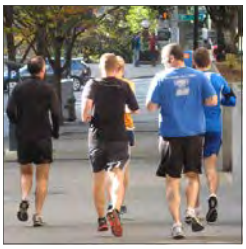
MAPLE VALLEY
NON-MOTORIZED TRANSPORTATION PLAN

March 2013

The City of
MAPLE VALLEY



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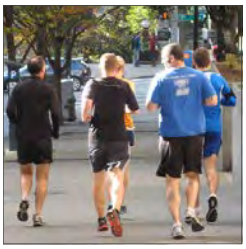

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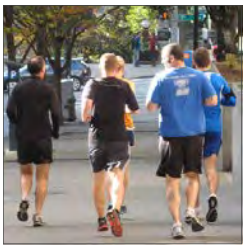


EXECUTIVE SUMMARY

Maple Valley citizens and civic leadership have expressed a desire to develop a more pedestrian and bicycle-friendly community. The City is in a unique position to implement non-motorized improvements almost immediately, as new roadways, housing, and civic amenities are in the early planning stages and slated for development as the economy gradually moves towards expansion.

This 2013 Maple Valley Non-Motorized Transportation Plan provides the community with a vision, strategy, and specific recommendations for improving their non-motorized transportation system. As an update of the City's 2004 Non-Motorized Transportation Plan, the 2013 Plan builds upon goals previously established, but clarifies a specific strategy for implementation. This Plan seeks to provide a visionary, yet practical, action strategy to make Maple Valley a multi-modal community.

The Plan was developed with a combination of input gathered through a public outreach process, observation and analysis of field conditions, and technical resources quantifying the relative value of potential connections. The public outreach process included three open houses over a six month period between June and December 2012, and provided specific information on routing and current deficiencies. The majority of users cited their primary reason for walking and biking as recreation, secondarily commuting, but all indicated these activities would increase significantly if more facilities were available. Wayfinding enhancements, such as signs and maps, were other improvements requested by the public.

Existing conditions along the corridors are briefly described in the project list and informed the selection of particular types of non-motorized facility improvements. A variety of maps generated for discussion with the public and used in the analysis are included in the appendix. Data gathering for the corridors did not include physical survey in the right-of-way, so final design may require adjustment to accommodate obstacles and encroachments.

Included are two route maps that describe the network of recommended non-motorized improvements. The **Facilities Network Plan** on page 19 provides an overview of the comprehensive network, with on-road and off-road facilities interconnected, without distinction between existing or planned facilities. The **Facilities Project Map** on page 21 identifies specific projects that are needed to complete the Facilities Network Plan, either with all new or partially upgraded improvements. A detailed matrix titled **Facilities Project List** starting on page 51 identifies the specific project limits and prioritization of routes.

Evaluation criteria to determine and prioritize routes were derived from discussion with the public and City staff. It was clear that Safety was of paramount importance to all users and this became a top-ranking criterion. Convenience, or the ease of connection to destinations, came in second, and Proximity to Destinations came in third. All other evaluation criteria were deemed important, but did not have a particular ranking. The top three criteria were given a weighted multiplier elevating certain projects to a higher priority for implementation. This information is valuable to citizens and City leadership when developing funding strategies and overall project budgets.

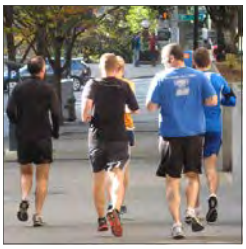
The Plan identifies a range of non-motorized facility types, or design standards, for these routes and makes recommendation based on factors such as roadway classification, speed and volume of traffic, intersection conditions, adjacent land uses, and constructability. The full range of design standards are presented in the Plan, however, not all are utilized in the final recommendation. The Plan is intended to allow for flexibility in design standards and project prioritization in order to accommodate changes that may occur over time in physical conditions, funding opportunities, or other project priorities.

Specific non-motorized improvements contained within the 2011 Transportation Element of the Comprehensive Plan also informed the recommendations made in this Plan. Bike lane and sidewalk improvements for the major corridors of Maple Valley-Black Diamond Road SE and SE 272nd Street/Kent Kangley Road SE are some of the specific improvements carried over from the Transportation Improvement Plan (TIP) project list. The Plan recommends incorporating TIP project improvements, but also expanding them to increase safety with the addition of a buffered bike lane or shared use path where space permits, or where easements may be negotiated with adjacent property owners now or in the future.

To address the public need for wayfinding enhancements, the Plan identifies short-term and long-term recommendations for signing and mapping. Trailhead design and signing may be a component of a larger “branding” effort the City of Maple Valley may pursue as the community grows and matures.

Funding opportunities for improvements are addressed, but these change quickly and should be reviewed on an annual basis. Management and maintenance challenges of facilities are briefly outlined. A strategy to fund maintenance for new facilities should be integral with the plan for construction, especially for off-road facilities.

The Plan provides a comprehensive summary of the process, results, and recommendations to guide Maple Valley citizens and City leaders in making informed decisions about non-motorized improvements over the coming years.



1 INTRODUCTION

Overview

Considerable planning and growth has taken place in Northwest communities over the past decades and there has been a growing awareness of the value and importance of connection. Residents can feel isolated in urban and suburban environments, and the citizens of Maple Valley have expressed a growing interest in becoming more reasonably and safely connected—to neighbors, the places they live and work, shop, go to school, and recreate. At the same time there is expanded recognition of bicycling and walking as integral and important components of an efficient transportation network. Increasing connections and providing for multiple modes will provide safety, health, recreation, environmental, and economic benefits.

The City's 1999 Comprehensive Plan included a series of goals and policies that promote non-motorized transportation. The City's Park, Recreation, Cultural and Human Services Plan, completed in 2000, focused on recreation trail systems and their benefits. Concurrently, federal, state, and regional planning efforts expressed support and advocacy for expansion of non-motorized transportation improvements and recognition of their standing in the transportation hierarchy.

In 2004, the Maple Valley City Council adopted the City's first Non-Motorized Transportation Plan, a document that expressed the citizens' interest in more proactive bicycle and pedestrian planning and initiated discussion of facility types, design standards, route selection, and implementation strategies. In 2011, an update to the Comprehensive Plan included the Transportation Element that expanded its strategy and implementation goals and policies to include non-motorized facilities.

This Plan builds upon the previous work and includes detailed inventory of existing conditions for non-motorized travel. It evaluates the suitability of existing and potential corridors, defines destinations and desirable connections, makes recommendations for design standards, and identifies specific corridors for improvement. Perhaps most importantly, it describes a vision for the future of bicycling and walking in Maple Valley and establishes a set of Guiding Principles to follow in the 21st century.

Background

Maple Valley has the enviable distinction of being situated near the crossroads of two major rail corridors, both of which are inactive and have been developed as regional trails, providing a tremendous benefit to the walking and biking community. This, combined with enormous expanses of undeveloped open space surrounding the City, provides great opportunity for numerous non-motorized connections between City sidewalks and streets to back road trails. City residents take full advantage of these amenities, but as the population grows, so grows the demand for more and safer non-motorized connections.

Even with those benefits, Maple Valley suffers the common transportation dilemma common to many newer communities. The City's street system has evolved for the movement and convenience of the automobile. Only recently has the value of accommodating the non-motorized user become more widely recognized. While many roadways were not built with pedestrians and bicyclists in mind, the community is cognizant that now is the time to incorporate non-motorized facilities before new streets are built and as old streets are improved. This Plan provides a strategy, based on the desires of the community, to accomplish that goal.

Organization

This Plan is structured to present the Facility Plan and Project List in its entirety in the report. Additional background information, such as data references, technical memoranda, and reference or analysis maps, is provided in the Appendix. This allows for the Plan to be at the core of the working document with reference provided for those elements that are important to the evolution of the Plan, but not central to its final recommendation.

The following is a summary of the content of each section of the Plan.

Introduction

The need for the Plan is addressed in the first section in a statement of guiding principles that inform and direct its focus and content. This includes a summary of the public outreach process and reference to the plans and policies that establish the need for such a plan for Maple Valley and neighboring communities.

Vision and Purpose

Section 2 highlights the vision and purpose of the Plan and addresses the core issues identified by the community and City leaders for development and implementation.

Goals and Policies

Expanding upon the goals and policies of the earlier plan, Section 3 further articulates the vision by identifying specific objectives and outlining policies and strategies to achieve those objectives. The goals and policies have been expanded to address changes in the community's focus and to ensure that new facilities will be incorporated as the City continues to grow.

Facilities Plan

Section 4 includes an overview of existing facilities, Plan recommendations, and detailed description of Plan components in the following subsections:

- The Facilities Network Plan provides for an overview of how the Maple Valley non-motorized facilities network will look and function following full implementation of the programs and improvements recommended in the Plan. The Plan makes a distinction between on-road and off-road facilities. This is the comprehensive look at a system that may be twenty or more years into the future.
- The Facilities Project Map identifies necessary projects to achieve the Network Plan and the particular facility type recommended for that project. The map does not include existing facilities, which may make the map appear incomplete. The map is the working document to advance implementation.
- Existing facilities are described, with reference to maps generated for the analysis. Analysis maps are included in the Appendices.
- Route selection criteria is addressed, clarifying why particular routes were selected and later prioritized in the project ranking process.
- Under the heading of The Plan, the selection of facility type for each route is more fully described. Each facility type is described in detail, with examples and information to assist in the final implementation.

Implementation

- Implementation describes the projects in greater detail, cross-references them to the projects in the Transportation Improvement Plan and the Transportation System Plan, and provides the final ranking and cost for each project.
- Management and maintenance is addressed in this section.

Conclusion

The Conclusion summarizes recommendations, with reference to implementation of specific corridors, and provides detailed description of the more readily achievable corridors.

Appendix
Additional detail and supporting documents are in the Appendices at the end of the Plan.

Guiding Principles

Based upon community input, discussions with staff, previous Maple Valley planning, and experience in similar communities, the Consultant suggests a simple set of Guiding Principles intended to guide both the planning process and the Plan itself. The Plan should:

- Create a non-motorized system that is safe, convenient, and accessible for users of all abilities;
- Suggest improvements that are consistent, balanced, and compatible with existing local and regional transportation corridor design standards;
- Maintain, and be consistent with, the positive character of Maple Valley's neighborhoods and community values;
- Initiate, encourage, and support pedestrian and bicycle education, safety, and enforcement programs;
- Initiate programs to encourage walking and cycling as healthy alternatives to the automobile.

Public Outreach

Maple Valley residents, citing the vast number of trails and open space within and just beyond the city limits, place high value on quality of life issues. Maple Valley was ranked as one of the ten Best Towns for Families by *Family Circle Magazine* in 2011 and a *Best Place to Raise Kids 2013* by *Businessweek Magazine,* and residents feel strongly that the community is one in which they and their children have good opportunities for education and recreation. Building on those opportunities is important, and that was made clear during the public meetings.

Open House Meetings

Three public open houses were held to present data and receive feedback at certain milestones in the process. The open houses were held in June, September, and December of 2012. The first open house was to present background information on the project and discuss a wide range of issues with residents including routes, access, safety concerns, facility types, costs and funding opportunities, and other topics. Residents completed a survey that provided information on what type of facilities were important, project priorities, and specific problem areas. The second open house was paired with a Planning Commission meeting in which a draft project map, project list, and facility options were presented for discussion. The third open house meeting was also paired with a Planning Commission meeting for presentation of the final draft plan, report, and project list.

Survey and Discussion

Results of the survey and public comment may be found in Appendix B, but a summary of comments and concerns is presented below:

- The majority of users state their primary reason for walking and biking as recreation, with smaller percentage using non-motorized facilities for getting to work or school. Paired with that was the comment that ALL of those activities would increase significantly if more facilities (sidewalks, trails, bike lanes) were available.
- Safety was the most important aspect of using these facilities with convenience ranking second.
- There were many comments requesting more paved trails, noting the longer regional facilities (Lake Wilderness Trail and east segment of the Cedar River Trail) were unpaved. There were also users who identified the unpaved trails as more desirable for off-road bikes and horses.
- Many requested more sidewalks, specifically connecting neighborhoods, extending along the major arterials, and filling in gaps in the system.
- Several attendees talked about the value of more wayfinding signs to inform them where trails would lead, and/or a comprehensive map showing how the network of trails, side-walks, and bike facilities were connected. Better identification of trailheads and locations for parking was requested.

Follow-up Efforts

Continued public outreach during the planning and implementation of these projects will be important to the success of the Plan and will inform the next update to the Plan.

Existing Plans, Policies, and Standards

It was important to review previous planning documents and policies relative to the development of non-motorized facilities. Planning for these facilities is addressed at all levels of government: local, regional, and state. While each has a different focus, the primary message is that non-motorized facilities serve to make a community more livable, safer, healthier, and convenient. Those planning documents included the following.

Local

1999 and *2011 Update to the City of Maple Valley Comprehensive Plan*

The Transportation Element of the 2011 update addresses the City's transportation goals and policies, as well as the City's future transportation system and facilities. The projects identified in the Transportation Improvement Program (TIP), contained within the Transportation Element of the Comprehensive Plan, are also identified in the project list for this Plan.

2000 and *2007 Update to the Maple Valley Parks, Recreation, Cultural and Human Services Plan*

This plan presents policy and strategy for acquiring and developing parks, recreation, cultural, and human services. This includes pathways and trails, trailhead parks, and open space, all important components of the non-motorized system. The plan identifies a significant need for recreational facilities, specifically pathways and trails, and proposes a range of trail system types be incorporated into the City's planning effort.

2004 City of Maple Valley Non-Motorized Transportation Plan (NMTP)

As the basis for this Plan, the 2004 report identifies goals, policies, existing facilities, a proposed network of improvements, and facility types. The 2004 NMTP focused on coordination with projects that evolved from the Comprehensive Plan, the Transportation Improvement Program, the Witte Road corridor study, and with input from the public and City staff. With the completion of some projects and/or modification of corridors, this Plan provides an update to City strategies for implementation and an expansion of the proposed network and project list.

> *The future success of regional bicycling relies on improving the on-street bicycle network.*
>
> *Left by the Side of the Road*

Regional

Destination 2030 Update: Metropolitan Transportation Plan for the Central Puget Sound Region

The Puget Sound Regional Council developed Destination 2030, with updates, to provide a strategy for making decisions related to growth, transportation, and other elements that affect the quality of life for residents in the region.

The report proposes strategies to curb trends leading to greater congestion and to encourage non-motorized improvements. Some specific implementation strategies identified in this regional plan are adapted for this Plan.

2004 King County Regional Trail Inventory and Implementation Guidelines

Maple Valley's system of trails is linked to King County's regional facility. In this document, King County's inventory examines each trail in its system and identifies missing links that may be addressed with either short-term or long-term connection strategies. The regional trails that are in, or in close proximity to, Maple Valley include Lake Youngs Trail and Connectors; SR 18 Trail; Green to Cedar Rivers Trail; and the Landsburg-Kanaskat Trail.

Left by the Side of the Road: Puget Sound Regional Bicycle Network Study, Assessment and Recommendations

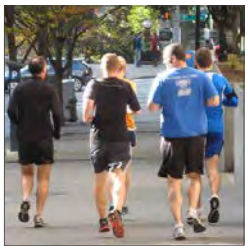
This document, compiled by numerous agencies in the Puget Sound region and published by Cascade Bicycle Club, purports to be the "most detailed assessment of bicycle routes ever performed" in the Puget Sound region. The study examines existing conditions, identifies missing links, and prioritizes key connections. The plan examines and identifies the SR 169 Maple Valley to Black Diamond route as a high priority route that is but one small segment of a state-wide, long-distance bicycle route.

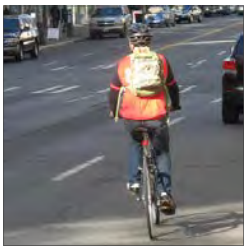
State

2010 Washington Transportation Plan (WTP) 2030

The WTP explores implementation strategies for a state-wide transportation network. They are organized around six statutory transportation policy goals in the Revised Code of Washington (RCW): economic vitality, preservation, safety, mobility, environment, and stewardship. The challenge of funding transportation projects is a theme presented in much of this recently updated document. Strategies that address non-motorized use include improving connectivity to facilitate travel across modes, encouraging partnerships among agencies to improve mobility in corridors, and improving corridors holistically to support all modes.

> *Invest in sidewalks and other facilities to provide a safe transportation experience for pedestrians.*
>
> *WTP 2030*





2 VISION AND PURPOSE

There is conclusive evidence from around the country that walking and cycling offer safety, transportation, health, and economic benefits to individuals as well as to the larger community. The citizens of Maple Valley and the Northwest have expressed a strong desire to make their own communities safer, more connected, and attractive for pedestrians and cyclists. This Plan proposes tools and strategies for achieving that vision and making Maple Valley a more walkable, bikeable community.

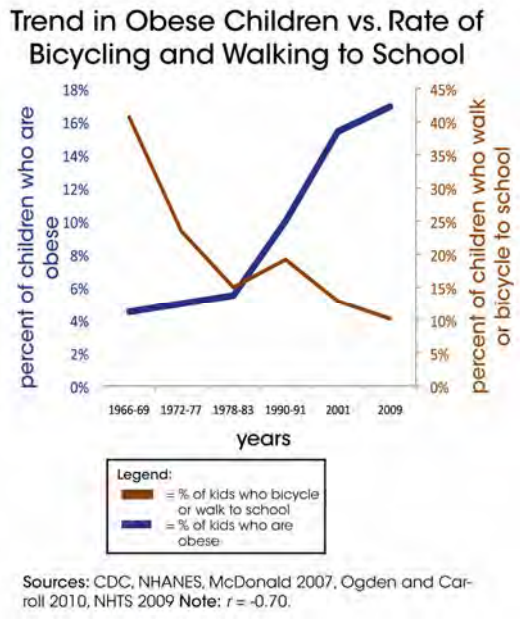
Safety

According to data from the National Highway Traffic Safety Administration (NHTSA), bicyclists and pedestrians account for 13.5% of all traffic fatalities, despite the fact that they make up only roughly 11.5% of all trips. This disproportion is even more dramatic in large urban settings where they represent almost 30% of all traffic-related fatalities.

A significant goal in more purposeful planning with pedestrian and cyclists in mind is to positively affect their safety. A Federal Highway Administration review finds that designs that include bicycle lanes, sidewalks, crosswalks, raised medians, turning controls, traffic calming, better lighting, and accessibility treatments improve pedestrian, bicyclist, and motorist safety.

Transportation

Creating opportunities for replacing auto trips with walking and cycling offers significant benefits of reduced congestion and parking demands, less costly infrastructure, and greater efficiency. Nearly 40% of all trips in the U.S. are two miles or less and 27% are one mile or less (NHTSA).



New research from Portland State University suggests that customers who arrive by bike spend 24% more per month than those who arrive by car. Another study in San Francisco showed that bike lanes increased the number of customers arriving by bike and improved sales for local businesses.

Since 2000, bike commuting has grown 73% in the largest U.S. cities. The share of bike trips made for utilitarian purposes increased 21% between 2001 and 2009.

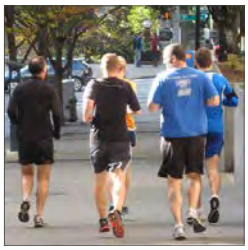
With improved and more complete streets, these trips are considered easily walkable or bikeable.

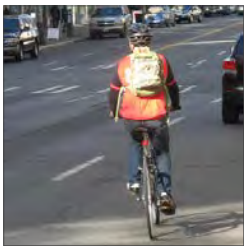
Health

The Center for Disease Control (CDC) has officially declared obesity an epidemic in the U.S., and studies examine the lifestyle choices that may be contributing factors. A sedentary lifestyle is near the top of the list of contributing factors, and studies suggest a link between the built environment and levels of physical activity. Where environments are built with pedestrians and bicyclists in mind, more people walk and bicycle. Data shows that states where walking and bicycling levels are lowest, obesity level is highest.

Economic Benefits

Even in difficult economic times, transportation systems can be an important sector for growth. While there is not yet a great deal of data on the economic impact of walking and bicycling, recent studies indicate the investment in these modes can result in new job creation, higher property values, increased tourism spending, and savings from reduced traffic congestion. A 2010 study concluded that pedestrian and bicycle infrastructure construction projects create 11-14 jobs per $1 million of spending while road infrastructure projects create approximately 7 jobs per $1 million. Local communities now vie for “Bicycle Friendly Community” and “Walking Friendly Community” designation, which has proven to be good for local business.





3 GOALS AND POLICIES

Previous Plans

Goals, Policies, and Strategies were identified to guide the implementation of the 2004 *Maple Valley Non-Motorized Transportation Plan*. Since that time, the City and citizens of Maple Valley have had the opportunity to assess how the development of the non-motorized facilities is supported by these Goals, Policies, and Strategies, and to determine if any adjustments are necessary to ensure consistency with adopted local plans and policies.

The growth of the City in the nine years since the 2004 Plan has heightened the incentive to ensure that non-motorized facilities are incorporated into the evolving infrastructure. While the goals have not changed appreciably, there are additional policies and developing strategies that have been identified to ensure transportation improvements include a greater range of non-motorized facilities.

Current Plan

The Goals, Policies, and Strategies of the 2004 NMTP have been updated to provide additional and more detailed policies that expand available tools to address the needs of individual modes of non-motorized transportation.

Goal One
Provide facilities for non-motorized use that are convenient, accessible, safe, and attractive.

Policies and Strategies

- Establish a set of non-motorized facility Design Standards consistent with other City planning documents and recognized federal and state guidelines (AASHTO, ADAAG, MUTCD, etc.). Employ these standards, as well as Maple Valley's Design Review Guidelines, Road Standards, and applicable standards from the Washington State Department of Transportation, in constructing new facilities and retrofitting existing City transportation facilities to address the needs of pedestrians and bicyclists.

- Employ Design Guidelines for Off-Street Facilities included in the Non-Motorized Transportation Plan and geometric design guidelines from the Maple Valley Parks, Recreation, Cultural and Human Services Plan for walking and bicycling facilities that are not part of the general purpose roadway system.
- Develop and maintain an inventory of existing non-motorized transportation facilities as a basis for on-going and future facility planning.
- Establish a rational system for priority evaluations and implementation of non-motorized facilities based upon such factors as public safety, convenience, etc. Allow for "opportunity projects" as defined herein.
- Regularly evaluate the needs of pedestrians and bicyclists and include consideration of pedestrian and bicycle improvements of highest priority during Capital Improvement Program update processes.
- When appropriate, place conditions or offer incentives on proposed new developments to ensure convenient walking and bicycling systems that are attractive, safe, and provide system continuity.
- Integrate walking and bicycling facilities into the City's Capital Improvements Projects

- Establish procedures for the acquisition of rights-of-way, easements, or other linear corridors for the establishment or expansion of non-motorized facilities.
- Encourage and support private and public institutions in providing pedestrian and bicycle facilities that serve to enhance/expand the system.
- Establish budgeting and expenditure procedures and priorities for the on-going construction, maintenance, and operation of non-motorized facilities.
- Regularly monitor to ensure that signs, pavement markings, pedestrian crossings, and wheelchair ramps are established and maintained to provide a high degree of safety and accessibility.
- Encourage or require, as appropriate, the provision of accessories, including parking for trailheads, disabled parking, bicycle racks, bus stops, rider shelters, bike carriers on transit buses, and other devices that facilitate transfers to, from, and between non-motorized modes of travel.
- Develop a set of equestrian facility Design Standards consistent with established requirements for safe equestrian use.
- Preserve existing off-road soft surface trails on existing corridors within and through Maple Valley that are consistent with facility standards and logically connect to other equestrian trails and facilities.
- Incorporate soft-surface equestrian trail components into trail projects on corridors that serve to expand or enhance the equestrian trail system in Maple Valley.

Goal Two

Coordinate policies and planning processes to promote non-motorized transportation and to ensure a high degree of consistency with surrounding agencies and organizations.

Policies and Strategies

- Cooperate and coordinate with regional agencies and adjoining jurisdictions to ensure continuity of the non-motorized transportation system.
- Preserve utility and transportation corridors both inside and outside the City that protect non-motorized goals from encroachment, barriers, and abandonment.
- Confer regularly with officials from Tahoma and Kent School Districts to evaluate changing needs for bus stops and school walking routes and respond with appropriate actions.

Goal Three

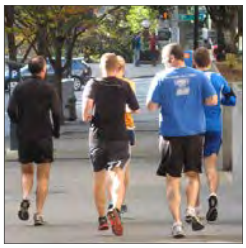
Encourage the use of non-motorized transportation.

Policies and Strategies

- Advance the development of bicycle and pedestrian safety education programs to expand understanding, observance of traffic laws, and to promote overall safety for pedestrians and bicyclists of all ages and skill levels.
- Support and enforce laws that are designed to enhance safety for pedestrians and bicyclists of all abilities.
- Provide bicycle and pedestrian facilities that logically connect local and regional traffic generators and destinations (e.g., neighborhoods, schools, community facilities, places of employment, transit connections, etc.).
- Develop a map of Maple Valley's bicycle routes, trail system, and walking routes and make it available on the City web page and at information outlets.

According to the 2009 National Household Travel Study (NHTS), 49% of walking trips are men and 51% are women, while among bicycle trips 76% are male and 24% are female. Walking is generally distributed proportionally among age groups, youth under age 16 make up 39% of bicycle trips but are 21% of the population.

