

Ash Creek Trail Master Plan

April 2005



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Table of Contents

Executive Summary	3
Trail Alignment and Design Features	4
Project Implementation	4
Introduction	7
Project Background and Purpose	7
Location	7
Project Approach	7
Vision and Goals	9
Public Involvement	9
Opportunities and Constraints	13
Ash Creek Corridor Opportunities and Constraints	13
General Opportunities and Constraints	13
Site Specific Opportunities and Constraints	17
Alternatives Analysis	25
Alignment 1	26
Alignment 2	27
Alignment 3	27
Public Response to Alternative Alignments Analysis	28
Preferred Trail Alignment and Recommendations	35
Evaluation Process	35
Preferred Trail Alignment Narrative by Section	35
Preferred Alignment Summary: Benefits and Challenges	36
Programmatic Recommendations	44
Trail Design Elements	49
Typical Trail Cross Section Design	49
Roadway Crossings	52
Trail Access	58
Trail Amenities	62

Landscaping	67
Project Implementation	71
Phasing	71
Cost Estimates	72
Permitting Requirements	74
Maintenance and Safety Recommendations	83
Trail Safety	83
Design Elements that Improve Trail Safety	84
Trail Watch Program	85
Corridor Maintenance	85
Recommended Code and TSP Language Changes	91
Recommended Plant List	97

Maps

Map 1. Location Map	8
Map 2. Opportunities and Constraints	16
Map 3. Ash Creek Trail Conceptual Alternatives	29
Map 4. Ash Creek Trail Conceptual Alternatives - Section 1 ..	30
Map 5. Ash Creek Trail Conceptual Alternatives - Section 2 ..	31
Map 6. Ash Creek Trail Conceptual Alternatives - Section 3 ..	32
Map 7. Trail Alignment Overview	34
Map 8. Recommended Section 1 Improvements, River View Park to Gun Club Road	38
Map 9. Recommended Section 2 Improvements, Gun Club Road to Hogan Road	40
Map 10. Recommended Section 3 Improvements, Hogan Road	

to Western Oregon University (Church Street)	42
Map 11. Ash Creek Greenway Overlay District	45
Map 12. Trail Access Points and Proposed Trailheads	60
Map 13. Polk County Inventoried Wetlands	77

Figures

Figure 1. Ash Creek Trail Standard.	49
Figure 2. Ash Creek Trail Cross Section	49
Figure 3. Concrete Trail in Stream Corridor	50
Figure 4. Boardwalk or Elevated Trail Treatment along Ash Creek	50
Figure 5. Concrete Trail Transitions to a Boardwalk	51
Figure 6. ADA-Accessible Ramp from Proposed Trail to Ash Street 52	52
Figure 7. Proposed Undercrossing at OR 99W and Gentle Woods Park	54
Figure 8. Crossing of Stream or Drainage	55
Figure 9. Proposed At-Grade Crossing at Church Street and OR 99W.	56
Figure 10. Trailhead Amenities at 10th Street / YMCA.	59
Figure 11. Trailhead Amenities at Riverview Park	61
Figure 12. Talmadge Middle School Trailhead and Outdoor Classroom Site	63
Figure 13. Proposed Trailhead at Gentle Woods	64
Figure 14. Trail Etiquette Sign	65
Figure 15. Trail Directional Sign	65
Figure 16. Trail Lighting.	68

Tables

Table 1. Ash Creek Trail Pedestrian and Bicycle Facilities	15
Table 2. Recommended Section 1 Improvements	39
Table 3. Recommended Section 2 Improvements	41
Table 4. Recommended Section 3 Improvements	43
Table 5. Ash Creek Trail Design Recommendations	49
Table 6. Basic Crossing Prototypes	53
Table 7. Trail-Roadway Intersection Treatments for the Ash Creek Trail	53
Table 8. Regulatory Signage	57
Table 9. Ash Creek Trail Cost Estimates by Phase	73
Table 10. Permitting Agencies.	75
Table 11. Maintenance Recommendations	87

Executive Summary

Trail Alignment and Design Features

Project Implementation

Executive Summary

The vision for the Ash Creek Trail Master Plan is two-fold: (1) to create open space and restoration opportunities and create a trail that (2) offers all community residents and visitors a non-motorized travel alternative between Independence and Monmouth. The proposed Ash Creek Trail will travel roughly parallel to Ash Creek and provide spur trails to locations outside the greenway, protecting and enhancing the biological, cultural, and historic resources of the corridor.

Ash Creek is an evolutionary product of human development. Two hundred years ago, early settlers drained and leveled wetlands and riparian areas for agriculture, logging, and settlement. Before this period, the creek and surrounding area resembled boggy, “braided marsh” with numerous small drainages, all spilling toward a larger drainage, what is known today as Ash Creek, and on to the Willamette River.

Today, Ash Creek is a significant drainage that links Monmouth, Independence, and Dallas (at its farthest reaches). It is home to listed threatened fish species, is picturesque in areas that have not been impacted by development, and serves as an ecological and educational asset to the communities. It is also a creek in distress. It has been dredged for flood control; much of its riparian corridor has been removed and is overrun with invasive plants; garbage and yard debris litter the creek bed and lodge in creekside vegetation; and the water is contaminated with agricultural and urban run-off, such as pesticides, animal effluent, oil, and other toxic liquids.



For the last 20 years, dedicated community members of Monmouth and Independence have been working to increase access to and educate citizens about Ash Creek and its watershed. They have sponsored walks along the drainage, created information displays, written articles and other publications, and encouraged student projects at Western Oregon University. Their goal has been to improve the quality of the creek, watershed, and corridor through education and outreach.

The Ash Creek Trail Master Plan takes this goal a step further. In addition to serving as a catalyst for education and ecological enhancement, the Ash Creek Trail will also provide a convenient, non-automotive transportation alternative to Oregon 51 and Hoffman Road for local trips within the communities of Independence and Monmouth. As the communities continue to grow, the Ash Creek Trail will serve as a major transportation connection between the cities, linking neighborhoods, schools, and parks along the corridor. The trail will also provide access to areas outside the corridor, such as commercial retail areas and neighborhoods south of OR 51, as well as provide additional recreational and open space preservation opportunities.



The Ash Creek Trail will provide recreational opportunities for pedestrians and bicyclists.

The master plan analyzes and recommends a trail alignment, environmentally-sensitive trail design features, trail amenities, and safety and security measures for the four-mile corridor. The purpose of the master plan is to guide the future development and safe use and operation of the Ash Creek Trail as a non-motorized recreational

and commuter trail, and establish guidelines for future greenway development and enhancement activities. The master plan will also be a useful tool when applying for grants to implement the three phases of construction.

Trail Alignment and Design Features

- The preferred trail alignment will roughly follow the Ash Creek drainage from the Willamette River to the western city limits of Monmouth through Western Oregon University.
- A 10-foot-wide trail with a concrete or boardwalk surface and soft shoulders will accommodate a wide variety of non-motorized uses, including pedestrian, recreational and commuting bicyclists, horses, wheelchairs, in-line skaters, and others. In constricted areas, the trail may need to narrow briefly to eight feet.
- Environmentally-sensitive design will respect wetlands and intact riparian areas, improve drainage, use native plants, and enhance degraded areas.
- Development of three potential trailheads and 12 pedestrian access points from neighborhood roads will provide good access for local trail users.
- The trail will provide off-street connections to parks, schools, and neighborhoods in Independence and Monmouth.
- Intersection improvements will ensure safe trail crossings at existing roads.
- Directional and regulatory signage will help orient trail users and inform them about trail etiquette.
- Interpretive signage will feature the rich cultural and ecological history of Ash Creek, Independence, and Monmouth.



Talmadge Middle School has a large number of bicycle commuters.

- Public art projects will involve area artists.
- Safety and security features will include lighting and good definition between the trail and adjacent neighbors.
- Trail amenities will include benches, restrooms, and garbage cans.
- Design features will maximize the trail's aesthetic and functional qualities.
- Community involvement in crime prevention and education will be encouraged through proposed Trail Watch and Friends of the Ash Creek Trail programs.
- Volunteer events and community trail projects will involve citizens in long-term maintenance activities.

Project Implementation

Ash Creek Trail construction is proposed in three phases. Successful implementation of the first phase will set the stage for future funding. It is hoped that the majority of the funding for implementation will come from a federal transportation program, but there are several state and local funding sources which should be pursued. Funding for environmentally-related enhancements is also available on a state level through various watershed and fish and wildlife programs.

Introduction

Project Background and Purpose

Location

Project Approach

Vision and Goals

Public Involvement

Introduction

Project Background and Purpose

The Ash Creek Trail concept has been in the minds and hearts of community residents for many years. Years ago, the communities of Monmouth and Independence sought to create a trail that ran the length of Ash Creek, linking the cities and the places within them. In 2004, the idea was revisited when the communities jointly applied for and were awarded a Transportation and Growth Management (TGM) grant from the Oregon Department of Transportation (ODOT) to develop a master plan for the Ash Creek Trail.

The purpose of the Ash Creek Trail Master Plan is two-fold:

1. Develop a trail alignment that will provide a convenient non-automotive transportation alternative to Oregon 51 (Monmouth / Main Street), linking important community destinations such as neighborhoods, commercial areas, schools, and parks.
2. Establish the Ash Creek corridor as a greenway for future waterway restoration and rehabilitation projects, community open space, flood control, and habitat preservation.

The Ash Creek Trail Master Plan is a 'tool box' containing the necessary nuts and bolts for successful trail development and implementation. The 'tools' include specific recommendations and guidelines for trail and greenway design, a list of required project permits and permitting agencies, cost estimates, and potential funding sources. The master plan is also a 'tool' to use for seeking project funding. Funding organizations often require the type of information provided in this master plan to determine grant eligibility and project feasibility.

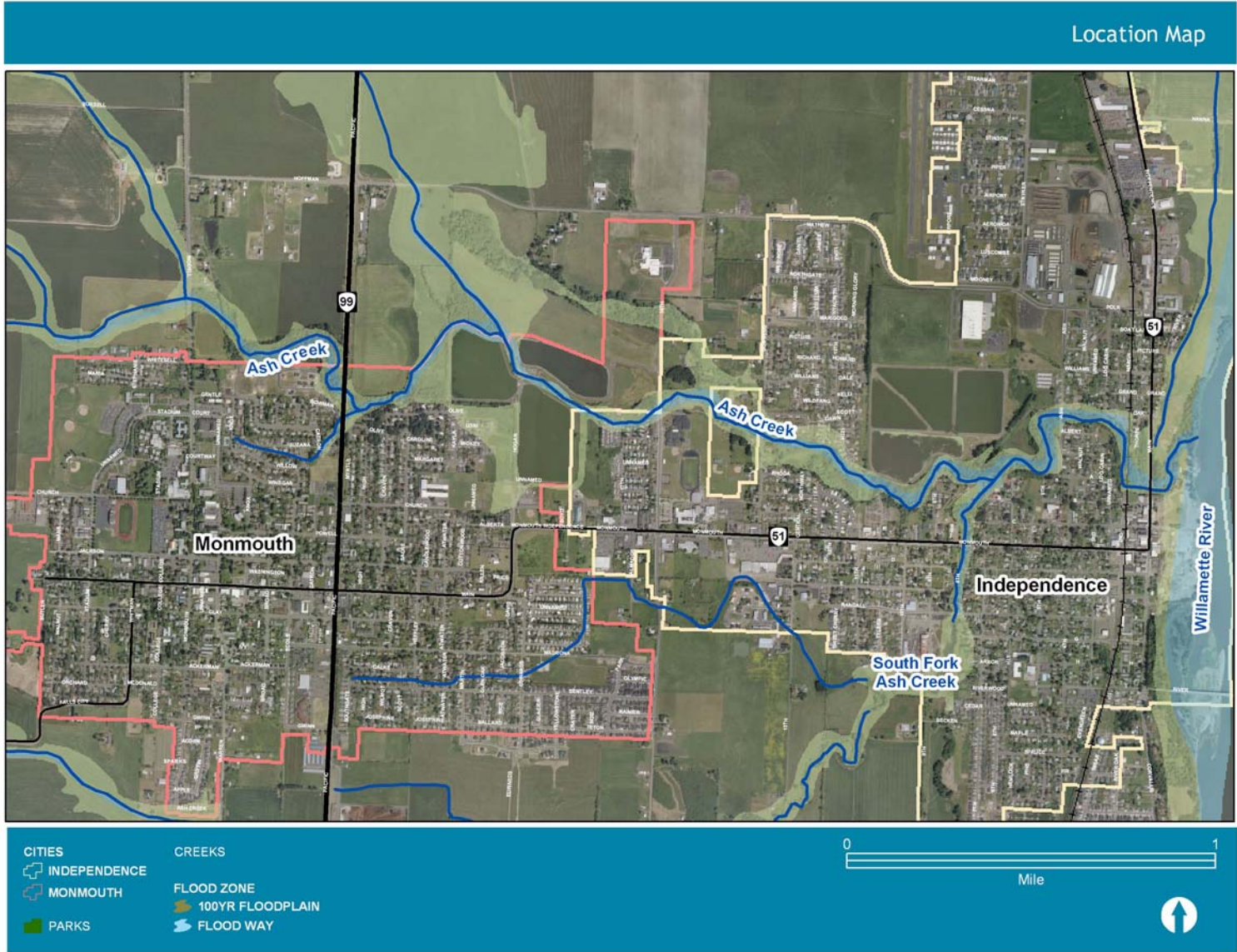
Location

Ash Creek is part of the Luckiamute watershed, traveling through the Polk County communities of Independence and Monmouth to the Willamette River. The four-mile proposed Ash Creek Trail extends from the Willamette River in Riverview Park (Independence) to the western edge of Monmouth at Western Oregon University (see Map 1 on page 8). The preferred trail alignment will roughly follow the Ash Creek drainage and is entirely separated from roadways. However, because the preferred alignment is a long-term vision and contingent upon future land use changes and/or private property owner cooperation, the Ash Creek Trail will be on-street for short sections until the preferred alignment can be fully implemented.

Project Approach

In the summer of 2004, ODOT, in partnership with Independence and Monmouth, retained Alta Planning + Design to prepare this Ash Creek Trail Master Plan. The development of the Ash Creek Trail Master Plan involved several phases, including an inventory phase, public participation phase, alignment options and assessment phase, and a design phase. The Ash Creek Trail Master Plan is designed to present the preferred trail alignment and recommendations for design, funding, and maintenance issues. The master planning work involved the following tasks:

- Re-establishment of the Multi-Use Trail Committee (MTC) to provide ongoing independent advice during the master planning process.
- Stakeholder interviews.
- Identification of project goals and objectives.
- Preparation of base maps reflecting existing conditions, including natural features, historical features and land uses, extensive photo documentation of the corridor, and review of existing plans and other relevant documents.



Map 1. Location Map

- Technical analysis of standards, regulations, and permitting requirements.
- Technical analysis of OR 99W and potential crossing sites.
- Opportunities and constraints analysis for a trail alignment in the Ash Creek corridor.
- Conceptual trail alternatives analysis.
- Public review of trail alignment options and trail design features. Input was received from the MTC, landowners adjacent to Ash Creek, agency stakeholders, community organizations, and interested citizens at four public open houses.
- Preparation of planning-level cost estimates and trail implementation plan.
- Completion of a the Ash Creek Trail Master Plan.

Vision and Goals

Greenways are undeveloped corridors, usually along water bodies or between urban centers that are reserved for non-motorized uses and environmental preservation. Greenways provide direct connections for walkers and runners, bicyclists, and other non-motorized users to other networks, such as bicycle lanes and sidewalks on local roadways and other trail systems, as well as to parks and open spaces, schools, neighborhoods, and other desirable destinations. They may also include stretches of 'quiet' minor roads designed to be safe and attractive for bicyclists or pedestrians.

The overarching vision for the Ash Creek Trail Master Plan is to designate the creek corridor as a greenway and develop a multi-use trail that provides a non-motorized travel alternative between Independence and Monmouth for all community residents and visitors. The Ash Creek Trail will travel roughly parallel to Ash Creek and provide spur trails to locations outside the greenway, while protecting and enhancing the biological, cultural, and historic resources of the corridor.

The consultant team developed the goals for the future Ash Creek Trail in consultation with the MTC and through public input at

several open house meetings. The goals listed below support the Ash Creek Trail vision, guide trail and greenway design, and future trail development:

1. Increase bicycling and walking opportunities in Independence and Monmouth by providing a safe and inviting trail that connects key destinations between and within the communities.
2. Improve the water quality and aesthetic appeal of the Ash Creek corridor by removing non-native, invasive plants; trash and other debris; rehabilitating the creek bank and riparian corridor; and improving habitat for threatened fish species and other animals.
3. Work with private property owners adjacent to Ash Creek to purchase or negotiate easements to preserve the corridor as a greenway.
4. Develop trail design and development standards that are easy to maintain and access by maintenance, security, and emergency vehicles and minimize impact to the environment.
5. Ensure that the trail design and long-term use respect adjacent properties.
6. Develop and establish a comprehensive signing system that enables people to use the trail without the use of a map.
7. Provide an enriching trail user experience through the incorporation of educational interpretation opportunities along the trail.
8. Enable project partners to apply for grants to implement the trail.

Public Involvement

Local trail and greenway advocates care deeply about the success of this project. The master planning work benefited greatly from the knowledge and expertise provided by an involved community and project partners, including the cities of Independence and Monmouth, Polk County, Oregon Department of Transportation (ODOT), the Ash Creek Water Control District, and the residents of Monmouth and Independence.

Stakeholders

Independence, Monmouth, and the consultant team involved key project stakeholders in the development of the trail alignment and design features. These stakeholders included private and public property owners within the project area and other special interest groups with direct social or economic ties to the project area. Project stakeholders included:

- Portland and Western Railroad
- Oregon Department of Transportation
- Private landowners adjacent to Ash Creek
- Boise Cascade
- City of Independence Police Department
- Central School District 13-J
- Western Oregon University

Ash Creek Multi-Use Trail Committee (MTC)

The Ash Creek Trail MTC has been working to develop the Ash Creek Trail for many years. Active members reconvened in the summer of 2004 to provide information about the corridor and guidance to the consultants. A number of community members from both cities stepped forward in the latter stages of the master planning process with an interest in joining the MTC for this and future Ash Creek Trail activities. Six MTC meetings were held throughout the project period in 2004 and 2005.

Public Outreach

The Ash Creek Trail is intended to be a public landscape representative of Independence and Monmouth, and as such, required direction and feedback from residents of both communities. In addition to meeting with the MTC and project stakeholders, the project consultants held four public open houses and developed a website to disseminate information about the project to ensure that residents could express their concerns and participate in the development of the plan.

Public open houses and meetings were held as follows:

- October 2004, Rotary Club
- October 20, 2004, Independence Public Library
- December 2, 2004, Western Oregon University
- December 15, 2004, Independence and Monmouth public libraries, concurrent meeting
- March 9, 2005, Independence Chamber of Commerce

More than 100 attendees provided important input at these meetings.

Opportunities and Constraints

Ash Creek Corridor Opportunities and
Constraints

General Opportunities and Constraints

Site Specific Opportunities and Constraints

Opportunities and Constraints

Ash Creek Corridor Opportunities and Constraints

A trail alignment along Ash Creek is ideal for connectivity purposes between Independence and Monmouth, since it literally splits the difference between OR 51/Monmouth Avenue and Hoffman Road, currently the only east-west connections between the cities. The creek flows past a number of schools, neighborhoods, and parks, and provides direct connections to commercial areas and other desirable locations on local roadways that have existing bicycle and pedestrian facilities or very little traffic.

There are many opportunities for trail development in the Ash Creek corridor. While the number of constraints is small, the issues surrounding them are not. The constraints to trail implementation will be challenging to overcome. This chapter of the master plan discusses the opportunities and constraints in the Ash Creek corridor in both generalized and specific terms. Generalized opportunities and constraints consist of larger, non-site specific characteristics of the corridor and surrounding community, including the rich histories of Independence and Monmouth, education opportunities, and demographic changes. Specific opportunities and constraints can often be pinpointed to a location in or around the corridor, such as a public parcel of land adjacent to the creek, a narrow bridge, or steep slopes. Specific opportunities and constraints have been noted on Map 2 on page 16 and discussed in the accompanying matrix.

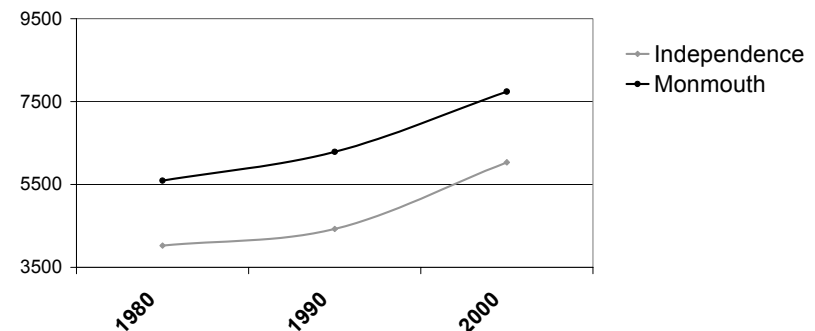
General Opportunities and Constraints

Population Growth and Traffic

The populations of Independence and Monmouth have increased significantly in the last 20 years. Independence's population has increased nearly 50% from 4,024 people to 6,035 people since

1980.¹ The situation is similar in Monmouth, which has increased 38% in population since 1980. The growth of the two cities has started to stress the existing roadway system, resulting in increased traffic and congestion and hazardous conditions for bicyclists and pedestrians, particularly children. This is an excellent opportunity to develop a trail in the Ash Creek corridor, which would help alleviate some of the traffic congestion and provide a safe place for people to travel between the communities.

**Population Growth:
Independence and Monmouth
1980 - 2000**



Development in the Ash Creek Corridor

Population growth can be a constraint to trail development as larger parcels of land in the community are subdivided for new housing. Without a plan in place, new development can reduce the number of opportunities the cities have for gaining easements along the

1. U.S. Census Bureau; Census 1990 and 2000 Summary File 1 (SF 1) 100 percent data; generated by Allison Wildman; using Data Extraction System; <<http://www.census.gov/>>; (22 September 2004).

creek for a trail. New development can also put additional pressure on the existing transportation system and the creek corridor, exacerbating some of the problems the trail hopes to negate.

Demographics

In addition to the recreational benefits of a community trail, there are three groups of people who benefit enormously from the transportation opportunities a trail would provide: children and the elderly, college students, and those without vehicles who depend on public forms of transportation. Because children and many elderly people cannot drive, they are largely dependent on themselves and others to transport them. In 2000, 30% of the population of Independence consisted of children under the age of 17 and 6% of the population were people over the age of 70². In Monmouth, nearly 20% of the population consisted of children under the age of 17 and 6% of the population were people over the age of 70. A trail presents an opportunity to meet the needs of a large portion of the population who depend on getting around on foot, bicycle, motorized and non-motorized mobility devices, and skateboard.

Monmouth is the home of Western Oregon University, with a student population of just over 5,000. Approximately 890 faculty and staff work at the University as well. College students typically do not have vehicles on campus due to limited or expensive parking, and they travel primarily by foot and bicycle to classes and local services. Faculty and staff members typically live close to the University and have similar parking issues. A trail in the Ash Creek corridor provides an opportunity to connect students, faculty, and staff to the greater communities of Independence and Monmouth while relieving some of the pressure on campus parking, traffic problems around campus, and connecting to off-campus housing.

2. Ibid.

University Resources

An opportunity exists to utilize resources at Western Oregon University for political and community support, trail implementation, maintenance, education, and interpretation. Student projects, letters of support, educational field trips, "Adopt a trail" programs, and community outreach are some of the many ways that students and staff at the University can support and participate in the development of the Ash Creek Trail. There are also opportunities to partner students from the School of Education with children from local community schools for teaching experience and out-of-classroom learning.

History

Agriculture and commerce are a central component of Independence and Monmouth's histories. There are a number of opportunities to incorporate historical elements into and along the trail, including information about native populations (Kalapuyas), pioneers and land settlement, river culture, hops and other agriculture, and Hispanic populations. The Heritage Museum on 3rd Street in Independence is an excellent resource for information and artifacts on regional and local history. There are opportunities to link the trail to this community resource throughout downtown Independence.

Flooding

The regular flooding of Ash Creek is both an opportunity and a constraint to trail development. Special care will need to be taken to ensure that the trail does not contribute to additional flooding and that the trail is able to withstand damage from normal flooding over time. There are also opportunities to create a riparian corridor along Ash Creek to protect wildlife and habitat. Constraints include permitting requirements and the potential for bank erosion.

