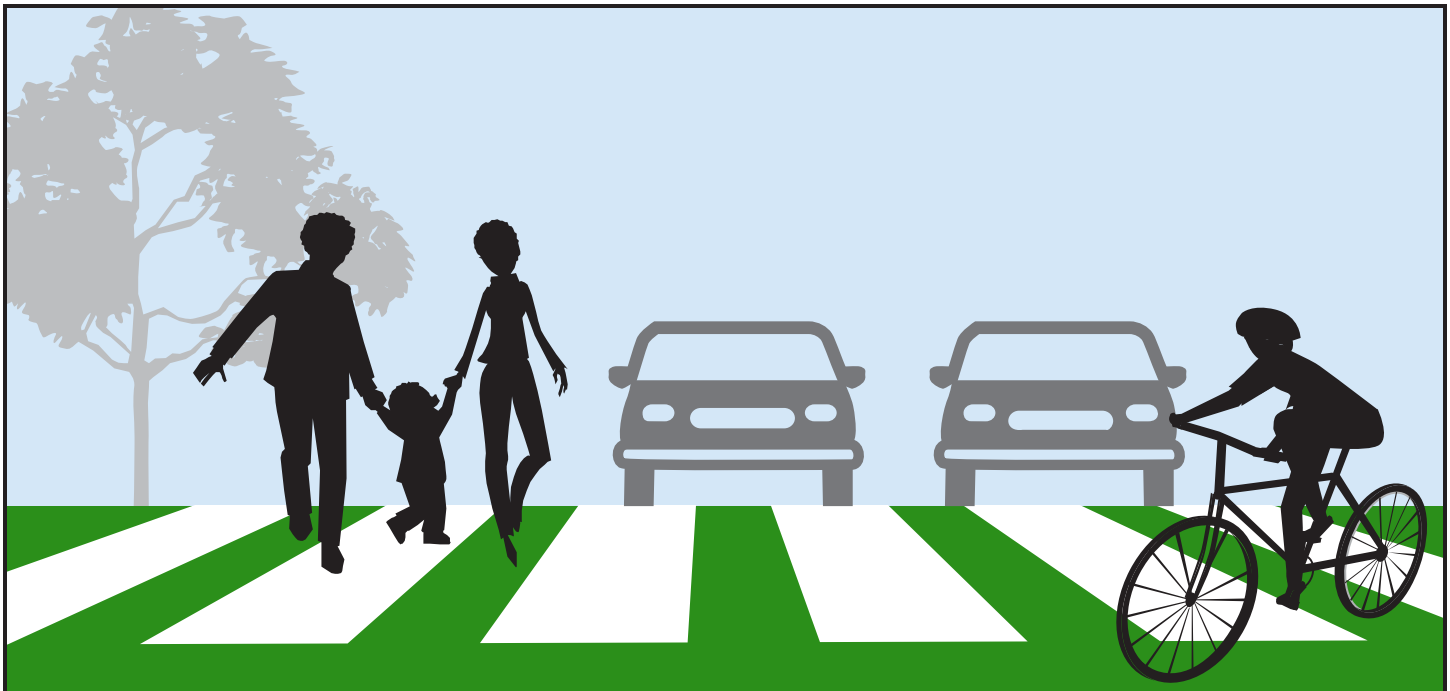

Aumsville

Transportation System Plan

Prepared for

City of Aumsville
595 Main Street
Aumsville, OR 97325

City of Aumsville

Aumsville Transportation System Plan

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595 Main Street
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October 2010

Acknowledgments

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Parametrix. 2010. Aumsville Transportation System Plan. Prepared by Parametrix, Portland, Oregon. October 2010.

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ACRONYMS

ADA	Americans with Disabilities Act
ADT	Average Daily Traffic (volume)
CARTS	Chemeketa Area Regional Transportation System
CBD	Commercial Business District
CIP	Capital Improvement Plan
DLCD	(Oregon) Department of Land Conservation and Development
DUs	Dwelling Units
EB	Eastbound
ECO	Employee Commute Options
EDU	Equivalent Dwelling Unit
FRA	Federal Railroad Administration
HCM	Highway Capacity Manual
HDM	Highway Design Manual
HV	(30) HV refers to 30th highest hourly traffic volume
Hwy	Highway
IAMP	Interchange Area Management Plan
ID	Interchange Development (zone)
ITE	Institute of Transportation Engineers
KSF	Thousand Square Feet
LID	Local Improvement District
LOS	Level of Service
MEV	Million Entering Vehicles
MUTCD	Manual on Uniform Traffic Control Devices
NB	Northbound
NHS	National Highway System
OAR	Oregon Administrative Rules
OBPP	Oregon Bicycle and Pedestrian Plan
ODDA	Oregon Downtown Development Association
ODOT	Oregon Department of Transportation
OECDD	Oregon Economic and Community Development Department
OHP	Oregon Highway Plan
ORP	Oregon Rail Plan
ORS	Oregon Revised Statues
OTIB	Oregon Transportation Infrastructure Bank
OTP	Oregon Transportation Plan
PAC	Planning Advisory Committee
PCI	Pavement Conditions Index
PDO	Property Damage Only
PDX	Portland International Airport
RTEP	Regional Transportation Enhancement Plan
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SAMTD	Salem Area Mass Transit District
SB	Southbound
SCA	Special Small City Allotment
SDC	System Development Charge

ACRONYMS (CONTINUED)

SPIS	Safety Priority Index System
SOVs	Single Occupant Vehicles
STAC	Special Transportation Advisory Committee
STF	Special Transportation Funds
STIP	State Transportation Improvement Program
Synchro	HCM compatible traffic analysis software for intersections
TAC	Technical Advisory Committee
TAZ	Transportation Analysis Zone
TDM	Transportation Demand Management
TGM	Transportation and Growth Management
TIA	Traffic Impact Analysis
TPAU	Transportation Planning Analysis Unit (of ODOT)
TPR	Transportation Planning Rule (Oregon state planning goal 12)
TSDC	Transportation System Development Charge
TSM	Transportation System Management
TSP	Transportation System Plan
TSPC	Traffic Signal Preemption Control
UGB	Urban Growth Boundary
V/C	Volume-to-capacity (ratio)
WB	Westbound
MVMT	Million Vehicle Miles Traveled

1. INTRODUCTION AND EXECUTIVE SUMMARY

We all rely on transportation systems to get us where we are going, to transport goods to and from our communities, and to connect us to the services we depend on. Not only do our lives and economic livelihoods depend on access to transportation, it can also affect how our community looks and how we live. Transportation facilities can define the character of our neighborhoods, providing safe and efficient ways for our families to get around to all kinds of activities.

The Aumsville transportation system is part of everyday life and serves as a backbone for the community. The Transportation System Plan (TSP) is the City's long-term plan for managing and improving its transportation system in a way that supports community livability and encourages local economic development. The Plan sets a vision for the City's transportation system, and seeks to integrate that vision with the City's adopted policy, code, and standards. The Plan also provides a list of needed transportation improvement projects that could be implemented through the City's Capital Improvement Plan (CIP), development review or grant funding. The TSP planning process provided an opportunity for the community to engage in a discussion about the transportation vision, and to determine how that vision could best be realized.

1.1 PURPOSE OF A TSP

One of the primary purposes of a TSP is to fulfill the State of Oregon Transportation Planning Rule (TPR) requirements for comprehensive transportation planning in cities throughout the state. But beyond state requirements, preparation of a TSP provides Aumsville with the opportunity to better understand how its transportation system works, where problems exist or might develop over time as the city grows and what types of policies and specific improvements are needed to ensure that the system continues to function in a way that meets the needs of local residents and businesses.

More specifically, the TSP can be used by the City as a guiding document for long term transportation system development and management. It presents the City's goals and policies for its transportation system, while outlining and prioritizing proposed improvements for automobiles, pedestrians and bicycles, public transportation, freight, rail and all other types or modes of transportation. The TSP strives to determine existing problem areas for all modes of transportation, looks into the future to identify the needs created by growth, and provides solutions to existing and future needs along with guidelines to develop the desired multimodal transportation system. Identifying specific transportation system needs will help the City guide its future transportation system investments and determine how land use and transportation decisions can be brought together beneficially for the community.

1.2 WHO WAS INVOLVED IN DEVELOPING THE TSP?

The technical findings and recommendations developed by the team were refined through a long-term public involvement process. The process included field visits, formation and three meetings of the Project Advisory Committee (PAC), six meetings of the Technical Advisory Committee (TAC), two Public Events including an Open House for project recommendations, work sessions with the City Council and Planning Commission, as well as final adoption hearings. Project materials were made available to all who inquired and were available at City Hall.

1.3 HOW WAS THE TSP DEVELOPED?

The preparation of the Aumsville TSP followed a multi-step process that included evaluating the state and local policy context for the plan, the existing transportation system and its limitations, community growth expectations and likely future traffic congestion problems, improvement options to address short- and long-term needs, selection of recommended improvements and development of an implementation strategy. At every stage, development of the plan was informed and assisted by PAC and TAC meetings, public events, and City Council and Planning Commission briefing where transportation issues and community concerns were fully discussed.

1.4 TSP EXECUTIVE SUMMARY

The TSP Executive Summary presents highlights of the planning process, policies, recommendations and implementation strategy that is included in the full document as presented in Chapters 2 through 8. The Executive Summary presents the following steps in the plan development process:

- Establish Goals and Policies
- Review of Plans and Policies
- Describe Existing Conditions
- Forecast Future Traffic Conditions
- Identify Needs and Potential Improvements
- Develop Recommendations
- Identify Financing for Transportation Projects

Establish Goal and Policies

The TSP goal and policy statements were established to define the community's vision of its transportation system, and to guide future City actions in managing and developing that system. The TSP goal and policies were adapted from the City's Comprehensive Plan (November 1999) that includes a transportation element with several goals and objectives related to the provision, operation and maintenance of the city's transportation system.

The Comprehensive Plan recognizes the need for the following actions:

- To identify streets, curbs, sidewalks, bikeways and pedestrian ways that need repair/construction and the need to prioritize their improvement into a capital improvement program.
- To work with public and private agencies to promote the use of van pools and park and ride.
- To enhance street connectivity.
- To enhance non-automobile modes of transportation through the construction of bicycle and pedestrian accessways.
- To identify places where the installation of bicycle parking facilities may be needed.

In addition to the Comprehensive Plan, the Oregon Downtown Development Association (ODDA) completed an assessment in October of 2001 that included recommendations for strengthening the downtown's image and sense of community, as well as strategies to

improve pedestrian and bicycle circulation and safety within the City. In 1999, the City developed a Visioning Plan to guide the provision of infrastructure and public services. This Plan is updated on an on-going basis. The October 2008 version was reviewed for purposes of this report.

Each of these documents provides a foundation for establishing goals and objectives to guide the analysis of transportation issues within the city and developing transportation system improvements for the TSP.

Goal: To provide a balanced, multi-modal, safe, convenient, cost-effective and efficient transportation system for Aumsville.

Policies:

1. Aumsville shall develop a coordinated transportation system that facilitates the mobility and accessibility of community residents in a safe and efficient manner, and encourages alternatives to and reduced reliance upon the single-occupant automobile.
2. Aumsville shall promote the development and maintenance of all transportation modes including bikeways, pedestrian ways, and public transportation to all planned land uses, while minimizing adverse environmental impacts.
3. The major street network should function so that livability of neighborhoods is preserved and enhanced, and arterial streets should avoid penetrating identifiable neighborhoods.
4. In those areas where the City has designated a future street location, the City shall ensure the preservation of right-of-way by requiring that all structures and other permanent improvements be located outside of the proposed street rights-of-way
5. Aumsville shall encourage through access over cul-de-sacs and other dead end streets.
6. Aumsville shall cooperate with and support regional public transportation planning efforts, including working with public and private agencies to promote the use of van pools and park and ride.
7. Aumsville shall promote and give high priority to bike and pedestrian ways in the downtown area, and in the vicinity of Aumsville Elementary School and parks, including development of a Safe Routes to School Action Plan as funding is available and the identification of locations where bicycle parking may be needed.
8. New construction shall provide bicycle and pedestrian facilities that provide safe and convenient access within, to, and from new subdivisions, planned developments, shopping centers and industrial parks to nearby residential areas, transit stops, and neighborhood activity centers, such as schools, parks and shopping.
9. Aumsville shall protect the function of rail facilities in the City if feasible and develop and implement strategies that minimize conflicts with other transportation modes and adjacent land uses.
10. Aumsville shall coordinate with the Oregon Department of Transportation (ODOT) and Marion County in the planning and provision of transportation services and in the implementation of the ODOT State Transportation Improvement Program (STIP) and provisions of the Oregon Highway Plan (OHP).
11. Aumsville should utilize the Transportation System Plan for guidance in all land use planning and project development activities.

12. Aumsville shall develop and regularly update, prioritize and maintain a Capital Improvements Program that identifies streets, curbs, sidewalks, bikeways and pedestrian ways that need repair/construction.
13. Aumsville shall involve the public in the transportation planning process to encourage community support for the TSP.

Implementation:

1. Enhance street connectivity through the identification and extension of dead-end streets and cul-de-sacs.
2. Enhance non-automobile modes of transportation through the construction of bicycle and pedestrian accessways in long blocks and cul-de-sacs.
3. Identify places where the installation of bicycle parking facilities may be needed.

Review Plans and Policies

As an initial step in the planning process, the applicable City, County, and State plans and policies relevant to the transportation planning process were reviewed. The purpose of this review was to provide a policy context for the planning effort, help ensure that proposed projects were consistent with existing relevant plans and policies, and aid in the development of implementing ordinances for the transportation plan.

All transportation improvements are subject to numerous state and federal requirements and are influenced by the transportation plans of other jurisdictions, transportation studies that have been previously conducted in the community, and other transportation-related documents and standards. The City and County TSPs serve to guide development of transportation improvements in the study area. The following laws, plans, programs and other documents have been reviewed. A detailed discussion of these documents is available in TSP *Technical Memorandum #4: Existing Plans, Policies, Standards and Laws.*

- Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (2005) (Federal transportation funding legislation)
- Federal Americans with Disabilities Act (ADA)
- Oregon Transportation Plan (2006)
- Oregon Transportation Planning Rule (last major amendment 2003)
- Oregon Highway Plan (1999, as amended)
- Oregon Highway Design Manual (2003)
- Oregon Administrative Rules regarding access management (OAR 734-051)
- Freight Moves the Oregon Economy (1999)
- Statewide Transportation Improvement Program 2008-2011
- Oregon Bicycle and Pedestrian Plan (1995)
- City of Aumsville Comprehensive Plan (adopted 1999)
- City of Aumsville Development Ordinance
- Marion County Comprehensive Plan, Transportation Element (adopted 1998 and updated 2005)
- Marion County Rural TSP (2005)
- City of Aumsville Comprehensive Plan (2009)
- City of Aumsville Visioning Plan (2008)

- Oregon Downtown Development Association's Resource Team Program Evaluation for City of Aumsville (2003)
- Aumsville Economic Opportunities Analysis (2002)
- Aumsville Development Ordinance (2010)

Describe Existing Conditions

An early activity in the TSP planning process involved a review of existing multi-modal transportation conditions to determine how well that transportation system currently operates. Roadway and intersection traffic volumes, sidewalk, bike lane and pavement conditions, public transportation and travel demand management activities, as well as rail, air, water and pipeline transportation were all reviewed with the goal of understanding the City's transportation system and to highlight any short-term needs for improvement. Additional detail related to these topics can be found in Chapter 2.

Forecast Future Traffic Conditions

One objective of a TSP is to evaluate the needs and deficiencies in the multi-modal transportation system over time as a community's comprehensive land use plan is implemented. Typically, TSPs will address a 20-year planning horizon and will be based on the level of growth and development that is expected to occur during that time period. An in-depth analysis of future (2030) transportation system needs was prepared for two separate land use scenarios for the 2030 planning horizon year: The first assumed build-out of the City's land use plan within the existing Urban Growth Boundary (UGB). The second evaluates a limited expansion of the UGB to accommodate added development beyond current Comprehensive Plan designations. While this scenario has no official standing as adopted land use policy, the analysis provides the opportunity to address the effects of one potential development scenario beyond the current UGB boundaries to accommodate the full complement of community population and employment growth that is anticipated by 2030.

