

Westside Trail Master Plan

Existing Conditions Report

July 2012



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BACKGROUND

This Westside Trail Master Plan (WTMP) Existing Conditions (Report) summarizes baseline information on certain existing conditions within the northerly and southerly segments of the planned Westside Trail corridor and immediately abutting areas. Existing conditions include opportunities and challenges associated with future development of the trail, but more specifically are the factors within the trail corridor that represent potentially significant impediments or “fatal flaws” to trail development. Information in this report is primarily based on previously documented conditions within the trail corridor or those conditions readily identifiable through geographic information system (GIS) data and other base and aerial mapping. Specific field investigations were not conducted, although some observations made during project start-up site visits are reflected. The findings in this report may be amended in the course of the overall WTMP process based on additional information or observations.

Trail segments

Trail segment numbering cited in this report is based on a system developed by Tualatin Hills Park and Recreation District (THPRD). Trail segments between Barrows Road (4.01) and the Tualatin Hills Nature Park (4.11) are either constructed or scheduled for construction in 2012–2013. Most of Segments 4.13 and 4.17 include built trail sections that are privately developed and maintained by Nike and the Oak Hills Homeowners Association). Segment 4.18.2 and the northerly portion of 4.18.1 that crosses Bronson Creek will be developed by THPRD by mid-2014, and Segments 4.20 and 4.22 are already developed and under the jurisdiction of THPRD.

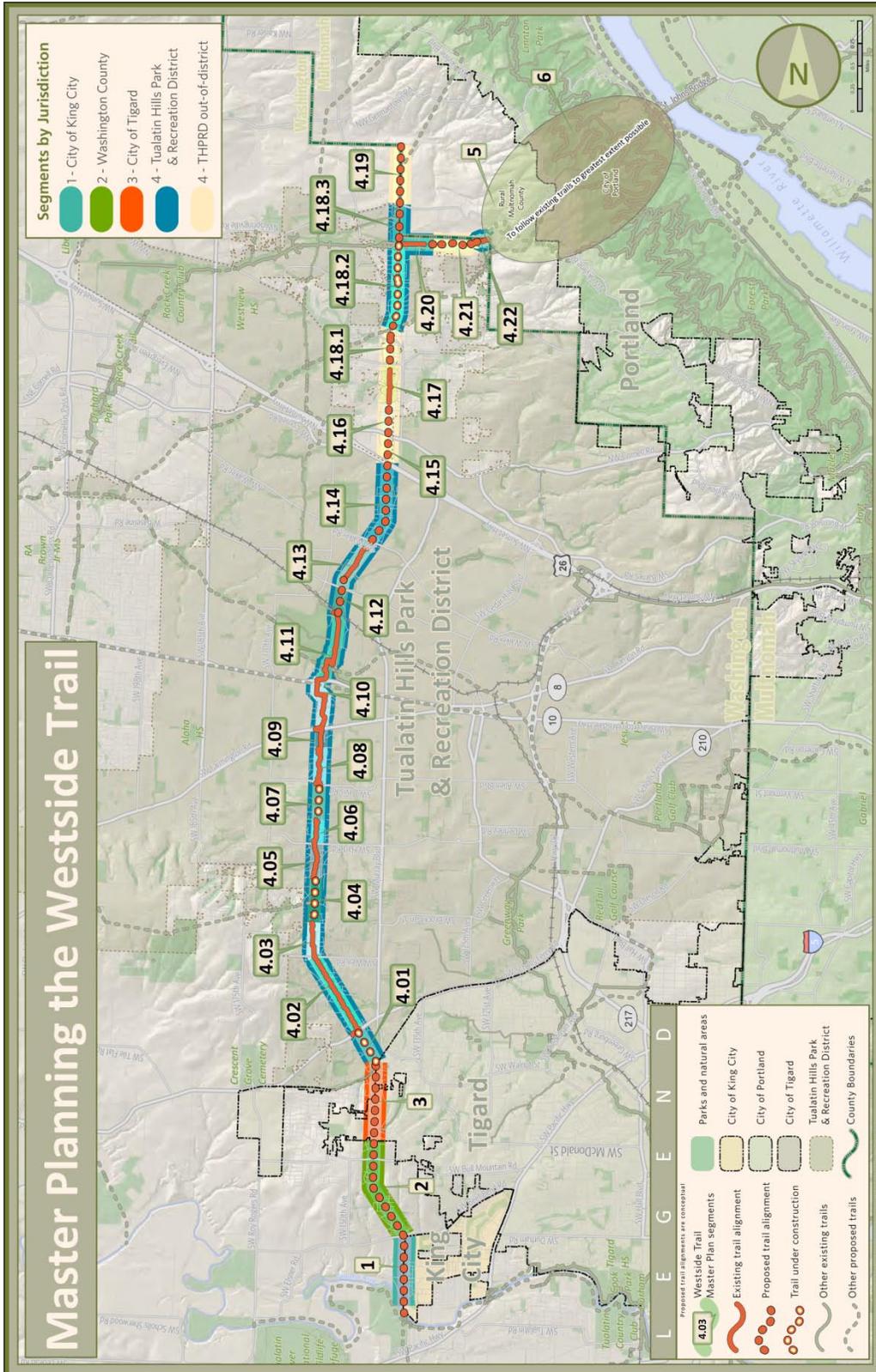


Figure 1. Map of the project extent

Prior trail development and major features

The Westside Trail will provide a continuous route for pedestrians and bicyclists between the Tualatin and Willamette Rivers. THPRD has already constructed, or is in the processing of completing, the central portion of the Westside Trail between Barrows Road and the MAX Blue Line. THPRD has one full northern segment (4.18.2) and the portion of Segment 4.18.1 that crosses Bronson Creek on the construction schedule for mid-2014. THPRD maintains completed segments along part of the potential trail approach to Forest Park (4.20 and 4.22). Trail sections have also been constructed privately in portions of Segment 4.13 (Nike) and 4.17 (Oak Hills). The City of Portland has built and maintains numerous trails within Forest Park and has adopted plans for trails along the Willamette Greenway that will bring the Westside Trail to its terminus at the St. Johns Bridge and the Willamette River.

The Westside Trail corridor crosses four major natural features (the Tualatin River, Bull Mountain, Bronson Creek Wetlands, and Portland's West Hills) and two major built features (MAX light rail line and US 26.)

Power transmission corridors

The main north-south route for the Westside Trail is within a Bonneville Power Administration and Portland General Electric (BPA and PGE, respectively) power transmission corridor. The north-south BPA portion of the power corridor is generally owned by the utility, except for the east-west portion at the north end that leads to and through Portland's West Hills and Forest Park. This connected but separate easement-secured BPA power line corridor crosses through WTMP Segments 4.21, 5 and 6. PGE power lines crossing through Segments 1 to 3 are generally secured by easements.

This power transmission corridor effectively preserves a linear open space through urbanized eastern Washington County and western portions of Multnomah County that is in many ways ideal for trail development. Power transmission corridors can be major opportunities for creating long continuous trails and are critical to the feasibility of developing trails in highly urbanized areas, as is the case with the lands surrounding much of the Westside Trail corridor. Power line and trail corridors also provide opportunities for linking and enhancing open spaces and natural habitat areas supporting numerous wildlife species. The Westside Trail's topographic characteristics represent great opportunities for views and for exciting bicycling and walking experiences.

The manner in which power lines can be routed and built across the landscape irrespective of many topographic, environmental and transportation characteristics can nonetheless also pose significant challenges to trail development. These factors present both challenges and opportunities to completing the Westside Trail, both as a non-vehicular transportation system and as a wildlife corridor. This is particularly true as the Westside Trail traverses steep areas such as Bull Mountain and Portland's West Hills and navigates highly urbanized areas such as King City, Tigard, Beaverton and Bethany. The numerous road and other crossings along the trail corridor will challenge both trail users and wildlife movement. Power transmission corridor vegetation management practices that focus on cost efficiency,

utility access, and minimizing interference with power line infrastructure may also affect habitat and wildlife.

CATEGORIES

Five categories of existing conditions were inventoried and evaluated.

Existing plans

Existing plans and policies may impact development of the trail corridor. These include information related to transportation, parks, natural areas, land use, other trail plans, and projects or programs that may serve as important sources of baseline information or direction.

Implementation requirements

Regulatory, land use, utility, property, or jurisdictional requirements for development of the trail corridor include land use actions, jurisdictional or property owner approvals, transportation crossing permissions, utility relocations, operations and maintenance agreements, and other governing factors. Additional implementation requirements associated with permitting trail segments may be identified in the upcoming WTMP Implementation Strategy task.

Design opportunities and challenges

Possible design opportunities and challenges for trail corridor development include significant views, existing or potential trail connections, existing public land holdings, adjacent land uses, significant natural features, and other factors.

Environmental conditions

Existing environmental and related conditions within the trail corridor including the following:

Natural environment

- Geology and soils
- Unstable slopes
- Unnamed water crossings
- Endangered Species Act (ESA)-listed, sensitive, and Oregon Conservation Strategy species
- Vegetative cover
- Wetlands
- Non-wetland waters
- Riparian areas

- Floodplains (up to 100-year)
- Hazardous materials (including contaminated soils)

Built environment

- Wildlife crossings
- Noise
- Historic and archeological
- Major utility structures and lines
- Major non-utility structures or land uses

Midblock road crossings/major trail intersections

This includes identification of the functional classifications of current or planned public roadways and major trails that cross the trail corridor.

METHODOLOGY

In conducting the existing conditions assessments, the following methods were used:

- Searched and reviewed literature to identify prior plans, studies, technical reports and other evaluations regarding areas within the trail corridor or potentially impacting development within the corridor.
- Consulted with WTMP project partners including Metro, THPRD, Portland Parks and Recreation, Washington County, and other participating jurisdictions.
- Studied results of a series of key stakeholder interviews conducted with neighborhood organizations, power utilities (BPA and PGE), area nonprofits, and bike and trail advocacy organizations.
- Reviewed an extensive collection of GIS-based mapping and other existing mapping and aerial photography.
- Conducted limited field observation.

Applicable data were also incorporated into three sets of maps illustrating conditions in each trail segment. The individual segment map atlas is included as Appendix A. The three sets of maps are titled:

- Design Opportunities & Road Crossings/Wildlife Crossings
- Transportation/Land Use/Utilities
- Wetlands/Vegetation/Waterways/Slopes

KEY FINDINGS

In the course of developing this report, key findings were made that provide a preview of the issues that may impact later stages of the WTMP process. These are highlighted below.

General

Existing plans

1. Regional and local planning documents support the use of the BPA/PGE power transmission corridor as a greenway and/or pedestrian and bicycle facility.
2. The Westside Trail corridor passes through or by several neighborhood, natural resource, and park areas that have resource management plans and/or to which resource protection policies or practices apply.
3. Segment 2, 4.18.3, 4.19, 4.21 and 5 are in unincorporated county areas. Various county comprehensive plan policies, zoning classifications, and other land use regulations may apply to trail development in these unincorporated areas.

Implementation requirements

1. BPA directly owns most of the north-south power/trail corridor, and PGE controls a parallel corridor within Segments 1 to 3 by easement. The west-east power corridor approaching Forest Park is controlled by BPA through easements. The underlying ownership and/or terms of usage under any easements may impact trail alignments and costs.
2. Trail alignments and structures will need to avoid both overhead and underground utilities. This may be challenging in some narrower or steeper portions of the trail corridor.
3. Enhancing wildlife habitat in segments of the trail corridor will require investments in restoration and revised maintenance agreements that meet and balance the needs of trail users, wildlife, BPA, PGE, and other utilities.
4. Segments 2 and 5 are in unincorporated county areas that do not provide parks services. Alternative providers for building and maintaining these trail sections will have to be identified.

