some sidewalk segments exist in places.   |  | No                              |   | Sidewalk improvements on Glacier Ct.             |  |  | 0.2            |                        | Oregon City Public Works Department                        | 2        | \$34,927   |
| L27      | BPA Powerline Trail              | Highway 213 to the Willamette River              | Earthen trail                          | This hiking/equestrian trail would follow the BPA right-of-way from Highway 213 to the Willamette River rocks off highway 99E. Grades would be moderate to steep in some areas but would provide a pastoral natural experience for local walkers and horse riders.                | Parks and Recreation Master Plan           | Yes                             | Easements needed across numerous private property parcels                     |  | Slope, erosion, privacy  | Type 2 crossing on Highway 213, Type 1+ on Leland, Central Point, and South End. Type 3 crossing on 99E. | 4.43           | Very Difficult         | Clackamas County, Oregon City Parks and Recreation         | 3        | \$1,491,426  |
| L28      | Coffee Creek Trail               | South End - Old Canemah Park                     | Stairs, earthen trail                  | This accessway would provide a connection from South End Road to Canemah Park and the regional trail system.  |  | Yes                             | Easements needed across numerous private property parcels                     | Sidewalk on South End Rd. to connect to stairway | Slope, erosion, private property   | Type 1+ on South End Rd.   | 0.54           | Difficult              | Oregon City Parks and Recreation, Oregon City Public Works | 2        | \$119,070  |
| L29      | Canemah Bluff Trail              | Oregon City Loop Trail to Oregon City Loop Trail | Earthen trail                          | This earthen trail would follow the contours on Canemah Bluff and travel around the southwestern point of the plateau. Two spur trails would connect to Beutel Rd. and Navajo Way. The trail will connect to the regional trail near Hazel Grove Drive.                           | Parks and Recreation Master Plan           | Some                            | Easements needed to cross multiple (27) private properties                    |  |  | Type 1+ crossing on South End Rd.  | 3.5            | Very Difficult         | Oregon City Parks and Recreation, Metro                    | 3        | \$651,038  |



| Projects |                     |  |                              |  |                                  | Implementation Measures         |   |                             |  |   |                |  |  |          |  | Planning Estimate Capital Costs (Excludes Property Acquisition/Easement) |
|----------|---------------------|--|------------------------------|--|----------------------------------|---------------------------------|---|-----------------------------|--|---|----------------|--|--|----------|--|--|
| ID       | Trail               | From - To                                      | Type                         | Description  | Adopted Plan(s)                  | In Water Quality Resource Zone? | Acquisition/ Easement   | Right-of-Way Improvement    | Other  | Crossings                                   | Length (miles) | Ease of Implementation   | Lead Responsibility  | Priority | Trail Costs (See Cost Estimate Worksheet for Cost Breakdown) |  |
| L30      | Lazy Creek Trail    | Gaffney to Molalla                             | Sidewalk and paved trail     | This on-street connection provides direct access from Molalla to Gaffney and the Parks Trail System. This trail would provide a more direct connection for Clackamas County Community College students living in the surrounding neighborhoods and residents wishing to access the College trail system. |                                  | Some                            | Easement needed to cross taxlot 32E08A 01606                        | Sidewalk on Lazy Creek Lane |  | Type 2 crossing on Molalla                  | 0.43           | Easy - Moderate  | Oregon City Public Works                                   | 1        | \$114,026  |  |
| L31      | Finnegan's Trail    | South End Rd. to Finnegan's Way                | Paved trail or earthen trail | This trail would formalize existing demand trails on quasi-public land and connect to the regional trail at the creek. It would also provide a connection to South End Rd and the trail system connecting to Canemah Bluff.  |                                  | Some                            |   |                             | Negotiation with the homeowner's association | Type 1+ crossing on South End Rd.           | 0.8            | Moderate - Difficult, depending on resident's receptiveness to a trail | Oregon City Parks and Recreation                           | 3        | \$221,454  |  |
| L32      | Parkland Trail      | South End Rd. to Canemah Bluff via Navajo Way  | Paved trail                  | A trail would travel through future development and follow Navajo Way to connect to Canemah Bluff and the proposed Canemah Bluff Trail.  |                                  |                                 | Easements as part of new development                                | Sidewalks on Navajo Way     |  | Type 1+ or Type 3 crossing on South End Rd. | 0.41           | Moderate   | Oregon City Parks and Recreation, Oregon City Public Works | 2        | \$102,287  |  |
| L33      | Powerline Trail     | Beavercreek Rd. - Meyers Rd.                   | Shared use path, on-street   | Community trail will utilize the powerline right-of-way in Newell Creek Canyon southwest to Meyers Rd., where it will connect to the Oregon City Loop Trail.   | Parks and Recreation Master Plan | n/a                             | n/a   | See description.            |  |   | 1.1            |  | Oregon City Parks and Recreation, Public Works             | 1        | \$481,478  |  |
| L34      | Central Point Trail | Regional Trail to BPA Powerline Corridor Trail | Earthen trails               | This trail would provide access from Central Point Rd and the Regional Trail through new development to the BPA Powerline Corridor trail along the creek.  | Parks and Recreation Master Plan | Yes                             | Easements as part of new development, easements on private property |                             |  |   | 0.45           | Difficult  | Oregon City Parks and Recreation                           | 3        | \$77,497   |  |









