PART II – EXHIBIT B

CITY OF BANKS
TRANSPORTATION SYSTEM PLAN

CITY OF BANKS TRANSPORTATION SYSTEM PLAN

VOLUME I

PREPARED FOR:

THE CITY OF BANKS, OREGON

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WITH SUPPORT FROM:

OREGON DEPARTMENT OF TRANSPORTATION
WASHINGTON COUNTY, OREGON

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The contents of this document do not necessarily reflect views or policies of the State of Oregon.

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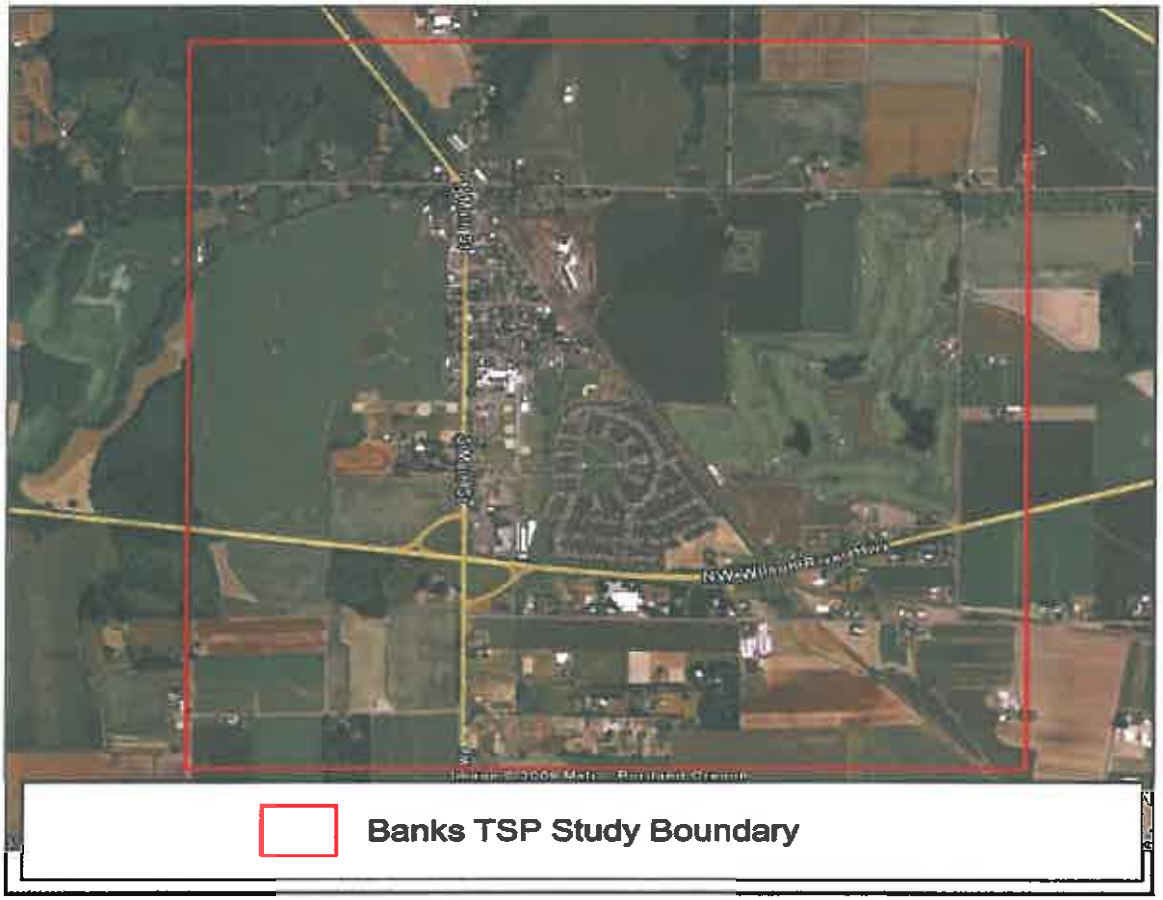
1 INTRODUCTION

The Banks Transportation System Plan addresses key issues related to transportation within the existing City of Banks urban growth boundary (UGB) as well as issues related to the proposed expansion of the UGB. This plan was led by the City of Banks in coordination with the Oregon Department of Transportation (ODOT), Washington County and the Department of Land Conservation and Development (DLCD).

Banks is located in the foothills of Oregon's coast mountain range approximately 20 miles west of Portland. Agriculture and the timber industry are historically important to the economy of the Banks area, with many farms, dairies and livestock operations located in the region. Private and public forest land provides employment for timber workers. According to City of Banks staff, many Banks residents commute to jobs in the Portland metropolitan area, such as the employment hubs of Hillsboro and Beaverton.

The study area for the Banks Transportation System Plan (TSP) is shown in Figure 1. The study area serves as the area for potential transportation system or program improvements considered for the 20-year time horizon of the Banks TSP.

FIGURE 1: BANKS TSP STUDY AREA



2 Planning Process

This section describes the planning process for the Banks Transportation System Plan, including public involvement, existing and future conditions analysis, and development and evaluation of alternatives.

Public Involvement

Banks community members, stakeholders, and representatives from the City, Washington County, ODOT, and DLCD provided guidance and policy direction for this plan. The Technical Advisory Committee (TAC) for the TSP planning process included members of ODOT, Washington County, and DLCD as well as members of public service provider agencies.

Three community meetings devoted specifically to discussion of the Banks TSP were held; two at Banks Elementary School (April 2009 and October 2010) and one at Schlegel Hall in Sunset Park (June 2009); these meetings allowed substantial input and feedback from the community. The first community meeting collected input on the deficiencies and needs related to existing conditions analysis results. The second community meeting collected input on the deficiencies and needs related to future conditions analysis results and gathered comments on the potential solution concepts under consideration. The final community meeting presented the draft project recommendations for public review and comment. Future traffic analysis conditions were reassessed in spring 2010 to account for the revised UGB expansion strategy approved by the city (the previous UGB expansion preferred alternative from July 2009 had been discarded).

Project background information, the project schedule, open house announcements, meeting summaries, and technical materials were made available on the City of Banks website (http://www.cityofbanks.org/). In addition to community meetings, public comments were also collected via email and regular mail.

Existing Conditions

The first step in the planning process was to determine the current transportation conditions within the study area. The project team collected information on traffic operations, safety issues, and the layout of study intersections. These current conditions were verified with the Project Management Team and the TAC.

Land Use

Land Uses & Zoning

This section provides an overview of existing land uses and zoning to understand existing development patterns and traffic generators within Banks. This is not intended to serve as a comprehensive land use inventory, but to provide information regarding how existing land uses (a) relate to current zoning designations and (b) affect transportation conditions. Generally, the project team found that existing land uses are consistent with the City's zoning map. City of Banks zoning is depicted on Figure 2.

Observations regarding land use patterns in the Banks study area are as follows:

- Banks' downtown area is located in the Main Street (OR 47; Main Street) corridor. The northern end of downtown contains a mix of small-scale retail and eateries along with single and multi-family residences. The central part of downtown contains a mix of institutional uses (city hall, fire station, post office) along with single-family residences. The southern part of downtown contains the Banks school complex. The high school and middle school facilities are located adjacent to each other north of Trellis Way; the elementary school is located immediately south of Trellis Way. A large grocery store and strip retail use parcel is located just south of Oak Way at the far southern edge of downtown near the OR 47 (Main Street)/OR6 interchange ramps. Based on observation and discussion with City staff, a significant amount of pedestrian and bicycle traffic takes place between the school complex and the grocery store retail area.

- The southern section of Banks east of OR 47 (Main Street) contains Arbor Village, a large residential Planned Unit Development (PUD). Narrow, curvilinear sidewalk and tree-lined streets with numerous mid-block pedestrian walkways mark this area. The sidewalks are Americans with Disabilities Act (ADA)-compliant. There is also a pedestrian path on the bank of the stream that extends through the area. The combination of these elements makes this area of the city very pedestrian and bicycle-friendly.

- The northern section of Banks east of OR 47 (Main Street) contains the Banks Lumber Mill, the largest employer in the city (according to City staff), and an older single-family residential area.

- The lands adjacent to and extending from the city's UGB boundary are predominantly composed of large agricultural parcels. These parcels are variously zoned Exclusive Farm Use (EFU) and, Agricultural Farm (AF-20 and AF-5).

- Sunset Park, located on the west side of Main Street in the south-central part of the city, is a 25-acre park with a racetrack, four baseball diamonds, a playground and picnic areas. The park is a non-profit, privately owned park administered by the Sunset Park Association. Sunset Speedway Park, located in the southwest corner of the park, is an oval dirt-racing track that holds race events every weekend during late spring and summer.

- Quail Valley Golf Course is located just east of the Banks' city boundary. The golf course sits on approximately 160 acres and is accessible from Aerts Road, approximately 320 feet north of the Aerts Road/OR 6 intersection. The course, which opened in 1994, is an 18-hole facility that is open to the public and draws most of its customers from the Portland metro area.

Development Potential & Constraints

The City of Banks has a number of vacant[1] and underutilized[2] properties that could be respectively developed or more intensely developed. The Banks area contains a number of environmental constraints to development. Small pockets of delineated wetland areas are located along the bank of the stream that extends in a north-south direction through the city as well as in low-lying areas at the southeastern part of the city and west of the city; as shown on Figure 3. A significant expanse of land located to the west of the city boundary is inside the Federal Emergency Management Agency's (FEMA) 100-year floodplain. The northwest portion of Sunset Park is also located inside the floodplain. Although the city's topography is primarily flat to gently rolling, the far northeastern part of the city contains some significant grades. Existing wetlands, floodplain areas, and contours are depicted on Figure 3.

[1] "Vacant" defined as lots that do not contain any structures

[2] "Underutilized" defined as lots not being currently used to the intensity/density allowed under current zoning

FIGURE 2: CITY OF BANKS ZONING (SOURCE: KENNEDY/JENKS CONSULTANTS)

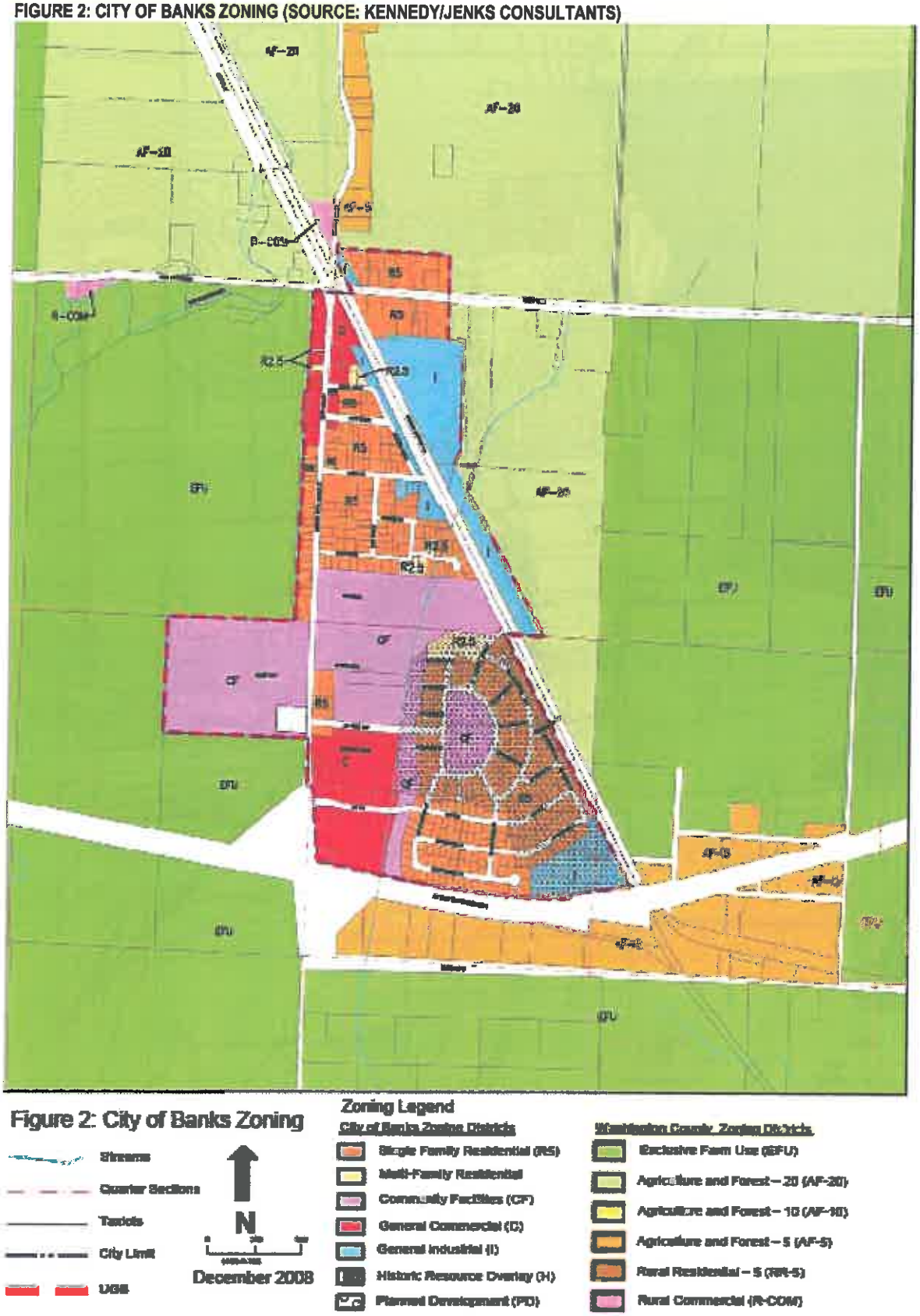
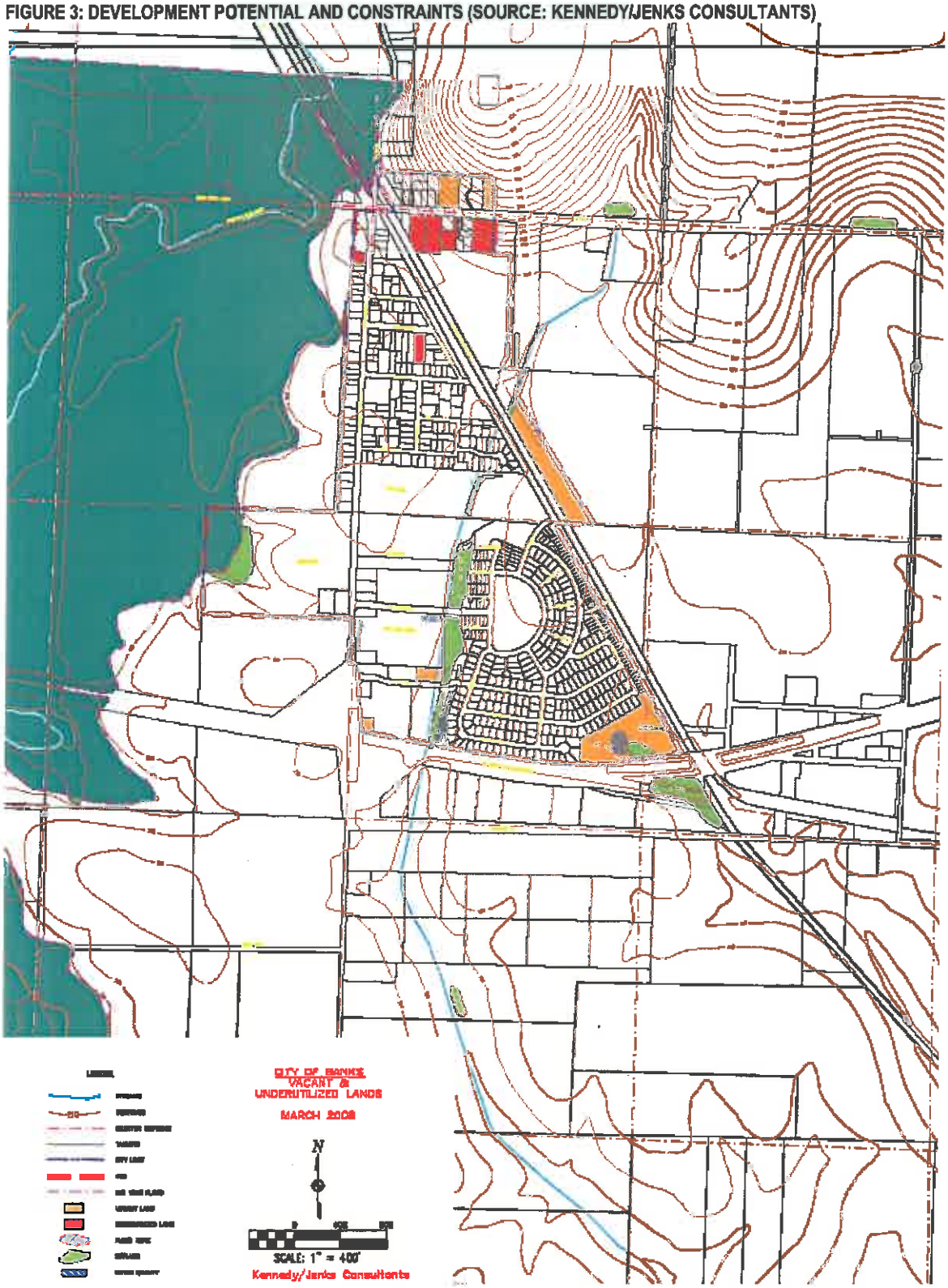


FIGURE 3: DEVELOPMENT POTENTIAL AND CONSTRAINTS (SOURCE: KENNEDY/JENKS CONSULTANTS)



Roadway Facilities

This section describes the current roadway network in Banks – state highways, the local roadway network, and Washington County owned roadways within the study area.