Scenario 1: UGB Build-out

Community Growth Assumptions

There is an estimated 251 acres available for development within the existing Aumsville UGB. Slightly more than 94 acres is zoned for single family residential uses which could accommodate approximately 417 new dwelling units (at 4.44 dwelling units per acre per the Aumsville Comprehensive Plan). This represents a population increase of nearly 1,169 persons (based on the 2.8 persons per household rate assumed in the Comprehensive Plan). Approximately 31 acres is zoned for multi-family residential uses which could accommodate about 247 new dwelling units (at 7.96 per acre) and 691 persons. Collectively, buildable single and multi-family acreage within the existing UGB could accommodate an additional 1,860 persons and, when added to the existing population of 3,535, would bring the total to be accommodated to 5,395 persons. This compares with a 2030 population forecast for the City of 5,706[1].

A modest amount of commercially-zoned land is available for development within the UGB (about 4 acres), however, the Interchange Development (ID) zone could also be used to accommodate appropriate commercial development that met the purpose of the zone and did not adversely compete with the downtown commercial core. Approximately 12 acres of the land designated as "public" represents the proposed school on the Baptist Church property

[1] 2030 Population Forecast for cities in Marion County, Marion County, May 2009.

along 1st Street. Figure 3-3 illustrates the locations of buildable lands where future development could occur.

Traffic Projections

Based on the land development expectations described above, forecasted future (2030) traffic volumes were prepared for Scenario 1. A total of 2,852 new peak hour trips are anticipated to be generated by community growth within the UGB between 2009 and 2030. These trips were assigned to the city's street system consistent with where development is expected and where people are likely to be traveling. Future turning movement projections were prepared for each study area intersection and evaluated to determine the need for future intersection and roadway system improvements.

Scenario 2: Plus UGB Expansion

Community Growth Assumptions

An analysis was conducted by the City in coordination with the Department of Land Conservation and Development (DLCD) to identify the additional acres by zoning type that could be needed over the next 20 years within the Aumsville UGB to meet community growth expectations.

In general, it is anticipated that urban growth boundary expansion may occur predominantly to the east and west of the city due to the physical constraints that exist on the north and south (e.g., wetland and 100-year floodplains/floodways). Figure 3-4 illustrates the locations of buildable lands where future development could occur with the proposed UGB expansion. However, it should be noted that future growth may not actually occur exactly as depicted in this figure.

Within the areas proposed for UGB expansion it is assumed that there would be approximately 28.5 acres of new single family residential development, 15.4 acres of multi-family residential development, 8 acres of commercial use (including downtown), 12.7 acres of industrial use and 26.6 acres of public use, primarily a new park to be located east of Bishop Road and immediately south of OR 22. A total of 91 additional acres would be added to the existing UGB with this expansion.

Traffic Projections

Based on the land development expectations described above, forecasted future (3020) traffic volumes were prepared for Scenario 2. A total of 916 new peak hour trips are anticipated to be generated by community growth with the UGB Expansion by 2030. These trips are additive to the trips identified with Scenario 1. Trips were assigned to the city's street system consistent with where development is expected and where people are likely to be traveling. Future turning movement projections were prepared for each study area intersection and evaluated to determine the need for future intersection and roadway system improvements.

Identify Needs and Potential Improvements

Based on an assessment of the existing transportation system and the development expectations under land use Scenarios 1 and 2, roadway improvement needs and potential improvements were identified. The following paragraphs briefly highlight key findings related to transportation improvement needs.

Roadway Needs Assessment with Scenario 1

Using the 2030 pm peak hour traffic projections prepared for Scenario 1, traffic operations analysis was conducted. Analysis results were compared with existing mobility standards to determine where deficiencies in the system might exist. Analysis results indicate that many of

the existing intersections in the Aumsville UGB are expected to operate within their applicable performance standards with the addition of 2030 peak hour traffic volumes. However, there are several locations where the standards would be exceeded and a future improvement need has been identified. These locations include:

- **Shaw Highway at OR 22**: For left turns from the eastbound off-ramp (V/C > 2.0, LOS F)
- **1st Street at Del Mar Drive**: For eastbound and westbound stop-controlled side street movements (V/C >2.0, LOS F)
- **1st Street at Main Street**: For the southbound stop sign controlled side street movements (V/C 1.94, LOS F)
- **11th Street at Olney Street**: For the eastbound stop sign controlled movements (V/C 1.68, LOS F)

Analysis of traffic back-ups or queues indicates that the eastbound right turn movement at the intersection of OR 22 with the westbound ramps would exceed its available vehicle storage, as would the eastbound left turn at the intersection of 1st Street with Main Street. Traffic queues are expected to spill back into the adjacent intersection for the westbound movement on East Del Mar Drive at 1st Street (based on anticipated site plan for development of this facility) and the southbound movement on 1st Street at Main Street. It is further anticipated that eastbound traffic on Del Mar Drive may periodically queue back over the railroad tracks while waiting to turn onto 1st Street.

Roadway Needs Assessment with Scenario 2

Based on the analysis of traffic volumes that would be generated with the UGB expansion (these are additive to the volumes based on development within the UGB), traffic operational deficiencies can be expected to occur at the same locations identified above for Scenario 1 with higher levels of congestion and delay. In addition, several new problem locations are expected including:

- **Shaw Highway at OR 22**: For left turns from the westbound off-ramps (westbound V/C 0.82, LOS F) with a worsening of already failing operations at the eastbound off ramp (eastbound V/C > 2.0, LOS F)
- **1st Street at Cleveland Street**: For eastbound stop sign controlled side street movements (V/C 0.89, LOS F)
- **1st Street at Main Street**: For the northbound stop sign controlled side street movements (northbound V/C 0.33, LOS F) with a worsening of the already failing southbound side street movements (southbound V/C >2.0, LOS F).
- **11th Street at Olney Street**: For westbound stop sign controlled side street movements (V/C >2.0, LOS F) with a worsening of the already failing eastbound side street movements (V/C >2.0, LOS F)

Traffic queuing results indicate that available vehicle storage will be exceeded in a number of locations. These include the eastbound right turn lane at the intersection of OR 22 with the westbound ramps at Shaw Highway, and the eastbound left turn lane at the intersection of 1st Street with Main Street.

Additionally, substantial traffic queues are anticipated for through traffic movement at several locations including: the westbound left turn lane at the intersection of OR 22 with the eastbound ramps at Shaw Highway (575-foot back-up is anticipated), the westbound direction on East Del Mar Drive at 1st Street with an estimated queue in excess of 600 feet, and 1st Street at Main Street with a southbound queue of 525 feet. It is further anticipated that

eastbound traffic on Del Mar Drive may periodically queue back over the railroad tracks while waiting to turn onto 1st Street.

Bicycle and Pedestrian System Needs

Aumsville has relatively good coverage by a pedestrian circulation system. This system is primarily comprised of sidewalks, although in some locations a widened shoulder is provided. The only designated bicycle lane in Aumsville is along Main Street between 1st and 11th Streets. Notable deficiencies in the existing pedestrian system include:

- Along 1st Street/Shaw Highway for its entire length
- Along the west side of much of 11th Street
- Along portions of Cleveland Street, Church Street, and Washington Street
- Along the south side of Willamette Street
- Along the entire length of Bishop Road
- The mobile home subdivision located north of Mill Creek Road and east of the Willamette Valley Railroad also lacks sidewalks

During the development of the existing transportation system inventory and needs analysis input was provided by the PAC and TAC. Key issues or concerns raised included:

- Narrowness of 1st Street between OR 22 and Main Street is problematic in that there can be conflicts between general traffic and large (16-foot wide) farm equipment when these machines move through the city from field to field. Additionally, there are no pedestrian or bicycle facilities along this street, and there exist large drainage ditches which raise the cost of widening the road and/or adding sidewalks.
- Need to enhance and add to the sidewalk system in the older portion of the city including:
    - Pedestrian crossings for people crossing Main Street to reach the Post Office or grocery store (a crossing at 3rd Street was emphasized and this improvement has been approved by Marion County and awaits installation of ADA-compliant ramps by the city for implementation),
    - Improvements to the south frontage of Main Street (recent sidewalk improvements were made to the north side and a similar improvement with street lighting is envisioned along the south side)
    - More protected pedestrian crossing of Main Street at 11th Street near the city park. Curb extensions and/or median refuges are not encouraged along Main Street due to the movement of the large farm equipment along both this street and 1st Street.
    - School zone flasher for southbound traffic approaching school zone on 11th Street in vicinity of Olney Street.
    - Crosswalks along 1st Street.

The City and Marion County recently received a grant from ODOT to add bicycle and pedestrian system improvements along a segment of 1st Street north of Main Street. On the west side of 1st Street these improvements would extend northward to Willamette Street. On the east side, they would extend north to Cleveland Street.

Evaluate Improvement Options

To address the existing and future transportation system deficiencies, a series of improvement options were developed and evaluated. These options include such actions as:

- Improvements to existing facilities such as lengthening or adding lanes, traffic control, intersection modifications, shoulder widening and/or added bicycle lanes.
- New facilities to provide increased connectivity within Aumsville and/or to provide sidewalks.
- Transportation System Management (TSM) measures such as access management to improve the operations of the existing roadway system, and/or installation of traffic signals.
- Transportation Demand Management (TDM) measures such as carpooling, telecommuting, flextime, employer-based transit, or other strategies to reduce travel demand on the roadway system.
- Land use changes to reduce or modify travel demand.

Improvement options were evaluated using criteria that were developed from the draft transportation goals and objectives, using input from the PAC and TAC. The evaluation criteria were intended to measure the effectiveness of proposed strategies to ensure the long-term safety and operations of the community's transportation system. Ten criteria are presented below in five major categories of performance measurement:

- Mobility and Accessibility:
  - Provide for smooth traffic movement through the OR 22/Shaw Highway interchange consistent with OHP criteria, and at other key intersections consistent with City and Marion County operational standards.
  - Enhance multi-modal system connectivity for all users.
  - Ensure consistency of improvement recommendations with City and County Comprehensive Plans, the Oregon Highway Plan, the Oregon Transportation Plan, the Transportation Planning Rule, and ODOT design and access management standards.
- Safety:
  - Strive to improve safety of the transportation system for all travel modes.
- Multi-modal Transportation:
  - Ensure adequate and safe access and circulation for non-motorized travel modes.
  - Provide a balanced transportation system that accommodates all modes of travel.
- Built and Natural Environment:
  - Minimize potential impacts to the built and/or natural environment associated with any potential improvements.
  - Minimize potential impacts on available ID zoned land available for economic development.
- Fiscal:
  - Minimize construction costs of any potential improvements.
  - Evaluate potential improvements in relation to anticipated funding levels.

Develop Recommendations

The Aumsville TSP focuses on Aumsville's transportation needs and the decisions that must be made to ensure that the system meets the community's expectations over the long-term. Participants in the planning process created a set of recommendations that implement state transportation planning policies, but are tailored to Aumsville's current and future needs.

From all of the input that citizens and businesses offered during the TSP process, there were some clear messages. The highest priorities for improving transportation in Aumsville are:

- Ensure that the community's small town feel and quality of life is maintained while accommodating the need for local economic development.
- Improve pedestrian and bicycle facilities throughout the city.
- Maintain existing facilities.
- Improve safety.

Collectively, the transportation mode-specific plan elements in Chapters 4 through 7 of the TSP describe the proposed capital and operational improvements to the transportation system between 2010 and 2030. While these potential improvements are presented as benefiting one mode, when possible, multiple modes are combined into one project. For instance, the 1st Street road-widening project listed in the Roadway Element could include new bike lanes and sidewalks, as well as improvements for freight mobility and rail safety. The following paragraphs briefly highlight key findings related to transportation improvement recommendations.

Roadway System Improvements

Safety Considerations

Some of the existing safety concerns that were identified during the assessment of existing transportation conditions would be addressed by one or more of the short- or long-term improvement recommendations identified in this chapter. Additional safety issues that should be addressed include:

- In conjunction with roadway improvement projects and/or land development activities, implement access management strategies along Main, 1st and 11th Streets to minimize the number of driveways to reduce collisions and enhance safety.
- Evaluate a speed zone reduction along Main Street through the city from 30 mph to 25 mph.
- Address sight distance constraints on Main Street eastbound approaching the railroad crossing.

Short Term Improvements

Through the evaluation of the existing transportation system in Aumsville, the following potential short-term improvement opportunities have been identified and are illustrated in Figure S-1:

- #ST-1: Pedestrian connection between Del Mar Drive and 11th Street.
- #ST-2: Pedestrian connections between Carmel Street and Windemere Street.
- #ST-3: Develop multi-use path on the east side of 1st Street, east of drainage ditch using the existing church and perhaps other easements, from Willamette Street north, with select designated crossings of drainage and 1st Street to the west.
- #SR-4: Add southbound left turn lane on 1st Street at Willamette Street as an interim improvement pending the long-term widening of 1st Street as discussed below under "Long-Term Improvements". A concept drawing illustrating this improvement is included as Figure E-1 in Appendix E.

- #ST-5: Consider adding traffic calming treatments to slow traffic along Main Street such as street trees, mixed pavement treatment and/or other visual traffic calming improvements.
- #ST-6: Designate and install signage at pedestrian crosswalks.
- #ST-7: Consider adding flashers for 20 mph speed zone for southbound traffic entering the City and approaching the intersection with Olney Street, and/or other measures to calm or slow traffic near the Aumsville Elementary School. Evaluate options for segregating bus traffic on Olney Street from automobiles entering the school site on 11th Street.

Long-Term Improvements

Table S-1 summarizes the recommended street system improvements identified for the two land use scenarios. Long-term recommendations for Scenario 1 are shown in Figure S-2. Long-term recommendations for Scenario 2 are illustrated in Figure S-3.

Table S-1. Recommended Street Improvements

No.	Intersections	Scenario 1: Improvements Needed with UGB Build-out	No.	Scenario 2: Improvements Needed with UGB Build-out and Expansion
	Shaw Highway @ Brownell Drive	• None needed		• None needed
	Shaw Highway @ OR 22 WB Ramps	▪ None needed	X-1	• Widen and restripe for separate NB left
1	Shaw Highway @ OR 22 EB Ramps	▪ Signalize and add SB left, and 2nd WB left ▪ Widen 1st Street south of intersection for approx. 600 feet to provide 2 northbound and 2 southbound thru lanes	X-2	• Add direct ramp from OR 22 for east-to-south traffic merging into 2nd SB thru • Signalize intersection and add SB left. Modify existing off-ramp to allow right turns only • Widen 1st Street south of intersection for approx. 600 feet to provide 2 northbound and 2 southbound thru lanes
2	1st Street @ Del Mar Drive	• Install traffic signal, and widen to add 2nd NB and SB thru lanes approx. 500 feet north of intersection and 300 feet south • Align with new road to east of 1st Street including addition of left turn lanes for all movements, and WB right turn lane • Transition back to single NB and SB thru lanes between Del Mar Drive and Willamette Street ▪ Improve railroad crossing of Del Mar west of intersection and install automatic gates, interconnect with signal on 1st	X-3	• Same as Scenario 1 plus addition of second SB left turn lane
3	East Del Mar Drive, 1st Street to Bishop Road	• Construct new 3-lane urban roadway with bike lanes and sidewalks	X-4	• Same as Scenario 1