- Establish a unified signage system for identifying routes and access points within the non-motorized system that is consistent with established standards (e.g., *Manual on Uniform Traffic Control Devices for Streets and Highways* [MUTCD]) and that builds upon the City's streetscape and furniture standards.
- Remove hazards in all transportation corridors where non-motorized use is permitted.
- Encourage walking and cycling by sponsoring or participating in activities and events that promote non-motorized transportation or recreation.
- Where appropriate, place conditions or offer incentives to private businesses who provide non-motorized accessories/accommodations (e.g., bicycle racks, shelters).



4 FACILITIES PLAN

Introduction

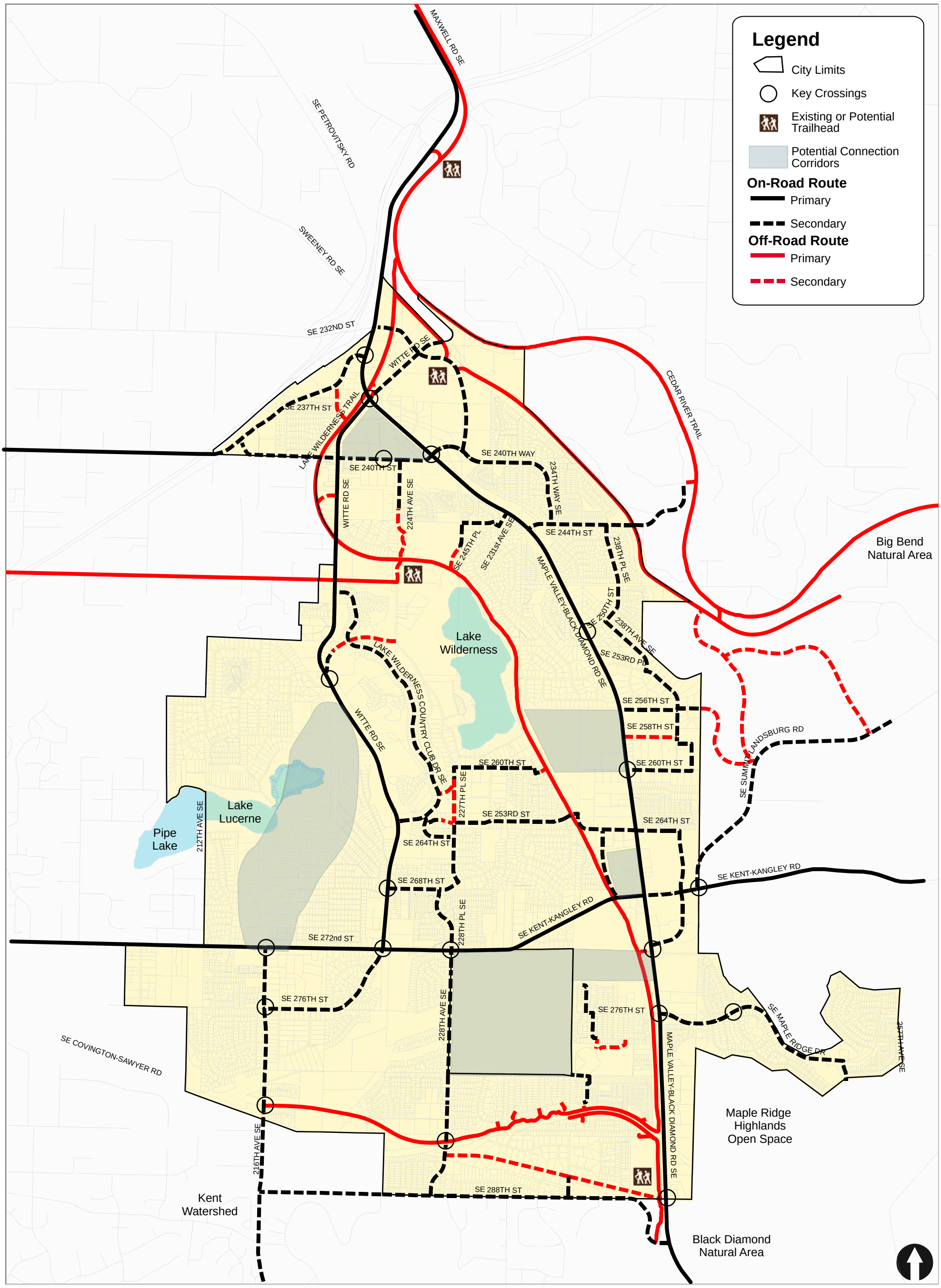
This section provides an overall guide for the design and implementation of future pedestrian and bicycle facility improvements in Maple Valley.

The **Facilities Network Plan**, Figure 1, page 19, provides a generalized overview of the comprehensive network. This map shows the interconnected system of on-road and off-road facilities. Each is defined with primary and secondary corridors. These distinctions are not indicative of a hierarchy for development, rather they are used to make a distinction between routes that are more regional or that extend completely through the community (primary), and those that serve to make the second leg of the journey to connect to destinations, extend into neighborhoods, or complete a loop (secondary). The Facilities Network Plan is comprehensive, showing all facilities without distinction between those already in place and fully functional, those with partial or limited non-motorized improvements, or those without non-motorized improvements.

The **Facilities Project Map**, Figure 2, page 21, identifies specific facilities that are needed to complete the Facilities Network Plan. The legend indicates the type of improvement proposed. The **Facilities Project List**, Figure 18, pages 51–56, provides detail such as termination points and prioritization of routes.

The Facilities Project Map builds upon projects and corridor improvements that have been completed, partially completed, or identified as in need of further enhancements in the 2004 Non-Motorized Transportation Plan and the 2011 Transportation Element of the Comprehensive Plan. The Map has also been guided by:

- The updated vision, goals, and policies established during this planning process;
- Level-of-service measures and system performance criteria that have remained consistent with those established in the earlier plans;
- Concerns, issues, and ideas generated by citizens, stakeholders, and policy-makers during the planning process.



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0 0.25 0.5 1 Miles

The City of MAPLE VALLEY

Maple Valley Non Motorized Transportation Plan

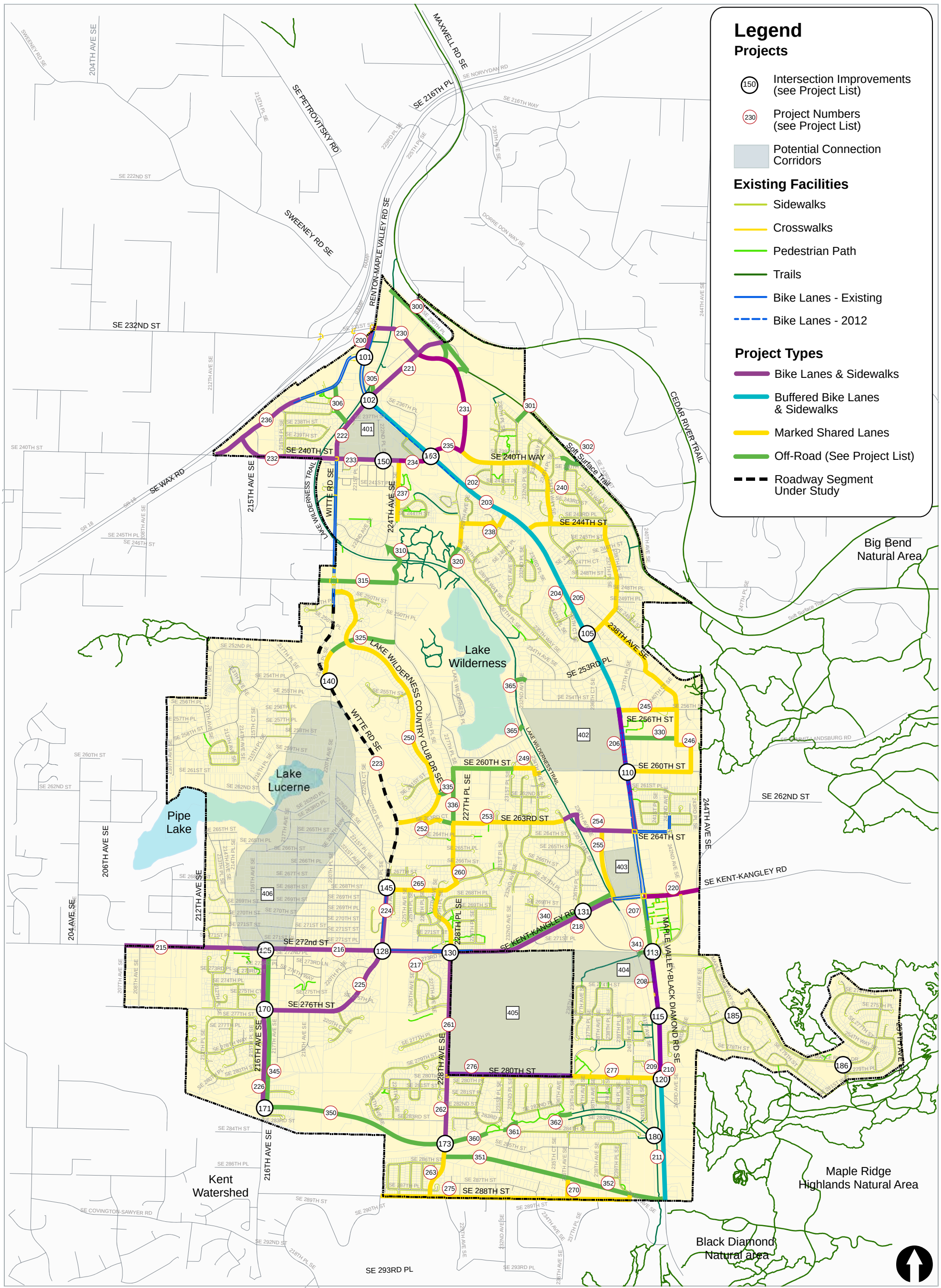
FACILITIES NETWORK PLAN

transpoGROUP

MACLEOD·RECKORD

Figure 1

Facilities Network Plan



The City of MAPLE VALLEY

Maple Valley Non Motorized Transportation Plan

FACILITIES PROJECT MAP

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Figure 2

Facilities Project Map

Existing Facilities

Inventory and analysis of existing conditions is a prerequisite to developing the Plan. Much of the base map information was assembled from the City's GIS mapping system and City-generated data from other planning efforts. The maps generated by the Consultant for public meetings and for analysis are in Appendix C and include the following:

- **2007 Aerial Photo**, Figure 19, shows the project area with City limit boundaries and an aerial photography overlay.
- **Destinations/Traffic Generators**, Figure 20, identifies the destinations within City limits, and immediately adjacent, that are likely traffic generators. Key destinations are fairly evenly distributed throughout the community. Note that Maple Valley-Black Diamond Road SE serves as both a spine connecting to several destinations as well as a significant obstacle for travel to destinations on the east and west side of the corridor.
- **Existing Non-Motorized Network**, Figure 21, based on City GIS data, identifies the existing improvements for the non-motorized community. Of particular interest are the short segments of bike lane from recent arterial improvements and the concentration of sidewalks in the newer neighborhoods.
- **Public and Utility Rights-of-Way**, Figure 22, shows that unused rights-of-way and the utility corridors that cross large areas of the south end of the City are prime opportunities for making connections.
- **Transit Facilities**, Figure 23, shows the routing of transit facilities (216th Ave SE, SE 272nd Street, and Maple Valley-Black Diamond Road SE) that leaves large segments of Maple Valley without close access to transit facilities.
- **Regional Trails**, Figure 24, is a broad overview of Regional Trails in the vicinity and shows the potential routing of the Tri-City Trail Corridor connecting Covington, Maple Valley, and Black Diamond.

Additional background information provided by the City is also in Appendix C and includes the following:

- **City Features and Planning**, Figure 25, shows City features included on the Destinations Map and Planning designations as they specifically related to traffic generators.
- **Land Use Map**, Figure 26, is from the Comprehensive Plan from several years prior. Most of the land use has not changed significantly.
- **Neighborhood Map**, Figure 27, identifies the neighborhoods and schools.
- **Parks, Recreation, and Open Space**, Figure 28, is a map highlighting the parks, future parks, and golf courses within the City limits and the King County open space and trails that extend beyond the City limits.

Route Selection

Destinations/Traffic Generators

Identification of the places people want to go is an important step to determining which routes should be targeted for pedestrian and bicycle improvements. The determination of important destinations, or traffic generators, was done through inventory and discussion with the public. The points mapped in Destinations/Traffic Generators, Figure 20, represent several categories of destinations:

- Parks and Open Space
- Retail/Commercial Areas
- Civic/Community Services
- Public Schools
- Churches and Places of Worship
- Transit Stops and Facilities
- Golf Courses

Evaluation Criteria

In order to resolve route selection and develop a plan for implementation, it is necessary to |establish criteria by which to (1) evaluate the route options and (2) prioritize the projects for development. Based on discussion with City staff and citizens of Maple Valley, the following criteria to gauge performance were developed and ranked. These are considered to be service based, or qualitative measures, rather than quantitative measures, and are ranked in priority order:

1. **Safety**
   *Ranked #**1** based on public survey input*
   Evaluation Criteria: Is the route safe to use, can your children use it?
   Prioritization Consideration: Does the route solve a safety problem or eliminate a known hazard?

2. **Connectivity to Destinations**
   *These next 2 criteria are different aspects of "convenience", which ranked #**2** on public survey input*

Evaluation Criteria: Does the non-motorized transportation system allow a user to get to their destination via a direct route with complete facilities?
Prioritization Consideration: Does the route provide a measureable improvement in connections to desired destinations?

3. **Proximity to Destinations**
   Another aspect of "convenience"
   Evaluation Criteria: Is the route close to important destinations that attract non-motorized users? Within ¼ mile or 5 minutes? Within ½ mile or 10 minutes?
   Prioritization Consideration: How many destinations are within a ½ mile of the project?

The remaining criteria were not ranked in priority order:

4. **Condition**
   Evaluation Criteria: Does the surface condition need to be addressed (pavement, width, visibility, sight distance)?
   Prioritization Consideration: Does the project provide or upgrade the conditions of a corridor to meet the needs of the anticipated users?

5. **Motorized Traffic Influence**
   Evaluation Criteria: Is the route comfortable to use relative to surrounding or adjacent motorized traffic?
   Prioritization Consideration: Will the project improve separation between motorized and non-motorized uses, or will it improve actual or perceived safety?

6. **Multimodal**
   Evaluation Criteria: Does the route accommodate more than one user type?
   Prioritization Consideration: Will the new route or facility expand the use to more than one user type?

7. **Funding**
   Evaluation Criteria: Is there funding, opportunity for funding, or is it in a corridor that has similar transportation enhancement improvements currently funded?
   Prioritization Consideration: Can the project be implemented because of the availability of funding?

The Plan

Proposed Facilities

The Facility Network Plan, as described in the Introduction of this section, provides the overall network of the entire system, whether already completed, partially completed, or undeveloped. The Facilities Project Map provides specific detail on the routes that need to be developed to complete the Network and provide a fully operational system. This next section addresses more specifically how these corridors might be improved for non-motorized use.

Facility Designation Criteria

While many of the recognized guidelines identify a range of criteria for selecting an appropriate facility type (see Figures 3 and 4), the final decision is influenced by local factors. Considerations include the following:

- Roadway classification – arterial, collector, local
- Traffic volume – including anticipation of near-term increases due to development
- Traffic speed – posted as well as actual
- Traffic mix – percentage of truck traffic in particular
- Expected users – do routes primarily serve schools (high use by children)
- Roadway and intersection conditions
- Driveways and access points – number, concentration, and service type
- Adjacent land use and availability
- Route completion or continuity – particularly if a facility type is already established
- Topography/gradient
- Cost/constructability

Other factors influencing facility designation include the work that has recently been completed on the Transportation Element of the updated Comprehensive Plan. Specific recommendations have been made in the Comprehensive Plan for non-motorized improvements in two major corridors including Maple Valley-Black Diamond Road SE (SR 169) and SE 272nd Street/SE Kent-Kangley Road (SR 516) and a number of other minor corridors. The corridors have been designated for the addition or completion of bike lanes and/or sidewalks to improve non-motorized connectivity. Those projects are included on the Facilities Network Plan and the Facilities Project List.

GENERAL GUIDELINES FOR SELECTING CROSS-SECTIONS ON ROADWAYS Adapted from WSDOT		
ROADWAY CLASSIFICATION	**TRAFFIC VOLUME AND SPEED (ADT = average daily traffic)**	**RECOMMENDED ON-ROAD CROSS-SECTION**
Highways and other high-volume streets with limited access	Speeds > 25 mph ADT > 2000	1st choice: *Shared use trail* 2nd choice: *4' min. shoulders, each side*
Arterials in residen-tial, commercial, industrial areas with higher access needs		1st choice: *Shared use trail* 2nd choice: *Bike lanes, each side*
Local streets, rural highways, Collector or minor arterials	Speeds < 25 mph ADT less than 2000	Shared roadway

Figure 3. WSDOT Guidelines for Selecting Cross-Sections

Figures 3 and 4 show a range of guide-lines and criteria that are considered in the region for development of particular facility types.

Generalized Bicycle Facility Designation	Detailed Bicycle Facility Designation	Speed Limit (mph)	ADT (vehicles per day)	Street Classification
Enhanced street	Neighborhood Greenway	25 or less	1,500 or less	Non-arterial
	Shared lane pavement marking (sharrows)	25	To be used due to ROW constraints or downhill	Non-arterial and Collector/minor arterials
In street, minor separation	Bicycle lane	25-30	8,000 or less	Collector arterial
	Buffered bicycle lane	25-30	15,000 or less	Collector/minor arterials
In street, major separation	Cycle track (raised or with barrier)	30 and greater	15,000 and above	Minor/principal arterials
Off-street	Multi-use trail	N/A	N/A	N/A

Figure 4. City of Seattle Preliminary Bicycle Facility Designation Criteria

Design Guidelines/Standards

The design guidelines described and illustrated in this section are intended to guide the design and development of pedestrian and bicycle facilities while allowing flexibility for site-specific conditions.

Established Design Guidelines and Recognized Standards

While most of the recommendations in this section are based on recognized state and national guidelines or on adopted City standards, some new facility types are not yet widely recognized. The development of non-motorized facilities is dynamic, and as community infrastructure grows and more non-motorized facilities are in demand, more innovative solutions are being developed. It is important that flexibility in design of these facilities is considered.

Some of the guidelines and standards used and referenced throughout this section include:

- National Association of City Transportation Officials (NACTO) *Urban Bikeway Design Guide*, 2011
- American Association of State Highways and Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities*, 2012
- American Association of State Highways and Transportation Officials (AASHTO) *Guide for the Planning, Design, and Operation of Pedestrian Facilities*, 2004
- National Standards for Traffic Control Devices *Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD), 2008
- Architectural and Transportation Barriers Compliance Board *Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way* (PROWAG), 2011

These standards and guidelines include dimensional recommendations for widths, cross-slopes, grades, surface treatments, separation of elements, marking, signage, and other elements in new or retrofitted facilities. The guidelines define minimum dimensional criteria for development of safe facilities functioning under normal conditions. Since potential grants to fund bicycle and pedestrian facilities are usually dependent upon state and/or federal guidelines, design flexibility may be limited. This is an important consideration as project planning and implementation evolves.

Design and descriptions of the types of facilities are presented in the following pages. Not all facility types are recommended in the Plan and nomenclature may vary among standards and jurisdictions, but all are facilities that will advance development of the non-motorized environment.

- Sidewalk
- Path
- Shared Use Path
- Side Path
- Shared Space
- Bike Lane
- Buffered Bike Lane
- Cycle Track
- Marked Shared Lane
- Bicycle Boulevard

Intersection and Crossing Treatments are included, and the category Other Considerations identifies a number of other physical and operational improvements to enhance non-motorized movement.

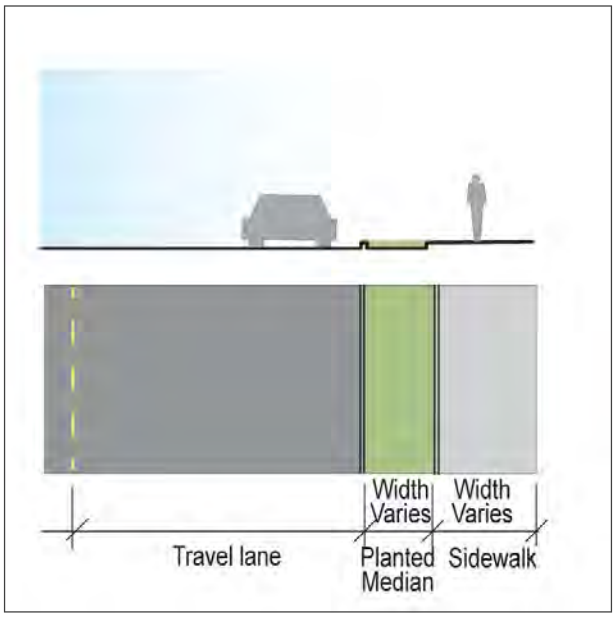
SIDEWALK

Minimum sidewalk width should be 5'; along principal arterials a minimum of 8'; in commercial districts the width may be 10' or more, depending on desired level of service.

In some areas a planting strip may be provided between the sidewalk and the curb. Providing a buffer between the sidewalk and travel lane enhances pedestrian safety. This buffer is often utilized for curb ramps, street light poles, trash pick up, traffic signs, and other obstacles. Recommended width for landscape buffers on local or collector streets is 2' to 4' wide and on arterials or major streets is 5' to 6' wide. Where there exists a likely upgrade of the Sidewalk to a Shared Use Path, the buffer should be a minimum of 5'.

216th Ave. SE

Maple Valley Black Diamond Rd.



228th Pl SE meandering sidewalk

Figure 5

PATH

Paths are off-road facilities that vary in width and surface treatment to suit the intended need and/or available space. They may be short connectors between roadway and a park or regional trail facility or they may be longer to connect multiple destinations. Paths are typically recreation rather than commuter corridors, accommodating slower speeds, with limited sight distance, and not always accessible for all modes. Paths can be upgraded with surfacing, by increasing the width, or providing switchbacks or stairs for greater accessibility.

Unsurfaced Path connects neighborhoods and extends to more non-motorized facilities.

Paved connections between houses formalizes and improves visibility of connections.

Unsurfaced Paths may be footpaths, off-road cycle paths, or equestrian trails. These are considered informal paths that may be good candidates for improvements, especially if they provide other connections.

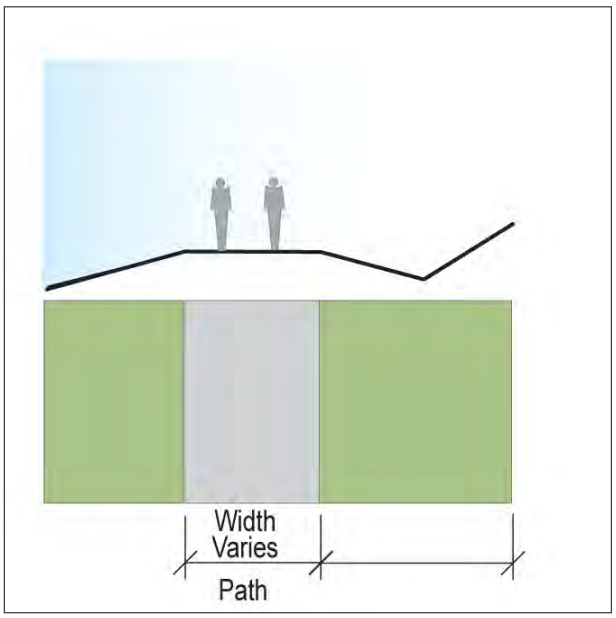


Figure 6

SHARED USE PATH

Per the AASHTO Guide for the Development of Bicycle Facilities, the recommended minimum width for a Shared Use Path is 10'. In rare instances, an 8' width can be adequate, such as where the following conditions prevail: (1) bicycle traffic is low, even on peak days or hours; (2) pedestrian use of the facility is not expected to be more than occasional; (3) there is good horizontal and vertical alignment allowing for frequent passing opportunities; and (4) normal maintenance procedures would not include vehicle loading conditions that would cause pavement edge damage. If there is substantial bicycle and pedestrian use and/or steep grades, the desirable width may be 12' to 14'.

In some cases where there is high volume mixed use of the Shared Use Path, it may be desirable to delineate users or direction of travel with striping, signage, or additional separation. Adequate sight distance through vegetation management and alerting bicycle traffic to slow in congested areas are recommended.

Cedar River Trail

Pipeline Trail

Lake Wilderness Trail

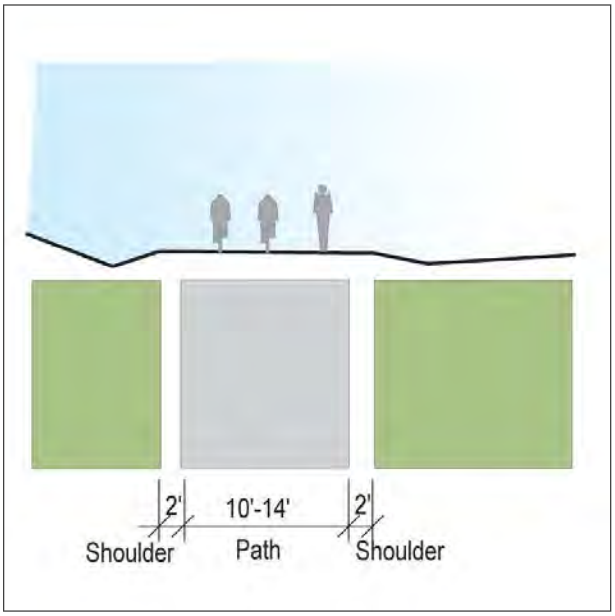


Figure 7

SIDE PATH

A Shared Use Path located immediately adjacent to a roadway is called a Side Path. It requires a minimum 5' separation between the travel lane and the paved edge of the path. Where the separation is less than 5', a physical barrier or railing of at least 42" height should be provided.