State Roadways

The state-administered highways within the City of Banks are OR 6 and OR 47 (Main Street). A major focus of the TSP planning effort is to balance the state's management objectives for OR 6 and OR 47 (Main Street) with the local needs and objectives of Banks in relation to the highways.

OR 47 (Main Street)

OR 47 (Main Street) is a predominantly north-south route that extends approximately 83 miles from OR 18 in McMinnville to OR 30 in Clatskanie.

Inside the city limits of Banks, OR 47 (the Nehalem Highway; Main Street), is functionally classified in the OHP as a Statewide Highway, a classification which is intended to provide inter-urban and inter-regional mobility and provide connections to larger urban areas, ports, and major recreation areas that are not directly served by Interstate Highways. A secondary function is to provide connections for intra-urban and intra-regional trips. The management objective of the Statewide Highway classification is to provide safe and efficient, high-speed, continuous-flow operation. Inside Special Treatment Areas (STAs), local access may also be a priority.

The section of OR 47 (Main Street) from mile points 82.85-83.58 is designated by the state as a principal arterial. OR 47 (Main Street) is also part of the National Highway System (NHS) and is a designated truck route. OR 47 (Main Street) contains one northbound and one southbound travel lane inside the City of Banks.

Within the TSP study area, OR 47 (Main Street) is designated as a Special Transportation Area (STA); STA's are defined as districts of compact development located on a state highway within an UGB where the need for appropriate local access outweighs the

considerations of highway mobility (except on designated OHP freight routes). Table 1 shows the roadway width of OR 47 within the study area.

Because Banks' Main Street also serves as a state highway, a major focus of the TSP planning process is to strike a balance between the needs of pedestrians, shoppers, employees, business owners, and residents with the needs of through traffic—both auto and freight—to move safely and efficiently over longer distances.

TABLE 1

OR 47 (Main Street) Right-of-Way Dimensions

Highway Section N to S (MP to MP)	SB Lane Width	NB Lane Width	SB Shoulder Width	NB Shoulder Width	Left Turn Bay	Right Turn Bay	Median
82.85 to 82.86	12	12	8	1	0	0	0
82.86 to 83.26	12	12	8	8	0	0	0
83.26 to 83.38	20	12	0	5	0	0	0
83.38 to 83.39	13	12	5	5	0	0	13
83.39 to 83.49	13	20	5	5	13	0	0
83.49 to 83.52	12	12	3	5	0	0	13
83.52 to 83.53	12	12	5	5	0	0	13
83.53 to 83.60	12	12	6	5	13	0	0
83.60 to 83.66	16	12	0	8	12	15	0
83.66 to 83.70	16	12	0	0	0	15	9

Source: ODOT ITIS Database, 2009

OR 6

OR 6 is an east-west route that extends approximately 52 miles from US 26 (approximately 1.80 miles east of Banks) to US 101 in Tillamook.

Inside the study area, OR 6 (Wilson River Highway) is functionally classified in the OHP as a Regional Highway, a freight route and a truck route. Regional Highways are intended to provide inter-urban and inter-regional mobility and provide connections and links to regional centers, Statewide or interstate Highways, or economic or activity centers of regional significance. The management objective of the Regional Highway classification is to provide safe and efficient, high-speed, continuous-flow operation in rural areas and moderate to high-speed, continuous flow operation in urban and urbanizing areas. A secondary function is to serve land uses in the vicinity of these highways.

There is currently a full at-grade interchange at OR 6 and OR 47 (Main Street). This is the only direct access to the City of Banks from this vital highway. The Banks Transportation Network Plan (TNP), completed in 1999, recommended a secondary route from the city to access OR 6. Table 2 shows the roadway width of OR 6 within the study area.

TABLE 2

OR 6 Right-of-Way Dimensions

Highway Section W to E (MP to MP)	EB Lane Width	WB Lane Width	EB Shoulder Width	WB Shoulder Width	Left Turn Bay	Right Turn Bay	Median
49.10 to 50.03	12	12	8	8	0	0	0

Source: ODOT ITIS Database, 2009

City of Banks Roadways

Banks has a number of streets with different classifications, which guide the use and expected traffic along the identified roadways. City of Banks roadway classifications are outlined in the Transportation Network Plan and described below:

- **Arterial Streets:** Arterial streets are major transportation corridors that provide connections between other cities and geographic areas. Access to Principle Routes is managed and coordinated to minimize degradation of capacity while providing access to abutting land uses. There are two Principle Route Arterial Streets within Banks – OR 6 and OR 47 (Main Street).
- **Collector Streets:** Minor collectors are intended to provide access to abutting properties and to serve the local access needs of a neighborhood, including limiting through traffic. Banks Road, Cedar Canyon Road, and Sellers Road are Minor Collectors located within, or on the edge of, the Banks city limits. Sunset Road is not classified as a collector street, although it functions as such.
- **Local Streets:** Local streets primarily provide direct access to abutting land uses. These streets have low traffic volumes and are not intended to serve through traffic. The remainder of the streets in Banks (not mentioned above) are classified as Local Streets.

Oak Way collects traffic from the shopping center and the Banks Estates/Arbor Village housing developments. Its current function and higher traffic volumes suggest potential classification as a Minor Collector street. Trellis Way primarily serves traffic from Arbor Village and the elementary school, and could also be classified as a Minor Collector street.

OR 47 (Main Street) was not classified by ODOT as a major truck route when the TNP was written, but in the 1999 OHP, OR 47 (Main Street) was classified as a Truck Route in the segment abutting Banks. The largest destination for truck traffic is the Banks Lumber Mill with access via Sunset Avenue. Log trucks typically come from locations north of town while processed lumber leaves to destinations south of the city.

Washington County Roadways

Washington County roadways within the study area are listed below. The functional classification for each roadway as defined in the Washington County 2020 Transportation System Plan (2002) is also noted:

- NW Banks Road – collector
- NW Sellers Road – collector
- NW Wilkesboro Road – collector
- NW Aerts Road – local roadway
- NW Cedar Canyon Road – local roadway
- NW Courting Hill Drive – local roadway

Bicycle Facilities

According to the American Association of State Highway and Transportation Officials (AASHTO)'s Guide for the Development of Bicycle Facilities (1999) and the Oregon Bicycle and Pedestrian Plan (OBPP), there are several different types of bicycle facilities. Bikeways are distinguished as preferential roadways that have facilities to accommodate bicycles. Accommodation can be a bicycle route designation or bicycle lane striping. Shared use paths are facilities separated from a roadway for use by cyclists, pedestrians, skaters, runners, and others. Bicycles are allowed on all study area roadways in Banks.

The following types of bikeways are recognized by AASHTO and OBPP:

- ***Shared Roadway / Signed Shared Roadway*** – Shared roadways include roadways on which bicyclists and motorists share the same travel lane. This is the most common type of bikeway. The most suitable roadways for shared bicycle use are those with low speeds (25 mph or less) or low traffic volumes (3,000 vehicles per day or fewer). Signed shared roadways are shared roadways that are designated and signed as bicycle routes and serve to provide continuity to other bicycle facilities (i.e., bicycle lanes) or designate a preferred route through the community. Common practice is to sign the route with standard Manual on Uniform Traffic Control Devices (MUTCD) green bicycle route signs with directional arrows. The OBPP recommends against the use of bike route signs if they do not have directional arrows and/or information accompanying them. Signed shared roadways can also be signed with innovative signing that highlights a special touring route (i.e., Oregon Coast Bike Route) or provides directional information in bicycling minutes or distance (e.g., "Library, 3 minutes, 1/2 mile").
- ***Shoulder Bikeway*** – These are striped shoulders on paved roadways wide enough for bicycle travel. ODOT recommends a 6-foot paved shoulder to adequately provide for bicyclists, and a 4-foot minimum in constrained areas. Roadways with shoulders less than 4-feet are considered shared roadways. Sometimes shoulder bikeways are signed to alert motorists to expect bicycle travel along the roadway.

- ***Bike Lane*** - Bike lanes are portions of the roadway designated specifically for bicycle travel via a striped lane and pavement stencils. ODOT standard width for a bicycle lane is 6 feet. The minimum width of a bicycle lane against a curb or adjacent to a parking lane is 5 feet. A bicycle lane may be as narrow as 4 feet, but only in very constrained situations (e.g. due to bridges or topography). Bike lanes are most appropriate on arterials and major collectors, where high traffic volumes and speeds warrant greater separation.
- ***Shared Use Path*** - Shared use paths are used by a variety of non-motorized users, including pedestrians, cyclists, skaters, and runners. Shared use paths may be paved or unpaved, and are often wider than an average sidewalk (i.e., 10 – 14 feet). In rare circumstances where peak traffic is expected to be low, pedestrian traffic is not expected to be more than occasional, good passing opportunities can be provided, and maintenance vehicle loads are not expected to damage pavement, the width may be reduced to as little as 8 feet.

Shared Roadways / Signed Shared Roadways

Most local streets in Banks are low speed/low volume roadways that could be classified as shared roadways. These streets can accommodate bicyclists of all ages and currently have little need for dedicated bicycle facilities (e.g., bicycle lanes). They generally have low vehicle volumes (3,000 ADT or less) and low-posted speeds (25 MPH or less). Curb-to-curb widths range between 25 and 40 feet with typical street cross-sections including two vehicle travel lanes with parking on both sides. Parked vehicles often obstruct visibility.

NW Banks Road – NW Cedar Canyon Road, the major east-west route north of OR 6, has a striped fog line of variable width (0-2 feet) with no signage or other accommodations for bicyclists.

Shoulder Bikeway

As shown in Table 1 most of OR 47 (Main Street) inside Banks has shoulders on both sides of the roadway that meet or exceed the 4-foot width recommendation. However, there are brief sections where there is no shoulder at all, forcing bicyclists to either use the sidewalks or mingle with through-traffic.

Bike Lane

There is a brief 1.70-mile section of bike lane on OR 47 (Main Street). This section, on northbound OR 47 (Main Street), begins at approximately milepost 21.5, near Oak Way. The bike lane continues until reaching the roadway entrance to Banks High School at milepost 19.79.

Shared Use Path

The Banks-Vernonia Trail is a 21-mile north-south rail trail that is open to hikers, bicyclists, and equestrians. The trail's northern terminus is in Vernonia; the trail itself follows a direction that is roughly adjacent to OR 47 (Main Street) before terminating in the City of Banks at Banks Road. The 2008-2011 State Transportation Improvement Program (STIP) contains programmed funds to extend the trail into Banks.

There is an existing 8-foot wide paved shared use path located immediately west of the Arbor Village development between Oak Way and Banks High School. There are also multiple footpaths within Arbor Village to connect properties.

Pedestrian Facilities

According to the OBPP, pedestrian facilities are defined as any facilities utilized by a pedestrian or people using wheelchairs. These types of facilities include walkways, traffic signals, crosswalks, curb ramps, and other features such as illumination or benches. The following types of pedestrian facilities are recognized by AASHTO and the OBPP:

- ***Sidewalks*** – Sidewalks are located along roadways, are separated from the roadway with a curb and/or planting strip, and have a hard, smooth surface, such as concrete. ODOT standard sidewalk width is 6 feet, with a minimum width of 5 feet acceptable on local streets.
- ***Shared Use Paths*** – Shared use paths, as defined earlier, are used by a variety of non-motorized users, including pedestrians, cyclists, skaters, and runners.
- ***Roadway Shoulders*** – Roadway shoulders often serve as pedestrian routes in many smaller Oregon communities. On roadways with low traffic volumes (i.e., less than 3,000 vehicles per day), roadway shoulders are often adequate for pedestrian travel. These roadways should have shoulders wide enough so that both pedestrians and bicyclists can use them, usually 6 feet or greater.

Sidewalks

The overwhelming majority of the local streets in Banks have adjacent sidewalks that are 5-foot in width or wider. There are sidewalks located on both sides of OR 47 (Main Street). In general, the majority of sidewalks are ADA-compliant (for a complete sidewalk inventory, see Appendix A of *Technical Memorandum 2.4 – Banks Transportation System Plan Update: Existing Conditions* (CH2M Hill, 2009), available upon request from the City of Banks).

Shared Use Paths

As noted previously, there are two shared use path facilities in the Banks study area: the Banks-Vernonia Trail and the path located just west of the Arbor Village development between Oak Way and Banks High School.

Roadway Shoulders

Outside the city limits of Banks, several of the rural roads do not have adequately sized roadway shoulders for rural pedestrian travel. These streets include NW Banks Road, NW Cedar Canyon Road, and NW Sellers Road.

Transit Facilities

The City of Banks is located outside the Tri-Met[3] public transportation service district. However, Ride Connection (Washington County U-Ride) provides curb-to-curb bus shuttle service from Banks to 19th and B Streets in Forest Grove, whereupon users can connect to the Tri-Met #57 bus and, from there, the entire Tri-Met transit system. User fare is two dollars each way. For seniors and those with disabilities, service is provided for free to destinations in Forest Grove or Cornelius.

Pick-up and drop-off locations for users must be within 1.5 miles of Banks city center. In 2009, pick-up service times within Banks were as follows: Monday to Saturday at 5:30 am, 6:30 am, 8:00 am, 10:00 am, 12:00 pm, 2:00 pm, 4:00 pm, 6:00 pm and 8:00 pm. Pick up service times at 19th and B Street in Forest Grove were as follows: Monday to Saturday at 6:30 am, 7:30 am, 9:30 am, 11:30 am, 1:30 pm, 3:30 pm, 5:30 pm, 7:00 pm and 9:00 pm.

[3] Tri-Met is the public transportation service provider in the Portland, Oregon metropolitan area.

Existing Operations Traffic Analysis

The existing conditions traffic analysis describes the motor vehicle operations for the existing (2008) P.M. peak hour conditions based on existing roadway geometry and lane configuration. This information provided the project team with an understanding of mobility level and length of delay on the roadway network within the City of Banks. These values were then compared to applicable ODOT standards to determine whether improvements might be needed.

Study Intersections

The existing operations traffic analysis examined one signalized intersection and five unsignalized intersections, as listed below.

Signalized Intersections

1. OR 47 (Main Street) and NW Oak Way

Unsignalized (Stop-Controlled) Intersections

2. OR 47 (Main Street) and OR 47 Exit
3. OR 47 (Main Street) and NW Trellis Way
4. OR 47 (Main Street) and NW Banks Road
5. NW Banks Road and NW Aerts Road
6. OR 6 and NW Aerts Road

The methodology for the traffic analysis conducted is described in *Technical Memorandum 2.4 – Banks Transportation System Plan Update: Existing Conditions* (CH2M Hill, 2009), available upon request from the City of Banks.

Mobility Standards and Designations

State highway mobility standards were developed for the 1999 Oregon Highway Plan (OHP) as a method to gauge reasonable and consistent standards for traffic flow along state highways. Within the study area, one intersection is located along OR 6, and three are on OR 47 (Main Street). Another intersection is located at the intersection of OR 47 (Main Street) and OR 6. State mobility standards for highways within the City of Banks are shown in Table 3.

TABLE 3

Relevant State Mobility Standards on Highways within City of Banks

Highway	Mileposts	Classification	Speed Limit (MPH)
Wilson River Highway (OR 6)	49.09-50.03	Regional Freight Route	55
Nehalem Hwy (OR 47; Main Street)	82.85-83.72	Statewide/National Highway System	25, 45, and 55

Operational Analysis of Existing Conditions (30th Highest Hour)

Table 4 presents the intersection v/c ratios for each of the study intersections under existing (2008) 30th highest hour design volumes. All of the six intersections analyzed currently meet the OHP v/c threshold (detailed reports on each intersection can be found in the Appendix D of *Technical Memorandum 2.4 – Banks Transportation System Plan Update: Existing Conditions* (CH2M Hill, 2009), available upon request from the City of Banks).

When v/c ratios exceed mobility standards, the indication is that the intersection experiences congestion and operates poorly on at least one approach during the peak period. Intersection v/c ratios lower than the mobility standards indicate that intersections are likely operating at acceptable levels of mobility. Table 4 outlines the intersection results in terms of v/c ratios and Level of Service. A detailed description of LOS can be found in *Technical Memorandum 2.4 – Banks Transportation System Plan Update: Existing Conditions* (CH2M Hill, 2009), available upon request from the City of Banks.

TABLE 4

Banks Traffic Analysis Intersection Results (2008)

				Intersection Performance		
ID	Intersection	Control Type	Mobility Standard	Average Vehicle Delay (sec)	V/C Ratio	Level of Service
1	OR 47 (Main Street) & NW Oak Way	Signalized	0.75	8.0	0.38	A
2	OR 47 (Main Street) & OR 47 Exit	OWSC	0.75	13.3	0.23	B
3	OR 47 (Main Street) & NW Trellis Way	OWSC	0.85	14.4	0.26	B
4	OR 47 (Main Street) & NW Banks Road	TWSC	0.90	18.7	0.42	C
5	NW Banks Road & NW Aerts Road	TWSC	*	9.8	0.01	A
6	OR 6 & NW Aerts Road	TWSC	0.70	24.2	0.11	C

Notes:

* ODOT mobility standards to not apply to intersection since it is not located on the state highway system

OWSC: One-way stop-controlled

TWSC: Two-way stop-controlled

Existing mobility standards for intersections are established from 1999 Oregon Highway Plan, Policy Element, Table 6: Maximum volume to capacity ratios for peak hour operating conditions

Mobility standards are established from 1999 Oregon Highway Plan, Policy Element, Table 6

Approach showing worst operations is reported for intersection performance at unsignalized intersections

The intersection of OR 47 (Main Street) and NW Banks Road actually operates as three separate intersections. For modeling purposes, all three intersections (OR 47/Main Street and NW Banks Road, NW Banks Road and NW Sellers Road, and OR 47/Main Street and NW Sellers Road) have been included in analysis. However, only results for the OR 47/Main Street and NW Banks Road intersection (which appears to represent the worst case scenario) are reported in this document.