Environmental Conditions

There are opportunities to improve the environmental conditions of Ash Creek through trail development. By developing the entire Ash

Creek corridor as a greenway, there is an opportunity to improve the entire corridor. Specific opportunities include:

- Removing non-native plants, such as Himalayan blackberry and English Ivy.
- Re-establishing native tree and plant populations.
- Improving fish habitat and water quality.
- Stabilizing the creek banks and reducing erosion.
- Closing “demand trails” to the water and routing people through less sensitive areas.
- Removing trash, unnecessary riprap, and garden debris.
- Establishing Ash Creek as an “educational laboratory” for local schools, instructing students about watersheds, flooding, flora and fauna, and ecosystems, among other topics.

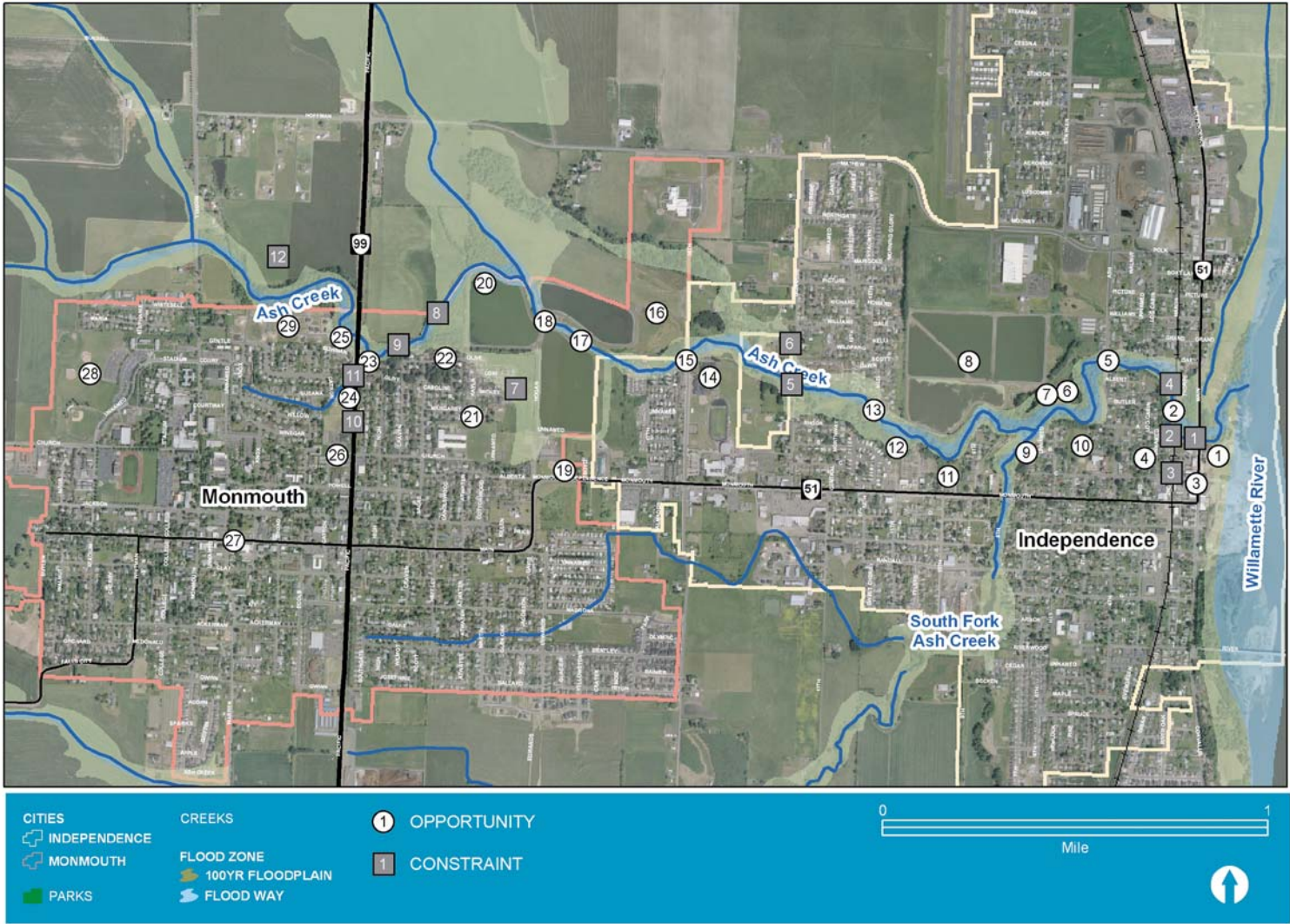
Trail Access

Trail connections to the larger transportation system are ample. Trail connections will generally occur every quarter-mile or less to existing on-street facilities or through new trailhead connections. The Ash Creek corridor currently crosses and provides access to major north-south roadways, including OR 51, Ash Street, Gun Club Road, 16th Street, OR 99W, and Monmouth Avenue N / Riddell Road. Table 1 provides a summary of existing pedestrian and bicycle facilities on roads to which the Ash Creek Trail is anticipated to cross or connect.

Trail connections can be viable and visible by implementing a comprehensive signing system that clearly highlights trailheads and access points and provides trail system maps at key trailhead locations. Trail locations near schools will draw children and their parents to the trail. Also, because the trail crosses almost every major north-south roadway in the area, entrance points to the trail will be clear.

Table 1. Ash Creek Trail Pedestrian and Bicycle Facilities





Road	Pedestrian Facilities	Bicycle Facilities
OR 51 (Main Street)	Sidewalk on west side from bridge to downtown, sidewalks on both sides from B Street through downtown.	Wide shoulders on elevated section of highway. No bicycle facilities through downtown.
OR 51 (Monmouth)	Intermittent sidewalks; good through Independence, lacking at city limits.	Bicycle lanes from approximately 9th Street in Independence to OR 99W in Monmouth.
Ash Street	Sidewalks	Bicycle route
Gun Club	Sidewalk on east side only	Two-way bicycle lane; shared with sidewalk in some places.
16th	Sidewalks	Bicycle lanes
OR 99W	Sidewalk/path on west side; terminates at Church Street. Sidewalk continues on west side to Main Street.	Shared use path on west side; terminates at Church Street. No facilities to the south. Good shoulders.
Monmouth Ave. N.	Sidewalks	Bicycle lanes











Map 2. Opportunities and Constraints






Site Specific Opportunities and Constraints






The following table is used in conjunction with Map 2 of the Ash Creek corridor. Opportunities are marked with a white circle; constraints are marked with a gray square. Each mark has a number that corresponds to the notations below.






Ash Creek Opportunities			
#	Location	Description of Issue	Photo
1	Riverview Park	A potential trailhead, as well as a major destination point for many users, including residents and visitors attending activities (concerts, festivals, fireworks, etc.) at the park.	
2	City-owned property	Several slivers of public property may provide a link through the gulch to the river. The best alignment opportunities transition from the west side of the creek to the east side of the creek.	
3	Downtown Independence	A major destination for many residents and visitors. Many parking, shopping, and eating opportunities. Adjacent to Riverview Park.	
4	On-street connections	Good on-street connections to the Ash Creek corridor on A Street and Ash Street.	






Ash Creek Opportunities			
#	Location	Description of Issue	Photo
5	Ash Street	Access to the Boise-Cascade property; opportunity to clean up creek and bank. There may be potential to go under the Ash Street bridge.	
6	Boise Cascade property	The company has been amenable to having the Ash Creek trail on the company's property in the past. Opportunities to cross at the creek or in the flat area to the south of the bridge. New ownership may require changing the alignment slightly.	
7	Loitering on Boise Cascade property	Opportunity to mitigate some of the problems local law enforcement has been having on the property.	
8	Independence water treatment facility	A large tract of public land for a trail alignment.	
9	Pioneer Park	A potential destination of trail users and residents of all ages, provide opportunity to improve park and increase usage. May be able to connect to public land with a bridge and boardwalk.	




Ash Creek Opportunities			
#	Location	Description of Issue	Photo
10	Independence Elementary	Major attractor and generator for trail users: 300 + children. 5th Street ROW can provide access to the trail.	
11	Public property behind YMCA building	Publicly owned tract of land to connect the trail to OR 51 and establish a trailhead. Must connect with bridge over to the publicly owned water treatment facility.	
12	Independence water tower – Wildfang Park	Publicly owned parcel with permits in place to cross the creek to city-owned property to the north.	
13	Pedestrian accessway	Easement provides access to publicly-owned land in the Ash Creek corridor. It is currently used for personal storage.	
14	Talmadge Middle School	Major attractor and generator for trail users, school district owns land adjacent to creek suitable for trail construction and clean up dump site. Site visits revealed a large number of children walking and riding bicycles to school.	




Ash Creek Opportunities			
#	Location	Description of Issue	Photo
15	16th Street	Bicycle lanes and new sidewalks connect to middle and high schools. School zone – 20 mph at all hours. Overflow parking lot for middle school would be an excellent trailhead.	
16	School District property	Large tract of land to make a trail connection to the Monmouth Water Treatment Facility.	
17	Monmouth water treatment facility	Publicly-owned parcel of land for a trail connection. Excellent wildlife viewing. Potential trail alignment on the south side of the pond along the creek.	
18	Water treatment facility bridge	Existing bridge over Ash Creek can provide access to the trail system through the water treatment facility.	
19	Monmouth Recreational Park and Skate Park area	City-owned property can provide an excellent trail connection off the water treatment facility road to link the skate park and baseball fields, as well as Monmouth Elementary School. In 100 year flood zone.	

Ash Creek Opportunities			
#	Location	Description of Issue	Photo
20	Monmouth water treatment facility	Publicly-owned parcel of land for a trail connection. Excellent natural experience despite location. Levy road is only trail alignment alternative.	
21	Pedestrian connection to Monmouth Elementary School	Provides good on-street connection from the school to the creek.	
22	Olive Street	Good on-street alternative connection to Gentle Woods to being in the creek corridor. Connected by street right-of-way at Kayla (overgrown with trees and shrubs).	
23	Gentle Woods Park	Destination and trailhead for trail users. Short existing trails.	
24	OR 99W bike path	Existing north-south paved bicycle path providing connections to Salem. Bike path terminates at Church Street.	

Ash Creek Opportunities			
#	Location	Description of Issue	Photo
25	Gentle Woods extension	Small parcel of public land across 99W can provide a good connection to the adjacent neighborhood.	
26	Church Street	Potential trail crossing to connect to 99W bicycle path. Existing "school zone" crossing with marked crosswalk provides traffic calming when enforced. Connects to pedestrian accessway to the west. Provides good connection to Catron/Powell.	
27	Monmouth downtown	"Square" being planned. Desirable destination for trail users.	
28	Western Oregon University	Major attractor and generator. Just over 5900 students, faculty, and staff. Monmouth Road is traffic calmed with speed tables and crosswalks every 150 feet through the University campus. Bicycle lanes exist.	
29	Gentle Road / Burlwood	Good on-street connection to Western Oregon University through Western Estates subdivision.	

Ash Creek Constraints			
#	Location	Description of Issue	Photo
1	Main Street bridge	The area underneath the Main Street bridge is constrained by the slope and the size of the opening under the bridge. Travel under the bridge is possible, but can be expensive.	
2	Railroad trestle	Railroad would require permitting and other challenges to going over, under, or across the railroad tracks.	
3	Railroad tracks	Condition of the flange surrounding the rails is in very poor condition and poses as a hazard for bicyclists and pedestrians.	
4	Ash Creek gulch	Gulch is steep and narrow. Trail implementation will be challenging through this area. Trail will have to cross Ash Creek at least once and travel under the railroad trestle. Slopes are challenging.	
5	Connection to Gun Club Road: private property	Creekside trail opportunities are limited due to the presence of private property on both sides of Gun Club Road. Significant challenge.	

Ash Creek Constraints			
#	Location	Description of Issue	Photo
6	Gun Club Road bicycle and pedestrian facilities	Bicycle and pedestrian facilities are limited on Gun Club Road. The bicycle lane is used as a two-way facility and sidewalks exist on the east side of the roadway only. In some places, the bicycle lane travels onto the narrow sidewalk and/or shoulder.	
7	Floodplain	Flood-prone area could pose problems for a year-round trail in this plain. The adjacent houses are built on a small berm above the plain.	
8	Private property	Following Ash Creek requires traveling through two private property parcels owned by the same person. One solution is to acquire a short easement to connect to public right-of-way on Kayla.	
9	Public parcels difficult to access	The proximity of the public parcels adjacent to the creek is problematic due to slope and difficult access.	

Ash Creek Constraints			
#	Location	Description of Issue	Photo
10	Right-of-way adjacent to OR 99W	While there is ample right-of-way for a trail to connect Gentle Woods Park and Church Street, it requires significant out of direction travel (over 1400') for the trail user.	
11	Crossing OR 99W	Large trucks, high speeds, high volumes of motor vehicles make this crossing difficult.	
12	Private property gap	Development along Ash Creek has left very little room to align a trail. The absence of public property makes connecting through this area along the creek very challenging. Good on-street alignment is available.	

Alternatives Analysis

Alignment 1

Alignment 2

Alignment 3

Public Response to Alternative Alignments
Analysis

Alternatives Analysis

To find the preferred alignment for the Ash Creek Trail, the consultants looked closely at the three most feasible alignments and assessed the advantages and disadvantages of each, also taking into consideration the existing and planned conditions in the study area. The preferred alignment (see the *Preferred Alignment* chapter) was developed with guidance from the MTC, community members, and various stakeholders in the corridor. It is important to note that the preferred alignment of the Ash Creek Trail is **not** one of the following alignments but an amalgam, combining the most desirable parts from each alignment that best meets the goals of the communities, even if all of the trail cannot not be implemented in the immediate future.

The conceptual alignments presented in this chapter closely follow one another in the Ash Creek corridor (Map 3 on page 29). The study area has been divided into three segments, running east to west, to show greater alignment detail (Map 4 through Map 6). Their differences are minor, but significant. Each alignment is summarized with regard to its relative advantages, disadvantages, and whether it has a potential fatal flaw. A fatal flaw is a constraint that may preclude feasibility, regardless of how well the alignment meets other criteria and goals. The evaluation criteria are as follows:

Community Connections

This criterion evaluated connectivity and access to other trails or bikeways, schools, parks, residential, commercial, or employment areas. The consultant gave highest priority to trail alignments that provided a necessary east-west link between Independence and Monmouth. High priority was also given to alignments that provided direct access to schools, parks, commercial centers, and other community attractors.

Safety

The consultant assessed and evaluated trail-roadway crossings based on existing crossing treatments (if any), roadway traffic speed, sight visibility, and volume. The consultant identified high-volume and high-speed roadway crossings that may have posed a safety concern. Alignments that used the local roadway system were considered to be less favorable than those that were completely separated from the public right-of-way.

Cost

This criterion evaluated the relative cost for alignments that included the cost of design, engineering, and/or construction, especially where crossing improvements, large ramps, boardwalks, or other expensive infrastructure improvements would be necessary.

Private Property Impacts

This criterion accounted for the places where property easements or acquisitions were required. The fewer the acquisitions or easements needed, the more favorable the alignment. Willingness of the property owner to grant easements was also taken into consideration. This criterion also took into account opportunities to purchase property to enhance the greenway and provide an undeveloped buffer throughout the corridor.

Potential for Environmental Education/Access

This criterion identified the ability of the trail alignment to provide opportunities for environmental interpretation and education along Ash Creek.

Proximity to Ash Creek

This criterion measured the quality of the proposed trail from the perspective of the user. It considered potential views, environmental aesthetics, and environmental characteristics such as noise and air

quality. Being close to the creek was an important goal for community residents, and this criteria was developed to reflect those desires.

Environmental Impacts

This criterion accounted for any environmental impacts the trail would have on the creek corridor. An alignment that traveled through an environmentally sensitive area scored lower than an alignment that used an existing disturbed area or avoided sensitive areas completely. The discussions took into account flooding potential, sensitive areas, mature tree and shrub removal, and crossing the creek, among other issues.

Alignment 1

Alignment 1 (white) is a trail alignment that stays true to the creek corridor for the longest distance. It utilizes the most desirable alignments, regardless of existing conditions that may preclude the trail from being implemented immediately. Alignment 1 begins in Riverview Park and closely follows Ash Creek to the western city limits of Monmouth where it would connect to Marie Street, or travel south to Church Street along the perimeter of the Western Oregon University athletic fields. Alignment 1 would travel under OR 99W through a new undercrossing.

Analysis Summary: Benefits and Disadvantages

Alignment 1 is the most desirable alignment for the Ash Creek Trail, as it best represents the overall vision and goals for the Ash Creek Trail. While all segments of Alignment 1 may not be feasible at present, many sections are very feasible, and alternative trail options are available for short-term connections. This alignment provides the most connection to the creek, ample trail access for both communities, the most educational and environmental opportunities, and the best trail experience by completely separating the trail from local roads. For these reasons, it is also the safest alignment, has the most continuity, and requires the least amount of retrofit to local roads.

The disadvantages of Alignment 1 are inherent for any creekside trail. The trail will be in the 100-year floodplain for the majority of the alignment and, in some constrained areas, in the floodway of the creek, requiring special design treatments to reduce its impact. The alignment will also require at least six bridges (excluding bridges needed to connect to proposed trailheads and access points) and an undercrossing which, if all are done correctly, can be high-cost items. However, because much of the Ash Creek corridor has been “disturbed” by development and is home to invasive, non-native plants and animals, garbage, and bank erosion, the trail alignment can provide opportunities to improve these conditions and can leave the corridor in better condition than before the trail was built.

The potential fatal flaw for Alignment 1 is the amount of private property the alignment negotiates. Topographic constraints in the gulch near downtown Independence *may* require a number of short easements across adjacent private property. The alignment will also require easements to follow the creek between Wildfang Park and 16th. To connect to Monmouth, the proposed alignment follows Ash Creek across four large parcels of private property. Easements will need to be negotiated with the property owners for an off-street trail connection through these parcels. Land use conditions may change over the next 30 years as development spreads north from Monmouth. The trail alignment is a good opportunity to delineate undeveloped land as a greenway and protect the creek corridor from future impacts.

Alignment 2

Alignment 2 (orange) also follows the creek corridor closely but avoids some private property parcels and utilizes some low volume, residential roadways to make connections. Alignment 2 begins in Riverview Park and travels up the existing maintenance road to a new path on the west side of OR 51, where it will traverse down the berm to Ash Creek on Polk County property. The alignment closely follows the creek until



Further study is needed to see if a shared use path would fit with the sidewalk and existing shoulder on OR 51.

16th, where it travels around the northern perimeter of the Monmouth water treatment facility to Olive Street. A short easement is needed to connect from the water treatment facility to the public right-of-way to Olive Street. The trail would utilize low-volume, residential roads to connect to Gentle Woods Park, travel under OR 99W to publicly-owned property, skirt the Western Estates neighborhood on the northern perimeter through a conservation easement, and connect to Knox at an unbuilt public right-of-way. Alignment 2 would then use the local street network to connect to Monmouth Avenue, Western Oregon University, and points to the south. Existing sidewalks would need to be improved to meet ADA requirements and new sidewalks would have to be constructed where they are missing.

Analysis Summary: Benefits and Disadvantages

Alignment 2 meets many of the goals and contributes to the overall vision for the Ash Creek Trail Master Plan. The notable difference between Alignment 1 and Alignment 2 is that Alignment 2 does not travel as far west and thus does not require easements on the private properties adjacent to Ash Creek between the Monmouth wastewater treatment facility and Western Oregon University.

The primary advantages of Alignment 2 are that it avoids many private properties and still provides decent connections to the creek corridor. Access to the alignment from the surrounding neighborhoods, schools, and parks is good and there are some opportunities for environmental education and restoration.

The disadvantages of Alignment 2 are similar to Alignment 1 regarding concerns about building a trail in a floodplain. However, implementing the trail will provide ample opportunity to improve the condition of the creek corridor and preserve the corridor as a greenway. Opportunities to delineate future greenway along Ash Creek are limited, since the trail would use existing local roadways from the Monmouth water treatment facility west to the University. The alignment still requires negotiation for easements along private property, particularly between Wildfang Park and 16th, which may be challenging. The alignment will also require at least four bridges (excluding bridges needed to connect to proposed trailheads and access points) and an ADA-compliant access ramp to traverse down the slope from OR 51 to the creek corridor, a feature that is particularly costly. Local roadways will also need to be retrofitted to meet ADA guidelines (curb ramps and the construction of sidewalks), which can be costly and politically challenging in venerable neighborhoods.

Alignment 3

Alignment 3 (red) avoids almost all areas of conflict or challenge and would rely on existing roads and publicly-owned parcels of land for a trail alignment. This alignment has the most out-of-direction travel, particularly around Gun Club Road, and is most disconnected from the creek. Alignment 3 begins in Riverview Park but, instead of following the creek, travels down B Street to the 5th Street right-of-way and connects to the north side of the creek over a bridge. From there, the trail would follow the creek to a pedestrian connection in the Wildfang neighborhood and use low-volume, residential roadways (12th, Wildfang, and Williams) to access Gun Club Road. From there, the trail would travel south and connect through school

district property to 16th and the Monmouth water treatment facility. The trail alignment would cross the existing bridge in the treatment facility and travel through a publicly-owned parcel to Olive Street, where it would connect to Gentle Woods Park, cross OR 99W, and follow local streets to Monmouth Avenue.

Analysis Summary: Benefits and Disadvantages

Alignment 3 is the most feasible alignment because it avoids private property and challenging areas, but it does not achieve the overall vision and goals of the Ash Creek Trail Master Plan. The primary advantage of Alignment 3 is that it can be implemented quickly. However, the disadvantages heavily outweigh the advantages. The alignment is disconnected from the creek, is indirect, and utilizes local roadway facilities, which reduces trail user safety. Most of the local roadway facilities will need to be upgraded to meet ADA guidelines (e.g., add curb ramps, repair sidewalks, construct sidewalks, etc.) which could be very costly. There are very few opportunities for education or enhancement due to its lack of connection to the creek.

The portions of Alignment 3 along the creek will be in the 100-year floodplain and will need at least one bridge (excluding bridges needed to connect to proposed trailheads and access points). Like all of the alignments, the trail will cross under OR 99W with a new undercrossing. There are limited opportunities to remove invasive, non-native plant species and re-establish the creek bank.

The potential fatal flaw for Alignment 3 is its lack of connection to the creek. Using local roadways for trail connections is a good solution to circumvent challenging areas for short segments, but much of Alignment 3 is on local roadways which limit opportunities to preserve the corridor as a greenway, force trail users to travel out-of-direction, and introduce more opportunity for trail user-motor vehicle conflict. Additionally, constructing sidewalks and other ADA-compliant features can be as costly and politically difficult as building a trail in some cases.

Public Response to Alternative Alignments Analysis

MTC members and the majority of the community members who attended the public open house to discuss the alignments thought that Alignment 1 was the most desirable of the three. There was overwhelming positive support for keeping the trail as close to the creek as possible and to provide a trail that was not part of the local roadway system.