## Estimated Long-Term Costs

The candidate projects are recommended to be implemented over the next 50 years, or as funding is available. Some of the more expensive projects may take longer to implement.

The total implementation cost is estimated at approximately \$34 million. Approximately \$7 million is for regional trails, \$19 million for trails on collector and arterial roadways, and \$9.3 million for local trails. A complete breakdown of costs is presented in Tables 6 and 7 on the following pages. Again, many trails will likely be implemented as part of property development projects over time. It is important to note that while some of the trail projects can be funded with Federal, State, and regional transportation, safety, and/or air quality grants, many are recreational in nature and must be funded by local or private sources.

| Trail Type           | Miles* | Cost/mile                                      | Total                |
|----------------------|--------|--|----------------------|
| Regional Trails      | 17     | \$6,000**                                      | \$102,000            |
| Community Trails     | 24     | assumed as part of routine roadway maintenance |                      |
| Local Trails         |        |  |                      |
| Natural Trails       | 22     | \$800  | \$17,600             |
| City Trails          | 17     | \$3,000 - \$6,000                              | \$51,000 - \$102,000 |
| Sidewalks/Accessways | n/a    | assumed as part of routine roadway maintenance |                      |

\* Approximate estimation. Actual trail miles will be determined after a detailed planning process and an engineering/survey analysis.

\*\* Lower bound cost estimate based on Portland's Springwater Corridor Trail. Maintenance costs typically range from \$6,000 - \$10,000 per year. On-street portions of the Regional Trail will undergo routine street maintenance.