Queuing Analysis Results

The vehicle queue analysis identifies deficient vehicle storage locations. Queue analysis is another way to look at traffic impacts in a study area. Table 5 shows the existing 2008 95th percentile vehicle queues for each movement in the study area. The 95th percentile queue values are analyzed based on methodology outlined in section 7.5 of the ODOT Analysis Procedures Manual. The movements without adequate storage are shown in the table with black highlight. Two intersections (a total of 5 movements) have queue lengths that exceed available storage capacity. Four of the movements are either exclusive left or right turn lanes. The other movement is a combined left/through/right lane.

Two locations had queue lengths exceeding available storage – OR 47/Main Street & NW Oak Way and OR 47/Main Street & NW Banks Road. At OR 47/Main Street & NW Oak Way, the queue exceeds the available storage on every approach to the intersection except for the westbound approach. When queues extend past the available storage for dedicated turn lanes (such as exist at both the aforementioned intersections), operational and safety issues can arise resulting from queued turning vehicles blocking through movements, which reduces intersection capacity and can result in an over-representation of rear-end crashes.

The intersection of OR 47/Main Street & NW Banks Road also experiences a queue that extends past its provided storage. On the westbound approach, the queue affects operations at the intersection of NW Banks Road & NW Sellers Road. These two intersections are only separated by 50 feet (measured center to center). Therefore, the westbound queue at this intersection (80 feet) could extend through this neighboring intersection, with the potential of causing operational problems at both. If the 95th percentile queue for westbound Banks Road at Sellers Road is included, then the total queue is approximately 170 feet. Details of the queuing analysis are provided in Appendix E of *Technical Memorandum 2.4 – Banks Transportation System Plan Update: Existing Conditions* (CH2M Hill, 2009), available upon request from the City of Banks.

Although the entrances to Banks Elementary School and High School are not study intersections, the school district has noted concern over the queuing along Main Street at these entrances. According to observation, vehicle queues back up onto Main Street during the time that parents are picking students up from school.

TABLE 5

2008 Existing 95th Percentile Queues at Banks Study Area Intersections

ID	Intersection	Approach	Lane Group	Existing Storage (feet)	Queue Length (feet)
1	OR 47 (Main Street) & NW Oak Way	Eastbound	Left	70	120
			Thru	750	250
			Right	30	100
		Westbound	Left	250	200
			Thru/Right	950	100
		Northbound	Left	95	40
			Thru	950	100
			Right	70	90
		Southbound	Left	125	110
			Thru	530	130
			Right	25	50
2	OR 47 (Main Street) & OR 47 Exit	Westbound	Left/Right	750	60
		Northbound	Thru	-	-
			Right	70	30
		Southbound	Left	115	70
			Thru	-	-
3	OR 47 (Main Street) & NW Trellis Way	Westbound	Left/Right	-	70
		Northbound	Thru/Right	-	-
		Southbound	Left	125	40
			Thru	-	-
4	OR 47 (Main Street) & NW Banks Road	Eastbound	Left/Thru/Right	-	50
		Westbound	Left/Thru/Right	20	80 (170[1])
		Northbound	Left/Thru	100	60
		Southbound	Left/Thru/Right	-	20
5	NW Banks Road & NW Aerts Road	Westbound	Left/Thru/Right	-	10
		Northbound	Left/Right	-	40
		Southbound	Left/Right	Driveway	30
6	OR 6 & NW Aerts Road	Eastbound	Left/Thru/Right	-	30
		Westbound	Left/Thru/Right	-	70
		Northbound	Left/Thru/Right	-	50
		Southbound	Left/Thru	-	40
			Right	50	30

Notes:

[1]Value is the sum of westbound Banks Road queue at OR 47 and Sellers Road

95th Percentile queues calculated using an average of five, one hour SimTraffic runs

Queue lengths rounded up to the nearest ten feet

Numbers in black highlight indicate a vehicle queue length that exceeds the available storage length

Safety Analysis

The safety analysis for key Banks roadways was updated using crash data from 2003-2007. The Banks TSP crash analysis consisted of three parts:

- Corridor Segment Crash Rates
- Intersection Crash Rates, and
- Safety Priority Index System (SPIS) Analysis.

Each part is described in the sections below.

Corridor Segment Crash Rates

Crash rates, expressed in "crashes per million vehicle-miles traveled (MVMT)," are used to compare the crash experience of one roadway segment to another. This rate expresses how many crashes might be expected of vehicles traveling through a particular section of roadway for a cumulative total of one million miles.

The two roadway segments listed below were analyzed:

- OR 6 (Wilson River Highway No. 37)
  - MP 49.09, OR 47, to MP 50.03, NW Aerts Road
- OR 47 (Nehalem Highway No. 102; Main Street)
  - MP 82.85, NW Banks Road, to MP 83.72, OR 6

TABLE 6

Historical Crash Data 2003-2007 for Wilson River Highway (OR 6), MP 49.09 to MP 50.03

Year	Total Crashes	Severity of Crash			Type of Crash		Crash Rate
		Fatality	Injury	Property Damage	Turning	Fixed Object	
2003	2	0	1	1	1	1	
2004	2	0	1	1	2	0	
2005	2	0	0	2	1	1	0.58
2006	3	1	2	0	2	1	
2007	0	0	0	0	0	0	
Total	9	1	4	4	6	3	
Average State Crash Rate: **0.99 Crashes per Million Vehicle Miles Traveled**							

Source: ODOT, 2007

As shown in Table 6, the most common type of crash on the OR 6 segment in the study area for the 5-year period was a turning crash (67 percent). There was an even split of injury and property damage-only crashes (each with 4). This segment also has one fatality recorded. This fatality occurred at MP 49.95, which is about 500 feet west of the OR 6 and NW Aerts Road intersection. The roadway conditions were raining/wet pavement, with dark light conditions. The crash records provided from ODOT do not provide any information on whether this driver was speeding or under the influence. However, collisions with fixed objects do not normally result in fatalities, so it is possible speed was a factor.

The crashes located on this segment cluster around the OR 6 and NW Aerts Road intersection. Of the 9 crashes shown, there appears to be a pattern of fixed object collisions and turning movement-related collisions.

The 5-year average crash rate for the OR 6 segment in the study area is 0.58. This crash rate is lower than the 5-year statewide average crash rate for minor arterials in rural areas (0.99).

TABLE 7

Historical Crash Data 2003-2007 for Nehalem Highway (OR 47; Main Street), MP 82.85 to MP 83.72

Year	Total Crashes	Severity of Crash			Type of Crash			Crash Rate
		Fatal	Injury	Property Damage	Angle	Rear-End	Turning	
2003	1	0	0	1	1	0	0	0.93
2004	2	0	2	0	0	1	1	
2005	2	0	1	1	1	1	0	
2006	2	0	1	1	1	0	1	
2007	4	0	1	3	0	2	2	
Total	11	0	5	6	3	4	4	
Average State Crash Rate: **1.19 Crashes per Million Vehicle Miles Traveled**								

Source: ODOT, 2007

As shown in Table 7, crash types on the OR 47 segment in the study area are fairly evenly distributed among angle, rear-end, and turning movement crashes (about 35 percent each). No fatalities were recorded over the five-year period for this segment. The 11 recorded crashes were split almost evenly between injury and property damage only. No overall trends have been identified regarding lighting, surface conditions, etc. for this segment.

The 5-year average crash rate for the OR 47 segment in the study area is 0.93. This crash rate is lower than the 5-year statewide average crash rate for rural city principal arterials (1.19).

Intersection Crash Rates

Intersection crash rates were calculated for all study area intersections. Intersection crash rates are measured in "number of crashes per million vehicles entering into an intersection," or MEV.

Table 8 provides a summary of crash rates for each intersection. None of these rates suggest crash trends or problems.

TABLE 8

Banks Study Area Intersection Crash Data (2003-2007)

	Intersection	Severity of Crash			Total Crashes	Crash Rate
		Fatal	Injury	Property Damage		
1	OR 47 (Main Street) & NW Oak Way	No Crashes Recorded				
2	OR 47 (Main Street) & OR 6	No Crashes Recorded				
3	OR 47 (Main Street) & NW Trellis Way	0	0	1	1	0.09
4	OR 47 (Main Street) & NW Banks Road	0	2	1	3	0.29
5	NW Banks Road & NW Aerts Road	No Crashes Recorded				
6	OR 6 & NW Aerts Road	0	4	2	6	0.38

Safety Priority Index System (SPIS)

In addition to crash rates, ODOT also assesses roadway safety via the Safety Priority Index System (SPIS). The SPIS takes into account crash frequency, crash rate, and crash severity. SPIS scores are computed for sections that are one-tenth of a mile. The scores for different roadway segments are compared to determine where safety improvement funds might best be spent. Typically, ODOT places the highest priority locations where SPIS scores fall within the top 10-percent in the entire state or region. The 2007 top 10% SPIS data for Region 1 was analyzed for this report. The project study area does not contain any ODOT SPIS sites.

Regulatory Environment

Plan and Policy Review

A summary of plans, policies, and regulations at the federal, state, regional, and local levels that directly influence transportation planning in the City of Banks is provided in Appendix F of *Technical Memorandum 2.4 – Banks Transportation System Plan Update: Existing Conditions* (CH2M Hill, 2009), available upon request from the City of Banks.

Compliance with Transportation Planning Rule (TPR)

Technical Memorandum 5.1 – Banks UGB/TSP Update: TPR Code Review Report (CH2M Hill, 2009), provided in Appendix A, summarizes the requirements of the Oregon Administrative Rule (OAR) 660-012-045 (also referred to the Transportation Planning Rule or TPR) Sections (2) and (3), and identifies and summarizes recommended code changes to ensure Banks' Land Development and Zoning Ordinances comply with the requirements.

Future Traffic Analysis

This section provides a summary of the Future No-Build (Year 2029) traffic conditions within the Banks Transportation System Plan (TSP) study area. Details on the future traffic analysis methodology are provided in traffic analysis methods utilized are provided in Appendix B (*Technical Memorandum 5.1 – Banks UGB Expansion/Transportation System Planning: Transportation Needs, Opportunities, and Constraints Report)* (CH2M Hill, 2010).

Context

The 2029 no-build traffic analysis presents congestion and intersection queuing results in 2029 if: (a) the urban growth boundary were to be expanded as reflected in Figure 4; and, (b) no additional roadway projects are built aside from the realignment of Sellers Road near the Banks Road/OR 47 (Main Street) intersection (which is already programmed for funding). This analysis identifies future deficiencies so that potential solutions can be developed.

Banks will need to expand its urban growth boundary (UGB) by approximately 248 acres (approximately 154 acres of buildable residential land and 94 acres of commercial and industrial land) by 2029 for consistency with the 20-year population and employment forecasts consistent with the Banks Comprehensive Plan and the City's Economic Opportunities Analysis. The UGB expansion area, as approved by the Banks City Council in January 2010, is illustrated in Figure 4.

UGB Expansion Volumes

For the land included in the UGB expansion, a manual trip generation and traffic assignment process was completed. The Banks area was divided into four zones with the land use growth estimated in each zone (see Figure 4). The ITE *Trip Generation Manual (8th Edition)* was used to estimate the number of trips for each zone. A conceptual roadway circulation was used to help estimate trip generation in each zone (see Figure 5). In total, the assumed development resulted in 3,127 new trip ends for the study area.

FIGURE 4: PROPOSED UGB EXPANSION AREA

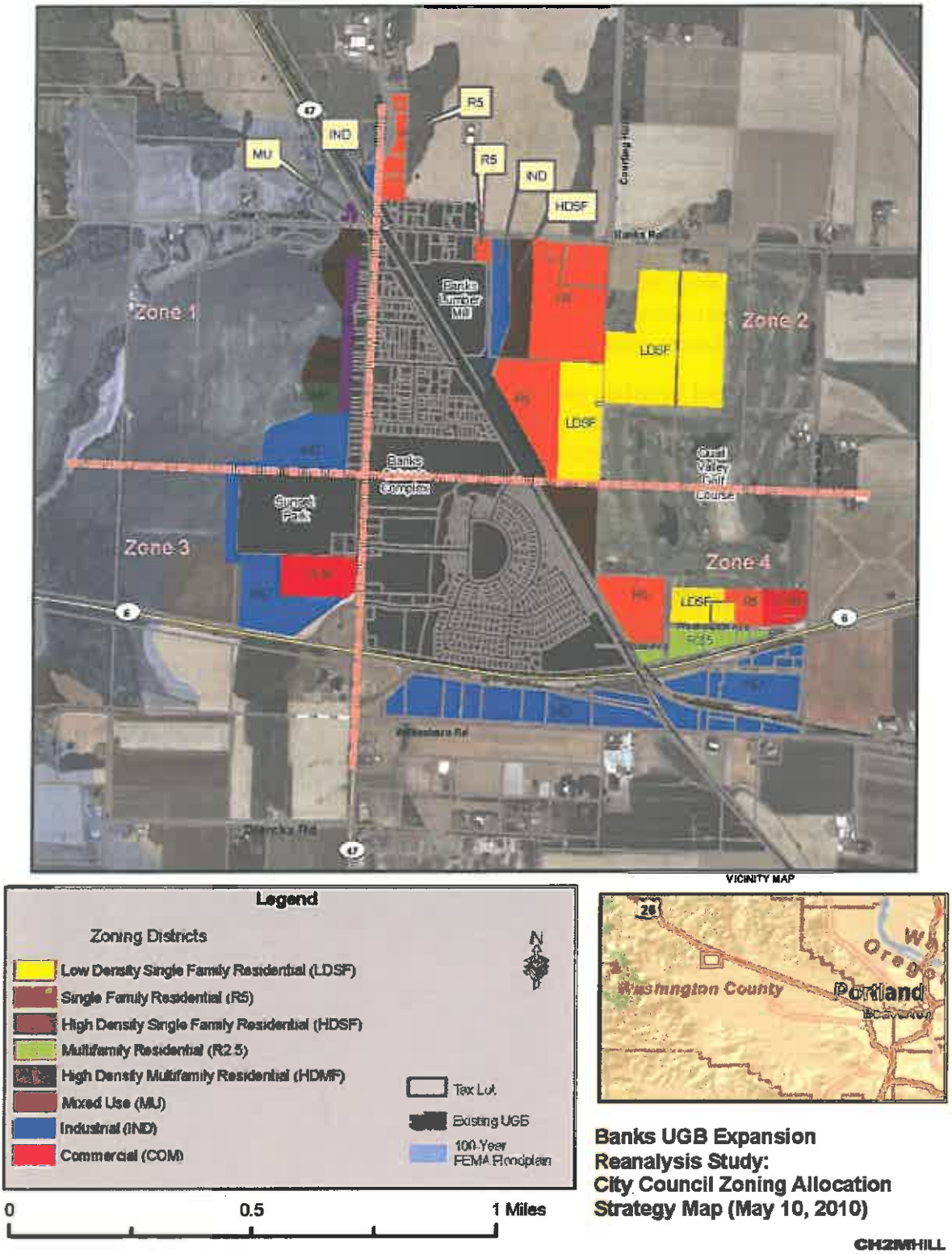
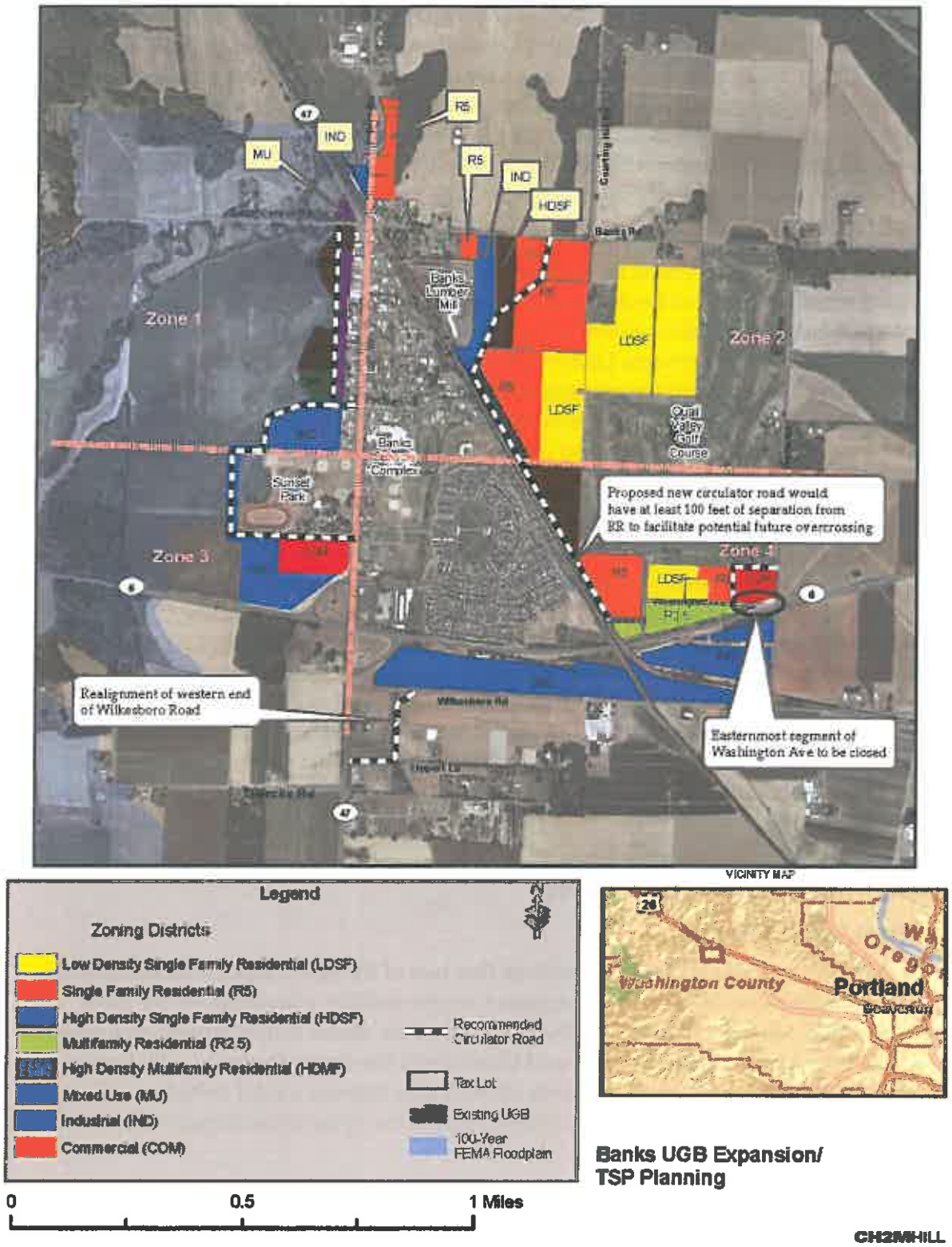