Private property owners who would be affected by the alignment were not supportive of Alignment 1, citing reasons that included incompatible use with private property use and habitat devastation, feeling that:

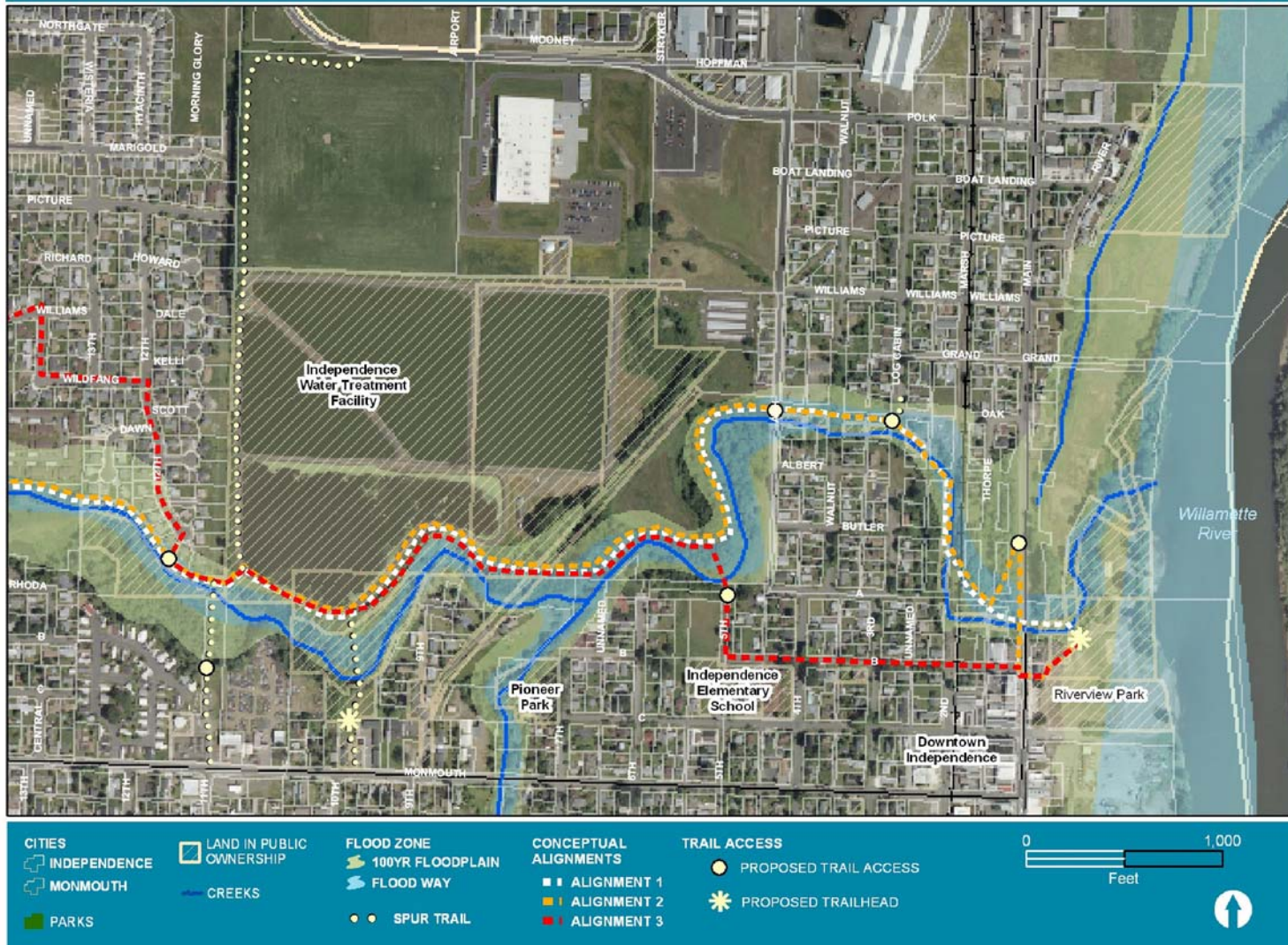
- the trail would promote anti-social behavior;
- that higher social priorities exist in the local community;
- that the community would not have adequate resources to care for the trail properly;
- that the trail would strain local law enforcement resources;
- that the pursuit of trail is hypocritical when the city has not met other state and federally required obligations (particularly wetland inventory);
- that personal safety would be threatened; and
- that there is the potential for negative impacts on wildlife habitat.

Slight modifications to the alignment met the desires of most of these private property owners.

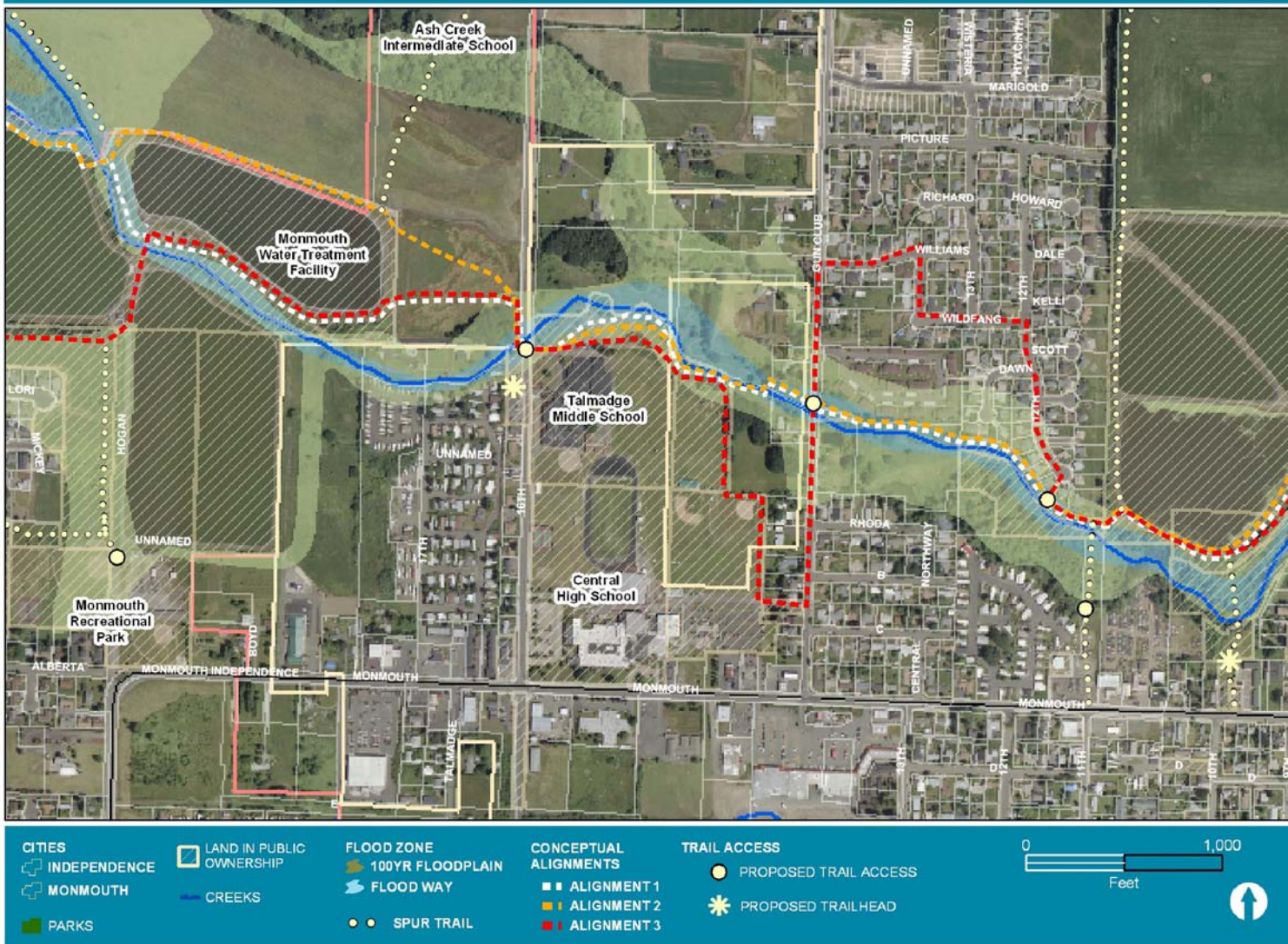
Conceptual Trail Alignments



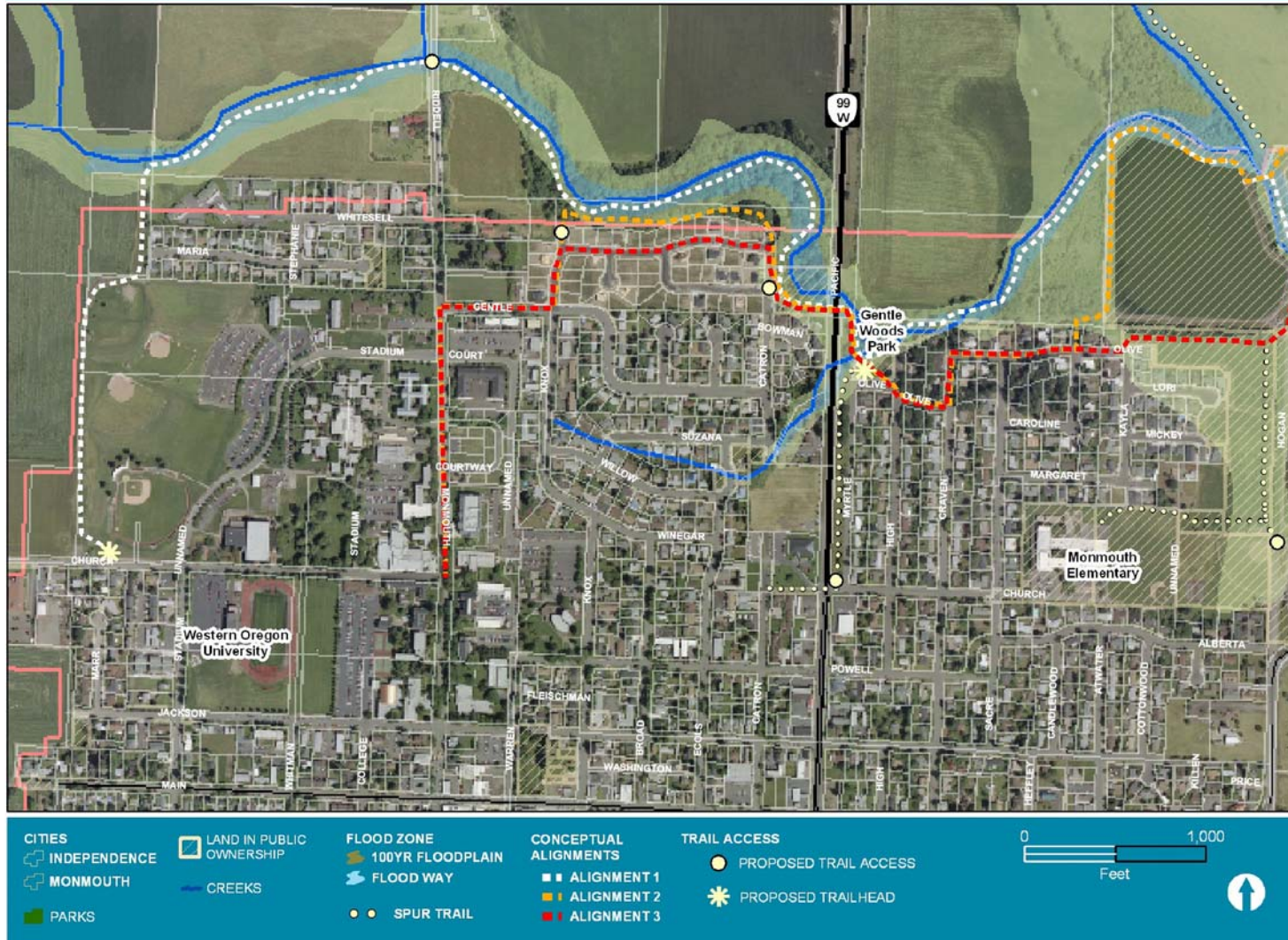
Map 3. Ash Creek Trail Conceptual Alternatives



Map 4. Ash Creek Trail Conceptual Alternatives - Section 1



Map 5. Ash Creek Trail Conceptual Alternatives - Section 2



Map 6. Ash Creek Trail Conceptual Alternatives - Section 3

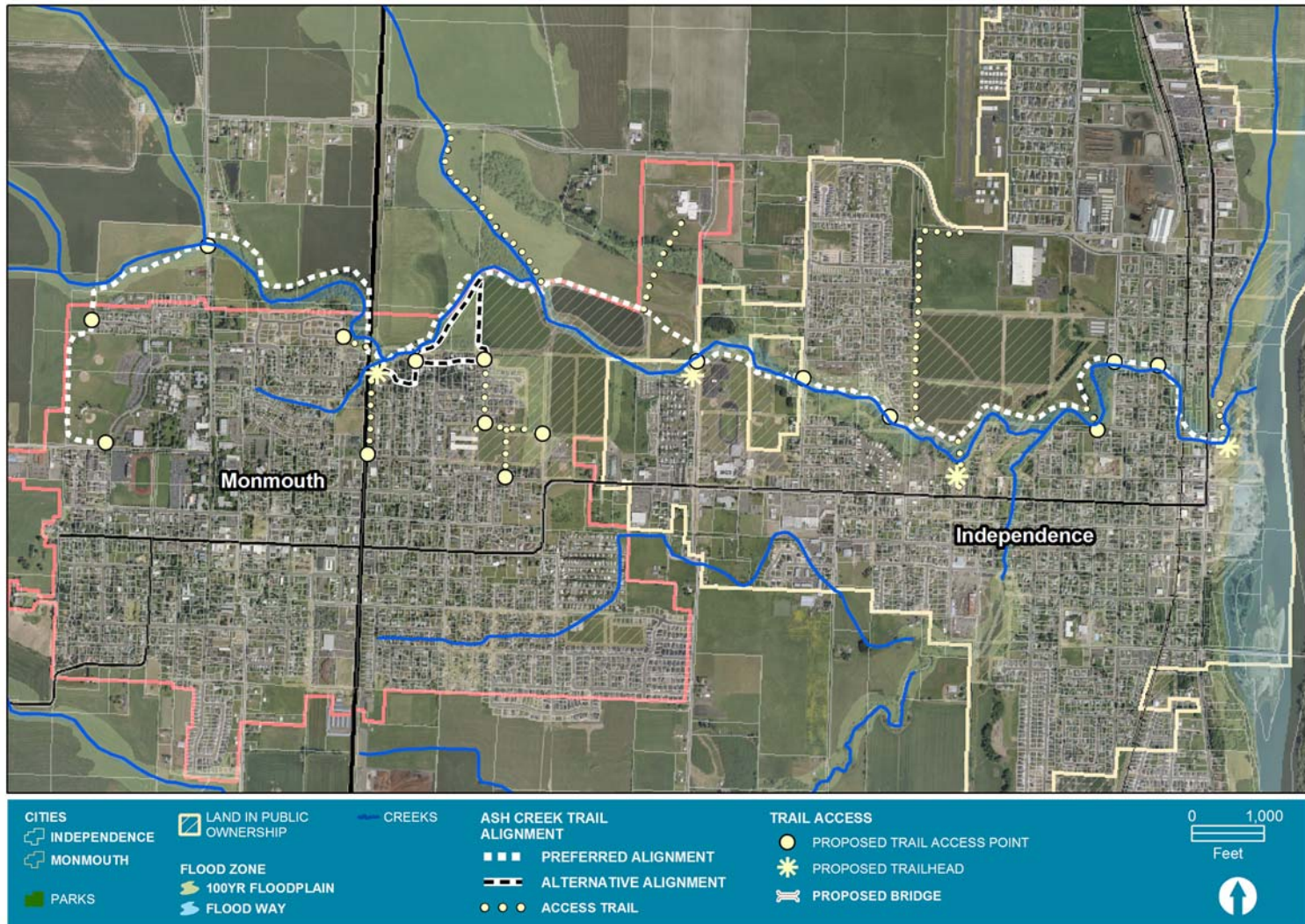
Preferred Trail Alignment and Recommendations

Evaluation Process

Preferred Trail Alignment Narrative by Section

Preferred Alignment Summary: Benefits and Challenges

Programmatic Recommendations



Map 7. Trail Alignment Overview

Preferred Trail Alignment and Recommendations

Evaluation Process

The preferred trail alignment is indicated by white dashes on Map 8 - Map 10. The preferred alignment was determined by performing an extensive examination and analysis of existing conditions, opportunities, and constraints, while striving to meet the project goals and objectives. The project partners and the MTC developed evaluation criteria which were then used to evaluate the three conceptual trail alignments.

Preferred Trail Alignment Narrative by Section

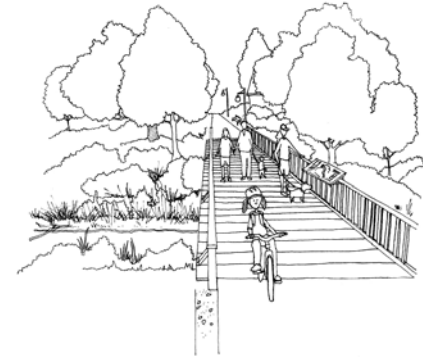
The preferred trail alignment begins in Riverview Park in Independence and closely follows the Ash Creek corridor to the western city limits of Monmouth, traveling along the perimeter of the Western Oregon University athletic fields to Church Street (Map 8 on page 38).

The Recommended Improvements Matrix corresponds to the three segment maps in this Master Plan. The segments of the Ash Creek Trail are each about one mile in length and have been numbered from east to west.

Section 1

The Ash Creek Trail would begin in Riverview Park, cross Ash Creek, and travel under OR 51 / Main Street into the "gulch." A boardwalk or elevated trail would run the length of the gulch, providing excellent educational and wildlife viewing opportunities. The trail would continue under Ash Street and travel through the Boise-Cascade property. An ADA-compliant ramp would connect Ash Street to the trail. Stairs could provide a connection to the trail from Log Cabin Road.

The trail would travel on the fringe of the riparian corridor on the Boise-Cascade property. A spur trail and bridge would connect the trail to a new access off 5th Street to connect to Independence Elementary. The trail would continue through the Independence wastewater treatment facility, traveling on or just below the access road. A spur trail and bridge would connect to a new trailhead and access point off 10th Street.



Limited space on the north side of the creek may require a boardwalk or elevated trail behind the houses off 12th Street. Another option is to cross Ash Creek and travel on the south side of the creek for the length of the public property, and then cross the creek again to connect to the Creekside Meadows property.



An elevated boardwalk will provide excellent educational and wildlife viewing opportunities.

The trail would cross Gun Club Road at-grade.

Section 2

The preferred alignment continues on the north side of the creek, crossing the creek just before the Cooper property (private) to the property owned by the Farm Worker Housing Development

Corporation (private). The trail would continue on the Central School District property (Talmadge Middle School) to 16th Street, where it would cross at-grade. The over-flow parking lot for Talmadge Middle School should be developed as a new trailhead.

The trail will then travel north on 16th and cross the Central School District property to the north side of the Monmouth wastewater treatment facility. Following the perimeter of the wastewater facility, the trail would cross Ash Creek on a new bridge to the access road around the western pond.

Section 3

The preferred alignment would cross Ash Creek and travel outside of the riparian corridor on the Ward property, paralleling the creek to Gentle Woods Park. The trail would then travel under OR 99W through a new undercrossing and connect to the existing OR 99W bicycle path. The preferred trail alignment would utilize the existing path to the northern edge of the riparian corridor of the Ward property and follow the corridor to Riddell Road. The trail would cross Riddell Road at-grade. The preferred alignment would continue following Ash Creek to Maria Street (new accessway) and travel south through the Western Oregon University campus to Church Street. The preferred alignment would terminate at the corner of Church and Stadium.

The preferred alignment includes access trails from Church, Catron, and Hogan Road. The Church Street access trail would travel in ODOT right-of-way, paralleling OR 99W to Gentle Woods Park. The Church-OR 99W intersection would be improved to connect to the existing OR 99W bicycle path and pedestrian accessway to Catron. The Catron access trail would connect the Western Estates subdivision to the existing bicycle path paralleling OR 99W and the preferred trail alignment.

Due to the amount of private property the trail must negotiate in Section 3, two alternatives were proposed for short-term connections. The first alternative trail alignment utilizes the access

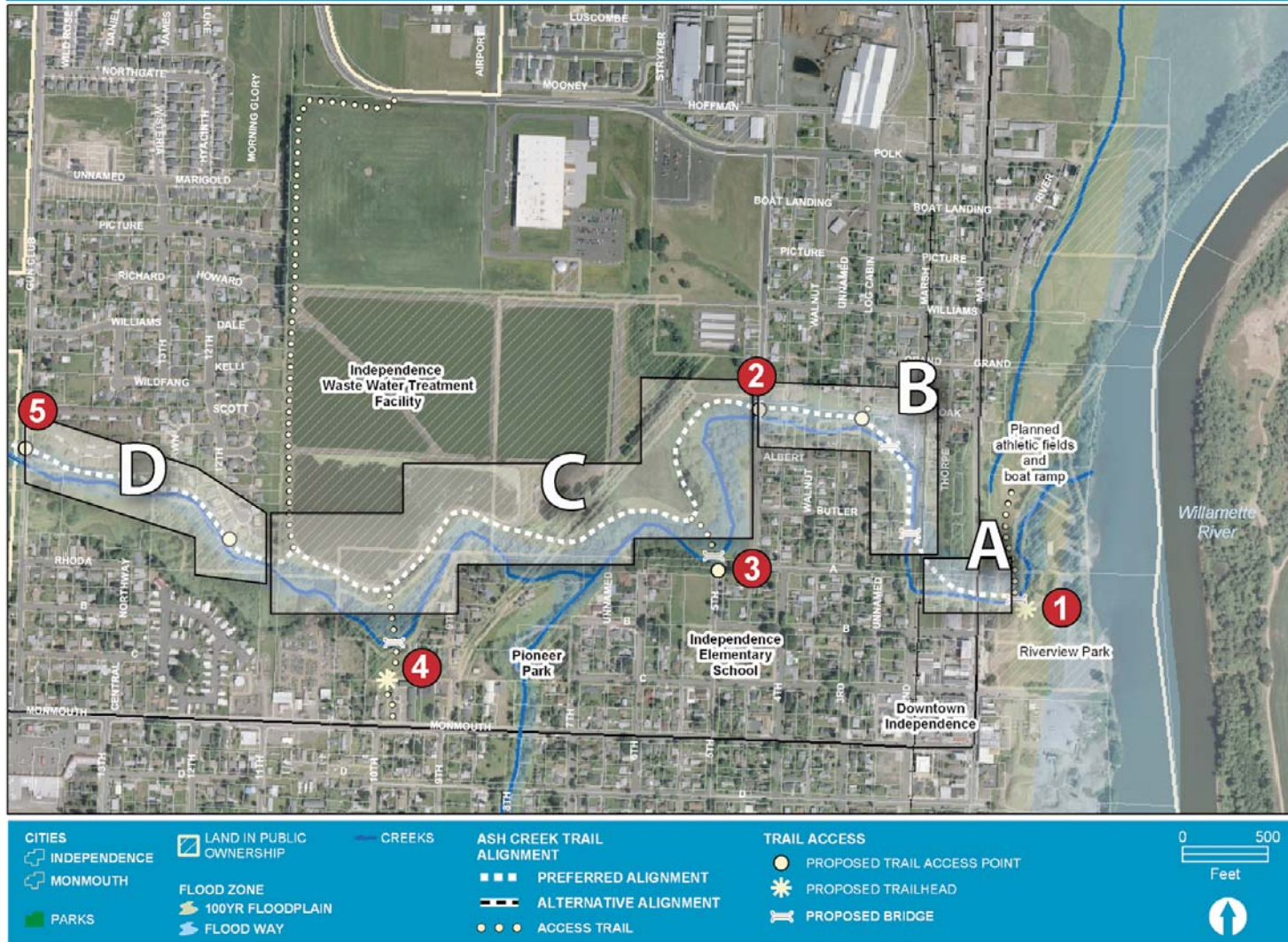
road on the levy around the western pond of the waste water treatment facility. The trail would connect to the corner of Olive and Kayla and follow Olive to Gentle Woods Park. The second alternative trail alignment would travel through the Ward property on the south side of the creek, utilizing a boardwalk or elevated trail to Gentle Woods Park. This area of the property is designated wetland and would require special design treatments to mitigate impact.

Preferred Alignment Summary: Benefits and Challenges

While all sections of the preferred trail alignment may not be immediately feasible due to private property ownership, most sections are feasible and alternative trail options can provide interim connections. The preferred trail alignment provides the most connection to the creek, ample trail access for both communities, the most educational and environmentally restorative opportunities, the best opportunity to designate the corridor as a greenway, and the best trail experience by completely separating the trail from local roads. For these reasons, it is also the safest alignment, has the most continuity, and requires the least amount of retrofit to local roads.

The challenges of the preferred alignment are inherent for any creekside trail. The trail will be in the 100-year floodplain for the majority of the alignment and, in some constrained areas, in the floodway of the creek requiring special design treatments to reduce its impact. The alignment will also require at least six bridges (excluding bridges needed to connect to proposed trailheads and access points) and an undercrossing which, if all are done correctly, can be costly items. However, because much of the Ash Creek corridor has been “disturbed” by development and is fraught with invasive, non-native plants and animals, garbage, and bank erosion, the preferred trail alignment can provide numerous opportunities to improve these conditions and can leave the corridor in better condition than before the trail was built.