Design opportunities and challenges

1. Multiple jurisdictions will need to invest in building and maintaining portions of the Westside Trail, but all will benefit from connections to the existing trail segments built and maintained by THPRD and from connecting trails already built and maintained by other local jurisdictions.
2. The Westside Trail will link to nearby parks, natural areas, residences, schools, and businesses; however, these opportunities may also generate conflicts between recreational and commuter users, and concerns may arise from abutting residents.
3. The trail corridor has the potential to provide access to interesting sites and views including the Tualatin River, Willamette River, Bull Mountain, and larger landscapes as seen from higher elevations and steeper areas. Natural areas, smaller stream corridors, and parks are possible points of interest as well. These opportunities may need to be balanced with neighboring privacy concerns.

4. Re-vegetation and habitat enhancements to improve appearance, screen neighbors, frame views, and enhance wildlife habitat must not interfere with overhead or underground utilities.
5. Trail alignments and construction across the steeper areas of Bull Mountain and Portland's West Hills may be more complex and expensive than for other segments, requiring retaining walls, trail meanders, and/or the use of areas outside of the power corridor to provide accessible multi-modal routes.
6. Trail alignment will be more challenging in parts of the power corridor with multiple power lines, existing non-utility development, and/or narrower power corridor width.
7. Adjacent land uses, land ownership, and nearby or intersecting roadway configurations, as well as steep slopes, may require consideration of trail alignment options that are outside of the power corridor.
8. Every intersection of a roadway, rail or bus transit line, or trail with the Westside Trail will generate opportunities for improved trail access, as well as potential conflicts between trails users and the users and infrastructure standards of these other transportation modes.
9. Trail crossings and intersections are also an opportunity to leverage trail and transportation improvements in partnership with the applicable local road, transit or parks authority.

Environmental conditions

1. Most of the trail corridor has the potential for habitat restoration supporting improved use and movement by pollinators, mammals, and songbirds. A prairie vegetation habitat restoration may be most feasible, except for wooded areas. Restoration potential will be further studied under the WTMP Concept Restoration Plan task.
2. The numerous high speed/high traffic road crossings are significant challenges to wildlife movements. Larger mammals also populate the WTMP study area, particularly segments surrounded by and near to rural lands and wooded areas. Crossings used by larger wildlife may represent dangerous collision hazards for trail users and passing motorists.
3. Higher speed/high traffic road crossings may generate adverse noise impacts.
4. There are only limited and isolated areas within or near to the trail corridor with hazardous materials or unstable slope issues. The one major exception is the petroleum pipeline leak cleanup site on the south bank of the Tualatin River near Segment 1.
5. There are no previously documented cultural or archeological resources within the WTMP study area.
6. Steep slopes along Bull Mountain (Segments 2 and 3) and Portland's West Hills (Segments 4.21 and 5) create significant challenges for trail development with

respect to achieving Americans with Disabilities Act (ADA)-compliant trail grades and for providing the most direct trail routes.

7. Steep slopes also represent opportunities for enhancing the trail user experience with the addition of viewpoints and pullouts.
8. Trail and crossing permitting and design at the Tualatin River, Bronson Creek, and other named and unnamed creeks and drainages may be challenging and potentially costly.
9. There is a potential for flooding within the trail corridor, most likely from the Tualatin River (Segment 1) and Cedar Creek (Segment 4.12). Intermittent winter flooding has also been reported along Segments 4.20 and 4.21.

Midblock road crossings/major trail intersection inventory

In addition to US 26 and US 30, the power corridor within the WTMP study area crosses 22 public roadways, 5 of which are classified as arterials. The Washington County Midblock Crossing Policy will provide guidance for the location and design for 19 of these potential trail crossings. One collector roadway and two local streets within Multnomah County/City of Portland may also be crossed by the trail.

Individual segments

Segment 1: Tualatin River crossing to SW Beef Bend Road

This City of King City segment will include a probable bridge over the Tualatin River. The bridge will connect directly to the planned Tonquin Trail and link to the Tualatin River Greenway Trail. Bridge design, construction and associated riverbank restoration may be costly and may require a variety of local, state and even federal permitting. Most of Segment 1 is relatively flat. Except for a wetland at the segment's midpoint and some slightly steeper slopes close to SW Beef Bend Road, this segment does not appear to exhibit any other significant impediments to trail alignments within the corridor. Re-vegetation to enhance wildlife habitat will improve cover for species seeking water at the river, as well as improve the trail user experience.

Segment 2: SW Beef Bend Road to Tigard city limits

This Washington County segment will have views of the Tualatin River and larger landscapes as elevation increases. Steep slopes, a slightly narrowed corridor and steep gully toward this segment's midpoint, existing tax lot and street patterns and prior residential development may make trail alignment options achieving ADA-compliant grades and the most direct travel routes challenging in some locations. The deep gully near the segment's midpoint is a significant impediment, and to the extent that alignment options may have to be developed taking the trail off corridor, the gully may even approach being considered a fatal flaw, at least with respect to in-corridor options.

Segment 3: Tigard city limits to SW Barrows Road

This City of Tigard segment features significant steep slopes and a slightly narrowed power corridor in middle sections. Extensive adjacent open spaces, particularly Hillshire Woods, may provide the potential for more flexibility in determining trail alignments, as well as for wildlife linkages. Re-vegetation could improve wildlife access and trail user experience. There are also links to trails in adjacent parks and natural areas, as well as connections to existing THPRD trail segments north of SW Barrows Road.

Segment 4.12 and 4.13: MAX Blue Line crossing to Nike open space

Segment 4.12 is between the Tualatin Hills Nature Park and the TriMet MAX Blue Line to SW Jenkins Road. The southern portion of Segment 4.13 extends from SW Jenkins Road, past a Nike-owned open space, and to the south end of the already developed trail that eventually enters the main Nike campus. Challenges for trail alignments through this segment are primarily related to crossing the MAX line and to the PGE maintenance yard, located immediately north of the light rail tracks, that sits astride the trail corridor. Adjacent forested areas and Cedar Mill Creek have the potential for improved wildlife habitat and movements.

Segment 4.14: SW Walker Road to US 26

This segment within the City of Beaverton narrows as PGE power transmission towers turn northwest, leaving just BPA power infrastructure along the trail corridor. Since the topography is relatively flat in this segment, the main challenges are limited to climbing one fill slope and aligning the trail through a corporate office park. The high level of urbanization along this segment may also limit the possibilities for effectively improving wildlife habitat.

Segments 4.15 and 4.16: US 26 to NW Oak Hills Drive

Segment 4.15 starts with the crossing of US 26 and ends at NW Cornell Road. Segment 4.16 starts at NW Cornell Road and ends at NW Oaks Hills Drive. Segment 4.15, which is 100 feet wide, is constrained by abutting industrial development just north of the highway. Segment 4.16 is 90 feet wide except for a short 100-foot-wide section approaching Oak Hills Drive. With only one short steep slope, overall, this segment is probably less challenging than Segment 4.15.

Crossing US 26 with a bridge or tunnel will be expensive and may require multiple permits and above- and underground utility line relocations. The US 26 crossing is probably the greatest challenge to wildlife movement within the entire Westside Trail corridor. Union Cemetery, Hunters Woods open space, and Willow Creek abutting Segment 4.16 provide multiple opportunities for wildlife habitat enhancements.

Segments 4.17 and 4.18.1: NW Perimeter Drive to NW Kaiser Road

There is a four-foot-wide concrete trail built within most of Segment 4.17, which is mostly flat, with the exception of a short section of the trail north of Perimeter Drive. Segment 4.17 presents no obvious challenges to trail development, except for the crossing into Segment 4.18.1 at West Union Road, an increasingly busy arterial roadway. The curves and slope of NW Kaiser Road, where crossed by Segment 4.18.1, may create significant sight distance challenges. A short steep slope within the trail corridor just south of NW Kaiser Road may also pose a challenge.

Segments 4.18.3 and 4.19: Rock Creek Trail to north of NW Springville Road

These two segments represent a major transition for the Westside Trail from a primarily urbanized or urbanizing setting to a primarily rural setting, and from being within the urban growth boundary (UGB) to being in a rural reserve and areas with extensive agricultural activity. The views are diverse: Portland's West Hills, several natural areas, some newer residential development, and agricultural fields. Connections to other trails and parks are many. Land use reviews and permitting arising from Washington County's North Bethany Subarea Plan and Multnomah County rural lands zoning and land use processes may be an important influence on trail alignment options and development.

Segment 4.21: Bethany Terrace

Segment 4.21 parallels a set of BPA power transmission lines and will connect two short trail segments previously developed by THPRD. The mixture of moderate to steep slopes, agriculture uses, rural residential development, and power pole locations may make trail alignment options challenging. The varied vegetation in this segment provides interesting views as well as habitat for grassland birds, pollinators and small mammals that use open habitat.

Segment 5: County line to NW Skyline Boulevard

Segment 5 crosses unincorporated Multnomah County through rural reserve land and enters the Portland city limits. The topography of the power line corridor moving up into the West Hills may be generally too steep for use for any extended sections of trail.

This power corridor is controlled by utility easements on private lands. The Westside Trail may need to parallel existing roads and/or traverse private property within this segment. Steep slopes and extensive wooded areas may also constrain development of a multi-modal paved trail. Specific land use reviews and permitting arising from Multnomah County rural lands zoning and land use processes may apply.

Segment 6: NW Skyline Boulevard to Saint Johns Bridge

Portland's Forest Park has many existing trails that could accommodate pedestrians, bicyclists and equestrians using the Westside Trail.

EXISTING PLANS AND IMPLEMENTATION REQUIREMENTS

Many trail implementation requirements are closely related to the key existing plans and policies summarized below. Generalized information relative to such implementation requirements is included in this report.

Existing plans and authorities

Several statewide, regional and local plans and policies impacting the WTMP study area will influence the development of the Westside Trail. The plans and policies described below were found to be the most directly relevant. There are several common threads with respect to the Westside Trail in the documents summarized herein.

- The Westside Trail is identified in multiple regional transportation and land use planning documents as a greenway and/or pedestrian and bicycle facility.
- Local jurisdiction planning and land use documents consistently support the use of the power corridor as a greenway and/or pedestrian and bicycle facility.
- The Westside Trail corridor passes through or by several natural resource and park areas that have associated resource management plans and/or to which resource protection policies or practices apply.

The WTMP will provide the planned basis for completion of the trail. Overall, regional and local plans are consistent with development of a regional trail within the WTMP corridor study area. Metro's 1992 Greenspaces Master Plan, 2003 Regional Trails and Greenways document, the current Regional Transportation Plan, and THPRD's 2006 Comprehensive Plan and Trails Plan all identify and support the Westside Trail. The Westside Trail is also referenced and supported in many local jurisdiction plans or ordinances, including the City of Tigard's Parks System Master Plan and Greenway Trails System Plan and Washington County's North Bethany Subarea Plan. The Multnomah County West Hills Rural Area Plan does show the approximate route of the Westside Trail as it may approach Forest Park, although the trail is not named as such in this particular plan.

WTMP impact: Statewide, regional and local plans support trail development. No regional or local comprehensive or functional plan amendments or exceptions are anticipated as a result of WTMP adoption or subsequent Westside Trail development.