**Table 4. Annual Trail Maintenance Costs**

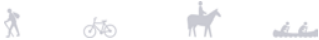




| Table 5. Estimated Costs for Oregon City's Trail Network: Regional Trails |                               |  |                                      |                                    |                         |                         |                         |                      |                       |                     |                         |                          |             |                  |                   |                   |                        |
|---|-------------------------------|--|--------------------------------------|------------------------------------|-------------------------|-------------------------|-------------------------|----------------------|-----------------------|---------------------|-------------------------|--------------------------|-------------|------------------|-------------------|-------------------|------------------------|
| ID  | Trail Name and Segments       |  | Trail miles Construction (12' paved) | Trail miles Construction (unpaved) | On-street miles         |                         |                         |                      | Crossings             |                     |                         |                          | Other****   | Preliminary Cost | Design & CM (15%) | Contingency (20%) | Estimate of Total Cost |
|   |                               |  |                                      |                                    | Widening                | Stripe/sign bike lane   | Sidewalk (6', one side) | Signing              | Type 1                | Type 1+             | Type 2**                | Type 3                   |             |                  |                   |                   |                        |
|   |                               |  |                                      |                                    | \$300,000<br>per mile * | \$132,000<br>per mile * | \$300,000<br>per mile   | \$25,000<br>per mile | \$184,800<br>per mile | \$1,500<br>per mile | \$5,000<br>per crossing | \$15,000<br>per crossing |             |                  |                   |                   |                        |
| Regional Trails   |                               |  |                                      |                                    |                         |                         |                         |                      |                       |                     |                         |                          |             |                  |                   |                   |                        |
| R1  | I-205 Path (Two Rivers Trail) |  | \$204,000                            |                                    |                         | \$17,750                | \$131,208               | \$3,450              |                       | \$15,000            |                         |                          |             | \$371,408        | \$55,711          | \$74,282          | \$501,401              |
| R2  | Newell Creek Canyon Trail     |  | \$867,000                            |                                    | \$117,000               | \$3,750                 |                         | \$4,050              |                       | \$15,000            |                         |                          | \$1,000,000 | \$2,006,800      | \$301,020         | \$401,360         | \$2,709,180            |
| R3  | Oregon City Loop Trail        |  | \$1,430,400                          |                                    | \$21,000                | \$17,500                | \$60,984                | \$14,250             | \$5,000               | \$30,000            |                         |                          | \$250,000   | \$1,829,134      | \$274,370         | \$365,827         | \$2,469,331            |
| R4  | Beaver Lake Trail             |  | \$163,200                            |                                    |                         |                         |                         |                      |                       |                     | \$10,000                | \$100,000                |             | \$273,200        | \$40,980          | \$54,640          | \$368,820              |
| R5  | Barlow Road Trail             |  | \$180,000                            |                                    | \$207,000               |                         | \$262,416               | \$2,550              |                       | \$15,000            | \$10,000                |                          |             | \$676,966        | \$101,545         | \$135,393         | \$913,904              |
| R6  | Trolley Trail Bridge          |  |                                      |                                    |                         |                         |                         |                      |                       |                     |                         |                          |             | \$0              | \$0               | \$0               | \$0                    |
| R7  | Willamette Greenway Trail     |  | \$300,000                            |                                    | \$375,000               | \$50,000                |                         | \$4,500              |                       |                     |                         |                          | \$100,000   | \$829,500        | \$124,425         | \$165,900         | \$1,119,825            |
|   |                               |  |                                      |                                    |                         |                         |                         |                      |                       |                     |                         |                          |             |                  |                   |                   |                        |
| Totals  |                               |  |                                      |                                    |                         |                         |                         |                      |                       |                     |                         |                          |             |                  |                   |                   | \$6,962,636            |

\* actual cost will depend on ROW acquisition, drainage issues, surface selected  
\*\* includes signal modifications to add pedestrian actuation  
\*\*\* includes only the trail segments within Oregon City's city limits  
\*\*\*\* special conditions that may include bridge construction, property acquisition, and sidewalk construction