FIGURE 5: CONCEPTUAL UGB EXPANSION AREA ROADWAY CIRCULATION USED FOR TRIP GENERATION ESTIMATION



Future Planned Infrastructure Projects

The traffic analysis assumes that one additional funded roadway infrastructure project will be built by 2029. The future analysis also assumes additional unfunded connection roadways within Banks will be in place by 2029. Sellers Road at NW Banks Road is the only funded project in the study area within the planning horizon. The Sellers Road realignment is currently under construction and should be completed in the autumn of 2010. This project entails realigning Sellers Road so that the intersection occurs approximately 200 feet east of the existing intersection with NW Banks Road. Each approach will be one-lane with no turn lanes, similar to the existing intersection. The traffic control assumed was a STOP approach for Sellers Road while NW Banks Road is uncontrolled.

A funded non-roadway infrastructure project, the extension of the Banks-Vernonia Linear Trail into the northern part of Banks, is also currently under construction (in coordination with the aforementioned Sellers Road realignment) and is anticipated to be completed by mid-October. The Banks-Vernonia Linear Trail serves pedestrians, bicyclists, and equestrian users. This project will extend the existing Banks-Vernonia trail from an existing state park facility located approximately 0.5-miles north of Banks to a trailhead facility to be located at the northwest corner of Banks Road and the realigned Sellers Road. The trailhead facility will provide off-street parking and other amenities for trail users.

At a meeting of the North West Area Commission on Transportation (NWACT) on July 8, 2010, it was revealed that the Portland & Western Railroad (P&WRR) "Banks Rail Connection" project (for which P&WRR had applied for funding through the ConnectOregon III Program) had been approved by the ODOT Final Review Committee and recommended for full funding to the Oregon Transportation Commission. This project will entail the construction of a "Y" track connection to be installed on trackage south of Highway 6 (near Wilkesboro Road). The project is anticipated to be constructed within two years. This project would likely result in a reduction of rail traffic on the portion of P&WRR trackage adjacent to the Arbor Village development and the Banks Lumber Mill, making existing and planned residential development in the vicinity of the existing track lines more favorable.

Future Intersection Operations

Operational Analysis Results

Results from the operational analysis indicate that two of the seven study intersections do not meet the applicable ODOT or Washington County mobility standards for the 2029 Future No-Build condition. These results indicate that the future traffic growth assumed will lead to operational problems at several locations in the Banks study area. However, it should be noted that, due to the limitations of the traffic forecast model (which entails a necessary conservatism), it is likely that projected adverse operational impacts are overstated.

In the existing conditions analysis, all of the intersections meet mobility standards, but in the future No-Build scenario, two intersections (OR 47 & NW Banks Road and OR 6 & NW Aerts Road) are not expected to meet mobility standards. NW Banks Road approaching OR 47 and NW Aerts Road approaching OR 6 are both stop-controlled and are both expected to

exceed the minor street v/c mobility standard. With the growth of through-traffic on the uncontrolled approaches and the minor street traffic growth, the side street traffic that is crossing or turning left will be expected to have a difficult time finding a sufficient gap in traffic to allow them to complete their maneuver in a reasonable amount of time.

Table 9 shows the results of the 2029 Future No-Build intersection operational analysis.

TABLE 9

Banks Traffic Analysis – 2029 Future No-Build Operational Results

ID	Intersection	Control Type	Future No-Build Mobility Standard	Intersection Performance					
				V/C Ratio[1]		Average Vehicle Delay (sec)[1]		Level of Service[1]	
1	OR 47 (Main Street) & NW Oak Way	Signalized	0.75	0.63		12.1		B	
2	OR 47 (Main Street) & OR 6 Interchange Ramp (south of OR 6)	OWSC	0.75	0.37	0.48	9.5	30.3	A	D
3	OR 47 (Main Street) & NW Trellis Way	OWSC	0.85	0.55	0.51	11.0	54.5	B	F
4	OR 47 (Main Street) & NW Banks Road	TWSC	0.90	0.10	> 2.0	2.6	>100	A	F
5	NW Banks Road & NW Aerts Road	TWSC	0.90[2]	0.04	0.29	1.7	14.7	A	B
6	OR 6 & NW Aerts Road	TWSC	0.70	0.24	> 2.0	6.0	>100	A	F
7	NW Banks Road & Sellers Road	OWSC	0.90[2]	0.22	0.27	3.4	14.2	A	B

Notes:
[1] At stop-controlled intersections, the first entry is the result for the uncontrolled roadway approach; the second entry is the result for the stop-controlled approach.
[2] ODOT mobility standards do not apply to the intersection since it is not located on the state highway system. Instead, the target mobility standard for the "first hour" of "Other Urban Areas" was used.
Black highlighting indicates intersection exceeds mobility standards

OWSC: One-way stop-controlled

TWSC: Two-way stop-controlled
Mobility standards are established from 1999 Oregon Highway Plan, Policy Element, Table 6

Queuing Analysis Results

The vehicle queue analysis identifies deficient vehicle storage locations. Table 10 shows the forecast 2029, 95th percentile vehicle queue lengths for each movement at the study intersections. The movements that are expected to have inadequate storage are shown in the table with black highlight. The intersection of OR 47 (Main Street) and NW Oak Way (a total of seven movements) has queue lengths that exceed available storage capacity. Six of these movements are either exclusive left or right turn pockets that can accommodate 4 or 5 vehicles. Due to the expected growth in volumes, this existing storage will often be exceeded. However, it should be noted that, due to the limitations of the traffic forecast model (which entails a necessary conservatism), it is likely that projected adverse queuing impacts are overstated.

The remaining movement at OR 47 (Main Street) and NW Oak Way that is expected to exceed storage capacity is the southbound through movement. This queue is expected to spill back to (and therefore affect operations at) OR 47 and NW Trellis Way.

TABLE 10

2029 Future No-Build 95th Percentile Queues at Banks Study Area Intersections

ID	Intersection	Approach	Lane Group	Storage (feet)	2029 Queue Length (feet)
1	OR 47 (Main Street) & NW Oak Way	Eastbound	Left	70	180
			Thru	750	300
			Right	30	100
		Westbound	Left	250	220
			Thru/Right	950	150
		Northbound	Left	95	100
			Thru	950	470
			Right	70	120
		Southbound	Left	125	330
			Thru	530	540
			Right	25	70
2	OR 47 (Main Street) & OR 6 Interchange Ramp (south of OR 6)	Westbound	Left/Right	750	140
		Northbound	Thru	-	10
			Right	70	40
		Southbound	Left	115	100
			Thru	-	-
3	OR 47 (Main Street) & NW Trellis Way	Westbound	Left/Right	-	250
		Northbound	Thru/Right	-	70
		Southbound	Left	125	60
			Thru	-	540
4	OR 47 (Main Street) & NW Banks Road	Eastbound	Left/Thru/Right	-	320
		Westbound	Left/Thru/Right	200	>200
		Northbound	Left/Thru	-	100
		Southbound	Left/Thru/Right	-	90
5	NW Banks Road & NW Aerts Road	Eastbound	Left/Thru/Right	-	650
		Westbound	Left/Thru/Right	-	200
		Northbound	Left/Thru/Right	-	110
		Southbound	Left/Thru/Right	Driveway	50
6	OR 6 & NW Aerts Road	Eastbound	Left/Thru/Right	-	520
		Westbound	Left/Thru/Right	-	390
		Northbound	Left/Thru/Right	-	700
		Southbound	Left/Thru	-	> 1000
			Right	50	60
7	NW Banks Road & Sellers Road	Eastbound	Left/Thru	200	120
		Westbound	Thru/Right	-	> 1000
		Southbound	Left//Right	-	420

Notes:
95th Percentile queues calculated using an average of five, one hour SimTraffic runs
Queue lengths not reported for free-flowing and uncontrolled movements
Queue lengths rounded up to the nearest ten feet
Numbers in black highlight indicate a vehicle queue length that exceeds the available storage length

At the intersection of OR 6 and Aerts Road, the southbound stop-controlled movement could experience queues in excess of 1000 feet due to vehicles not being able to find a safe gap in traffic on OR 6. The southbound queue on Aerts Road could back up to within 700 feet of the Banks Road/Aerts Road intersection. The northbound movement could also experience long queues, which may result from left turns waiting for available gaps in traffic. These queues could have an impact on travel throughout Banks.

The intersection of OR 47 (Main Street) and NW Banks Road could experience queues in excess of 1000 feet on the westbound approach. This queue could back up beyond Sellers Road, and could extend back to within 400 feet of the NW Banks Road and NW Aerts Road intersection. The southbound queue on Sellers Road could also be long because vehicles waiting to turn from Sellers Road would be blocked by westbound backups on NW Banks Road.

Although the entrances to Banks Elementary School and High School are not study intersections, the school district has noted concern over the queuing in present day along Main Street at these entrances. As volumes along Main Street continue to increase, the 2029 queues at the school entrances are assumed to increase as well.

Future Operations Needs, Constraints and Opportunities

Needs

Based on the examination of existing and future transportation conditions, the following needs were identified:

- Realignment of Wilkesboro Road. This is an anticipated need based on buildout of the proposed UGB expansion area south of OR 6. The added vehicles that will accompany growth into the expanded UGB area south of OR 6 would create poor safety and operational conditions at the existing Wilkesboro Road/OR 47 intersection, due to the close proximity of this intersection to the OR 6 ramp terminal. To address this problem, Wilkesboro Road will need to be realigned southward to flow into existing Lippert Lane so that Wilkesboro Road intersects with OR 47 further south from the OR 6 ramp terminal (see Figure 5).

- Realign Washington Avenue. There is a need to close the eastern end of Washington Avenue and realign it so that it intersects with Aerts Road at a point further north of its current intersecting point. The existing alignment of Washington Avenue would be operationally inefficient and experience poor safety conditions upon the addition of vehicles that will accompany growth into the expanded UGB area east of the existing city.

- East-west circulation and a secondary route from the existing City of Banks to the OR 6 access point at Aerts Road via a crossing of the railroad. This is an anticipated need based on buildout of the proposed UGB expansion area to the east of the railroad. Moreover, the need for a secondary route to access OR 6 at Aerts Road is a need that is supported by the Banks Comprehensive Plan Transportation Element (1988 Update; pp. 73-74) and the Banks Transportation Network Plan (1999), which provides a discussion regarding the need for providing secondary route to access OR 6 from the existing city (pp 38-43). A secondary route to the Aerts Road access point

at OR 6, which would entail a railroad overcrossing at the south end of Arbor Village (connecting to Rose Avenue/Washington Street on the east side of the track) is an approval criterion for the development for the undeveloped land at the south end of Arbor Village. By virtue of the Banks City Council, in 2008, requiring a covenant (stipulating the installation of a railroad crossing at the previously described location) on the deed to the aforementioned property, the Council reiterated the need for the City to have such a secondary route to access OR 6 at Aerts Road.

- Increased monitoring of safety conditions at the OR 6/Aerts Road intersection (and potential installation of safety measures), as warranted by future conditions (as the UGB expansion area on the east side of railroad is developed). This intersection has no current status as a location with documented safety issues and there are no existing geometric deficiencies or sight-distance issues. However, in addition to the previously noted fatality at this intersection, north-south users of Aerts Road have repeatedly reported unsafe conditions when trying to cross over OR 6 on Aerts Road or make left turns from southbound Aerts Road to eastbound OR 6. This perceived lack of safety is the result of motorists on Aerts Road trying to find "gaps" in OR 6 traffic, where cars are moving at a high rate of speed (posted speed on OR 6 at this location is 55 miles per hour). The perceived lack of safety at this intersection could worsen operations at the intersection, which is already forecasted to have poor operational conditions in the 2029 No Build model (see Tables 9 and 10 of this memorandum). Moreover, the perceived lack of safety could significantly inhibit circulation in the future – the added vehicles that will accompany growth into the expanded UGB area east of the existing city could avoid utilizing this intersection in a manner that would be efficient for the Banks area transportation system as a whole, opting instead for the access point to OR 6 at OR 47 (Main Street), thereby causing potential congestion issues at that location.

- Sight-distance improvements on Banks Road at the existing intersection with Aerts Road and the future intersection with a new circulator road into the expanded UGB area on the east side of the railroad. Banks Road contains several steep vertical grades – these conditions create sight distance problems for drivers at the intersection of Aerts Road (which sits at the top of a steep grade) and would create problems at a new intersection along Banks Road west of Aerts Road (where a new circulator road would connect with Banks Road – see Figure 5); this latter "new" intersection would sit near the bottom of a vertical grade.

- Pedestrian and bicycle linkages both north-south within the existing Banks UGB (on the east side of Main Street) and connections from the UGB to other parts of the city, particularly to the downtown commercial area, the schools complex, and Sunset Park.

- Solutions to congestion issues at OR 47 (Main Street) at NW Banks Road and OR 6 at NW Aerts Road.

- Solutions to queuing issues at OR 47 (Main Street) at NW Oak Way.

- East-west collector road connectivity to reduce the Banks residents' use of the state highway system for local trips.

Constraints

- Railroad lines. The stop-controlled intersections of NW Banks Road & NW Aerts Road, OR 47 & NW Banks Road and OR 6 & NW Aerts Road would need to support increased traffic under the no-build scenario. Any examination of alleviating that load through an east-west connection(s) would need to cross two sets of railroad tracks (Port of Tillamook Bay and P&W). ODOT Rail Division discourages at-grade crossings.
- Main Street and adjacent land uses. Many residences and commercial buildings in Banks are located close to the street; also, Main Street functions as the heart of the city. Expansion of Main Street would be constrained, as public right-of-way is not available. Expansion of Main Street may also not be desired by the community due to safety concerns in relation to pedestrians, school children, etc.
- Schools and parks along Main Street. The location of schools and parks along Main Street require special attention, particularly relating to safety concerns for children.
- Flooding on NW Cedar Canyon Road. Several community members have discussed how NW Cedar Canyon Road has flooded in past years west of the OR 47 and NW Banks Road intersection.
- Neighborhood streets. Many residents have expressed concerns about increased traffic along local streets. Some connectivity options would likely increase traffic along roadways that have historically been neighborhood streets in character.
- Access management. ODOT has access control along OR 6 in the study area. No new accesses are allowed on OR 6. ODOT also has access spacing standards along OR 47. Because of this, Banks will need to efficiently utilize the two existing access points to OR 6 (at OR 47 and Aerts Road) in conjunction with local transportation system improvements.
- Signal warrants. Any new signal would need to meet ODOT signal warrants.
- Cost. In general, many of the transportation connections or upgrades required to accommodate population and employment associated with the UGB expansion will be expensive. Railroad crossings (grade-separated crossings can exceed $20 million), upgrades of rural county roadways (e.g. Banks Road, Aerts Road), realignment of roadways (e.g. a potential realignment of Wilkesboro to the south), widening to add turn lanes, and any upgrades to Main Street would be expensive and potentially cost prohibitive. Traffic signal installation is also expensive (approximately $250,000 per signal).

Opportunities to Reduce Congestion and Queuing Issues

- The intersection of OR 47 (Main Street) and NW Banks Road actually operates as three separate intersections, and exhibits a v/c ratio over ODOT's mobility standards for the westbound movement in the future condition. Complicating the three separate intersections is the railroad crossing at NW Banks Road. The project that will alter NW Sellers Road (so that it intersects NW Banks Road further to the east), will provide more storage space westbound , but does not help vehicles on the eastbound and northbound stop-controlled approaches that will experience long delays while waiting to find gaps

in order to perform their maneuver. As the intersection is currently stop-controlled, installing a traffic signal may better control traffic to help reduce the delay and queues on the NW Banks Road approaches, but would impact the performance of the OR 47 (Main Street) approaches. Prior to signal installation, the location would need to be evaluated to determine if the intersection meets ODOT signal warrants and spacing guidelines (this requirement only applies to signals on ODOT facilities).