While a Side Path is considered safer than on-road facilities, there is greater potential for conflict and confusion between trail users and vehicles. Intersections and driveways are especially hazardous, as motorists may not notice cyclists approaching from their right; motor vehicles can block the path in a driver's attempt to gain visibility; sign orientation can be confusing to motorists and cyclists alike; barriers may require additional setback from travel lanes or paths to keep them from being obstructions.

Planted separation in addition to delineation for users.

Guardrail separation where there are space constraints.

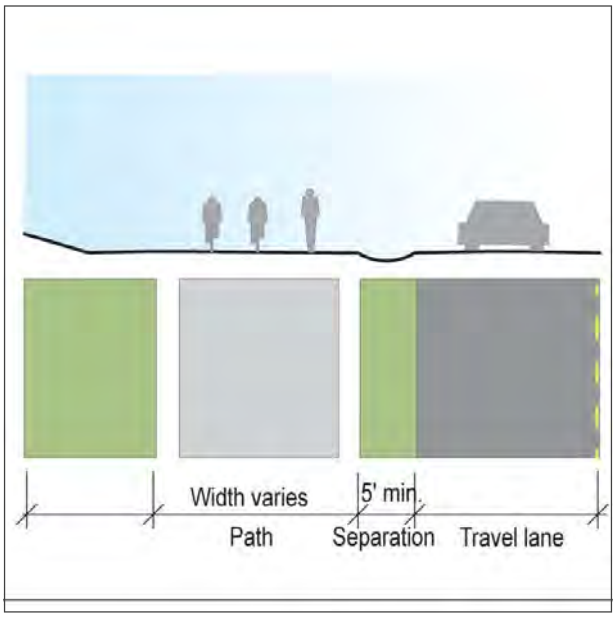


Figure 8

SHARED SPACE

There are currently no guidelines for these facilities, but there are certain features similar to many successful Shared Spaces in the United States and abroad. These are facilities shared by automobiles, pedestrians, and bicycles, without separate designation for uses. These are on low-volume, low-speed streets, typically located in either urban or residential conditions. Amenities include street furnishings, planting, rain gardens (stormwater treatment facilities), defined parking areas, pedestrian-scale surface treatments, and point-of-entry markers or gateways making it clear the corridor is primarily to service the non-motorized user. Most often neighborhoods or downtown districts are actively involved in the design and maintenance of a Shared Space, improving their success and reducing cost of maintenance.

Residential communities can adopt Shared Space concepts.

Urban street fair or farmer's markets often are Shared Space.

Convertible streets

Pedestrian-oriented street

Mixed use all areas

Figure 9

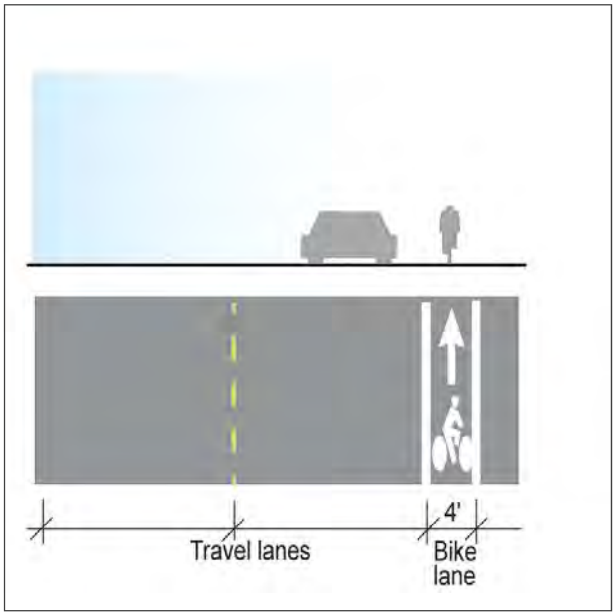
BIKE LANE

The AASHTO *Guide for Development of Bicycle Facilities* recommends Bike Lanes as one-way facilities, provided on both sides of two-way streets, adjacent to and separated from the travel lane by a 4” to 6” wide solid white stripe. Minimum width is 4’ in most locations or 5’ if the bike lane is adjacent to a vertical curb or guardrail, where vehicle speeds are higher, or substantial truck traffic is present.

Bike Lanes are most helpful on streets with more than 3,000 motor vehicle average daily traffic (ADT) and with a posted speed greater than 25 mph. Bike Lanes increase the predictability of bicyclist and motorist positioning and interaction. Designated lanes increase the total capacity of streets carrying mixed bicycle and motor vehicle traffic.

Bike Lane adjacent to a Paved Shoulder.

Bike Lanes on Witte Road SE



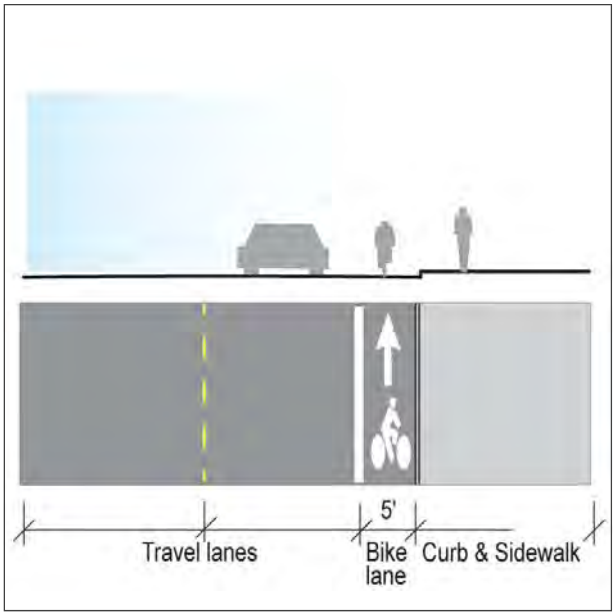


Figure 10

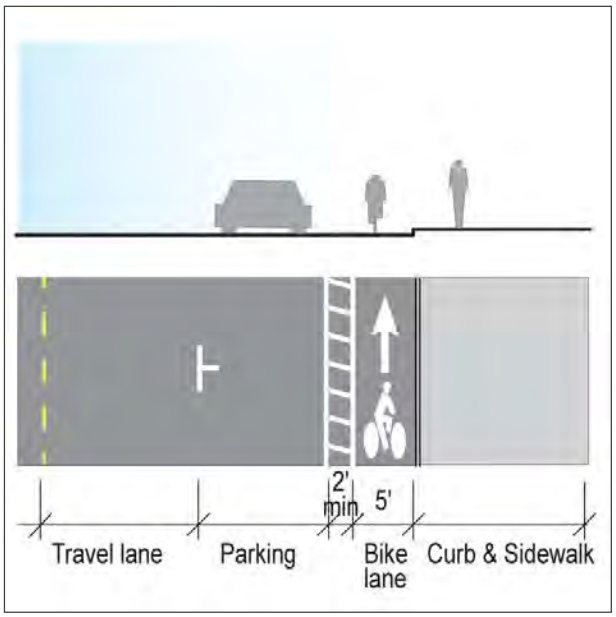
BUFFERED BIKE LANE

The AASHTO *Guide for Development of Bicycle Facilities*, 2012 edition, does not specifically differentiate Buffered Bike Lanes from Bike Lanes, however, recommendations for additional width are addressed. A striped buffer dimension is preferable to simply widening bike lanes in order to prohibit parking in the Bike Lane. On high speed roads, especially with truck traffic, a buffer zone provides lateral separation between motor vehicles and bicycles to minimize wind blast and other effects.

NACTO *Urban Bikeway Design Guide* provides detailed design guidance for Buffered Bike Lanes in a variety of travel lane and parking configurations. While Buffered Bike Lanes increase both the actual and perceived safety of cyclists, they may present challenges when incorporated on streets with multiple transit stops or loading zones.

Parking to left of Buffered Bike Lane.

Parking to right of Buffered Bike Lane.



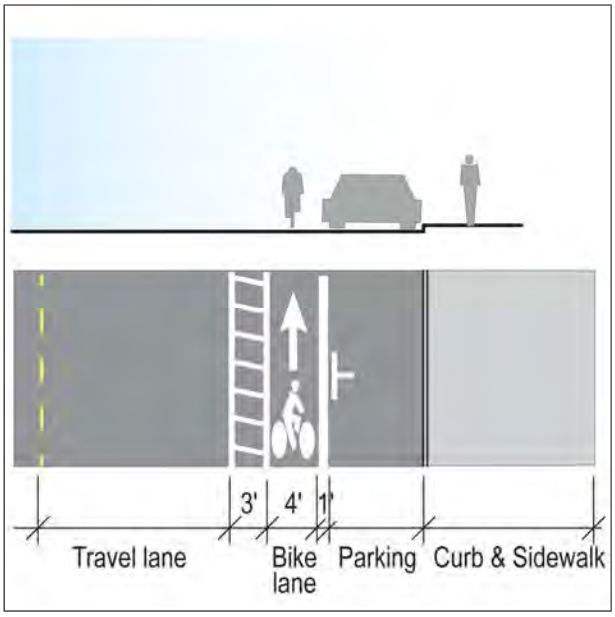


Figure 11

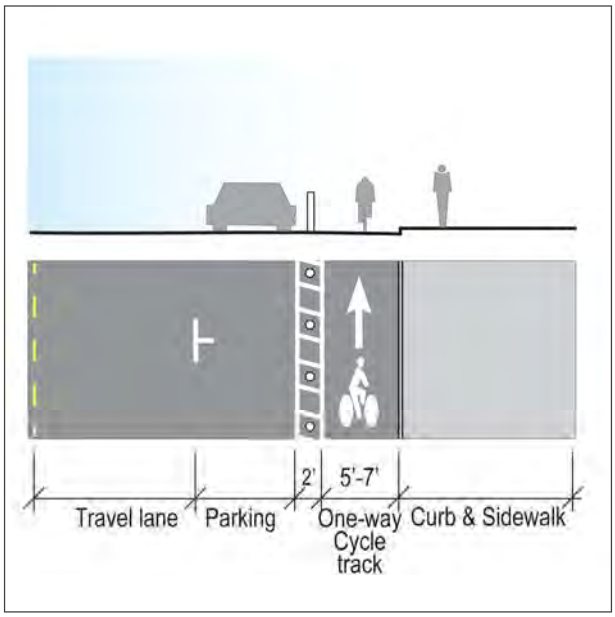
CYCLE TRACK

A Cycle Track is physically separated from motor vehicle traffic and distinct from the sidewalk. It is an exclusive bike facility that may be one-way or two-way, may be at street level or sidewalk level or partly between, and is typically on one side of the roadway. Separation between the Cycle Track and other modes may be defined with curbs, raised medians, planting strips, or differences in pavement color or texture. In situations where on-street parking is allowed, Cycle Tracks are located to the curb-side of the parking (in contrast to bike lanes).

Cycle Tracks provide the user with the safety of a separated path and the convenience of the on-street infrastructure. These facilities are not yet recognized in the AASHTO Guide, but are recognized in the NACTO Guide as an innovative solution to managing bicycle traffic in urban settings or where there is significant bicycle volume.

One-way Cycle Track

Two-way Cycle Track



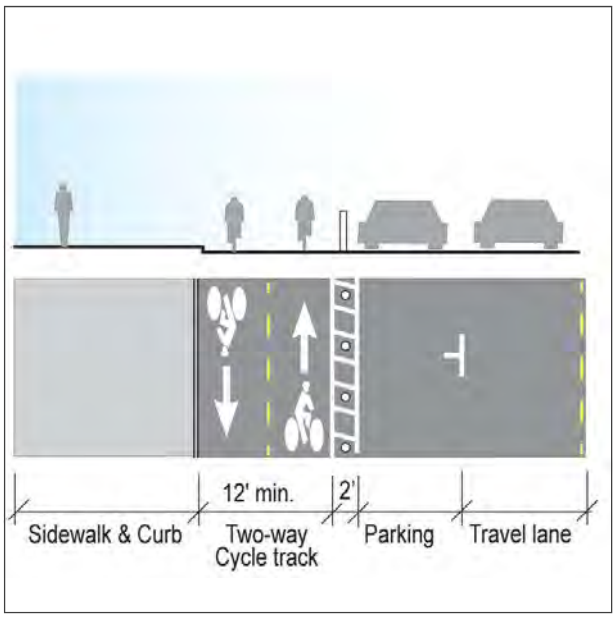


Figure 12

MARKED SHARED LANE

The Marked Shared Lane is now recognized in the 2012 AASHTO *Guide for Development of Bicycle Facilities* and is known in many communities as a Sharrow. Its use is becoming widespread and accepted in many communities. The Marked Shared Lane provides a higher level of guidance to bicyclists and motorists in corridors where there is insufficient width to provide Bike Lanes. Markings may include single or multiple chevrons, a bicycle symbol painted in or to one side of the travel lane, and/or posted signs. The intent is to provide additional recognition that the route is suitable and designated for bicycles.

Marked Shared Lanes are useful to complete gaps in a system between Bike Lanes. Marked Shared Lanes may be used asymmetrically, in a downhill lane, with Bike Lanes in the uphill direction.

Marked Shared Lane transition to Bike Lane on an incline. Note transition is reversed in opposite lane.

Example of Marked Shared Lane striping.

Example of Marked Shared Lane signing.

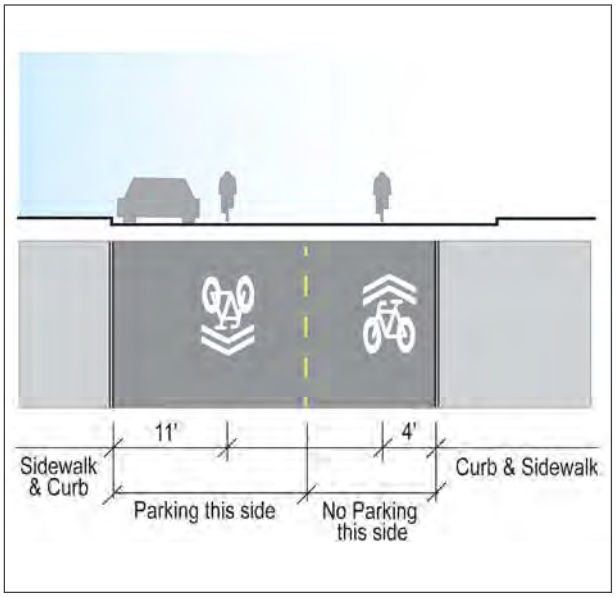


Figure 13

BICYCLE BOULEVARD

A Bicycle Boulevard is a local street or series of contiguous street segments that have been modified to function as a through street for bicyclists while discouraging through-automobile travel. Local access is maintained.

Bicycle Boulevards create favorable conditions for bicycling by taking advantage of low-volume, low-speed local streets with added physical and operational changes to ensure bicyclists can travel over greater distances with relative ease.

Bicycle Boulevards should be long enough to provide continuity over a distance typical of an average urban bicycle trip (2-5 miles). They can also be used for shorter distances when needed to connect path segments in constrained environments or as a short segment on a route between a neighborhood and a school.

A Bicycle Boulevard incorporates several design elements to accommodate bicyclists. These may include crossing improvements at major streets, traffic diverters at key intersections to reduce through vehicular traffic while permitting passage for cyclists, wayfinding signs, and a variety of traffic-calming features.

Traffic diverter at a major intersection.

Median refuge and cut-through.

Traffic calming measures

Wayfinding

Bicycle-only left turn lane

Figure 14

INTERSECTION TREATMENTS

Intersection Treatments are as varied as the types of roadways and non-motorized facilities and should be addressed specifically for the location. Some examples of Intersection Treatments to facilitate non-motorized movement are shown and noted below.

Through-bike lane at right turn pocket on SE Kent-Kangley Road.

Left turn bike box

Pushbutton & signals only for bike movement.

Bicycle left turn lanes on a busy arterial.

Median refuge at Community Center and Library mid-block crossing.

Figure 15

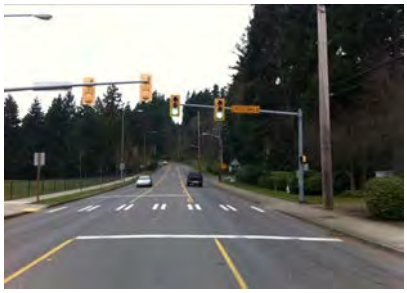
CROSSING TREATMENTS

There is a range of solutions for crossings depending on street classification, volume, speed, and sight distance.

Midblock Crossing with median refuge.

Midblock Crossing

Pedestrian Flags



Pedestrian Signal

Crosswalk Pattern

Rectangular Rapid Flashing Beacons

Figure 16

OTHER CONSIDERATIONS

A variety of physical improvements can be considered to enhance non-motorized movement and are shown below.

Underpass (or overpass) provides safe separation of different users.

Full width ramps ease transitions for all users.

Bicycle parking encourages use.

ADA ramp at Witte Road / Lake Wilderness Trail connection.

Signs inform of potential conflicts as well as provide wayfinding.

Trailhead parking & access

Surface installation of wayfinding

Ramp built into steps improves access for bicycles.

Figure 17

Variations on Established Design Guidelines

In an effort to meet growing demand for affordable non-motorized facilities and to improve safety and encourage use for all ages and abilities, new facility types are evolving, especially for bicycle use. This Plan proposes some Design Guidelines that may be new to some, but are in fact an outgrowth of facility types that have been in existence for years. These facility types are becoming more commonly used in urban settings or areas with a high volume of bicycle use. In suburban and rural environs, or where there is not a significant increase in demand for dedicated cycling corridors, these new facility types may seem unnecessary or initially underused. However they will play an increasingly important role in improving non-motorized access throughout the community. By incorporating these new guidelines now, the City's goals for safer facilities and increased non-motorized use in the future may be met more readily. Three facility types, referenced in the Design Guidelines, are described in greater detail below and include *Bicycle Boulevards*, *Buffered Bike Lanes*, and *Shared Space*.

Bicycle Boulevards

The shared roadway, in which cyclists share the roadway with motor vehicles, either inside or just outside the travel lane, has been a workable concept for many communities. These corridors are often signed or marked as a preferred bike route and may be paired with bike lanes on the incline side, and sidewalks on one or both sides. Typically there are no changes made in the corridor to benefit cyclists, with the exception of traffic calming, signing or marking.

An improvement upon the shared roadway is the Bicycle Boulevard, one in which the corridor selected is a low-volume, low-speed (typically residential) street, and there are modest improvements made that optimize the route for bicycle travel, while still maintaining satisfactory operating conditions for motor vehicles. The improvements include treatments such as traffic calming, traffic reduction, pavement markings and signage, and intersection crossing modifications. These treatments allow for motor vehicular movement, but discourage the use of these streets as through-corridors for non-local traffic. One of the greatest benefits to the community is these facilities are already part of the roadway infrastructure, needing only moderate revisions and additions in the corridor to make them a more comfortable, safe, and attractive environment for cyclists. These corridors are typically not designated on streets where there is likely to be significant change in use, volume, or traffic type (freight or transit).

With selected improvements, these corridors become very attractive to cyclists of all ages and abilities, providing a route more people will use. The traffic calming amenities enhance the street for homeowners, typically offsetting any inconvenience of changed routing or lowered speed limits.

For years communities throughout the United States and Europe have been building these facilities with considerable success. They are known by various names:

- Vancouver, BC – *Local Street Bikeways*
- Seattle, WA – *Neighborhood Greenways*
- Minneapolis, MN – *Bike/Walk Streets*
- Portland, OR; and many communities in CA – *Bicycle Boulevards*
- Germany & Netherlands – rough translation is *"Bike Streets"*

The range of design elements for Bicycle Boulevards is extensive and elements should be selected by those with expertise in bikeway design and roadway engineering, as well as with input from the community affected by any changes.

Buffered Bike Lanes

Bike Lanes have been the default solution utilized to provide a designated corridor for bicyclists. The benefits include: a design and function familiar to cyclists and motorists; they demark a clear travel lane edge; and they typically connect desired destinations in a linear and efficient manner. Bike Lanes are best suited for those accomplished cyclists who have a high degree of confidence, travel at higher speeds, and have an understanding of rules of the road. Bike Lanes are often not ideal for occasional or casual cyclists, young or early learners, where the adjacent motorized traffic volume and speed are high, or includes heavy truck traffic.

Buffered Bike Lanes are conventional bike lanes with the addition of a 2' to 3' buffer space separating the cyclist from the adjacent travel or parking lanes. The primary benefit of the additional shy distance is increased safety – actual and perceived. There are far fewer incidents of sideswiping from moving vehicles and "dooring" from parked cars. The added buffer provides more space for the cyclists to separate themselves from the draft of truck traffic or higher speed vehicles and creates a cycling environment more

A study in Vancouver, B.C. indicated that most respondents were likely or very likely to choose to cycle on off-street paths (71%–85% of respondents); physically separated routes next to roads (71%); and residential routes (48%–65%). Rural roads and routes on major streets were least likely (16%–52%) to be chosen. Routes with traffic calming, bike lanes, paved surfaces and no on-street parking were preferred.

comfortable to a wider range of ages and abilities. A variety of pavement marking or surfacing treatments to provide a buffer are used depending on the site conditions.

Shared Space

There are other roadway types that are good candidates for an amenity similar to Bicycle Boulevards which includes improvements for pedestrian movement. These streets are typically already low-volume and low-speed roadways and inherently good corridors for mixed use. Some are residential in character and serve a small number of homes with minimal through-traffic. Others are in commercial environments where speeds are low due to a high volume of a mix of users. These areas may include street market corridors, parking lots, and delivery lanes. These corridors are already naturally occurring "shared spaces" serving a variety of users. Safety can be improved with design elements to alert users of the mixed nature of the space.

A select number of guidelines for developing these kinds of shared space facilities are shown in Figure 9. Amenities include street furnishings, planting, changes in surfacing that direct pedestrian movement or slow vehicular movement, and point-of-entry markers or gateways defining the space as mixed use.

The Shared Space is a concept more widely known and used in Europe, although it is gaining favor in urbanized communities in the United States. Various names include:

- United States – *Shared Space*
- Netherlands – *Woonerf*
- United Kingdom – *Home Zone* or *Home Street*

Implementation of measures to create a Shared Space is most effective with support starting at the neighborhood or community level. Some of the changes would be

developed and/or maintained by the neighborhood or community and it is critical that improvements are desired and the associated operational changes acceptable. These corridors should provide connectivity to the larger non-motorized system to provide the greatest effectiveness for the public at large.

Conflicts Between Design Standards

To enable City staff to identify and address sections of the *Maple Valley Municipal Code* or Design Standards that conflict with the Standards and Guidelines recommended in this Plan, the Consultant provided a memorandum titled *Potential Roadway Standards Revisions with Adoption of the Non-Motorized Facility Design Guidelines* (Appendix D). The memorandum identifies specific conflicts and proposes changes or additional flexibility that could resolve the conflict. The memorandum addresses three categories: facility width; new bicycle facilities; and, pedestrian and other.

Evaluation and Prioritization

To provide recommendation on priority projects, it is necessary to revisit the evaluation criteria discussed earlier and determine how well each project fulfills various needs. While all criteria are considered, the three top-ranking evaluation criteria, Safety, Connectivity to Destinations, and Proximity to Destinations, are weighted more heavily. The numerical weighting and scoring criteria for prioritizing projects is more fully described in Appendix E, and the evaluation methodology for the top-ranked criteria is more fully defined below:

Safety

Projects to correct a known safety problem rank the highest. Examples of these are new signals or crosswalks where there are already high-volume, non-motorized crossings without adequate crossing treatments or locations on high-volume/high-speed roads where there is a gap in a sidewalk or bike lane along an otherwise continuous facility route.

Connectivity to Destinations

To increase the objectivity of the evaluation and prioritization process, a Geographic Information System (GIS) based measurement tool called ViaCity was used to measure the impact of project improvements. Detailed description of the methodology used in ViaCity modeling is provided in Appendix F.

A 2008 study by the Rails-to-Trails Conservancy estimated that a modest increase in bicycling and walking in the U.S. would save 3 billion gallons of gasoline and keep 28 million tons of CO_2 from the atmosphere.

The model takes into account common destinations identified by the community such as Lake Wilderness Park, Four Corners shopping area, and Lake Wilderness Elementary. Using the non-motorized transportation network, the measurement tool determines the shortest route from all locations in the City to the identified destinations and determines the quality and directness of that connection.

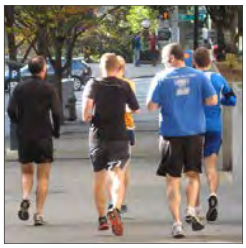
To prioritize projects, this measurement is made both with and without each project identified in the Plan, and the relative improved quality and directness that each project produces is measured.

Proximity to Destinations

Proximity to destinations was an important evaluation criteria identified by the community. Public feedback often included a desire for improvements that allow them and their children to walk or bike to common destinations that would otherwise be hard or unsafe to reach by walking or biking.