| Table 6. Estimated Costs for Oregon City's Trail Network: Local Trails |                                     |   |                                       |                         |                       |                                 |                      |                       |                     |                         |                          |           |                     |                      |                      |                           |
|--|-------------------------------------|---|---------------------------------------|-------------------------|-----------------------|---------------------------------|----------------------|-----------------------|---------------------|-------------------------|--------------------------|-----------|---------------------|----------------------|----------------------|---------------------------|
| ID   | Trail Name and Segments             | Trail miles Construction<br>(12' paved) | Trail miles Construction<br>(unpaved) | On-street miles         |                       |                                 |                      | Crossings             |                     |                         |                          | Other**** | Preliminary<br>Cost | Design & CM<br>(15%) | Contingency<br>(20%) | Estimate of Total<br>Cost |
|  |                                     |   |                                       | Widening                | Stripe/sign bike lane | Sidewalk/Path<br>(6', one side) | Signing              | Type 1                | Type 1+             | Type 2**                | Type 3                   |           |                     |                      |                      |                           |
|  |                                     |   |                                       | \$300,000<br>per mile * | \$132,000<br>per mile | \$300,000<br>per mile           | \$25,000<br>per mile | \$184,800<br>per mile | \$1,500<br>per mile | \$5,000<br>per crossing | \$15,000<br>per crossing |           |                     |                      |                      |                           |
| Local Trails   |                                     |   |                                       |                         |                       |                                 |                      |                       |                     |                         |                          |           |                     |                      |                      |                           |
| L1   | Thimble Creek Trail                 |   | \$594,000                             |                         |                       |                                 |                      |                       |                     |                         |                          | \$200,000 | \$794,000           | \$119,100            | \$158,800            | \$1,071,900               |
| L2   | Holcomb Ridge Loop Trail            |   | \$183,480                             | \$12,000                | \$1,000               | \$343,728                       |                      |                       |                     |                         |                          |           | \$540,208           | \$81,031             | \$108,042            | \$729,281                 |
| L3   | Park Place School Trail             |   |                                       |                         |                       | \$85,008                        |                      | \$5,000               |                     |                         |                          |           | \$90,008            | \$13,501             | \$18,002             | \$121,511                 |
| L4   | Park Place Park Trail               |   | \$63,360                              |                         |                       |                                 |                      | \$5,000               |                     |                         |                          |           | \$68,360            | \$10,254             | \$13,672             | \$92,286                  |
| L5   | Park Place Creek Loop               |   | \$66,000                              |                         |                       |                                 | \$750                |                       |                     |                         |                          | \$50,000  | \$116,750           | \$17,513             | \$23,350             | \$157,613                 |
| L6   | Park Place Development Trail System |   |                                       |                         |                       |                                 |                      |                       |                     |                         |                          |           | \$0                 | \$0                  | \$0                  | N/A                       |
| L7   | Livesay Creek Trail                 |   | \$165,000                             |                         |                       |                                 |                      | \$5,000               |                     |                         |                          |           | \$170,000           | \$25,500             | \$34,000             | \$229,500                 |
| L8   | Abernethy Creek Trail               |   |                                       |                         |                       | \$140,448                       | \$1,140              |                       |                     |                         |                          | \$100,000 | \$241,588           | \$36,238             | \$48,318             | \$326,144                 |
| L9   | Abernethy Creek Extension Trail     |   | \$33,000                              |                         |                       |                                 |                      |                       |                     |                         |                          |           | \$33,000            | \$4,950              | \$6,600              | \$44,550                  |
| L10  | Stadium Loop Trail                  |   |                                       |                         |                       | \$77,616                        |                      |                       |                     |                         |                          |           | \$77,616            | \$11,642             | \$15,523             | \$104,782                 |