- Widening and modernizing the approximately 1.70-mile extent of Banks Road between the intersection with OR 47 (Main Street) and the intersection with OR 26. This would entail bringing the road up to current design standards by providing shoulders on Banks Road and performing sight distance improvements at intersections with Banks Road (as warranted by future conditions – described earlier in this memorandum) and adding intermittent or continuous left-turn lanes (as warranted by future conditions). These improvements would make Banks Road a more feasible option for those wishing to travel to, and from, US 26; this could subsequently relieve future congestion issues at the existing access points to OR 6 within Banks, and along OR 6 itself, as drivers would have a suitable east-west alternative to and from US 26.

- Widening Wilkesboro Road to ensure adequate design standard lane width for trucks and other large vehicles in this area that is slated for industrial uses in the 20-year planning horizon.

- The signalized intersection of OR 47 (Main Street) and NW Oak Way will likely have vehicle queues that exceed available storage in the future conditions. The northbound, southbound, and eastbound legs of the intersection have queues that extend past the existing turn pockets, and in some cases extend into the next intersection. Below are potential suggestions to reduce congestion on each approach:

  - Most southbound and northbound movements have queues exceeding the available storage. A low-cost, short-term, and easily implementable improvement to reduce vehicle queuing for the southbound left movement is to extend the southbound left turn pocket from 125 feet to 350 feet. The area is already paved; it would simply require restriping and would not require any right of way acquisition. This additional storage is expected to accommodate future queues in 2029 with the proposed UGB expansion.

  - For the eastbound left movement, a similar turn pocket extension could accommodate the queuing. Currently the left turn pocket is 70 ft. Extending the turn pocket to at least 200 feet would provide turning vehicles with a refuge, removing them from the traffic stream of vehicles continuing through the intersection. This improvement would require additional pavement and widening of the OR 6 westbound exit-ramp.

  - The westbound left queue is nearing capacity and could exceed the available storage. Many of the vehicles are heading eastbound onto OR 6 towards Hillsboro and Portland. Increasing the turn pocket would be difficult as the road is constrained on either side by development, and there is little available right of way to expand the width of the road.

All of these potential solutions would be based on future analyses warranting their funding and construction. These potential solutions will be evaluated during alternatives analysis.

Opportunities to Improve Safety

- Currently OR 6 is designated as a safety corridor by ODOT. There are no identified safety issues from the crash data, and crash rates are below the state average. However, the Banks City Council identified one area of concern, OR 6 near NW Aerts Road. One fatality was reported in this area. Effective safety improvements that could be utilized include increased lighting, a roadside inventory to identify fixed objects in the clear zone, and increased enforcement of speed limits and safe driving in the vicinity.

- As shown on Figure 5, it is recommended that the easternmost segment of Washington Avenue be closed to vehicular traffic. Washington Avenue currently intersects with Aerts Road immediately north of the OR 6/Aerts Road intersection. Currently, Washington Avenue only services a few single-family homes and therefore receives very little traffic volume; however, assuming a buildout of the east side of Banks per the proposed UGB expansion strategy, the amount of volume would significantly increase, and would pose a significant safety hazard to the intersection of OR 6/Aerts Road.

Opportunities for Enhanced Local Circulation

- Individual developments in the UGB expansion land should be required to provide internal circulation for vehicles, pedestrians and bicyclists, which should be codified per City of Banks Development Code. Local circulation options should consider the feasibility of new or enhanced east-west connections (e.g. upgrades to Wilkesboro Road, Banks Road, or potential rail crossings) as well as north-south connections (e.g. upgrade of NW Aerts Road, connections between areas of UGB expansion). As new development is planned, the City must ensure that these developments provide suitable external connections to the greater Banks area.

- Construct a vehicular overcrossing of the railroad to connect the existing city to the UGB expansion area to the east of the railroad. Location options for such an overcrossing include the south end of the Arbor Village neighborhood (connecting to Washington Street on the east side of the railroad) or at Sunset Avenue (which would connect to a new circulator road on the east side of the tracks). Although a railroad overcrossing is likely infeasible in the short-term, the City should plan for the long-term construction of such a crossing when it is warranted based future growth.

Opportunities for Bicycle and Pedestrian Connections

- Construct one or more pedestrian/bicycle overcrossings of the railroad to ensure east-west pedestrian/bicycle connectivity from the UGB expansion area east of the railroad to center city destinations, including the residential areas to schools, the library, and town hall.
- Currently bicycle lanes and pedestrian sidewalks are not connected well within the city. Improvements should focus on connecting the existing system of bike lanes and sidewalks to improve non-motorized mobility. A north-south bike route should be established in the existing city in the area east of Main Street, with direct connections to the schools complex.
- All new and modernized roadways should include bicycle and pedestrian accommodations.

Consider Future Transit Connections

The recently added TCTD bus service in Banks should be monitored regularly to identify the need for further future transit capacity improvements, such as potentially increasing the number of pick-up/drop-off times at the stop the Sunset Avenue/Banks Road intersection or adding another stop location in the City of Banks.

3 ALTERNATIVES EVALUATION & RECOMMENDATIONS

The Banks Transportation System Plan alternatives presented in this section are organized around addressing needs identified in the existing and future transportation analysis and needs associated with providing transportation services to the expanded UGB area. Each alternative has an associated planning-level cost estimate.

The following evaluation criteria were developed and approved by the TAC in July 2009 to guide the assessment of potential alternatives.

- **Traffic Operations.** *Does the alternative mitigate existing and anticipated (2029) traffic congestion?* This criterion measures the extent to which alternatives alleviate existing and anticipated future traffic congestion.
- **Safety.** *Does the alternative mitigate existing or anticipated safety issues?* This criterion measures the extent to which alternatives ensure safety for all users (drivers, transit, pedestrians, and bicyclists).
- **Mobility.** *Does the alternative enhance mobility for all users?* This criterion measures the extent to which alternatives enhance mobility for transportation users (freight, nonmotorized, transit, transportation disadvantaged, etc.).
- **Land Use.** *Does the alternative minimize land use impacts? Is the alternative consistent with state and local land use planning goals?* This criterion measures the extent to which alternatives minimize property impacts and impacts on existing residential and business access. This criterion relates to economic development because it also evaluates the extent to which alternatives impact future business development through property takes. It also relates to consistency with local, regional and statewide land use plans.
- **Environmental & Social Impacts.** *Does the alternative minimize environmental and social impacts, including impacts on existing and future development and low-income/minority populations?* Most alternatives will have some built and natural environmental impacts. This criterion measures the extent to which alternatives minimize impacts on the social and environmental considerations for the interchange management area. This criterion includes environmental justice considerations.
- **Support for Implementation.** *Can the alternative be supported by both the state and local community?* This criterion measures the extent to which alternatives can be agreed upon that meet the needs and interests of stakeholders within acceptable timelines.
- **Cost-Effectiveness.** *Is the scale of the alternative consistent with the benefits it provides? Is it a practical, affordable solution?* All alternatives will have costs associated with development and implementation. This criterion evaluates how effective the alternative is at relieving congestion compared to the cost.

A detailed description of the alternatives evaluation process is provided in Appendix C (*Technical Memorandum 5.2: Banks TSP Alternatives Evaluation Report*).

Concepts to Address Needs Identified in TSP Analysis

This section discusses projects to address needs identified in analyses performed for this TSP effort. Generally, the conceptual projects discussed in this section are enumerated to correspond with the alternative number title the project had in *Technical Memorandum 5.2: Banks TSP Alternatives Evaluation Report* – text is provided to alert the reader where this is not the case.

The location of projects depicted in this TSP are conceptual in nature, and as such are intended as a guide for development and should not be explicitly used as shown to constrain development options in the future. The precise location of all recommended projects should be defined through the land development process as projects are funded, designed, and built.

It is important to note that any modification of a Washington County roadway proposed in this TSP is a recommendation to Washington County that the proposed modification be considered by the County; all such projects would need to be evaluated through the county's transportation plan amendment or update process.

It is also important to note that, due to the limitations of the traffic forecast model (which entails a necessary conservatism), it is likely that projected adverse operational impacts are overstated.

Need:

Remove future volume from the intersection of Wilkesboro Road and OR 47.

Upon urbanization of the Wilkesboro Road corridor (in the UGB expansion area south of OR 6) there would be significant increase vehicles on a road that currently experiences very little volume. This increase in vehicles would potentially pose an operational and safety problem at the existing Wilkesboro Road/OR 47 intersection, due to the close proximity of this intersection to the OR 6 ramp terminal.

Concept #1: Realign Wilkesboro Road

This concept entails realigning Wilkesboro Road southward to flow into existing Lippert Lane so that Wilkesboro Road intersects with OR 47 further south from the OR 6 ramp terminal (see Figure 6 below); the existing intersection of Wilkesboro Road and OR 47 would be closed to vehicular traffic (i.e. dead-ended). This concept would necessitate the construction of approximately 0.27-mile of new road and the purchase of approximately 48,000 square feet of privately owned land for right-of-way.

Per applicable ODOT interchange area access management spacing standards[4], there should be a minimum spacing distance of 1,320 feet between the OR 6 ramp terminal and the nearest major intersection. The purpose of these spacing standards is to protect the function of the interchange and, consequently, the state's investment in the facility. Moving towards compliance with applicable standards greatly improves the likelihood that an interchange (and its associated local street system connector roads) operates efficiently and safely. This

[4] *Appendix C: Access Management Standards" from the Oregon Department of Transportation (ODOT).* See Table 18.

concept would increase the spacing (on the east side of OR 47) between the OR 6 ramp terminal and Wilkesboro Road intersection from 80 feet (existing) to 890 feet (after realignment).

The proposed realignment is optimal because it would result in an increase in future operational efficiency, safety, and mobility, while simultaneously not impacting any residential structures and minimizing the division of active farmland to the greatest extent practicable.

This concept would be constructed only when warranted based on future traffic conditions associated with future development of the UGB expansion area south of OR 6. The anticipated increase in trips associated with a prospective development (as revealed through a traffic impact assessment) would trigger the need to close the aforementioned intersection and subsequently prompt the need to construct the realigned Wilkesboro Road. Because the safety problem is exacerbated by urbanization, and the adjacent area would become industrial (i.e. generate more large truck movements with relatively slower speeds and wide turns) a project to correct this problem should be a high priority for inclusion in the CIP.

The realigned Wilkesboro Road corridor shown on Figure 6 is conceptual and would be defined through the land development process as it is funded, designed, and built.

FIGURE 6: CONCEPT #1 – REALIGNMENT OF WILKESBORO ROAD

A detailed evaluation of this concept is provided in Appendix C (*Technical Memorandum 5.2: Banks TSP Alternatives Evaluation Report*). Based on the evaluation assessment, this concept is recommended as a project to be placed on the City's transportation CIP list for consideration to be constructed.

This concept would become warranted based on future conditions related to urbanization along Wilkesboro Road and the associated increase in traffic volume utilizing the intersection of Wilkesboro Road/OR 47. It is likely that the timing of realignment will coincide with impending development – that is, the anticipated increase in trips associated with a prospective development (as revealed through a traffic impact assessment) would trigger the need to close the aforementioned intersection and subsequently prompt the need to construct the realigned Wilkesboro Road.

Based on planning level estimate tools, this project is estimated at $853,650. This estimate includes the design and construction of new roadway, new right-of-way, contingency, and engineering costs. Cost estimate details are provided in Appendix D.

A detailed discussion of potential transportation funding sources for this concept is provided in Section 4 of this TSP.

Need:

Remove future volume from the intersection of Washington Avenue and Aerts Road.

Upon urbanization of the UGB expansion area east of the railroad tracks (north of OR 6) there would be significant increase vehicles on Washington Avenue, a road that currently experiences very little volume. This increase in vehicles would pose an operational and safety problem at the existing Washington Avenue/Aerts Road intersection, which creates a fifth leg at the Aerts Road/OR 6 intersection. This fifth intersection approach is confusing to drivers, and is at an angle that invites high-speed entering traffic to Washington from eastbound OR 6, and involves sharp-angle right turns onto OR 6.

Concept #2: Realign Washington Avenue

This concept entails realigning Washington Avenue northward to intersect with Aerts Road further north from the Aerts Road/OR 6 intersection (see Figure 7 below). This concept addresses the future need to provide greater spacing between the Washington Avenue/Aerts Road intersection for safety and operational purposes (and provide subsequent potential room for a southbound left-turn storage lane that could be warranted based on future conditions). It should be noted, however, that the traffic forecast model likely overstates the degree of queuing impact – this is due to the limitations of the model.

This concept would close the existing Washington Avenue intersection with Aerts Road, which is currently located immediately north of the intersection with OR 6. This concept would be constructed only when warranted based on future traffic conditions associated with future development of the UGB expansion area east of the railroad tracks.

The location of this concept is optimal because it would increase the spacing between the Aerts Road/OR 6 intersection and the Aerts Road/Washington Avenue intersection an extra 420 feet, which would improve the safety and operations of the OR 6/OR 47 intersection. Safety conditions are also greatly improved through the closure of the existing Washington Avenue intersection with Aerts Road, which would likely be operationally inefficient and pose a safety problem upon the addition of vehicles that will accompany growth in the expanded UGB area east of the existing city.

The realigned Washington Avenue corridor shown on Figure 7 is conceptual and would be defined through the land development process as it is funded, designed, and built.

FIGURE 7: CONCEPT #2 – REALIGNMENT OF WASHINGTON AVENUE

A detailed evaluation of this concept is provided in Appendix C (*Technical Memorandum 5.2: Banks TSP Alternatives Evaluation Report*). Based on analysis conducted, this concept is recommended as a project to be placed on the City's transportation CIP list for consideration to be constructed.

Based on planning level estimate tools, this project is estimated at $1,198,600. This estimate includes the design and construction of new roadway, new right-of-way, contingency, and engineering costs. Cost estimate details are provided in Appendix D.

This concept would become warranted based on future conditions related to urbanization in the UGB expansion areas west and south of the Quail Valley Golf Course and the associated increase in traffic volume utilizing the intersection of Washington Avenue/Aerts Road. It is likely that the timing of realignment will coincide with impending development; that is, the anticipated increase in trips associated with a prospective development (as revealed through a traffic impact assessment) would trigger the need to close the aforementioned intersection and subsequently prompt the need to construct the realigned Washington Avenue. Because the safety and operational problem is exacerbated by urbanization, and the adjacent area would be substantially developed (i.e. generate a significant number of commuter) a project to correct this problem should be a high priority for inclusion in the CIP.

A detailed discussion of potential transportation funding sources for this concept is provided in Section 4 of this TSP.

Need:

Viable travel alternative to OR 6 for traffic between Banks and the Portland metropolitan area.

A need exists to provide an alternate east-west route that could be used by Banks residents and visitors if congestion issues occur at the intersection of Aerts Road and Highway 6; the alternate route would be Banks Road-to-US 26. To address this need, there is an associated need to address existing geometric/safety issues and inadequate roadway width on Banks Road. There are existing sight distance issues associated with the existing steep vertical grade conditions in the vicinity of the intersection of Banks Road and Aerts Road – although sight distance issues exist currently, the risk these issues pose to user safety would increase significantly in correlation with the number of new vehicles that would be utilizing this intersection upon development build-out of the UGB expansion areas. The existing Banks Road/Aerts Road intersection is shown in Figure 8 below.

Currently, Banks Road has extremely narrow-to-no roadway shoulders on the road segment between Main Street and Aerts Road, which will be a critical segment to improve in association with the development of the UGB expansion areas on the east side of Banks. The lack of shoulder space poses a significant potential safety concern for pedestrians and bicyclists.

FIGURE 8: INTERSECTION OF BANKS & AERTS ROAD (LOOKING WEST)

Concept #4: Install advanced warning signage

Concept 4 is intended to increase safety for motorists, pedestrians, and cyclists traveling on Banks Road and those turning onto Banks Road from Aerts Road who do not have adequate sight distance based upon assumed design speed and existing conditions. The installation of advanced signing on all three legs of the intersection approach would warn motorists of reduced sight distance on the crest vertical curve, thereby improving safety conditions at the intersection. In addition to advanced signing, rumble strips for westbound Banks Road traffic just east of the crest vertical curve should be considered, and are included in the cost estimate. Existing vegetation should also be pruned and/or removed to improve sight distance conditions.

A detailed evaluation of this concept is provided in Appendix C (*Technical Memorandum 5.2: Banks TSP Alternatives Evaluation Report*). In the aforementioned memorandum, this concept is titled "Alternative 4a". Based on analysis conducted, this concept is recommended as a project to be placed on the city's transportation CIP list.

Based on planning level estimate tools, this project is estimated at $14,000. This estimate includes the evaluation of existing signing at the site, design and construction of new advanced signing, construction of rumble strips on Banks Road east of the intersection, contingency, and engineering costs. Cost estimate details are provided in Appendix D (in the cost estimate sheets, this concept is titled "Alternative 4a").

A detailed discussion of potential transportation funding sources for this concept is provided in Section 4 of this TSP.

Concept #5: Reconstruct Banks Road

Concept 5 is intended to increase safety for motorists, pedestrians, and cyclists traveling on Banks Road between Main Street (OR 47) and US 26.