City of Portland

Forest Park Natural Resources Management Plan

Forest Park: Desired Future Condition

The Forest Park Natural Resources Management Plan (NRMP), released in 1995, is a framework for managing this park. The NRMP divides Forest Park into three geographical areas or management units: the North, Central and South Management Units. Existing conditions are reviewed in the NRMP and strategies for resource protection, ecological restoration and operation and maintenance are provided. The NRMP also offers suggestions

on the appropriate level of recreational activity. The North Management Unit extends from Germantown Road to Newberry Road. The bicycle and pedestrian activities generated by the Westside Trail would be inconsistent with North Management Unit policies that strongly emphasize a natural area management regime. Forest Park: Desired Future Conditions (2011) supplements the guidance provided in the Forest Park NRMP. It provides a natural resource inventory and projects the plant community structure to 2035. Ecological goals and management actions are offered to support implementation of the desired future conditions.

WTMP impact: Initial WTMP analysis and discussions with Portland Parks and Recreation resulted in eliminating two of the three potential connections to Forest Park from the WTMP because the segments would have entered Forest Park through the North Management Unit. See Figure 2 below for all the originally contemplated northern WTMP trail segments.

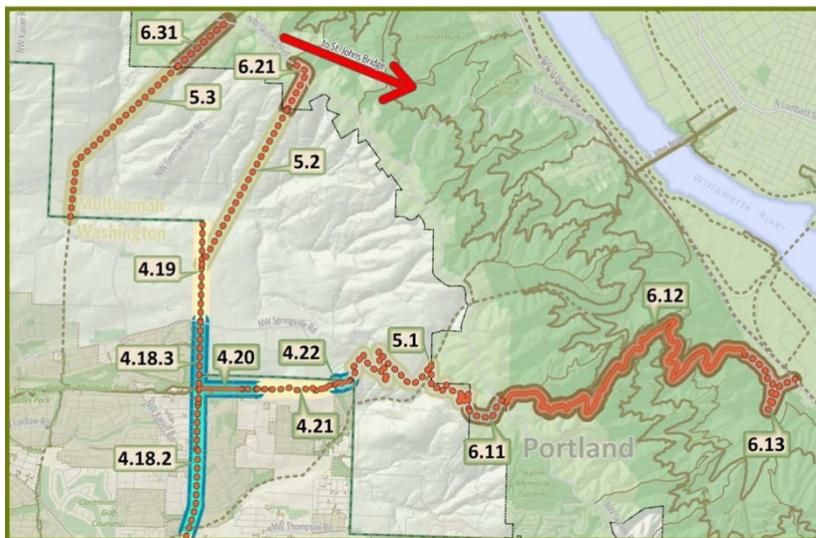


Figure 2. Original WTMP north-end trail segments

The River Plan

Willamette Greenway Trail Planning Workbook

The River Plan (2010) is an update of the Willamette Greenway Plan (1987) and serves as a comprehensive planning document along the Willamette River. The River Plan addresses three stretches or reaches. The North Reach extends from the Willamette River's confluence with the Columbia River to the Fremont Bridge and includes the area where potential Westside Trail sections may exit Forest Park and connect to the St. Johns Bridge. The River Plan also identifies trail connections between the Willamette Greenway and Forest Park at NW Bridge Avenue, NW Springville Road and NW Saltzman Road.

As part of the River Plan development process, a Willamette Greenway Trail Planning Workbook was compiled for the Plan's Trail Task Group. The workbook describes existing

conditions within the Willamette Greenway, as well as ideas for improving proposed trail alignments. The workbook includes a map illustrating a bike lane connection between the St. Johns Bridge and the Leif Erikson Trail in Forest Park.

WTMP impact: Based on the above described level of prior analysis and planning and city and state jurisdictional considerations, trail alignment and crossing solutions for Segment 6 within Forest Park and the Willamette River Greenway will be defined through discussions between Metro and Portland Parks and Recreation and with ODOT regarding crossings and connections along US 30.

Trail Design Guidelines for Portland's Park System

Portland Parks and Recreation's Trail Design Guidelines for Portland's Park System (2009) include design specifics for a variety of trail types that serve multiple uses in multiple settings. Portland Parks and Recreation requires that all newly constructed public recreational trails comply with these guidelines.

WTMP impact: These guidelines will influence the alignment and design of Segment 5 approaching Forest Park, as well as trail design within Forest Park and along the Willamette River Greenway.

Portland Bureau of Planning and Sustainability Environmental Overlay Zone

The portion of Segment 5 within the City of Portland is in an Environmental Protection zone, indicating that highly significant resources and functional values are present.

WTMP impact: Trail alignments and construction in the City of Portland section of Segment 5 will be subject to environmental reviews and permitting as specified by City of Portland environmental overlay standards.

Metro

Urban growth management functional plan

As noted earlier in this report, a variety of Metro plans and policies support the planning and development of the Westside Trail. Metro's Urban Growth Management Functional Plan, which provides tools to meet the 2040 regional growth concept, includes three sections ("titles") that have particular relevance with respect to elements of the WTMP and the impacts of future trail design and construction:

- Title 3, Stream and Floodplain Protection Plan, protects the region's health and public safety by reducing flood and landslide hazards, controlling soil erosion and reducing pollution of the region's waterways.
- Title 5, Neighbor Cities and Rural Reserves, requests that the counties and the cities adjacent to green corridors and rural reserves adopt comprehensive plan policies to reflect the rural reserve policies contained in the 2040 Growth Concept.

- Title 13, Nature in Neighborhoods, conserves, protects and restores a continuous ecologically viable streamside corridor system that is integrated with upland wildlife habitat and the surrounding urban landscape.

WTMP impact: Titles 3, 5 and 13 provide standards and guidance to WTMP goals with respect to wildlife habitat conservation and restoration and for compliance with rural reserves policies and requirements.

Multnomah County

Parks authority

Multnomah County is not presently a parks provider. Therefore, the ultimately responsible agency for the development and operation of the trail in Segments 4.18.3 and 5, and potentially portions of Segment 4.19, remains an open question. The WTMP's Implementation Strategy task will assess parks authority options for building and maintaining the trail within unincorporated Multnomah County.

WTMP impact: The lack of an existing parks provider will challenge the development of trail segments within unincorporated Multnomah County.

Planning authority

Multnomah County has a variety of adopted land use codes that could impact the siting and construction of the Westside Trail through these unincorporated sections of Segment 5. According to Multnomah County, two of the four land use zones within Segment 5 may influence land use reviews and permitting for the trail. Section 33 (West Hills Rural Area Plan) of the County Code specifies allowed and conditional uses within these zones, and five environmental overlay zones are also within Segment 5. Based on the trail alignment options determined under the WTMP Trail Corridor Analysis task, additional analysis of these Multnomah County standards will be required as part of the WTMP Implementation Strategy task.

WTMP impact: A range of Multnomah County land use and development policies and processes will need to be considered in the siting and development of Segment 5.

Washington County

Parks authority

Washington County is not presently a parks provider. Therefore, the ultimately responsible agency for the development and operation of the trail in Segment 2 remains an open question. The WTMP's Implementation Strategy task will assess parks authority options for building and maintaining the trail within unincorporated Washington County.

WTMP impact: The lack of an existing parks provider will challenge the development of trail segments within unincorporated Washington County.

Planning authority

Washington County adopted a **North Bethany Subarea Plan** in 2011 which includes sections addressing pedestrian movement and trails issues within the neighborhoods of North Bethany. The North Bethany Subarea Plan proposes a parks and trail system internal to this community. The North Bethany Subarea Plan does not specifically name or illustrate a conceptual alignment for the Westside Trail. Even though the North Bethany Subarea Plan ends at the county line, and the power corridor is in Multnomah County, some concepts illustrating short portions of the North Bethany trail system do overlap the power corridor. If and when the Westside Trail (Segment 4.19) extends north of NW Springville Road, additional trail connections to the North Bethany community trail system would be possible.

Washington County has also adopted a **West Bull Mountain Concept Plan** for unincorporated areas within urban and rural reserves just west of WTMP Segments 2 and 3. The future urban areas within this concept plan are termed Planning Areas 63 and 64 and include three “major framework” trails between SW Beef Bend Road and SW Barrows Road and west of 150th Avenue.

WTMP impact: A Westside Trail alignment within the power corridor would be outside of Washington County and the North Bethany Subarea Plan. Westside Trail connections to North Bethany would have to integrate with community trail systems, including specific alignment restrictions or options and special planning or permitting processes.

The planned bicycle and pedestrian trails within the West Bull Mountain Concept Plan area are well outside of the WTMP study area, but as in North Bethany, connections would be desirable.

Pedestrian midblock crossing policy (2010)

This Washington County policy describes the required analysis for determining appropriate treatments for midblock crossings and uncontrolled intersections on County-jurisdiction roads. Each crossing must be evaluated separately and approved by Washington County under County Code Chapter 15.08. Approved crossings require right-of-way and construction permits from the County.

WTMP impact: The Washington County midblock crossing policy will be used as the default WTMP standard for assessing all midblock crossing solutions at the master plan level and will eventually apply to the actual location, design and construction of any trail crossings of Washington County roads. The Westside Trail may cross 19 roads within Washington County jurisdiction, of which 5 are classified as arterials and 2 as collectors.

City of Tigard

Tigard Greenway Trail System Master Plan Environmental Report (2011)

This report describes potential environmental impacts to assist in City of Tigard trail alignment processes and identifies the parties that may have to be consulted, including

Clean Water Services, the Washington County stormwater utility. A Tualatin River Greenway Trail/Westside Trail connection is described. The report also includes a list of state-listed threatened or endangered plant species that may occur in Washington County and discusses applicable regulations. Segment 3 is also within a City of Tigard significant habitat area.

WTMP impact: Development of the Tualatin River Greenway Trail and its Westside Trail connection across the Tualatin River will require coordination with Clean Water Services for mitigation and/or enhancement. Consultation with the US Fish and Wildlife Service, the Oregon Department of State Lands, and other federal and state regulatory agencies will also be required.

City of King City

Parks authority

The City of King City owns and operates parks, including the King City Community Park at the south end of Segment 1 near the Tualatin River. The City does not, however, presently have a parks department providing park operations and maintenance services. The City's capacity and ability to build and maintain an extended trail segment is therefore limited, and this is not expected to change in the near future.

WTMP impact: The City of King City probably does not have the present capacity to build and maintain a trail in Segment 1.

West King City Planning Area

The City of King City has no bicycle, pedestrian, or transportation plans addressing trail planning or development. However, City Municipal Code 16.142 defines and regulates a "West King City Planning Area" subject to Statewide Planning Goal 5 "Safe Harbor Review" for impacts to riparian areas and wetlands. Segment 1 is within this King City planning area.

WTMP impact: Segment 1 will have to undergo a safe harbor review as defined by city code.

Utility requirements

Use permissions

The proposed Westside Trail corridor within Washington County is centered on a major BPA power transmission corridor that traverses the eastern portion of the county from north to south. A PGE power corridor parallels the BPA corridor through Segments 1 to 3, including lands within the City of King City and City of Tigard, as well as unincorporated Washington County. A separate BPA power corridor crosses Segments 4.21 and 5, including areas within Multnomah County and the City of Portland.

According to BPA, most of the north-south BPA power corridor is owned fee-simple by BPA. BPA's east-west power corridor into Portland's West Hills is secured by easements across

private property. The PGE corridor within Segments 1 to 3 is secured by easements across private property. Many of these power easements were established when much more of the land surrounding and underneath the present power lines was actively farmed. Information from BPA and PGE indicates that these easements typically allow continued private farming uses. Other uses may also be permitted within power utility–owned or easement-secured lands provided that power line infrastructure integrity and maintenance is not adversely impacted.