To include proximity in the evaluation and prioritization of projects, the number of destinations that were within close proximity (½ mile) of each project was identified. Areas with a high concentration of community destinations are more likely to have people using non-motorized modes, especially around schools and recreational destinations. By measuring the number of destinations proximate to a project, the likelihood of non-motorized travel to these destinations was captured.

Each project on the Facilities Project List was evaluated on a scoring system using the full spectrum of criteria and given a ranking of High, Medium, or Low. This methodology is designed to allow some flexibility and judgment, while maintaining objectivity in the evaluation process. High priority projects are those that will provide the greatest benefit to the community based on these criteria. Projects in the Medium and Low priority categories are important to the non-motorized network but may benefit a smaller segment of the population or may not provide a level of benefit commensurate with their cost.



5 IMPLEMENTATION

Introduction

This Plan provides the City and the citizens of Maple Valley a broad array of options to consider as they move forward in developing and improving upon their existing non-motorized system. The decision to implement projects identified in this Plan will require a more detailed assessment at a project design level to determine the appropriateness of an improvement, confirm available right-of-way and funding, and plan for any disruption the implementation may create. In the planning process, certain assumptions are made about existing conditions, road locations in the right-of-way, condition and location of utilities, etc. When each project is brought to the development phase, a topographic and right-of-way survey will provide a more clear picture of the actual conditions of the route, and it may be necessary to adjust or alter recommended design solutions. In addition, as funding for these projects is identified, there may be development of other capital projects or changes in funding strategies that dictate alterations to the recommended cross section or facility classification. This Plan is intended to provide a reasonable strategy and guidance to inform how best to make those adjustments.

TIP and TSP Projects

The 2011 Transportation Element of the Comprehensive Plan identifies Transportation Improvement Plan (TIP) projects that have been included by reference in this Plan and on the Facilities Project List. The intent is to ensure projects are viewed collectively and, as development in any given corridor is planned for motorized improvement, its non-motorized component is included in the planning and funding process. Both the 6-year funded TIP and the long term Transportation System Plan (TSP) projects are referenced in this Plan. All projects identified in the TIP or TSP would be built to City design standards and in accordance with the non-motorized facility improvements presented in this Plan.

TIP and TSP plans are primarily either capacity or safety related projects and are therefore primarily located along Maple Valley-Black Diamond Road SE (SR-169), SE 272nd Street/SE Kent-Kangley Road (SR-516), and Witte Road. This means that implementation of the arterial components of this Plan will mostly occur in coordination with TIP projects. Intersection improvements identified in the TIP, especially signalized crossings, are another key instance in which TIP or TSP projects will be key to implementation of this Plan.

Plan Flexibility

Conditions and priorities in all communities change over time. The Facilities Project List and recommendations should be re-evaluated periodically to ensure they reflect the needs and desires of the community at large. Non-motorized improvement treatments continue to evolve at a rapid pace, and new strategies for accommodation of bicycles and pedestrians are being adopted annually. Re-evaluation may involve changes as significant as redefining routes or design standards or as minor as shifting project priorities. Maintaining flexibility and responsiveness to the community's concerns and desires will assure long-term success and continued growth of the system.

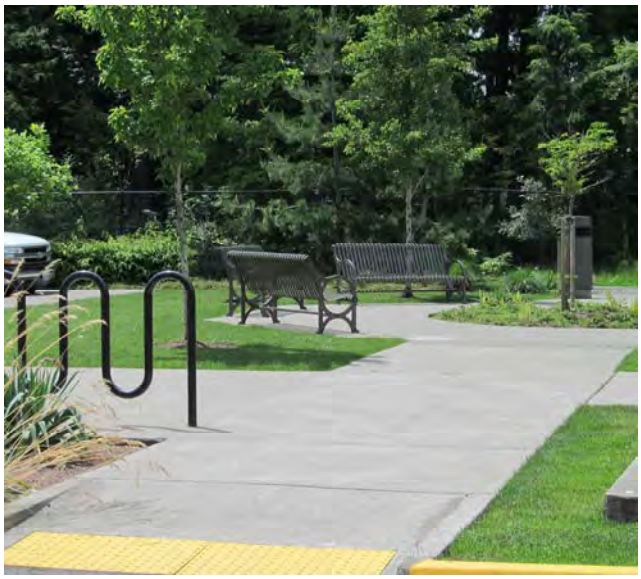
Opportunity Projects

This Plan suggests criteria for evaluating potential routes and establishing priorities for non-motorized improvements, but there should be enough flexibility in the overall plan to allow for what may be called "Opportunity Projects."

Opportunity Projects are those that are desirable to implement at some point in the future, may be assigned a lower priority, but should be constructed if and when a special opportunity arises. Special opportunities may include such things as a project, driven by other imperatives, to improve or widen the existing road corridor, widening or replacement of an existing roadway bridge, or a previously unanticipated funding source. Examples are where development of large master-planned projects may occur adjacent to, or in connection with, the non-motorized network. The opportunity arises to include the planned non-motorized element as part of this project, and to implement it in a much more efficient and timely manner.

Wayfinding and Trailheads

Public input during the planning process highlighted a need to have more information about trails and non-motorized routes available to users – both on line and "in the field." Many citizens noted they would use more of the City's extensive system of trails if they had more confidence about the routes, and whether there was a loop configuration to get them back from their destination. Such wayfinding enhancements are a valuable part of the non-motorized plan. As more information is available about where to go, more people use the facilities and are more likely to support expanding improvements.



Provision of wayfinding enhancements was deemed important enough to be identified as a discrete project in this Plan, but has not been specifically identified in the Facilities Project List. There are many options in how and where to provide signs, maps, directories, kiosks, and even electronically-generated applications for wayfinding. There are vast differences in thinking about the best practices for wayfinding to target pedestrians or bicycles. The City may want to consider further study of short- and long-term strategies before making a major investment in a signing program.

Near-Term Wayfinding Aids

To address immediate wayfinding challenges, the City may consider developing a walk-and-bike map showing existing facilities, how accessible they are (to particular modes), and how to work around current gaps in the system. This map could be made available on line, posted at trailheads, and available in libraries, schools, and other community gathering locations. It may prove to be a valuable tool for building awareness and support for more non-motorized facilities. As the non-motorized system improvements are implemented, the walk-and-bike map may be updated.

Wayfinding signage on roads and trails is equally important to maximizing use of the non-motorized system. The City has implemented some measure of wayfinding at selected

locations, but a more extensive plan for highlighting connections, especially between on- and off-road facilities, would increase visibility and use of existing systems.

Long-Term Wayfinding System

As the population increases and new public facilities are completed, the City may find significant benefit in developing a comprehensive wayfinding system to link public services, public amenities, commercial destinations, and residential communities with new non-motorized facilities. The City may consider a collaborative planning effort, involving public and private stakeholders, to determine criteria for sign content, design, locations, and how to fund installation and maintenance. This collective effort would benefit the community by creating a system of mapping and signing that is consistent, legible, and unique to the City of Maple Valley.

Trailheads

There was public comment on the identification and use of trailheads, some of which is related to the lack of signing. Existing trailheads should be clearly identified. Areas currently used as informal trailheads should have information posted addressing whether parking is permitted and what trails or public amenities are nearby. As the non-motorized system expands, parking may become more of a concern to local residents and business, and should be addressed in review of trailhead amenities.

Facilities Project List

The projects identified in the Facilities Project Map are numbered and may be cross-referenced to the Facilities Project List (Figure 18) for more detailed information. Data includes project termination points, current condition, length, cost, and whether it is a project also included in the list of the 6-year funded TIP projects or the long-term TSP projects. Additional comments address unique issues regarding implementation, options, or other opportunities. The Project List includes a prioritization score, numerical ranking, and more generalized tier of High, Medium, or Low priority.

The Facilities Project List is organized by numeric sections. The 100-series represents projects at points of intersection; 200-series are on-road projects; 300-series are off-road projects; 400-series are other projects represented as areas (public and private) where non-motorized circulation improvements would benefit the City-wide system.

PROJECT LIST

Project	Street	From	To	Current Status	Recommended Improvement	Side	Length (ft)	Total Cost (Materials, Construction, Planning and Design, Contingency)	TIP/LTP	Comments	Evaluation/Priority Criteria									Tier
											Safety	Destination Connectivity	Proximity	Condition	Motorized Influence	Multimodal	Funding	Score	Rank	
INTERSECTIONS																				
		Primary Street	**Secondary Street**																	
101	N/A	Maple Valley-Black Diamond Rd SE	SE Wax Road	Existing signal with pedestrian facilities	Add tactile warning surface.	Both	-	See LTP 101	LTP 101	verify bike lanes do not conflict with right turn lanes	1	0	3	1	1	1	3	21	74	Low
102	N/A	Maple Valley-Black Diamond Rd SE	Witte Road SE	Existing signal with pedestrian facilities	Add tactile warning surface.	Both	-	See LTP 102	LTP 102	Projects 221 & 222 would impact intersection design	1	0	3	1	1	1	3	21	74	Low
103	N/A	Maple Valley-Black Diamond Rd SE	SE 240th St	Existing signal with pedestrian facilities	Add tactile warning surface.	Both	-	See LTP 103	LTP 103	Projects 235 & 244 would impact intersection design	1	0	3	1	1	1	3	21	74	Low
105	N/A	Maple Valley-Black Diamond Rd SE	SE 244th St	Planned signal with crosswalks and sidewalk to 231st Ave SE	None	-	-	See LTP 104	LTP 104		2	3	2	3	1	3	1	38	7	High
110	N/A	Maple Valley-Black Diamond Rd SE	SE 260th St	None	Signalized crossing or grade-separated crossing	-	-	$400,000 or $3,000,000	No	Combine analysis with 101, 245,246, 247, and 402	2	2	2	3	1	3	2	35	11	High
113	N/A	Maple Valley-Black Diamond Rd SE	SE 271st Pl	Recently completed	Future improvements to improve transition from bike lane/sidewalk (s) to shared use path (n)		-	See LTP 130	LTP 130	project not included in analysis										
115	N/A	Maple Valley-Black Diamond Rd SE	SE 276th St/SE Maple Ridge Dr	Existing signal with pedestrian facilities	Improve Lake Wilderness Trail crossing, Add tactile warning surface	West	-	$68,000	No	verify crossing location	1	0	2	2	2	2	2	20	81	Low
120	N/A	Maple Valley-Black Diamond Rd SE	SE 280th St	Existing signal with pedestrian facilities	Improve Lake Wilderness Trail crossing, ADA improvements if needed	Both	-	$68,000	No	verify crossing location	1	0	1	2	2	2	2	17	89	Low
125	N/A	SE 272th St	216th Ave SE	Existing crossing with substandard pedestrian/ADA facilities.	Construct curb/sidewalk/gutter on SW corner of intersection, add pedestrian crossing for W leg of intersection	Both	-	$83,000	No		3	0	1	3	1	1	0	26	50	Medium
128	N/A	SE 272th St	Witte Road SE	Existing signal with pedestrian facilities	Add tactile warning surface	Both	-	$2,000	No	Projects 224 & 225 would impact intersection design	1	0	1	1	1	1	2	14	92	Low
130	N/A	SE 272th St	228th Ave SE	Existing signal with pedestrian facilities	Bicycle detection north side as warranted		-	$6,000		Projects 260 & 261 would impact intersection design	0	0	1	1	1	1	2	8	94	Low
131	N/A	SE Kent-Kangley Rd	236th Pl SE	None - need to verify north leg	Add north-south crosswalk with intersection improvements with future road construction that extends south	Both	-	$110,000	No	this crossing improvement would occur with extension of road network south and west into Project 405. Note if proposed road location from Project 405 occurs at 232nd Ave SE, this project location may change	1	1	3	3	1	3	2	28	42	Medium
140	N/A	Witte Rd SE	SE 254th Pl/220th Ave SE	Operates below LOS standard; intersections of SE 254th Pl and 220th Ave SE closely spaced; high speeds; no pedestrian crossing	Realign intersections with greater separation; add turn lanes on Witte Rd and add pedestrian facilities including a crosswalk on Witte Rd.	Both	-	See LTP 108	LTP 108	Combine analysis with 325	2	3	2	3	2	3	3	41	6	High
145	N/A	Witte Rd SE	SE 268th St	None	Add turn lanes on Witte Rd and pedestrian facilties including a crosswalk on Witte Rd.	Both	-	See LTP 121	LTP 121	Combine analysis with 265	2	3	1	3	2	2	3	37	8	High
150	N/A	SE 240th St	222nd Pl SE	None	Add crosswalk on east leg of intersection	East	-	$33,000	No		1	0	3	2	3	1	2	23	63	Medium
170	N/A	216th Ave SE	SE 276th St	Ramp and sidewalk on west side of intersection	Improve pedestrian facilities on east side of intersection. Add crosswalk.	Both	-	$73,000	No		2	3	1	3	2	1	0	33	17	High
171	N/A	216th Ave SE	Mid-Block	None	Add crosswalk at end of BPA trail.	Both	-	$55,000	No	Combine analysis with 171,350,360,361,362	1	3	1	3	2	1	2	29	34	Medium
173	N/A	RR Tracks	228th Ave SE	Informal railroad crossing	Add formal railroad crossing, possibly at grade	Both	-	$260,000	No	Combine analysis with 173,351,352	2	2	1	3	3	3	2	34	15	High
180	N/A	Maple Valley-Black Diamond Rd SE	BNSF Railroad	Informal railroad crossing	Connect trails on north and south side of BNSF railroad tracks with clear span bridge using existing abutments	-	-	$250,000	No	assume clear span 80' prefab bridge on existing abutments	1	3	1	3	3	3	2	32	18	High
185	N/A	SE Maple Ridge Dr	Maple Ridge Way SE	Ramps and sidewalks	Enhanced crosswalk		-	$44,000	No	consistent with Maple Ridge Neighborhood speed study	2	0	1	1	3	1	2	22	67	Low
186	N/A	255th Ave SE	253rd Pl SE	Ramps and sidewalks	Enhanced crosswalk		-	$44,000	No	consistent with Maple Ridge Neighborhood speed study	2	0	1	1	3	1	2	22	67	Low
ON-ROAD PROJECTS																				
200	Maple Valley-Black Diamond Rd SE (SR 169)	SE 231st St	SE Wax Rd	Sidewalks both sides	Formalize and stripe bike lanes. Could require re-striping of the roadway to obtain a 5-foot bike lane.	Both	1,280	$9,000	No	appears that 4 foot shouders already exist. Possibly restripe only.	1	1	3	2	1	1	4	27	48	Medium
202	Maple Valley-Black Diamond Rd SE (SR 169)	Witte Rd SE	SE 244th St	No sidewalks, and 4 to 8 foot shoulder	Construct buffered bike lane and sidewalks.	East	4,430	See LTP 106	LTP 106	Consider off-road pathway as space permits	3	3	3	3	1	3	3	49	1	High
203	Maple Valley-Black Diamond Rd SE (SR 169)	228th Ave SE	SE 244th St	No sidewalks, and 2 to 8 foot shoulder	Construct buffered bike lane and sidewalks.	West	1,750	See LTP 107	LTP 107		3	3	3	3	1	3	3	49	1	High
204	Maple Valley-Black Diamond Rd SE (SR 169)	SE 244th St	SE 255th St	Small segment of sidewalk, and 4 to 8 foot shoulder	Construct buffered bike lane and sidewalks.	West	4,360	See LTP 109	LTP 109		3	2	3	3	1	3	3	45	4	High
205	Maple Valley-Black Diamond Rd SE (SR 169)	SE 244th St	SE 255th St	No sidewalks, and 4 to 8 foot shoulder	Construct buffered bike lane and sidewalks.	East	4,360	See LTP 110	LTP 110		3	2	3	3	1	3	3	45	4	High
206	Maple Valley-Black Diamond Rd SE (SR 169)	SE 255th St	SE 264th St	No sidewalks or bike lanes, except on the east side bwt SE 264th St and SE 262nd St	Construct bike lanes & sidewalks.	Both	4,179	See TIP T-31	TIP T-31 LTP 108	Part of this project has already been designed and portions will be constructed soon.	3	3	3	3	1	3	3	49	1	High
207	Maple Valley-Black Diamond Rd SE (SR 169)	SE Kent-Kangley Rd	SE 271st Pl	Sidewalks exist along both sides. 3 to 4 foot shoulder on west side. Variable width planted separation	Major reconstruction to provide Side Path both sides allowing for Shared Use separated from roadway. Relocation of utilities and parking may be required. Work with adjacent retail to improve NM connections through this block. 'Gateway' opportunity	Both	1,970	Extent of reconstruction necessary for project needs to be determined	No	This project remains in the 200-series (on-road facility) for now, even though the final recommendation is for an off-road facility. Near-term improvements in this segment may have to be Marked Shared Lane until such time that future redevelopment of businesses (with negotiated easements) allows for construction of a Side Path both sides.	1	1	2	2	1	3	0	22	67	Low
208	Maple Valley-Black Diamond Rd SE (SR 169)	SE 271st Pl	SE 276th St	Sidewalk - 1 Side	Construct bike lanes & sidewalk on east side. Re-stripe roadway to provide bike lanes on west side.	Both	2,790	See LTP 111	LTP 111		2	1	2	2	1	3	3	31	27	High
209	Maple Valley-Black Diamond Rd SE (SR 169)	SE 276th St	SE 280th St	No sidewalks, and 4 to 8 foot shoulder	Construct bike lane & sidewalk.	West	1,240	See LTP 112	LTP 112		2	1	2	3	1	3	3	32	18	High

PROJECT LIST

Project	Street	From	To	Current Status	Recommended Improvement	Side	Length (ft)	Total Cost (Materials, Construction, Planning and Design, Contingency)	TIP/LTP	Comments	Evaluation/Priority Criteria									Tier
											Safety	Destination Connectivity	Proximity	Condition	Motorized Influence	Multimodal	Funding	Score	Rank	
210	Maple Valley-Black Diamond Rd SE (SR 169)	SE 276th St	SE 280th St	No sidewalks, and 4 to 8 foot shoulder	Construct bike lane & sidewalk.	East	1,240	See LTP 113	LTP 113		2	1	2	3	1	3	3	32	18	High
211	Maple Valley-Black Diamond Rd SE (SR 169)	SE 280th St	South City Limit	No sidewalks, and 4 to 8 foot shoulder	Construct buffered bike lanes and sidewalk on west side.	Both	5,160	See LTP 114	LTP 114		2	3	1	3	1	3	3	37	8	High
215	SE 272nd St (SR 516)	207th Ave SE	216th Ave SE	Incomplete sidewalk segments, and 2 to 6 foot shoulder	Construct bike lanes & sidewalks.	Both	4,630	See LTP 116 & 117	LTP 116 & 117		2	1	1	2	1	3	3	28	42	Medium
216	SE 272nd St (SR 516)	216th Ave SE	Witte Rd SE	No sidewalks, and 2 to 6 foot shoulder	Construct bike lanes & sidewalks.	Both	4,940	See LTP 116 & 118	LTP 116 & 118	Sidewalks and ADA improvements have occurred at the 216th Ave intersection	2	3	1	2	1	3	3	36	10	High
217	SE 272nd St (SR 516)	Witte Rd SE	228th Ave SE	Sidewalk and bike lane complete on north side. 2 to 6 foot shoulder on south side.	Construct bike lane & sidewalk.	South	1,050	See LTP 118	LTP 118	Sidewalks and ADA improvements have occurred at the 228th Ave intersection	1	1	1	2	1	3	3	22	67	Low
218	SE Kent-Kangley Rd (SR 516)	228th Ave SE	Lake Wilderness Trail	Short segment of sidewalk on north side, and 2 to 8 foot shoulders.	Construct bike lanes & sidewalk on south side and western portion of north side. Link to Side Path	Both	6,480	See LTP 119	LTP 119	LTP identified bike lane and sidewalk full length north side, but safer improvement would be for Shared Use Path/Side Path.	2	1	3	2	1	3	3	34	15	High
220	SE Kent-Kangley Rd (SR 516)	Maple Valley-Black Diamond Rd SE	East City Limit	New sidewalk and bicycle lanes recently completed.	Complete striping for bike lanes	Both	590	$242,000	No	paved shoulders are variable width and without bike lane symbols	1	1	2	1	1	1	2	21	74	Low
221	Witte Rd SE	Cedar River Pipeline Trail	Maple Valley-Black Diamond Rd SE	None	Construct bike lanes & sidewalks.	Both	3,934	$1,595,000	No		1	1	3	2	2	2	0	25	56	Medium
222	Witte Rd SE	Maple Valley-Black Diamond Rd SE	SE 240th St	Partial sidewalks on east side.	Construct bike lanes & sidewalks.	Both	1820 s/w & bl; 940 s/w	See LTP 124	LTP 124	s/w = sidewalk; bl=bike lane	1	2	3	3	2	3	1	32	18	High
223	Witte Rd SE	Lake Wilderness Country Club Dr.	SE 268th St	Under Study	under study		6880 (one direction)	Undetermined	No	2013 predesign planned. Possible Bike Lanes, Marked Shared Lanes, Shared Use Path, or off-road gravel pathway to be considered.										
224	Witte Rd SE	SE 268th St	SE 272nd St	Sidewalk and bike lane partially complete on west side.	Extend bike lane and sidewalk to SE 272nd St on west side. Construct bike lane & sidewalk on east side.	Both	1390 s/w & bl, 200 s/w	$568,000	No	wall construction or road restriping/realignment may be required	1	1	1	2	2	2	0	19	85	Low
225	SE 276th St/Witte Rd SE	SE 272nd St	216th Ave SE	None	Construct bike lanes & sidewalks.	Both	6,434	See LTP 125	LTP 125	possible trailhead/wayfinding on north side at wide spot on SE 276th St	2	3	1	3	2	2	1	35	11	High
226	216th Ave SE	SE 272nd St	South City Limit	Sidewalks exist along the west side and 2 to 4 foot shoulder on the east side	Widen roadway and stripe bike lanes	Both	7,280	See LTP 125	LTP 125	LTP identified bike lane and sidewalk full length east side, but safer improvement would be for Shared Use Path/Side Path.	1	3	1	1	2	1	1	26	50	Medium
230	SE 231st St	Maple Valley-Black Diamond Rd SE	Witte Rd SE	None	Construct bike lanes & sidewalks.	Both	2,200	See LTP 126	LTP 126		1	1	3	2	2	2	1	26	50	Medium
231	SE 231st St connection	Witte Rd SE	SE 240th Way	None	Construct bike lanes & sidewalks as part of new roadway.	Both	5,364	See LTP 127	LTP 127	Opportunity for trailhead where connection to Shared Use Path occurs	1	1	3	3	2	3	1	28	42	Medium
232	SE 240th St extension	Wax Rd	Witte Rd SE	None	Construct bike lanes & sidewalks as part of new roadway.	Both	4,420	See LTP 128	LTP 128		1	2	3	3	2	3	1	32	18	High
233	SE 240th St	Witte Rd SE	224th Ave SE	Sidewalk complete on the south side	Construct bike lanes & sidewalk on north side	Both	1280 s/w & bl; 1280 bl	See LTP 123	LTP 123	s/w = sidewalk; bl=bike lane	1	1	3	2	2	1	1	25	56	Medium
234	SE 240th St	224th Ave SE	Maple Valley-Black Diamond Rd SE	Sidewalks exist on both sides	Re-stripe roadway with bike lanes	Both	1,320	$10,000	No	Verify there is room for bike lanes	1	1	3	1	2	1	0	23	63	Medium
235	SE 240th St	Maple Valley-Black Diamond Rd SE	SE 231st St connection	Sidewalks exist on both sides, with approx 4 foot striped shoulder.	Re-stripe to designate bike lanes		1,600	$12,000	No	Shoulder already striped, but substandard width for bike lane. Consider restripe of roadway to accommodate bike lanes, contiguous with construction of project 231.	1	2	3	2	2	3	0	30	31	High
236	SE Wax Rd	SE 236th Pl	City Limit	Short segment of sidewalk on south side, and 2 to 4 foot shoulders.	Construct bike lanes & sidewalks.	Both	3,400 bl (widen), 600 bl (stripe)	$966,000	No		1	1	2	2	2	2	0	22	67	Low
237	224th Ave SE	SE 240th St	SE 244th St	Sidewalks exist on both sides, with wide travel lanes.	Stripe/sign for marked shared lane	Both	1,030	$7,000	No	Also improve signing for connections between commercial, residential, and park along this N/S route.	0	2	3	1	3	1	2	24	62	Medium
238	231st Ave SE/SE 244th St/229th Ave SE	Maple Valley-Black Diamond Rd SE	SE 246th St	Variable; sidewalks on both sides or east side	Stripe/sign for marked shared lane	Both	3320	$17,000	No		0	3	3	2	3	1	2	29	34	Medium
240	SE 240th Way/234th Way SE/SE 244th St/238th Pl SE/238th Ave SE	SE 231st St Connection	SE 256th St	Variable; sidewalks on both sides; paved or gravel shoulders one or both sides	Stripe/sign for marked shared lane; complete sidewalks or paved shoulders for continuity and as space allows	Both	17,400	$41,000	No	Include connections to Maple Valley-Black Diamond Road SE at SE 244th St and SE 252nd Pl (?) with improvements in N/S corridors.	0	2	3	2	3	2	2	26	50	Medium
245	SE 256th St	Maple Valley-Black Diamond Rd SE	242nd Pl SE	Partially on south side of road.	Construct marked shared lanes and sidewalks	Both	2,400	$7,000	No	This recommendation assumes there are plans for public road extension through this segment. If not, consider changing this to a 300-series project with recommendation being Side Path.	0	2	1	1	3	1	0	16	90	Low
246	242nd Pl SE/SE 260th St	SE 256th St	Maple Valley-Black Diamond Rd SE	Not built	Construct marked shared lane and sidewalks as part of new roadway	Both	6,660	NA - Part of Development Agreement	No		0	2	1	1	3	3	0	18	88	Low
249	SE 260th St/234th Ave SE	231st Pl SE	Lake Wilderness Trail Access point	Sidewalks exist on both sides.	Stripe/sign for marked shared lane	Both	1,600	$16,000	No	Signs required to clearly guide to/through cul-de-sac	0	3	3	1	3	1	2	28	42	Medium
250	Lake Wilderness Country Club Dr SE	Witte Rd SE	Witte Rd SE	Sidewalks exist on both sides.	Stripe/sign for marked shared lane	Both	13,240	$27,000	No		0	2	3	2	3	1	2	25	56	Medium
252	SE 263rd Ct	Lake Wilderness Country Club Dr SE	SE 263rd Ct Cul de sac	Sidewalks exist on both sides	Stripe/sign for marked shared lane	Both	1,040	$8,000	No	Includes 253	0	1	1	1	3	1	2	14	92	Low
253	SE 263rd St	228th Ave SE	235th Ave SE	Sidewalks exist on both sides	Stripe/sign for marked shared lane	Both	4,768	$10,000	No	Included in 252	0	1	3	1	3	1	2	20	81	Low
254	SE 264th St	234th Ave SE	Maple Valley-Black Diamond Rd SE	Sidewalks exist on both sides	Construct bike lanes	Both	3,320	$26,000	No	Consider marked shared lane if no room for bike lanes	1	1	3	2	3	1	2	27	48	Medium
255	238th Ave SE extension	SE 264th St	SE Kent-Kangley Rd	Not built	Construct marked shared lanes and sidewalks as part of new roadway	Both	2,892	-	No	Provides paved alternative to nearby LWTrail	1	0	2	1	2	3	2	20	81	Low