The single greatest challenge with the preferred alignment is the amount of private property the alignment requires. Topographic constraints in the gulch near downtown Independence *may* require a number of short easements across adjacent private property parcels; a topographic survey will reveal where the public parcels lie in the gulch. The alignment will also require easements on private properties to follow the creek between Gun Club Road and 16th. To connect to Monmouth, the preferred alignment follows Ash Creek across four large parcels of private property. Easements will need to be purchased or negotiated with the property owners for an off-street trail connection through these parcels or implemented upon redevelopment of the site. Land use conditions may change over the next 30 years as development spreads north from Monmouth. The preferred trail alignment is an excellent opportunity to delineate undeveloped land bordering the creek and protect the corridor from future impacts.



Map 8. Recommended Section 1 Improvements, River View Park to Gun Club Road

Table 2. Recommended Section 1 Improvements

Segment #	Location / Intersection	Recommended Improvement	Issues / Notes
Section 1: Riverview Park to Gun Club Road			
	Entire Segment	Install lighting in key locations.	
1	Riverview Park	Construct trailhead with map, trail information, lighting, and benches. Construct bridge over Ash Creek.	
A	Area A	A new 10-foot-wide concrete shared use path should be constructed from the creek at Riverview Park to the railroad trestle.	Area under the OR 51 bridge will need to be reconfigured to accommodate the trail. Will require permit from ODOT.
B	Area B	A new 10-foot-wide boardwalk should traverse under the railroad trestle and follow Ash Creek on the west and north side to Ash Street, crossing the creek twice.	Alignment crosses Polk County property. Grade changes from top of bank under trestle must meet ADA in the transition. Will need permit from Portland and Western RR and ODOT Rail for undercrossing. Special design requirements apply. Will require access easements from taxlot 24361 (Fitts) and 24348 (Reich).
2	Ash Street	Construct ADA accessible ramp from Ash Street to the proposed trail.	May be able to argue that 5th Street provides comparable access; considerable cost savings. In lieu of ramp, construct stairs with wheel wells.
C	Area C	A new 10-foot-wide concrete shared use path should be constructed from approximately Ash Street to the edge of the Independence wastewater treatment facility.	Preserve as much of the riparian corridor as possible on the Boise-Cascade property. Need coordination with the Independence wastewater treatment facility.
3	5th Street	Construct new wooden bridge and 10-foot-wide concrete shared use path to access 5th Street right-of-way and Independence Elementary School. Construct / improve sidewalks on 5th Street to school.	Will require access easement from taxlot 24309 (Boise-Cascade).
4	10th Street / YMCA	Develop trailhead / parking. Construct 10-foot-wide concrete access trail and bridge over Ash Creek through Boise Cascade property.	Will require access easement from taxlot 24309 (Boise-Cascade).
D	Area D	Construct 10-foot-wide concrete shared use path and boardwalk trail from accessway to Gun Club Road.	Will require access easements from taxlot 24544 (Atkinson) and taxlot 24345 (Creekside Meadows). Trail surface depends on proximity to creek. Constrained areas may require boardwalk / elevated trail.
5	Gun Club Road	Clearly demarcate crossing and provide appropriate warning signs for cross-traffic. Candidate for in-ground flashing lights due to limited sight distance. Type 1.	Low to moderate-volume roadway crossing. 24 - 30 feet of pavement. Two-way bicycle lane and sidewalk on east side of roadway. Limited sight distance. Posted speed 25.



Map 9. Recommended Section 2 Improvements, Gun Club Road to Hogan Road

Table 3. Recommended Section 2 Improvements

Segment #	Location / Intersection	Recommended Improvement	Issues / Notes
Section 2: Gun Club Road to Hogan Road			
	Entire segment	Install lighting in key locations.	
E	Area E	Construct a new 10 foot wide concrete shared use path from Gun Club to 16th Street. Cross Ash Creek with a new wooden bridge.	Will require easements from taxlot 24375 (Romano/Cummins) and taxlot 24428 (Farm Worker Housing Development), and <i>possibly</i> taxlot 24147 (Cooper) <i>or</i> taxlot 24453 (Pena). Will require easement/permission to construct trail on school district property.
6	16th Street	Clearly demarcate crossing and provide appropriate warning signs for cross-traffic. Type 1. Develop trailhead and interpretive area at Talmadge Middle School.	Low-volume roadway with excellent sight distance. School zone. Coordination and permission to use overflow parking lot at trailhead needed from school district.
F	Area F	Construct a new 10-foot-wide concrete shared use path from 16th Street to Hogan Road. Trail would hug the northern perimeter of the Monmouth waste water treatment facility and cross a new wooden bridge over Ash Creek. Trail surface on Western Oregon University campus to Church Street should stay consistent with the rest of the Ash Creek Trail Master Plan but should have wider soft shoulders for runners.	Alignment crosses school district property – easement/ permission needed to coordinate with future recreational uses on the parcel. Also requires agreement for trailhead use. Need to coordinate with the Monmouth wastewater treatment facility and Ash Creek Water Control District for best trail alignment. Will require easement/permission to construct trail on Western Oregon University property. Coordinate with University athletic department to determine best trail alignment.
G	Area G	Construct 10-foot-wide concrete shared use path to connect Kayla and Monmouth Elementary – Monmouth Recreational Park – Skate Park. Connect to existing accessway off Kayla. Retain access from Alberta between Monmouth Elementary School and Monmouth Recreational Park for future neighborhood access to trail.	

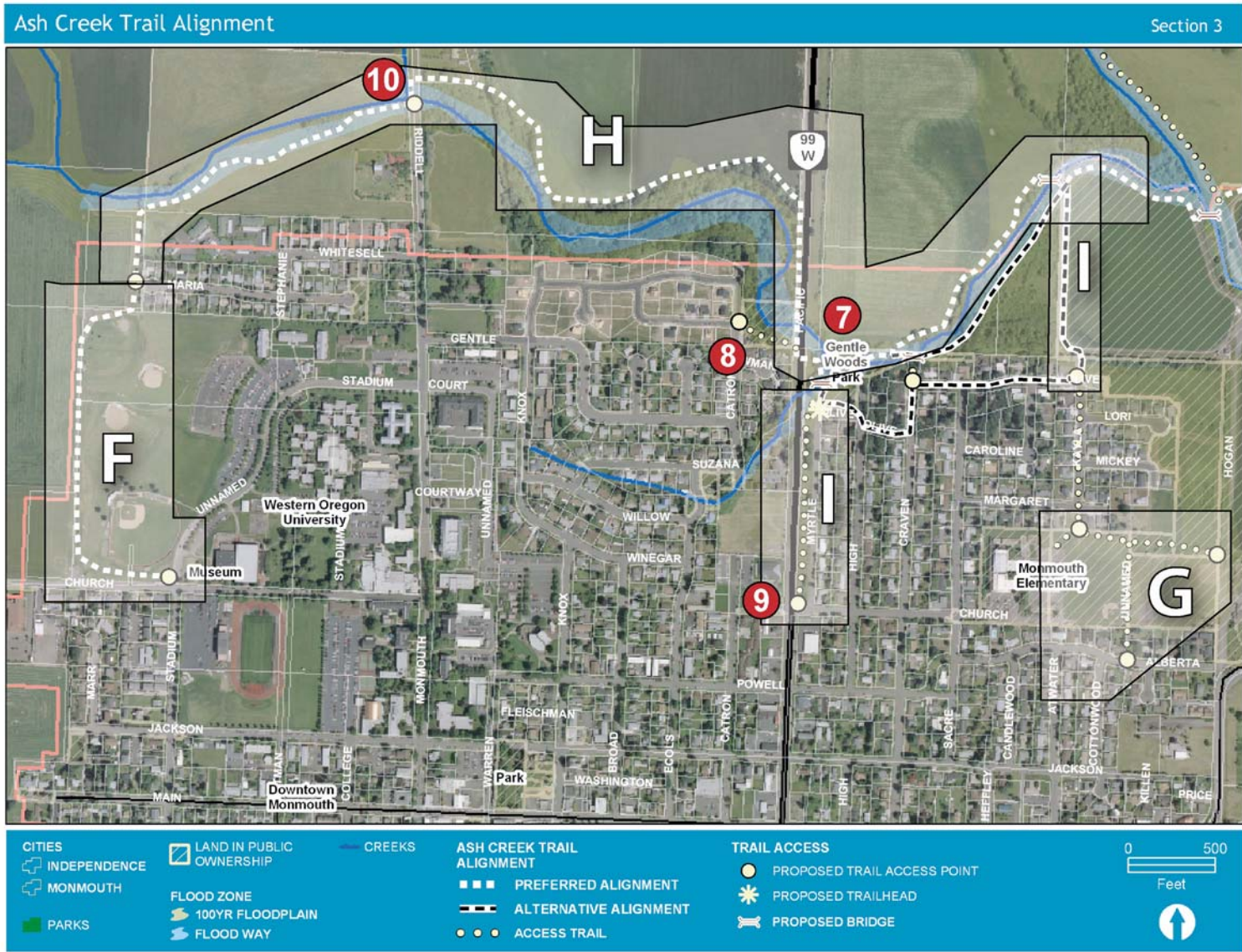


Table 4. Recommended Section 3 Improvements

Segment #	Location / Intersection	Recommended Improvement	Issues / Notes
Section 3: Hogan Road to Western Oregon University (Church Street)			
	Entire segment	Install lighting in key locations.	
H	Area H - Preferred Trail Alignment	Construct 10-foot-wide concrete trail from Hogan Road to Maria Street. Trail should be located outside of the riparian corridor on all undeveloped parcels.	Will require easements from taxlots 23501 and 23913 (Ward), taxlot 23486 (Fisher - Hall), and taxlot 23552 (Gragg), or implemented upon redevelopment.
7	OR 99W - Preferred Trail Alignment	Construct a new 10-foot-wide concrete trail and undercrossing under OR 99W to connect to existing shared use path paralleling OR 99W. Make trailhead improvements in Gentle Woods Park (bicycle parking, trail signs, maps, etc.)	Undercrossing would likely be in 100-year floodplain. Will require permits and coordination with ODOT to cross OR 99W.
I	Area I - Alternative Alignment	Construct a new 10-foot-wide concrete trail on the access road around the western pond at the wastewater treatment facility to the access point at Olive and Kayla. Sign Olive to connect to Gentle Woods Park. Construct a new 10-foot-wide concrete trail from Gentle Woods Park to Church Street in ODOT right-of-way.	Need to coordinate with the Ash Creek Water Control District. Waste water control facility may change in the future. Trail alignment and design should accommodate changes to the facility without limiting community connectivity. Need to coordinate with ODOT for access in ODOT right-of-way.
8	Catron	Construct a 10-foot-wide concrete access trail to connect Western Estates neighborhood to the OR 99W path and preferred trail alignment.	Follow existing demand trail. Need to coordinate with ODOT for access in ODOT right-of-way.
9	Church Street - OR 99W Intersection	Clearly demarcate crossing, install median and lighting, and provide appropriate warning signs for cross-traffic. Type 1+. Develop the area as a gateway to Monmouth to emphasize the urban-rural transition. Petition ODOT to reduce speed on highway from Ash Creek bridge to the school zone.	Need to coordinate with ODOT for access in ODOT right-of-way. Will require permit and coordination with ODOT for Church-99W crossing. Trail use may warrant pedestrian activated signal for this location.
10	Riddell / Monmouth	Clearly demarcate crossing and provide appropriate warning signs for cross-traffic. Type 1. Construct sidewalks and bicycle lanes if / when area develops to provide on-street connection to Western Oregon University and downtown Monmouth.	

Programmatic Recommendations

Establish a “Friends of Ash Creek Trail” Organization

Both communities have tremendous social capital that should be tapped to provide implementation opportunities for the trail and greenway corridor. The primary purpose of a Friends group would be to generate support and interest in the Ash Creek corridor to utilize local resources. Ultimately, the group would ensure that the cities stayed interested in the corridor and that the trail and greenway are successful when implemented.

The group could designate and organize events that improve the creek corridor, including tree plantings, clean up activities, trail monitoring, bridge building, invasive plant removal, etc.

The group could work with other civic organizations and local businesses to get in-kind donations for cleaning up the corridor (e.g., a local hauling service could donate a truck to haul away debris or a local nursery could donate native plants for enhancement activities). They could also work with local artists and designers, as well as students from Western Oregon University, to develop user maps and signs, interpretive illustrations, and functional artwork for the corridor.

The group could also perform fundraising activities for trail enhancements, such as an interpretive site along the creek. Additionally, the group could be responsible for assisting the cities with grant writing efforts to secure federal and state funding for the next phases of development.

Develop Ash Creek Identity

A unique and identifiable image for trail and greenway signs will create a sense of continuity and consistency throughout the corridor. The project partners and the MTC should coordinate with local schools, artists, and university students to develop an image or

concept that embodies the trail and greenway corridor for trail signs, interpretive areas, and maps.

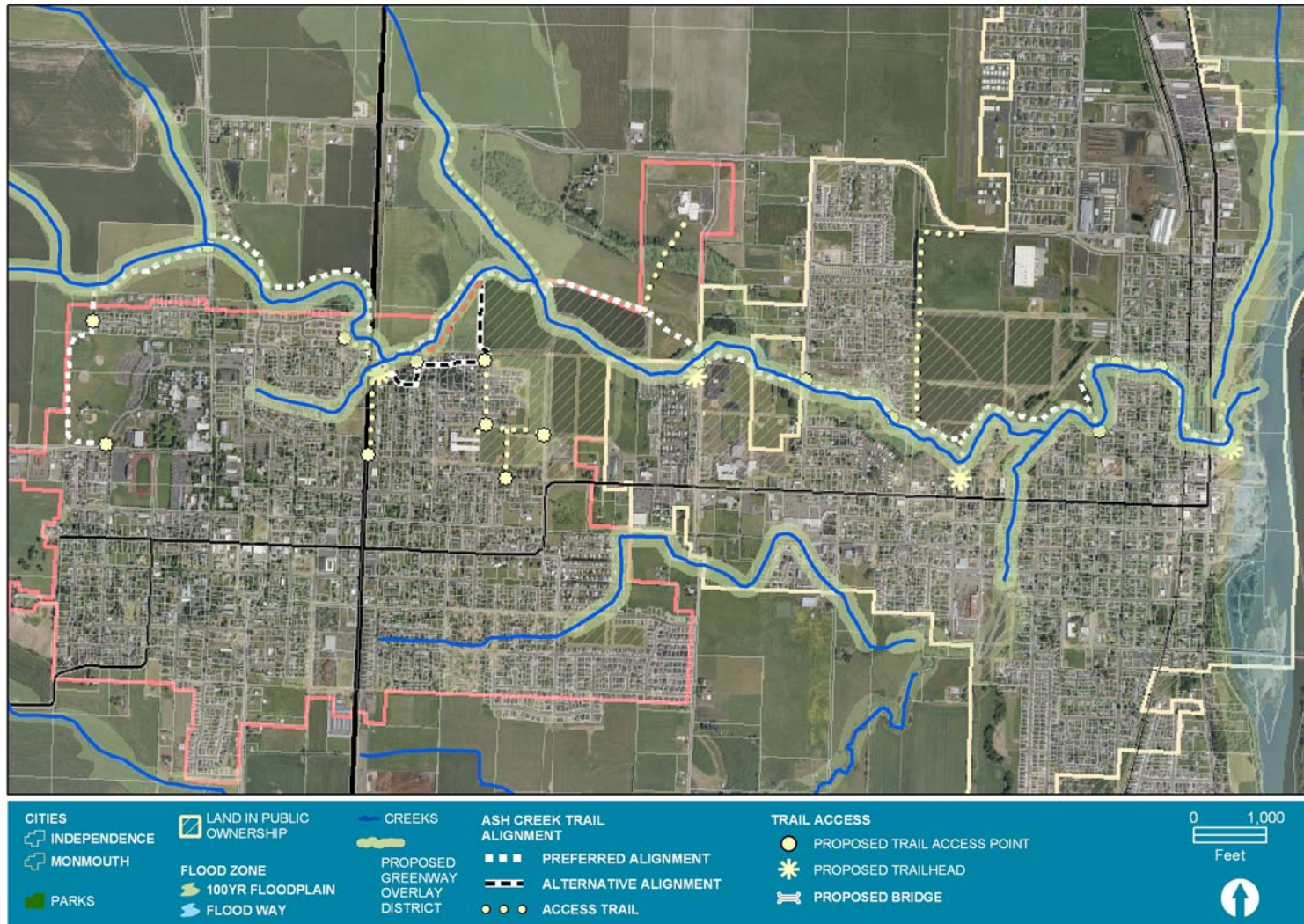
Potential themes include:

- Dominant landscape elements – the creek, vegetation, mountains
- Walking and bicycling elements – silhouettes of people walking and riding, equipment
- Place names – city names, creek name, watershed name
- Historic elements – pioneers, native cultures, agriculture, railroad
- Environmental elements – salmon, waterfowl, waterway, vegetation

Ash Creek Trail and Greenway Overlay District

This plan recommends developing and implementing an Ash Creek Trail and Greenway Overlay District, extending 100 feet on both sides of Ash Creek and its tributaries from the centerline of the creek. This overlay district will serve to preserve open space and the riparian corridor, mitigate habitat fragmentation, limit future development in the greenway and floodplain, and provide public access for trails. Amended development code for both communities is located in the Recommended Code and TSP Language Changes chapter of this plan.

Ash Creek Trail and Greenway Overlay District



Map 11. Ash Creek Greenway Overlay District

Trail Design Elements

Typical Trail Cross Section Design

Roadway Crossings

Trail Access

Trail Amenities

Landscaping

Trail Design Elements

Typical Trail Cross Section Design

The optimum recommended trail width is 10 feet and, based upon field reconnaissance work, this appears to be achievable along most of the Ash Creek corridor.

Much of the Ash Creek corridor will benefit from a concrete surface trail. Concrete is a better trail surface for wet areas and is not prone to buckling from tree roots or imperfections in the subgrade. Concrete is more expensive, but it is a better community investment since it lasts much longer than asphalt and is easier to maintain. When properly installed, concrete will last 25 years or longer and will need little maintenance. A boardwalk or elevated trail should be used in wetlands or perennially wet areas to reduce impact.

Two-foot-wide soft shoulders should be provided on both sides of the trail. This provides a setback or “shy distance” from fixed objects along the trail edge and also serves as a tactile warning device for anyone inadvertently swaying off the trail. Wood planer shavings or ¾-inch minus crushed aggregate are both suitable materials for the trail shoulders. Vertical clearance along the trail should be a minimum of 10 feet, and horizontal clearance should extend two feet beyond the trail shoulders.

Table 5. Ash Creek Trail Design Recommendations

Width	10 feet
Surface	Concrete, wood
Soft Shoulder	Wood planer shavings or ¾" crushed aggregate
Vertical Clearance	10 feet
Horizontal Clearance	2 feet
Maximum Slope	5%
Cross Slope	2%

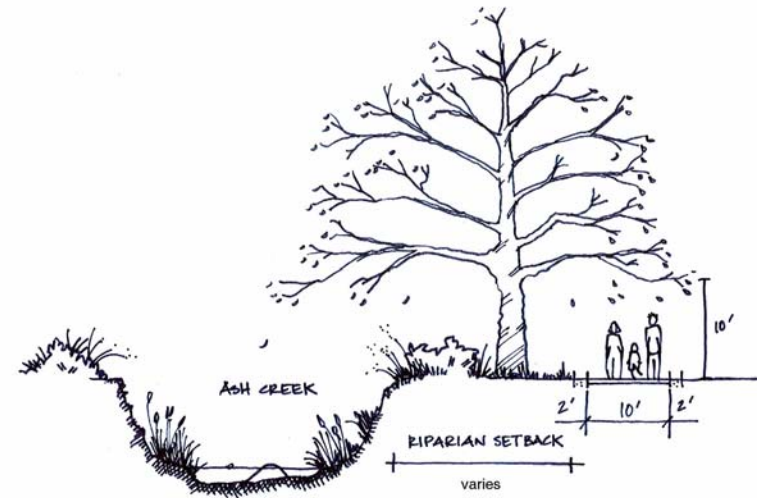


Figure 1. Ash Creek Trail Standard

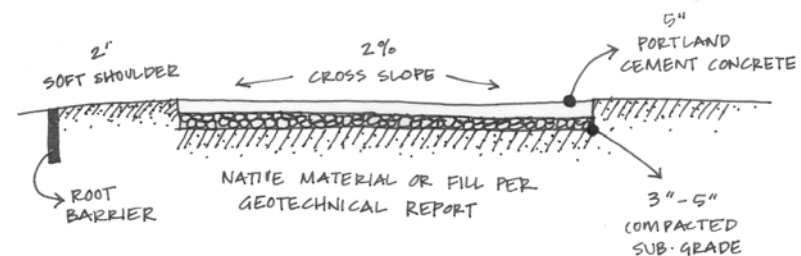


Figure 2. Ash Creek Trail Cross Section

Structural Section and Surface

Trail construction will be conducted in a similar manner as roadway or sidewalk construction. Sub-base thickness will be determined by soil conditions. Expansive soil types require special structural sections. Use of geotextiles should be encouraged (depending on subsurface soil type and drainage) to provide stability and aid drainage to subsurface soils. Concrete thickness should be five inches of Portland Cement, with three to five inches of crushed aggregate over a stabilized base.



Figure 3. Concrete Trail in Stream Corridor

The trail should have a cross-slope of at least 2% to direct water to a subdrainage or swale, which then directs the water to Ash Creek or the nearest water body. This will provide a pretreatment opportunity for storm water.

The concrete trail surface should be broom finished for traction and saw cut to reduce bumps. Concrete can be dyed any color to fit the surrounding environment, if desired.

Boardwalks and Elevated Viewing Platforms

Some areas along the Ash Creek corridor will benefit from an elevated trail treatment (i.e., boardwalk) which minimizes impact to sensitive wet areas. Boardwalks can also be showcase trail pieces by providing an unparalleled trail experience close to the water and through scenic wetland areas with minimal impact.

Biological conditions may require platforms to be located so as not to shade sensitive resources, and so that trail treads allow light to penetrate to vegetation under the trail.³ Screw piles are recommended for building boardwalks and viewing platforms along Ash Creek. They are less disruptive to the creek bed than wooden pier foundations and more environmentally sensitive than using chemically treated lumber. Boardwalks can be very expensive and should go through an extensive design process so they do not contribute to flooding hazards, are ADA compliant, and minimize impact to the surrounding environment.

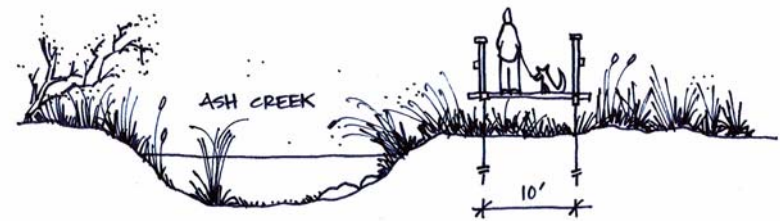


Figure 4. Boardwalk or Elevated Trail Treatment along Ash Creek

3. Green Trails: Guidelines for environmentally friendly trails. Metro, 2004.

Trail Setback and Greenway Recommendations

Development setbacks from streams are important for maintaining stream bank integrity, preserving habitat, and reducing the potential for erosion and sedimentation into the creek system.

In general, the larger the setback from the stream, the greater the benefit to the stream system. However, large setbacks are not always feasible in developed areas. Most stream protection ordinances specify setbacks for buildings because trail development is a relatively new occurrence. Polk County requires setbacks ranging from 25 to 100 feet, depending on the width of the stream, for structural development near waterways and wetlands (Polk County, 2004). The setback is determined by multiplying the average width of the stream channel by a factor of three, but the resulting buffer cannot exceed 100 feet or be less than 25 feet. Based on this formula, the estimated setback for Ash Creek would likely be approximately 45 feet, although the average stream width would need to be measured in the field.



Figure 5. Concrete Trail Transitions to a Boardwalk

Another method of determining the setback distance or riparian buffer is using the Site Potential Tree Height (SPTH) method. In this case, the ideal riparian buffer width is equivalent to the height a mature canopy tree is expected to grow at the site. The dominant canopy tree in the project area is the Oregon ash (*Fraxinus latifolia*). The project consultants estimated its tree height during a November, 2004 field visit as ranging from 60 to 100 feet.

There are a few areas along Ash Creek where trail development options are constrained by land ownership, and the preferred trail alignment is less than 40 feet from the top of the stream bank.