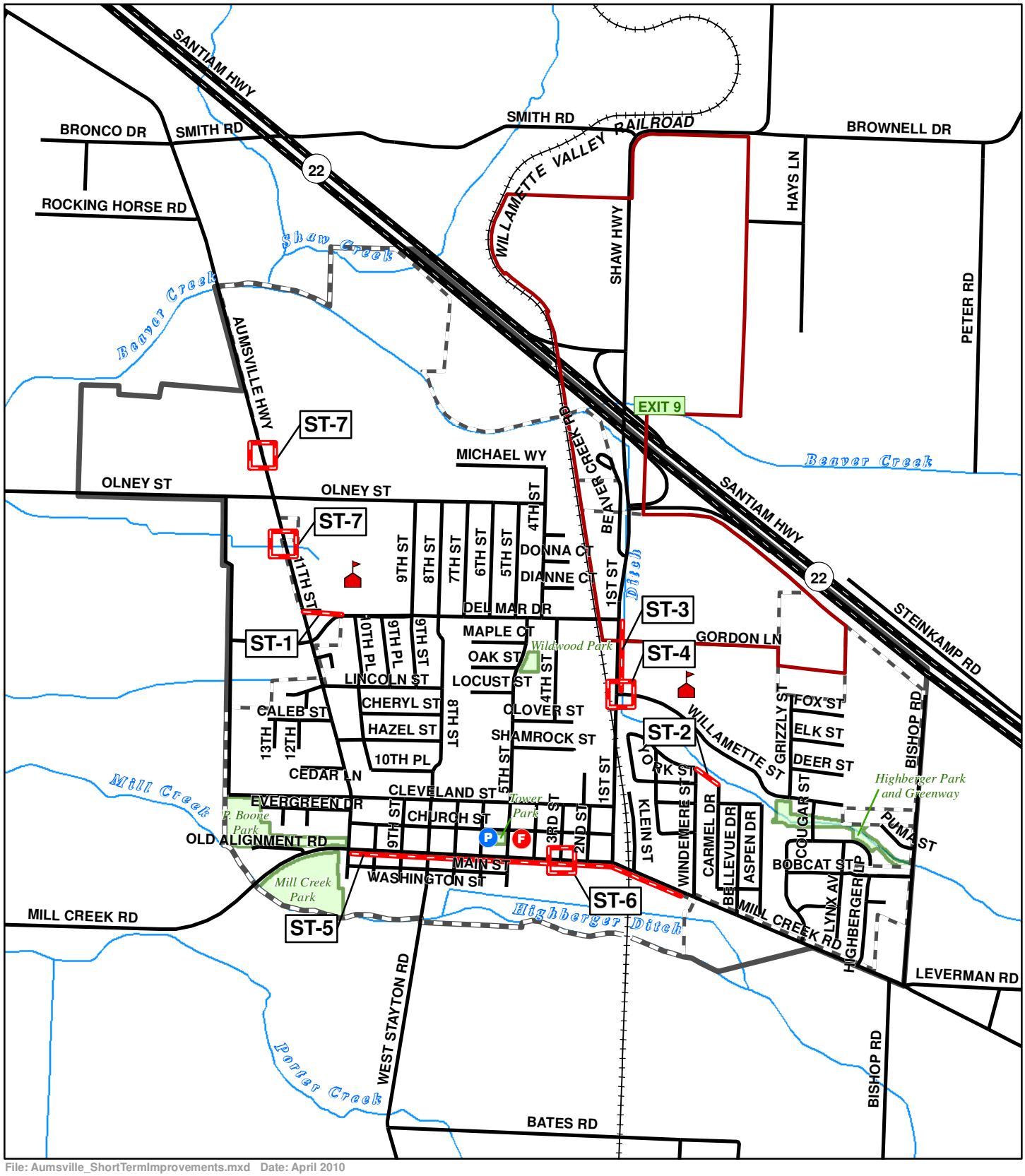
Table S-1 Continued. Recommended Street Improvements

No.	Intersections	Scenario 1: Improvements Needed with UGB Build-out	No.	Scenario 2: Improvements Needed with UGB Build-out and Expansion
4	1st Street @ Willamette Street	• Install southbound left turn lane • Complete transition for approx. 300 feet from north and improve 2-lane cross-section with bike lanes and sidewalks for approx. 650 feet to south • Install railroad crossing gates and relocate local street access on west side of 1st Street	X-5	• Same as Scenario 1
	1st Street @ Cleveland Street	• None needed	X-6	• Signalize • Add NB left turn lane
	1st Street @ Church Street	• None needed	X-7	• Install median and convert Church access to right-in/right-out
5	1st Street @ Main Street	• Signalize intersection, add bike lanes and sidewalk enhancements • Install automatic railroad gates and interconnect with signal at 1st	X-8	• Same as Scenario 1 plus addition of SB left and WB right turn lanes
6	8th Street @ Main Street	• Modify SE corner curb radii to better accommodate large trucks	X-9	• Same as Scenario 1
	11th Street @ Main Street	• None needed		• None needed
	11th Street @ Church Street	• None needed		• None needed
	11th Street @ Cleveland Street	• None needed		• None needed
	11th Street @ Lincoln Street	• None needed		• None needed
7	11th Street @ Olney Street	• Signalize	X-10	• Same as Scenario 1 plus addition of NB and SB left turn lanes
8	Willamette Street, eastern terminus to Puma Street	• Complete street connection to Bishop Road	X-11	• Same as Scenario 1
9	14th Street, Olney Street to Cleveland Street	• Construct new urban street with bike lanes and sidewalks	X-12	• Same as Scenario 1
10	Del Mar Drive, 14th Street to 11th Street	• Construct new urban street with bike lanes and sidewalks	X-13	• Same as Scenario 1
11	Cleveland Street, 14th Street to 11th Street	• Construct new urban street with bike lanes and sidewalks	X-14	• Same as Scenario 1

Source: Parametrix, Inc. 2009

Bicycle and Pedestrian System Improvements

Table S-2 summarizes recommended improvements to the bicycle and pedestrian system. These recommendations are also illustrated in Figures S-4 and S-5 for bicycles and pedestrians, respectively. This list of improvement projects is intended to address the following



File: Aumsville_ShortTermImprovements.mxd Date: April 2010

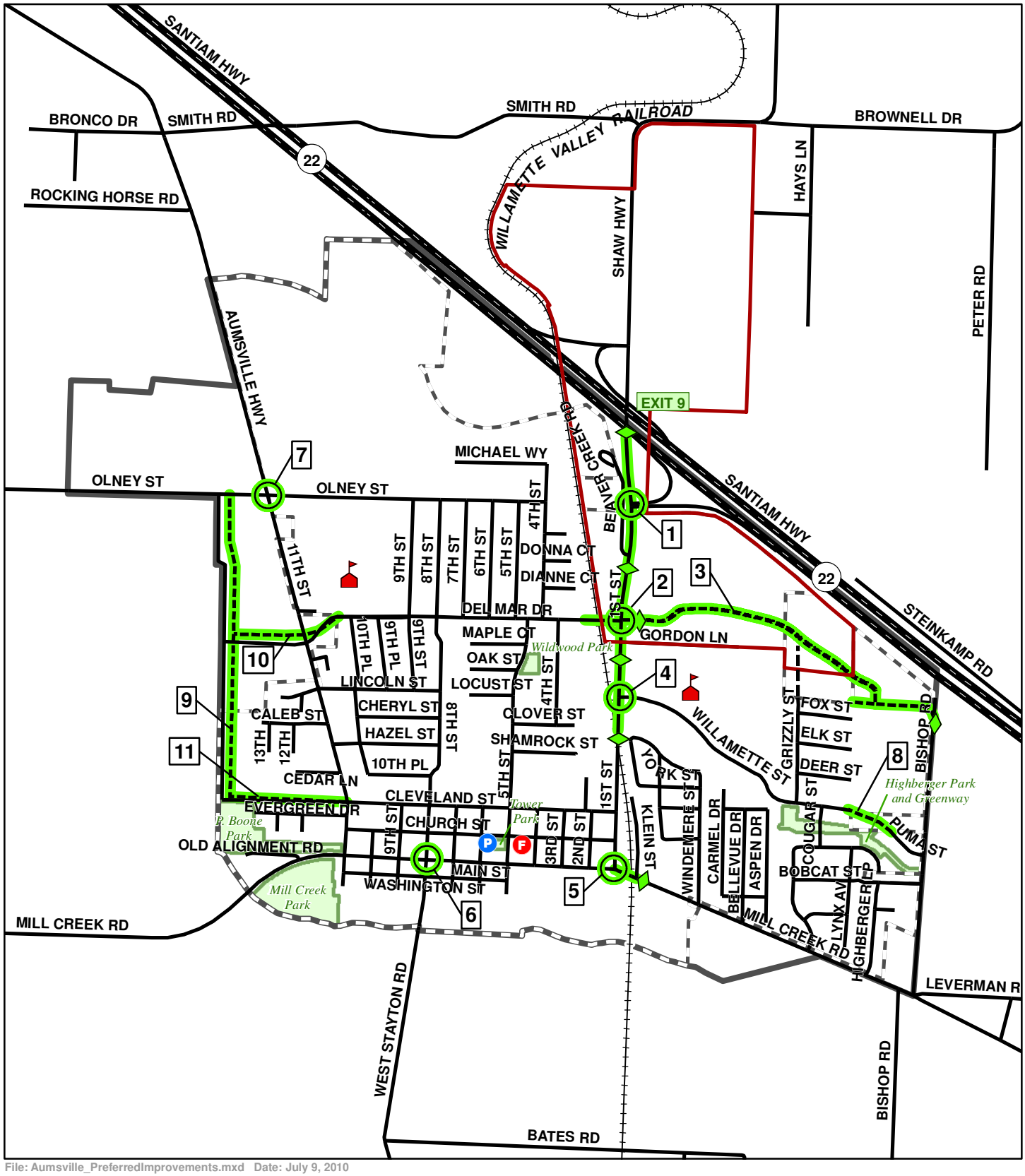
- Highway
- Street Centerline
- Willamette Valley Railroad
- Aumsville Fire Department
- School
- Aumsville Police Department
- Interchange Area Management Plan Boundary
- City Limits
- Urban Growth Boundary
- Park
- Streams and Drainage Ditches
- Short-Term Transportation Improvements
- ST-6 (Project Number)

N

500 0 500

SCALE IN FEET

Figure S-1
Short-Term Transportation Improvements



File: Aumsville_PreferredImprovements.mxd Date: July 9, 2010

N

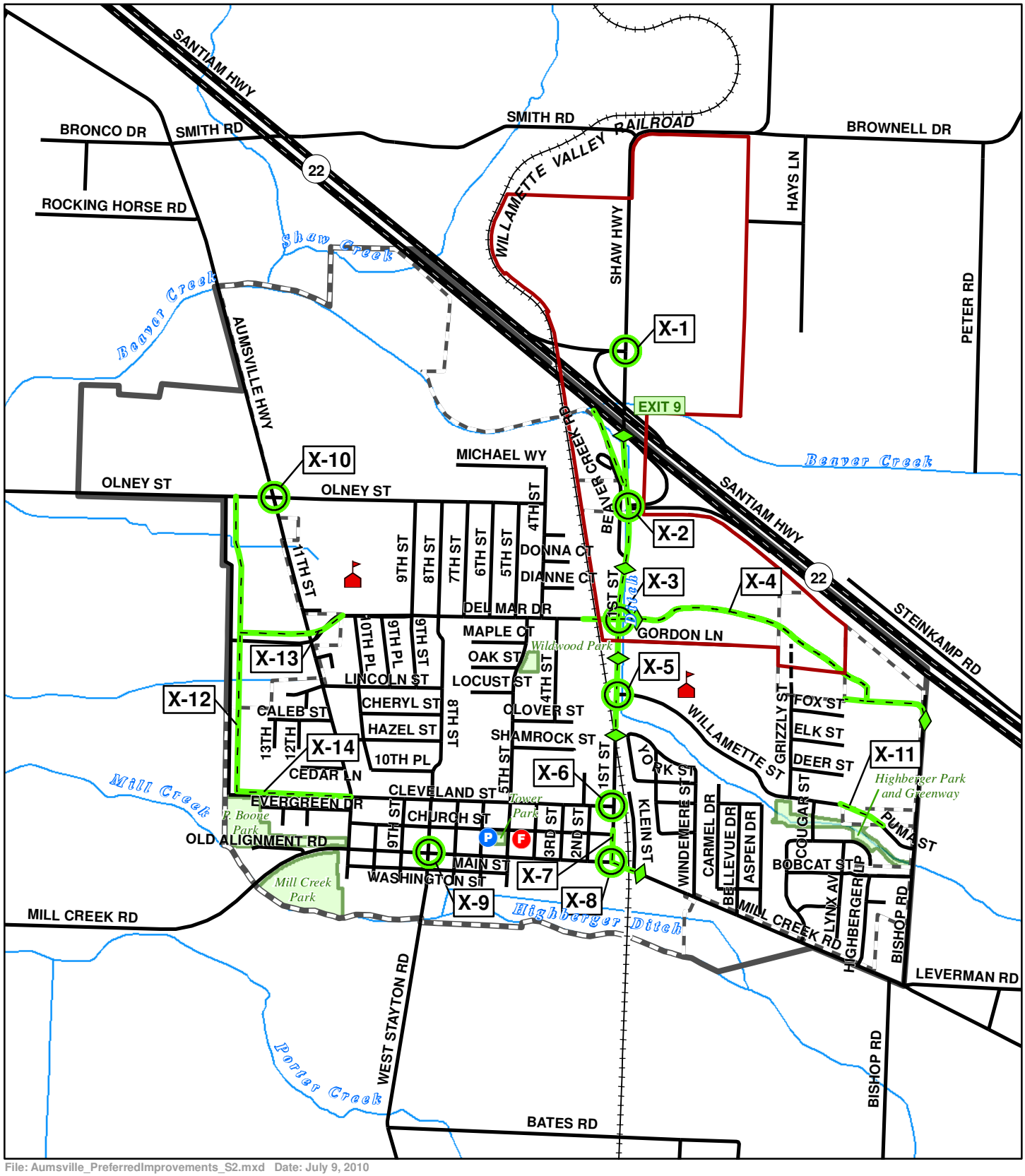
500 0 500

SCALE IN FEET

- Highway
- Street Centerline
- Willamette Valley Railroad
- Aumsville Fire Department
- School
- Aumsville Police Department
- Project Limits
- Interchange Area Management Plan Boundary
- City Limits
- Urban Growth Boundary
- Park
- Streams and Drainage Ditches
- New Road
- Intersection and Street Improvements
- 6 (Project Number)

Figure S-2

Long-Term Street Improvements with Scenario 1: UGB Build-out



File: Aumsville_PreferredImprovements_S2.mxd Date: July 9, 2010

- Highway
- Street Centerline
- Willamette Valley Railroad
- Aumsville Fire Department
- School
- Aumsville Police Department
- Project Limits
- Interchange Area Management Plan Boundary
- City Limits
- Urban Growth Boundary
- Park
- Streams and Drainage Ditches
- Intersection and Street Improvements X-6 (Project Number)