The WTMP’s Right-of Way Inventory and Acquisition reports will detail the forms and limits of power utility ownership or control. These reports will define where ownership issues represent particular challenges to trail development. These findings will become part of the WTMP’s Trail Corridor Analysis task.

WTMP impact: The underlying ownership and/or use easements applied to trail segments will have major implications for trail alignment feasibility and trail development costs.

Ownership considerations

BPA and PGE own outright, or partly control through easements, most sections of the segments of the Westside Trail corridor. BPA and PGE will not necessarily have the ability to permit trail development where there is underlying private property ownership, as utility easements may only permit power transmission uses and structures.

Trail development may be further complicated by the variety of existing uses and structures within the power corridor ranging from gravel and paved private parking lots and driveways, to private accessory buildings, to landscaped and fenced back yards. The most prominent such uses are the business parking lots and appurtenant structures in Segment 4.14 and the PGE maintenance yard within Segment 4.12. Trails have been built in Segments 4.13 (Nike) and 4.17 (Oak Hills). Nike is the underlying owner for Segment 4.13, but the Oak Hills trail section was developed privately without utility permission. The WTMP’s Right-of-Way Inventory and Right-of-Way Acquisition reports will document the forms and limits of utility ownership and/or easement control.

WTMP impact: The Right-of-Way reports to be undertaken as part of the WTMP process will specifically identify acquisition options and costs based on segments and individual properties.

Relocations

There are numerous aboveground power utility structures along the trail corridor including steel power line towers, wooden power poles, structural support cables, maintenance access roads, and small utility buildings. Some trail segments with extremely steep slopes, such as portions of Segments 2 and 3 for example, might require significant trail switchbacks to be ADA-compliant, thus making routing around power poles and towers more challenging. The high cost of relocating towers may constitute a significant impediment or fatal flaw to some alignment options considered under the WTMP’s Trail Corridor Analysis task.

Although power line poles and towers may not need to be moved, there are some areas where power lines crossing over the trail corridor may have to be relocated. The most likely such relocation is in Segment 4.15 where a pedestrian/bicycle bridge crossing of US 26 may create a safety hazard given the current height and location of existing east-west power lines on the north side of the highway.

Buried natural gas pipelines follow or cross the corridor in several locations. A petroleum pipeline crosses the north end of the study area. It roughly follows the lines of Bronson Creek and then turns south and follows the power corridor all the way to the Tualatin River. Precise information on the petroleum pipeline route is difficult to ascertain from public records. The pipeline's owner, Kinder Morgan, has committed to providing additional information if needed in the course of the WTMP Trail Corridor Analysis task.

The WTMP's Trail Corridor Analysis and Right-of-Way reports will document areas where trail options may be impacted by these pipelines. These pipelines should not be a major impediment to trail development provided that maintenance access to the lines is preserved during trail design and alignment. Nonetheless, major structures, such as bridge footings or trail retaining walls, could potentially limit pipeline maintenance to an extent that some pipeline relocation would be required if other trail alignment alternatives are not feasible. These factors will be given additional consideration during the upcoming WTMP Trail Corridor Analysis task.

WTMP impact: Within the power corridor, it is anticipated that there will generally be enough flexibility to avoid major power line tower or pole relocations.

Trail maintenance agreements

PGE and BPA follow their usual and customary infrastructure and vegetation maintenance practices in trail corridor segments where utility infrastructure is present. Practices suitable for utility purposes may not be compatible with a corridor co-developed for bicycle and pedestrian traffic nor with the planned dual function of the trail corridor as a wildlife corridor.

Existing maintenance agreements between the power utilities and THPRD for developed trail segments provide adequate precedence and a model for future agreements with respect to basic trail corridor maintenance. The larger challenge will be that Multnomah County and Washington County are not presently parks providers and therefore may not be able to take responsibility for maintaining future Westside Trail segments within their jurisdictions. The City of King City also has very limited organizational capacity to maintain parks.

WTMP impact: Example agreements for usual and customary power corridor maintenance for developed trail segments are in place and operational; some trail segments, based on current jurisdictional authorities, will not have a default agency to assume maintenance responsibilities.

Wildlife-friendly trail maintenance agreements

Customary THPRD trail maintenance practices, while supportive of a more landscaped corridor than yielded by basic utility vegetation management approaches, currently do not specifically address wildlife habitat needs. The WTMP will recommend a set of enhancement and maintenance practices supporting wildlife values and habitat enhancements. These practices will have to be translated to agreements between the utilities and the jurisdictions that maintain and operate different trail segments, potentially also including THPRD-built sections.

WTMP impact: Wildlife-friendly maintenance agreements will have to be pioneered through implementation of the WTMP.

DESIGN OPPORTUNITIES AND CHALLENGES, ENVIRONMENTAL CONDITIONS, AND MIDBLOCK CROSSINGS/TRAIL INTERSECTIONS

The following sections highlight some overarching conditions with respect to the built and natural environments and summarize design opportunities and challenges, existing environment conditions, probable midblock crossings and major trail intersections on a segment-by-segment basis.

Natural environment

Some of the possible environmental factors and conditions within the Westside Trail corridor, listed in the introductory sections of this report, have limited impact or presence within the study area. Other factors and conditions are found to be more generally ubiquitous within the study area but not generally tied to individual segments.

Geology and soils

No specific impediments to trail development due to geology or soils were identified. The geology of the trail corridor and abutting areas is comprised of Columbia River basalt formations in the northernmost segments encompassing Portland's West Hills and Forest Park (Segments 5 and 6), giving way to mixed valley floor sediments southward, all the way to the Tualatin River. Alluvial and colluvial soils derived from weathered basalts characterize Portland's West Hills, and these soils give way to locally sourced and Missoula flood-derived sediments mixed by fluvial processes in the valley bottom south to the Tualatin River.

The US Department of Agriculture Natural Resource Conservation Service (NRCS) has documented soils in Washington County with respect to suitability for roads and has also developed a separate suitability classification for paths and trails. These classifications apply to the suitability of local natural soils as the surface for roads, paths or trails. Nonetheless, the multiple factors that are included in these classifications will be of value in determining planning-level trail alignments and should apply to actual trail design and construction considerations. The paths and trails suitability classification is shown on the segment-by-segment maps included in Appendix A.

Unstable slopes

Oregon Department of Geology and Mineral Industries (DOGAMI) mapping indicates four small unstable slope/landslide areas along NW Springville Road in Segment 5. In addition, DOGAMI documents historical slide areas to the immediate east of the trail corridor in Segment 3. All historical slide areas in Segment 3 are within the general bounds of what is now Hillshire Woods Park. This information is included in segment-by-segment maps included in Appendix A.

Unnamed water crossings

Named streams crossed by trail segments are listed in the segment-by-segment tables of this report. There are also some perennial or intermittent channels that are not named. These are primarily in Portland's steeply sloped and wooded West Hills (Segment 5). The more significant channels are shown on segment-by-segment maps, included in Appendix A, and will be further examined during the WTMP Trail Corridor Analysis and Concept Restoration Plan tasks.

Fish species

A 1996 study of fish populations in the Tualatin River Basin identified 25 species (see Table 1 below). Winter run steelhead has also been documented in the basin. This fish study focused on the identification of species present. Relative or absolute populations were not documented or estimated. Three of the documented species — coho salmon, steelhead, and pacific lamprey — are anadromous, meaning these species migrate to marine waters. The rest are resident, although several species are introduced exotics. Pacific lamprey is listed generally under the ESA as a federal species of concern. Some populations of coho and steelhead salmon in Oregon are listed under the ESA as threatened, but the Tualatin River Basin runs are not. The species present in the Tualatin River Basin are also those probably present in the watersheds at the north end of the WTMP study area that drain into the Willamette Basin.

Table 1. Possible WTMP Study Area Fish Species

Brook lamprey	Goldfish	Warmouth
Pacific lamprey	Largescale sucker	Black crappie
Coho salmon	Yellow bullhead	White crappie
Cutthroat trout	Brown bullhead	Yellow perch
Rainbow trout	Mosquitofish	Reticulate sculpin
Redside shiner	Three-spined stickleback	Prickly sculpin
Speckled dace	Largemouth bass	Torrent sculpin
Northern shad	Bluegill	Winter run steelhead
Fathead minnow	Pumpkinseed	

Habitats/vegetative cover

There is only a single threatened plant species that published surveys and studies indicate may be present in or near the trail corridor: Nelson's checker-mallow (*Sidalcea nelsonii*).

In general, habitat within most trail corridor segments consists of a mix of grass/forb species with occasional blackberry thickets and mixed shrubs. This is not unexpected as the trail corridor is surrounded, crossed, and sometimes encroached upon by varied urban uses and by infrastructure that has greatly altered native and local vegetation patterns and species. In addition, the corridor has long been maintained as a major power line route, and power utilities follow proscribed vegetation maintenance practices that are not usually habitat-friendly and that have virtually eliminated any significant tree growth under power lines.

Trail segments that cross natural areas with stream channels and other water features exhibit more riparian and wetland vegetation diversity, and areas within Segment 5 approaching Forest Park and along portions of Segments 2 and 3 are wooded.

Notwithstanding residential development in the area, the density of woodlands in Segment 5 increases significantly as this segment moves uphill toward NW Skyline Boulevard and Forest Park. Once the boundary of Forest Park is crossed (Segment 6), the historical use of this park area and present management practices have preserved extensive natural areas, woodlands and riparian zones.

Wildlife species

A wide variety of wildlife species commonly use habitat along or within the Westside Trail corridor. Habitats include extensive woodlands in Portland's Forest Park and West Hills', riparian corridors along the Tualatin River and other stream systems and grass/forb habitat under miles of power lines. Certain species may be more common in one or two of these habitats. Given the high degree of natural habitat alteration in the suburban/urban setting that characterizes most of the WTMP study area, as well as habitat created as parts of yards and parks, wildlife species do tend to cross over and find many niches to inhabit. For birds in particular, spring and fall migration will see many additional species present in the study area for limited periods.

The grass/forb habitat that predominates most of the trail corridor, as it passes through urbanized areas along the valley floor, provides habitat for a wide variety of small mammals, pollinators and birds.

At higher elevations in Portland's West Hills and Forest Park, in larger natural area parks (such as the Tualatin Hills Nature Park), and elsewhere within remaining wooded areas (including wooded residential areas), larger mammal species are present and in some cases common. These species include deer, coyote, raccoon and skunk. Roosevelt elk and even black bear are reported. A range of bird species that favor wooded environments is also found.

The third primary habitat within the WTMP study area includes wetlands and riparian areas associated with the Tualatin River, Bannister Creek, Cedar Mill Creek, and a variety of

other stream and drainage corridors. These areas support pollinators and insects, smaller and larger mammals, and a variety of water-dependent reptiles and amphibians. Bird species that favor wetter environments are also more common.

Several publications and lists were consulted in understanding the range of wildlife present in the WTMP study area. The US Fish and Wildlife Service maintains regularly updated lists specifically covering Washington and Multnomah Counties for endangered and threatened, proposed, candidate, and delisted species under the ESA, as well as species of concern. See www.fws.gov/oregonfwo/Species/Lists. The Oregon Department of Fish and wildlife publishes and updates similar lists. For a broader range of potential species within the WTMP study area, the Oregon Wildlife Explorer Wildlife Viewer generates lists by county, eco-regions, basin, and watershed. See www.oregonexplorer.info/wildlife/WildlifeViewer. The data for this site are developed and maintained by the Oregon Biodiversity Information Center.

For Forest Park and Portland's West Hills, *One City's Wilderness: Portland's Forest Park* (OSU Press) by Marcy Cottrell Houle includes extensive species lists. Most operators or support groups associated with significant natural areas within or close to the WTMP study area have published species list or links on their websites. These include Tualatin Hills Nature Park, Tualatin River National Wildlife Refuge and the Audubon Society of Portland.