While this does not preclude trail development, there are several considerations for developing a trail adjacent to the stream:

- Avoid or minimize grading.
- Avoid or minimize the removal of mature trees and shrubs.
- Restrict vegetation removal and paving within 10 feet of the top of stream bank. Any vegetation proposed for removal in the Ash Creek riparian zone would require the preparation of a management plan for approval by ODFW and DSL. Mitigation is not required for vegetation removal, but the management plan will need to address how the remaining vegetation would be maintained (Austin McGuigan, Polk County, personal communication, 2004).
- Use buffer averaging – increase the setback in other areas along the creek system to offset development adjacent to the stream.
- Shift arbitrary boundaries to provide a wider setback (i.e., the chain link fencing around the wastewater ponds).
- Locate bridges at natural constrictions in the stream channel or at previously disturbed sections.
- Mitigate for impacts by planting native trees and thicket-forming shrubs along the stream bank to improve soil stability and prevent off-trail use.

Grades

The recommended maximum trail longitudinal gradient is 5%. Steeper grades (8%) can be tolerated for short distances (up to about 500 feet). The Ash Creek corridor is nearly flat for most of the alignment. There is only one anticipated area where a ramp will need to be built to provide ADA-compliant access: the connection to Ash Street (Figure 6 on page 52).

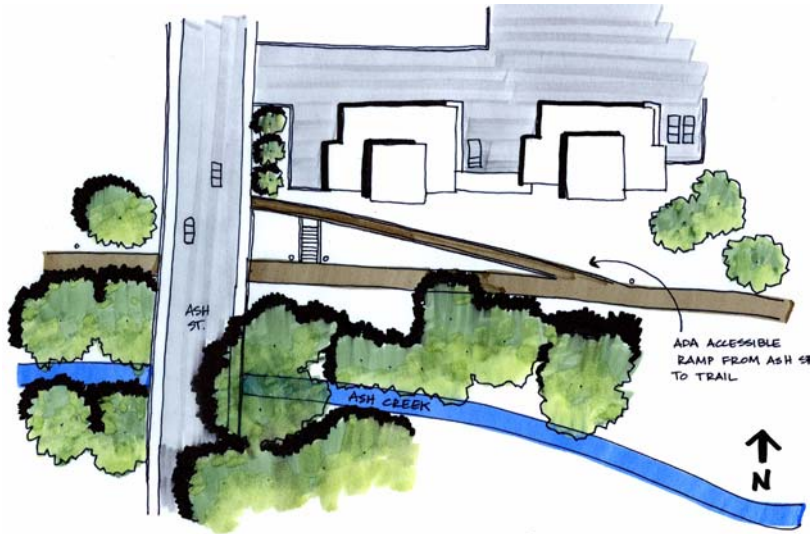


Figure 6. ADA-Accessible Ramp from Proposed Trail to Ash Street

Roadway Crossings

The Ash Creek Trail crosses six roads. Depending on alignment, they either cross at-grade or below-grade under existing bridges or through a new undercrossing. Most of these roadways are lower-volume, low-speed roadways that do not require extensive treatment to accommodate users safely.





Roadway crossings represent one of the key challenges to trail implementation. Motorists often do not expect to see bicyclists and pedestrians at unprotected locations at trail crossings. Most of the trail-roadway crossings on Ash Creek have low to moderate traffic volumes, and have good visibility on the approaches, both from the trail user's and the automobile driver's points of view. In addition, the vast majority of the trail-roadway intersections will be designed to meet at a simple 90 degree angle or will travel under the roadway, minimizing crossing distances and making the appropriate design

treatments simple to implement. The one exception to this is the crossing of OR 99W.

Engineering analysis will need to be completed as part of the final design of the proposed crossings to determine the most appropriate design features. An evaluation of crossings of the Ash Creek Trail will involve analysis of traffic patterns of vehicles as well as trail users. This includes traffic speeds, street width, traffic volumes (average daily traffic and peak hour), line of sight, and trail user profile (age distribution, destinations).

The proposed crossing treatments in this Master Plan are based on established standards, preliminary evaluation of the available data, and experience on similar existing facilities. Virtually all possible crossing treatments fit into one of four basic categories, described in Table 6 on page 53.

Table 6. Basic Crossing Prototypes

Crossing Type	Photo	Description
I. Unprotected		Unprotected crossings include mid-block crossings of residential, collector, and sometimes major arterial streets.
II. Routed to Existing Intersection		Trails that emerge near existing intersections may be routed to these locations.
III. Signalized/ Controlled		Trail crossings that require signals or other control measures due to traffic volumes, speeds, and trail usage.
IV. 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.

Trail-Roadway Crossing Recommendations

For the Ash Creek Trail, Type I, III, and IV trail crossings are recommended. Table 7 presents a summary of trail–roadway intersections in the Ash Creek corridor and their respective treatments.

Table 7. Trail-Roadway Intersection Treatments for the Ash Creek Trail

Road	ADT	Recommended Crossing Type
OR 51 (Main)	7,741	Undercrossing – under existing bridge
Ash Street	566	Undercrossing – under existing bridge
Gun Club	4,486	Type I, marked crosswalk, may be a candidate for in-ground flashing lights
16th	2,155	Type I, marked crosswalk
OR 99W / Ash Creek	12,472	Type IV, undercrossing - tunnel
OR 99W / Church	12,472	Type I+ or III, marked crosswalk, pedestrian refuge, illumination, gateway treatments, possible pedestrian signal
Riddell / Monmouth	n/a	Type I, marked crosswalk

Type I or uncontrolled crossings (unsignalized, but with other traffic control devices) are recommended for streets where vehicles travel at speeds of less than 45 mph and are used by fewer than 10,000 vehicles per day.

Type III or new signalized crossings are recommended for crossings more than 250 feet from an existing signalized intersection, where 85th percentile travel speeds are 40 mi/h and above, and/or ADT exceeds 15,000 vehicles. ODOT recommends that trails receive a high level of crossing protection. The intersection of Church and OR

99W could *potentially* be a Type III intersection. Preliminary technical analysis of the crossing has revealed that the most appropriate crossing treatment is a marked crosswalk with an eight-foot-wide pedestrian refuge, warning signing, and illumination. The intersection does not warrant a pedestrian signal under existing and 20-year projected conditions; however, the treatment should be revisited in the design and engineering phase of the project. 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 IV or grade-separated crossings may be needed where ADT exceeds 25,000 vehicles, and 85th percentile speeds exceed 45 mi/h, or where trails cross major roadways or grades are conducive. Safety is a major concern with both overcrossings and undercrossings. In both cases, trail users may be temporarily out of sight from public view. 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 minimize flooding, as well as to be spacious and well-lit, equipped with emergency cell phones at each end, and completely visible for its entire length prior to entering.

OR 99W Crossing Recommendations

OR 99W is the only roadway in the Ash Creek corridor that poses a serious threat to the safety of trail users. For this reason, two options were developed for crossing the roadway: Option A, an undercrossing (tunnel) in Gentle Woods Park, connecting to the OR 99W path and future trail alignments in the westerly direction, and Option B, an at-grade crossing at Church Street and OR 99W.

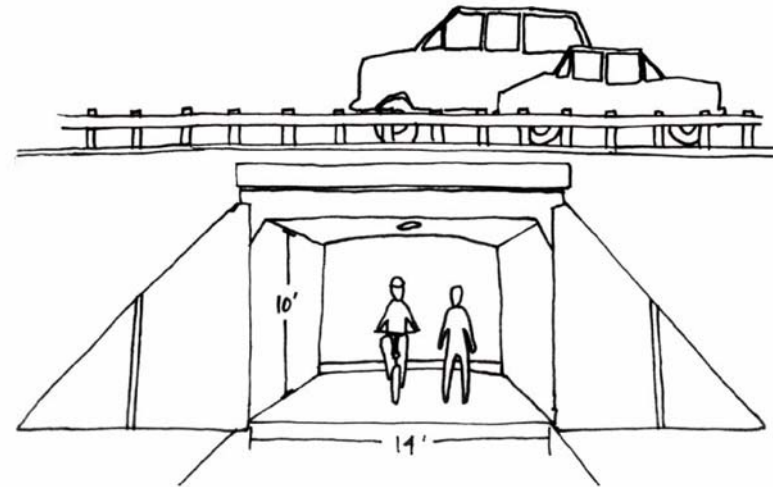


Figure 7. Proposed Undercrossing at OR 99W and Gentle Woods Park

Option A: Undercrossing

The undercrossing should be designed to provide a well-lit, unobstructed passage for trail users (Figure 7). Trail users should be able to see through the tunnel to the other side. Minimum ceiling clearance should be 10 feet; eight feet can be used in constrained conditions but is not recommended. Minimum width should be the width of the trail, but should be as wide as necessary to provide good sight lines and light. Proper drainage is very important due to

the location of the undercrossing in the 100-year floodplain and its proximity to the creek.

The OR 99W path will intersect the undercrossing entrance on the west side of the road, which will be a conflict area for trail users. Warning signs, a mirror, or re-alignment of the 99W path will improve safety at this conflict point.

Option B: At-Grade Crossing

The second crossing option is to construct a trail in the ODOT right-of-way from Gentle Woods Park to Church Street along OR 99W and enhance the existing crossing at the intersection of Church Street and OR 99W (Figure 9 on page 56). The intersection is situated across from a pedestrian accessway that connects to Catron and adjacent neighborhoods. Children from nearby Monmouth Elementary frequently use the marked crosswalk at this location with the aid of a crossing guard during school hours. The crosswalk is located in a speed zone, posted 20 mph when children are present. Recommendations for this intersection include installing an eight-foot-wide pedestrian refuge with at-grade cuts (no ramp to top of median), illumination, warning signage, and striping a crosswalk with higher visibility. Poles must be mounted away from curb cuts and out of the pedestrian path.

This area should also be treated as a gateway and should include vertical elements to cue motorists and let them know that they are transitioning from a rural area to a developed community.

Bridges

There may be up to nine bridges crossing Ash Creek at various points in the corridor. While bridges can be some of the most interesting features of a trail system, they can also be the most challenging.

Bridges should be at least as wide as the trail. ADA guidelines require handrails no shorter than 36 inches and decking material that is firm and stable. Bridges should accommodate maintenance

vehicles if necessary. Bridge structures should be located out of the 100-year floodplain. Footings should be located on the outside of the stream channel at the top of the stream bank. The bridge should not impede fish passage or constrict the floodway. All bridges and footings in the Ash Creek corridor will need to be designed by a registered structural engineer. Cost, design, and environmental compatibility will dictate which structure is best for the trail corridor.

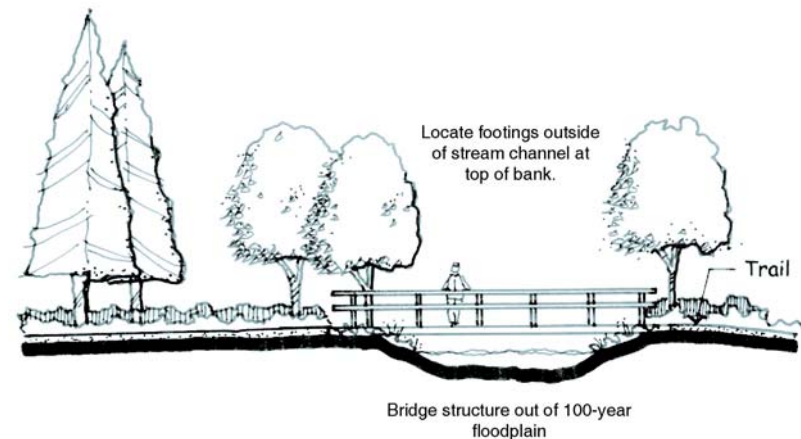


Figure 8. Crossing of Stream or Drainage

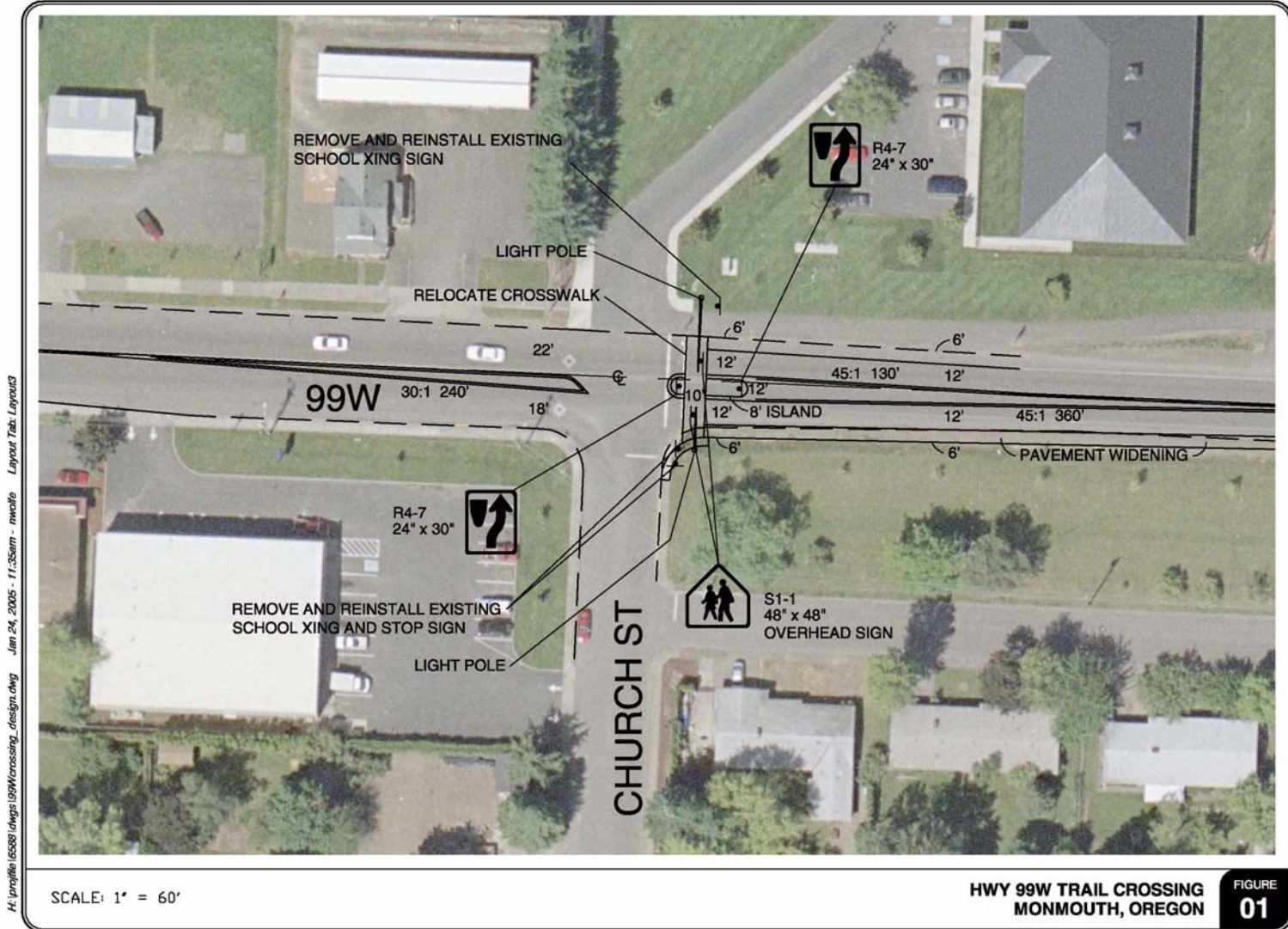


Figure 9. Proposed At-Grade Crossing at Church Street and OR 99W

Standard Crossing Features

Signing

Crossing features for all roadways should include warning signs for both vehicles and trail users. Signing for trail users must include a standard “STOP” sign and pavement marking, combined with other features such as bollards or a curve in the trail to slow bicyclists as they approach the intersection. The type, location, and other criteria are identified in the Manual for Uniform Traffic Control Devices (MUTCD).

Give consideration to adequate warning distance based on vehicle speeds and line of sight. Catching the attention of motorists desensitized to roadway signs may require additional alerting devices such as roadway striping or in-ground flashing lights. Take care not to place too many signs at crossings or they will result in sign clutter and will reduce their impact.

Directional signing may be useful for trail users and motorists alike. For motorists, a sign reading “Ash Creek Trail Xing” along with a 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. Table 8 details the location, color, and designation of the types of signs to use in the trail corridor.

Table 8. Regulatory Signage

Item	Location	Color	AASHTO Designation	MUTCD Designation
No Motor Vehicles	Entrances to trail	B on W	R44A	R5-3
Use Ped Signal/ Yield to Peds	At crosswalks; where sidewalks are being used (Church)	B on W	n/a	R9-5, R9-6
STOP, YIELD	At trail intersections with roads	W on R	R1-2	R1-1, R1-2
Bicycle Crossing	For motorists at trail crossing	B on Y	W79	W11-1
Turns and Curves	At turns and curves which exceed 20 mph design specifications	B on Y	W1,2,3; W4,5,6, 14 W56,57	W1-1,2 W1-4,5 W1-6
Trail Intersections	At trail intersections where no STOP or YIELD required, or sight lines limited	B on Y	W7,8,9	W2-1, W2-2 W2-3, W2-4, W2-5
Pedestrian Crossing	Where pedestrian walkway crosses trail	B on Y	W54	W11A-2
Directional Signs	At intersections where access to major destinations is available	W on G	G7, G8	D1-1b (r/l), D1-1c

Table 8. Regulatory Signage (Continued)

Item	Location	Color	AASHTO Designation	MUTCD Designation
Trail Etiquette / Bikes Reduce Speed & Call Out Before Passing	All trail entrances	B on W	n/a	n/a
Multi-purpose Trail: Bikes Yield to Pedestrians	All trail entrances	n/a	n/a	n/a
Please Stay on Trail	In environmentally-sensitive areas or where the trail travels on private property	n/a	n/a	n/a
Trail Closed: No Entry Until Made Accessible & Safe for Public Use	Where trail or access points closed due to hazardous conditions	n/a	n/a	n/a

Striping

Standard striping patterns used to delineate trail crossings will be implemented on the Ash Creek Trail. The actual crosswalk striping may be accompanied by pavement treatments to help warn and slow motorists. In areas where motorists do not typically defer to pedestrians in crosswalks, additional measures may be required. While there is a trend to remove unprotected crossings, the marked crossings serve a valuable function and warn motorists of the crossings.

Trail Access

The Ash Creek Trail is a multi-use trail that will be used by pedestrians, bicyclists (both recreational and commuters), in-line

skaters, and other non-motorized uses. The trail will be accessible to people in wheelchairs and people with walking aides who require a smooth surface for navigating.

Good access to the trail for all users is a key element to its future success. Simply put, if people cannot get to a trail easily, they will not use it. Neighborhood access will be achieved from all local streets crossing the trail, as well as through four new trails from 5th Street, 10th Street, Western Estates, and along OR 99W. Each street crossing will be identified and directional signage will be placed at street intersections, identifying destinations and distances along the trail and within the surrounding community. Potential trail access points include:

- Church Street / WOU
- Maria Street
- Riddell / Monmouth
- Western Estates / Catron
- Gentle Woods Park
- Church Street / OR 99W
- Olive Street
- Kayla Street
- Hogan Road
- 16th Street
- 10th Street
- 5th Street
- Ash Street
- Log Cabin Road
- Riverview Park
- Gun Club Road

Potential Trailheads

Trailheads (formalized parking areas) serve all trail users. They provide information about the trail (i.e., maps) and may have trail user facilities such as restrooms, trash receptacles, information kiosks, and benches. Trailhead locations should ideally be located every two to three miles along the trail. Four areas along the trail are recommended as trailhead access points (Map 12 on page 60). Use of these sites as public trailheads will require discussions with the

managing agency of the site and neighbors living in the vicinity of the trailheads.

Riverview Park: This park has a substantial existing parking lot for visitors that could easily provide access to a trailhead in the park. The park also has existing restrooms, trash receptacles, picnic areas, and is a pleasant destination for trail users. The trailhead can also serve as an interpretive area, as the view of Ash Creek in this location is outstanding. A pervious surface is recommended for the staging area adjacent to the trail due to its proximity to the creek. See Figure 11 on page 61.

10th Street / YMCA Building (Independence): This parking area can be formalized and expanded to allow for trail user parking of four to eight cars and still have sufficient space to accommodate the trail, as well as develop the property as a park. The park could include amenities such as benches, environmental interpretation, and picnic facilities. A bridge would connect to the trail on the north side of the creek.

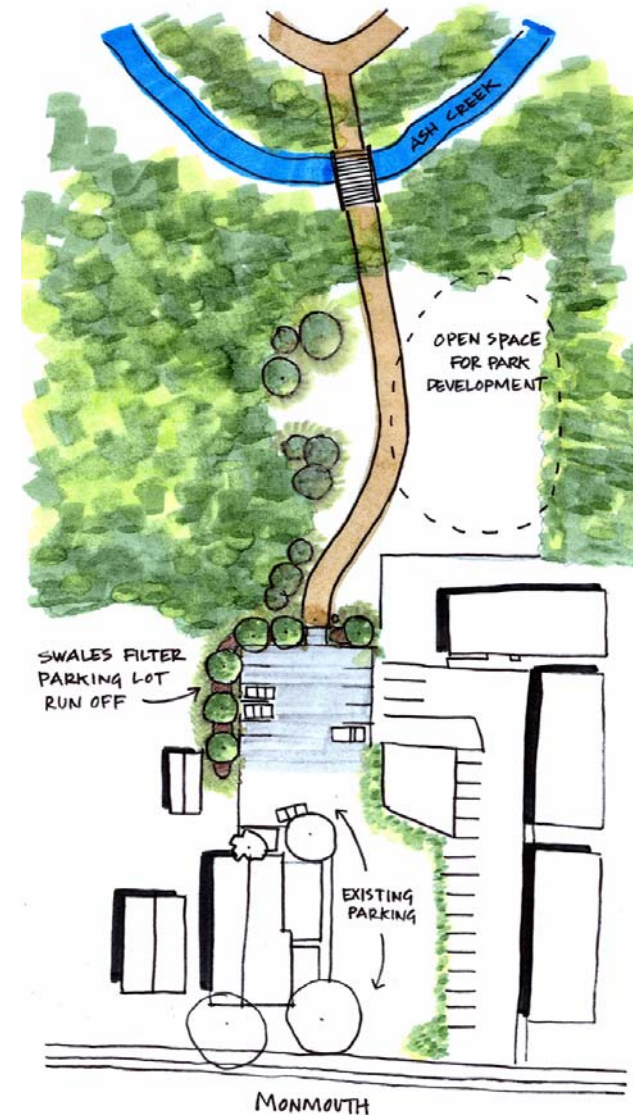
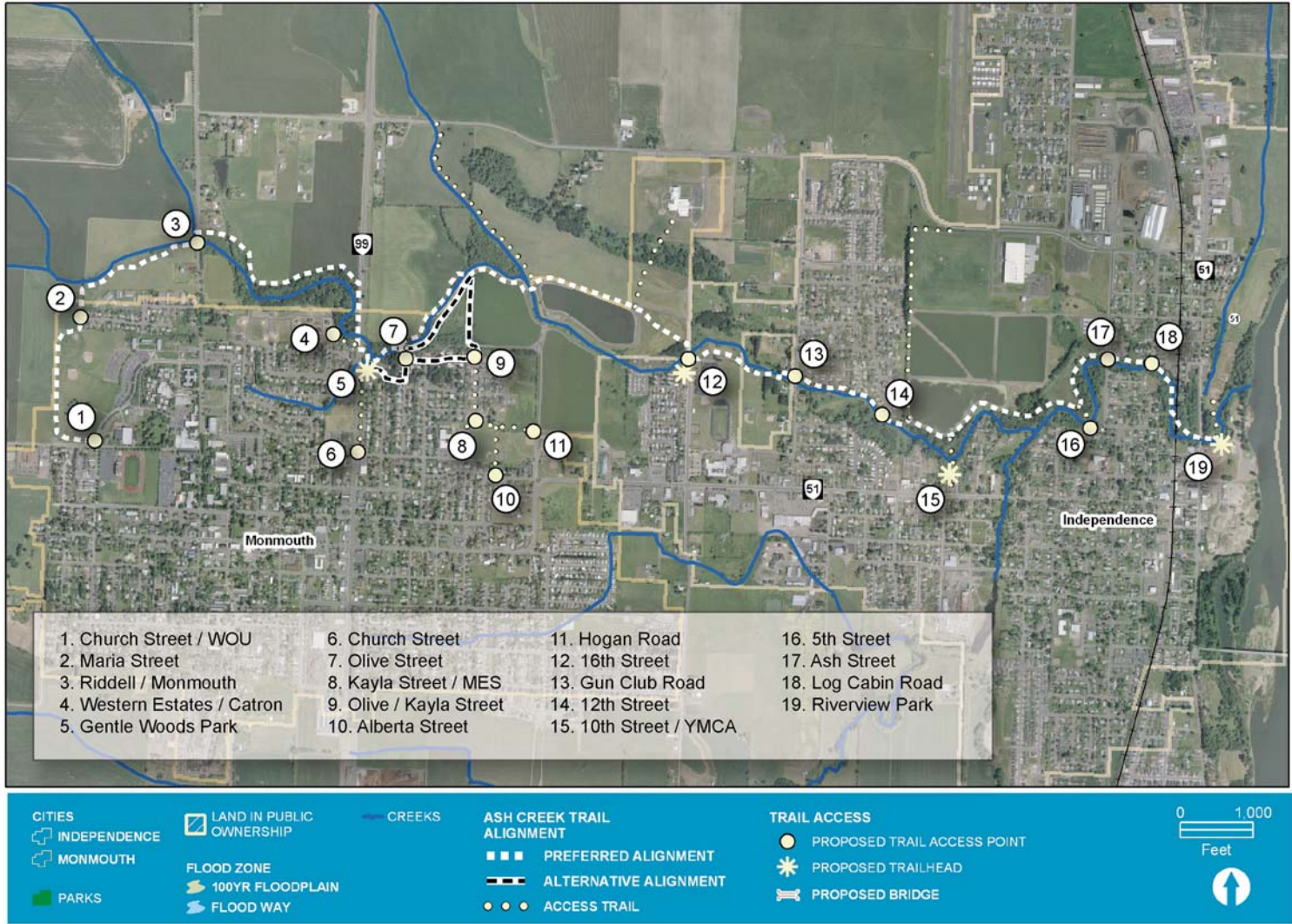