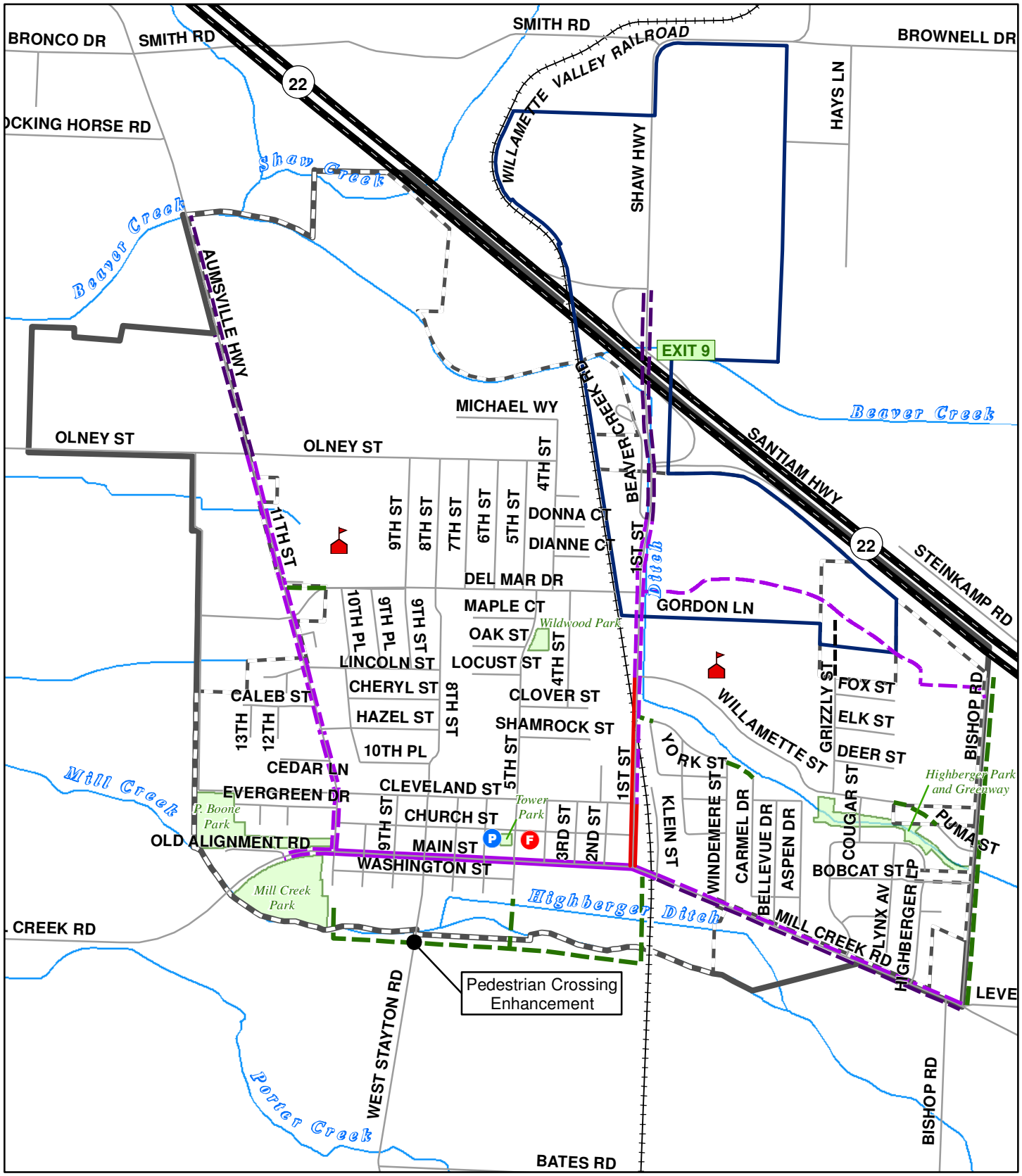
N

500 0 500

SCALE IN FEET

Figure S-3

Long-Term Street Improvements with Scenario 2: Plus UGB Build-out



File: Aumsville_BikePed_Improvements.mxd Date: July 9, 2010

N

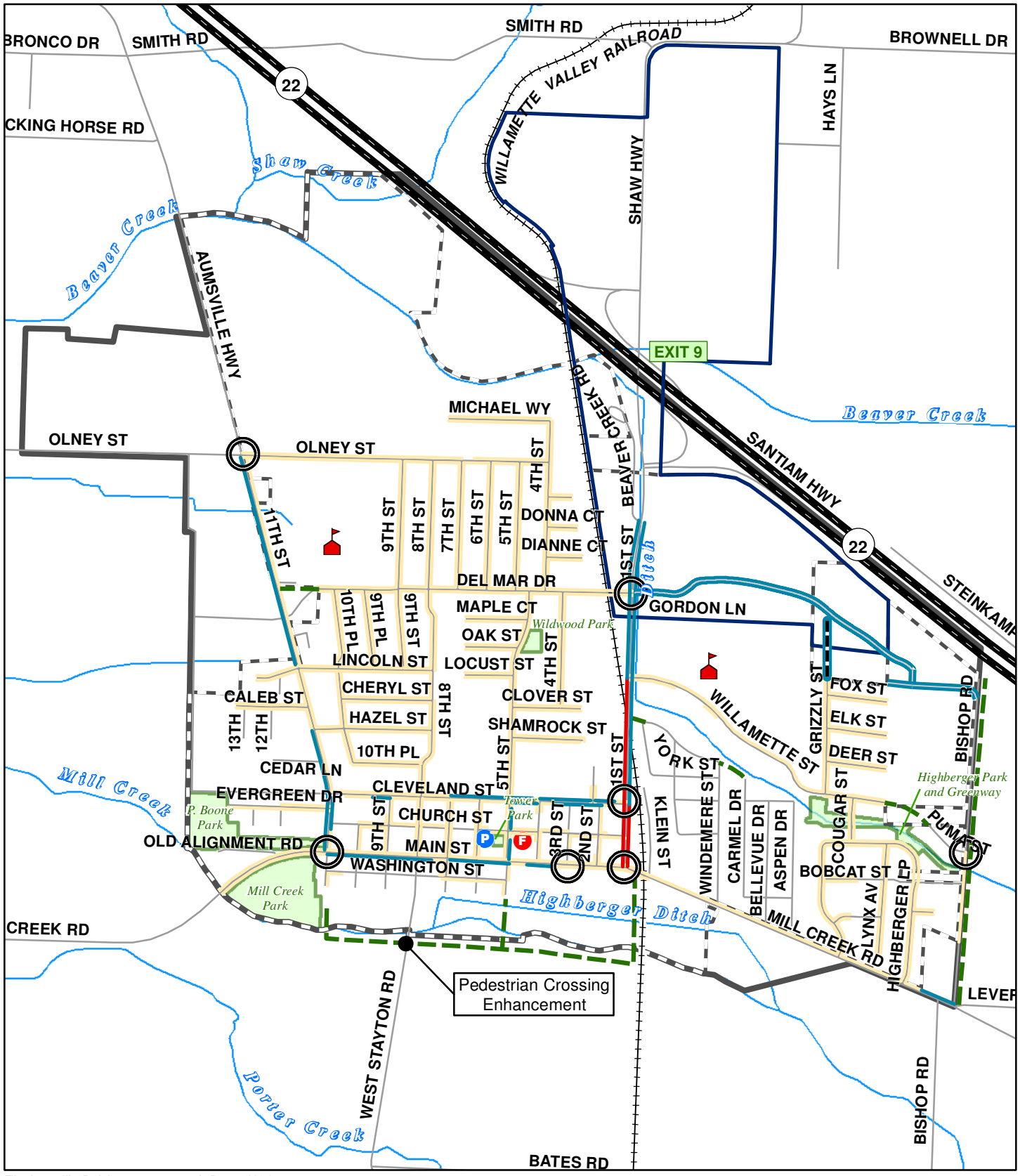
500 0 500

SCALE IN FEET

- Highway
- Street Centerline
- Willamette Valley Railroad
- Aumsville Fire Department
- School
- Aumsville Police Department
- Interchange Area Management Plan Boundary
- City Limits
- Urban Growth Boundary
- Taxlot
- Park
- Streams and Drainage Ditches
- Bicycle Lane
- Pending Improvement
- Proposed Bike Lanes
- Proposed Multi-Use Path
- Proposed Shoulder Bikeway

Figure S-4

Existing Bicycle Facilities and Proposed Improvement Projects



File: Aumsville_Ped_Improvements.mxd Date: 1/22/10

N

500 0 500

SCALE IN FEET

- Highway
- Street Centerline
- Willamette Valley Railroad
- Aumsville Fire Department
- School
- Aumsville Police Department
- Interchange Area Management Plan Boundary
- City Limits
- Urban Growth Boundary
- Taxlot
- Park
- Streams and Drainage Ditches
- Existing Pedestrian Facility
- Pending Improvement
- Proposed Multi-Use Path
- Proposed Sidewalk Improvements
- Potential Crosswalk Location

Figure S-5

Existing Pedestrian Facilities and Proposed Improvement Projects

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- Provide continuous bicycle and pedestrian facilities on arterial and collector roadways, focusing on north/south and east/west routes that provide continuous access through Aumsville to connect neighborhoods, businesses, school, and parks. The arterial roadways of 1st Street, 11th Street, and Main Street are critical routes for bicycles and pedestrians, as well as motorized vehicles. The lack of existing facilities and growth in future traffic volumes make it critical to provide improvements along these routes to ensure safe and efficient travel for all users.
- Provide a network with access to important community destinations. The improvements listed would enhance safety and connectivity to key community destinations such as parks, schools, civic buildings, retail centers and neighborhoods. The network includes different types of facilities such as standard sidewalk and bike lane in more urban developed areas, and multi-use paths and shoulders at the urban/rural interface.
- Indentify pedestrian and bikeway-only connections between existing streets. These connections provide an opportunity for encouraging bicycling and walking by reducing the distance to other facilities and destinations such as a neighbor's house, school, or businesses. These opportunities should be considered as development applications are submitted, as well as identifying opportunities with the existing system such as providing a non-motorized connection from the western terminus of Del Mar Drive to 11th Street.
- Additionally locations were identified where crossing safety enhancements should be considered and are shown on Figure S-5. These may occur with signalization and/or other intersection improvements or may be considered separately. The enhancements would be specific to the location but may include additional lighting, refuges, marked crosswalks, special pavement treatments, warning signage, and/or signalization.

Table S-2. Bicycle and Pedestrian Improvement Projects

Project Location	Project Limits	Project Description	Needs
1st Street	WB OR 22 to Beavercreek Road	Provide shoulder bikeway-walkway	Continue facilities to connect to areas north of the city
1st Street	Willamette Street to Beavercreek Road	Install bicycle lanes	Critical arterial connection to growth areas and private school
1st Street	Cleveland Street to Willamette Street	Add sidewalk and bicycle lane on east side of 1st Street.	Critical arterial connection to growth areas and private school
Main Street/Mill Creek Road	11th Street to Porter Boone Park Entrance	Add bicycle lanes	Continue bike lanes on Main Street and provides connection to recreation opportunities
Main Street	11th to 3rd Street	Complete sidewalk gaps on the south side of Main Street	Critical arterial connection to community centers
Main Street/Mill Creek Road	1st Street to Bishop Road	Complete sidewalk gap and add bike lanes on north side and shoulder on south side	Critical arterial connection to future park and growth areas and private school

Table S-2 Continued. Bicycle and Pedestrian Improvement Projects

Project Location	Project Limits	Project Description	Needs
Bishop Road	Mill Creek Road to future park	Install multi-use path	Connection to growth areas and future park
11th Street	Main Street to Olney Street	Add bicycle lanes	Critical arterial connection to growth areas and school
11th Street	South of Olney Street	Complete sidewalk on east side to Olney	Complete critical arterial connection to growth areas and school
11th Street	Main Street to Hazel Street	Complete sidewalks	Complete critical arterial connection to growth areas
Del Mar Drive	10th Street to 11th Street	Install multi-use path connection	Connectivity to reduce out of direction travel and connects neighborhoods/arterials
Cleveland Street	11th Street to 1st Street	Complete sidewalks	Completes east-west route that serves downtown uses and connects neighborhoods/arterials
5th Street	Main Street to Cleveland Street	Complete sidewalks	Completes north-south route that serves park and Main Street uses
Willamette Street	Eastern terminus to Puma Street	Install multi-use path connection	Connectivity to reduce out of direction travel and connects neighborhoods/arterials
Carmel Drive to Windermere Street	--	Install multi-use path connection	Connectivity to reduce out of direction travel and connects neighborhoods/arterials
1st Street to York Street	--	Install multi-use path connection	Connectivity to reduce out of direction travel and connects neighborhoods/arterials
Mill Creek Trail	11th Street to 1st Street	Investigate feasibility of trail development	Provides a recreational corridor that connects the east and west portions of the city

Identify Funding for Transportation Projects

This section presents a discussion of the costs associated with implementing the 20-year recommendations in the Aumsville TSP, and both existing and potential future sources of funding for transportation improvements.

Costs of Transportation Improvement Recommendations

Planning level cost estimates were prepared for roadway system improvements with Scenarios 1 and 2, and for the recommended bicycle and pedestrian improvements. It should be noted these planning level cost estimates do not reflect the cost of right-of-way acquisition. This exclusion is due to the fact that no preliminary design details were prepared for the recommended improvements (this level of analysis is not normally done in conjunction with a TSP), and the lack of detailed information related to the precise boundaries of existing public rights-of-way. A further unknown which makes it difficult to

develop the right-of-way component of project cost estimates is uncertainty regarding whether the necessary right-of-way will be dedicated as part of a land development application eliminating the need for public expenditure. Specific details concerning right-of-way acquisition needs and costs will be refined during project design.

Interim Improvement

Both Scenario 1 and 2 identified the need for and proposed adding a southbound left turn lane on 1st Street at its intersection with Willamette Street. While the improvement of 1st Street as described in the discussion of long-term improvements may be conducted in phases as the community grows, the need for a more immediate improvement at this intersection was identified. Accordingly, an interim southbound left turn lane improvement is recommended pending full widening of 1st Street. A concept drawing illustrating this improvement is included as Figure E-1 in Appendix E. Estimated cost for this improvement is $273,000 excluding right-of-way. Some right-of-way acquisition may be needed to complete this improvement along the west side of 1st Street the extent of which will be determined during design.

Scenario 1: UGB Build-out

The total 20-year cost for the roadway improvements identified for Scenario 1 in Table S-1 above is estimated at approximately $9.9 million excluding right-of-way acquisition where needed.

Scenario 2: Plus UGB Expansion

The total 20-year cost for the roadway improvements identified for Scenario 2 in Table S-1 above is estimated at approximately $13.2 million excluding right-of-way acquisition where needed.

Bicycle and Pedestrian System Improvement Costs

The total 20-year cost for the roadway improvements identified for the bicycle and pedestrian system improvement identified in Table S-2 above is estimated at approximately $2.5 million.

Summary of Transportation Funding with Scenario 1

Development of the TSP included an assessment of future funding that could be available for the transportation system improvements in the Aumsville UGB over the 20-year planning horizon. The assessment included a review of past trends in transportation funding which focused primarily on state gas tax receipts, a variety of grants and other funds provided by the city.

An evaluation was also conducted to support establishing Transportation System Development Charges (TSDCs) in the city. TSDCs are one-time fees paid by land developers to cover a portion of the increased system capacity needed to accommodate new development. TSDCs can only be used to fund capacity-enhancing transportation improvements. Based on the level of development anticipated with Scenario 1, a maximum TSDC fee of $3,396 per single family dwelling unit (or equivalent) could be levied by the City to pay for the improvements required by community growth. This rate would raise an estimated $450,000 per year dependent on the level of building activity. It should be stressed that this is the maximum amount that could reasonably be levied by the City as a TSDC based on the improvement fee approach given the development and project cost assumptions inherent in this analysis. Lesser amounts could be levied; however, these would also raise less revenue for making needed transportation improvements, requiring that the necessary funding be obtained from some other source.

Table S-3 presents estimates of the availability of transportation funding in future years, starting in 2010, based on past funding availability and the possibility of creating a TSDC at the maximum level discussed above. The table is divided into funds available in the short (2015), medium (2020), and long term (2030), to help determine what timeline to establish for the development of future transportation projects. For purposes of analyzing available transportation revenue for capital improvements, existing revenues from gas tax, other city funds, and approximately one half of grant funds are deducted to account for on-going operations and maintenance expenses.

As shown in Table S-3, a total of nearly $11 million is estimated to be available to the City for capital improvement projects through the 21-year planning period, of which nearly $9.5 million (or 87 percent) would be generated by a TSDC implemented in 2010 at the maximum eligible amount. As noted previously, forecasts assume a relatively constant level of funding from all sources. In reality, funding may vary considerably from year-to-year as grants are won and TSDC-eligible development occurs.

Table S-3. Estimated Future Transportation Revenue

Source	Annualized Revenue	2010-2015	2016-2020	2021-2030	Totals
ODOT Gas Tax	$170,000/year	$1,020,000	$850,000	$1,700,000	$3,570,000
Grants	$28,846/year	$169,500	$144,000	$289,000	$602,500
Other City Funds	$4,790/year	$28,700	$24,000	$47,000	$99,700
TSDC	$450,380/year	$2,702,000	$2,252,000	$4,504,000	$9,458,000
	Sub-Total	$3,920,200	$3,270,000	$6,540,000	$13,730,200
Operations and Maintenance		($810,000)	($675,000)	($1,350,000)	($2,835,000)
Total Available for Capital Projects		$3,110,200	$2,595,000	$5,190,000	$10,895,200

Notes: TSDC or Transportation System Development Charge is based on future development projection

Cost and Funding Comparison with Scenario 1

Table S-4 presents a summary comparison of the total cost of improvements in the preferred plan with the anticipated funding that could be raised from the City's current sources and with the addition of a TSDC at the level of $3,396 per EDU (or single family dwelling unit equivalent). As indicated in the table, Aumsville could experience a funding gap of approximately $1,524,000 over the 21-year planning period.