Built environment

Wildlife crossings

Roadway crossings represent the most obvious challenges to ground wildlife movement along the Westside Trail corridor. Most of the trail corridor may have potential for prairie grassland and wildflower habitat restoration supporting improved use and movement by pollinators, smaller mammals and songbirds. Only the highest-speed transportation corridors, US 26 and highly trafficked arterials such as NW Cornell Road, are likely to be regular impediments to birds and to airborne insects such as butterflies and moths. Nonetheless, the numerous high speed/high traffic road crossings significantly challenge wildlife movements. Larger mammals also populate the study area, particularly segments surrounded by and near to rural lands and wooded areas. These larger species can represent dangerous collision hazards for trail users and passing motorists. Information on Westside Trail midblock road crossings and major trail intersections (including functional classification information) is incorporated into the following segment-by-segment summaries and is shown on individual segment maps.

Noise

Roadway and transportation crossings will be the primary sources of noise that may affect habitat conditions and/or the trail user experience along the Westside Trail. The US 26 crossing will probably be the most significant noise source. The trail corridor also crosses five arterial roadways and three collectors that may generate considerable noise.

Hazardous materials and contaminated soils

A review of Oregon Department of Environmental Quality (DEQ) records for hazardous materials and contaminated soils revealed a few problems or possible violations. None of these areas is within the power corridor, and only one will have a probable impact on alignment options.

The most significant contaminated soils problem is a petroleum fuels pipeline leak on the south bank of the Tualatin River. This contamination is well documented and a longstanding cleanup effort is underway. This contamination cleanup could influence the siting of any bridge spanning the river and connecting the south end of the Westside Trail with the future Tonquin and Tualatin River Greenway trails. DEQ also reports two leaking residential underground heating fuel storage tanks (USTs) west of but near to the Segment 1 power corridor.

In Segment 4.14, facilities operated by Lattice Semiconductor, Intel, and Leupold and Stevens have been noted by ODEQ for possible hazardous materials violations in the past. The only site close enough to the power corridor to have any potential implications for trail alignment options is Leupold and Stevens, and this is an old record (1994) merely involving a report of possible paint dumping.

Along Cornell Road near to Segment 4.16, two adjacent businesses, a dry cleaner and pet cancer clinic, have been cited for hazardous wastes in the past, and two apartment complexes have had UST problems. None are probable sites for alternative trail alignments options outside of the power corridor.

In Segment 5, leaking USTs have been cited by ODEQ for three residences along or near to NW Springville Road.

Historic and archeological

No known historic or archaeological resource sites were identified within the Westside Trail corridor. State Historic Preservation Office (SHPO) records were consulted.

The Oak Hills Neighborhood (Segment 4.17) was developed as a planned unit development in the 1960s and retains a consistent architectural style from this era for many homes and community buildings. The Oak Hills Homeowners Association reports that an application for designation as a state historic district is in process.

Major utility structures and lines

Electrical power

In general, large electrical power transmission towers and poles within the trail corridor will challenge trail development and/or alignments, particularly where the power corridor narrows to 90 to 100 feet and/or where steep slopes or natural features such as wetlands and streams are present. Power tower and pole footing locations are documented in segment-by-segment maps included in Appendix A.

There are also some aboveground power utility or other small utility buildings along the corridor. Such aboveground buildings are few in number and should not pose a significant

challenge to trail alignments. The WTMP Trail Corridor Analysis task will provide for additional evaluation of these potential constraints.

The southern section of the main trail corridor is developed with three parallel electrical power transmission lines: one set of PGE steel tower-mounted lines and two sets of two or three wood pole-mounted BPA lines. In northern sections of the trail corridor, there are only the two sets of BPA's wood pole-mounted lines, and the corridor is generally narrower. Eastbound towards Forest Park, there is a BPA power easement crossing through Segments 4.21 and 5.

One area of the trail corridor on the north side of US 26 (Segment 4.15) will present some issues with respect to power lines that *parallel* the highway and *cross* the corridor west to east. If a bridge structure overpassing the highway is determined to be the preferred trail solution in this location, these power lines will be too close to the bridge to ensure user safety and will have to be moved or raised.

Natural gas

Another major utility within the trail corridor is underground natural gas transmission pipelines. These pipelines follow or cross the corridor in several locations. In general, trail alignments and surfaces, as well as habitat enhancements, will have to assure the continued accessibility to these pipelines for maintenance and replacement purposes.

Petroleum

Kinder Morgan operates a refined fuels tank farm in the Linnton neighborhood on the east side of Forest Park. A major pipeline serving this tank farm crosses through Forest Park and emerges on the west side of the park in the vicinity of WTMP Segment 5. According to Kinder Morgan officials, the pipeline generally follows Bronson Creek until it intersects with the power corridor. From this point all the way to the Tualatin River the petroleum pipeline generally follows the power corridor. Kinder Morgan officials have committed to providing records during the WTMP Trail Corridor Analysis task as needed to help determine any conflicts with respect to pipeline alignment or depth. Just outside of the south end of the WTMP study on the south side of the Tualatin River, ODEQ has a longstanding petroleum fuel cleanup underway within the power corridor. This cleanup could influence the siting of any bridge spanning the river and connecting the Westside Trail to other trails to the south.

Major non-utility structures or land uses

There are numerous non-utility land uses and structures within the trail corridor. These include the privately built trails in the Nike and Oak Hills Segments (4.13 and 4.17). Other significant uses include the paved business parking lot in Segment 4.14, the PGE maintenance yard in Segment 4.12, and what appears to be the primary access road to the municipal water tanks abutting Segment 4.18.3. There is also a lengthy driveway along Segment 4.19, which serves as an alternate access to farm buildings and dwellings to the east of this segment, and a private industrial service road that crosses Segment 4.15. The degree to which these private uses are permitted by utility agreements or easements will be determined as part of the WTMP Trail Corridor Analysis and Right-of-Way tasks. Depending

on these determinations, these and similar uses could potentially constitute significant impediments to trail development.

Particularly in areas where residential housing backs up to the power corridor, there are numerous more minor uses present. These include driveways, landscaped yards, fencing, gardens, small appurtenant sheds and outbuildings and graveled parking lots. Segments 2 and 4.21 have quite a few such uses within the trail corridor. Segment 4.15 has several graveled parking lots serving adjacent developments.

Midblock crossings

The WTMP Trail Corridor Analysis will evaluate trail alignment options where a major roadway, rail line, or significant natural area is crossed. The WTMP major crossing analysis will include US 26, the TriMet MAX Blue Line, and the Tualatin River. Up to 11 additional roadways will be specifically analyzed for appropriate midblock crossing treatments. All are classified as arterials or collectors, except for NW Skyline Boulevard and NW Saltzman Road. NW Springville Road will potentially be followed or crossed more than once by the trail. NW Skyline Boulevard is classified as a local street by the City of Portland and as a city bikeway. NW Saltzman is also a local street and already serves as a bike route within Forest Park. These last two local roadways will be included in the WTMP's Midblock Crossing Analysis task only if they are crossed by WTMP alignment options. Finally, a crossing analysis of US 30 may be conducted based on determinations of primary trail routes through Forest Park.

- SW Beef Bend Road (Segments 1 and 2)
- SW Bull Mountain Road (Segment 2)
- SW Jenkins Road (Segments 4.12 and 4.13)
- SW Walker Road (Segment 4.14)
- NW Cornell Road (Segments 4.15 and 4.16)
- West Union Road (Segments 4.17 and 4.18.1)
- NW Kaiser Road (Segment 4.18.1)
- NW Springville Road (Segments 4.18.3 and 4.19, possibly Segment 5)
- NW Skyline Boulevard (Segment 5)
- NW Saltzman Road (Segment 5)
- NW St. Helens Road (Segment 6)

TRAIL SEGMENT SUMMARIES

Summaries of the existing conditions in each trail segment follow. The categories covered are design opportunities and challenges, environmental conditions and midblock road crossings/major trail intersections. Most of the features described are also included in Appendix A, individual segment-by-segment maps atlas.

Segment 1: Tualatin River crossing to SW Beef Bend Road

Design opportunities: This segment is within the City of King City and between the Tualatin River and SW Beef Bend Road. The segment is 0.79 mile long. It slopes toward the river from an elevation of 245 to 110 feet at the top of the bank. Most longitudinal slope is less than 5 percent. There are three sets of power transmission lines in this segment. BPA power lines and poles are within utility-owned right-of-way, and the larger PGE power towers are within easements crossing private properties. The BPA corridor is 100 feet wide between the river and the segment’s approximate midpoint. The PGE corridor paralleling this BPA section is 125 feet wide. 137th Avenue parallels the west side of the BPA power corridor from this midpoint to Beef Bend Road. 137th appears to be within BPA property, in which case the northerly half of the BPA corridor may be 150 feet wide. For this segment, additional research as part of WTMP Right-of-Way reports may be necessary to make a final determination.

This segment passes newer residential development in King City on its east side, with unincorporated older rural residential development to the west. At its southeast end, the corridor is abutted by the King City Community Park and a small wetland that appears to be a stormwater management feature constructed to serve the nearby housing development.

Environmental conditions: This segment’s intersection with and eventual crossing of the Tualatin River and associated riparian areas provide an opportunity to improve wildlife movement and linkages. The King City Community Park and an adjacent wetland at the south end of the segment, and areas to the west that are primarily older, larger lot, low density residential, provide useful habitat for wildlife. There is a linear unnamed open space along about two-thirds of the segment’s east side and a small wetland about midpoint. The increased human activity approaching and crossing the river through this segment and adjacent housing developments could impair some wildlife presence and movements. DEQ pollution monitoring wells in place to monitor prior petroleum pipeline leakage pollution on the south side of the Tualatin River could influence bridge siting.

Crossings and trail intersections: The Westside Trail’s crossing of the Tualatin River and connections to both the Tualatin River Greenway Trail and the Tonquin Trail to the south of the river are the major challenges to developing Segment 1. SW Beef Bend Road, a Washington County arterial, is the boundary between Segments 1 and 2 at a midblock location. The high vehicular speeds on SW Beef Bend Road are a significant challenge to ground wildlife crossings.

Table 2. Design opportunities, Segment 1: Tualatin River crossing to SW Beef Bend Road

Opportunities	Challenges
Views of Tualatin River, bridge or bankside interpretive facilities/viewpoint	Bridge crossing required to complete regional trail connections.
Links to Tualatin River Greenway and Tonquin Trail on south bank of river	Bridge permitting and construction will be costly and complex.

Access to river via boat landing or launch	The riverbank is highly degraded.
Linear open space on east side of segment may provide opportunities for trail location and/or additional buffers	Stormwater wetland and park development may constrain bridge and/or trail location.
Existing wetland provides amenity and potentially buffers trail from park	Three sets of power transmission lines may limit trail alignment options.
Community park, paved and graveled parking, rest facilities, playground, playing field, tennis court, all make this a high activity area	Residences adjacent to segments may desire vegetative buffers, transmission line sets may constrain placement of buffers.
Adequate space for major trailhead development and many potential trail access points from existing roads	ODEQ petroleum pipeline leak cleanup site on south side of river could impact bridge siting.
Connection to Deer Creek Elementary School	
Re-vegetate to enhance environment for trail users, neighbors, wildlife	

Table 3. Environmental conditions, Segment 1: Tualatin River crossing to SW Beef Bend Road

Condition	Impact
General segment habitat – grass/forb	Potential for pollinator, small mammal, songbird use/movement along segment.
General vicinity habitat/land use – residential	Community park and residential landscaping has potential for wildlife access/linkages to river.
Non-wetland waters	River is termed “riverine, lower perennial, unconsolidated bottom” in National Wetlands Inventory (NWI).
Wetlands	Stormwater management wetland feature near King City Park may limit trail and bridge location options. A small emergent wetland mid-segment may provide habitat improvement potential.
Riparian areas	Tree and shrub cover and mudflats adjacent to river are likely wildlife movement corridors and areas for potential habitat improvements.
Floodplain	Trail would intersect floodway and floodway fringe of Tualatin River. Possible outright flooding of segment during major flood events.