|     |                                      |           |           |  |       |           |         |          |          |          |           |             |           |           |             |
|-----|--------------------------------------|-----------|-----------|--|-------|-----------|---------|----------|----------|----------|-----------|-------------|-----------|-----------|-------------|
| L11 | Barclay Park Connection              |           |           |  |       | \$22,176  | \$180   |          |          |          |           | \$22,356    | \$3,353   | \$4,471   | \$30,181    |
| L12 | Holcomb School Connection            |           |           |  |       | \$103,488 |         | \$5,000  |          |          |           | \$108,488   | \$16,273  | \$21,698  | \$146,459   |
| L13 | Swan Avenue                          |           |           |  |       | \$96,096  |         |          | \$30,000 |          |           | \$126,096   | \$18,914  | \$25,219  | \$170,230   |
| L14 | Hunter Spur Trail                    |           |           |  |       | \$35,112  |         |          | \$15,000 |          | \$390,000 | \$440,112   | \$66,017  | \$88,022  | \$594,151   |
| L15 | Waterboard - Singer Creek Connection |           |           |  |       | \$49,896  | \$210   |          | \$15,000 |          |           | \$65,106    | \$9,766   | \$13,021  | \$87,893    |
| L16 | Waterboard Rim Trail                 |           |           |  |       | \$51,744  |         | \$5,000  |          |          |           | \$56,744    | \$8,512   | \$11,349  | \$76,604    |
| L17 | Waterboard Park Trail                |           | \$54,120  |  |       |           |         |          |          |          |           | \$54,120    | \$8,118   | \$10,824  | \$73,062    |
| L18 | Center Street                        |           |           |  |       | \$62,832  |         |          |          |          |           | \$62,832    | \$9,425   | \$12,566  | \$84,823    |
| L19 | Old Canemah - McLoughlin Connection  |           |           |  |       | \$44,352  | \$360   |          |          |          |           | \$44,712    | \$6,707   | \$8,942   | \$60,361    |
| L20 | Rivercrest Loop Trail                |           |           |  |       | \$136,752 | \$1,110 | \$5,000  | \$15,000 |          |           | \$157,862   | \$23,679  | \$31,572  | \$213,114   |
| L21 | Parks Trail                          |           |           |  |       | \$347,424 | \$2,700 | \$5,000  |          | \$10,000 |           | \$365,124   | \$54,769  | \$73,025  | \$492,917   |
| L22 | Hillendale South Trail               |           |           |  |       | \$85,008  | \$690   |          | \$15,000 |          | \$20,000  | \$120,698   | \$18,105  | \$24,140  | \$162,942   |
| L23 | Wesley Lynn - Chapin Trail           | \$165,000 |           |  | \$750 | \$11,088  | \$690   |          | \$45,000 |          |           | \$222,528   | \$33,379  | \$44,506  | \$300,413   |
| L24 | Newell Creek Trail System            |           |           |  |       |           |         |          |          |          |           | \$0         | \$0       | \$0       | \$0         |
| L25 | Chapin - South End Connector         |           |           |  |       | \$42,504  |         |          |          |          |           | \$42,504    | \$6,376   | \$8,501   | \$57,380    |
| L26 | Glacier Court Trail                  |           |           |  |       | \$25,872  |         |          |          |          |           | \$25,872    | \$3,881   | \$5,174   | \$34,927    |
| L27 | BPA Powerline Trail                  |           | \$584,760 |  |       |           |         | \$20,000 |          |          | \$500,000 | \$1,104,760 | \$165,714 | \$220,952 | \$1,491,426 |
| L28 | Coffee Creek Trail                   |           | \$13,200  |  |       |           |         |          |          |          | \$75,000  | \$88,200    | \$13,230  | \$17,640  | \$119,070   |
| L29 | Canemah Bluff Trail                  |           | \$462,000 |  |       |           | \$5,250 |          | \$15,000 |          |           | \$482,250   | \$72,338  | \$96,450  | \$651,038   |
| L30 | Lazy Creek Trail                     |           |           |  |       | \$79,464  |         | \$5,000  |          |          |           | \$84,464    | \$12,670  | \$16,893  | \$114,026   |
| L31 | Finnegan's Trail                     |           |           |  |       | \$147,840 | \$1,200 |          | \$15,000 |          |           | \$164,040   | \$24,606  | \$32,808  | \$221,454   |
| L32 | Parkland Trail                       |           |           |  |       | \$75,768  |         |          |          |          |           | \$75,768    | \$11,365  | \$15,154  | \$102,287   |
| L33 | Powerline Trail                      | \$330,000 |           |  |       |           | \$1,650 |          | \$15,000 | \$10,000 |           | \$356,650   | \$53,498  | \$71,330  | \$481,478   |
| L34 | Central Point Trail                  |           | \$56,760  |  |       |           | \$645   |          |          |          |           | \$57,405    | \$8,611   | \$11,481  | \$77,497    |





## Trail Funding Sources

### *Public Funding for Trails*

There are a variety of potential funding sources including local, State, regional, and Federal funding programs that can be used to construct or augment the proposed trail improvements. Most of these are competitive, and involve the completion of extensive applications with clear documentation of the project need, costs, and benefits. Local funding for these projects would typically come from Oregon City and/or potential future bonds or other local revenues.

Table 7 summarizes public funding sources for Oregon City trails. Some of these funds are restricted to the type of improvements that qualify for assistance. It is important to note that many of the funding sources are highly competitive and impossible to determine exactly which projects will be funded by which funding sources. It is also difficult to pinpoint the timing of the projects, due to dependence on competitive funding sources, timing of roadway and development projects, and the overall economy.

### *Other Funding Opportunities*

Residents and other community members are excellent resources for garnering support and enthusiasm for a trail and the City should work with volunteers to substantially reduce trail implementation and maintenance costs. Local schools, community groups, or a group of dedicated neighbors may use the project as a project for the year, possibly working with a local designer or engineer. Work parties can be formed to help clear the right-of-way where needed. A local construction company can donate or discount services. Other opportunities for implementation will appear over time, such as grants and private funds. The City should look to its residents for additional funding ideas to expedite the completion of the trail system.