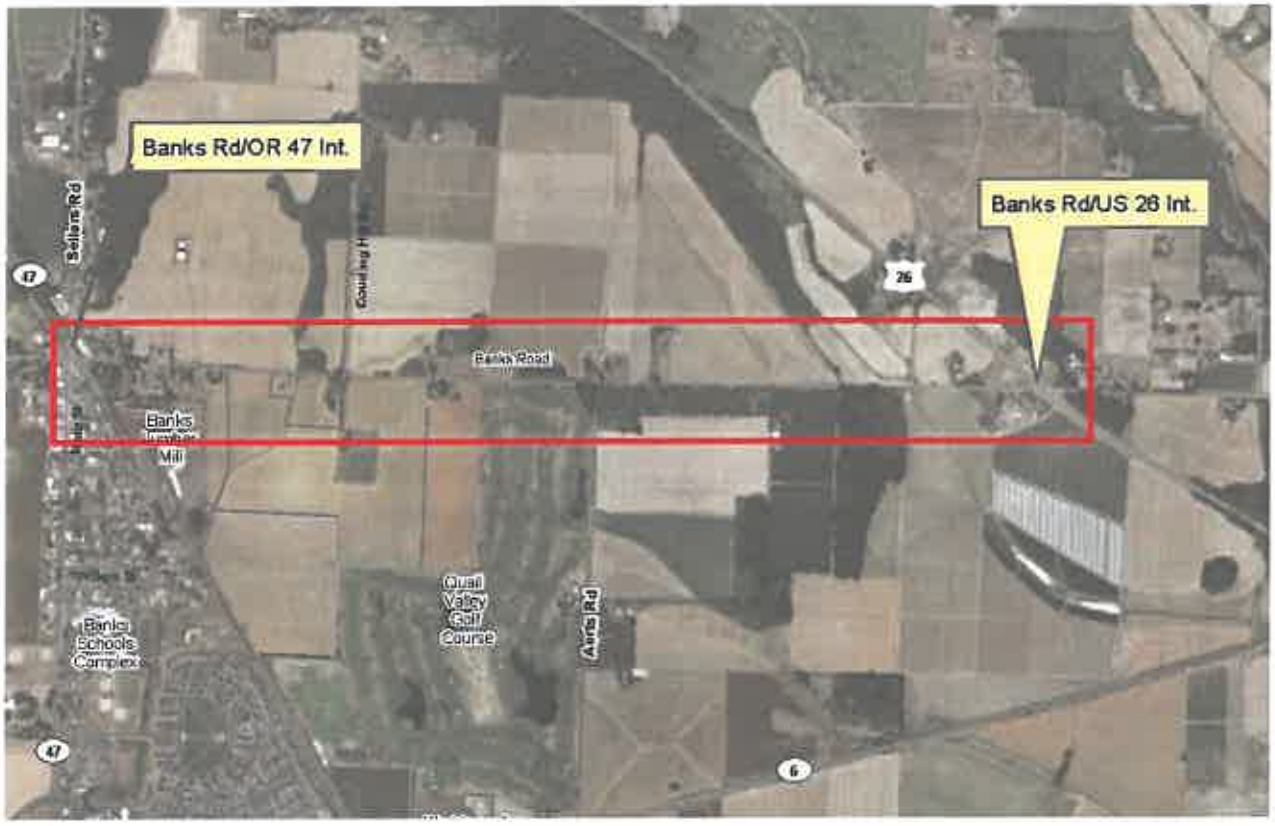
This concept entails re-grading the existing crest vertical curve at Banks Road and Aerts Road, and the sag curve 500 feet to the west of the intersection (see Figure 8), to meet a minimum 60 mile-per-hour vertical design speed sight distance requirement. This would allow drivers approaching Aerts Road from Banks Road, and drivers attempting to turn from Aerts Road, adequate sight distance. Approximately 3,800 feet of Banks Road and 100 feet of Aerts Road would be reconstructed to the Washington County Collector standard width of 36 feet. The golf course to the south of Banks Road would have retaining walls on fill. Some signs would need to be removed and replaced.

This concept would also entail widening the approximately 1.70-mile length of Banks Road between Main Street (OR 47) and US 26 (see Figure 9) to include shoulders on both sides of the road that meet Washington County Major Collector standards. It is assumed that existing usable roadway width is 20 feet, and would be widened to 36 feet. This would address the lack of adequate lane width and shoulders on Banks Road (in consideration of forecasted increases in traffic volume associated with the development of the UGB expansion areas on the east side of Banks) and the need to have a viable east-west alternative to OR 6 for accessing US 26 (so as to alleviate congestion and queuing issues at

both existing Banks access points to OR 6). This concept would significantly improve safety conditions for motorists, bicyclists, and pedestrians.

This concept would be constructed only when warranted based on future traffic conditions associated with future development of the UGB expansion areas.

FIGURE 9: CONCEPT #5 – WIDENING OF BANKS ROAD BETWEEN MAIN STREET (OR47) AND US 26



This concept is a combination of two formerly separate alternatives (titled "Alternative 4d" and "Alternative 5") that were evaluated in *Technical Memorandum 5.2: Banks TSP Alternatives Evaluation Report,* provided as Appendix C. As noted in the aforementioned memorandum, the two formerly separate alternatives would be exceedingly more cost-effective if done in concurrence. This is the reason that the two alternatives were combined into the present concept being discussed. Based on analysis conducted in the aforementioned memorandum, this concept is recommended as a project to be placed on the city's transportation CIP list.

Based on planning level estimate tools, this project is estimated at $8,233,900. This estimate includes the design and construction of new roadway, new right-of-way, contingency, and engineering costs. Cost estimate details are provided in Appendix D (in the cost estimate sheets, see "Alternatives 4d and Alternative 5" for specific cost estimate elements, respective costs and overall combined cost as presented for the present concept). A detailed discussion of potential transportation funding sources for this concept is provided in Section 4 of this TSP.

Need:

Increased left-turn lane storage capacity at intersection of Main Street/Oak Way/OR 6 Ramp Terminal.

Concept #6: Extend Southbound Left-Turn Lane on Main Street at intersection with Oak Way /OR 6 Ramp Terminal

This concept would entail extending the southbound left-turn lane pocket from 125 feet to 350 feet (see Figure 10 below). This concept addresses forecasted queuing issues at the southbound leg of the intersection of Main Street and Oak Way. This concept would be designed according to applicable requirements in ODOT's Highway Design Manual and Striping Manual and would be constructed only when warranted based on future traffic conditions associated with future development of the UGB expansion areas.

FIGURE 10: CONCEPTS # 6 AND #7 – SOUTHBOUND AND EASTBOUND LEFT-TURN LANE EXTENSION

A detailed evaluation of this concept is provided in Appendix C (*Technical Memorandum 5.2: Banks TSP Alternatives Evaluation Report*).Based on analysis conducted, this concept is recommended as a project to be placed on the city's transportation CIP list.

Based on planning-level estimate tools, this project is estimated at $8,800. This estimate includes the design and construction of new striping and signing associated with the off-ramp and intersection, contingency, and engineering costs. Cost estimate details are provided in Appendix D.

A detailed discussion of potential transportation funding sources for this concept is provided in Section 4 of this TSP.

Concept #7: Extend Eastbound Left-Turn Lane on OR 6 Ramp Terminal at intersection with Oak Way/Main Street

This concept would entail extending the eastbound left-turn lane pocket on the OR 6 ramp terminal from 70 feet to 200 feet (see Figure 10). This concept addresses forecasted queuing issues at the eastbound leg of this intersection. This concept would be constructed only when warranted based on future traffic conditions associated with future development of the UGB expansion areas.

A detailed evaluation of this concept is provided in Appendix C (*Technical Memorandum 5.2: Banks TSP Alternatives Evaluation Report).*Based on analysis conducted, this concept is recommended as a project to be placed on the City's transportation CIP list.

Based on planning-level estimate tools, this project is estimated at $9,100. This estimate includes the design and construction of new striping and signing associated with the off-ramp and intersection, contingency, and engineering costs. Cost estimate details are provided in Appendix D.

A detailed discussion of potential transportation funding sources for this concept is provided in Section 4 of this TSP.

Summary of Recommendations to Address Needs Identified in Traffic Analysis

Planning level cost estimates for recommended project to address the needs identified in the traffic analysis are included in Table 11. Cost estimate details are provided in Appendix D.

TABLE 11
Recommendations to Address Needs Identified in Traffic Analysis

Recommendation	Estimated Cost (2010$) (rounded to the nearest $1,000)
Concept #1: Realign Wilkesboro Rd.	$854,000
Concept #2: Realign Washington Ave.	$1,199,000
Concept #4: Install Advanced Warning Signage on Banks Road (in vicinity of Banks/Aerts Rd.	$14,000
Concept #5: Reconstruct Banks Rd.	$8,234,000
Concept #6: Extend SB Left Turn Lane on Main St @Main St/Oak Way/OR 6 Ramp Intersection	$9,000
Concept #6: Extend EB Left Turn Lane on OR 6 Ramp Terminal @Main St/Oak Way/OR 6 Ramp Intersection	$9,000

Concepts to Service Expanded UGB Areas

This section discusses projects to directly serve as future streets for the expanded UGB area. Generally, the conceptual projects discussed in this section are enumerated to correspond with the alternative number title the project had in *Technical Memorandum 5.2: Banks TSP Alternatives Evaluation Report* – text is provided to alert the reader where this is not the case.

The location of projects depicted in this TSP are conceptual in nature, and as such are intended as a guide for development and should not be explicitly used as shown to constrain development options in the future. The precise location of all recommended projects should be defined through the land development process as projects are funded, designed, and built.

Need:

East-west internal circulation in Banks to accommodate expanded urban area and reduce reliance on state highways for intra-city circulation.

Making provisions for east-west travel is critical to maintaining adequate citywide circulation as the City expands east of the railroad tracks. Subsequently, there is a need to provide an east-west collector road for the City of Banks with respect to the UGB expansion area east of the existing city. Such an east-west collector road system, which integrates the proposed new eastside collector road (see Concept 10) is not possible without a railroad crossing. Along with this need is the City's transportation objective of having a secondary route from the existing City of Banks to the Aerts Road access point to OR 6.

The preferred option for a collector road between the east and west sides of Banks would be to construct at-grade railroad crossings because the cost to do so would be significantly less than an overcrossing. However, at-grade crossings of the railroad under existing conditions is infeasible because the tracks that would need to be crossed are currently used for track-switching – an activity that is highly incompatible with at-grade crossings; this is also the reason that at-grade crossings along this segment of tracks is not permitted under ODOT Rail Division Policy.

Based on the above circumstances, at-grade crossings are not a feasible option for recommendation at this time. However, as noted, at-grade crossings are the City's preferred option for east-west railroad crossings, and would be pursued for implementation at such time in the future that at-grade crossings become feasible due to changing conditions.

A proposed over-crossing would be treated as local parallel route to OR6 and Banks Road. To gain a better investment for the structure, this parallel route would be classified as a collector and allow cut-through traffic. Local traffic could use this over-crossing instead of using OR 6 to access different sides of the city. It is important to note that each of the concepts proposed to address this would necessitate close coordination with the railroad companies actively using the rail lines.

Concept #3a: Install vehicular overcrossing of railroad from area south of Arbor Village to Rose Avenue

This concept would entail constructing a vehicular bridge over the railroad tracks connecting the existing street network on the west side of Banks (south of the Arbor Village

neighborhood) to the future street network on the east side of Banks (at Rose Avenue) (see Figure 11 below). This crossing would include bicycle/pedestrian accommodations. This concept is a long-term one which assumes the full build-out of the UGB expansion area on the east side of Banks as a prerequisite for consideration of construction.

This concept would be constructed only when warranted based on future traffic conditions associated with future development of the UGB expansion area east of the railroad tracks.

The proposed railroad crossing corridor shown on Figure 11 is conceptual and would be defined through the land development process as it is funded, designed, and built.

FIGURE 11: CONCEPT #3A – LOCATION OF RR OVERCROSSING FROM ARBOR VILLAGE TO ROSE AVENUE

A detailed evaluation of this concept is provided in Appendix C (*Technical Memorandum 5.2: Banks TSP Alternatives Evaluation Report)*. As noted in the aforementioned technical memorandum, this concept's crossing corridor is less advantageous than Concept 3b because it is as centrally located in juxtaposition to the eastside UGB expansion area. Both Washington County and ODOT staff noted that, in a comparison between Concept 3a and 3b, Concept 3b is preferable because Concept 3a appears too far south to be the sole east-west railroad crossing and would result in out of direction travel for significant portions of intra-city traffic in the future (if it were the sole crossing).Therefore, this concept is recommended as a project to be placed on the City's transportation CIP list as a secondary option to Concept 3b.

Based on planning level estimate tools, this project is estimated at $8,650,000. This estimate includes the design and construction of new roadway, a new single span cast-in-place concrete girder bridge, new right-of-way, contingency, and engineering costs. Cost estimate details are provided in Appendix D.

A detailed discussion of potential transportation funding sources for this concept is provided in Section 4 of this TSP.

Concept #3b: Install vehicular overcrossing of railroad from Sunset Avenue to new collector road on east side of railroad

Concept 3b is intended to address the same needs described for Concept 3a. Concept 3b would construct a vehicular bridge crossing of the railroad tracks at a point further north than 3a; from Sunset Avenue on the west to a future circulator road on the east (see Figure 12). There is currently an at-grade crossing at this location, which is not open to the public that is utilized by the Banks Lumber Mill under an agreement with the existing rail companies. This crossing would include bicycle/pedestrian accommodations.

The proposed railroad crossing corridor shown on Figure 12 is conceptual and would be defined through the land development process as it is funded, designed, and built.

FIGURE 12: CONCEPT #3B – LOCATION OF RR OVERCROSSING FROM SUNSET AVENUE TO EASTSIDE

A detailed evaluation of this concept is provided in Appendix C (*Technical Memorandum 5.2: Banks TSP Alternatives Evaluation Report)*.Based on analysis conducted, this concept is recommended as a project to be placed on the City's transportation CIP list.

Based on planning level estimate tools, this project is estimated at $7,083,000. This estimate includes the design and construction of new roadway, a new single span cast-in-place concrete girder bridge, new right-of-way, contingency, and engineering costs. Cost estimate details are provided in Appendix D.

A detailed discussion of potential transportation funding sources for this concept is provided in Section 4 of this TSP.

As noted earlier, Concept 3b is recommended as the primary location option for a vehicular railroad crossing, with Concept 3a being a secondary option. Along with cost, major factors that should be considered with regard to deciding on a railroad crossing location include:

- Usefulness as a intra-city collector to reduce reliance on peripheral roads (OR 6; Banks Road)
- Effect on railroad operations (i.e. feasibility of crossing location vies a vies railroad operations)
- Impact on existing residents, businesses, landowners
- Anticipated associated traffic impacts
- Engineering feasibility

Need:

North-south circulation system on west side of Banks in UGB expansion area and access to new land uses.

Concept #8: New North-South Circulator Road in Westside Banks Area between Cedar Canyon Road and Area South of Sunset Park

This concept entails constructing a new north-south road on the west side of the existing City of Banks with termini intersections at Cedar Canyon Road in the north and Main Street in the south (see Figure 13). This roadway would be a 40-foot wide paved roadway with sidewalks, illumination, landscaping and drainage, occupying a right-of-way footprint of 64 feet, and meeting City of Banks Collector standards.

The location of this proposed roadway is optimal because it will allow for double-loading of mixed uses on the lot line in the northern segment of the road and will provide access to the commercial and industrial areas, while simultaneously providing north-south circulation within the constraints of the adjacent floodplain. It is the intent of this TSP that land on both sides of this circulator road would be developed.

This concept would be constructed only when warranted based on future traffic conditions associated with future development of the UGB expansion area west of Main Street.

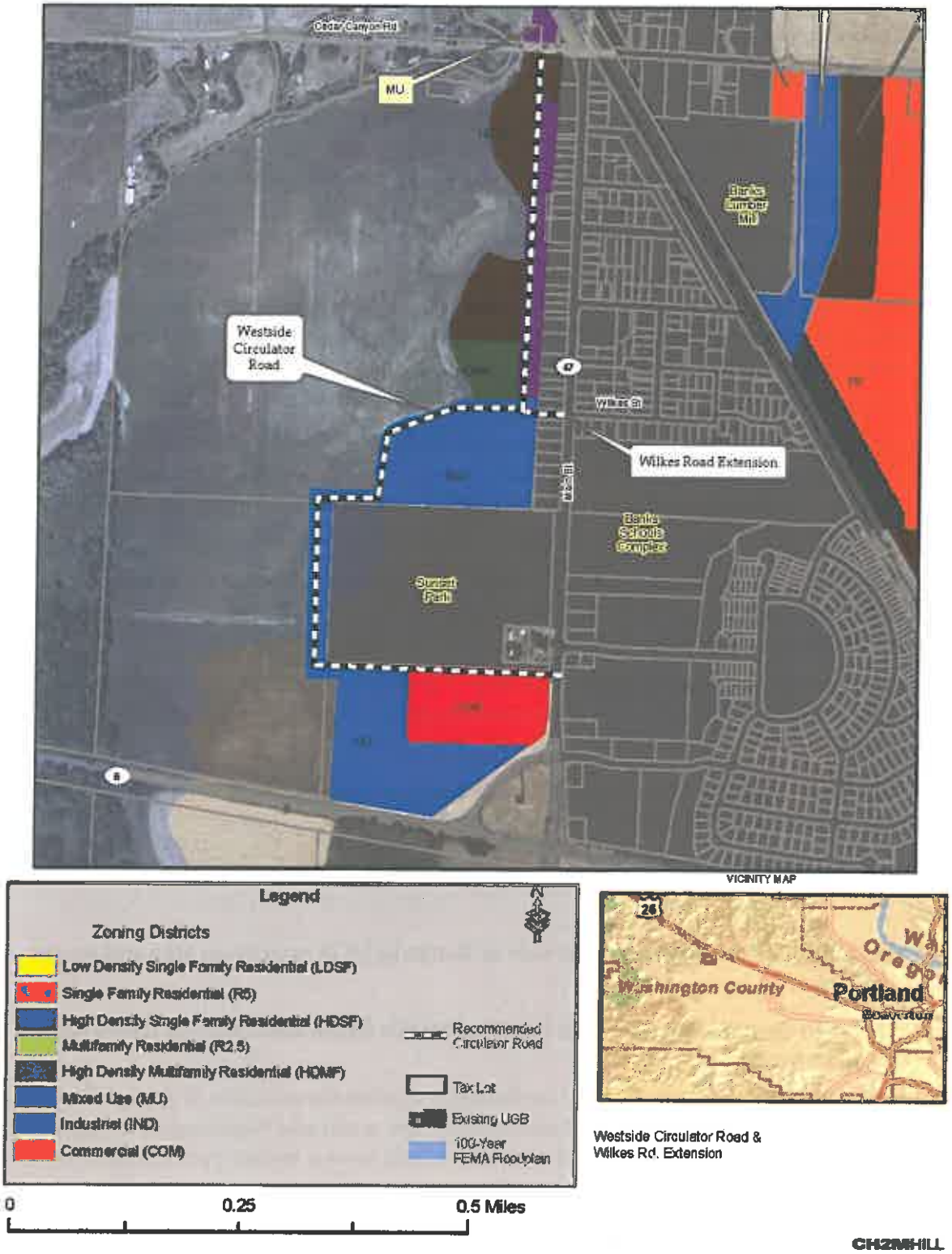
The proposed Westside north-south circulator road corridor as shown on Figure 13 is conceptual and would be defined through the land development process as it is funded, designed, and built.