Figure 10. Trailhead Amenities at 10th Street / YMCA

Proposed Trailheads and Trail Access Points



Map 12. Trail Access Points and Proposed Trailheads

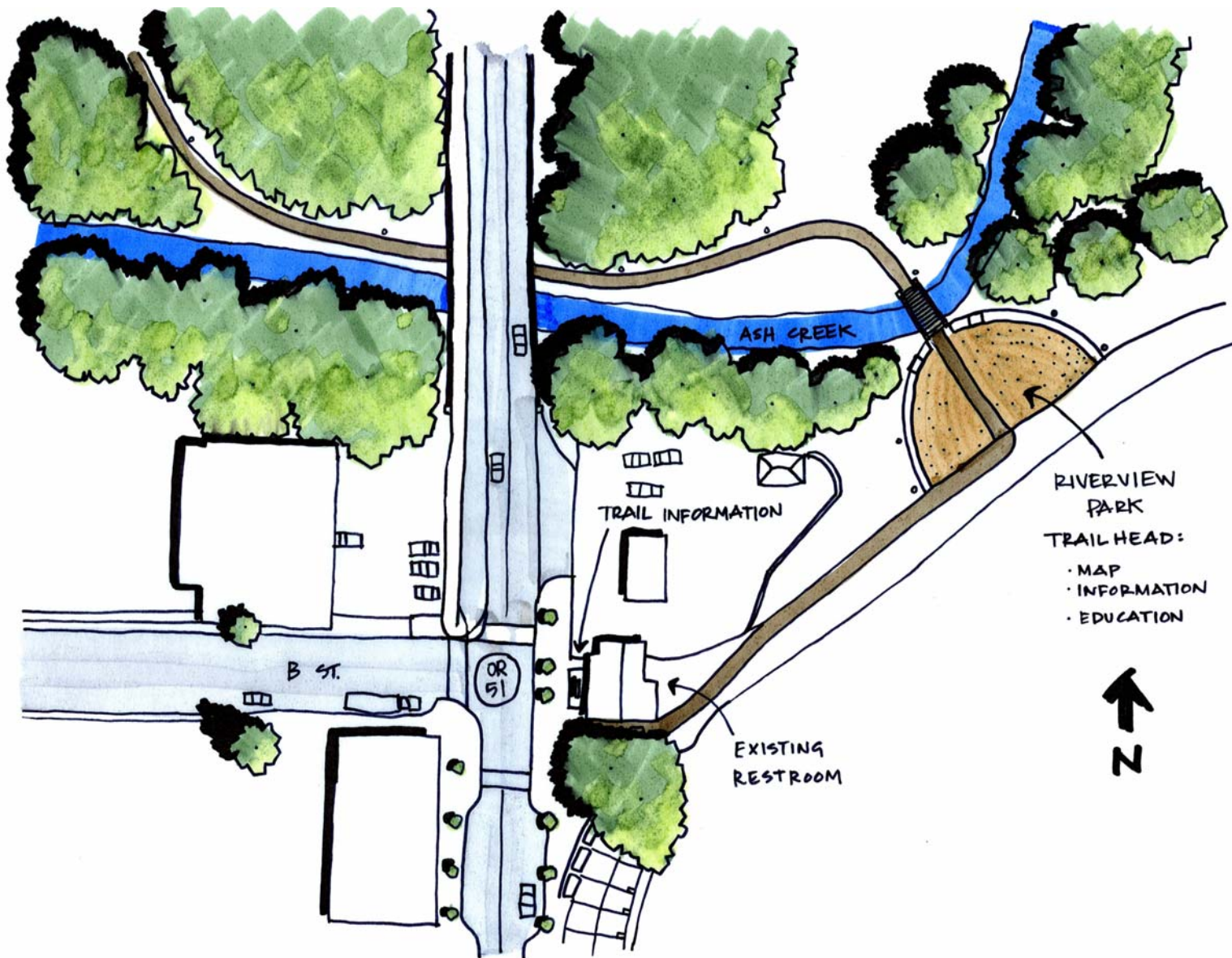


Figure 11. Trailhead Amenities at Riverview Park

Talmadge Middle School: It is recommended that the overflow school parking lot be used as a trail access point during non-school hours. Peak trail use and need for parking should not conflict with peak parking times for the school. Trail information and a map should be installed in the parking lot or in the right-of-way for visitors. Use of this site will require approval from the school district.

In addition to being a good site for a trailhead, Talmadge Middle School is an excellent site for outside environmental education and experiential learning. The space adjacent to the creek should be cleared of invasive plants and, replanted with native plant species, and, as an educational community project, a soft-surface walking path could be created to showcase native plants, stream ecology, and other educational information (Figure 12 on page 63). Classroom projects could include researching and creating informative signs about stream-side ecology to be displayed along the trail. Involving local kids in these projects will help create a sense of ownership which may in turn reduce vandalism, littering, and other inappropriate behavior on the trail.

Gentle Woods Park: This popular Monmouth park is an excellent site for a trailhead since it has an existing parking area, restrooms, picnic facilities, and trash receptacles. The area in front of the restrooms should be enlarged to reduce conflict between trail and park users, as well as to provide space for trail information and maps, benches, and bicycle parking (Figure 13 on page 64).

Trail Amenities

In order for the Ash Creek Trail to be a successful community amenity, the trail should appeal to a wide variety of users. To achieve this, the Ash Creek Trail should be designed to provide a high level of user conveniences. These groups will use the trail more often if amenities are provided. Recommended trail amenities include:

- **Benches:** Wood with metal detailing. Benches near Riverview Park should mimic those already in place.

- **Covered bench areas:** Metal and wood should be encouraged. Structures that emulate the organic forms of the creek corridor and the history of the area should be mimicked.
- **Bike racks:** Approved by the Oregon Bicycle and Pedestrian Plan.
- **Mile post markers:** Mileposts greatly increase use of the trail by joggers and cyclists looking for set workout distances. Recommend incorporation of milepost markers onto fixed wood bollards. Signage should be consistent with other trail signage.
- **Restrooms:** Utilize existing restrooms at Riverview Park and Gentle Woods Park. Signage should be provided to indicate these facilities.
- **Garbage cans:** The trail should establish the National Park Service ethic of "pack it in, pack it out." However, garbage cans are provided at Riverview Park and Gentle Woods Park and should be provided at the proposed trailheads at Talmadge Middle School and 10th Street.
- **Dog waste pickup stations:** Dog waste pickup bag dispensers should be placed at trailheads and key neighborhood access points along the route. Signs should be placed along the trail notifying dog owners of the county ordinance requiring dog owners to pick up after their dogs. Local grocery stores may donate rolls of produce bags for these stations.



Information kiosks educate trail users on a variety of topics.

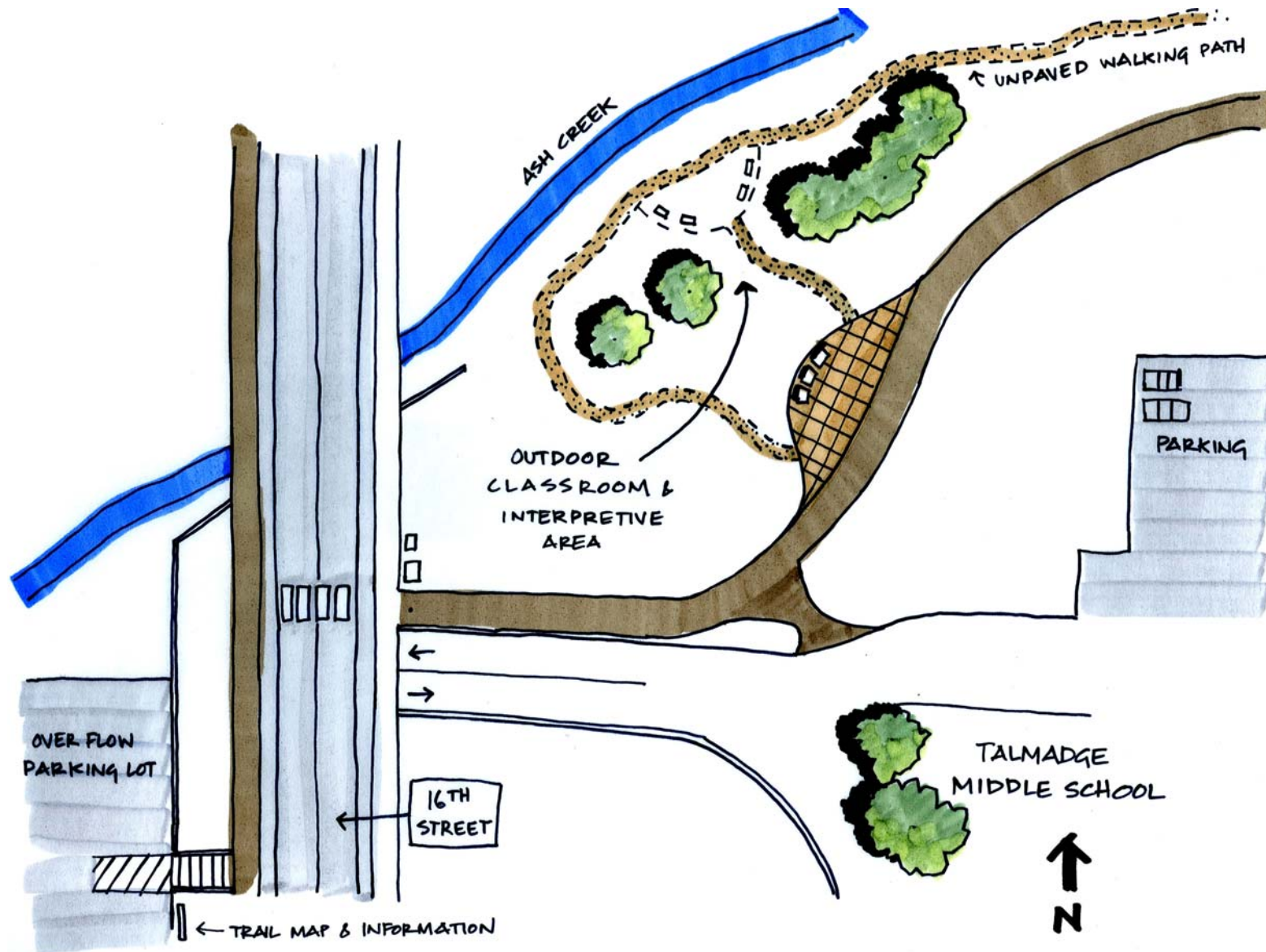


Figure 12. Talmadge Middle School Trailhead and Outdoor Classroom Site

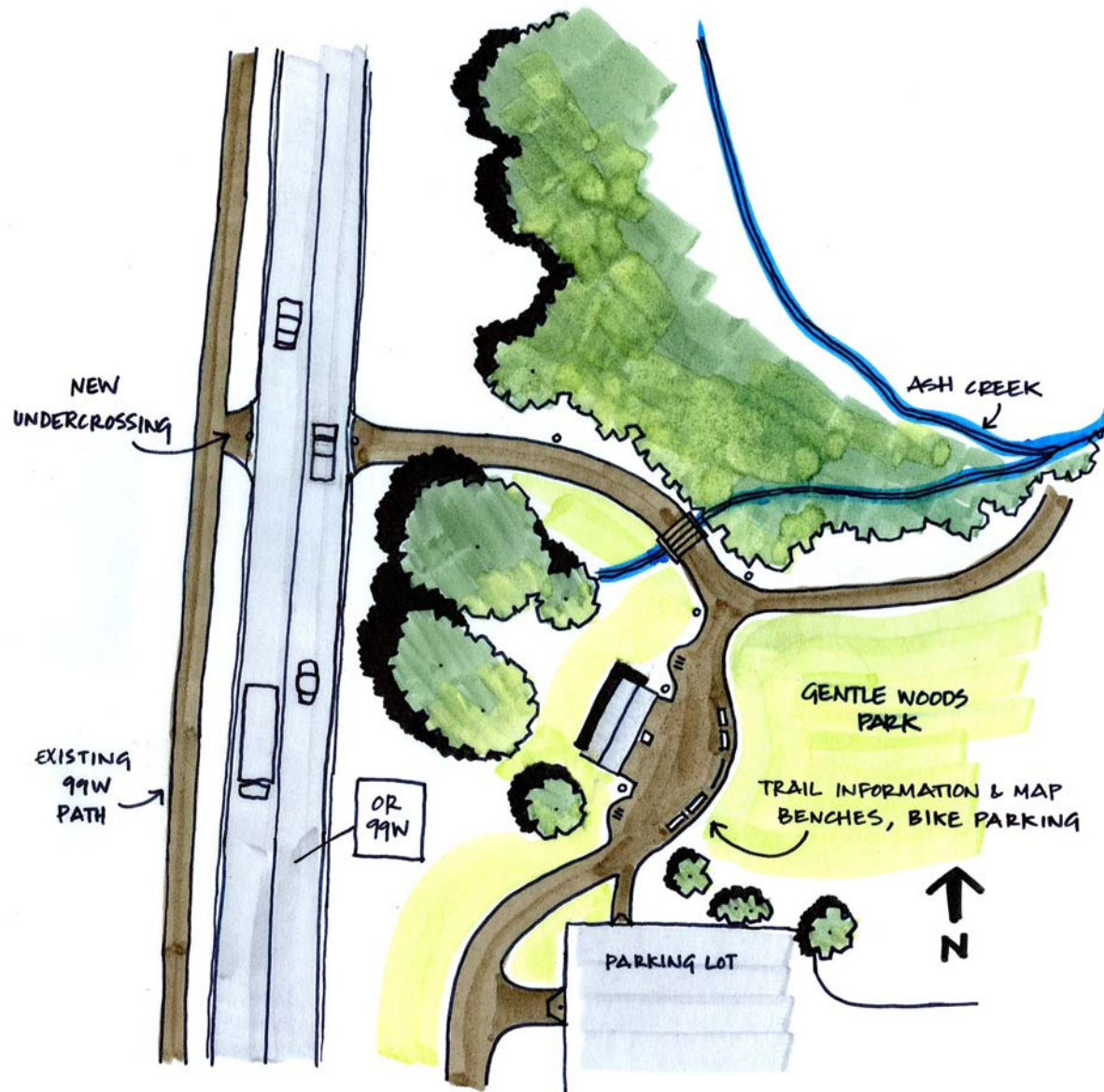


Figure 13. Proposed Trailhead at Gentle Woods

- **Information kiosks:** Trailhead stations should provide trail users with information about the ecology of Ash Creek and its watershed. Educating the public about the creek corridor will help reduce dumping, littering, and other abuses to the waterway. Involving school children, university students, and civic organizations in the research, design, and construction of these kiosks would be an excellent community activity and would also reduce implementation costs.

Materials used for amenities should receive approval from the future trail managing authority, the City of Independence, and the City of Monmouth. For recycling and maintenance purposes, the cities should use wood composite materials for amenities where wood is specified; wood composites have the aesthetic qualities of wood, but are better for park amenities. Local materials could also be used for some trail amenities.

Signage

As a general rule, caution should be exercised to not “over sign” the trail. Incorporation of signage into planned trailside vertical elements such as bollards should be encouraged. This will avoid “visual pollution” of too many signs along the trail and an excessive number of sign poles.

Trailhead Access Signage

Since trailheads will serve as access points to people who may not be as familiar with the trail, information signage should be provided that includes a “You Are Here” map and trail etiquette signs. These should be placed on an information kiosk, designed to be reflective of the corridor or adjacent surroundings. Kiosks must be ADA compliant.



Figure 14. Trail Etiquette Sign



Figure 15. Trail Directional Sign

Trail Etiquette Signage

The trail etiquette sign will clearly spell out proper rules and customs for trail users. This will be based on national standards and accepted trail practices. A sample sign is shown in Figure 14 on page 65.

Directional Signage

Directional signage provides orientation to the trail user and emphasizes the continuity of the trail. Street names, mileage markers, and place names are key elements that should be called out along the trail. Street names should be indicated at all trail intersections with roadways. Mileage markers should be placed at quarter-mile increments. Directional signage should be used to identify key destinations along the trail route and include the following:

- Schools
- Parks
- City of Monmouth downtown
- City of Independence downtown
- Commercial area off 16th and OR 51
- OR 99W path and points north
- Western Oregon University

Interpretive Signage

Interpretive signage provides enrichment to the trail user experience, strengthens the uniqueness of the local community, and provides educational opportunities. Key interpretive opportunities include:

- Environmental education about stream ecology, water quality, fish, conservation, native plants, riparian corridors, the watershed at Talmadge Middle School, Riverview Park, Gentle Woods Park, potential park property off 10th, and potentially along the private properties to the north of Monmouth.
- Archeological and indigenous cultures information at Gentle Woods Park.
- Historic neighborhood development

- Water treatment facilities: education about the treatment process and water conservation strategies.
- Water quality: Talmadge Middle School and waste water treatment facilities.
- Land settlement patterns/place name history: Independence “gulch” and Riverview Park with historical information about Old Independence, Indian Grave Road, and the evolution of present-day Independence. Historic information about Monmouth and Western Oregon University.
- Topography / geologic formations: Between 16th and the Monmouth wastewater treatment facility looking toward the Coast Range.

Public Art

Public art along a trail provides an opportunity to add interest to the trail experience and, depending on the scale and form, can become an “event” in itself and serve as a public draw. Public art can be aesthetic or functional, doubling as sitting or congregation areas. Because the Independence and Monmouth communities are close-knit, local artists should be encouraged to produce artwork in a variety of materials for sites along the Ash Creek corridor that reflect the two communities.

Bollards

Posts or bollards at roadway-trail intersections and trail entrances will be necessary to keep vehicles from entering the Ash Creek Trail. Posts will be designed to be visible to bicyclists and others, especially at nighttime, with reflective materials and appropriate striping. Posts will be designed to be removable by emergency and maintenance vehicles.

- Fixed bollards: Should be used at roadway-trail intersections. Bollards should be heavy timber structures and spaced at five feet on center.
- Removable bollards: Install center removable bollards at intersections that can be keyed and locked to allow maintenance

and emergency service vehicle access to the trail. Recommend use of metal.

Landscaping

Vegetative Buffers

When possible, landscaping is the first choice for creating separation between the trail and adjacent properties. Vegetative buffers have the dual purpose of creating a natural privacy screen, providing habitat for some of the wildlife that live in the creek corridor, and stabilizing the creek bank. Landscaping can also be an effective barrier to unwanted access where needed.



Fixed and removable bollards can also incorporate signage and information

Restoration Opportunities

Several restoration opportunities exist along Ash Creek. Many stream sections have been disturbed from past vegetation clearing, dumping of trash, and excessive foot traffic on denuded banks. One method of restoring some of the areas along the stream is re-establishing native vegetation to provide bank stabilization, stream shading to improve water quality, and riparian habitat for wildlife. Appendix A lists the trees, shrubs, and herbaceous species suitable for planting in the Ash Creek corridor. A key to establishing native vegetation is controlling non-native species

such as Himalayan blackberry and reed canary grass. These aggressive species have invaded many impacted areas in the corridor and prevent the recruitment of native vegetation by monopolizing soil nutrients and space. While complete eradication of invasive species is not feasible, local control and removal would be necessary to allow the successful establishment of native plantings.

Potential restoration sites include:

- "Gulch" in Independence
- East of Gun Club Road
- Wildfang Park
- Riverview Park (stream enhancement)
- Monmouth wastewater treatment facilities

Fencing

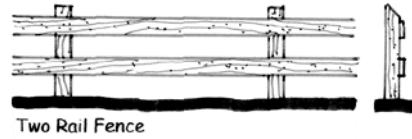
As a general policy, fencing will be the responsibility of the adjacent resident. Although the public often perceives fencing as a means of assuring safety by prevention of unwanted access, too much fencing can have the opposite effect by impairing informal trail surveillance. Inappropriate fencing can also degrade the experience of trail users, obscure views, and create a "tunnel" effect that makes users feel trapped.



Good neighbor fence

A fencing height of six feet is typically sufficient to provide security. Lower fencing of approximately four feet can also provide a barrier sufficient to denote private property or deter most access.

Should adjacent property owners choose to build fences, a variety of fencing applications can be considered. Solid fencing that does not allow any visual access to the trail should be discouraged. Fencing that allows a balance between adjacent residents' privacy and informal surveillance of the trail should be encouraged. If fencing is desired purely for privacy reasons, vegetative buffers are recommended.



Lighting

Local law enforcement has strongly encouraged the installation of lighting along the Ash Creek Trail as a means of deterring crime. In general, lighting should be placed at trail access points and in enclosed spaces (e.g., under bridges) in the tunnel undercrossing of OR 99W, and in the gulch just north of downtown Independence. This will help facilitate security surveillance of the trail from police vehicles. Light cut-offs should be used to minimize unwanted light onto private property and into the sky. Lighting should be phased in as funding becomes available.



Sample trail lighting

Project Implementation

Phasing

Cost Estimates

Permitting Requirements

Project Implementation

Phasing

The primary purpose for a trail phasing plan is to ensure a logical sequence of implementation that provides a high degree of success as each phase is built, thereby building momentum for each future phase of the project. Success is directly correlated with a substantial level of use, strong public and political support, and proven effective management of the trail as each phase is implemented.

It is assumed that the majority of funding for implementation will be acquired through the Federal Highway Administration's Transportation Equity Act for the 21st Century (TEA-21) program. Grant amounts are unknown, but other multi-use trail projects similar to the Ash Creek Trail in Oregon have typically been in the \$1 million to \$3 million range. Phasing recommendations target levels of funding within this range.

Success of the first built phase is critical to securing future funding. The first phase must be well received by the public and become a model for all other future phases.

Phase I: 1 – 8 years

- Riverview Park to 16th Street
- 5th Street Access Trail
- 10th Street Access Trail

Phase I represents 1.96 miles of trail, traversing the length of Independence. This phase would connect downtown Independence to parks, schools, and residential neighborhoods; establish a route through the "gulch;" and set the tone for future stream bank clean up, mitigation, and design sensitivity. It supports pedestrian and bicycle travel and provides access to the Willamette riverfront and greenway, one of the area's greatest assets. Phase I will connect to

Riverview park, downtown Independence, Independence Elementary School, Ash Creek Intermediate School, Talmadge Middle School, and Central High School, as well as to the commercial area off 16th and OR 51.