| Source  | Description  | Eligible Projects   | Funding Cycle       |
|---|--|---|---------------------|
| Metro Transportation Improvement Program Funding (MTIP) | Federal transportation funds coordinated by Metro. Funds can be used for Preliminary Engineering, ROW acquisition and construction.                            | Regional, Community Trail projects along roadways with regional classifications | 2 years             |
| Recreational Trails Grants                              | Coordinated by Oregon State Parks. Funds can be used for ROW acquisition and construction.   | Regional, Local Trails  | Annual              |
| Land and Water Conservation Fund (LWCF)                 | Federal funds coordinated by Oregon State Parks. Funds can be used for ROW acquisition and construction.   | Regional, Local Trails  | Annual              |
| Measure 66 funds from Oregon State Lottery              | Coordinated by Oregon State Parks. Funds can be used for ROW acquisition and construction.   | Regional, Local Trails  | 2 years             |
| Transportation Enhancements                             | Administered by Oregon Department of Transportation (ODOT). Must serve transportation need.  | Regional, Community, some Local Trails  | 2 years             |
| Oregon Bike/Ped Grants                                  | Administered by ODOT's Bicycle and Pedestrian Program. Must be in public ROW.  | Regional, Community, some Local Trails  | 2 years             |
| System Development Charges (SDCs)                       | Fees on new construction allocated for parks, streets, and public improvements. Where available, funds can be used for ROW acquisition and trail construction. | Community, Local Trails   | Varies              |
| Local/Regional bond measures                            | Funds can be used for ROW acquisition, engineering, design and trail construction.   | Regional, Community, Local Trails   | Varies              |
| Tax Increment Financing/Urban Renewal Funds             | Part of trail project must be located in an urban renewal district which meets certain economic criteria and is approved by a local governing body.            | Community, Local Trails   | Varies              |
| Local Traffic Safety Commission                         | Funding for street crossings and signals.  | Community, Local Trails   | Varies              |
| Safe Routes to School Funds                             | Federal funds for pedestrian and bicycle facilities to improve school safety   | Regional, Community, Local Trails   | Pending legislation |
| Congestion Mitigation and Air Quality (CMAQ) funds      | Federal funding for bicycle and pedestrian facilities that reduce travel by automobile. Recreational facilities generally are not funded.                      | Community Trails  | 2 years             |

Table 7. Public Funding Sources for Bicycle, Pedestrian, and Trail Projects





## Maintenance Guidelines and Costs

The following table summarizes a recommended maintenance schedule for the Oregon City Trail system. These guidelines address maintenance on the off-street portions of the trails. On-street portions should be maintained per the standards of the responsible jurisdiction.

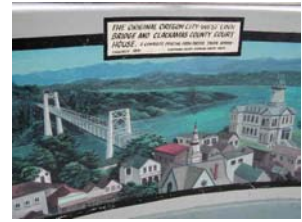
| Item   | Frequency  |
|--|--|
| Inspections  | Seasonal - at both beginning and end of summer                       |
| Signage Replacement                                      | 1 - 3 years  |
| Pavement Markings Replacement                            | 1 - 3 years  |
| Major damage response (fallen trees, washouts, flooding) | Schedule based on priorities   |
| Pavement Sealing, Potholes                               | 5 - 15 years   |
| Introduced tree and shrub plantings, trimming            | Every 1- 3 years   |
| Culvert Inspection                                       | Before winter and after major storms                                 |
| Cleaning Ditches   | As needed  |
| Trash Disposal   | Weekly during high use; twice monthly during low use                 |
| Lighting Luminaire Repair                                | Once a year  |
| Pavement Sweeping/Blowing                                | As needed, before high use season. Weekly in fall.                   |
| Maintaining culvert inlets                               | Inspect before the onset of the wet season, then again in early fall |
| Shoulder plant trimming (weeds, trees, brambles)         | Twice a year: middle of growing season and early fall                |
| Waterbar maintenance (earthen trails)                    | Annually   |
| Site furnishings, replace damaged components             | As needed  |
| Graffiti Removal   | Weekly, as needed  |
| Fencing Repair   | Inspect monthly for holes and damage, repair immediately             |
| Shrub/Tree Irrigation for introduced planting areas      | Weekly during summer months until plants are established             |
| Litter Pick-up   | Weekly for high use; twice a month for low use                       |

Table 8. Maintenance Tasks and Frequency of Need





## V. Additional Recommendations



In addition to implementing the proposed trails discussed in the previous chapter, the following action items are recommended to ensure the success of the Oregon City Trails Master Plan.