Table S-4. Preferred Improvement Plan, Summary of Costs and Funding for Capital Improvement Projects

	Value
Total Project Costs (2010-2030)	$12,419,000
Total Estimated Funding for Capital Projects	$10,895,200
Funding Gap (deficit)	**($1,523,800)**

Note 1: This analysis assumes that four projects on the list of preferred improvements would be funded by Developer Exactions and are not included in the above analysis. These improvements are necessary to provide the basic access and circulation to effectively develop and market these properties and are not assumed to be a city responsibility.

Note 2: Project costs do not include right-of-way acquisition or relocation (if necessary) as to the level of detail in conceptual design makes it difficult to reasonably estimate the extent of acquisition required. These costs could be significant, particularly for improvements along 1st Street.

Summary of Transportation Funding with Scenario 2

The evaluation of transportation funding with Scenario 2 following the same methodology as described above with Scenario 1. All revenue projections would remain the same with the exception of TSDCs which are influenced by the level of development that is anticipated. With the development expectations in Scenario 2 (including both land within the existing UGB and a potential UGB expansion) a maximum TSDC fee of $2,746 per single family dwelling unit (or equivalent) could be levied by the City to pay for the improvements required by community growth. This rate would raise an estimated $495,000 per year dependent on the level of building activity.

Table S-5 presents estimates of the availability of transportation funding in future years with the proposed UGB expansion, starting in 2010. As with the analysis presented in Table S-3, the information in this table is based on past funding availability and the possibility of creating a TSDC at the maximum level discussed above for land use Scenario 2. The table is divided into funds available in the short (2015), medium (2020), and long term (2030), to help determine what timeline to establish for the development of future transportation projects. As with the discussion for Scenario 1, existing revenues from gas tax, other city funds, and approximately one half of grant funds are deducted to account for on-going operations and maintenance expenses.

Table S-5. Estimated Future Transportation Revenue with UGB Expansion

Source	Annualized Revenue	2010-2015	2016-2020	2021-2030	Totals
ODOT Gas Tax	$170,000/year	$1,020,000	$850,000	$1,700,000	$3,570,000
Grants	$28,846/year	$169,500	$144,000	$289,000	$602,500
Other City Funds	$4,790/year	$28,700	$24,000	$47,000	$99,700
TSDC	$494,762/year	$2,968,000	$2,474,000	$4,948,000	$10,390,000
	Sub-Total	$4,186,200	$3,492,000	$6,984,000	$14,662,200
Operations and Maintenance		($810,000)	($675,000)	($1,350,000)	($2,835,000)
Total Available for Capital Projects		$3,376,200	$2,817,000	$5,634,000	$11,827,200

Notes: TSDC or Transportation System Development Charge is based on future development projection.

As shown in Table S-5, a total of nearly $12 million is estimated to be available to the City for capital improvement projects through the 21-year planning period, of which nearly $10.4 million (or 88 percent) would be generated by a TSDC implemented in 2010 at the maximum eligible amount. As noted previously, forecasts assume a relatively constant level of funding from all sources. In reality, funding may vary considerably from year-to-year as grants are won and TSDC-eligible development occurs.

Cost and Funding Comparison with Scenario 2

Table S-6 presents a summary comparison of the total cost of improvements in the preferred plan with the anticipated funding that could be raised from the City's current sources and with the addition of a TSDC at the level of $2,746 per EDU (or single family dwelling unit equivalent). As indicated in the table, Aumsville could experience a funding gap of approximately $1,419,000 over the 21-year planning period.

Table S-6. Summary of Project Costs and Funding including UGB Expansion

	Value
Total Project Costs (2010-2030)	$13,246,000
Total Estimated Funding	$11,827,200
Funding Gap (deficit)	**($1,418,800)**

Note 1: This analysis assumes that four projects on the list of preferred improvements would be funded by Developer Exactions and are not included in the above analysis. These improvements are necessary to provide the basic access and circulation to effectively develop and market these properties and are not assumed to be a city responsibility.

Note 2: Project costs do not include right-of-way acquisition or relocation (if necessary) as to the level of detail in conceptual design makes it difficult to reasonably estimate the extent of acquisition required. These costs could be significant, particularly for improvements along 1st Street.

Safety Considerations

Some of the existing safety concerns that were identified during the assessment of existing transportation conditions would be addressed by one or more of the short- or long-term improvement recommendations identified in this chapter. Additional safety issues that should be addressed include:

- In conjunction with roadway improvement projects and/or land development activities, implement access management strategies along Main, 1st and 11th Streets to minimize the number of driveways to reduce collisions and enhance safety.
- Evaluate a speed zone reduction along Main Street through the city from 30 mph to 25 mph.
- Address sight distance constraints on Main Street eastbound approaching the railroad crossing.
- As part of the pending improvement project along 1st Street, consideration should be given to sight distance improvements on Church Street at 1st Street looking north.
- Evaluation should be made of potential sight distance restrictions and vehicle turning radii along Olney Street through the industrial area.
- Work cooperatively with Marion County to address the need for improvements at the intersection of Bishop and Leverman Roads near Mill Creek.

Recommend Policy Changes

To support the recommendations for physical improvements to the street system in Aumsville, several policy recommendations have also been identified and are discussed below. These include:

- Identification of a truck route system within the UGB to include the following streets:
  - 1st Street
  - Main Street
  - 11th Street
  - Olney Street from the westerly UGB to the west side of 9th Street
  - West Stayton Road from Main Street to Mill Creek Bridge
  - East Del Mar Drive in the ID-zoned area

- Add an industrial street classification to the City's Development Ordinance.
- Add provision for requiring and preparing Traffic Impact Analyses (TIAs) to the City's Development Ordinance to guide identification of impacts associated with the future development and the assignment of mitigation responsibilities. It is recommended that the TIA requirements be modeled on those used by Marion County. Key elements of the TIA requirements for the City will include: defining the magnitude of development that would trigger the need for this document, requiring review of bicycle and pedestrian system connectivity in addition to evaluating motor vehicle impacts and mitigation, providing flexibility to accommodate the trip generation characteristics of unusual uses not covered by the ITE Manual (e.g., requiring trip generation surveys of at least three similar uses), and preparation by an Oregon registered Traffic Engineer or Civil Engineer with expertise in traffic engineering. Marion County's TIA requirements can be found at: http://www.co.marion.or.us/PW/Engineering/analysis.htm.
- Establish Level of Service (LOS) D for signalized intersections and LOS D for stop controlled movements at unsignalized intersections as the City's traffic operational performance standard.
- Reduce the existing mobility standard for the westbound ramp terminal of the OR 22/Shaw Highway interchange to V/C = 0.50 to manage traffic growth within the existing UGB and to preserve roadway and intersection capacity for future UGB expansion(s).
- Modify functional classification of streets in the City's existing Comprehensive Plan as follows:
    - 8th Street between southerly UGB and Main Street – designation changed from urban arterial to urban collector for consistency with Marion County's classification to the south.
    - Extension of Del Mar Drive from western terminus to UGB – this new street should be designated as an urban collector.
    - Extension of Cleveland Street from 11th Street west to UGB – this new street should be designated as an urban collector.
    - 14th Street – this is a proposed new street running north/south and parallel to the city's western UGB between Olney Street and Cleveland Street. 14th Street should be designated as an urban collector.
    - Olney Street from 11th Street to the western UGB – to support development in the northwest quadrant of Olney Street at 11th Street and to serve potential future UGB expansion this street should be designated as an urban collector.
    - East Del Mar Drive (new street) from 1st Street to Bishop Road – this street should be designated as an urban collector.
    - Grizzly Street from East Del Mar Drive to Willamette Street – designate as an urban collector to provide connectivity between East Del Mar Drive and Willamette Street.
- To meet the access requirements of Oregon Administrative Rules (OAR) Chapter 734, Division 51 in the vicinity of thee OR 22/Shaw Highway interchange, access spacing requirements shall be implemented consistent with, and meet or exceed the minimum standards in the 1999 OHP, Policy 3C, as follows:

- When new approach roads are planned or constructed near the interchange, the nearest intersection on a crossroad shall be no closer than 1,320 feet from the interchange, unless no alternative exists for providing property access and/or local street circulation. Measurement is taken from the ramp intersection or the end of a free flow ramp terminal merge lane taper.
- Existing private accesses shall be closed along 1st Street where access control has been purchased by ODOT and when alternative access to public roads is provided.
- Deviations are permitted for new access for farm and forestry equipment and associated farm uses, as defined in Oregon Revised Statue (ORS) 215.203, on lands zoned for exclusive farm use, and accepted forest practices on those lands that are within the boundary of the OR 22/Shaw Highway Interchange Area Management Plan (IAMP), but only when access meeting the standards identified above is unfeasible.
- Deviations will be permitted for three existing driveways serving farm uses north of the OR 22/Shaw Highway westbound ramp termini (one on the east side located approximately 600-feet north of the termini, one located on the west side approximately 770-feet north, and one located on the west side approximately 1,280-feet north). No changes in existing land uses that would impact the use of these driveways are anticipated. Additionally, no improvements are recommended for the highway in the TSP, but improvements may be needed as part of the future UGB expansion.
- Deviations will also be permitted for two existing driveways and two existing street intersections south of the OR 22/Shaw Highway eastbound ramp termini. The existing driveways include: an access point to existing farm property located on the east side approximately 470-feet south (this access point will become an emergency only access route to approved development in the southeast quadrant of the interchange) and an existing driveway for a single family residence located on the west side approximately 960 feet south. The two street intersections include Beaver Creek Road located on the west side approximately 440-feet south of the termini, and Del Mar Drive located approximately 1,125-feet south. It is anticipated that the existing intersection of Gordon Lane with 1st Street will be closed and future access to this property will occur via a connection to East Del Mar Drive.

- The City and County shall work with ODOT to implement the operational, physical and access recommendations identified in the TSP.

2. EXISTING CONDITIONS

2.1 OVERVIEW

An inventory of the existing Aumsville transportation system was conducted at the outset of the planning process. This inventory included:

- Existing street characteristics including physical features, traffic control, current traffic operations and safety, and freight mobility with primary emphasis on the arterial and collector street systems
- Pedestrian and bicycle systems
- Public transportation and travel demand management
- Other transportation modes including rail, air, water and pipelines

Inventory data comes from a variety of sources including information collected specifically for the TSP planning process. While information was collected for all transportation modes, the greatest level of detail is provided for the street system.

2.2 EXISTING STREET SYSTEM

This section describes the physical characteristics of the street and state highway system in the Aumsville urban area. The inventory includes functional classification and jurisdiction, number of travel lanes, presence of on-street parking, bicycle and/or pedestrian facilities, posted speeds, intersection geometrics, and traffic control at key locations. A discussion of existing access management in the vicinity of the OR 22 interchange with Shaw Highway is also provided. The existing street system in Aumsville is illustrated in Figure 2-1.

Functional Classification of Roads and Highways

Functional classification provides a systematic basis for determining future right-of-way and improvement needs, and can also be used to provide general guidance as appropriate or desired for vehicular street design characteristics. The functional classification of a street is typically based on the relative priority of traffic mobility and access functions that are served by the street. At one end of the spectrum of mobility and access are freeways, which emphasize moving high volumes of traffic, allowing only highly controlled access points. At the other end of the spectrum are residential cul-de-sac streets, which provide access only to parcels with direct frontage and allow no through traffic. Between the ends of this spectrum are state highways, arterials, collectors and local streets, each with a decreasing emphasis on mobility and more emphasis on land access.

Figure 2-2 shows a map of the existing Aumsville street network and the roadway functional classification system for public streets located within the UGB. This classification system includes three categories of streets: Arterial, Collector and Local. The City's Comprehensive Plan, Transportation Element defines these classifications as follows:

Arterial: "*A street of considerable continuity, which is used primarily for through traffic and interconnection between major areas of the city. An arterial is intended to provide for the majority of regional travel passing through an area as well as the majority of local trips entering and leaving the urban area. It should also provide continuity for all rural arterials, which intercept the UGB and should include connections to all rural collectors. Arterials generally emphasize mobility over land access. Access to arterials should be managed to protect the*

mobility function of the street as much as possible".

Based on the current Comprehensive Plan, Aumsville has the following designated arterial streets:

- Main Street/Mill Creek Road (UGB to UGB)
- 1st Street/Shaw Highway (UGB to Main Street)
- 11th Street/Aumsville Highway (UGB to Main Street)
- 8th Street/West Stayton Road (UGB to Main Street)

Collector: *"The collector street collects traffic within an area and distributes it to an arterial street. A collector provides more emphasis on land access than an arterial serving the traffic circulation needs of surrounding residential areas. Collectors penetrate into all areas of a city, gathering traffic, and channeling it to arterials or rural collectors."*

Based on data provided by the City of Aumsville, the following collector streets have been designated within the Aumsville UGB:

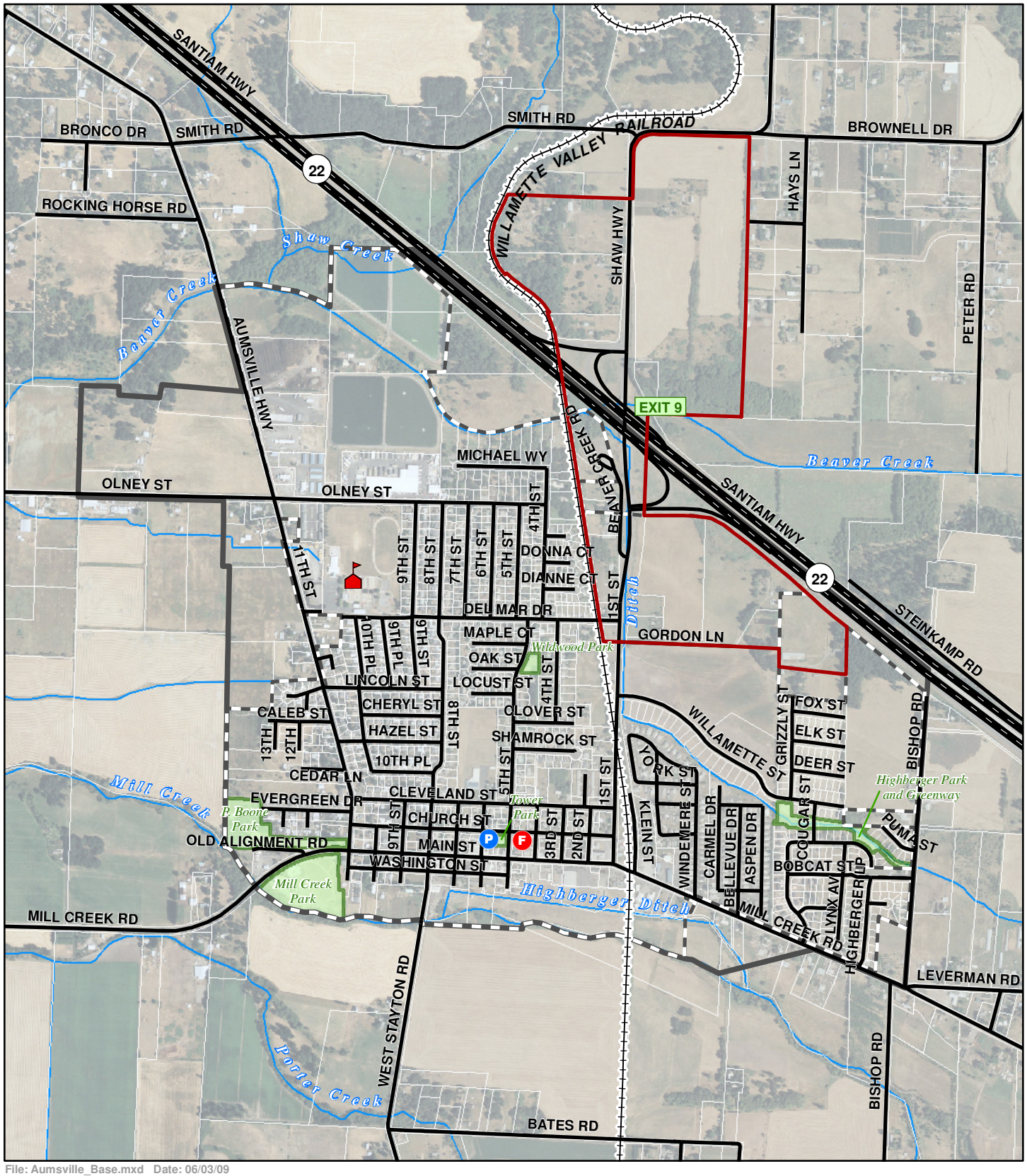
- Bishop Road (City Limits to Main Street)
- Church Street (11th Street to 1st Street)
- Cleveland Street (11th Street to 1st Street)
- Cougar Street (Willamette Street to Highberger Loop)
- Del Mar Drive (9th Street to 1st Street)
- Highberger Loop (Mill Creek Road to Mill Creek Road)
- Olney Street (11th Street/Aumsville Highway to 4th Street)
- Willamette Street (1st Street to Cougar Street)
- 4th Street (Olney Street to Del Mar Drive)
- 5th Street (Del Mar Drive to Cleveland Street)
- 8th Street (Del Mar Drive to Cleveland Street)
- 9th Street (Olney Street to Del Mar Drive)

Local: *"A street intended primarily for access to abutting properties, but protected from "through" traffic. Local streets entail all those not otherwise defined as arterials or collectors. While connectivity is encouraged for all streets, through traffic movement is not the intended purpose of a local street."*

In addition to its arterial, collector and local street system, Aumsville is served by one state highway, OR 22.