PROJECT LIST

Project	Street	From	To	Current Status	Recommended Improvement	Side	Length (ft)	Total Cost (Materials, Construction, Planning and Design, Contingency)	TIP/LTP	Comments	Evaluation/Priority Criteria: Safety	Destination Connectivity	Proximity	Condition	Motorized Influence	Multimodal	Funding	Score	Rank	Tier
260	227th/228th Ave SE	SE 263rd St	SE 272nd St	Sidewalks exist on both sides	Stripe/sign for marked shared lane	Both	6,276	$20,000	No	Signs required to clearly guide on 90 degree turns	0	3	1	2	3	1	0	21	74	Low
261	228th Ave SE	SE 272nd St	SE 280th St	Sidewalk on west side	Construct or strip bike lanes, complete sidewalk, and strip for marked shared lane in constrained cross sections	Both	2200 s/w & bl; 400 bl; 400 msl; 2200 bl	$1,518,000	No	s/w=sidewalk; bl=bike lane. Encourage n/s construction of shared use path with future development of project 405	1	1	1	2	3	2	2	22	67	Low
262	228th Ave SE	SE 280th St	BNSF Railroad tracks	Sidewalk on east side	Stripe bike lanes and complete sidewalk	Both	1460 bl; 1000 s/w & bl	$415,000	No	s/w=sidewalk; bl=bike lane	1	1	1	2	3	2	0	20	81	Low
263	228th Ave SE	BNSF Railroad tracks	SE 288th St	Sidewalks exist on both sides	Stripe/sign for marked shared lane on existing road	Both	1800 msl; 600 bl	$9,000	No	msl=marked shared lane; bl=bike lane. If no road extension is planned, this may be a stand alone trail project. If expansion of road system continues south in future, this segment may be upgraded to bike lane and sidewalk.	0	2	1	1	3	2	2	19	85	Low
265	SE 268th St	Witte Rd SE	227th Ave SE	Sidewalk - 1 Side	Stripe/sign for marked shared lane		2,120	$7,000	No	Combine analysis with 145	0	3	1	2	3	1	2	23	63	Medium
270	236th Ave SE	BPA Trail	SE 288th St	None	Stripe/sign for marked shared lane		480	-		Stripe/sign only if NM improvements are made to SE 288th St; project not included in analysis										
275	SE 288th St	East City Limit	241st Ave SE/BPA Trail	Paved and unpaved shoulder	Stripe/sign for marked shared lane or coordinate with improvements proposed by King County/Black Diamond		10,500	-		Coordinate any improvements with King County/Black Diamond; project not included in analysis										
276	SE 280th St	228th Ave SE	Glacier Park Elementary School Entrance	Sidewalk on south side	Stripe/sign bike lanes on both sides	Both	5,400	$35,000	No	Encourage e/w construction of shared use path with future development of project 405	1	1	2	2	3	2	0	23	63	Medium
277	SE 280th St	Glacier Park Elementary School Entrance	Maple Valley-Black Diamond Rd SE	Sidewalk on both sides	Stripe/sign for marked shared lane	Both	3,720	$13,000	No	Consider striping for bike lanes if space permits, to provide continuity	1	1	2	1	3	2	0	22	67	Low
OFF-ROAD PROJECTS																				
300	Lake Wilderness/Pipeline Trail Connector	Lake Wilderness Trail	Pipeline Trail	Partial gravel roadbed, partial no facility	Construct shared use path		900	$85,000	No	Include connections to on-street Project 231; Combine analysis with 301 and 302	1	2	2	3	3	3	2	28	42	Medium
301	Cedar River Pipeline Trail Access	231st Pl SE	Cedar River Pipeline Trail	Informal trail	Construct path		300	$30,000	No	Combined analysis with 300 and 302	1	2	2	2	3	3	4	29	34	Medium
302	Cedar River Pipeline Trail Access	SE 239th Ct and 235th Ave SE	Cedar River Pipeline Trail	Informal trail	Construct path		800	$77,000	No	Combined analysis with 300 and 301	1	2	2	2	3	3	4	29	34	Medium
305	Lake Wilderness Trail Access	Witte Rd SE/Maple Valley-Black Diamond Rd Intersection	Lake Wilderness Trail	Informal trail	Construct path		350	$55,000	No	Consider construction of shared use path if adequate space/budget	1	2	3	2	3	3	2	30	31	High
306	Lake Wilderness Trail Access	SE Wax Road	Witte Rd SE	Informal trail	Construct shared use path		1,000	$258,000	No		1	3	3	3	3	3	2	35	11	High
310	Lake Wilderness Trail and Park Access	244th Ave SE	SE 248th St	Semi-formal trail	Construct shared use path		600	$156,000	No	verify complete connections from retail to park are made with these improvements; make any further recommendations for improvements to 224th Ave SE	1	2	3	2	3	3	4	32	18	High
315	Tri-City Regional Trai	West City Limit	Lake Wilderness Park	No facility	Construct shared use path		1,700	$310,000	No		1	2	3	3	2	3	2	30	31	High
320	Lake Wilderness Trail Access	228th Ave SE	Lake Wilderness Trail	Semi-formal trail	Construct shared use path		550	$101,000	No		1	3	3	1	3	3	4	35	11	High
325	Lake Wilderness Golf Course Connector	219th Pl SE	224th Ave SE	Private/None	Construct shared use path		1,400	$154,000	No	Combine analysis with 140	1	3	2	3	3	3	2	32	18	High
330	Arbors at Rock Creek Path	Maple Valley-Black Diamond Rd SE	242nd Pl SE	None	Construct path		1,200	NA - Part of Development Agreement	No	Combine analysis with 110, 245, 246, and 402	1	2	2	3	3	3	2	28	42	Medium
335	Lake Wilderness Country Club Dr SE/227th Pl SE Connector	Lake Wilderness Country Club Drive SE	227th Pl SE	Informal trails	Construct path		1,500	$113,000	No		1	3	2	3	3	3	2	32	18	High
336	227th Pl SE/SE 260th St	SE 26rd St street end	SE 260th street end	Informal trails	Construct path		500	$78,000	No		1	3	2	3	3	3	2	32	18	High
340	SE Kent-Kangley Rd	232nd Ave SE	Lake Wilderness Trail	None	Construct shared use path	North	2,900	$1,100,000	No		1	2	3	3	3	3	2	31	27	High
341	Summit Park Connector	Lake Wilderness Trail	Maple Valley-Black Diamond Rd SE	Informal	Construct shared use path		300	$29,000	No	Combine analysis with 404	1	1	2	2	3	3	4	25	56	Medium
345	216th Ave SE	SE 272nd St	BPA Trail	Variable width shoulder NB, 12ft shoulder/deceleration lane SB	Construct shared use path	East	3,500	$345,000	No	provides safe/off road N/S alternative on west side of town	1	3	2	1	2	3	2	29	34	Medium
350	BPA Trail - West	216th Ave SE	228th Ave SE	None/Informal	Construct shared use path		4,100	$370,000	No	Combine analysis with 171, 360, 361, 362	1	3	1	3	3	3	2	29	34	Medium
351	BPA Trail - Central	228th Ave SE	236th Ave SE	Informal	Construct shared use path		2,700	$245,000	No	Combine analysis with 173 and 352	1	2	1	3	3	3	2	25	56	Medium
352	BPA Trail - East	236th Ave SE	Maple Valley-Black Diamond Rd SE	Informal/None	Construct shared use path		2,100	$191,000	No	Combine analysis with 173 and 351	1	2	1	3	3	3	2	25	56	Medium
360	228th Ave SE-Diamond Hills Connector	228th Ave SE	Diamond Hills trails	None	Construct shared use path		900	$100,000	No	Combine analysis with 171, 350, 361, and 362	1	3	1	3	3	3	2	29	34	Medium
361	Diamond Hills-Rosewood Park Connector	Diamond Hills trails	Rosewood Park trails	None	Construct shared use path		500	$57,000	No	Combine analysis with 171, 350, 360, and 362	1	3	1	3	3	3	4	31	27	High
362	Diamond Hills-Rosewood Park Connector - East	Rosewood Park trails	Lake Wilderness Trail	None	Construct shared use path		300	$37,000	No	Combine analysis with 171, 350, 360, and 361	1	3	1	3	3	3	4	31	27	High
365	Lake Wilderness Trail Access	S LakeWilderness Dr SE	SE 253rd Pl	Informal	Construct shared use path		300	$59,000	No		1	2	2	2	3	3	4	29	34	Medium
OTHER PROJECTS																				
	LOCATION																			
401	Wilderness Village				Improve Circulation	-	-	NA	-	Provide better definition between motorized and non-motorized	1	0	3	2	2	0	0	19	85	Low
402	Legacy Site				Improve E-W Circulation	-	-	NA	-	Combine analysis with 110, 245, 246, and 330	1	2	2	3	3	0	0	26	50	Medium
403	Four Corners Square				Improve Circulation	-	-	NA	-		1	0	2	1	2	0	0	15	91	Low
404	Summit Park				Improve E-W Circulation	-	-	NA	-	Combine analysis with 341	1	1	2	2	3	0	0	21	74	Low
405	King County Site				Improve Circulation	-	-	NA	-	Analyze with possible high-quality internal network	1	2	2	3	3	0	0	26	50	Medium
406	Cherokee Bay Community				Possible Community Partnership Project	-	-	NA	-	Analyze with N-S bicycle boulevard	1	1	2	2	3	0	0	21	74	Low

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Funding

Funding programs are available to support development of non-motorized facilities at the federal, state, and local levels. The following resources for information and grant funding may be considered as implementation strategy is further developed.

A good resource for data on federal funding for bicycle and walking facilities is the Federal Highway Administration's Federal Management Information System (FMIS) accounting. The funding data depicts a 5-year average of federal funds obligated to projects and provides an indication of what is available by state.

The most recent federal transportation act, *Moving Ahead for Progress in the 21st Century* (MAP-21) was signed into law in July 2012 and provides over $105 billion for fiscal years 2013 and 2014 for surface transportation programs. MAP-21 creates a streamlined and performance-based surface transportation program and builds on many of the highway, transit, bike, and pedestrian programs and policies established in 1991.

The Washington State Recreation and Conservation Office (RCO) provides matching grants for trail acquisition and development and is open to local and state agencies. Under the Washington Wildlife and Recreation Program (WWRP), eligible projects range from long-distance, cross-state rail-trial conversions to small paths connecting neighborhoods or to other trail systems. Grant applications are received on even calendar years.

At the local level, King County Parks Levy funding can be used for development of the regional trails extending through and surrounding Maple Valley. While the current funding levels are low due to the economic downturn, funding priority continues to be maintenance of existing systems and closing missing gaps in established systems. Some improvements identified in this Plan may be good candidates for parks levy funding.

Management

Public Safety and Education

A key component to the successful implementation of any Facility Plan is education. There is a variety of audiences to target in any education program, including:

- Bicyclists about how to ride safely and avoid injury
  Unsafe behaviors and disregard for traffic laws and signing are some of the more common actions that can result in cyclists endangering themselves. Education starting in the schools and continuing through bike clubs and other organizations can keep cyclists informed.
- Motorists about how to share the road with bicyclists
  Speeding, failure to yield to cyclists, passing too closely, and opening doors onto cyclists are often not only harmful, but can be fatal to cyclists. Additional information on Share the Road material and enforcement is beneficial.
- Children about the importance of learning rules of the road
  Walking and biking to school for kids is not only a function of providing them with the necessary facilities, but teaching them the importance of using them correctly and consistently.
- Commercial and municipal drivers (truck, taxi, and buses) on how to share the road with bicyclists
  Commercial vehicles can pose a greater risk to cyclists and pedestrians given their more frequent use and increased size. Professional driver education should integrate bicycle safety components.

The City should provide on-going public information about the implementation of this Plan, the opportunity for follow-up review and comment, and any significant changes that need to be made during implementation. The annual update of the City's 6-year Transportation Improvement Program (TIP) will provide one such avenue for input.

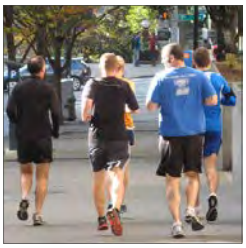
In addition, there is a range of programmatic efforts that can promote education about the availability of, and safe use of, the non-motorized network. Safe Routes to School (SRTS) is a

program with a broad base of resources developed to encourage school children to walk and bike to school, and it provides for education on how to safely navigate the various non-motorized systems. Public art showcasing non-motorized facilities, such as trailhead signs, gateway architecture, or signing through a recognizable “branding” of the City’s non-motorized network provides education about the system to pedestrians, bicyclists, and motorists. This last effort falls within the realm of marketing or advertising, which can also include creating maps, flyers, or organizing community rides and walks that promote and educate the public on safe use of facilities.

Maintenance

Regular maintenance of roadways and shoulders, sidewalks, and trails allows these corridors to be used safely and more consistently throughout the year. Of particular note to cyclists and pedestrians is the importance of fully sweeping the bike lane, with increased frequency in the autumn and after storms. Regular inspection and repair of the asphalt edge and sidewalks, and removal of vegetation that encroaches into the paved area or obscures line of sight at intersections and driveways are important measures. Maple Valley has a significant inventory of soft surface trails, requiring at least annual maintenance to ensure drainage has not damaged the surface and edges, and surfacing is replenished where low or soft areas have developed.

Maintenance cost requirement for the expanding non-motorized system should be reviewed and increased on a regular basis, proportionate to the quantity of system improvements.



CONCLUSION

This Plan provides recommendations for facility improvements that will improve and expand upon the non-motorized system that the City of Maple Valley has begun. It is intended to provide guidance for, but also to allow for flexibility in, implementation as the community grows and priorities for investment and development evolve. The breadth of the Plan and the facility type recommendations have been influenced by community concerns about safety, an interest in greater connectivity, and expansion of non-motorized opportunities, but also with an eye toward how these improvements can be implemented in the current economy. Grant opportunities for new facilities are more competitive, and availability of local funds has diminished. This reality influences what can reasonably be accomplished in transportation improvement efforts.

To that end, this Plan recognizes projects with non-motorized components that have begun and capitalizes on opportunities to continue with implementation of those projects. The recommendations for bike lane and sidewalk improvements on the major corridors of Maple Valley-Black Diamond Road SE and SE 272nd Street/Kent-Kangley Road SE build upon facilities that have already been established and recommend improvements to the safety in those corridors with the addition of Shared Use Path or Buffered Bike Lanes where space permits and where those facilities will be widely used.

The addition or expansion of the same mode of improvements, bike lane and sidewalk, are recommended in loop systems at the north end (SE 240th Street and SE 231st Street) and south end (216th Avenue SE, 228th Avenue SE, and SE 280th Street) of the community where there are existing or planned major destinations or traffic generators that will attract more non-motorized activity. These are the locations where an investment in infrastructure will have the greatest benefit to an ever larger percentage of the community.

There are opportunities to build on a system that has available land, but needs a coordinated agreement with other jurisdictions, namely Burlington Northern Santa Fee (BNSF) and Bonneville Power Administration (BPA). With conscientious planning and relatively modest

investment, new facilities can be added in these corridors that will expand the accessibility of the entire Maple Valley community to many neighborhoods on the south and west perimeters. These are the off-road Shared Use Paths that extend through these rights-of-way and connect neighborhoods as well as the east/west extensions that will one day connect to the planned Tri-City regional trail. These corridors will complement the strong north/south off-road corridors of the Lake Wilderness Trail and the Cedar to Green River Trail giving safe off-road access to more of the community.

The last, and one of the most efficient, category of projects is identified as Marked Shared Lanes, which extend through many of the residential communities, link schools, commercial areas, and provide a safe alternative to the busy arterials. There is an opportunity to expand on a system that has already been functioning to some degree as a non-motorized corridor, but lacks the clarity of connectivity to other parts of the system. With some creativity, these corridors can be made something more than their functional name – "marked shared lane". These back roads through the heart of the community may be signed and marked with images that not only guide, but celebrate Maple Valley's expanding non-motorized system. These corridors may exhibit a branded image of what Maple Valley has to offer in the way of non-motorized corridors, such as signing or painted symbols with a Maple Valley logo, or a stylized image of walking/ biking. These symbols may serve to not only guide, but educate users, and invite them to use more of a system that gets them safely to the destinations they previously accessed only by car.

This same strategy for providing wayfinding on these low volume side streets could be implemented City-wide to provide information about how to access other trails and corridors that connect. This lack of understanding about the availability of the current system was a central comment from the public and one that could be addressed with minimal effort and funds. As the system grows, the demand for trailheads will grow, and the Plan identifies potential locations for three additional trailheads. At the north, south, and west edges of the community, these provide good "introductory" entry points to the community where wayfinding symbols are explained and maps are made available.

Trail surfacing is a topic often discussed, and it was brought up by several members of the community. Improvement from "unsurfaced" or gravel surface to a paved surface was not identified in the Plan as a project, although at some point in the future it likely will become an issue the City may have to address. Currently the Lake Wilderness Trail, the western extension of the Cedar to Green Trail, and the Pipeline Trail are gravel, a surface preferred by some walkers, joggers, off-road cyclists, and equestrians. This is not considered an ADA accessible surface unless it is surfaced with fine graded gravel and frequently maintained. As the rest of the non-motorized network is developed, an ADA surface in this corridor may not be necessary, as comparable adjacent routes will provide that benefit. The City and community will likely weigh the pros and cons of added surfacing in these corridors over time.

Projects identified in the '400' series of the Facilities Project List are not necessarily ones the City will have any obligation or ability to develop. The City and community at large should encourage those owners or communities to consider non-motorized improvements through these corridors, expanding the system for the benefit of all users.

APPENDIX A

Definitions

Bicycle Boulevard – A street segment, or series of contiguous street segments, that has been modified to accommodate through-bicycle traffic and minimize through-vehicular traffic.

Bicycle Facilities – A general term denoting improvements and provisions to accommodate or encourage bicycling, including parking and storage facilities and shared roadways not specifically defined for bicycle use.

Bicycle Lane or Bike Lane – A portion of roadway that has been designated for preferential or exclusive use by bicyclists by pavement markings and, if used, signs. It is intended for one-way travel, usually in the same direction as the adjacent traffic lane, unless designed as a contra-flow lane.

Bicycle Route or Bike Route – A roadway or bikeway designated by the jurisdiction having authority, as a unique route designation or with Bike Route signs along which bicycle guide signs may provide directional and distance information. Signs that provide directional, distance, and destination information for bicyclists do not necessarily establish a bicycle route.

Bicycle Wheel Channel – A channel installed along the side of a stairway to facilitate walking a bicycle up or down the stairs.

Bikeway – A generic term for any road, street, path, or way which in some manner is specifically designated for bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with other transportation modes.

Buffered Bike Lanes – Conventional bicycle lanes paired with a designated buffer space separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane.

Contra-Flow Bike Lanes – Bicycle lanes designed to allow bicyclists to ride in the opposite direction of motor vehicle traffic.

Cycle Tracks – An exclusive bike facility that combines the user experience of a separated path with the on-street infrastructure of a conventional bike lane.

Highway – A general term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.

Marked Shared Lane – A Shared Lane with pavement marking that identifies combined automobile and bicycle travel is permitted.

Rail-Trail – A Shared Use Path, either paved or unpaved, built within the right-of-way of a former railroad.

Raised Cycle Tracks – Bicycle facilities that are vertically separated from motor vehicle traffic.

Right-of-Way – A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to transportation purposes.

Shared Lane – A lane of a traveled way that is open to both bicycle and motor vehicle travel.

Shared-Lane Marking – A pavement marking symbol that indicates an appropriate bicycle positioning in a Shared Lane.

Shared Roadway – A roadway that is open to both bicycle and motor vehicle travel.

Shared Space – A corridor in which automobiles, bicycles, and pedestrians share space without definition of separate use areas.

Shared Use Path – A bikeway physically separated from motor vehicle traffic by an open space or barrier and either within the highway right-of-way or within an independent right-of-way. Shared Use Paths may also be used by pedestrians, skaters, wheelchair users, joggers, and other non-motorized users. Most Shared Use Paths are designed for two-way travel.

Shoulder – The portion of the roadway contiguous with the traveled way that accommodates stopped vehicles, emergency use, and lateral support of subbase, base, and surface courses. Shoulders, where paved, are often used by bicyclists.

Sidewalk – That portion of a street or highway right-of-way, beyond the curb or edge of roadway pavement, which is intended for use by pedestrians.

Side Path – A Shared Use Path located immediately adjacent and parallel to a roadway.

Traveled Way – The portion of the roadway intended for the movement of vehicles, exclusive of shoulders and any Bike Lane immediately inside of the shoulder.

Two-Way Cycle Tracks – Cycle Tracks that are physically separated from motorized vehicles and that allow bicycle movement in both directions on one side of the road.

Unpaved Path – Path not surfaced with a hard, durable surface such as asphalt or Portland cement concrete.

APPENDIX B

Comments from Public Survey - Public Meeting #1

27-Jun-12

Total 17 responses

	#	%
1. Area		
North	1	6%
Central	6	35%
South	4	24%
East	4	24%
Other	2	12%
2. Age Group		
under 12		0%
13-18	1	6%
19-30	1	6%
30-45	10	59%
46-65	4	24%
over 65	1	6%
3. Reasons you walk or ride		
exercise, recreation	16	94%
shopping	9	53%
school	3	18%
parks	11	65%
work	6	35%
visit friends	13	76%
other	4	24%
4. Walk on shoulder/roadway if no sidewalks available		
Y	12	71%
N	4	24%
5. Which activities would increase with more facilities		
walking, running, exercise	12	71%
shopping	12	71%
school	6	35%
parks	9	53%
work	7	41%
visit friends	8	47%
other	2	12%

6. Which aspects are most important

Ranking	**1**	**2**	**3**	**4**
Safety	12	2	1	
Convenience	2	7	3	
Aesthetics		1	4	4
Maintenance		3	3	
Other	1			

Comments from Public Survey – Public Meeting #1

June 27, 2012

7. Generally, how would you like sidewalks, bike lanes, or trails in Maple Valley improved?

CENTRAL

More paved trails for rollerblading
By having more sidewalks and trails, there aren't very many to begin with
Increased
Continuous sidewalks, signage to trails

EAST

Key connections or gaps–sidewalks most important
Underpass–below grade crossing of Cedar to Green trail @ Kent Kangley Rd (SR 516)
All communities should be connected by sidewalks
I wouldn't, don't waste the money

SOUTH

SE 276th from 216th to Witte road – sidewalks

OUTSIDE CITY LIMITS

Quit building apts. then!
Please add them to the road by creating new ones.

8. What is/are your priority projects for non-motorized improvements in Maple Valley?

CENTRAL

sidewalks! ☺
Safety on the trails
Sidewalks & trails
With road sidewalks & connections

EAST

On-street facilities/sidewalks on main arterials–SR169, SR516, and Witte Rd.
169 corridor
@ Hwy 18/169 paved connector from bike path to road surface
Hwy 169 needs sidewalks and a means of connecting both sides of the Hwy without interrupting traffic (pedestrian bridge)
Stop all of it!

SOUTH

Safety on the trails

OUTSIDE CITY LIMITS

Would like loop routes for bikes – or connecting business with trails so can ride to something.
Developing new sidewalks or bike lane to and from MV including the non-incorporated MV (i.e. Sweeney Rd, Petrovisky Rd.)