### Implementation

To oversee implementation of the proposed trail system, it is recommended that staff management, the Parks and Recreation Advisory Committee, and the Natural Resource Committee take leadership roles, and devote at least two meetings annually to Plan evaluation, monitoring, and progress.

### New Development

Develop and adopt City Code to ensure that trail portions are built to recommended standards as part of the land use permitting process. City inspectors should be educated about Oregon City trail standards and trail siting guidelines to ensure that trails are included in the development and are constructed properly.

### Waterway Trails

Oregon City has two navigable waterways that are adjacent to the city limits, which are ideal for non-motorized aquatic recreation (i.e., canoeing and kayaking).

- Launches for small non-motorized watercraft should be provided in parks and public spaces that are adjacent to the Willamette and Clackamas Rivers. Launches on Clackamette Cove should be considered when the area is redeveloped.
- Small tie-up areas should be provided so people can visit downtown Oregon City and fish on the Willamette River.

### Trailheads

Good access to the trail system is a key element to its future success. Trailheads (formalized parking areas) serve the local and regional population arriving to the pathway and trail system by car. As seen on the **Conceptual Trails Map**, this Plan identifies a series of trailhead locations, all in conjunction with major parks and schools. Trailheads provide essential access to the trail system and provide amenities



like parking, restrooms, and signage for trail users. Additional trailhead siting will occur with further planning processes for individual projects.

## Signage

A comprehensive signage and directional system should be developed to inform and educate users about the trail and pathway system. This program should include a unique sign that delineates the Oregon City Trail network theme. Opportunities for interpretive information could include the history of Oregon City and its early pioneers; mills and shipping; historic sites, information about native flora and fauna; water quality; geologic formations; drainage and flow of water systems; bicycle and pedestrian safety and awareness; history of the Willamette and Clackamas rivers and native populations. An integrated system of interpretive signs or markers should be developed on heritage trails to guide, and provide information about, heritage sites. Comprehensive and innovative signing systems make trail networks outstanding.

Signs should also be created to warn either motorists of bicyclists and pedestrians or caution bicyclists and pedestrians of oncoming motor vehicles.

Kiosks could be placed along some trails and at major trailheads, such as Mountainview Cemetery, Canemah Park, and Clackamette Park, that include a map and other helpful information about the route, safety, and the city. A sample is provided in the *Design Guidelines* section of this Plan.

## Education

Numerous educational opportunities exist to use the trail system for educational purposes about history, culture, science, and safety. The trail projects are more likely to attract foundation funding specific to education if education is incorporated into project design.

Establish bicycle and pedestrian safety programs that will teach bicycle safety to children, adults, and other groups that encounter bicyclists and pedestrians. A specific curriculum geared for each audience, along with a handbook or other literature, is recommended.

Link to local youth participation programs, such as the Girl and Boy Scouts for educational opportunities, adopt-a-trail, trailside plantings, and other activities.

## Other Master Plan Processes

The following projects need to undergo Master Planning processes in order to identify the feasibility, cost, and funding availability of each project:

- Oregon City Loop Trail
- Newell Creek Canyon Regional Trail
- Newell Creek Canyon trails



- Barlow Road Trail
- Powerline Trail
- Canemah Bluff (Metro property and links to Oregon City)
- Parks Trail and the Wesley Lynn – Chapin Trail
- Park Place UGB expansion area trails
- Livesay Creek Trail

## Safe Routes to School

Nationwide, communities are developing programs to improve the safety and ability of children to bicycle and walk to school. Federal money may be available in the future as a part of the transportation budget for projects that improve direct access to schools.

This Plan includes a trail connection to every school in Oregon City. Complementary to that would be the development of a local safe routes to school program. The toolbox of potential solutions includes:

- signal timing modifications
- curb extensions and median islands
- traffic calming
- markings and signage
- trails, sidewalks, bicycle lanes, and other facility improvements
- crosswalks
- crossing guard programs
- safe routes to school maps
- escorted bike and walk groups
- educational safety curriculums
- outreach programs to encourage safe driving.