Roadway Jurisdiction

Table 2-1 summarized the existing jurisdictional ownership for roadways within the Aumsville UGB.



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SCALE IN FEET

- Highway
- Street Centerline
- Willamette Valley Railroad
- Aumsville Fire Department
- Aumsville Elementary School
- Aumsville Police Department
- Interchange Area Management Plan Boundary
- City Limits
- Urban Growth Boundary
- Taxlot
- Park
- Streams and Drainage Ditches

Figure 2-1

Aumsville Study Area

File: Aumsville_FunctionClassExisting.mxd Date: March 2010

- Principal Arterial (ODOT)
- Urban Arterial (Aumsville)
- Urban Collector (Aumsville)
- Rural Major Collector (Marion County)
- Rural Minor Collector (Marion County)
- Local Road
- Willamette Valley Railroad
- Interchange Area Management Plan Boundary
- City Limits
- Urban Growth Boundary
- Park
- Streams and Drainage Ditches

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SCALE IN FEET

Figure 2-2

Existing Functional Classification

Table 2-1. Aumsville UGB Roadway Jurisdiction

Street	Limits	Jurisdiction
Antelope Street	Highberger Loop to Lynx Avenue	City of Aumsville
Aumsville Hwy	North of City Limits	Marion County
Bishop Road	Main Street to north of Puma Lane	Marion County
Bobcat Street	Highberger Loop to City Limits	City of Aumsville
Caleb Street	11th Street to end	City of Aumsville
Cedar Lane	West of 11th Street	Private
Church Street	1st Street to 11th Street	City of Aumsville
Cleveland Street	1st Street to 11th Street	City of Aumsville
Clover Street	5th Street to end	City of Aumsville
Cougar Street	Highberger Loop to Willamette Street	City of Aumsville
Crystal Court	Off Lincoln Court	Private
Darla Court	4th Street to end	City of Aumsville
Deer Street	Grizzly Street to end	City of Aumsville
Del Mar Drive	1st Street to 10th Place	City of Aumsville
Dianne Court	4th Street to end	City of Aumsville
Donna Court	4th Street to end	City of Aumsville
Elk Street	Grizzly Street to end	City of Aumsville
Fox Street	Grizzly Street to end	City of Aumsville
Grizzly Street	Willamette Street to end	City of Aumsville
Hazel Street	8th Street to 11th Street	City of Aumsville
Highberger Loop	Mill Creek Road to Mill Creek Road	City of Aumsville
Klein Street	Main Street to end	City of Aumsville
Lincoln Court	11th Street to end	City of Aumsville
Lincoln Street	8th Street to 11th Street	City of Aumsville
Locust Avenue	5th Street to end	City of Aumsville
Lynx Avenue	Highberger Loop to end	City of Aumsville
Main Street/Mill Creek Road	City Limits to City Limits	Marion County
Maple Street	5th Street to end	City of Aumsville
Michael Way	4th Street to end	City of Aumsville
Miranda Place	11th Street to end	Private
Oak Street	5th Street to end	City of Aumsville
Olney Street	4th Street to 11th Street	City of Aumsville
Panther Court	Highberger Loop to end	City of Aumsville
Puma Lane	Bishop Road to end	City of Aumsville
Shamrock Court	5th Street to end	City of Aumsville
Shaw Highway	North of City Limits	Marion County
Washington Street	5th Street to 11th Street	City of Aumsville
Willamette Street	1st Street to end	City of Aumsville
1st Street	Main Street to City Limits	Marion County
2nd Street	Main Street to Cleveland Street	City of Aumsville
3rd Street	Main Street to Cleveland Street	City of Aumsville
4th Street	Main Street to Cleveland Street Clover Street to Michael Way	City of Aumsville
5th Street	Olney Street to end	City of Aumsville
6th Street	Cleveland Street to end Del Mar Drive to Olney Street	City of Aumsville
7th Street	Cleveland Street to end Del Mar Drive to Olney Street	City of Aumsville
8th Street	Olney Street to end	City of Aumsville

Table 2-1 Continued. Aumsville UGB Roadway Jurisdiction

Street	Limits	Jurisdiction
9th Street	Washington Street to Cleveland Street Lincoln Street to Olney Street	City of Aumsville
10th Street	Washington Street to Church Street	City of Aumsville
10th Place	8th Street to Del Mar Drive	City of Aumsville
11th Street	Washington Street to City Limits	Marion County
12th Street	Celeb Street to end	City of Aumsville
13th Street	Caleb Street to end	City of Aumsville
OR 22 westbound ramps	On Shaw Highway at OR 22	ODOT
OR 22 eastbound ramps	On Shaw Highway at OR 22	ODOT

Source: City of Aumsville, 2009.

Existing Street System Characteristics

This section describes the physical characteristics of the street and highway system in the Aumsville urban area. The four major street classifications are further described below.

Highways

OR 22

Aumsville is served by one state highway, OR 22. OR 22 generally runs northwest to southeast immediately north of the Aumsville city limits. It provides regional connectivity for the City, linking it to other nearby communities and the remainder of the State. Aumsville has no direct control over the state highway; however, adjacent development and local traffic patterns are heavily influenced by the state highway. OR 22 is on the National Highway System (NHS), and, in the adopted OHP, it is classified as a statewide highway, state freight route, federally designated truck route and expressway. The posted speed on OR 22 in the study area is 55 mph.

Arterials

Mill Creek Road/Main Street

In Aumsville, Mill Creek Road/Main Street is a two-lane County-maintained road and is designated by the city as an Arterial facility. Outside of the UGB, Mill Creek Road has been designated as a Rural Major Collector by Marion County. This road connects Aumsville to the City of Turner on the west and to the cities of Stayton and Sublimity on the east. Mill Creek Road/Main Street serves as the commercial core for Aumsville between 11th and 1st Streets. The posted speed west of 11th Street is 35 mph, dropping to 30 mph between 11th Street and the east city limits, and then increasing to 45 mph. Within the city limits, Mill Creek Road/Main Street has sidewalks on at least one side of the roadway. According to the Comprehensive Plan, Mill Creek Road/Main Street has an estimated design capacity of 28,000 vehicles per day.

North Shaw Highway/1st Street

North Shaw Highway/1st Street is a two-lane facility and has been designated by the City as an Arterial. Marion County has designated Shaw Highway as a Rural Major collector north of the UGB. This road provides a direct connection between various destinations in Aumsville and OR 22 to the north. The posted speed from Main Street to the city limits is 45 mph, increasing to 55 mph immediately north of the eastbound OR 22 interchange ramp termini. North Shaw Highway/1st Street has approximately 24-feet of pavement width with little or no shoulders. Although this street is a school bus route and has recently seen new adjacent development that generates pedestrian traffic, there are no sidewalks. There are two existing drainage ditches paralleling 1st Street, generally between the OR 22 interchange and

Willamette Street. The larger of the two is located on the east side of the street and provides both storage and convenience functions. The Willamette Valley Railroad has an at-grade, skewed angle crossing of 1st Street between Willamette and Cleveland Streets. This crossing has advance signing and pavement marking but no active warning devices. According to the Comprehensive Plan, North Shaw Highway/1st Street has an estimated design capacity of 24,000 vehicles per day.

Aumsville and Marion County recently received an ODOT grant to improve the cross-section of 1st Street between Willamette and Main Streets. This improvement would construct sidewalks and bike lanes on both sides of 1st Street from Main Street to Cleveland Street, and on the west side of 1st Street from Cleveland Street to Willamette Street.

Aumsville Highway/11th Street

Aumsville Highway/11th Street is a two-lane street and designated by the City as an Arterial, and by Marion County as a Rural Major Collector north of Olney Street. This road connects Aumsville with Salem-Keizer on the west and to other destinations in rural Marion County on the north. 11th Street provides access to the Aumsville Elementary School and much of the city's east-west collector and local street network. Via Main Street, this road also provides access to the city's business core. The posted speed between Washington and Main Streets is 25 mph; between Main and Miranda Streets it is 30 mph; from Miranda to Olney Streets it is 35 mph, except for school zone regulation; then from Olney Street north to city limits it is 45 mph.

Aumsville Highway/11th Street has sidewalks on one side of the roadway between Cleveland Street and the school. According to the Comprehensive Plan, Aumsville Highway/11th Street has an estimated design capacity of 24,000 vehicles per day.

8th Street/West Stayton Road

8th Street/West Stayton Road is a two-lane roadway and has been designated by Marion County as a Rural Minor Collector south of Mill Creek which forms the Aumsville UGB. North of the UGB to Main Street, 8th Street also has two travel lanes and is designated by the City as an Arterial. These designations are inconsistent in terms of the roadway functions they are intended to accommodate. Consideration should be given to reducing the functional classification of 8th Street within the UGB to an Urban Collector. The posted speed limit between Main and Washington Streets is 25 mph, increasing to 35 mph from this location to a point slightly south of the UGB. There are no curbs, sidewalks or bike lanes along this portion of 8th Street/West Stayton Road. According to the Comprehensive Plan, West Stayton Road/8th Street has an estimated design capacity of 24,000 vehicles per day.

Collectors

Aumsville's network of Collector streets link residential neighborhoods with smaller community centers and facilities, as well as providing access to the arterial system. Property access is generally a higher priority for collector streets than for arterial streets, while through-traffic movements are served as a lower priority. The city's collector street system was identified earlier in this chapter and is illustrated in Figure 2-2. Available right-of-way for most collector streets is 60 feet (the exception being portions of Bishop Road where existing right-of-way varies between 40 and 50 feet. Additional right-of-way along this street will be obtained as part of the Flowers Phase IV development.).

Street widths along the collector street system vary from 20 to 40 feet depending on location with narrow street segments being found primarily along Bishop Road, Church Street and Cleveland Street. Sidewalks are present along portions of all collector streets in the city but gaps do exist as described later in this chapter. Detailed information about collector street

cross-sections and features is included in Appendix A of *Technical Memorandum 5: Inventory*. One Collector street deserves particular attention due to its role in connecting Aumsville to the surrounding rural community and that is 8th /9th Streets which connect with West Stayton Road south of the UGB.

8th /9th Streets

Within the UGB, 8th and 9th Streets each have two travel lanes and, collectively, have been designated by the City as north/south Collector facilities. 9th Street serves the area between Olney Street and Del Mar Drive. 8th Street serves the area between Del Mar Drive and Cleveland Street. The posted speed from Olney Street to Main Street is 25 mph. There are sidewalks along the length of these two streets between Olney and Cleveland Streets.

Local Streets

Local streets have the sole function of providing access to immediately adjacent land. Local streets connect housing, commercial, and industrial land uses with the collector and arterial system. Property access is the main priority of local streets and through traffic movement is not encouraged. Typically on-street parking is permitted. In the Aumsville UGB, most local streets have 60 feet of right-of-way and pavement widths of 36 to 40 feet. In some locations narrower right-of-way is available, ranging from 30 to 50 feet. Narrower street widths are also provided in these locations, ranging from 12 to approximately 30 feet. Sidewalks are provided on many local streets as discussed later in this chapter. Detailed information about local street cross-sections and features is included in *Technical Memorandum 5: Inventory*.

Pavement Conditions

Pavement conditions evaluation for streets within the study area is presented in Appendix A of this TSP and summarized in the tables below. The City of Aumsville and Marion County use a pavement condition rating system with five categories: very good, good, fair, poor and very poor. These ratings are based on a Pavement Conditions Index (PCI) that reflects the type, severity, and amount of pavement distress (such as cracking, potholes, or other problems). The PCI is continually updated and offers the ability to review changes in pavement conditions over time. A breakdown of pavement ratings by category is presented in Table 2-2. Also included in this table is the mileage of gravel-surfaced roads within the study area, as well as privately maintained facilities.

Table 2-2. Street Surface Types and Conditions

Surface Conditions	Pavement Condition Index (PCI)	Miles	% of Total Miles
Paved Surface:			
Very Good	90 to 100	4.71	34.3%
Good	70 to 89	6.55	47.8%
Fair	50 to 69	2.35	17.1%
Gravel Surfaces:			
Poor		0.02	0.2%
Very Poor		0.08	0.6%
Total		**13.71**	**100%**

Source: City of Aumsville, 2009

Table 2-3 summarizes pavement conditions stratified by functional classification for the arterial and collector roadway system.

Table 2-3. Pavement Conditions for Arterials and Collectors

Pavement Condition (PCI)	Arterial Mileage	Arterial Percentage	Collector Mileage	Collector Percentage
Very Good (90 to 100)	0.59	20.21%	1.38	30.20%
Good (70-89)	1.85	63.36%	1.96	42.89%
Fair (50 to 69)	0.48	16.43%	1.23	26.91%
Poor (25 to 49)	0.0	0.0%	0.0	0.0%
Very Poor (1 to 24)	0.0	0.0%	0.0	0.0%
Total	**2.92**	**100%**	**4.57**	**100%**

Source: City of Aumsville, 2009

Freight Mobility

OR 22 has been designated by ODOT as a State Freight highway. The City of Aumsville restricts the operation of trucks in excess of 20,000 lbs. gross weight on city streets except on designated truck routes, for delivery purposes, or to serve businesses at industrial sites adjacent to the street. City designated truck routes include:

- Main Street
- 1st Street
- 11th Street from the northern city limits to Main Street
- 8th Street from the southerly city limits to Main Street

During the agricultural season the existing arterial roads are used by many large farm vehicles including semi-trucks and 16-foot wide combines moving from field to field to harvest crops and providing other necessary services. Some key freight mobility issues that were identified by the PAC for the TSP included: the narrow cross-section along 1st Street where there are conflicts between large agricultural vehicles and traffic moving in the opposite direction; turning radius at the intersection of Main and 1st Streets for the southbound right turn movement, and conflicts between improving pedestrian crossings of Main Street and the movement of large vehicles along Main Street.

Existing Bridges

There are five bridges within or near the city limits, the Shaw Highway Bridge over OR 22, the Aumsville Highway Bridge over Beaver Creek (#47C27), the Mill Creek Road Bridge over Mill Creek (#6008A), the West Stayton Road Bridge over Mill Creek (#4714), and the Bishop Road Bridge over Mill Creek (#47C71).

Shaw Highway Bridge at OR 22

A key bridge serving the Aumsville UGB is the Shaw Highway Bridge over OR 22. This bridge was built in 1997, and is owned and operated by ODOT. The bridge is constructed of pre-stressed concrete. Based on the 2008 ODOT bridge conditions report this structure is in Good condition with a sufficiency rating of 93.3 (out of 100).

Aumsville Highway Bridge at Beaver Creek

The Aumsville Highway Bridge crosses Beaver Creek at the northern edge of the Aumsville UGB. This bridge is owned and maintained by Marion County and is listed on Marion County's bridge inventory as bridge #47C27. The bridge was built in 1964 and carries an estimated Average Daily Traffic (ADT) volume of 4,000 vehicles. The bridge has a

sufficiency rating of 94.9 and is not weight-restricted. Some maintenance needs have been identified for transition areas and approach railing.

Mill Creek Road Bridge at Mill Creek

The Mill Creek Road Bridge #6008A crosses Mill Creek immediately west of the Aumsville UGB in the vicinity of the Porter Boone Park. This bridge is owned and operated by Marion County and was built in 1955. The bridge carries an ADT of approximately 3,800 vehicles and has a sufficiency rating of 68.7. At some point in the future replacement is recommended for the bridge decking which has some deep rutting in the eastbound direction.