APPENDIX C

0 0.25 0.5 1 Miles

The City of MAPLE VALLEY

Maple Valley Non Motorized Transportation Plan

2007 AERIAL PHOTO

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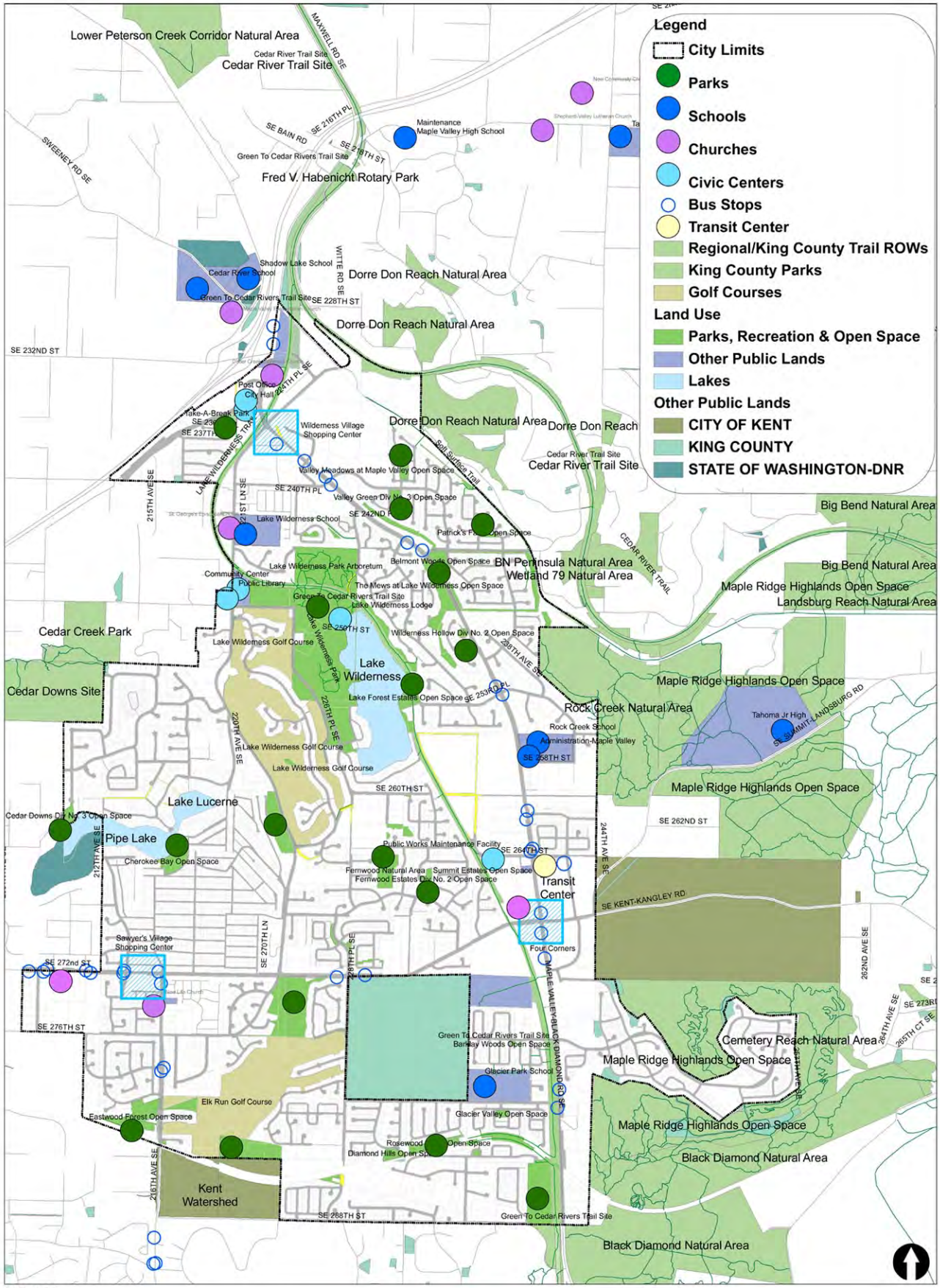
MACLEOD·RECKORD

Figure 19



The City of MAPLE VALLEY

Maple Valley Non Motorized Transportation Plan

DESTINATIONS/TRAFFIC GENERATORS

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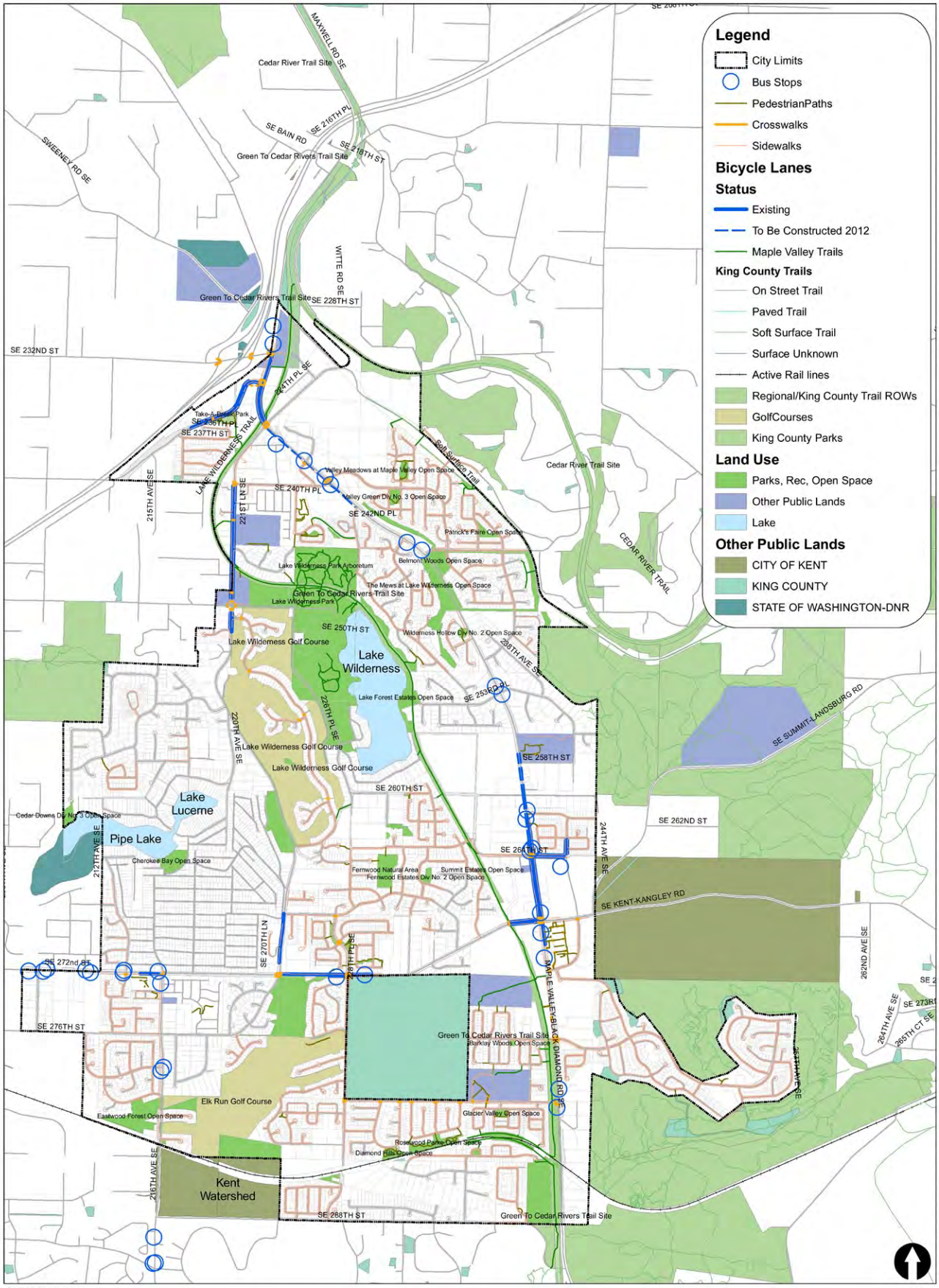
MACLEOD-RECKORD

Figure 20



JAN 2013

0 0.25 0.5 1 Miles

The City of MAPLE VALLEY

Maple Valley Non Motorized Transportation Plan

EXISTING NON-MOTORIZED NETWORK

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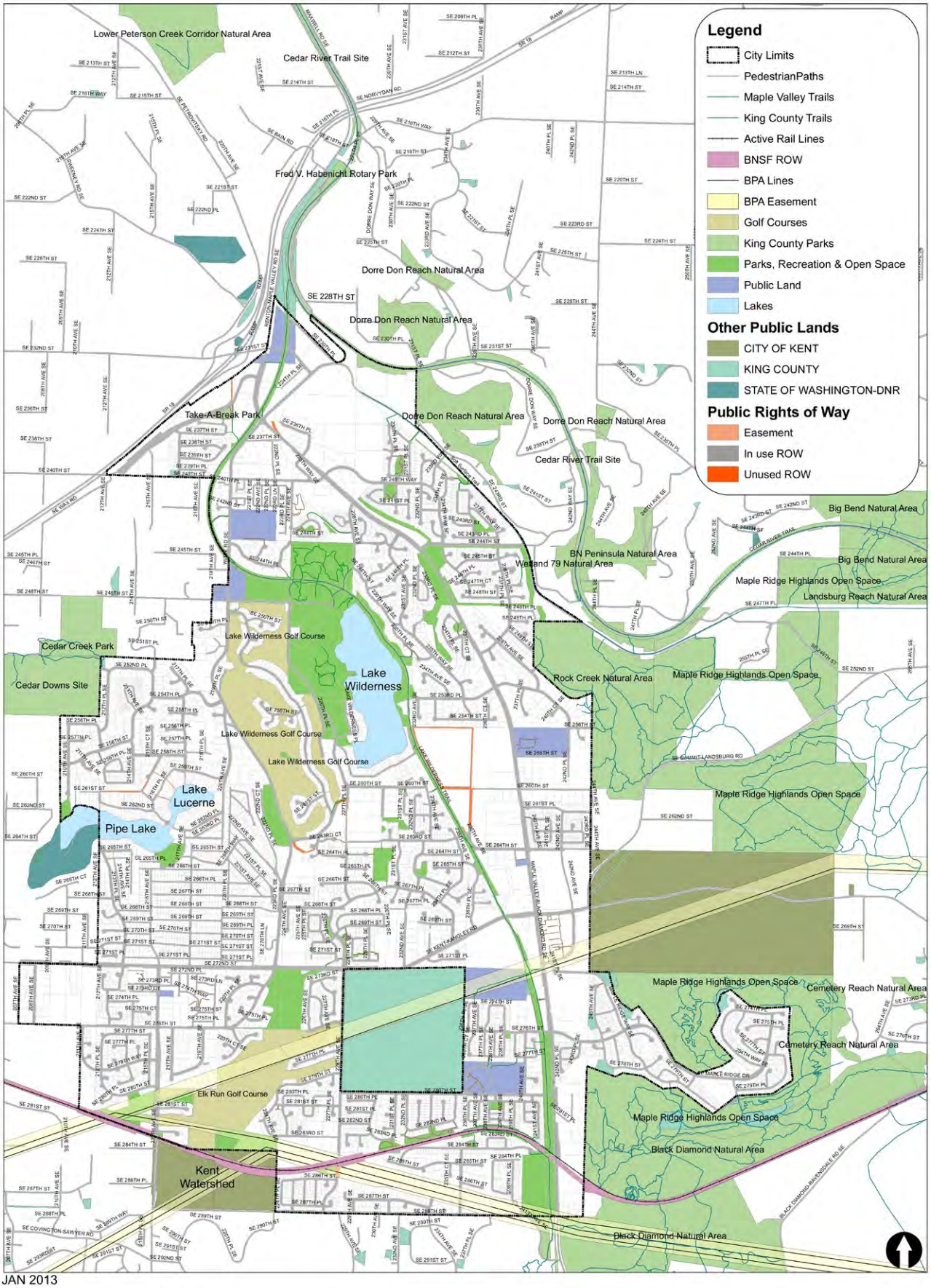
Figure 21



JAN 2013

Miles

0 0.15 0.3 0.6

The City of MAPLE VALLEY

Maple Valley Non Motorized Transportation Plan

PUBLIC AND UTILITY RIGHTS OF WAY

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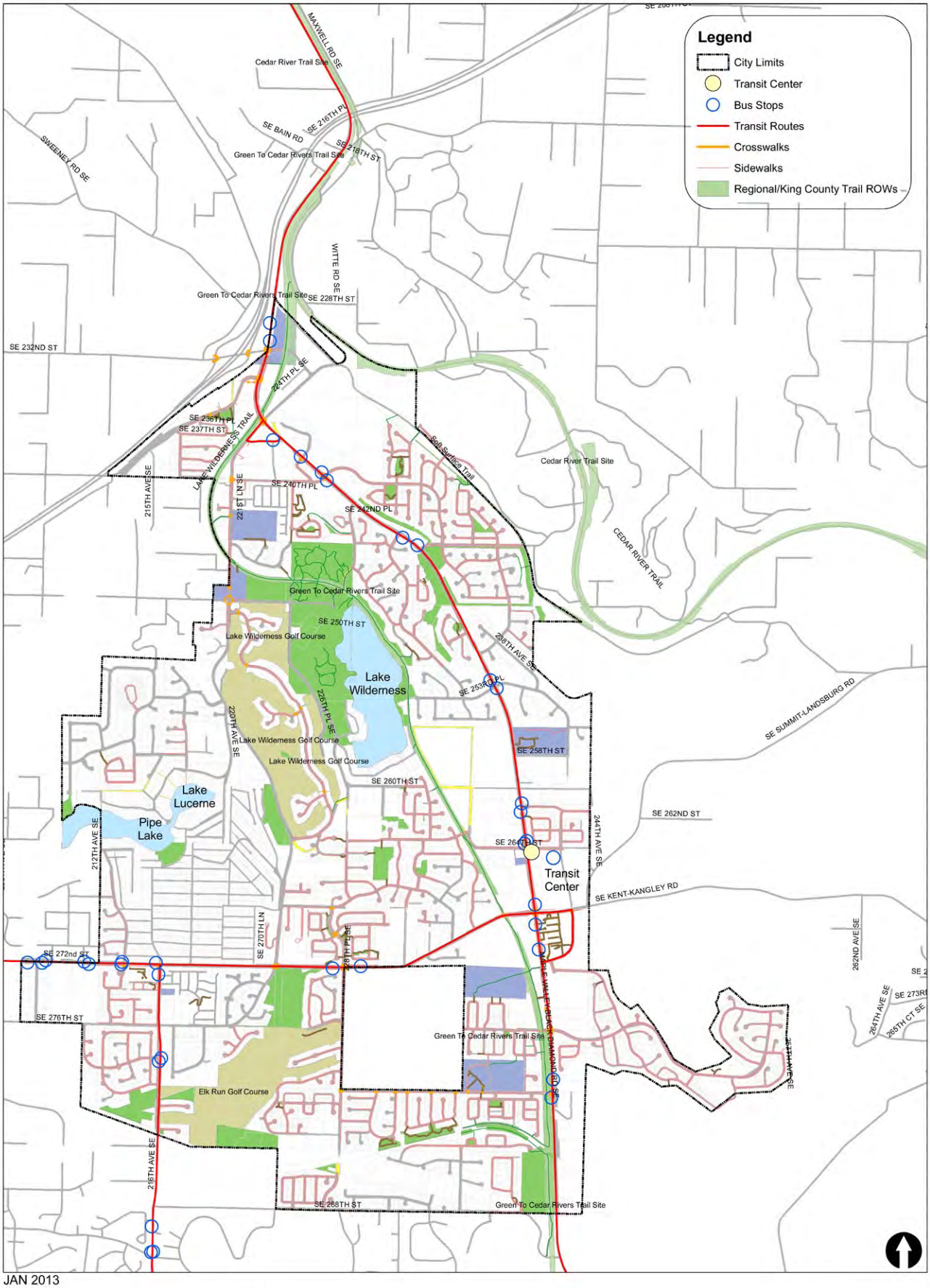
Figure 22



JAN 2013

0 0.25 0.5 1 Miles

The City of MAPLE VALLEY

Maple Valley Non Motorized Transportation Plan

TRANSIT FACILITIES

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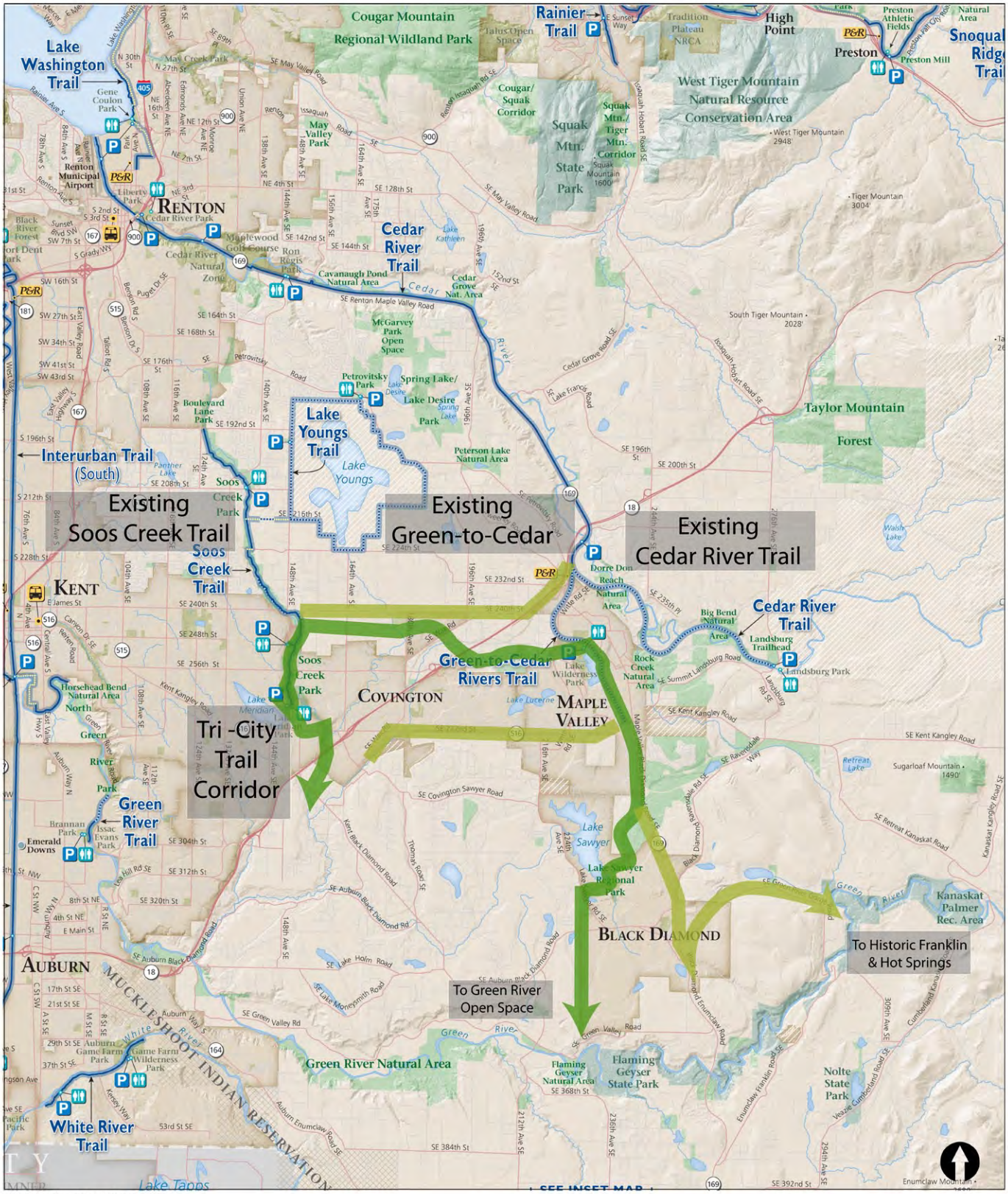
Figure 23