A detailed evaluation of this concept is provided in Appendix C (*Technical Memorandum 5.2: Banks TSP Alternatives Evaluation Report)*.Based on analysis conducted, this concept is recommended as a project to be placed on the City's transportation CIP list.

Based on planning level estimate tools, this project is estimated at $12,673,100. This estimate includes the design and construction of new roadway, new right-of-way, contingency, and engineering costs. Cost estimate details are provided in Appendix D.

A detailed discussion of potential transportation funding sources for this concept is provided in Section 4 of this TSP.

FIGURE 13: CONCEPT #8 – WESTSIDE CIRCULATOR ROAD



Westside Circulator Road & Wilkes Rd. Extension

CH2MHILL

Need:

Connection from new UGB expansion area on the west side of Banks to Main Street to provide access and east-west circulation.

Concept #9: New West Extension of Wilkes Road

A shown on Figure 13, this concept entails constructing a west extension of Wilkes Road that would connect to Main Street on the east and the new west side circulator road on the west (see Concept #8), and would result in a new 4-way intersection of Wilkes Road and Main Street. This concept would include the installation of a striped pedestrian crossing. This concept addresses the need to provide an outlet from the new UGB expansion area west of Main Street.

This concept would be constructed only when warranted based on future traffic conditions associated with future development of the UGB expansion area west of Main Street. Per ODOT staff, the new roadway would require an ODOT approach permit and the proposed marked crosswalks would need State Traffic Engineer Approval.

The location of the proposed Wilkes Road extension is optimal in that it will allow for a formal 4-way intersection with Main Street and the existing Wilkes Road and will support the circulatory function of a collector (Wilkes Road is proposed for upgrading to collector status).

A detailed evaluation of this concept is provided in Appendix C (*Technical Memorandum 5.2: Banks TSP Alternatives Evaluation Report).*Based on analysis conducted, this concept is recommended as a project to be placed on the City's transportation CIP list.

Based on planning-level estimate tools, this project is estimated at $464,000. This estimate includes the design and construction of new roadway, contingency, and engineering costs. Cost estimate details are provided in Appendix D.

A detailed discussion of potential transportation funding sources for this concept is provided in Section 4 of this TSP.

Need:

North-south circulation system on east side of Banks in UGB expansion area and access to new land uses.

Concept #10: New North-South Circulator Road in Eastside Banks Area between Banks Road and Washington Avenue

This concept entails constructing a new north-south road on the east side of the existing City of Banks with termini intersections at Banks Road in the north and Washington Avenue in the south (see Figure 14). The proposed roadway would have a 36-foot paved width within a 60-foot right-of-way, meeting Washington County Major Collector standards. This concept would address the need to provide a primary circulator road for the UGB expansion area to the east of the railroad tracks.

The location of this proposed circulator road would be the most efficient because it is central to the new eastside UGB expansion area and would have significant cost-benefits because it

could serve adjacent land uses on both sides and would limit out-of-direction travel. Washington County and ODOT staff has concurred on this assessment. The predominantly central location of this road would allow for double-loading of land use development; it is the intent of this TSP that land on both sides of this circulator road would be developed.

A previously considered eastside circulator road that would be located adjacent to the railroad tracks for much of its length was discarded because it would be ineffective from a cost-benefit perspective with regard to serving adjacent land uses. The rationale for the location of the discarded concept was to provide a buffer between land use development and the railroad. However, as was noted by Washington County staff, there are other aesthetically pleasing mechanisms, such as berms or vegetated walls, which could be used to provide a buffer function instead of the roadway, which, as noted, would be significantly more effective if located in a more central location that served adjacent land uses on both sides of the road.

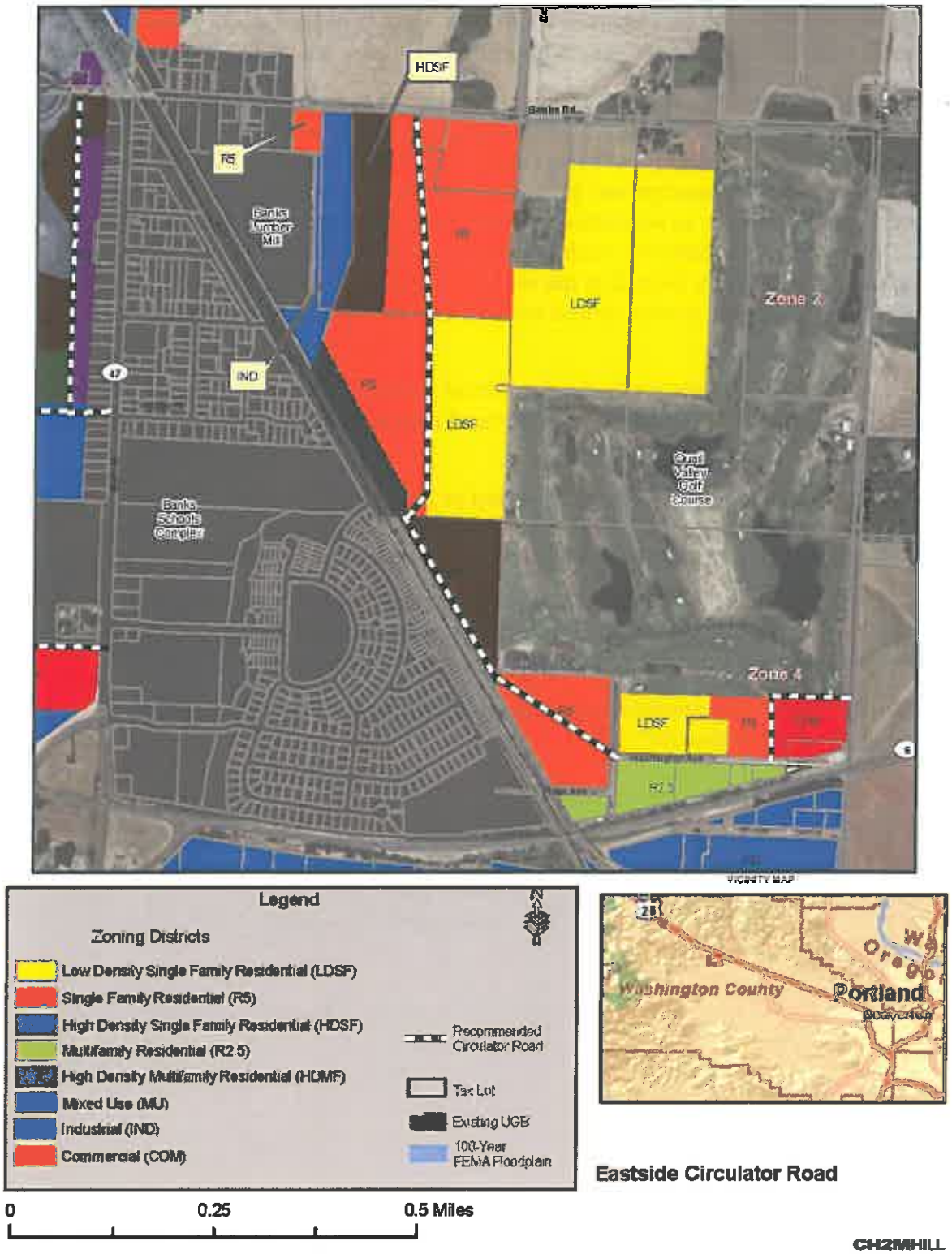
The proposed Westside north-south circulator road corridor as shown on Figure 14 is conceptual and would be defined through the land development process as it is funded, designed, and built.

A detailed evaluation of this concept is provided in Appendix C (*Technical Memorandum 5.2: Banks TSP Alternatives Evaluation Report)*.Based on analysis conducted, this concept is recommended as a project to be placed on the City's transportation CIP list.

Based on planning level estimate tools, this project is estimated at $4,441,400. This estimate includes the design and construction of new roadway, new right-of-way, contingency, and engineering costs. Cost estimate details are provided in Appendix D.

A detailed discussion of potential transportation funding sources for this concept is provided in Section 4 of this TSP.

FIGURE 14: CONCEPT #10 – EASTSIDE CIRCULATOR ROAD



Need:

East-west bicycle/pedestrian circulation system.

Several versions of this concept were assessed and are discussed in turn below.

The proposed bicycle/pedestrian crossing corridor as shown on Figure 15 is conceptual and would be defined through the land development process as it is funded, designed, and built.

Concept #11 Option A: Install Bicycle/Pedestrian Overcrossing of Railroad from Area East of Banks Schools Complex to Eastside of Banks (UGB Expansion Area)

As shown in Figure 15, this concept entails constructing a pedestrian/bicycle overcrossing of the railroad tracks to connect the UGB expansion area east of the tracks to the west side of Banks (at the Banks schools complex area) and would include a connecting path on the eastside to the circulator road (thereby providing a connection to the bicycle facilities on the new road). This concept would entail a temporary closure of the railroad tracks (approximately 2 nights at 6 hours a night).

This concept addresses the need to provide safe, convenient, and reasonably direct east-west bicycle/pedestrian circulation. This concept could serve as an affordable interim step to meet this need in the event that the City determines that the longer-term objective of constructing motor vehicle crossings of the railroad with bicycle/pedestrian accommodations (see Concepts 3a and 3b) will occur at an unacceptably late future time with respect to the need for bicycle/pedestrian accommodations across the railroad (to accommodate the population in the eastside UGB expansion area).

This concept would encourage the use of alternate modes of travel between the west and east sides of Banks (assuming development of the UGB expansion areas on the east side of Banks) in keeping with City goals and objectives.

This concept would significantly improve safety conditions for bicyclists and pedestrians who would be provided with an east-west connecting route that was separated from motor vehicle traffic. This concept would be a pivotal safe route to school component.

This concept would significantly improve mobility conditions for bicyclists and pedestrians traveling to and from the UGB expansion area on the east side of the railroad tracks. This concept would enable short trips from east to west Banks and most importantly to the Banks school complex and downtown Banks – to be made conveniently by foot or bicycle.

FIGURE 15: CONCEPT #11 – BIKE/PED RR CROSSING CORRIDOR

A detailed evaluation of this concept is provided in Appendix C (*Technical Memorandum 5.2: Banks TSP Alternatives Evaluation Report)*. In the aforementioned memorandum this concept is titled "Alternative 11a". Based on analysis conducted, this concept is recommended as a project to be placed on the City's transportation CIP list as a secondary bicycle/pedestrian bridge option IF Concept #11 Option B were not feasible, as discussed later in this report. Also, as previously noted, this concept should only be considered for implementation in the event that the City determines that the longer-term objective of constructing motor vehicle crossings of the railroad with bicycle/pedestrian accommodations (see Concepts 3a and 3b) will occur at an unacceptably late future time with respect to the need for bicycle/pedestrian accommodations across the railroad (to accommodate the population in the eastside UGB expansion area).

Based on planning level estimate tools, this project is estimated at $5,690,800. This estimate includes the design and construction of a new pedestrian/bicycle overcrossing, new right-of-way, contingency, and engineering costs. Cost estimate details are provided in Appendix D.

A detailed discussion of potential transportation funding sources for this concept is provided in Section 4 of this TSP.

Concept #11 Option B: Install Bicycle/Pedestrian Undercrossing of Railroad from Area East of Banks Schools Complex to Eastside of Banks (UGB Expansion Area)

This concept would be in the same location and provide the same connecting points as in Concept 11 Option A (see Figure 15) but would entail an undercrossing (tunnel) connection rather than an overcrossing (bridge). This concept would necessitate a total closure of the railroad tracks for approximately 2-4 weeks.

The location for this undercrossing is optimal for the same reasons described for Concept 11, Option A.

A detailed evaluation of this concept is provided in Appendix C (*Technical Memorandum 5.2: Banks TSP Alternatives Evaluation Report*). In the aforementioned memorandum this concept is titled "Alternative 11c".

Based on analysis conducted, this concept is recommended as a project to be placed on the City's transportation CIP list as the primary bicycle/pedestrian bridge option. **However**, as previously noted, this concept should only be considered for implementation in the event that the City determines that the longer-term objective of constructing motor vehicle crossings of the railroad with bicycle/pedestrian accommodations (see Concepts 3a and 3b) will occur at an unacceptably late future time with respect to the need for bicycle/pedestrian accommodations across the railroad (to accommodate the population in the eastside UGB expansion area). In the event that the City wanted to pursue a bicycle/pedestrian bridge, but Concept 11 Option B were deemed infeasible due to the construction impacts on the railroad companies, Concept Option A would then be recommended.

Based on planning level estimate tools, this project is estimated at $4,167,000. This estimate includes the design and construction of a new pedestrian undercrossing of the existing railroad, new right-of-way, contingency, and engineering costs. Cost estimate details are provided in Appendix D.

A detailed discussion of potential transportation funding sources for this concept is provided in Section 4 of this TSP.

Summary of Recommendations to Service Expanded UGB Areas

Planning level cost estimates for recommended project to address the needs identified in the traffic analysis are included in Table 12. Cost estimate details are provided in Appendix D.

TABLE 12
Recommendations to Service Expanded UGB Areas

Recommendation	Estimated Cost (2010$) (rounded to the nearest $1,000)
Concept #3b: Construct Overcrossing of Railroad from Sunset Avenue to Eastside[1]	$8,650,000
Concept #3a: Construct Overcrossing of Railroad from South Arbor Village to Rose Avenue[1]	$7,083,000
Concept #8: Construct Westside Circulator Road	$12,673,000
Concept #9: Construct Wilkes Road Extension	$464,000
Concept #10: Construct Eastside Circulator Road	$4,441,000
Concept #11 Option B: Construct Bicycle/Pedestrian RR Undercrossing[2]	$4,167,000

[1] As noted earlier in this report, the City's preferred option for east-west collector road railroad crossing is to construct at-grade crossings, which, although not currently a feasible option, would be pursued by the City at such point in the future that at-grade railroad crossings become feasible due to changing conditions.

[2] In the event that the City wanted to pursue a bicycle/pedestrian bridge but Concept 11 Option B were deemed infeasible due to the construction impacts on the railroad companies, Concept 11 Option A would then be recommended

The City should also consider conducting a concept plan for the Eastside UGB expansion area – this would be a comprehensive focused plan to define preferred specific locations for the transportation facility project concepts recommended in this TSP.

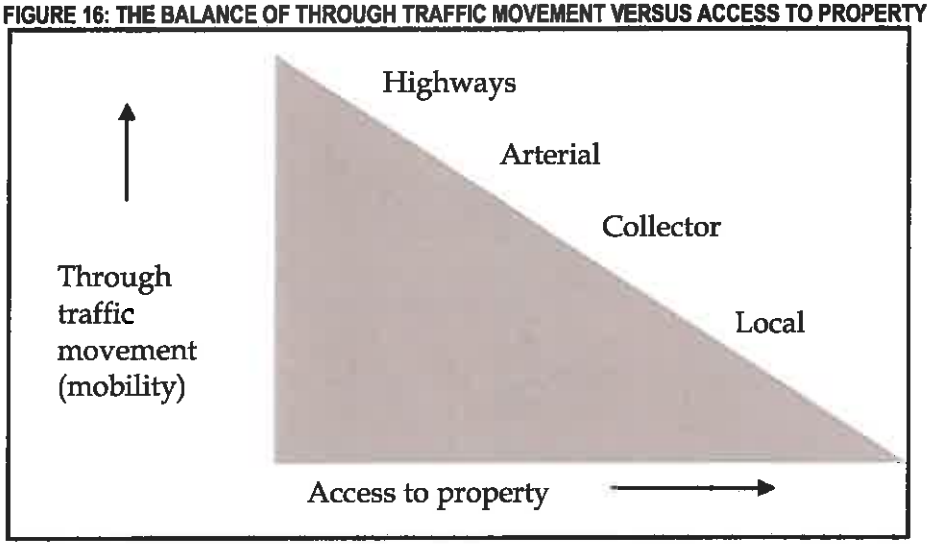
Functional Classification of Roadways

Functional Classifications

The purpose of classifying streets is to provide a balanced transportation system that provides both mobility for all modes at acceptable levels of service and reasonable access to land uses. The functional classification defines a street's role and context in the overall transportation system and how it is used within the community. In addition, the classification defines the appropriate street standards for the facility: desirable roadway width, right-of-way needs, access spacing and pedestrian and bicycle facilities.