West Stayton Road Bridge at Mill Creek

The West Stayton Road Bridge over Mill Creek is located immediately to the south of the Aumsville UGB. Known as Bridge #47C14, the West Stayton Road Bridge is owned and maintained by Marion County. The bridge was built in 1966 and carries an ADT of approximately 2,500 vehicles. The bridge has a sufficiency rating of 49, and was built with timber columns and slab with an asphalt overlay which is in need of repair. It is recommended that maintenance on this bridge be undertaken to repair the bank and protect it from undermining and that a hydraulic analysis be conducted and scour action plan prepared.

Bishop Road Bridge at Mill Creek

The Bishop Road Bridge #47C71 crosses Mill Creek immediately east of Aumsville and south of Mill Creek Road. This bridge is owned and maintained by Marion County. The bridge was built in 1969 and carries an estimated ADT of 250 vehicles. The bridge has a sufficiency rating of 87.4, and is comprised largely of timber with an asphalt decking overlay. Some undermining of the bridge abutment has occurred.

Existing Access Management

The term access management refers to the process of balancing the need for access to parcels of land adjacent to roadways with the need for safe and efficient through movement of vehicular traffic on the roadway. Frequent driveway and cross-street access can significantly degrade traffic operations along major streets, as motorists must contend with people slowing to turn into adjacent property or attempting to get back onto the major street from a side access location. Not only do frequent driveways adversely affect the operational capacity of a road, they also affect safety in that each driveway or intersecting street represents a potential conflict point for through-moving vehicles. The strip development that often occurs as a result of the lack of access control can also be inhospitable to pedestrians and can be difficult to adequately serve by transit due to the spread out nature of destinations.

Access management is closely related to street functional classification. Typically, when access controls are in place, the frequency of driveways and intersecting streets is more restrictive along state highways and major arterials where the movement of traffic takes a higher priority. Access controls are less restrictive along collector streets where there is greater balance between access and mobility. Access controls are restricted only by safety considerations along local streets where property access is the primary function of the street. Access management for the major streets in the Aumsville UGB is controlled by ODOT (in the vicinity of the OR 22 interchange) and by Marion County (for 1st, 11th and Main Streets). The City of Aumsville's regulations related to access management speak primarily to individual property access, opportunities for combined access and limitations on cul-de-sacs.

State Highways

In Aumsville, access management along Shaw Highway/1st Street will be of the highest importance to ensure the on-going safety and functionality of this facility as the community

grows. The OHP stipulates access management standards in the vicinity of the interchange with OR 22, noting that all access to adjacent property should be prohibited within ¼ mile (1,320 feet) of each ramp intersection. Currently there are several access points within ¼ mile both north and south of the interchange. These access points are described below.

- To the north of the OR 22/Shaw Highway westbound ramp termini there are three existing driveways serving farm uses. One is located on the east side of the highway approximately 600-feet north of the termini, one is located on the west side of the highway approximately 770-feet north, and one is located on the west side approximately 1,280-feet north.
- To the south of the OR 22/Shaw Highway eastbound ramp termini there are two existing driveways and three existing street intersections. The existing driveways include an access point to an existing farm property located on the east side approximately 470-feet south (this access point will become an emergency only access route to approved development in the southeast quadrant of the interchange) and an existing driveway for a single family residence located on the west side approximately 960 feet south. The street intersections include Beaver Creek Road located on the west side approximately 440-feet south of the termini, Del Mar Drive located approximately 1,125-feet south and Gordon Lane located on the east side approximately 1,285 feet south of the interchange. It is anticipated that the intersection of Gordon Lane with 1st Street will ultimately be closed and that future access to this property will occur via a connection to East Del Mar Drive.

At the time of interchange construction ODOT purchased access control along Shaw Highway, and existing local street and driveway connections were allowed to remain. South of the interchange, ODOT currently controls access on the east side of the road from the eastbound ramp terminal to a point just south of Gordon Lane. On the west side of the road access is controlled from the westbound ramp terminal to the intersection with Beaver Creek Road. As future improvements are made to Shaw Highway/1st Street from the eastbound ramps southward, access spacing deviations will be needed to meet the requirements of OAR 734, Division 51.

Marion County Roads

Marion County has jurisdictional control over many of the major roads within the Aumsville UGB including 1st Street/Shaw Highway, Main Street/Mill Creek Road, 11th Street/Aumsville Highway, and 8th Street/West Stayton Road (south of Main Street). Each of these facilities is designated as an urban arterial within the UGB, but as a collector outside of the UGB. Shaw Highway, Mill Creek Road and Aumsville Highway are all designated as Major Collectors outside of the UGB and West Stayton Road is designated as a Minor Collector. In the Transportation Element of its Comprehensive Plan and the Rural Transportation System Plan Marion County has identified the following access spacing requirements for County Roads in cities that have not adopted access spacing standards:

- Arterials:
  - 400 feet from any intersection with a state highway, arterial or major collector
  - 300 feet from any other intersection (including a private access)
- Major Collectors:
  - 300 feet from any intersection with an arterial or state highway
  - 150 feet from any other intersection (including a private access)
- Collectors (if City has only one collector classification like Aumsville)
  - 250 feet from any intersection with an arterial or state highway

  - 150 feet from any other intersection (including a private access)
- Minor Collectors:
  - 200 feet from any intersection with an arterial or state highway
  - 100 feet from any other intersection (including a private access)

These standards are measured from the centerline of the driveway to the centerline of the adjacent facility. Within the UGB of a city, the functional classification of the roadway is designated in that city's TSP or other plan adopted by the city.

Within the Aumsville city limits, existing access spacing between intersecting streets along portions of 1st Street, Main Street and 11th Street are approximately 300 feet (centerline to centerline). There are many driveways along each of these streets, typically one serving each parcel, which do not meet Marion County's access spacing standards for Arterials.

Existing Intersection Geometrics and Traffic Control

Fourteen unsignalized intersections were evaluated as part of the analysis of the existing conditions:

- Shaw Highway @ Brownell Drive
- Shaw Highway @ OR 22 WB Ramps
- Shaw Highway @ OR 22 EB Ramps
- 1st Street @ Del Mar Drive
- 1st Street @ Willamette Street
- 1st Street @ Cleveland Street
- 1st Street @ Church Street
- 1st Street @ Main Street
- 8th Street @ Main Street
- 11th Street @ Main Street
- 11th Street @ Church Street
- 11th Street @ Cleveland Street
- 11th Street @ Lincoln Street
- 11th Street @ Olney Street

Existing lane configurations and traffic control for the fourteen study area intersections are shown in Figure 2-3. Field notes illustrating existing intersection geometrics are included in Appendix A of the *Technical Memorandum #6: Existing Conditions*, while a photolog of existing intersection is presented in Appendix B of the same report.

2.3 EXISTING TRAFFIC PATTERNS

This section provides a discussion of existing data related to roadway operations including traffic volumes and vehicle classification, and crash history and analysis. Analysis and review of this information provides the basis for understanding existing traffic operational and safety needs and deficiencies, and will form the basis for short-term improvement recommendations. Appendix B presents a summary of the analysis methodology used in evaluating existing and future traffic operations in Aumsville.

Hourly Distribution of Traffic

To support preparation of the TSP for Aumsville, ODOT provided 16-hour traffic volume counts that were taken on May 13th and 14th of 2008 along the mainline of OR 22 both east and west of the Shaw Highway interchange. Counts were taken between the hours of 6 AM and 10 PM. Table 2-4 presents a summary of the hourly distribution of traffic volumes along these highway segments.

As indicated in Table 2-4, there is a significant peaking in traffic volumes in the AM and PM peak periods along OR 22 in the vicinity of Shaw Highway. The two-hour AM peak period accounts for approximately 16 percent of total traffic counted during the 16-hour period both east and west of Shaw Highway. The two-hour PM peak period accounts for over 19 percent of total traffic during the 16-hour count.

A review of the directionality of existing traffic volumes indicates that about 1/3 of total volumes are traveling eastbound during the AM peak hour (7 to 8 AM) and 2/3 of the total is traveling west. During the PM peak hour (5 to 6 PM), the pattern is reversed with approximately 1/3 traveling west and 2/3 traveling east. These patterns are strongly indicative of a commuter travel market – heading to the Salem area in the morning and going home in the evening. Eastbound and westbound traffic is nearly evenly divided over the course of the entire 16-hour count period.

Table 2-4. OR 22 at Shaw Highway Interchange, Hourly Distribution of Traffic

	East of Shaw Highway				West of Shaw Highway			
Time	**WB**	**EB**	**Total**	**%**	**WB**	**EB**	**Total**	**%**
6-7 AM	830	373	1,203	6.7%	968	418	1,386	6.8%
7-8 AM	1,088	503	1,591	8.7%	1,321	591	1,516	9.5%
7-7:15 AM	233	80	313	1.7%	297	102	399	2.0%
7:15-7:30 AM	272	134	406	2.2%	331	180	511	2.5%
7:30-7:45 AM	331	138	469	2.6%	405	155	560	2.8%
7:45-8 AM	252	151	403	2.2%	288	154	442	2.2%
8-9 AM	766	502	1,268	7.0%	847	517	1,364	6.6%
8-8:15 AM	237	117	354	2.0%	274	137	411	2.0%
8:15-8:30 AM	188	145	333	1.8%	217	130	347	1.7%
8:30-8:45 AM	178	128	306	1.7%	191	122	313	1.5%
8:45-9 AM	163	112	275	1.5%	165	128	293	1.4%
9-10 AM	547	435	982	5.4%	679	516	1,195	5.9%
10-11 AM	556	459	1,015	5.6%	584	488	1,072	5.3%
11-12 PM	554	464	1,018	5.6%	596	501	1,097	5.4%
12-1 PM	489	491	980	5.4%	549	535	1,084	5.3%
1-2 PM	554	570	1,124	6.2%	614	616	1,230	6.1%
2-3 PM	595	688	1,283	7.1%	623	761	1,384	6.8%
3-4 PM	659	875	1,534	8.5%	726	1,008	1,734	8.6%
4-5 PM	689	1,023	1,712	9.5%	746	1,161	1,907	9.4%
4-4:15 PM	175	251	426	2.4%	204	296	500	2.5%
4:15-4:30 PM	168	271	439	2.4%	177	276	453	2.2%
4:30-4:45 PM	189	259	448	2.5%	201	290	491	2.4%
4:45-5 PM	157	242	399	2.2%	164	299	463	2.3%
5-6 PM	588	1,162	1,750	9.7%	685	1,279	1,964	9.7%
5-5:15 PM	166	278	444	2.5%	201	325	526	2.6%
5:15-5:30 PM	153	327	480	2.7%	188	374	562	2.8%
5:30-5:45 PM	136	288	424	2.3%	149	299	448	2.2%
5:45-6 PM	133	269	402	2.2%	147	281	428	2.1%
6-7 PM	420	596	1,016	5.6%	457	662	1,119	5.5%
7-8 PM	267	400	667	3.7%	293	485	778	3.8%
8-9 PM	200	335	535	3.0%	212	426	638	3.1%
9-10 PM	123	257	380	2.1%	129	287	416	2.1%
Totals	8,925	9,133	18,058	100%	10,029	10,251	20,280	100%

Note: WB means westbound, EB means eastbound

Vehicle Classification

In addition to the traffic counts collected along the OR 22 mainline in the vicinity of the Shaw Highway interchange, ODOT collected 3 and 16-hour turning movement counts at

several intersections throughout the Aumsville study area. The 16-hour turning movement counts included vehicle classification information which is useful for understanding the potential needs of traffic movement through the city. The 16-hour classification counts were taken during mid-May of 2008 at the following locations:

- 1st Street at Main Street
- 11th Street at Main Street
- Shaw Highway at the OR 22 eastbound ramps
- Shaw Highway at the OR 22 westbound ramps

Table 2-5 summarizes vehicle classification data on the major legs of each intersection and indicates total volumes and percentages that represent medium duty and heavy duty trucks. Based on the definition provided in the ODOT "Analysis Procedures Manual" (October 2008), medium duty trucks include all vehicles with 2 axles pulling a trailer, 2-axle, 6-tire single unit vehicles and buses. Heavy duty trucks include all vehicles with 3 or more axles and greater than single units along with all combinations.

In reviewing this table, during the AM peak hour it appears that the percentage of medium trucks on Aumsville streets ranges from a low of about 4 percent to a high of over 14 percent. For heavy trucks the percentages range from zero to just over 2 percent. During the PM peak hour, medium truck percentages on Aumsville streets range from a low of 3.3 percent to a high of over 5 percent. For heavy trucks the percentages range from zero to 5 percent. Over the course of the 16-hour traffic count period (e.g., 6 am to 10 pm), medium trucks comprise between 5 and nearly 8 percent depending on location. For heavy trucks during this same time period, percentages range from 2 to just over 3 percent.

Along OR 22 in the vicinity of the Shaw Highway interchange, medium truck percentages range from 2 to 4 percent during the AM peak hour and between approximately 1 and less than 3 percent during the PM peak hour. Heavy trucks comprise approximately 3.5 percent during the AM peak hour and just under 2 percent during the PM peak hour. Over the 16-hour count period, medium trucks represent between 4.7 and 5 percent while heavy trucks comprise approximately 4 percent.

Peak Period Traffic Volumes

As noted previously, ODOT provided 3 and 16 hour turning movement counts for study intersections collected in mid-May and early June 2008. No adjustments were necessary to ensure consistency of the data with a single base year of analysis. However, as traffic count data typically varies depending on time of the year, the turning movement counts were adjusted to reflect peak season or 30th highest hourly design volumes (30th HV). These volumes represent "typical" conditions that should be used in assessing performance deficiencies, and in the development of conceptual improvement options. The traffic count data is summarized in Figure 2-4 and reflects seasonally adjusted or 30th HV. The traffic count data is presented in Appendix C of *Technical Memorandum #6: Existing Conditions*. The methodology for these adjustments is summarized in Appendix D of that same Technical Memorandum.

Existing (2008) Traffic Operations

This section addresses existing transportation system volumes and operations at key intersections in the Aumsville study area. There are no traffic signalized intersections in the study area. Intersections are typically stop sign-controlled for side street traffic movements only. Existing lane configurations and traffic control for the fourteen study area intersections are shown in Figure 2-3. 2008 30th HV are shown in Figure 2-4.