LEGEND

PROPOSED TRAIL

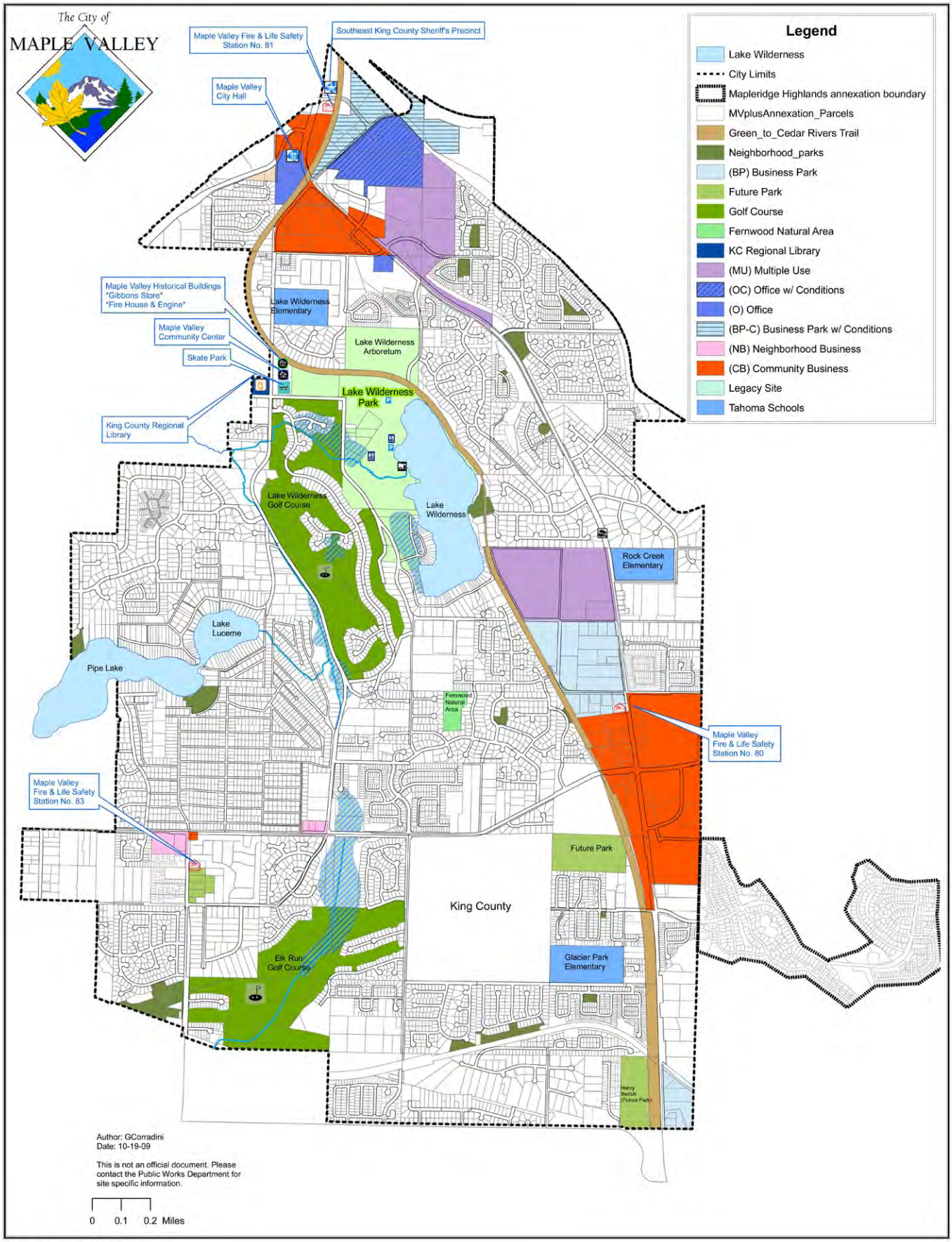
PROPOSED BIKE LANES

The City of MAPLE VALLEY

Maple Valley Non Motorized Transportation Plan

REGIONAL TRAILS

Figure 24

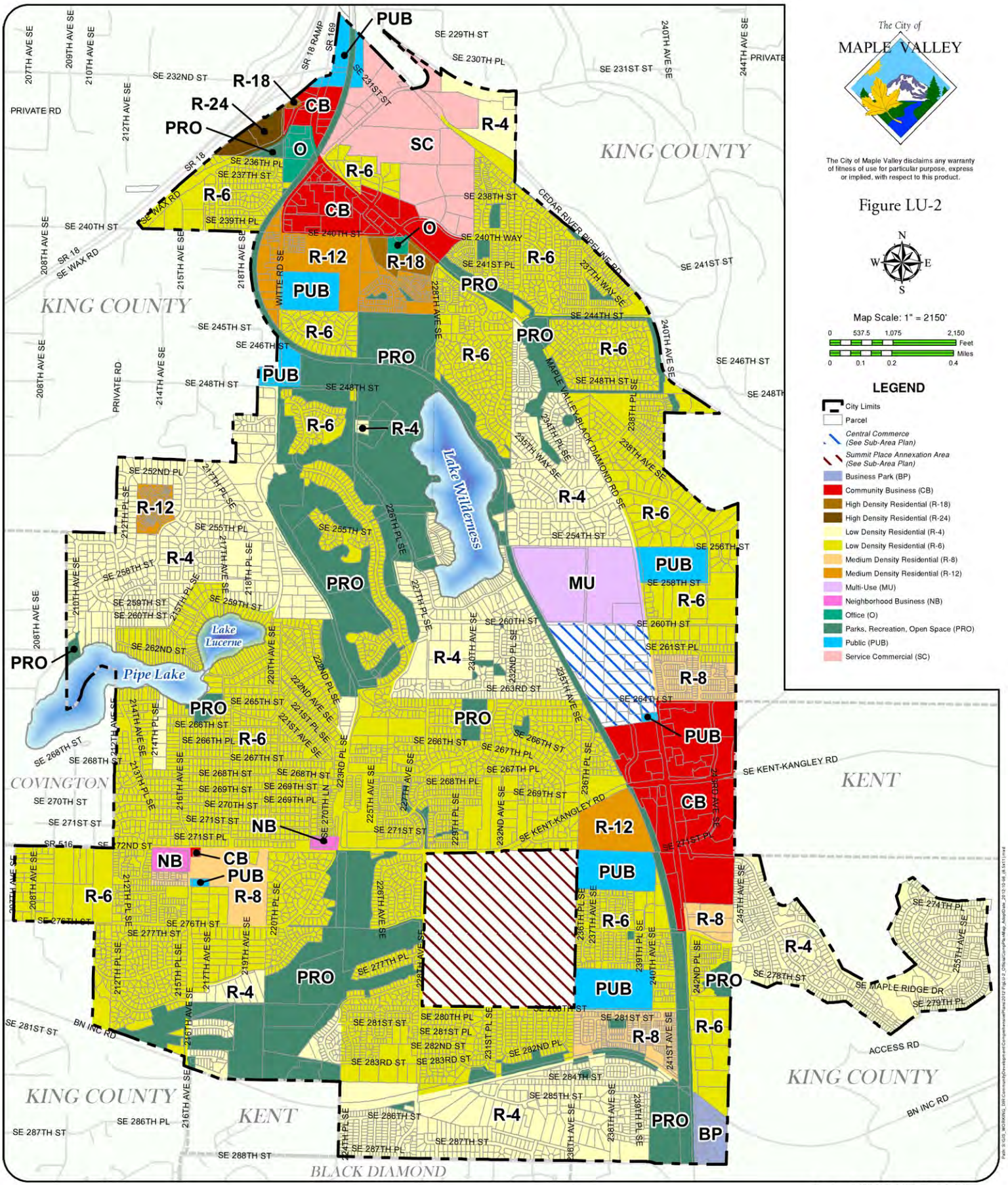


Map provided by City of Maple Valley

City of Maple Valley

CITY FEATURES AND PLANNING MAP

Figure 25



Revised 10/1/2012 Ord.# 512

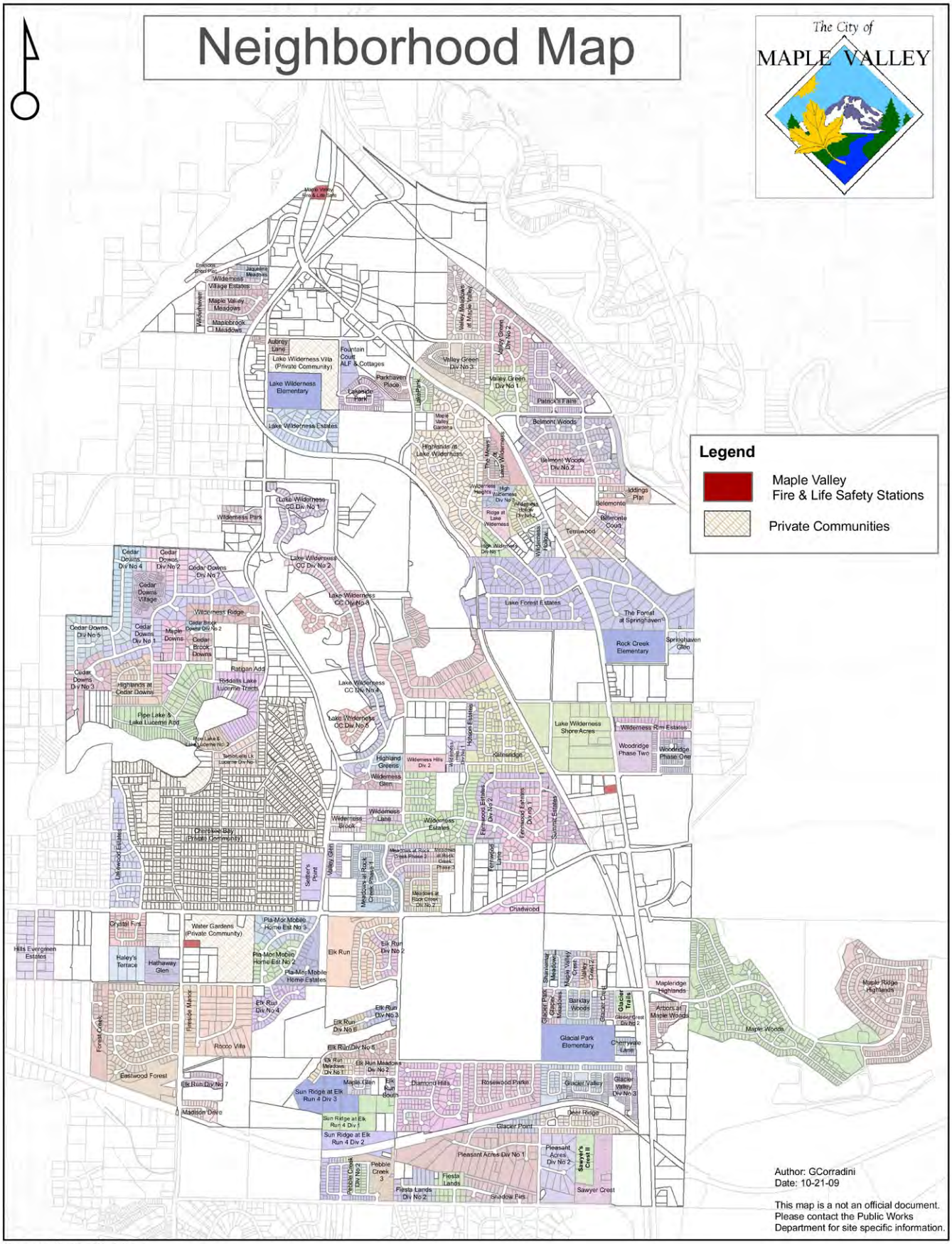
City of Maple Valley

OFFICIAL COMPREHENSIVE PLAN MAP

AS RECOMMENDED BY THE
COMMUNITY DEVELOPMENT DEPARTMENT
AND THE PLANNING COMMISSION AND
ADOPTED BY CITY COUNCIL
ADOPTED: 10/8/2012, Ordinance No. 0-12-512

Map provided by City of Maple Valley

Figure 26



Map provided by City of Maple Valley

City of Maple Valley

NEIGHBORHOOD MAP

Figure 27

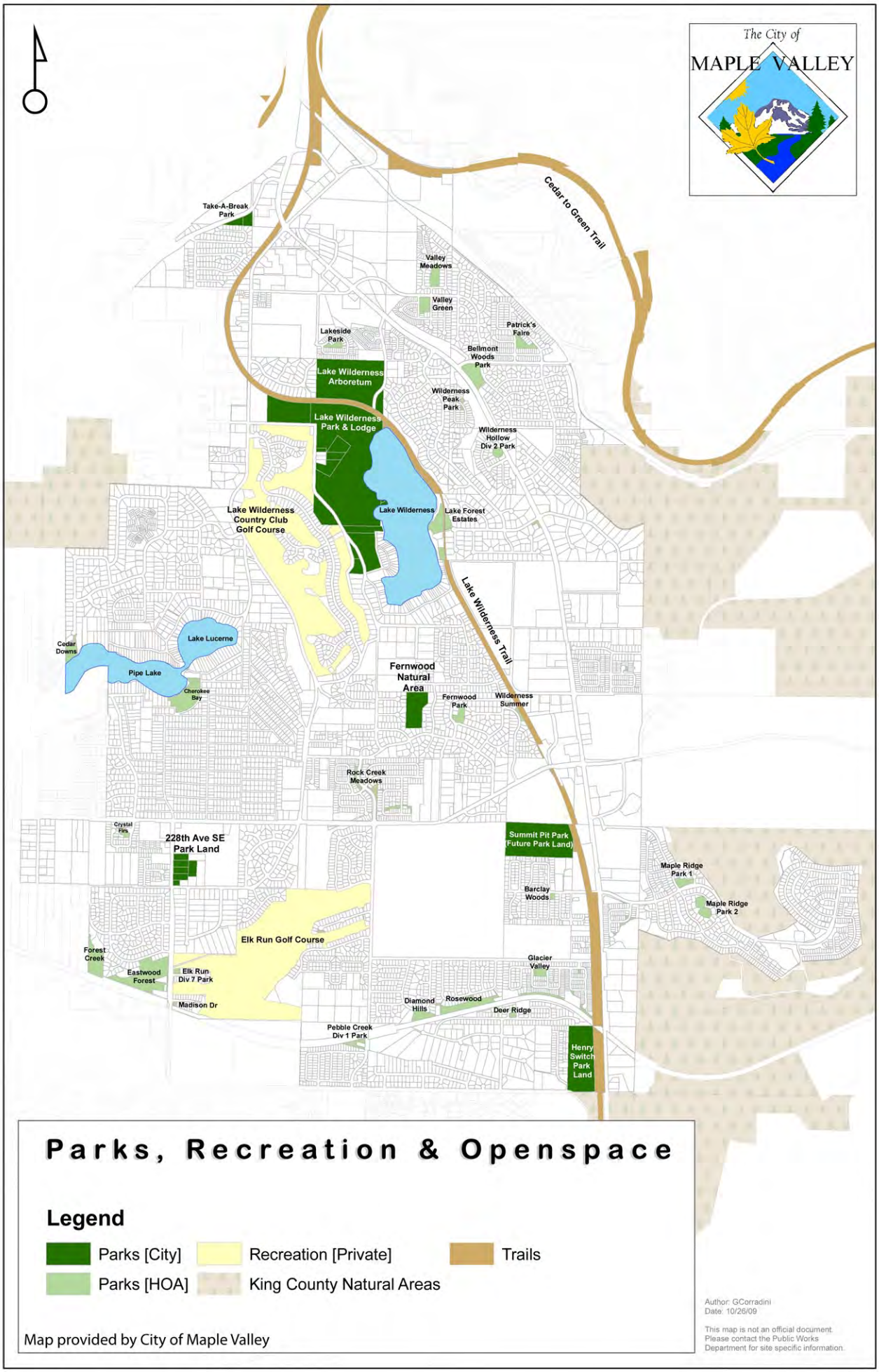

The City of
MAPLE VALLEY
Cedar to Green Trail
Take-A-Break Park
Valley Meadows
Valley Green
Patrick's Faire
Lakeside Park
Bellmont Woods Park
Lake Wilderness Arboretum
Wilderness Peak Park
Lake Wilderness Park & Lodge
Wilderness Hollow Div 2 Park
Lake Wilderness Country Club Golf Course
Lake Wilderness
Lake Forest Estates
Lake Wilderness Trail
Cedar Downs
Lake Lucerne
Pipe Lake
Cherokee Bay
Fernwood Natural Area
Fernwood Park
Wilderness Summer
Rock Creek Meadows
Crystal Firs
228th Ave SE Park Land
Summit Pit Park (Future Park Land)
Maple Ridge Park 1
Barclay Woods
Maple Ridge Park 2
Elk Run Golf Course
Forest Creek
Eastwood Forest
Elk Run Div 7 Park
Madison Dr
Glacier Valley
Diamond Hills
Rosewood
Deer Ridge
Pebble Creek Div 1 Park
Henry Switch Park Land
Parks, Recreation & Openspace
Legend
Parks [City]
Parks [HOA]
Recreation [Private]
King County Natural Areas
Trails
Map provided by City of Maple Valley
Author: GCorradini
Date: 10/26/09
This map is not an official document. Please contact the Public Works Department for site specific information.

Figure 28

APPENDIX D

DRAFT

transpoGROUP
WHAT TRANSPORTATION CAN BE.

MEMORANDUM

Date:	November 5, 2012	**TG:**	11253.00
To:	Steve Clark, City of Maple Valley		
From:	Adam Parast, Transpo Group		
cc:	Connie Reckord, MacLeod Reckord		
Subject:	Potential Roadway Standards Revisions with Adoption of the draft Non-Motorized Transportation Plan		

The purpose of this memorandum is to identify what revisions to the City's roadway design standards may need to be considered with the adoption of the draft Non-Motorized Transportation Plan (NMTP). Maple Valley Municipal Code and Standard Plans were reviewed and compared against the NMTP to determine possible revisions needed to maintain consistency between the City documents. This memo highlights possible conflicts between the currently adopted City standards and the draft NMTP and outlines approaches to address the conflicts.

The draft NMTP includes changes and additions to facility designs that are not consistent with existing Maple Valley Municipal Code (MVMC) and/or Standard Plans. In addition, some guidance provided in the revised American Association of State Highway Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities* conflicts with MVMC and Standard Plans. The following provides more detail on consistency issues and suggested revisions.

Facility Width

Wide Curb Lane	
Conflict: The current MVMC identifies wide curb lanes as the required bicycle facility type on boulevard collectors. However, the City's Standard Plans identify bike lanes as the preferred facility type for boulevard collectors. Additionally, the draft NMTP does not propose the use of this facility type.	Possible Revisions: Clarify the facility type required for boulevard collectors and determine if wide curb lanes are a desired facility type.
Travel Lane Width	
Conflict: The current MVMC identifies minimum travel way widths for each roadway classification such as 32 feet for a 2/3 lane roadway. The 2012 AASHTO *Guide for the Development of Bicycle Facilities* encourages greater flexibility with regard to vehicle travel lane widths be explored when additional width is needed to achieve a 5-foot bike lane on existing roadways.	Possible Revisions: Provide flexibility with regard to minimum travel lane width when bicycle facilities are added to existing roadways with constrained cross sections.
Landscape Strip Width	
Conflict: Standard Plans for Neighborhood Collectors and Business Collectors identifies a 4.5 foot landscape strip. This landscape strip is 1/2 foot narrower than the 5 foot separation recommended by AASHTO between a sidepath (shared use path adjacent to roadway) and curb	Possible Revisions: The City should evaluate increasing the required planting strip to 5 foot.

or edge of pavement.	
Bike Lane Width	
Conflict: The MVMC and Standard Plans state that bike lanes are 5 foot wide. This conflicts with the proposed NMTP, which proposes bike lanes with a minimum width of 4 foot for roads without curb and gutter and up to 8 feet for buffered bike lanes.	Possible Revisions: Additional flexibility in bike lane width should be added to the MVMC and Standard Plans. The NMTP will provide guidance on the appropriate width for corridors. The required minimum bike lane width should vary depending on presence of vertical curb, gutter, vehicle volumes, vehicle speeds and substantial truck traffic. This flexibility should allow and/or guide the use of buffered bike lanes.
Sidewalk Width	
Conflict: The MVMC and Standard Plan require minimum sidewalk widths depending on roadway classification. The proposed NMTP proposes sidepaths (shareduse paths adjacent to roadways) as a facility type. Sidepaths will require greater width, special attention to crossings and possibly a different paved surface.	Possible Revisions: Provide added flexibility to the MVMC and Standard Plans to allow for sidepaths (shared use paths). Guidance on crossing and paved surface should also be addressed.
Bridge Widths	
Conflict: The MVMC states that non-motorized facilities on new bridges shall comprise the full width and configuration of the road being served. In some cases this could result in a constrained bridge cross section if current non-motorized facilities on the road being served are not currently built out to the cross section identified in the non-motorized transportation plan. Adequate bridge width for future non-motorized facilities is a recommendation in the 2012 AASHTO Guide for the Development of Bicycle Facilities.	Possible Revisions: Clarify that bridge cross section design should accommodate the long term non-motorized facility design identified in the NMTP regardless of current configuration of the road being served.

New Bicycle Facilities

Cycle Track	
Conflict: The MVMC and Standard Plans require all arterial roadways to include bike lanes. The proposed NMTP adds cycle tracks as a new facility type that may be used in similar situations as bike lanes. The MVMC and Standard Plans do not recognize cycle tracks as a bicycle facility type.	Possible Revisions: Update the MVMC and Standard Plans to allow the use of cycle tracks and provide guidance on the application of this facility.

Marked Shared Lanes	
Conflict: The MVMC and Standard Plans do not recognize marked shared lanes as a bicycle facility type. The proposed non-motorized plan draft adds marked shared lanes as a new facility type.	Possible Revisions: Update the MVMC and Standard Plans to allow the use of marked shared lanes and provide guidance on the application of this facility.
Bicycle Boulevard	
Conflict: The MVMC and Standard Plans do not recognize bicycle boulevards as a facility type. The proposed NMTP adds bicycle boulevards as a new facility type.	Possible Revisions: Update the MVMC and Standard Plans to allow the use of bicycle boulevards and provide guidance on the application of this facility.

Pedestrian and Other

Shared Space	
Conflict: The MVMC and Standard Plans do not recognize shared space as a roadway classification and therefore does not provide design standards for this facility type. The proposed NMTP adds shared space as a new facility type.	Possible Revisions: Add design specifications to the MVMC and Standard Plans to address roadway types, geometrics, surfacing, roadside features and drainage for a curbless shared street.
Crossings	
Conflict: The MVMC and Standard Plans do not currently include guidance on mid-block crosswalk design or striped crossing location. Crosswalks are an important element of the proposed NMTP.	Possible Revisions: Provide guidance in the MVMC and Standard Plans on pedestrian crossings.
Shared-Use Path	
Conflict: The MVMC calls for the use of bollards on trails to deny motor vehicle access. Guidance in the 2012 AASHTO guide recommends against the use of bollards unless there is a documented history of unauthorized intrusion by motor vehicles.	Possible Revisions: Add flexibility in the use of bollards to the MVMC and recommend other design and signage strategies be considered and employed before bollards.

APPENDIX E

Overall Prioritization Weighting and Scoring Criteria

To provide recommendation on priority projects for the non-motorized network the evaluation criteria, developed early in the process and listed below, are assigned a number used as a multiplier. While all criteria are considered, the three top-ranking evaluation criteria, Safety, Connectivity (Destination Service, Directness, and Continuity), and Proximity to Destinations, are weighted more heavily. Numbers identified under "Weighting" are multiplied by the score determined under the criteria for each project resulting in a total score that establishes the project's ranking. The projects are then equally separated into three tiers – High, Medium, and Low.

<u>Weighting</u>

1) Safety - 4
2) Destination service, Directness and Continuity - 6
3) Proximity - 3
4) Condition - 1
5) Motorized influence - 1
6) Multimodal - 1
7) Funding - 1

<u>Scoring Criteria (input factors) – 1 point (Low), 2 points (Medium) 3 points (High)</u>

1. Safety (public feedback, engineering judgment)
    a. Up to current design standards - 0
    b. Not up to current design standards or not yet built -1
    c. Identified safety issue – 2
    d. Critical safety issue – 3
2. Destination service, Directness and Continuity (sum of delta RDI score)
    a. Bottom 1/3 – 1
    b. Middle 1/3 – 2
    c. Top 1/3 – 3
3. Proximity (# of destinations within ½ mile)
    a. Bottom 1/3 – 1
    b. Middle 1/3 – 2
    c. Top 1/3 – 3
4. Existing Condition (pavement, width, visibility, sight distance)
    a. At or close to standards - 1
    b. Below standards – 2
    c. Poor or none - 3
5. Motorized Traffic Influence (vehicular volumes, speeds, truck traffic)
    a. High – 1
    b. Medium – 2
    c. Low – 3

6. Multimodal Project (pedestrian, bicycle, vehicle, equestrian, transit)
    a. 1 Mode – 1
    b. 2 Modes – 2
    c. 3+ Modes – 3
7. Funding (improves likeliness of implementation) – sum points for score
    a. Likely to be funded through TIP project – 1
    b. Low cost project – 2
    c. Possible funding partner (WSDOT, School District, Parks Department, Grants, etc.) - 2

APPENDIX F

Destination Service, Directness and Continuity

As outlined in Appendix E, Destination Service, Directness and Continuity were combined into a single measure called "Connectivity" with a weighting multiplier of six. These three measures were integrated into the Connectivity measure utilizing a network based GIS analysis methodology. The methodology utilized Transpo's ViaCity software to complete the calculation-intensive portion of the analysis.

This methodology measured the directness of travel from all tax parcels within the City limits to major destinations within and adjacent to the City. It does this while factoring in the quality of the non-motorized transportation facilities between parcels and a given destination. This analysis was run with and without each proposed project or group of projects. The impact of the project was determined by comparing these two results and project scoring was integrated into the prioritization matrix.

Below is the methodology.

1. **Select Destinations** – Using information provided by the city the major destinations within and adjacent to the city were selected and mapped. These destinations were later in the analysis.
2. **Prepare Analysis Layer** – The tax parcel shapefile was prepared for use as the analysis layer, including elimination of unneeded parcels and defining the study area.
3. **Prepare Base Network** – The base network was next developed. This included modification and augmentation of the transportation network to include non-motorized facilities as well as the barrier effect of arterials. Using sidewalk, crosswalk, trails and bicycle facility data the quality of each link in the base network was determined and coded.
4. **Prepare Project Networks** – Using the base network as the foundation, each project or group of projects were coded with the proposed improvements identified by the master plan. This included coding of new sidewalks, crosswalks, trails and bicycle facilities and the associated improvement in facility quality they provided.
5. **Run Before and After Analysis** – Using the base and project networks the before and after destination connectivity of the non-motorized transportation system is assessed using ViaCity. Data was stored in the parcel analysis layer separately for each project.

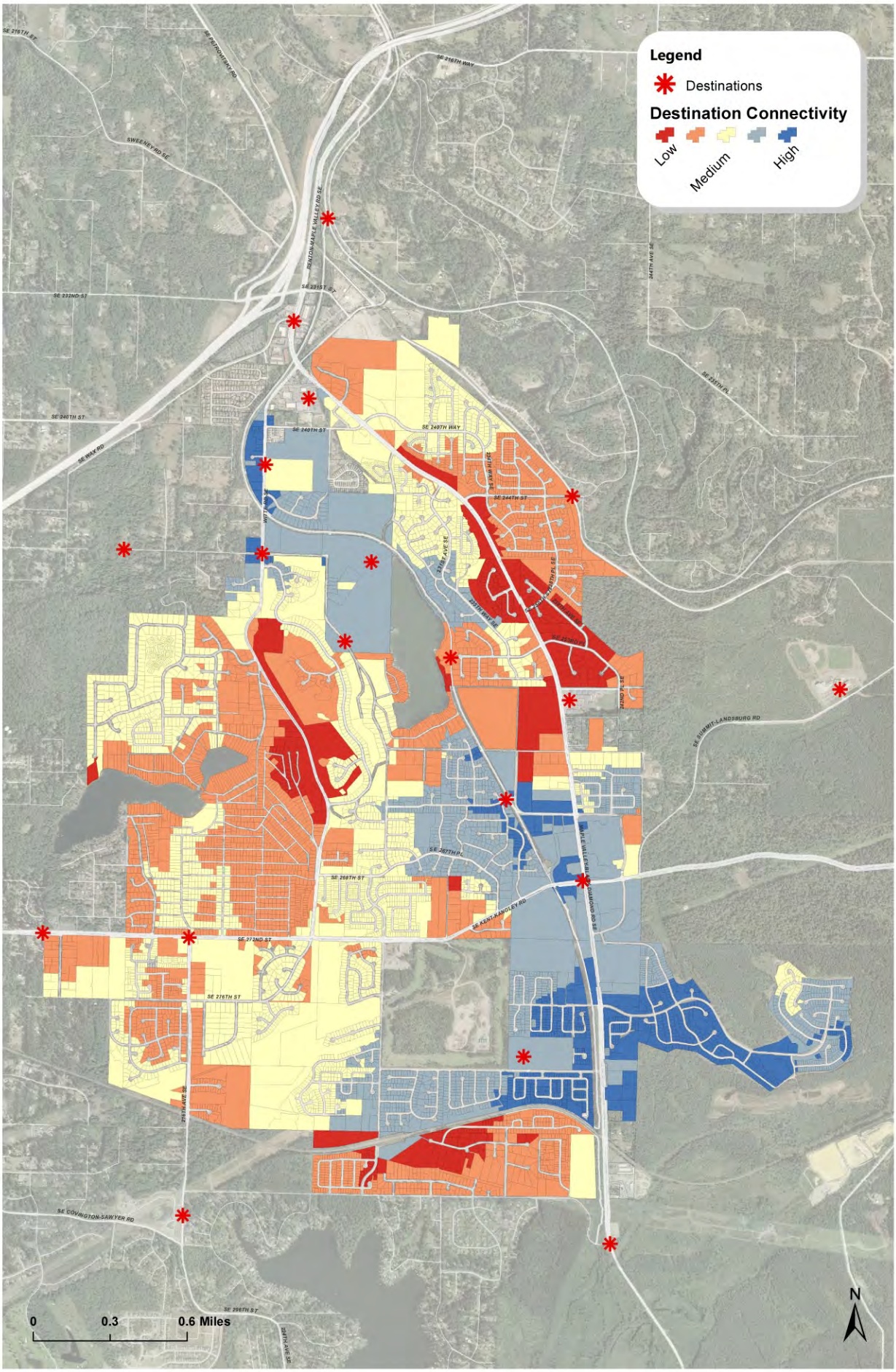
   Maps: See Figure F1 and F2 for an example of the before and after analysis results.
6. **Assessing Impact of Projects** – The destination connectivity enhancement of each project was assessed by looking at the connectivity improvement between the base network and project network. The overall impact of each project was calculated and entered into the project prioritization matrix.