Table 4. Crossings and trail intersections, Segment 1: Tualatin River crossing to SW Beef Bend Road

Name/classification	Impact
SW Beef Bend Road – Washington County arterial	Midblock crossing will be subject to WTMP crossing analysis based on county standards. Potential Westside Trail access point, and significant wildlife crossing challenge.
Tualatin River	Bridge crossing may impact wildlife movements across river and within riparian area, both positively and negatively.
Tualatin River Greenway Trail	Regional land trail planned to connect at this point. Regional water trail will cross under bridge. Potential boat landing or launch development would connect to Westside Trail.
Tonquin Trail	Planned regional trail will connect north to Westside across Tualatin River bridge.

Segment 2: SW Beef Bend Road to Tigard city limits

Design opportunities: This segment travels up and across the west slope of Bull Mountain between SW Beef Bend Road and the Tigard city limits. Segment 2 is 1.15 miles long. Most of the segment slopes toward the south from an elevation of 670 to 250 feet. Longitudinal slopes of 14 percent to 20 percent are common. The corridor includes BPA-owned right-of-way and PGE easements over private lands. The BPA power corridor is 100 feet for the full length of the segment. The parallel PGE-controlled power corridor is approximately 125 feet wide between SW Beef Bend Road and Woodhue Street, narrows to between 100 feet and 115 feet in the middle of the segment, and widens back out to 125 feet between 144th Avenue and SW Bull Mountain Road.

The combination of steep slopes, the narrowed section of power corridor, tax lot patterns, and prior residential development may make ADA-compliant trail alignments challenging in parts of this segment. In particular, this segment traverses some large estate residential development across a deep wooded gully at the segment’s midpoint. Even if a narrow trail with some switchback, stairway or bridged sections is determined to be a preferred or even required solution, pedestrian-only and/or on-street options for bicyclists may be necessary. Potential on-street options are primarily very steep and may require circuitous and out-of-direction travel.

Environmental conditions: Any viable wildlife habitat within or along this segment is heavily influenced by residential development, although the wooded gully and the estate developments preserve some wooded habitat.

Crossings and trail intersections: The Westside Trail corridor crosses three local or neighborhood streets midblock — Colyer, Woodhue, and 144th Avenue, and one collector roadway — SW Bull Mountain Road. All are in Washington County jurisdiction.

Table 5. Design opportunities, Segment 2: SW Beef Bend Road to Tigard city limits

Opportunities	Challenges
Views over surrounding landscape improve with increased elevation	Steep slopes will require switchbacks to provide more accessible trail, and associated retaining walls and resulting longer physical trail will be more costly.
Two local existing trails connect neighborhoods on either side of corridor but do not connect to or cross corridor	A steeper, higher challenge trail design would decrease accessibility.
Several potential trail access points from existing roads	Stormwater treatment facility north of SW Beef Bend Road may constrain trail location.
A steeper, higher challenge trail design would offer more aerobic workout	Three sets of power transmission lines may limit trail alignment options.
Potential bridge crossing at segments midpoint may be an opportunity for improved wildlife movement and trail user views	Deep gully crossing corridor is approximately 40 feet deep and may require bridge crossing.

	Some of the narrow portions of corridor are steeply sloped and may require trail switchbacks, stairways.
	Private driveway and landscapes cross corridor.
	Residences adjacent to segments may desire vegetative buffers, but locations of transmission line towers may constrain placement of buffers.
	Existing grass is mowed periodically. Mowing frequency may affect potential to establish prairie habitat.

Table 6. Environmental conditions, Segment 2: SW Beef Bend Road to Tigard city limits

Condition	Impact
General segment habitat – grass/forb	Potential for pollinator, small mammal, songbird use/movement along trail segment.
General vicinity habitat/land use – residential	Small forested segment at gully near midsection and a small wooded area at north provide habitat diversity.
Wetlands/non-wetland waters	Steeply sloped gully is likely to be vegetated drainage or linear wetland.

Table 7. Crossings and trail intersections, Segment 2: SW Beef Bend Road to Tigard city limits

Name/classification	Impact
Segment crosses three Washington County local streets or neighborhood routes	County standards for midblock local street crossing would apply.
Segment crosses one Washington County collector – SW Bull Mountain Road	County standards for midblock collector street crossing would apply. SW Bull Mountain Road is a higher traffic roadway during commute hours and is a significant wildlife crossing challenge.

Segment 3: Tigard city limits to SW Barrows Road

Design opportunities: This segment crosses the west slope of Bull Mountain between the Tigard city limits and SW Barrows Road. North of SW Barrows Road is THPRD jurisdiction and a series of Westside Trail segments developed by that agency. Segment 3 is 0.83 mile long. Most of the corridor slopes toward the north from an elevation of 650 to 240 feet. Longitudinal slopes of 12 percent to 25 percent are common. As with Segments 1 and 2, BPA owns a power transmission right-of way, and PGE controls parallel sections via easement. The BPA-owned power corridor is 100 feet wide for the full length of Segment 3. The parallel PGE-controlled corridor is approximately 130 feet wide at the segment’s north end between SW Barrows Road and Fern Street and narrows to approximately 125 feet for the balance of the segment, except potentially at the south end of Hillshire Woods where property lines indicate the PGE corridor may be as narrow as 105 feet.

Surrounding development is primarily fairly new single-family residential, with some estate-sized parcels as well as more conventional single-family lots. Much of the large lot estate development remains heavily wooded. Although some of this segment is narrow and steep, there is more adjacent open space and less immediately abutting residential development in this segment as compared to Segment 2. This may afford more flexibility, notwithstanding slope constraints, to build a full-purpose, ADA-compliant trail within the corridor.

Environmental conditions: Segment 3 appears capable of providing wildlife linkages between the steeply sloped drainages east and west of the corridor. Hillshire Woods, a concave, forested feature abutting the east side of the segment’s midsection, appears to be the headwaters of Summer Creek. In addition to Hillshire Woods and Northview Parks, there is a large open space surrounding Tigard’s Ascension Trail to the east. This trail could connect to the Westside Trail corridor along a short section of built street.

Crossings and trail intersections: The Westside Trail corridor crosses four Tigard local streets or neighborhood routes midblock: Mistletoe, Creekside, Fern, and Horizon.

Table 8. Design opportunities, Segment 3: Tigard city limits to SW Barrows Road,

Opportunities	Challenges
Views over surrounding landscape improve with increased elevation	Steep slopes will require switchbacks to provide more accessible trail and necessary retaining walls and longer physical trail could be more costly.
The Ascension Trail through a nearby wooded area is accessible via sidewalks	Summer Creek headwaters cross corridor and provides some riparian habitat.
Several potential trail access points from existing roads	Three sets of power transmission lines may limit trail alignment options.

Existing grass could be re-vegetated to enhance environment for trail users, neighbors, wildlife	Residences adjacent to segments may desire vegetative buffers, but locations of transmission line towers may constrain placement of buffers.
Part of the corridor is bounded by Hillshire Woods and Northview Park on the east	
Connections to existing trails in Northview Park and Barrows Park	

Table 9. Environmental conditions, Segment 3: Tigard city limits to SW Barrows Road

Condition	Impact
General segment habitat – grass/forb	Potential for pollinator, small mammal, songbird use/movement along trail segment.
General vicinity habitat/land use – residential	Substantial open space (1300 linear feet on west side, 3500 linear feet on east side) adjacent to corridor through publicly owned natural areas and wooded areas associated with private large lot houses have potential for improved wildlife access.
Wetlands/non-wetland waters	Headwaters of Summer Creek should be preserved as part of trail development-channel may have seasonal flow.
Unstable slopes	DOGAMI maps indicate some small areas of historic landslides just east of the corridor within Hillshire Woods.

Table 10. Crossings and trail intersections, Segment 3: Tigard city limits to SW Barrows Road

Name/classification	Impact
Segment crosses four Tigard local streets or neighborhood routes	City or county standards for midblock local street crossings would apply.

Segments 4.12 and 4.13 (south portion): MAX Blue Line crossing to Nike open space

Design opportunities: Segment 4.12 is between the Tualatin Hills Nature Park and TriMet MAX Blue Line and SW Jenkins Road. This segment is 0.31 mile long. An undeveloped section of Segment 4.13 will also be evaluated as part of 4.12. This partial undeveloped section is about 400 feet long and runs from SW Jenkins Road past a Nike-owned open space to the south end of a developed trail that enters the main Nike campus. The power corridor is mostly flat at an elevation of 190 feet and is 100 feet wide. BPA controls the corridor through ownership. PGE power lines and easements no longer parallel the BPA lines.

Most of Segment 4.12 passes the PGE westside maintenance yard and abuts SW 153rd Drive. Some of the PGE yard is actually developed and fenced within the trail corridor and occupied permanently by utility vehicles and equipment, making habitat enhancement, much less trail development, highly challenging. There may be several potential trail alignment options outside of the corridor, depending on the flexibility of the area’s major property owners (PGE, TriMet, Reser’s, and Nike) and the degree to which on-street trail sections along SW 153rd Drive would be desirable or required, particularly as a function of getting over the MAX Blue Line and past the PGE yard. These options will be fully evaluated under the WTMP Trail Corridor Analysis task.

Environmental conditions: Segment 4.12 crosses Cedar Mill Creek at its north end near SW Jenkins Road. The undeveloped portion of Segment 4.13 is adjacent to a Nike-owned open space. This Nike open space is east of the segment, is traversed by Cedar Mill Creek, and opens up into a pond and wetland at its center.

Crossings and trail intersections: The Segment 4.12 crossing of the MAX Blue Line is a major challenge facing this segment and the overall development of the Westside Trail. SW Jenkins Road, a Washington County jurisdiction arterial, connects Segments 4.12 and 4.13 at midblock. The south end of this joint segment will connect to trails within the Tualatin Hills Nature Park, and at the north end connects to developed trail that enters the main Nike campus.

Table 11. Design opportunities, Segments 4.12 and 4.13 (south portion): MAX Blue Line Crossing to Nike open space

Opportunities	Challenges
View mix of large wooded open spaces and urban development	Corridor crosses active light rail line and may cross and intersect with inactive rail spur.
Provide link between trails at Tualatin Hills Nature Park and Nike campus	TriMet would require extensive improvements for at-grade crossing or re-route to existing improved crossing at SW 153rd Drive; bridge permitting and construction over the MAX line would be costly.

Tualatin Hills Nature Park has an existing trailhead with parking, drinking fountain, and restrooms	Alternative alignment to use existing light rail crossing at SW 153rd Drive would require on-street portion of trail.
Connection through Tualatin Hills Nature Park to regional Waterhouse Trail	Power transmission line locations may limit trail alignment options.
Existing grass is mowed periodically, re-vegetate to enhance environment for trail users, neighbors, wildlife	PGE substation and maintenance yard has fences, parking, structures, storage areas and driveways in corridor.