# VI. Appendix

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## Oregon City Trails Visioning Workshop Comments

January 14, 2004  
6:00 – 8:00 PM  
Pioneer Community Center

### Attendees:

|                 |                     |                   |
|-----------------|---------------------|-------------------|
| Dianne Kosboth  | Lois Kiefer         | Jerry Herman      |
| George Kosboth  | Ralph Kiefer        | Alison Himmelwitz |
| Dean Walch      | Sha Spady           | Liz Crane         |
| Bill Woods      | Richard Craven      | Lango Hansen      |
| Shawn Dachtler  | Kathy Franco        | Doug Neeley       |
| Marcia Sinclair | Thelma Haggenmiller |                   |

### Facilitators:

Dee Craig, Oregon City Parks and Recreation  
Jim Row, Oregon City Parks and Recreation  
Larry Potter, Oregon City Public Works Department  
Allison Wildman, Alta Planning + Design  
George Hudson, Alta Planning + Design

**Notes** (from notations made on aerials with trails. Names of trails taken from Oregon City Base Map):

- Near Clackamas Community College, there is a jogging trail that can be connected to the Oregon City Loop regional trail.
- Near the Oregon City H.S. freshman campus, there are maintenance roads.
- Newell Creek Trail needs to stay on the canyon rim.
- Stay out of the ravine for the Newell Creek Trail.
- Newell Creek Trail has a viewing point for good views of Mt. Hood.
- The land around the Newell Creek Trail is city owned.
- Newell Creek Trail should continue into Mountainview Cemetery and go out to Molalla Ave.
- East of the Beaver Creek Trail, there are Old Molalla railway easements.
- Ogden Middle School is a destination.



- Just NW of Ogden MS, there is a culvert that can be walked through that runs under HWY 213, connecting Newell Creek Trail and Beaver Creek Trail.
- A connection should be made from Holcomb Blvd to Clackamette Heights Trail.
- Holcomb Blvd has no sidewalks.
- The Barlow Alternative Trail is a MUST.
- North of Holcomb Blvd from Winston Dr (just south of Armel) there is county concern over loss land of Oregon Trail.
- There will be a future road that connects Holcomb Blvd near the town line with a new town center that will be south of Livesay Rd.
- The Oregon Trail runs nearby Holcomb Elementary School
- There is easement trail potential along that part of Oregon Trail, heading NW towards Hunter Ave.
- There needs to be a connector between Park Place Elementary School and the nearby trail.
- The Cemetery City Park near where Hwy 213 and train tracks intersect is a destination.
- Just NE of the new Amtrak station (across from End of Oregon Trail Center) is a Metro wetlands with a small loop trail and info kiosk.
- Tie in Barclay Park via 12<sup>th</sup>.
- Create a loop between Barclay Park, the Swimming pool, and Atkinson Park.
- A connection is needed between Canemah Park and Old Canemah Park.
- Access to Canemah Cemetery.

## Oregon City Trails Public Open House Comments

March 10, 2004

6:00 – 8:00 PM

Pioneer Community Center

### Facilitators:

Dee Craig, Oregon City Parks and Recreation

Jim Row, Oregon City Parks and Recreation

Larry Potter, Oregon City Public Works Department

Allison Wildman, Alta Planning + Design

George Hudson, Alta Planning + Design

### Written Comments:

*"I live on South End and Warner Parrott. As a part of the Trails Master Plan, I would like to see improved/added BIKE LANES along main roads, connecting to shopping areas (Fred Meyer, etc.) and historic downtown. Also, there are many rough walking paths that connect the Rivercrest Neighborhood to the historic downtown. I believe these trails run through Waterboard Park. I would like to see these paths upgraded so that they are more inviting to users. As they are, they feel a bit isolated...almost like you wonder if you should be there. Accessing historic downtown from*



*these trails is much more convenient as a pedestrian than going by road...which gets me back to BIKES LANES!"*

*"Proposed trail extensions: extending from Metro Trailhead in the Canemah Children's Park, going directly below and parallel with South End Road, crossing over Miller Avenue at Coffee Creek, and going into the Old Canemah Park."*

*"Newell Creek – West side – only one trail through center of Newell Creek and one on the ridge; East side – follow old RR berm."*

*"Need crossing light for 99E north to 205 north."*

*"Newell Creek – Keep trail on east side of Highway 213 on old RR berm."*



## VII. References

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