   Maps: See Figure F3 for an example of the destination connectivity impact analysis.
7. **Prioritization Weighting** – Destination connectivity scores were converted into a score of zero through three. Projects in the first quartile were given a score of zero, projects in the second quartile were given a score of one, projects in the third quartile were given a score of two and projects in the fourth quartile were given a score of three. These scores were then weighted using a factor of six. This weighting factor was selected because of the high importance of destination service among the community and the multiple factors that the destination connectivity score encapsulates.

Project Impact Maps

In addition to the before, after, and improvement destination connectivity maps for projects 105, 238, and 320 shown in Figures F1-F3, project benefits of four other top ranked projects were mapped. These maps illustrate the areas of Maple Valley that benefited from specific projects and how large those benefits were.

Figures F4-F7 were similar to Figure F3, and show how the destination connectivity improved when a project or group of projects were implemented. The data used to create these maps feed into the prioritization matrix, so while only a few projects were mapped, similar data was used for project prioritization.



The City of MAPLE VALLEY

Base Network Connectivity

City of Maple Valley Non-Motorized Transportation Plan

FIGURE
F1

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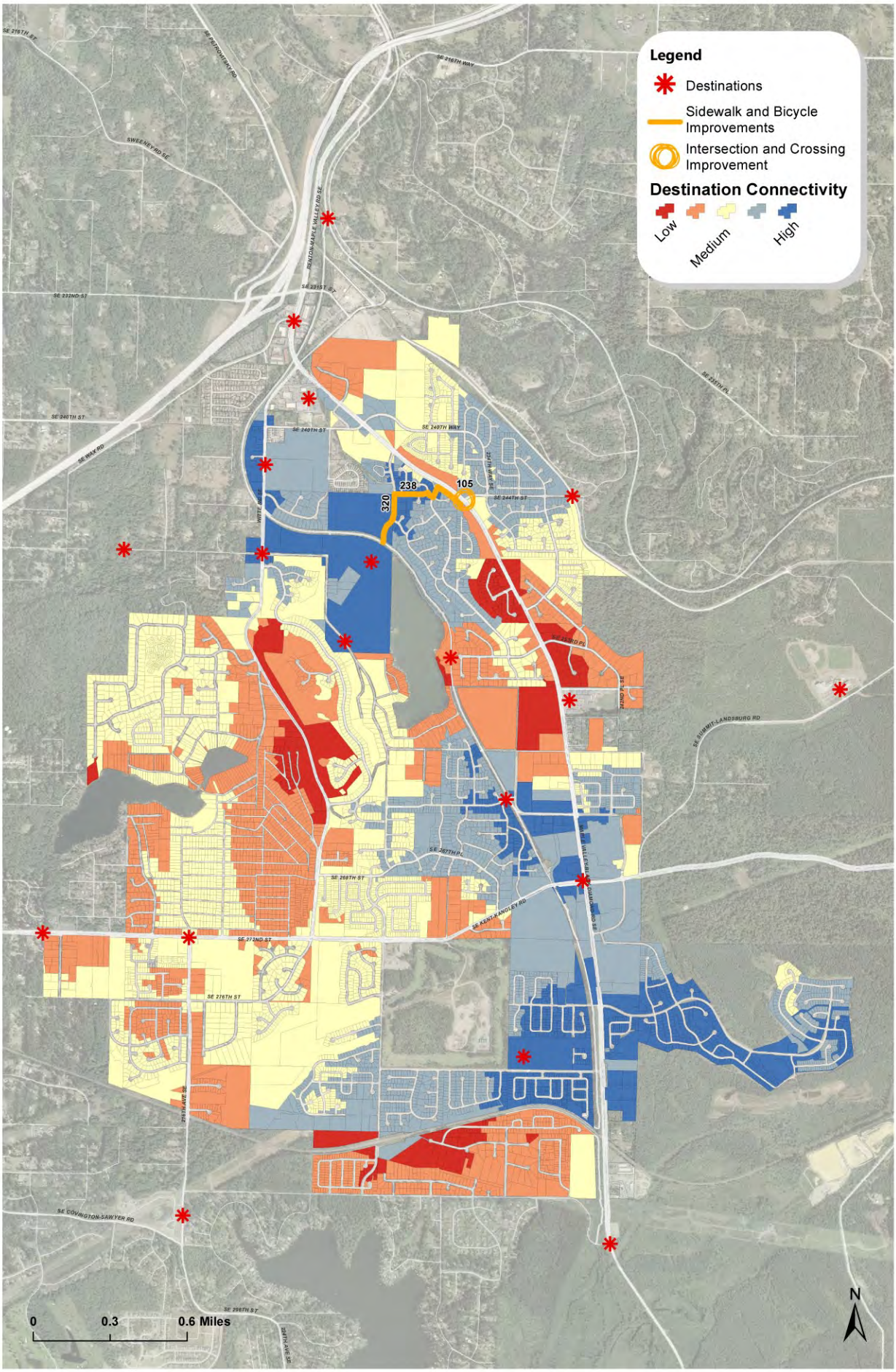

The City of MAPLE VALLEY

Project Network Connectivity - 105 & 238 & 320

City of Maple Valley Non-Motorized Transportation Plan

FIGURE **F2**

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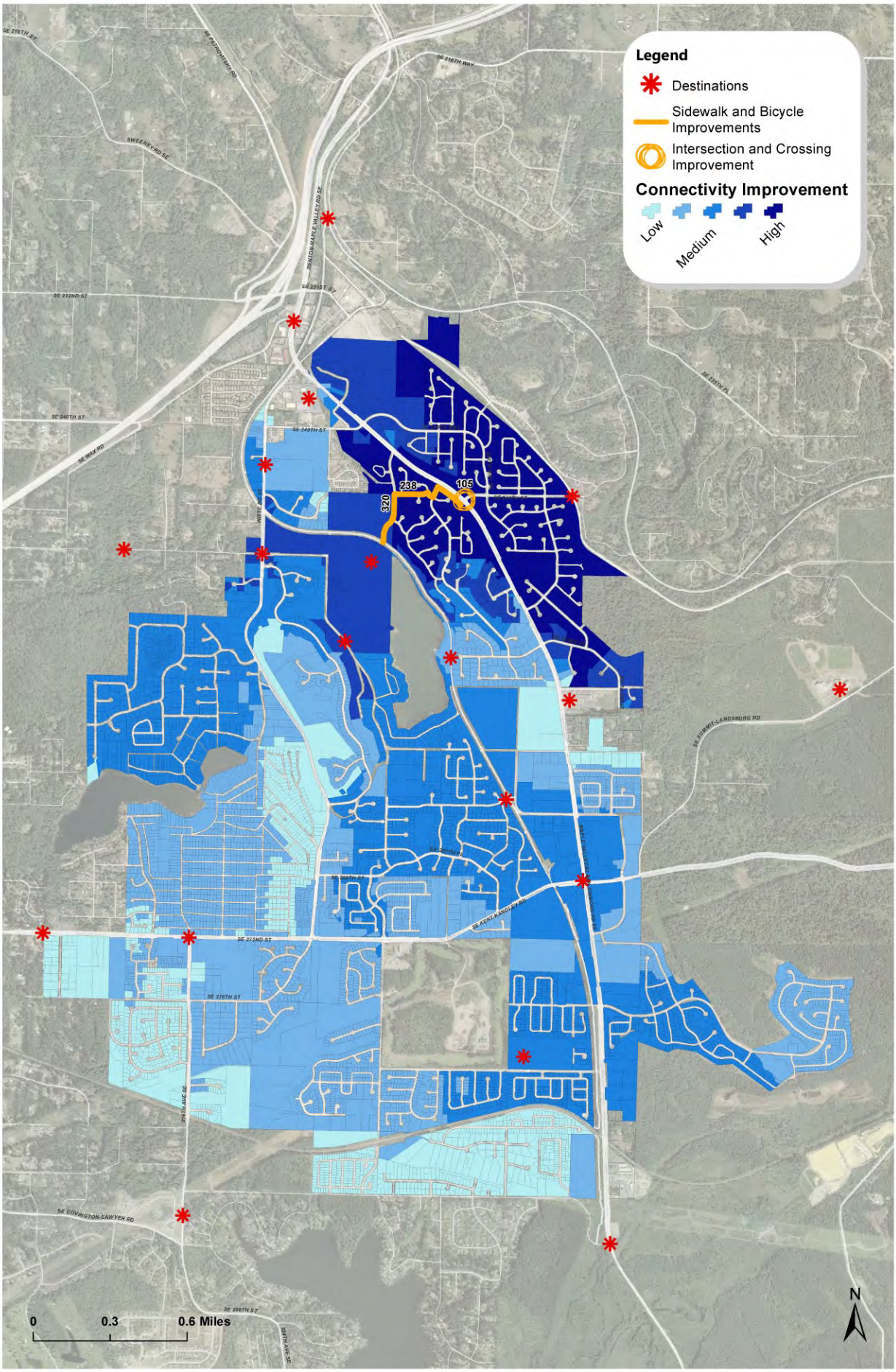
MACLEOD·RECKORD



The City of MAPLE VALLEY

Connectivity Improvement - 105 & 238 & 320

City of Maple Valley Non-Motorized Transportation Plan

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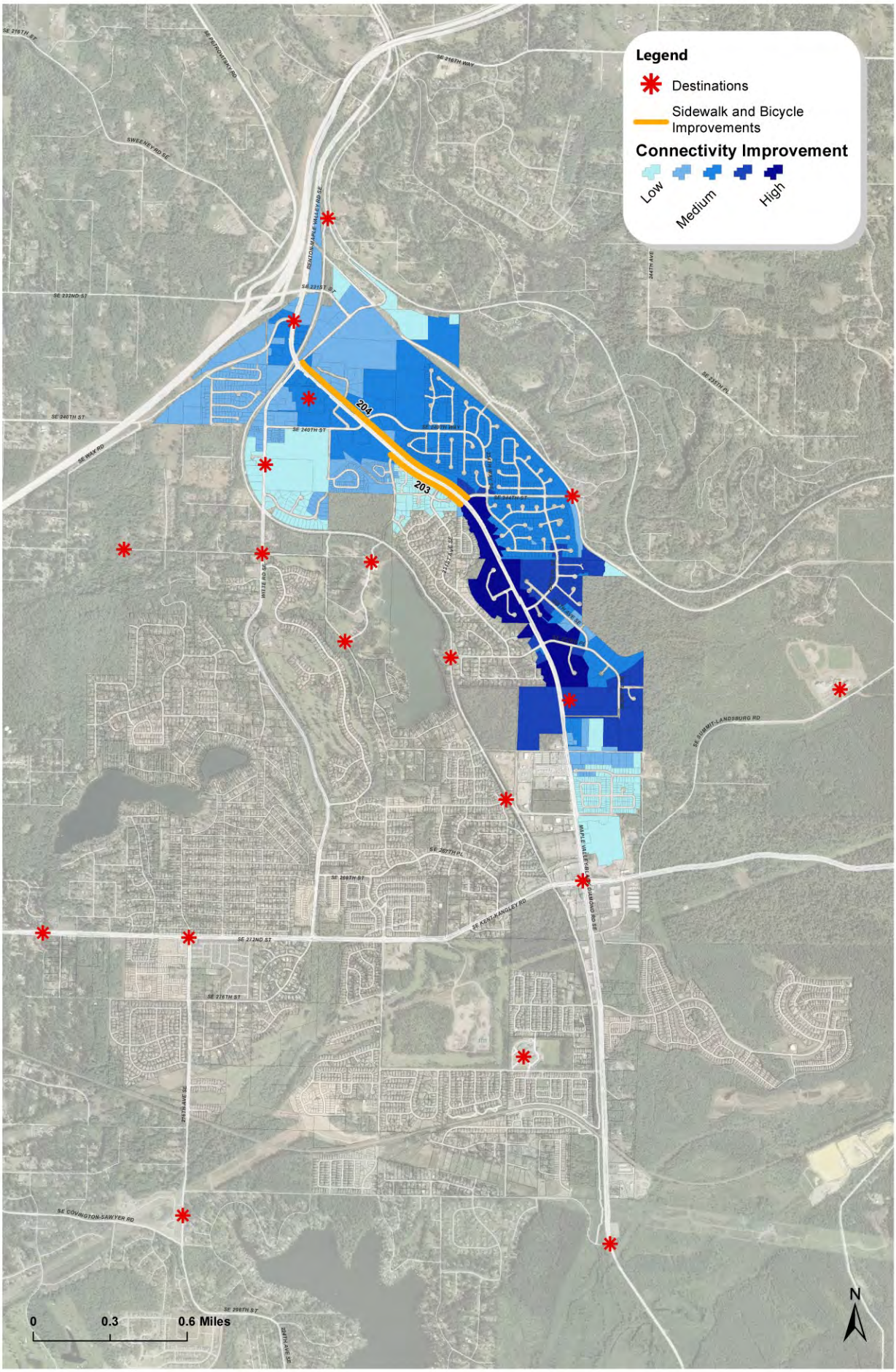
FIGURE
F3



The City of MAPLE VALLEY

Connectivity Improvement - 202 & 203

City of Maple Valley Non-Motorized Transportation Plan

FIGURE
F4

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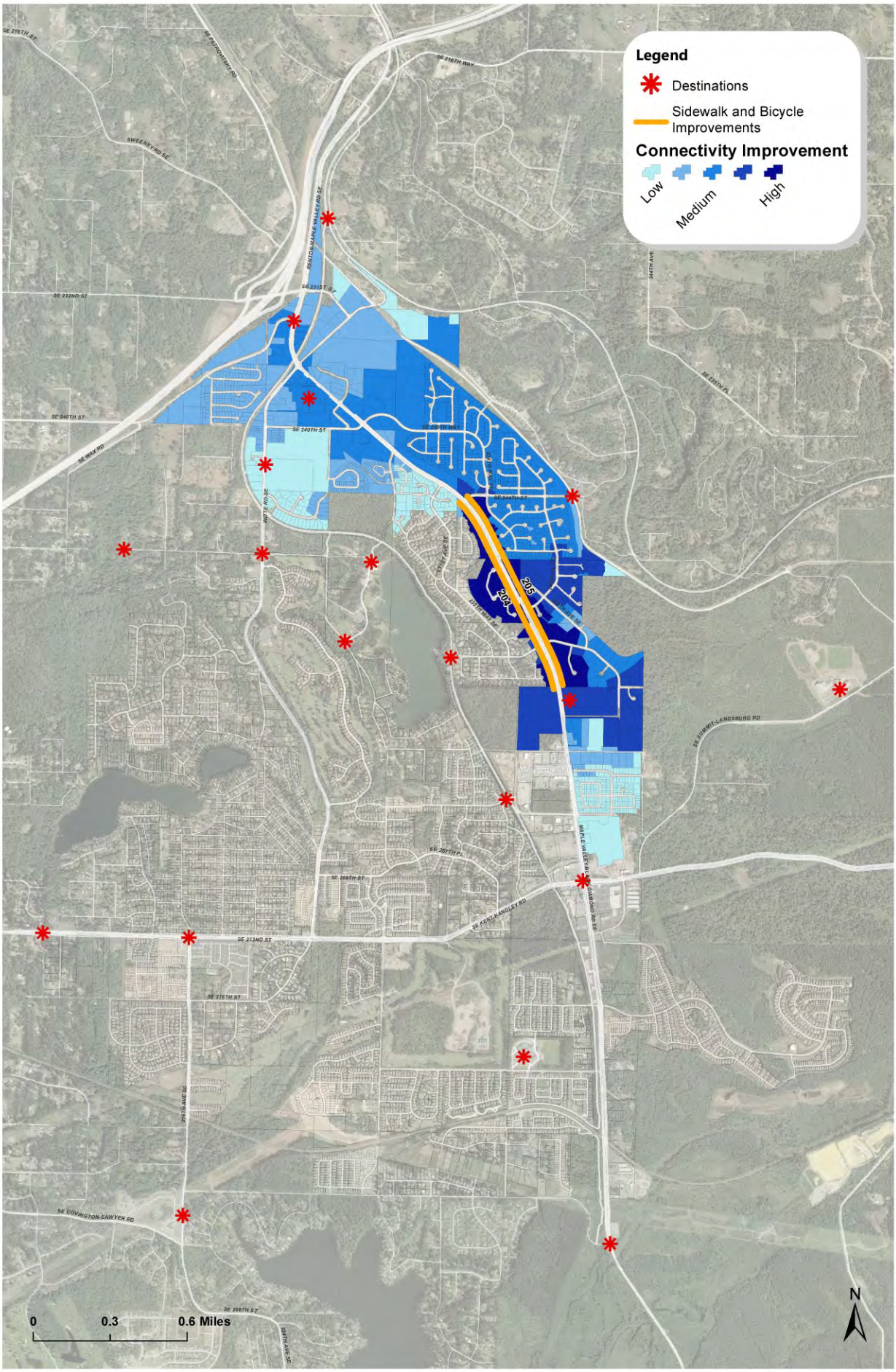

The City of MAPLE VALLEY

Connectivity Improvement - 204 & 205

City of Maple Valley Non-Motorized Transportation Plan

FIGURE **F5**

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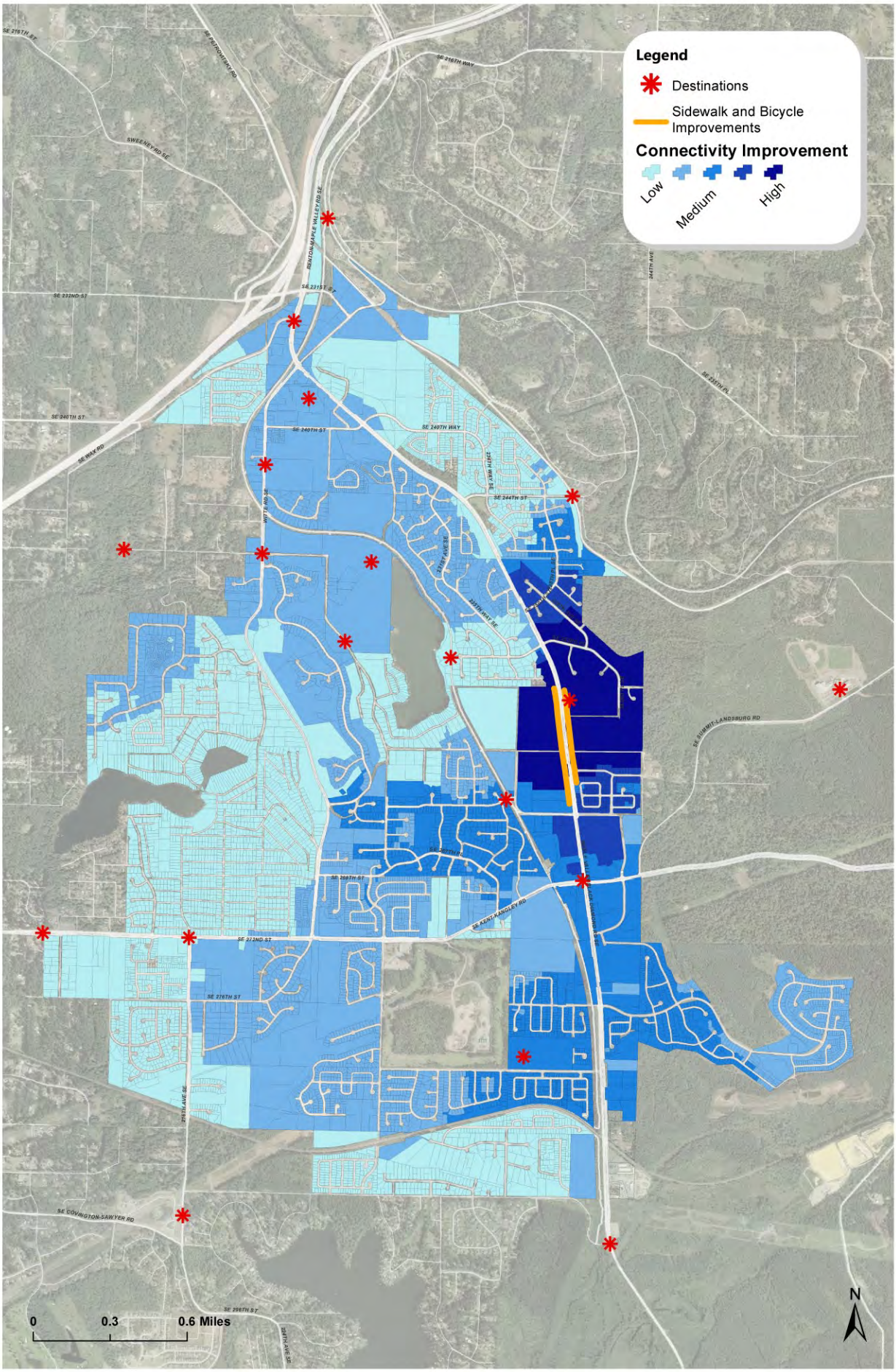
MACLEOD·RECKORD



The City of MAPLE VALLEY

Connectivity Improvement - 206

City of Maple Valley Non-Motorized Transportation Plan

FIGURE
F6

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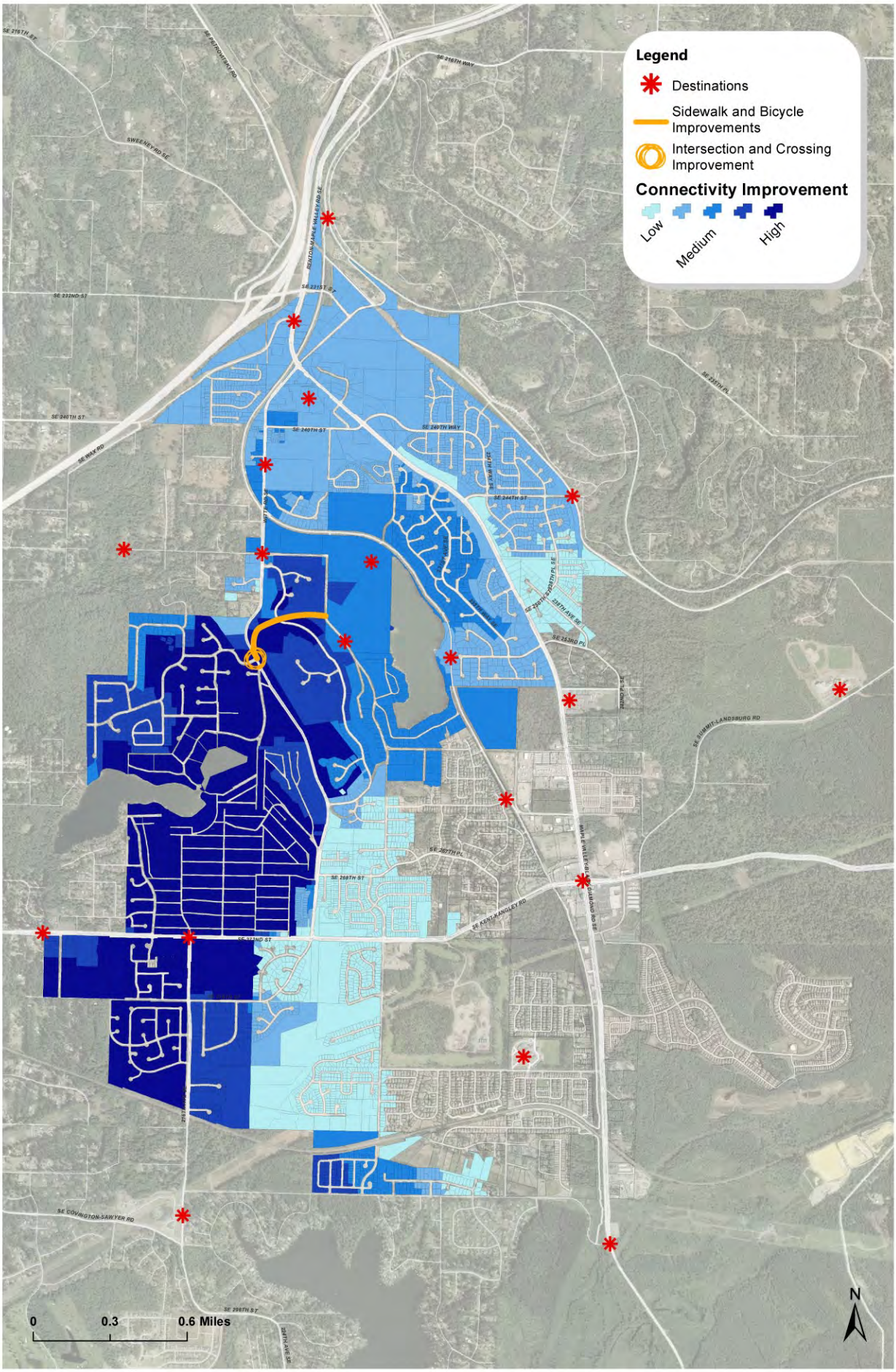

The City of MAPLE VALLEY

Connectivity Improvement - 140 & 325

City of Maple Valley Non-Motorized Transportation Plan

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FIGURE **F7**

APPENDIX G

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