Table 12. Environmental conditions, Segments 4.12 and 4.13 (south portion): MAX Blue Line Crossing to Nike open space

Condition	Impact
General corridor habitat – grass/forb upland and emergent wetland habitat (Segment 4.12) and mixed “created” wetland/landscaped habitat along established trail (Segment 4.13)	Significant forested component in close proximity to Segment 4.12 has potential for improved wildlife movements; Nike campus trail (Segment 4.13) is mostly landscaped with some use for pollinator, small mammal, songbird use/movement along trail segment.
General vicinity habitat/land use – mixed commercial use and large tracts of undeveloped open space	Approximately 25 percent of segment is open space at northern end of Segment 4.12 (associated with Cedar Mill Creek and its riparian area) and supports wildlife movements.
Non-wetland waters	Cedar Mill Creek supports six fish species.
Wetlands	Riparian wetlands associated with Cedar Mill Creek in Segment 4.12. Wetlands potentially extend 500 feet along northern portion of trail alignment. Palustrine, scrub-shrub wetlands east of and palustrine, forested wetlands west of Segment 4.12. This area likely serves as a wildlife movement corridor along the stream and between the wooded open spaces east of the segment.
Floodplain	Trail segment intersects floodway and floodway fringe. Cedar Creek has a 100-year floodplain documented on FEMA mapping and thus outright flooding of segment during major flood events is possible.

Table 13. Crossings and trail intersections, Segments 4.12 and 4.13 (south portion): MAX Blue Line Crossing to Nike open space

Name/classification	Impact
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TriMet MAX Blue Line	Major crossing in the WTMP and will be subject to separate analysis. Although light rail trains are high speed, close nearby stops and the intermittent nature of this traffic makes it a lesser barrier to wildlife than is an arterial roadway.
SW Jenkins Road - Washington County arterial	Midblock crossing will be subject to WTMP crossing analysis based on county standards. Possible Westside Trail access point and significant wildlife crossing challenge.

Segment 4.14: SW Walker Road to US 26

Design opportunities: This segment is between the north side of the Nike campus at SW Walker Road and US 26 and is 0.91 mile long. The segment is fairly flat, undulating between elevations of 220 and 240 feet. The power corridor is 100 feet wide. The southerly two-thirds of this segment are adjacent to multi-family and single-family developments. A long-established, landscaped corporate business park sits astride the northern third of the segment.

Environmental conditions: Pioneer Park separates the business and residential areas around this segment. In one location near Greenbriar Parkway, a large paved and landscaped parking area serving the business park occupies the full width of the corridor.

Crossings and trail intersections: SW Walker Road, a Washington County jurisdiction arterial, connects Segments 4.13 and 4.14 at midblock. This segment also crosses Pioneer Road, a neighborhood route in Washington County jurisdiction, and Greenbriar Parkway, which is the only City of Beaverton street crossing within the WTMP study area. The eventual Westside Trail will be close to developed trails within Pioneer Park, but short spurs would be necessary to connect.

Table 14. Design opportunities, Segment 4.14: SW Walker Road to US 26

Opportunities	Challenges
Mix of housing, park and office park “frames up” more interesting views	Two sets of power transmission lines may limit trail alignment options.
Potential links to Pioneer Park and trails and Cornell Oaks Business Park pedestrian walkways	Several areas used for vehicle parking, circulation, and corporate business park landscaping, may constrain trail location.
Access to Meadow Park Middle School	Residences adjacent to segments may desire vegetative buffers/transmission lines sets may constrain placement of buffers.
Several potential trail access points from existing roads	Steep fill slope at south end of the corporate business park may need switchback and retaining wall to provide ADA-compliant trail grade.
Re-vegetate to enhance environment for trail users, neighbors, wildlife	Large parking lot in corridor south of Greenbrier Parkway may require joint trail/vehicle usage of existing paving or alternative alignment.

Table 15. Environmental conditions, Segment 4.14: SW Walker Road to US 26

Condition	Impact
General corridor habitat – grass/forb	

General vicinity habitat/land use – dense residential/commercial/industrial	Small portion of segment abuts Pioneer Park which has potential for improved wildlife access.
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Table 16. Crossings and trail intersections, Segment 4.14: SW Walker Road to US 26

Name/classification	Impact
SW Walker Road - Washington County arterial	Midblock crossing will be subject to WTMP crossing analysis based on County standards. Significant wildlife crossing challenge although the high level of urbanization in this area already limits wildlife presence.
Segment crosses one local street and one neighborhood route	City or county standards for midblock local street crossing would apply.

Segments 4.15 and 4.16: US 26 to NW Oak Hills Drive

Design opportunities: Segment 4.15 crosses US 26 and ends at NW Cornell Road. Segment 4.16 starts at NW Cornell Road and ends at NW Oak Hills Drive. The last 100 feet or so of Segment 4.16 is within the Oak Hills Neighborhood. The two segments total 0.67 mile. The corridor is fairly flat, undulating between elevations of 230 to 260 feet and back down to 220 feet. The Segment 4.15 power corridor is 100 feet wide. The Segment 4.16 power corridor is 90 feet wide except between the north end of Union Cemetery and Oak Hills Drive where it widens to 100 feet.

Segment 4.15 passes between several closely abutting industrial buildings, transitioning to closely abutting multi-family developments nearer to NW Cornell Road. North of NW Cornell Road, Segment 4.16 passes a large nursery operation to the west and multi-family residential to the east, single-family residential area around Hunters Drive, and finally passes Union Cemetery and crosses the Hunters Woods open space.

Environmental conditions: A small wetlands at the south end of Segment 4.15 is located at the probable north end of any trail bridge crossing US 26. US 26 will also be a major challenge for crossing wildlife. Segment 4.16 crosses the Hunters Woods open space and Willow Creek

Crossings and trail intersections: The Segment 4.15 crossing of the ODOT jurisdiction US 26 is the major challenge facing this segment. In addition, Segments 4.15 and 4.16 connect midblock over NW Cornell Road, a heavily trafficked Washington County urban arterial. Segment 4.16 also crosses NW Hunters Drive and NW Oak Hills Drive. A private road crosses Segment 4.15 just north of US 26 and connects industrial developments to the east and west.

Table 17. Design opportunities, Segments 4.15 and 4.16: US 26 to NW Oak Hills Drive

Opportunities	Challenges
View mix of housing, businesses and parking frame more interesting views	Bridge or other special crossing will be required to cross US 26. Overhead power lines run north-south as well as east-west on north side of highway.
View of nursery, Union Cemetery and Hunters Woods open space	Segment 4.16 narrows to 90 feet.
US 26 is below existing grade on both north and south sides of corridor, reduces need for approach ramps to bridge	Bridge permitting and construction may be costly.
Re-vegetate to enhance environment for trail users, neighbors, wildlife	Two sets of power transmission lines may limit trail alignment options.
Access to Sunset High School and Terra Linda Elementary School	Several areas used as graveled parking lots, potential trail/vehicle conflicts. Also nursery uses in corridor.

The multiple open spaces crossed by this trail segment – Hunters Woods, Union Cemetery, Willow Creek – represent opportunities for views and interpretive facilities	Willow Creek just south of NW Oak Hills Drive may require boardwalks or other special trail treatments.
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Table 18. Environmental conditions, Segments 4.15 and 4.16: US 26 to NW Oak Hills Drive

Condition	Impact
General corridor habitat – grass/forb and blackberry thicket	Potential for use by pollinators, small mammals, songbirds for forage/nesting/movement.
General vicinity habitat/land use – dense residential/commercial/industrial	
Segment crosses Hunters Woods open space and passes near to Union Cemetery	Open space and cemetery could be habitat/wildlife islands accessed by trail wildlife movement corridor.
Waters	Willow Creek flows east-west, perpendicular to Segment 4.16. The associated riparian corridor provides wildlife passage up and downstream.
Wetlands	A small, emergent/scrub-shrub wetland is located west of and within Segment 4.15 at its southern terminus where the highway bridge would presumably be placed.
Floodplain	FEMA flood mapping does not show either of these segments within 100-year floodplain, but a review of DOGAMI digital elevation maps indicates this may not be accurate. Further investigation may be necessary.

Table 19. Crossings and trail intersections, Segments 4.15 and 4.16: US 26 to NW Oak Hills Drive

Name/classification	Impact
US 26	Challenges of crossing of this highway will be varied and multiple—bridge or tunnel construction, utility relocations, constrained areas, adjacent development. This highway is also probably the greatest challenge to wildlife movements within the entire corridor.
NW Cornell Road – Washington County arterial	Midblock crossing will be subject to WTMP crossing analysis based on county standards. Westside Trail access point and potential wildlife crossing challenge, especially given high levels of

	commuter traffic.
Segment also crosses two local or neighborhood streets	County standards for midblock local street crossing would apply.
Segment crossed by private industrial road	Could create conflicts with industrial traffic.

Segments 4.17 (north portion) and 4.18.1 (south portion): NW Perimeter Drive to NW Kaiser Road

Design opportunities: A short undeveloped portion of Segment 4.17 from NW Perimeter Drive to NW West Union Road is within the Oak Hills Neighborhood and is about 300 feet long. The south portion of Segment 4.18.1 runs from West Union Road to NW Kaiser Road and is 0.26 mile long. The corridor slopes to the north from an elevation of 280 to 250 feet. The power corridor is 100 feet wide. The south portion of Segment 4.18.1 abuts large lot residential housing to the west, with single-family housing lying to the east.

Environmental conditions: Within the southern portion of Segment 4.18.1, there are no significant environmental conditions impacting potential trail alignments. The north end of the trail in this section will have to connect across NW Kaiser Road to the terminus of the trail system crossing Bronson Creek, which is scheduled for construction by mid-2014.

Crossings and trail intersections: NW Perimeter Drive is a local street within the Oak Hills Neighborhood. Segments 4.17 and 4.18.1 connect midblock across West Union Road, a Washington County arterial with growing traffic volumes as areas west and north of Oak Hills urbanize. The south portion of Segment 4.18.1 also crosses NW Kaiser Road, a Washington County collector, where it will connect with a trail section scheduled to be built by mid-2014. The curve and slope of NW Kaiser as it crosses the trail corridor may require a more extensive midblock crossing treatment than normally applied to collector roadways.

Table 20. Design opportunities, Segments 4.17 (north portion) and 4.18.1 (south portion): NW Perimeter Drive to NW Kaiser Road

Opportunities	Challenges
Views of residences and open space	Two sets of power transmission lines may limit trail alignment options.
Several potential trail access points	Some parts of corridor have enough cross-slope that trail might require low retaining walls to be ADA-compliant.
Re-vegetate to enhance environment for trail users, neighbors, wildlife	Trail might need detour from corridor and on-street segment in order to cross SW Kaiser Road safely.

Table 21. Environmental conditions, Segments 4.17 (north portion) and 4.18.1 (south portion): NW Perimeter Drive to NW Kaiser Road

Condition	Impact
General corridor habitat – grass/forb, blackberry thicket	Potential for use by pollinators, small mammals, songbirds for forage/nesting/movement.
General vicinity habitat/land use – mixed landscaped yards in dense residential	Densely treed residential area provides opportunities for songbirds and small

neighborhoods	mammals.
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Table 22. Crossings and trail intersections Segments 4.17 (north portion) and 4.18.1 (south portion): NW Perimeter Drive to NW Kaiser Road

Name/classification	Impact
Perimeter Drive – local street	County standards for midblock local street crossing would apply.
West Union Road – Washington County arterial	Midblock crossing will be subject to WTMP crossing analysis based on County standards. Potential Westside Trail access point and a significant wildlife crossing challenge given increasing levels of commuter traffic.
NW Kaiser Road – Washington County collector	County standards for midblock collector street crossing would apply. NW Kaiser Road is a high traffic roadway during commute hours and is a significant wildlife crossing challenge.