Phase II: 1 – 8 years

- 16th Street to Gentle Woods Park / Church Street
- Catron / Western Estates Access Trail
- Church Street Access Trail and Improved OR 99W Crossing
- Western Oregon University

Phase II represents 1.02 miles of trail and provides the most comprehensive connectivity for alternative transportation purposes in Monmouth. Phase II could occur simultaneously with Phase I, or at any time thereafter, depending on availability of funding. This phase directly links schools, parks, and residential neighborhoods in both communities. Upon completion of Phase I, Phase II will provide east-west access across both communities without having to use major roadways, and will connect to the most desirable destinations. These destinations include Gentle Woods Park, Monmouth Elementary School, Monmouth Recreational Park and Skate Park, Western Oregon University, and downtown Monmouth, in addition to the destinations mentioned above.

Portions of Phase II may not be feasible to implement in the phasing time frame, but feasible alternative alignments exist until conditions are favorable for a trail alignment that follows the preferred route.

Phase III: 20 years

- Gentle Woods Park to Maria Street
- OR 99W undercrossing

Phase III includes .96 miles of trail and an undercrossing. This phase logically extends Phase II to Western Oregon University along the Ash Creek corridor. While it is not presently a direct transportation alternative, the trail alignment will be an important connection when the area develops. Currently, much of the trail alignment in Phase III is outside the Monmouth city limits, but within the city's urban growth boundary. When the preferred alignment is feasible, it will also be appropriate to implement the OR 99W undercrossing to provide a safe, direct connection to the trail.

Cost Estimates

The construction costs for the Ash Creek Trail will depend on a number of factors, most specifically, the final alignment and design of the trail segments. Preliminary estimates for construction are based on unit costs and estimates needed for grading and paving a 10-foot-wide concrete trail and most of the recommended trail amenities (10th Street trailhead not included). The total estimated cost for the preferred alignment of the Ash Creek Trail is just over \$4.5 million in 2005 dollars.

The costs for Ash Creek (see Table 9 on page 73) do not include easement or property acquisition costs for greenway and trail development. They also do not include costs to retrofit local roads to meet ADA accessibility guidelines for alternative trail alignments.

Federal and State Funding Sources – Competitive Grants

- Recreational Trails Grants – Coordinated by Oregon State Parks. Funds can be used for construction. Annual funding cycle.
- Land and Water Conservation Fund (LWCF) – Federal funds coordinated by Oregon State Parks. Funds can be used for construction. Biannual funding cycle.
- Measure 66 Funds – Funds from Oregon State Lottery coordinated by Oregon State Parks. Funds can be used for construction. Biannual funding cycle.

- Enhancement Projects – Funded by federal transportation dollars and administered by Oregon Department of Transportation (ODOT). No funding cycle, when funds are available.
- Oregon Bicycle / Pedestrian Grants – Administered by ODOT's Bike Program. Project must be in a public right-of-way. Funding available every two years.
- Community Development Block Grants – Federal funds administered by the counties for areas with low and moderate income households. Bicycle and pedestrian projects are eligible.
- Oregon Watershed Enhancement Board – Grants are available annually for projects in the following categories: Land Acquisition, Restoration, Water Acquisition, Monitoring, Assessment, Education and Outreach, Technical Assistance, and Small Grants. Information about specific opportunities can be found on OWEB's website: oregon.gov/OWEB/index

Local Funding Sources

- System Development Charges – Funded by fees from new development and administered by either Monmouth or Independence.
- Urban Renewal Funds / Tax Increment Financing – 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.
- Local/Regional Bond Measures approved by voters - Funds can be used for right-of-way acquisition, engineering, design, and trail construction.

Table 9. Ash Creek Trail Cost Estimates by Phase

	Costs							TOTAL COST
	Trail Construction	Boardwalk	Amenities	Roadway Crossings	Bridges	Design and CM (15%)	Contingency (20%)	
Phase 1								
Riverview Park to 16th Street	\$730,663	\$234,850	\$125,668	\$40,000	\$120,000	\$187,677	\$37,535	\$1,476,394
5th Street Access Trail	\$28,500		\$11,326		\$60,000	\$14,974	\$2,995	\$117,795
10th Street Access Trail	\$48,562		\$24,894		\$60,000	\$20,018	\$4,004	\$157,478
TOTAL PHASE 1								\$1,751,666
Phase 2								
Preferred Alignment								
16 th Street to Gentle Woods Park	\$563,366	\$527,100	\$101,900	\$70,000	\$60,000	\$198,355	\$39,671	\$1,560,392
<i>Includes:</i>	\$109,060							
<i>Catron Access Trail</i>								
<i>Church Street Access Trail</i>								
<i>Church Street Improved Crossing</i>								
<i>Western Oregon University</i>								
TOTAL PHASE 2								\$1,560,392
							*concrete trail only, no boardwalk	\$1,142,352
Short-Term Alignment								
16 th Street to Gentle Woods Park	\$563,366		\$101,900	\$70,000	\$60,000	\$119,290	\$23,858	\$938,414
On-Street Connection (Olive)			\$495			\$74	\$22	\$592
TOTAL PHASE 2: SHORT-TERM ALIGNMENT								\$939,006
Phase 3								
Gentle Woods Park to Maria Street	\$366,437		\$37,500	\$3,000		\$61,041	\$12,208	\$480,186
OR 99W Undercrossing				\$200,000		\$30,000	\$6,000	\$236,000
TOTAL PHASE 3								\$716,186

TOTAL COST OF PREFERRED ALIGNMENT \$4,028,245
TOTAL COST OF SHORT-TERM ALIGNMENT \$3,406,858

Private Funding Sources – Volunteer Services

Local businesses can help defray some of the costs associated with trail and greenway development. Some examples include:

- Cash donations
- Donations of services, equipment, and labor
- Discounted materials
- Contribution of employee volunteer time

Foundations

Some trail elements, particularly if they are educationally, civically, or environmentally-related, can be funded through private foundations. Funding opportunities are better from local foundations and should be approached before national foundations. Some local foundations include the Ford Family Foundation and the Meyer Memorial Trust. It is important to keep in mind that many foundations only solicit grant proposals from registered 401c3 nonprofit organizations.

Land Trusts

Land Trusts are local, regional, or statewide nonprofit conservation organizations directly involved in helping protect natural, scenic, recreational, agricultural, historic, or cultural property. Land trusts work to preserve open land that is important to the communities and regions where they operate.

Service Clubs

Community organizations have been very successful holding fundraisers and providing volunteer labor for trail building and maintenance activities. Local examples include 4-H, Boy Scouts of America, Rotary Club, Western Oregon University service clubs, and others.

Individual Sponsors

Individuals, businesses, or corporations can contribute donations to sponsor sections of trail or project elements. Plaques or other forms

of recognition are typically placed on constructed pieces in the trail corridor or at a prominent entry point. Sponsorship is a good way to fund trail elements such as benches, trash receptacles, and interpretive areas.

Sections of trail can also be sponsored through a “Buy a Foot” program. Community members can purchase a section of trail at a fixed cost per linear foot and have their names (or dedication) inscribed in the concrete or along the boardwalk.

Permitting Requirements

Agency Standards, Guidelines and Reviews

The design and alignment for the Ash Creek Trail generally follows national and state standards and guidelines for multi-use trails.

Access Permits

The Ash Creek Trail will cross or access ODOT right-of-way at five points. Permits and coordination are necessary for access at the following locations per ORS 347.305-310:

- Crossing OR 51 – Type III undercrossing
- Crossing OR 99W - Type III undercrossing
- Improvements to OR 99W and Church intersection (widening is required)
- Access trail in ODOT right-of-way paralleling OR 99W
- Access to the existing OR 99W path from Western Estates

An ODOT Rail Order is also necessary to cross under the Portland and Western Railroad trestle. Special design treatments are required to protect trail users from objects that may fall off trains.

Table 10. Permitting Agencies

Type	Agency (& contacts)	Contact / Document	Relevant Standards & Guidelines
State	Oregon Department of Transportation, Oregon Bicycle and Pedestrian Plan	Michael Ronkin, 503-986-3555 <i>Oregon Bicycle and Pedestrian Plan</i>	Standard Widths and Clearances: 8 ft. minimum width, 2 ft. minimum lateral clear distance, 8 ft. minimum overhead clearance, 5 ft. separation from edge of roadway or fence separation. Many of the standards and guidelines are based on AASHTO recommendations.
Federal	American Association of State Highway and Transportation Officials	<i>Guide for the Development of Bicycle Facilities</i>	Guidelines: This book provides guidelines for trails including widths, grades, intersection treatments, pavement surfaces, lighting, and signing.
Federal	Americans with Disabilities Act- US Dept. of Justice	<i>ADA Standards for Accessible Design</i>	These standards apply to public facility designs and require that urban trails meet accessibility requirements regarding slope, clearance, and height of facilities (i.e. drinking fountains).
Federal	Federal Highway Administration	<i>Manual on Uniform Traffic Control Devices</i>	The MUTCD provides both standards and guidelines regarding trail and roadway traffic control devices. The standards primarily include signing recommendations.

Environmental Regulation and Permitting

Floodplains

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program and reviews and approves changes to Flood Rate maps. The State of Oregon administers floodplain regulations through its review of local government regulations in compliance with the Statewide Planning Goals. Specifically, floodplain regulation is accomplished through State Goal 7, Areas Subject to Natural Disaster and Hazards. All local jurisdictions must adopt regulations that comply with Goal 7 and its Policies and have their regulations acknowledged by the State Land Conservation and Development Commission.

The **City of Monmouth** has an adopted floodplain overlay zone (Subchapter 51) to minimize private and public losses from flood conditions. Areas of special flood hazard are depicted in the City's 100-year floodplain map and are based on a 1988 "Flood Insurance Study" for Polk County Oregon and Incorporated areas. According to the City's floodplain overlay zone, trail construction in the 100-year floodplain of Ash Creek would require a development permit from the City of Monmouth. Development in the floodway, the channel of the river, or the stream required to discharge flood waters, would require greater scrutiny. Trail or bridge development in the Ash Creek floodway would require certification from a registered professional engineer that the development would not increase flood levels (Chapter 51.048).

The **City of Independence** also regulates development within the 100-year floodplain of Ash Creek under the Flood Damage Prevention Ordinance. Development is defined as "any human-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations located within the area of special flood hazard." Based on information from Frieda Anzur, City Planner (personal communication, August 2004), a paved multi-use trail would likely be considered a permitted use, or

specifically, a “structure necessary for the City or a public utility to provide service to a neighborhood.” (Chapter 51.015) Development of a bridge or trail in the floodway would require certification from a professional engineer or architect to indicate that the fill or new construction would not result in an increase in flood levels.

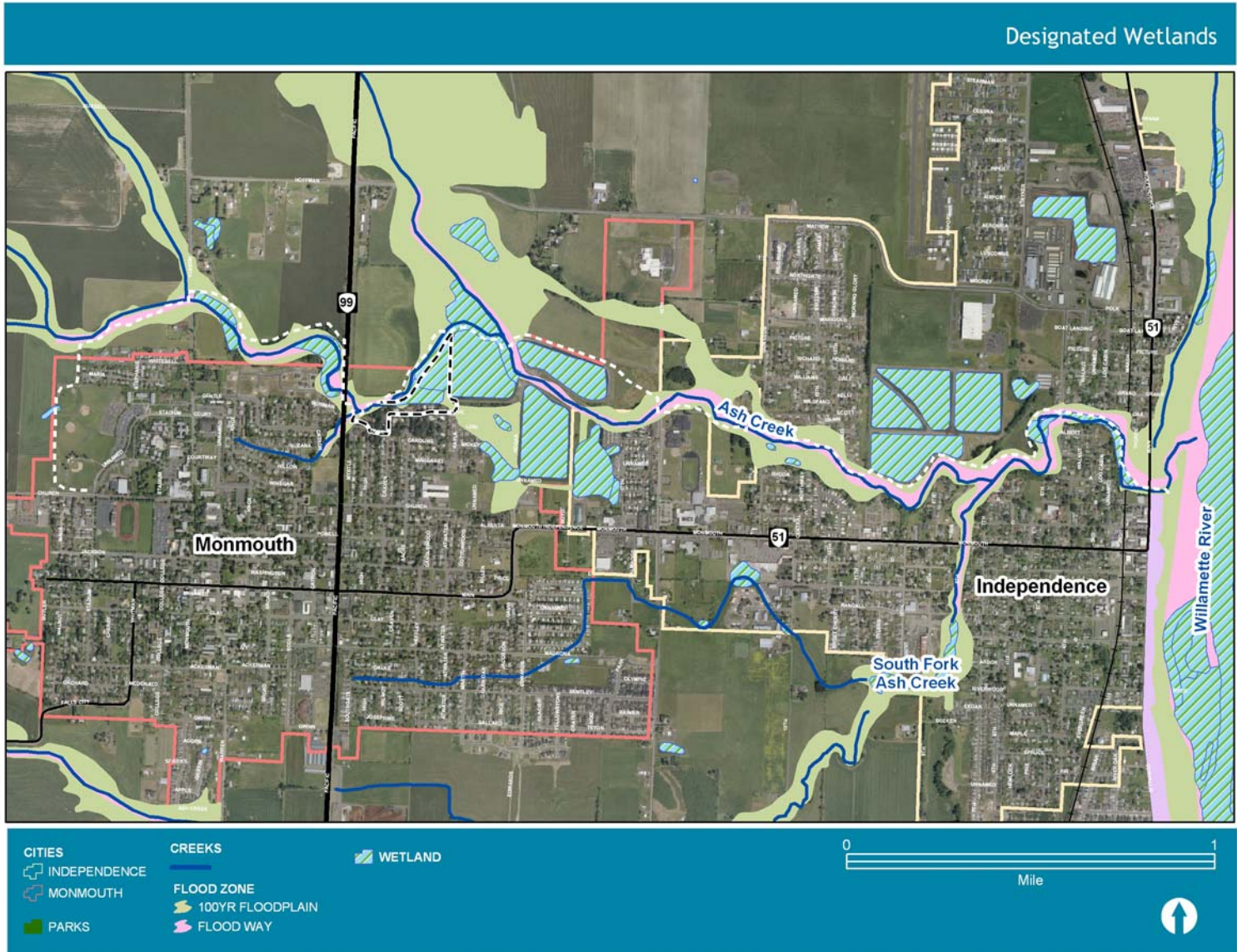
For areas in the floodplain outside of City of Monmouth or City of Independence limits, **Polk County** regulates development under the floodplain overlay zone ordinance (Chapter 178). Non-structural development (such as filling, grading, or paving) within any floodplain would require administrative review and would be subject to the conditions under Ch. 178.060(B)4. Specifically, trail development in the Ash Creek floodplain is permitted, provided that the cumulative effect of the proposed development with existing and future development does not elevate the base flood more than one foot at any point. Trail development (filling and paving) or bridge construction in the floodway is permitted with certification from a professional engineer to indicate that no net increase in the base elevation will result from the development.

Wetlands

According to Polk County data (based on National Wetlands Inventory mapping), several wetlands are mapped along the Ash Creek corridor (Map 13 on page 77). Wetlands are protected under Section 404 of the Federal Clean Water Act. Proposed activities within jurisdictional wetlands adjacent to Ash Creek would likely require permitting from the **U.S. Army Corps of Engineers (Corps)** and the **Oregon Department of State Lands (DSL)**. If wetlands are affected by proposed trail development, a joint permit application would be required for submittal to the Corps and the DSL for determination of jurisdiction. The Corps regulates fill or disposal of dredged material in wetlands in terms of linear feet or acreage. Depending on the area of impact (if less than 0.25 or 0.5 acres), the project may qualify for a Nationwide Permit, a programmatic permit pre-issued by the Corps. A Nationwide Permit is a categorical permit designed to streamline permitting and is often processed in about thirty days.

The area of wetland impact would be determined by delineating wetland boundaries in the field according to methodology approved by the Corps, surveying the boundary, and calculating the area impacted by the proposed trail alignment. If proposed wetland fill does not qualify for a Nationwide Permit, then an Individual Permit would be required. An Individual Permit is typically processed in 120 days or longer and requires a full public review of the proposed action, coordination with federal and state agencies, and an alternatives analysis by the Corps. Individual Permits are typically issued for projects with large impacts to wetlands (often greater than 0.5 acres) and are thus scrutinized in greater detail than projects that qualify for a Nationwide Permit.

Under Oregon’s Removal-Fill Law (ORS 196.795-990), removal or fill of more than 50 cubic yards in wetlands or other Waters of the State requires a permit from 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 non-navigable, including that portion of the Pacific Ocean that is in the boundaries of this state.” Ash Creek appears to fit under this definition. Proposed fill or removal associated with trail construction in wetlands would most likely qualify for a General Authorization (GA) permit from DSL. A GA is a streamlined permit that is processed within 40 days of a technically complete application and does not require a permit fee. The GA would be for certain transportation related structures (OAR 141-089-0170) and would allow the fill or removal of up to 0.5 acres of wetland for the construction of new bicycle, pedestrian, or other lanes or trails. If 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.



Map 13. Polk County Inventoried Wetlands

Neither the City of Independence nor the City of Monmouth regulates activities in wetlands. Instead, both cities coordinate with the DSL for wetland permitting. Wetlands mapped on the National Wetland Inventory outside of City limits are regulated by Polk County under the Significant Resource Overlay Zone (SRO)(Chapter 182). Development (grading, filling, and paving) in an SRO would require a management plan approved by DSL and the Oregon Department of Fish and Wildlife.

Streams

Trail and/or bridge development involving the fill or removal of material below the Ordinary High Water Mark (OHWM) of Ash Creek or other waterways would require a permit from DSL. Because Ash Creek contains steelhead (*Oncorhynchus mykiss*) (Streamnet, 2004), DSL would regulate any amount of fill or removal from below the OHWM. For waterways that lack essential salmon habitat, DSL regulates the removal or fill of 50 cubic yards or more of material.

Proposed stream crossings would likely be covered under the same GA permit described above for wetland impacts. The GA for certain transportation related structures allows the fill or removal of up to 5,000 cubic yards in waters of the state for the construction of new bicycle, pedestrian, or other lanes or trails (OAR 141-089-0170). DSL may require mitigation for removal or fill below the OHWM of Ash Creek depending on the amount of impact. Mitigation is determined on a case-by-case basis and may include planting native vegetation along the creek or removing a fish barrier. 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.

Trail development adjacent to Ash Creek outside of City limits would require review by Polk County under the Significant Resource Areas Overlay Zone (Chapter 182). Refer to the discussion in Trail Setback

and Greenway Recommendations on page 51 for details on development standards.

Threatened and Endangered Species

Ash Creek is mapped as containing federally-listed “threatened” Steelhead and is within the range of Essential Fish Habitat (EFH).

Threatened and endangered species are protected under the federal Endangered Species Act (ESA) of 1970 (16 USC 1531). The ESA prohibits the “take” of listed species without a special permit. “Take” is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt any of these actions. Consultation with the **U.S. Fish and Wildlife Service (USFWS)** or the **National Marine Fisheries Service (NOAA Fisheries)** is required under Section 7 of the ESA for proposed actions with a federal nexus (funding or permitting) that may affect threatened or endangered species or their habitats.

Fish habitat is protected under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) (16 USC 1801). The purpose of this federal law is to promote protection, conservation, and enhancement of EFH, which includes those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity. The MSA requires all federal agencies to consult with NOAA Fisheries on all actions or proposed actions that are permitted, funded, or undertaken by the federal agency that may adversely affect designated EFH.

If implementation of the Ash Creek Trail involves federal funding or a federal permit, the lead federal agency would be required to ensure that its actions do not jeopardize listed species or destroy or adversely modify critical habitat.

At the state level, proposed activities affecting listed species are reviewed as part of fill/removal permits issued by DSL. Proposed trail development that may affect listed species in Ash Creek would be

reviewed by Polk County as part of a Significant Resource Overlay Zone management plan.

Stormwater

The City of Independence requires a stormwater management plan for development, resulting in the exposure of more than 60,000 square feet of soil at a time or for 10,000 square feet of impervious surface (Subchapter 55).

The City of Monmouth code does not specify stormwater requirements for paved recreational trails, but the Public Works Department may require stormwater treatment and management. Discussions with the Public Works department are necessary to determine stormwater requirements, if any.

Polk County does not have stormwater treatment or management requirements that would apply to paved multi-use trail along Ash Creek (Austin McGuigan, Polk County, personal communication, 2004).

Maintenance and Safety Recommendations

Trail Safety

Design Elements that Improve Trail Safety

Trail Watch Program

Corridor Maintenance

Maintenance and Safety Recommendations

Trail Safety

Trail safety is a major concern of both trail users and those whose property is adjacent to the trail. Creating a safe trail environment goes beyond design and law enforcement, and should involve the entire community. The most effective and most visible deterrent to illegal activity on the Ash Creek Trail will be the presence of legitimate trail users. Getting as many “eyes on the corridor” as possible is a key deterrent to undesirable activity in the Ash Creek corridor. There are several components to accomplishing this, as outlined below:

Provide Good Access to the Trail

Access ranges from providing conveniently located trailheads along the trail, to encouraging the construction of sidewalks to accommodate access from private developments adjacent to the trail. Access points should be inviting and signed so as to welcome the public onto the trail.

Good Visibility from Adjacent Neighbors

Neighbors adjacent to the trail can potentially provide 24-hour surveillance of the trail and can become an ally to the cities’ police departments. Though some screening and setback of the trail may be needed for privacy of adjacent neighbors, complete blocking of the trail from neighborhood view should be discouraged. This eliminates the potential of neighbors’ “eyes on the trail,” and could result in a “tunnel effect” for trail users.

High Level of Maintenance

A well maintained trail sends a message that the community cares about the public space. This message alone will discourage undesirable activity along the trail.

Programmed Events

Community events along the Ash Creek Trail will help increase public awareness and thereby attract more people to use the trail. Various civic organizations can help organize public events along the trail which will increase support for the trail. Events might include a day-long trail clean-up or a series of short interpretive walks led by long-time residents or a naturalist.

Community Projects

The support generated by the Ash Creek Trail could be further capitalized by involving neighbors and friends of the trail in a community project. Ideas for community projects include volunteer planting events, art projects, interpretive research projects, or even bridge building events. These community projects are the strongest means of creating a sense of ownership along the trail, and are perhaps the strongest single deterrent to undesirable activity along the trail.

Adopt-a-Trail Program

Nearby businesses, community institutions, and residential neighbors often see the benefit of their involvement in the trail development and maintenance. Businesses and developers may view the trail as an integral piece of their site planning and be willing to take on some level of responsibility for the trail. The Rotary Club may provide an excellent opportunity to make contact with local business leaders. Creation of an adopt-a-trail program should be explored to capitalize on this opportunity and foster civic pride.

Design Elements that Improve Trail Safety

Below are common trail safety concerns and ways in which thoughtful design treatments can prevent safety problems along the Ash Creek Trail:

Privacy of Adjacent Property Owners

- Encourage the use of neighborhood friendly fencing and also planting of landscape buffers.
- Clearly mark trail access points.
- Post trail rules that encourage respect for private property.
- Place lighting strategically, utilizing light shields to minimize unwanted light in adjacent homes.



Litter and Dumping

- Post trail rules encouraging “pack it in, pack it out” etiquette.
- Place garbage receptacles at trailheads.
- Provide good visual access to the trail.
- Manage vegetation within the right-of-way to allow good visual surveillance of the trail from adjacent properties and from roadway/trail intersections.
- Encourage local residents to report incidents as soon as they occur.
- Remove dumpsites as soon as possible.
- Encourage use of yard debris recycling service.

Trespassing

- Clearly distinguish public trail right-of-way from private property through the use of vegetative buffers and good fencing.
- Post trail rules that encourage respect for private property.

Crime

- Manage vegetation so that corridor can be visually surveyed from adjacent streets and residences.
- Select shrubs that grow below three feet in height and trees that branch out greater than six feet in height.
- Place lights strategically and as necessary.
- Place benches and other trail amenities at locations with good visual surveillance and high activity.
- Provide mileage markers at quarter-mile increments and clear directional signage for orientation.
- Create a “Trail Watch Program” involving local residents.
- Proactive law enforcement. Design the trail so that police vehicles can access the entire corridor.



Intersection Safety

- Require all trail users to stop at public roadway intersections through posting of stop signs.
- Provide crosswalk striping and trail crossing warning signs for vehicle drivers. Put Ash Creek Trail logo on warning signs.
- Manage vegetation at intersections to allow visual access at crossings.