Functional classifications balance the need for mobility - getting from point A to point B quickly - with access - the need to get to land uses. As access points along a street increase, mobility tends to decrease because traffic slows to allow for turns on and off the roadway. Drivers generally slow down to make turns off a roadway, and accelerate after making a turn onto a roadway. The differences in travel speed caused by accelerating and decelerating vehicles interrupt the overall flow of traffic. As illustrated in Figure 16, functional classifications balance mobility with access.

FIGURE 16: THE BALANCE OF THROUGH TRAFFIC MOVEMENT VERSUS ACCESS TO PROPERTY



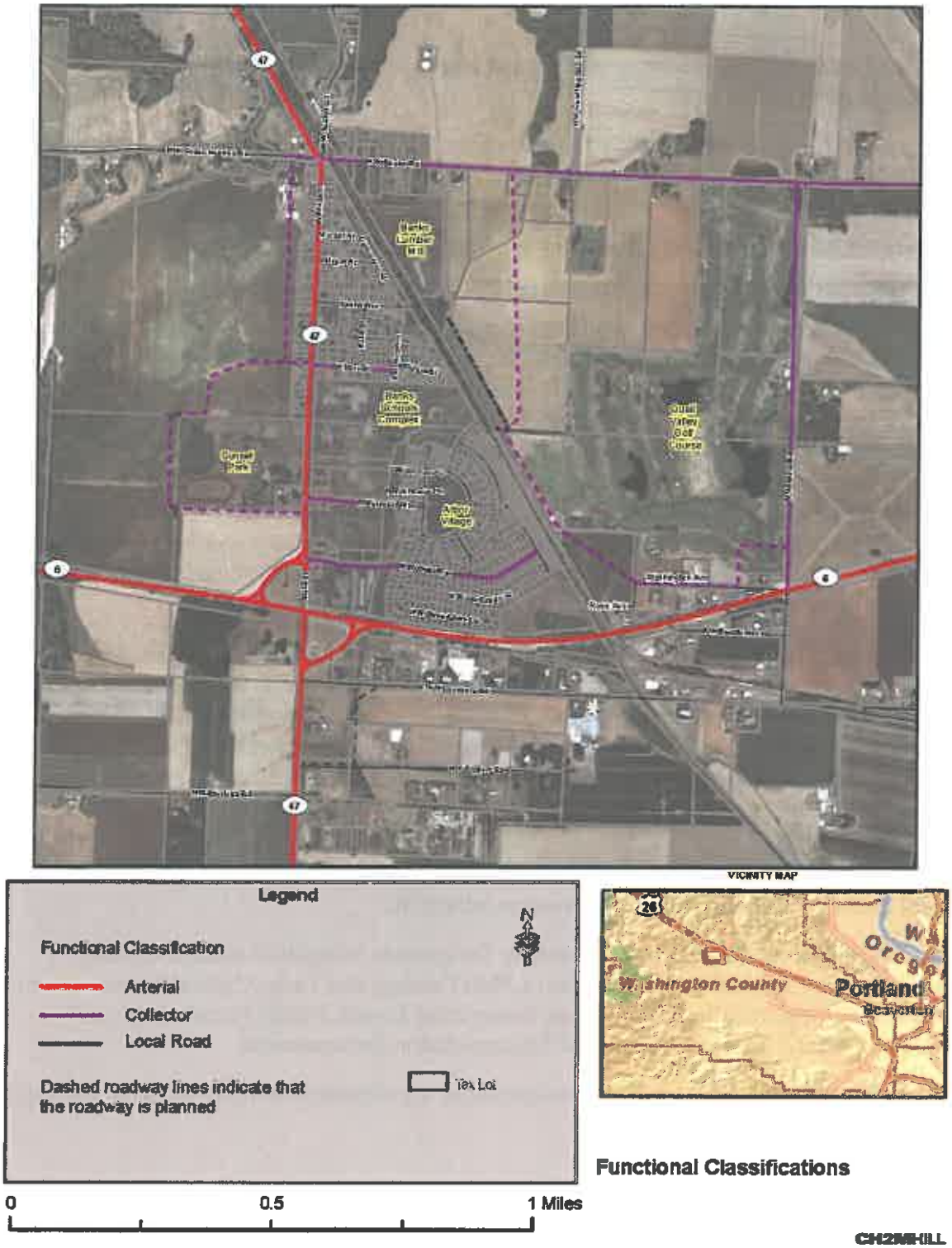
Since functional classifications define the role of a roadway in the transportation system and overall community, those roadways that have a greater emphasis on mobility, highways and arterials, limit the number of access points to provide for better traffic flow. Retrofitting an existing system of streets to meet design standards can be impracticable. In such cases, deficiencies in the system may be defined instead through other means such as safety analysis, future traffic demand analysis, bicycle and pedestrian needs analysis, and public input. Design standards aid in defining potential improvements, but alone do not prompt improvement on existing roadways.

The 1999 Banks Transportation Network Plan (TNP) established a functional classification for Banks that included arterial streets, collector streets, and local streets. The proposed functional classification map for streets in Banks is shown in Figure 17. Any street not designated as an arterial or collector street is considered a local street. The recommended

changes to the existing functional classification defined in the 1999 TNP are summarized below.

- Oak Way is upgraded from a local street to a collector
- Trellis Way is upgraded from a local street to a collector
- Wilkes Street is upgraded from a local street to a collector
- Aerts Road is upgraded from a local street to a collector

FIGURE 17: FUNCTIONAL CLASSIFICATIONS



4 IMPLEMENTATION

A variety of local and state funding sources can be explored to help fund the recommendations in this plan.

Further research should be conducted to ensure the applicability of these funding sources for the projects recommended in this report.

State Administered Funding Sources

State Transportation Improvement Program (STIP)

The STIP is the primary programming document that identifies transportation priorities for federal and state funding in Oregon. The STIP provides a schedule and identifies funding for projects throughout the state. The STIP lists projects that are planned for construction during a four-year period. Projects that are included in the STIP are considered "regionally significant" and have been given a high priority through planning efforts and by the relevant area commissions on transportation (ACT). The STIP has five major programs: modernization, safety, preservation, bridge, and operations – and fifteen specific programs from which projects can receive funding. All federally funded transportation projects and programs, and all state and locally funded projects that are deemed "regionally significant" must be included in the STIP.

Transportation projects in the STIP are generally categorized into the five major programs referenced above, plus a sixth "other," or "special projects" category. Recommended transportation capital improvement projects related to state facilities may fall within two categories: Operations Projects and Special Programs. The STIP states that the applicable uses under each of these projects are as follows:

- ***Modernization:*** *Capital projects that lead to increased highway system capacity.*
- ***Operations:*** System management and improvements that lead to more efficient and safer traffic operations and greater system reliability.
- ***Special Programs:*** Bicycle and Pedestrian, Congestion Mitigation and Air Quality Improvement, Federal Lands Highways, Fish Passage and Large Culvert Improvement, Immediate Opportunity Fund, Indian Reservation Roads, Public Transit, Railroad Crossing Safety, Scenic Byways, and Transportation Enhancement.

The funding programs under these three categories are described in more detail in the pages that follow.

Modernization

The 2010-2013 Draft STIP states that projects funded under this section are capital highway improvements that lead to increased system capacity. Increased capacity can be accomplished by either adding additional lanes, constructing new highways, or other system improvements. Strong competition exists for funding through the STIP Modernization Program as the need for funding such projects greatly outweighs the funds

available. Projects are awarded funding through this program by the applicable ODOT Region.

Operations

The 2010-2013 Draft STIP states that projects funded under this section "improve the efficiency of the transportation system through the replacement of aging infrastructure and the deployment of technology that allows the existing system to meet increased demands." Applicable projects may be listed within four sub-categories: (1) Intelligent Transportation Systems (ITS); (2) Signs, Signals, and Illumination; (3) Slides and Rockfalls and; (4) Transportation Demand Management (TDM).

- ***Signs, Signals and Illumination Program*** – The Signs, Signals and Illumination program provides funding for the replacement of equipment that has reached the end of its useful life. This program also provides limited funding for new or upgraded signals at problem intersections.

Special Programs

ODOT also provides funding to a number of special programs. This section describes the programs that are applicable to recommended projects for the City of Banks.

- **ODOT Bicycle and Pedestrian Program** – The ODOT Pedestrian and Bicycle Grant Program provides funding to cities, counties and ODOT regional and district offices through a competitive process. Eligible projects are related to the design and construction of pedestrian and bicycle facilities within the public right-of-way. The application process occurs every two years with applications for the 2012-2013 cycle beginning in 2010 and applications for the 2014-15 cycle beginning in 2012. Every biennium, the program awards approximately $5 million. A local match is expected for projects that receive this grant.

  The bicycle and pedestrian recommendations located within the public right-of-way would be eligible for this program. A grant application could be submitted as early as 2010 for receipt of funds in the 2012-2013 funding cycle.

- **Transportation Enhancement Program** – Oregon's Transportation Enhancement (TE) program provides federal highway funds for project that strengthen the cultural, aesthetic, or environmental value of our transportation system. TE activities are funded through a required state set aside from STP funds of 10%, or the amount set aside in FY 2005, whichever is greater. Projects fall into four main categories: Bicycle and Pedestrian; Historic Preservation; Landscaping and Scenic Beautification; and Environmental Mitigation. The intent of the program is to fund special or additional activities not normally required on a highway or transportation project.

  Since the project's inception in 1992, 190 projects of approximately $97 million have been funded in Oregon through the TE program. For fiscal years 2008-2011 the Program will have $6.5 million per year for competitive selection, and $2 million per year for the TE Discretionary Account. Awards for the 2012-2013 bienniums were approved by the Oregon Transportation Commission in August 2009; applications for the 2014-2015 bienniums start in April 2010. The funds are provided through reimbursement, not

grants. Participation requires matching funds from the project sponsor, at a minimum of 10.27 percent. All projects must have a direct relationship to surface transportation.

This is a competitive grant application process facilitated by ODOT that awards funding to local governments on an annual basis. The TE Advisory Committee awards the grants based on a project's technical merit and local support. The committee also considers the TE "focus areas" for the year and the connection to other transportation projects.

- **Immediate Opportunity Fund –** This fund provides funding for the construction and improvement of streets and roads that are crucial to support site-specific economic development projects. ODOT manages this fund on a case-by-case basis in cooperation with the Oregon Economic and Community Development Department.

  The fund's use is discretionary, and it can only be used when other sources of financial support are unavailable or insufficient. Its use is also restricted to circumstances where an actual transportation problem exists and where funds are needed to identify or retain employers that provide primary industry employment in a community. A match of at least 50 percent of the total fund requested is expected from project's applicants.

- **Railroad Crossing Safety Program –** This program is administered through the Rail Division of ODOT. They allocate funding by prioritizing projects based on an accident prediction model. The Division also has limited funds for discretionary projects that improve safety at railroad-highway grade crossings.

Special Transportation Fund

The Special Transportation Fund (STF) was created by the Oregon Legislature in 1985. It is funded through a cigarette tax and ODOT Transportation Operating Funds. This state funding source provides support for special transportation services that benefit seniors and individuals with disabilities. Seventy-five percent of the funding is allocated to designated counties, transit districts and Indian tribal governments proportional to population. The remaining 25percent of the funds are distributed through a discretionary grant program called the Public Transportation Discretionary Grant Program.

STF funds can be used to create, maintain, or expand systems that serve seniors or individuals with disabilities, as well as plan and develop new services for those currently not served. ODOT's STF Guidebook provides a list of TSM and TDM examples of previous fund use (*http://www.oregon.gov/ODOT/PT/PROGRAMS/stf_program.shtml*).

Special City Allotment Grant

The Special City Allotment Grant was created by the Oregon Legislature. The legislature mandated that a $1 million be set aside for cities with populations less than 5,000. Half of the funds for this grant come from the cities' share of the state gas tax and half of the funds come from ODOT's portion of the State Highway Fund. The maximum grant allocation is $25,000. Half of the grant can be allocated to the city up front and the second half is provided when the project is completed.

County Funding Sources

Transportation Development Tax (TDT) program

The Transportation Development Tax (TDT) is a countywide tax applied to all new developments to help pay for the transportation infrastructure needed throughout the County to accommodate growth. Ultimately, the TDT is designed to generate enough revenue to construct approximately 28% of the growth-related transportation infrastructure called for in the county and cities' 20-year Transportation Plans. The TDT is not a property tax. New development is required to pay the tax when a building permit or occupancy permit is issued. The TDT tax rate is uniform throughout the County, and the amount of tax due is based on the estimated traffic generated by each development. TDT taxes are assessed and collected by the Washington County Current Planning Division in unincorporated Washington County, and by the cities within city limits. Remodeling, temporary uses, and state and federal government buildings are exempt from the TDT. All TDT revenue will be dedicated to funding transportation improvements designed to accommodate growth, such as:

- Improvements to Arterial and Collector roadways, including sidewalks and bike lanes;
- Transit capital projects (such as bus shelters).

Developers may be eligible to receive credits against their TDT tax for the value of certain developer-constructed improvements built as conditions of development approval. To be eligible for TDT credits, the improvements must be to an arterial or collector roadway or on the adopted Project List (link to list/map). There are a number of additional limitations on TDT credit eligibility, and developers are strongly advised to consult with appropriate city or county staff regarding credit eligibility prior to investing in an improvement.

Major Streets Transportation Improvement Program (MSTIP)

The MSTIP is a tax that originated in 1986 as a short term levy put forth by Washington County to fund various construction projects throughout the area. Two more MSTIP measures were approved by voters, in 1989 and 1995. In 1997 voters approved Measure 50, which included provisions to reduce the MSTIP tax rate to 90 percent of the 1995 level and then combine it with Washington County's permanent fixed property tax rate.

Local Funding Sources

City Budget

Many of the state and federal grants identified in this funding section require a local match. This is the most appropriate use of city budget funding as it can leverage larger pools of money available for identified projects.

Exactions

With developer exactions, an improvement is paid for or built by the developer to City standards and then deeded to the City as a condition for development approval. Developer exactions and contributions can pay for portions of roads in, adjacent to, or through new developments. The City of Banks currently requires that all new subdivisions build sidewalks as a developer exaction.

Local Improvement District

Local Improvement Districts (LIDs) are created by property owners within a specified area to raise revenues for constructing street improvements within the same district. LIDs may be used to assess property owners for improvements that benefit properties. The LID can be a larger geographic area than the area with the actual street improvements but all landowners will need to understand advantage to entering into the LID. Property owners typically enter into LIDs because they see economic or personal advantages to the improvements.

Assessments are secured by property liens. The formation of LID districts is governed by state law and local jurisdictional development codes. LID revenues can be used solely for capital costs.

Urban Renewal Areas

Banks does not currently have any urban renewal areas. To establish an Urban Renewal Areas (URAs) the City of Banks would need to create an Urban Renewal Agency. Once this agency was formed, it could identify blighted areas within the city. In the selected area, tax-increment financing (TIF) could be used to generate urban renewal funds. TIF works by 'freezing' property values at the beginning of an urban renewal plan, and assessing a fee only on the incremental growth in property value observed since the beginning of the urban renewal district plan. The revenues generated within an urban renewal area are used to secure bonds to finance projects and programs within that area.

Local Option Levies

In most taxing districts, voters within an established taxing district, such as a city or a fire district can approve levies for operating purposes or capital projects. A levy can either be established as a set rate or a set dollar amount. For capital projects, a levy cannot last longer than 10 years. Levies must be approved at a November election in an even numbered year or by more than 50 percent of eligible voters (double majority).

General Obligation Bonds

Bonding allows municipal and county governments to finance costs for construction projects by borrowing money and paying it back over time (with interest). Financing

requires smaller regular payments over time compared to paying the full cost at once, but financing increases the total cost by adding interest. General Obligation Bonds are often used to pay for construction of large capital improvements. This method is typically used to fund road improvements that will benefit an entire community. General Obligation Bonds add the cost of the improvement to property taxes over a period of time. Oregon State law states "A city may issue general obligation bonds to finance capital construction or capital improvements upon approval of the electors of the city" (287A.050). Revenue for General Obligation Bonds is collected in property tax billings.

Revenue Bonds

Revenue bonds are paid back with dedicated revenue from a source other than property taxes. Revenues from a Systems Development Charge (Washington County's TDT is a system development charge), Local Improvement District, or other reliable revenue streams can be used. The City of Banks has not used revenue bonds backed by Systems Development Charges, as this funding source is variable based on the amount of development. Revenue bonds are typically used to fund improvements that primarily benefit the people who provide the revenue through fees and assessments.

Appendix A

Plan and Code Amendments

APPENDIX B

TRANSPORTATION SYSTEM NEEDS, OPPORTUNITIES, AND CONSTRAINTS

APPENDIX C

ALTERNATIVES EVALUATION

APPENDIX D

PLANNING-LEVEL COST ESTIMATES