Segments 4.18.3 and 4.19: Rock Creek Trail to north of NW Springville Road

Design opportunities: Segment 4.18.3 stretches from the Rock Creek Trail to NW Springville Road and is 0.44 mile long. Segment 4.18.3 abuts Kaiser Woods Park and residential development to the west, Bethany Meadows Terrace Park, two large municipal water storage tanks, and agricultural lands to the east. The Segment 4.18.3 power corridor and lands to the east of Segment 4.18.3 are in Multnomah County and designated as rural reserves. These lands will stay in agricultural use for the foreseeable future.

Segment 4.19 is 0.65 mile long. The first two-thirds of this segment are within a BPA power line corridor. At the point at which the power line corridor turns northeast, the trail segment, as designated in the THPRD trail plan, continues due north along the Washington/Multnomah county line and across private lands. Abutting lands to the west are within Washington County and the UGB and will probably urbanize in the near future. Abutting lands under the power lines and abutting to the east are in Multnomah County and designated as rural reserves. These lands will stay in agricultural use for the foreseeable future.

The two segments slope from a low point of 360 feet in the south to a high point of 410 feet and then drop to 340 feet at the north end. The power corridor is 100 feet wide. The northernmost 1,450 feet of Segment 4.19 is not within any designated power corridor or a separate tax lot.

Environmental conditions: Both of these trail segments intersect with the most extensive grass/forb open spaces in the Westside Trail study area vicinity. The northern portion of Segment 4.19 is crossed by a minor drainage that flows into Abbey Creek. Abbey Creek eventually flows into Rock Creek.

Crossings and trail intersections: Two important developed trails intersect with Segment 4.18.3: THPRD’s Rock Creek Trail and trails within THPRD’s Kaiser Woods Park. The boundary between Segments 4.18.3 and 4.19 is NW Springville Road. NW Springville is designated as a local street within Washington County but is classified as a rural collector in Multnomah County.

Table 23. Design opportunities, Segments 4.18.3 and 4.19: Rock Creek Trail to north of NW Springville Road

Opportunity	Challenges
Views of Kaiser Woods Park, Bethany Meadows Terrace, other open space	Two sets of power transmission lines may limit trail location options.
Views of residential and agricultural areas frame more interesting views	Need to provide maintenance access to water tanks and agricultural land uses.
Connection to Rock Creek Trail	Power line corridor is in Multnomah County, and thus outside THPRD jurisdiction. There is no established parks provider for this segment.

Potential trail access points, including connection to trail in Kaiser Woods Park	
Re-vegetate to enhance environment for trail users, neighbors, wildlife	
Interpretative opportunity: UGB and agricultural lands	

Table 24. Environmental conditions, Segments 4.18.3 and 4.19: Rock Creek Trail to north of NW Springville Road

Condition	Impact
General corridor habitat – grass/forb and shrub thicket	Potential for use by pollinators, small mammals, grassland birds for forage/nesting/movement.
General vicinity habitat/land use – residential/agricultural	Potential for use by grassland birds, pollinators and small mammals. Extensive rural areas along Segment 4.19 provide opportunity for wildlife attracted to open habitat.
Non-wetland waters	Minor headwater drainage of Rock Creek.
Wetlands	Small emergent wetlands associated with headwater drainage.

Table 25. Crossings and trail intersections, Segments 4.18.3 and 4.19: Rock Creek Trail to north of NW Springville Road

Name/classification	Impact
NW Springville Road – Multnomah County rural collector (Springville is classified as a local street to the west once it enters Washington County)	Midblock crossing will be subject to WTMP analysis. Potential Westside Trail access point and significant wildlife crossing challenge.
NW Skyline Blvd. – City of Portland local street. Skyline provides access and thru traffic functions in excess of normal local street expectations	Midblock crossing will be subject to WTMP analysis. Entry of Westside Trail into Forest Park.
Rock Creek Trail – THPRD regional trail	Regional trail connects from west.

Segment 4.21: Bethany Terrace

Design opportunities: Segment 4.21 will connect two short trail segments (4.20 and 4.22) previously developed by THPRD. Segment 4.21 is 0.78 mile long and is crossed by a set of BPA power poles and lines. These power structures are permitted by easement with the underlying property remaining in private ownership. This segment slopes from a low point of 390 feet at the west end near NW Skycrest Parkway to a hilltop of 500 feet and back down to 400 feet at the east end near NW Redfox Drive. This segment includes farm residences and other buildings, tilled agricultural lands, and what appears on aerial maps to be produce farming and orchards. Segment 4.21 is within Washington County and the UGB.

Environmental conditions: A tributary of Bannister Creek crosses Segment 4.21 just west of NW Redfox Drive, and flows south into Bannister Creek Park, which abuts this segment to the southeast. Winter flooding is reported along the west end of the segment and the trail in Segment 4.20.

Crossings and trail intersections: Segment 4.21 does not cross any public streets, although private access driveways do cross and parallel the power corridor. The developed Segment 4.20 trail is within Bethany Terrace Park and crosses NW Skycrest Parkway, a Washington County local street, midblock. The Segment 4.20 trail then parallels the Greenwood Hills open space for another 270 feet, at which point it connects to this undeveloped trail Segment 4.21. The developed but short (0.12 mile) and very steep Segment 4.22 at the east end of Segment 4.21 follows the power easement and crosses NW Redfox Drive, another Washington County local street, and ends at the county line and UGB.

Table 26. Design opportunities, Segment 4.21: Bethany Terrace

Opportunities	Constraints
Views of Bethany Woods Terrace Park, Greenwood Hills Open Space, and West Hills	Trail may have to be routed across private property.
Views of residential and agricultural areas	Two sets of power transmission lines may limit trail alignment options.

Table 27. Environmental conditions, Segment 4.21: Bethany Terrace

Condition	Impact
General corridor habitat – grass/forb, agricultural crops	Potential for use by pollinators, small mammals, grassland birds for forage/nesting/movement.
General vicinity habitat/land use – agricultural/residential	Potential for use by grassland birds, pollinators and small mammals. Segment 4.21 provides opportunity for wildlife attracted to open habitat and forest edges.
Bannister Creek tributary	Crosses segment at east end.
Winter flooding along west end of segment	Could limit year-round usefulness of trail.

Table 28. Crossings and trail intersections, Segment 4.21: Bethany Terrace

Name/classification	Impact
No crossings within this segment	N/A

Segment 5: Multnomah county line to NW Skyline Boulevard

Design Opportunities: The probable route of the Westside Trail through this area is broadly defined. While other segments follow well-established lines primarily dictated by the power corridor, Segment 5 will require analysis across a broader landscape.

The western portion of Segment 5 is within rural Multnomah County and is designated as a rural reserve. The eastern portion is within the City of Portland. This steep segment totals slightly over 1 mile as the crow flies, and slopes from a low point of 490 feet at the west end on the Multnomah county line just northeast of NW Redfox Drive to 1,090 feet at the probable trail intersection at NW Skyline Boulevard, where the trail corridor enters Forest Park. The actual trail through Segment 5 will undoubtedly be much longer than an as-the-crow-flies route due to topographic challenges. For instance, even a narrow, pedestrian-only route climbing 600 feet in elevation at 7 percent slope would be at least 2.2 miles long, with potentially additional length needed to manage storm runoff, avoid tree root damage, and reach optimal drainage crossing locations.

Much of this segment may be too steep and wooded for a multi-modal paved trail, even one that parallels existing roads. In order to reduce grades, preserve trees, and minimize the need for land purchases and easements, a variety of design options may have to be considered. Segment 5 options may include but are not limited to splitting the Westside Trail into separate pedestrian and bicycle routes, using Segment 4.18.3 to connect the trail via NW Springville Road to NW Skyline Boulevard, and/or connecting the trail from Segments 4.20 or 4.21 across Segment 5 to NW Springville Road or NW Skyline Boulevard.

The BPA power line corridor that traverses Segment 5 could also be part of alignment solutions, although the steep grade of the power corridor makes it an unlikely candidate for any extended sections of trail. The WTMP Trail Corridor Analysis will provide for detailed evaluation of these potential constraints.

Environmental conditions: Segment 5 includes Bannister Creek, a tributary of Bronson Creek. Eventual trail alignments could potentially cross or parallel Bannister Creek and some additional unnamed tributaries more than once. This segment intersects a number of unnamed stream channels and drainages formed in the steep terrain. As the segment climbs into Portland's West Hills, it also crosses through the most densely wooded areas within the overall Westside Trail corridor. This habitat is the most likely area within the Westside Trail study area to encounter larger mammals such as deer, elk, and coyote, and woodland bird species.

Crossings and trail intersection: Depending on final alignment solution(s), the Westside Trail through Segment 5 could parallel NW Saltzman Road, NW Skyline Boulevard, and/or NW Springville Road before entering Forest Park. The trail will have to cross NW Skyline Boulevard at some point in order to enter Forest Park. Consideration will have to be given to these alignments and crossings relative to trail solutions with Forest Park (Segment 6) and the eventual intersection/crossings with and along US 30 connecting the Willamette Greenway Trail and the St Johns Bridge.

Table 29. Design opportunities, Segment 5: Multnomah county line to NW Skyline Boulevard

Opportunity	Challenges
Potential connection to 70+ miles of trails in Forest Park plus the Willamette Greenway	Improving NW Springville Road or NW Skyline Boulevard for bicyclists may be costly. For instance, the County ranks bicycle improvement to Springville as 26th out of 43 such projects in its adopted Capital Improvement Plan.
Improving NW Springville Road or NW Skyline Boulevard for bicyclists will improve safety and reduce conflicts with vehicles	The West Hills has slopes ranging from 12% to 50% or more and mixed coniferous/deciduous forests. The combination of steep slopes and dense forests will make tree preservation along the trail a significant challenge.
Topography and tree cover may require more narrow, hiking style trail design	Steep slopes also will cause higher trail development costs and increase the possibility of trail induced erosion and landslides.
NW Saltzman Road is paved west of NW Skyline Boulevard	The large number of trails within Forest Park that users would access from Segment 5 are built and maintained for a multiplicity of uses. Segment 5 solutions must take into consideration the potential impacts of Westside Trail users on the Forest Park system.
The large number of trails within Forest Park provide multiple options for moving different types of trail users entering and moving thru the park from Segment 5 to the Willamette Greenway and St. Johns Bridge	Segment 5 solutions must consider the differing routes and challenges connecting the Westside Trail through the Forest Park trail system to the Willamette Greenway and St. Johns Bridge.

Table 30. Environmental conditions, Segment 5: Multnomah county line to NW Skyline Boulevard

Condition	Impact
General corridor habitat – forest	Use by wildlife species suited to forest habitat.
General vicinity habitat/land use – undeveloped forest slope	Use by forest birds, pollinators and larger mammals. Extensive open space connecting to Forest Park, region’s largest open space.
Waters	Segment 5 intersects Bannister Creek. Other unnamed channels formed in hill slope folds intersect potential trail alignments.
Wetlands	Wetlands are likely associated with Bannister Creek riparian areas.

Unstable Slopes	DOGAMI maps indicate four small slide areas along NW Springville Road in Segment 5.
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Table 31. Crossings and trail intersections, Segment 5: Multnomah county line to NW Skyline Boulevard

Name/classification	Impact
NW Springville Road – Multnomah County rural collector	Potential Westside Trail access point and wildlife crossing challenge.
NW Saltzman Road – Portland local street	City of Portland standards for would apply.
NW Skyline Boulevard – Portland local street	City of Portland standards would apply.