Vandalism

- Select benches, bollards, signage, and other site amenities that are durable, low maintenance, and vandal resistant.
- Respond through removal or replacement in rapid manner.
- Keep a photo record of all vandalism and turn over to local law enforcement.
- Encourage local residents to report vandalism.
- Create a trail watch program; maintain good surveillance of the corridor.
- Involve neighbors in trail projects to build a sense of ownership.
- Place amenities (benches, etc.) in well used and highly visible areas.

Trail Watch Program

A trail watch program would provide an opportunity for local residents to become actively involved in crime prevention along the trail. Similar to Neighborhood Watch programs, residents are brought together to get to know their neighbors, and are educated on how to recognize and report suspicious activity.

Safety Inspections

Regular inspection of the trail and associated amenities is a key factor to trail safety. Periodic visual inspections should be conducted by Monmouth and Independence public works crews. These inspections can help identify and correct problems before they become an issue. A fallen tree or limb, for example, can be readily removed from the trail or coned off to divert trail users away from the hazard until such time as maintenance crews can remove the hazard. A written record of inspections is recommended. This will help create a database of information that can assist the cities in several ways. Written records can reveal safety trends and use patterns that can assist the cities with prioritizing maintenance dollars. Written records also can help protect the cities from potential liability, providing documentation of diligent maintenance

practices targeted towards protection of the public. A typical inspection record should include:

- Inspection reports noting any hazards that have been found along the trail, along with remedial action. This should note basic items such as debris found on the trail, wash outs, or other trail obstructions.
- Monthly inspections of the entire trail should be conducted. These inspections should document the condition of the trail, and notes should be made of any potential hazards on the trail (cracks, erosion, overhead vegetation, etc.). Corrective actions should be integrated into the next 30-day work plan.
- Quarterly visual and operational inspections should be made of all of the trail amenities such as benches, signage, drinking fountains, bike racks, etc. Recommended corrective actions should be made and be integrated into a three-month maintenance work plan.

The cities should set up a resident response system so that problems with the trail can be systematically recorded if maintenance crews are unable to visit the trail daily.

Trail Closure

The Ash Creek Trail should be closed if any heavy equipment is expected to use the trail during flooding events, or when any maintenance or construction activities are occurring that could be injurious to the general public. Independence and Monmouth should take appropriate measures to notify the public of closure of the segment of trail and arrange detours where appropriate.

Corridor Maintenance

A high level of trail maintenance is critical to the overall success and safety of the Ash Creek Trail. It includes such activities as pavement stabilization, landscape maintenance, facility upkeep, sign replacement, fencing, mowing, litter removal, painting, and pest

control. However, the effects of a good maintenance program are not limited to the physical and biological features of the trail:

- A high standard of maintenance is an effective way of helping advertise and promote the trail as a regional and state recreational resource;
- The psychological effects of good maintenance can be an effective deterrent to vandalism, litter, and encroachments;
- Good maintenance is necessary to preserve positive public relations between the adjacent land owners and government;
- Good maintenance can help make enforcement of regulations on the trail more efficient. Local clubs and interest groups will take pride in “their” trail and will be more apt to assist in protection of the Corridor.
- A proactive maintenance policy will help improve safety along the trail.

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

Vegetation

In general, visibility between plantings at trailside should be maintained so as to avoid creating the feeling of an enclosed space. This will also give trail users good, clear views of their surroundings, which enhances the aesthetic experience of trail users. Understory vegetation along the trail corridor shall not be allowed to grow higher than 36 inches. Tree species selection and placement should be made to minimize vegetative litter on the trail and root uplifting of pavement. Tree branching should be pruned up to a minimum of six feet. Appendix A lists recommended plants, shrubs, and trees to use in the Ash Creek corridor.

Surfacing

Concrete is the recommended surface material for the Ash Creek Trail. Concrete was chosen for its low-maintenance characteristics and its ability to weather annual flood events. When properly cared for, concrete will last indefinitely.

The trail surface should be kept free of debris, especially broken glass and other sharp objects, loose gravel, leaves, and stray branches. Trail surfaces should be swept periodically.

Bridges

Bridge structures will need to be kept clear of debris to prevent washouts along the trail and maintain positive flow. Checks for erosion along the trail should be made periodically during the wet season, and immediately after any storm that brings flooding to the local area.

Pest and Vegetation Management

Some basic measures should be taken to protect the trail investment. This includes a bi-annual mowing along both sides of the trail to prevent invasion of plants into the pavement area. Recommended time of year for mowing is in fall and in spring.

All run-off heads to the Willamette River. Use of chemical sprays for vegetation control should be avoided. Wherever possible, vegetation control should be accomplished by mechanical means or hand labor. Use of chemical sprays should be limited to use only on those plants that are harmful to the public such as poison oak. Effort should be made to eradicate invasive species found along Ash Creek. Volunteer removal via hand labor is recommended.

Vertical clearance along the trail should be periodically checked and any overhanging branches over the trail should be pruned to a minimum vertical clearance of 10 feet.

Litter and Illegal Dumping

Staff or volunteer effort should remove litter along the trail. Litter receptacles should be placed at access points such as trailheads. Litter should be picked up once a week and after any special events held on the trail.

Alternatively, the trail corridor could be signed “pack it in, pack it out.” This technique has been met with mixed results, but if maintenance funds are not available to meet trash removal needs, it is best to remove trash receptacles.

Illegal dumping should be controlled by vehicle barriers, regulatory signage, and fines as much as possible. When it does occur, it must be removed as soon as possible in order to prevent further dumping. Neighborhood volunteers, friends groups, alternative community service crews, and inmate labor should be used in addition to maintenance staff.

Signage

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

Flooding

Many portions of the trail are subject to flooding due to its location in the 100-year floodplain. Debris accumulated on the trail surface should be removed after each recession of water. In addition, debris should be periodically removed from the waterway under bridge structures.

Table 11 summarizes maintenance recommendations for the Ash Creek Trail.

Typical maintenance vehicles for the trail will be light pick-up trucks and occasionally heavy dump trucks and tractors. A mechanical sweeper is recommended to keep the trail clear of loose gravel and

other debris. Care should be taken when operating heavier equipment on the trail to warn trail users and to avoid breaking the edge of the trail surface.

Table 11. Maintenance Recommendations

Item	Frequency
Sign replacement / repair	1-3 years
Pavement marking replacement	1-3 years
Planted tree, shrub trimming / fertilization	5 months - 1 year
Clean drainage system	Annually
Pavement sweeping	Monthly
Shoulder mowing	Bi-annual - Fall / Spring
Trash disposal	As needed, twice a week
Graffiti removal	As reported
Maintain benches, site amenities	1 year
Pruning to maintain vertical clearance	1-4 years
Remove fallen trees	As needed
Weed control	Monthly
Maintain emergency telephones	1 year
Irrigate / water introduced plants	Weekly, as needed

Maintenance Costs

The total estimated annual maintenance for the Ash Creek Trail is about \$24,000, based on the estimated length of four miles. This maintenance cost is based on an industry standard of \$6,000 per mile of concrete bike path annually, based on similar trails in the state.

Maintenance costs cover labor, supplies, and amortized equipment costs for weekly trash removal, monthly sweeping, and bi-annual resurfacing. Repair patrols includes cleaning and patching (if necessary) the concrete trail, repairs to crossings, cleaning drainage systems, trash removal, landscaping, underbrush and weed abatement (performed once in the late spring and again in mid-

summer). These costs can be greatly reduced if volunteer crews are used or a local organization assumes some of the responsibilities.

Recommended Code and TSP Language Changes

City of Independence TSP Changes

City of Monmouth TSP Changes

City of Independence and Monmouth
Development Code Changes

Recommended Code and TSP Language Changes

City of Independence TSP Changes

The following changes to the City of Independence Transportation System Plan are recommended:

- Amend the TSP, pp.86-87, with new section, after Pedestrian System Element and before Air, Freight:

Ask Creek Trail Master Plan

The TSP adopts the recommendations in the Ash Creek Trail Master Plan (2005) for development of a shared use path, transportation and recreation corridor, which benefits pedestrians, bicyclists, and motorists alike. City staff should follow the design guidelines in the Ash Creek Trail Master Plan, and pay particular attention to design of roadway-trail intersections at Gun Club Road and 16th Street when undertaking relevant transportation projects. New developments planned along the creek corridor should incorporate and/or connect to the trail.

- p. 91, add to Table 24, under 0-5 Years:
System Element: Shared Use Path/Greenway
Project Description: Phase 1 Ash Creek Trail
Cost: \$2,686,360
- p. 94, under State (Revenue Sources), add:
Oregon State Parks Recreation Trails Program
The Recreational Trails Program (RTP) was authorized through the Transportation Equity Act for the 21st Century (TEA-21). The RTP is a Federal-aid assistance program to help States provide and maintain recreational trails for both motorized and non-motorized trail use. The program provides funds for all kinds of recreational trail use, such as pedestrian use, which includes hiking, running, and wheelchair use. Other trail uses are bicycling, in-line skating, equestrian use, cross-country skiing,

snowmobiling, off-road motorcycling, all-terrain vehicle riding, four-wheel driving, or other off-road motorized vehicle use. Oregon Parks and Recreation Department (OPRD) administers the RTP in Oregon. RTP funds represent a portion of the federal gasoline tax attributed to recreation on non-gasoline tax supported roads.

- p. 97: References, add to references list:
Alta Planning + Design, Ash Creek Trail Master Plan, 2005.

City of Monmouth TSP Changes

The following changes to the City of Monmouth Transportation System Plan are recommended:

- p. 33, Amend Figure 8: Bicycle Master Plan map, to reflect the preferred and alternative alignments in the Ash Creek Trail Master Plan.
- p. 32, Add new section, after Bicycle Ways section:
Ask Creek Trail Master Plan
The Monmouth TSP adopts the recommendations in the Ash Creek Trail Master Plan (2005) for development of a shared use path and transportation and recreation corridor, which benefits pedestrians, bicyclists, and motorists alike. City staff should follow the design guidelines in the Ash Creek Trail Master Plan, and pay particular attention to design of roadway-trail intersections at Church Street and 99W and at Riddell Road, when undertaking relevant transportation projects. New developments planned along the creek corridor should incorporate and/or connect to the trail.
- p.70, under State, Add new funding sources:
Oregon Pedestrian and Bicycle Program
The Oregon Pedestrian and Bicycle Program offers grants to support

cities in the implementation of bikeways and walkways in public right-of-way. The grant amounts change from year to year, and the funding is available every two years. For more information, consult <http://www.odot.state.or.us/techserv/bikewalk/>

Oregon State Parks Recreation Trails Program

The Recreational Trails Program (RTP) was authorized through the Transportation Equity Act for the 21st Century (TEA-21). The RTP is a Federal-aid assistance program to help States provide and maintain recreational trails for both motorized and non-motorized trail use. The program provides funds for all kinds of recreational trail use, such as pedestrian use, which includes hiking, running, and wheelchair use. Other trail uses are bicycling, in-line skating, equestrian use, cross-country skiing, snowmobiling, off-road motorcycling, all-terrain vehicle riding, four-wheel driving, or other off-road motorized vehicle use. Oregon Parks and Recreation Department (OPRD) administers the RTP in Oregon. RTP funds represent a portion of the federal gasoline tax attributed to recreation on non-gasoline tax supported roads.

- p. 143, Table F-4, under Bikeways Element,
Streets Element: Olive Wy
Section: Pacific end of Olive Wy
Estimated Cost: change from \$1,800 to **\$3,900**

- p. 143, Table F-4, under 2005 and later, add:
Streets Element: Ash Creek Trail Phase 2, Preferred Alignment
Section: 16th to OR 99W
Length: 5,386
Estimated Cost: \$1,560,392

- p. 143, Table F-4, under 2005 and later, add:
Streets Element: Ash Creek Trail Phase 3, Preferred Alignment
Section: OR 99W to Maria Street
Length: 5,069
Estimated Cost: \$716,186

City of Independence and Monmouth Development Code Changes

The following new subchapter is recommended to be added to the City of Independence and Monmouth Development Code.

Subchapter 101

Ash Creek Greenway and Trail Overlay District, Easement Requirements

101.005 Purpose

The purpose of the Ash Creek Greenway and Trail Overlay District is the following:

- A. To protect, conserve, enhance and maintain the natural, scenic, historical, economic and recreational qualities of lands along the Ash Creek.
- B. To implement the Ash Creek Trail Master Plan.
- C. To minimize the need for a public hearing for each development application.
- D. Increase transportation and recreation opportunities within the City of Independence Portland and connect these opportunities with the City of Monmouth.
- E. Improve the safety of residents by providing an alternative pedestrian and bicycle route to Highway 51.
- F. Provide emergency vehicle access.
- G. Provide connections to schools, parks, and other features within the City.
- H. Implement the City's Transportation System.
- I. Help create a pleasant, aesthetically pleasing urban environment.

101.010 Definitions

- A. Development means the act, process or result of developing.
- B. Develop means to construct or alter a structure, to conduct a mining operation, to make a physical change in the use or

appearance of land, to divide land into parcels, or to create or terminate rights of access.

- C. Intensification means any additions which increase or expand the area or amount of an existing use, or the level of activity. Remodeling of the exterior of a structure is an intensification when it will substantially alter the appearance of the structure. Intensification shall not include the completion of a structure for which a valid permit has been issued as of December 6, 1975. Maintenance and repair, usual and necessary, for the continuance of an existing use is not an intensification of use. Reasonable emergency procedures necessary for the safety or protection of property are not an intensification of use. Residential use of land within the GREENWAY includes the practices and activities customarily related to the use and enjoyment of ones home. Landscaping, construction of driveways, modification of existing structures, or construction or placement of such accessory structures or facilities adjacent to the residence as are usual and necessary to such use and enjoyment shall not be considered an intensification. Seasonal increases in gravel operations shall not be considered an intensification of use.
- D. Site Plan means a vertical depiction of a site within the GREENWAY boundary that is the subject of the administrative review process. It will indicate access, structures, setbacks, height, prominent landscape features and other such information as required by the Administrative Reviewer.
- E. Ash Creek Greenway and Trail Overlay District means all land within the City of Independence lying within 100 feet on each side of the centerline of Ash Creek, as depicted on the Ash Creek Greenway and Trail Overlay District Map of the City of Independence, hereby adopted as Exhibit **(fill in correct letter.)**

101.015 Application of Ash Creek Greenway and Trail Overlay District

- A. The provisions of this chapter shall apply to all lands within the Greenway boundary as designated on the Ash Creek Greenway and Trail Overlay District map.

101.020 Dedication of a Public Right-Of-Way or Easement

All applicants for a land use review or for building permits on lands designated within the Ash Creek Greenway and Trail Overlay District on the zoning map are required to grant an easement for the trail, per the recommendations laid out in the Trail Design Elements section of the Ash Creek Trail Master Plan (2005). The easement must be done as part of recording a land use review and finalized prior to obtaining a final certificate of occupancy. The land may be donated to the City instead of granting an easement.

101.025 Administrative Review Approval Required

All development, change of use or intensification within the Ash Creek Greenway and Trail Overlay District requires Administrative Review prior to issuance of a building permit. Administrative Review does not require a hearing and approval will be given if the proposal is consistent with the Primary Zone and adequately meets the guidelines of the appropriate overlay zone. Additional standards that must be met prior to Administrative Review Approval are as follows:

- A. The proposed use or structure is consistent with the purpose of the Ash Creek Greenway and Trail Overlay District.

A public hearing may be required as a result of Administrative Review, if:

- A. The Administrative Reviewer is not convinced that the application or site plan adequately represent an intent to carry out the purpose of the Greenway.
- B. The proposed use is not consistent with the Primary Zone or overlaying zone.

- C. After Administrative Review there are still unanswered questions in the opinion of the Reviewer.
- D. A guideline is not adequately met or if a determination as to whether it is or isn't being met can be made from the application and site plan.

101.030 Conditional Use Approval Required

A conditional use permit is required if during the Administrative Review process it is determined that the proposed use is not consistent with either the Primary Zone or the overlay zone guidelines. The conditional use permit procedure requires a public hearing as prescribed by Subchapter 71 of this ordinance. If the proposed use is a prohibited use in the Primary Zone or is not a conditional use, it may require approval of a different type of action. Standards for conditional use permit approvals are as follows:

- A. A decision on a Greenway conditional use application shall be based on findings of compatibility with all elements of the Ash Creek Trail Master Plan.
- B. The proposed use or structure is consistent with the purpose of the Ash Creek Greenway and Trail Overlay District.

101.035 Appeal Period and Notice Requirements

- A. Any land use action or ruling made by the City Manager or designee in accordance with the provisions of this subchapter may be appealed. Such an appeal shall be directed to the Planning Commission; it shall be filed in writing with the City Manager or designee no later than 12 days of the date of the decision. If no appeal is filed within 12 days of the decision, that decision shall be final.
- B. If an appeal is filed, the Planning Commission shall be given a report of the City Manager or designee's action or ruling. The Planning Commission shall hold a public hearing of the appeal.

Notice for such a public hearing shall be provided in accordance with the provisions for public hearings set forth in this ordinance. The public hearing of an appeal shall be conducted in accordance with the procedures for public hearings set forth in this ordinance. The decision of the Planning Commission regarding any appeal shall constitute a final local decision.

- C. Notification of the proposed land use action and administrative decision shall be sent to:
 1. Residents within 250 feet of affected property.

Appendix A

Recommended Plant List

Recommended Plant List

Woodland Upland Areas			
Trees:	Douglas fir (<i>Pseudotsuga menziesii</i>) Western hemlock (<i>Tsuga heterophylla</i>)	Grand fir (<i>Abies grandis</i>) Western red cedar (<i>Thuja plicata</i>)	Big leaf maple (<i>Acer macrophyllum</i>) Red alder (<i>Alnus rubra</i>)
Small Trees and Shrubs:	Vine maple (<i>Acer circinatum</i>) Cascara (<i>Rhamnus purshiana</i>) Serviceberry (<i>Amelanchier alnifolia</i>) Pacific yew (<i>Taxus brevifolia</i>) Chinkapin (<i>Castanopsis chrysophylla</i>) California hazel (<i>Corylus cornuta</i>) Pacific dogwood (<i>Cornus nurrallii</i>) Oceanspray (<i>Holodiscus discolor</i>) Nootka rose (<i>Rosa nutkana</i>)	Western rhododendron (<i>Rhododendron macrophyllum</i>) Indian plum (<i>Osmaronia cerasiformis</i>) Red elderberry (<i>Sambucus racemosa</i>) Blue elderberry (<i>Sambucus cerulea</i>) Western mock-orange (<i>Philadelphica lewisii</i>) Common chokecherry (<i>Prunus virginiana</i>) Bitter cherry (<i>Prunus emarginata</i>) Tall Oregon grape (<i>Mahonia aquifolium</i>)	Dull Oregon grape (<i>Mahonia nervosa</i>) Red huckleberry (<i>Vaccinium parvifolium</i>) Evergreen huckleberry (<i>Vaccinium ovatum</i>) Salal (<i>Gaultheria shallon</i>) Red flowering currant (<i>Ribes sanguineum</i>) Thimbleberry (<i>Rubus parviflorus</i>) Snowberry (<i>Symphoricarpus albus</i>) Woods rose (<i>Rosa woodsii</i>) Oval-leaf viburnum (<i>Virburnum ellipticum</i>)
Herbaceous Plants and Wildflowers:	Vanilla leaf (<i>Achylis triphylla</i>) Wild ginger (<i>Asarum caudatum</i>) Ladyfern (<i>Athyrium filix-femina</i>) Deerfern (<i>Blechnum spicant</i>) Swordfern (<i>Polystichum munitum</i>) Bunchberry dogwood (<i>Cornus stolonifera</i>) Twinflower (<i>Linnaea borealis</i>)	Miners lettuce (<i>Montia siberica</i>) Oxalis (<i>Oxalis oregona</i>) False solomonseal (<i>Smilacena racemosa</i>) Starry solomonseal (<i>Smilacena stellata</i>) Foamflower (<i>Tiarella trifoliata</i>) Starflower (<i>Trientalis latifolia</i>) Piggyback plant (<i>Tolmiea menziesii</i>)	Inside-out flower (<i>Vancouveria hexandra</i>) Trillium (<i>Trillium ovatum</i>) Wood violet (<i>Viola glabella</i>) Snow queen (<i>Synthris reniformis</i>) Red columbine (<i>Aquilegia formosa</i>) Western buttercup (<i>Ranunculus occidentalis</i>) Pacific bleedingheart (<i>Dicentra formosa</i>)
Prairie/Grasslands			
Grasses and Herbaceous Plants:	California brome-grass (<i>Bromus carinatus</i>) Blue wildrye (<i>Elymus glaucus</i>) California fescue (<i>Festuca californica</i>) Idaho fescue (<i>Festuca idahohensis romeri</i>) Lemmon's needlegrass (<i>Stipa lemmoni</i>) White yarrow (<i>Achillea millefolium</i>) Western columbine (<i>Aquilegia formosa</i>) Menzies' larkspur (<i>Delphinium menziesii</i>) Leichtlin's camas (<i>Camassia leichtlinii</i>)	Globe gillia (<i>Gillia capitata</i>) Shooting star (<i>Dodecatheon hendersonii</i>) Broadleaf strawberry (<i>Fragaria virginiana platypetala</i>) Oregon iris (<i>Iris tenax</i>) Smallflower parietar (<i>Lithophragma parviflora</i>) Barestem lomatium (<i>Lomatium nudicaule</i>) Nine-leaf lomatium (<i>Lomatium triternatum</i>) Common lomatium (<i>Lomatium utriculatum</i>) Sickle-keel lupine (<i>Lupinus albicaulis</i>)	Slender cinquefoil (<i>Potentilla gracilis</i>) Heal-all (<i>Prunella vulgaris</i>) Rose checker-mallow (<i>Sidalcea virgata</i>) Canadian goldenrod (<i>Solidago canadensis</i>) Yellow violet (<i>Viola nuttallii</i>) Mule's ears (<i>Wyethia angustifolia</i>) Northern saitis (<i>Brodiaea congesta</i>) Harvest brodiaea (<i>Brodiaea coronaria</i>) Spanish clover (<i>Lotus purshianus</i>)

Riparian / Wetland Areas			
Trees:	Oregon ash (<i>Fraxinus oregona</i>) Black cottonwood (<i>Populus trichocarpa</i>) Western red cedar (<i>Thuja plicata</i>) Cascara (<i>Rhamnus purshiana</i>)	Columbia willow (<i>Salix fluviatilis</i>) Pacific willow (<i>Salix lasiandra</i>) Piper's willow (<i>Salix piperi</i>) Rigid willow (<i>Salix rigida</i>)	Scouler willow (<i>Salix scouleriana</i>) Soft-leaved willow (<i>Salix sessiliflora</i>) Sitka willow (<i>Salix sitchensis</i>)
Shrubs:	Red-osier dogwood (<i>Cornus stolonifera</i>) Black twinberry (<i>Lonicera involucrata</i>) Indian plum (<i>Oemlaria cerasiformis</i>) Pacific ninebark (<i>Physocarpis capitatus</i>)	Swamp rose (<i>Rosa pisocarpa</i>) Salmonberry (<i>Rubus spectabilis</i>) Blue elderberry (<i>Sambucus cerluea</i>) Red elderberry (<i>Sambucus racemosa</i>)	Douglas spirea (<i>Spirea douglasii</i>) Nootka rose (<i>Rosa nootkana</i>)
Herbaceous Plants and Wildflowers:	Maidenhair fern (<i>Adiantum pedatum</i>) Douglas aster (<i>Aster Douglasii</i>) Lady fern (<i>Athyrium filix-femina</i>) Big-leaf sedge (<i>Carex amplifolia</i>) Columbia sedge (<i>Carex aperta</i>) Dewey's sedge (<i>Carex deweyana</i>) Henderson's wood sedge (<i>Carex hendersonii</i>)	Western corydalis (<i>Corydalis scouleri</i>) Elegant rein-orchid (<i>Habenaria elegans</i>) Soft rush (<i>Juncus effusus</i>) Skunk cabbage (<i>Lysichitum americanum</i>) Yellow monkey-flower (<i>Mimulus guttatus</i>) Streambank springbeauty (<i>Montia parviflora</i>) Candyflower (<i>Montia siberica</i>)	Forget-me-not (<i>Myostis laxa</i>) Water parsley (<i>Oenanthe sarmentosa</i>) Sweet coltsfoot (<i>Petasites frigidus</i>) False solomon-seal (<i>Smilacena racemosa</i>) Laceflower (<i>Tiarella trifoliata</i>) Piggyback (<i>Tolmiea menziesii</i>) Stream violet (<i>Viola glabella</i>)