Table 2-5. Summary of Vehicle Classification Counts at Selected Locations

	AM Peak Hour			PM Peak Hour			16 Highest Hour Total		
Location	**Medium Trucks**	**Heavy Trucks**	**All Vehicles**	**Medium Trucks**	**Heavy Trucks**	**All Vehicles**	**Medium Trucks**	**Heavy Trucks**	**All Vehicles**
OR 22 east of Shaw Highway									
Volume	55	56	1,591	43	29	1,750	840	748	18,058
Percentage	3.5%	3.5%	100%	2.5%	1.7%	100%	4.7%	4.1%	100%
OR 22 west of Shaw Highway									
Volume	37	65	1,912	14	36	1,964	1,211	805	20,280
Percentage	1.9%	3.4%	100%	0.7%	1.8%	100%	6.0%	4.0%	100%
1st Street north of Main Street									
Volume	16	4	271	15	5	304	188	93	3,115
Percentage	5.9%	1.5%	100%	4.9%	1.6%	100%	6.0%	3%	100%
Main Street west of 1st Street									
Volume	23	7	338	18	10	497	201	141	4,927
Percentage	6.8%	2.1%	100%	3.6%	2.0%	100%	5.5%	3%	100%
Main Street east of 1st Street									
Volume	20	5	264	13	5	388	200	89	4,026
Percentage	7.6%	1.9%	100%	3.4%	1.3%	100%	5.0%	2.2%	100%
11th Street north of Main Street									
Volume	32	4	227	12	3	240	167	47	2.119
Percentage	14.1%	1.8%	100%	5.0%	1.3%	100%	7.7%	2.2%	100%
Main Street west of 11th Street									
Volume	31	3	222	12	3	232	163	52	2,399
Percentage	14.0%	1.4%	100%	5.2%	1.3%	100%	6.8%	2.2%	100%
Main Street east of 11th Street									
Volume	22	5	271	1129	0	366	180	69	3,464
Percentage	8.1%	1.8%	100%	3.3%	0%	100%	5.2%	2.0%	100%
Shaw Highway south of OR 22									
Volume	13	5	313	19	8	440	219	114	4,363
Percentage	4.2%	1.6%	100%	4.3%	1.8%	100%	5.0%	2.6%	100%
Shaw Highway Bridge over OR 22									
Volume	10	4	248	16	9	270	184	78	2,961
Percentage	4.0%	1.6%	100%	5.9%	3.3%	100%	6.2%	2.6%	100%
Shaw Highway north of OR 22									
Volume	6	0	127	9	9	181	100	52	1,563
Percentage	4.7%	0%	100%	5.0%	5.0%	100%	6.4%	3.3%	100%

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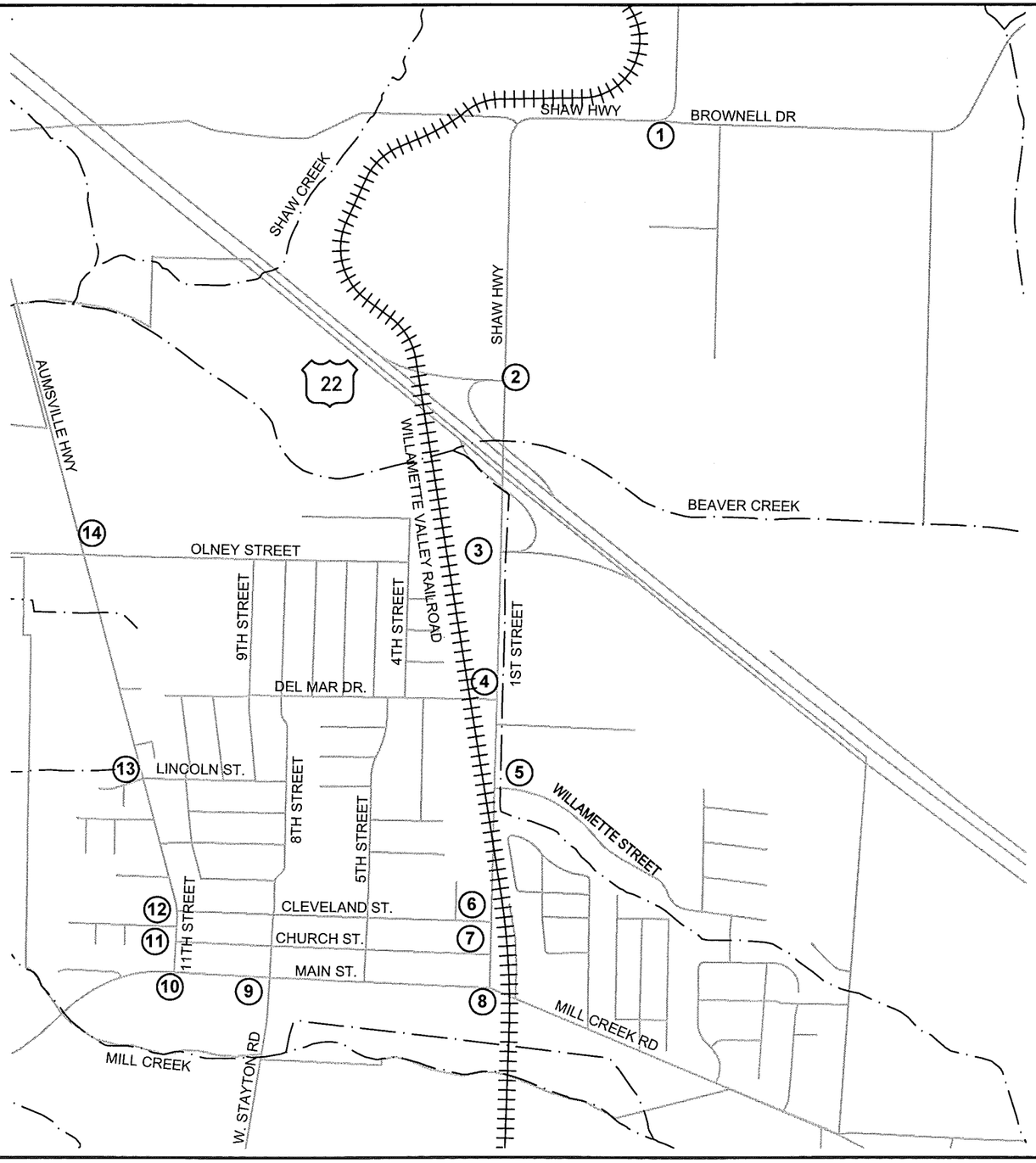
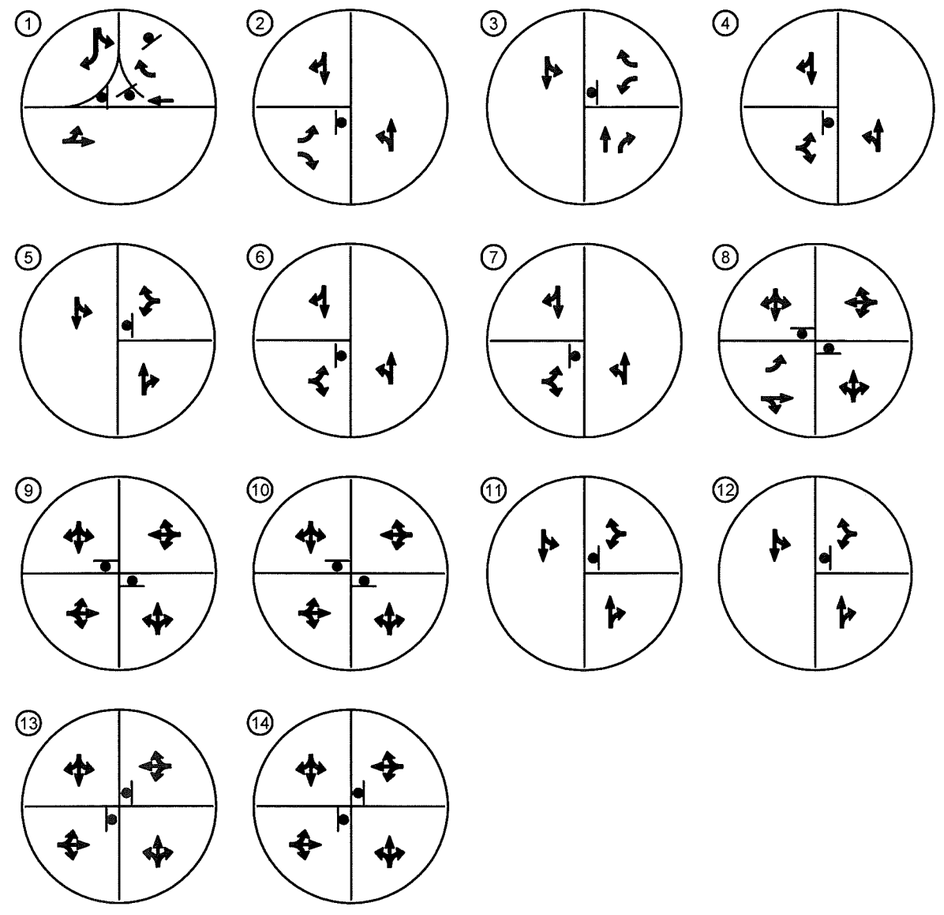




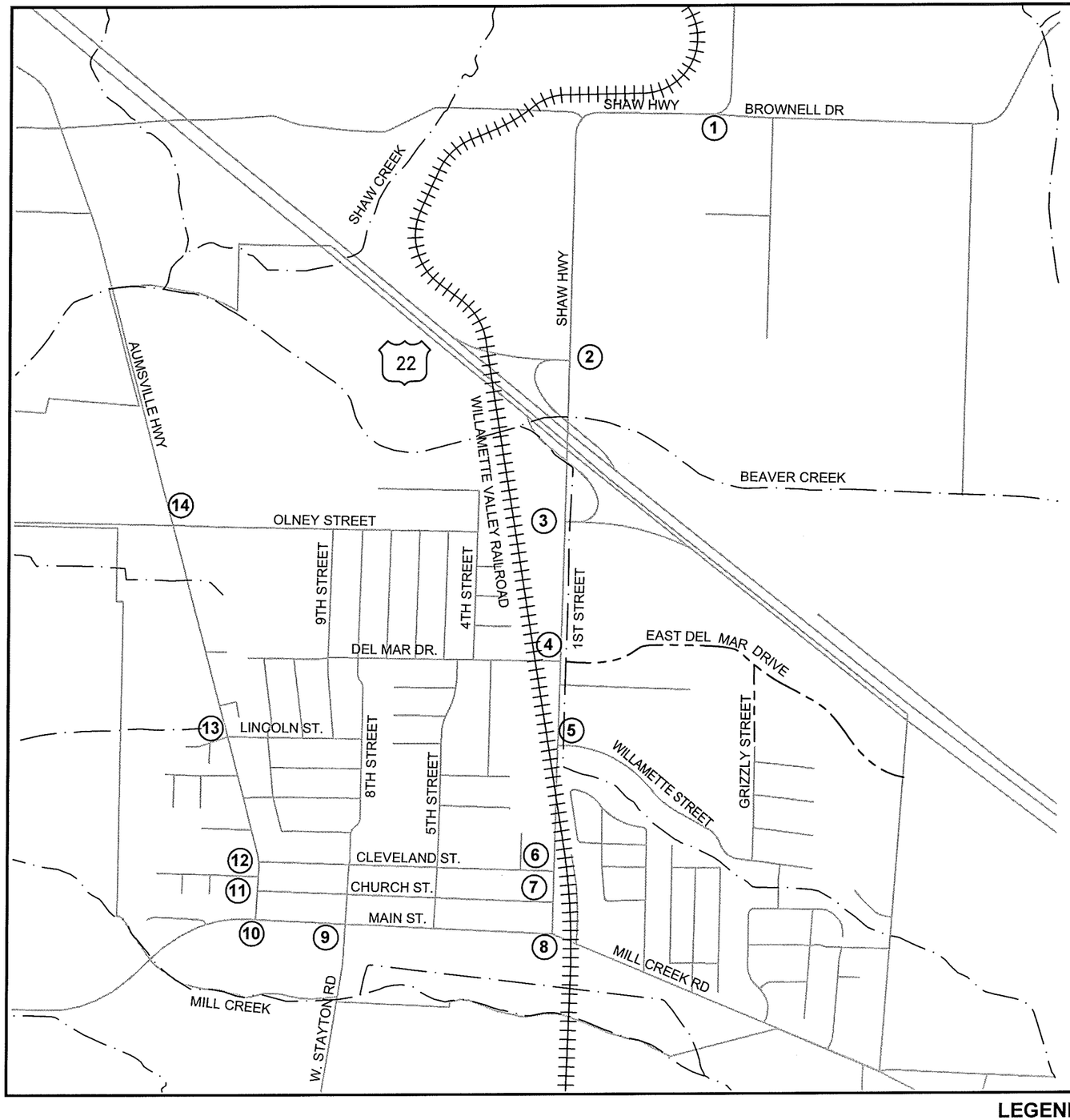
LEGEND

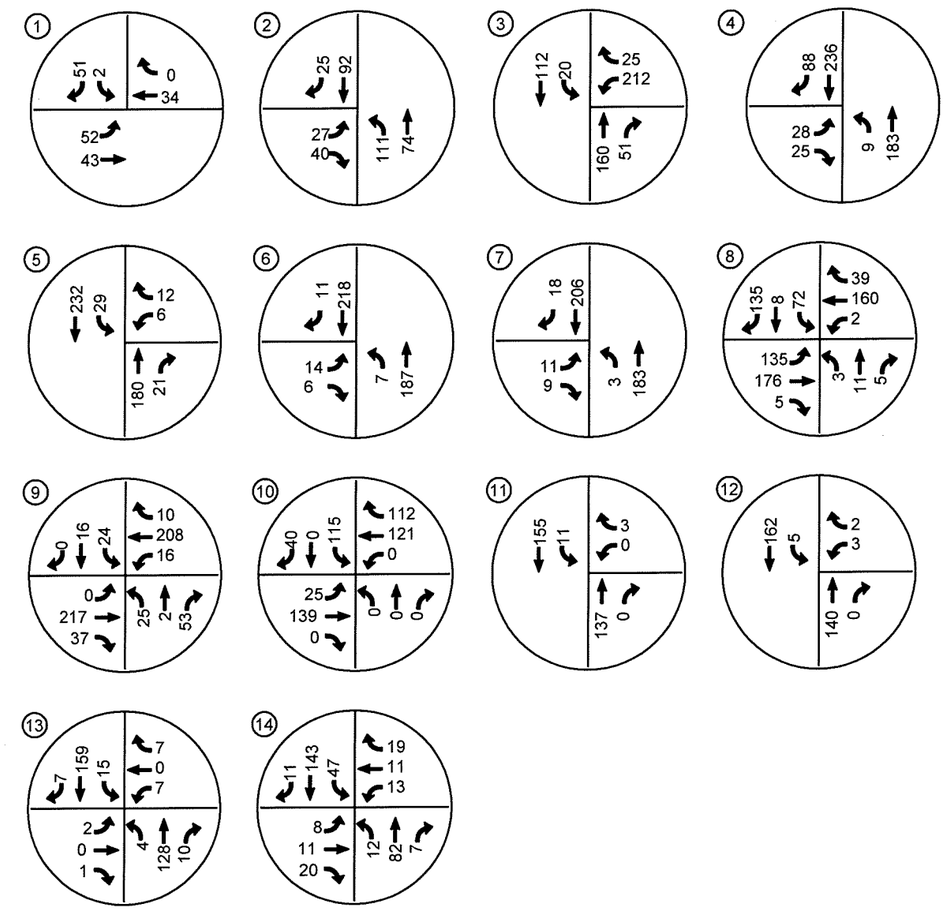
TRAVEL LANE

STOP SIGN

N

Figure 2-3
Existing Intersection Characteristics





LEGEND

XXX → TURNING MOVEMENT VOLUME BY DIRECTION OF TRAFFIC

N

Figure 2-4
2008 Adjusted 30th HV Intersection Turning Movements

Intersections Operational Standards

Within the state of Oregon traffic operations are evaluated based on two sets of criteria or standards. The operative standard used by ODOT for state highways is the volume-to-capacity (V/C) ratio, and is expressed in terms of a ratio between traffic volumes and the roadway or intersection's capacity. Many local communities assess the quality of traffic performance in terms of intersection or roadway levels of service (LOS). These two operational standards are described below.

Volume-to-Capacity Standard

As adopted in the 1999 OHP, ODOT uses V/C ratios to measure state highway performance. A V/C ratio expresses the relationship between traffic volumes and the roadway or intersection's theoretical capacity. Various V/C thresholds are applied to all state highways based on functional classification of these facilities. OR 22 in the Aumsville study area is classified as a Statewide Expressway and State Freight route. The peak hour, maximum V/C standard for OR 22 is 0.70 for the highway and 0.85 for the interchange ramp termini. This standard establishes the minimum threshold of acceptable operations. A V/C ratio of 0.85 means that 85 percent of the capacity of the intersection is utilized based on an established planning level capacity and measured traffic volume. The city does not currently have a V/C ratio for the local street network but may wish to adopt a volume-to-capacity ratio for planning purposes.

Intersection Level of Service Standard

Another measure of intersection operating performance during peak travel periods is based on average control delay per vehicle entering the intersection. This delay is calculated using equations that take into account turning movement volumes, intersection lane geometry and traffic signal features, as well as characteristics of the traffic stream passing through the intersection, including time required to slow, stop, wait, and accelerate to move through the intersection. Various levels of delay are then expressed in terms of LOS for either signalized or unsignalized intersections. The various LOS range from LOS A (free-flow conditions) through LOS F (operational breakdown). Between LOS A and LOS F, progressively higher LOS grades reflect increasingly worse intersection performance, with higher levels of control delay and increased congestion and traffic queues. Characteristics of each LOS are briefly described below in Table 2-6.

Table 2-6. Level of Service Definitions

	Average Delay/Vehicle (sec.)		
Level of Service	**Signalized**	**Unsignalized**	**Description**
A (Desirable)	<10 seconds	<10 seconds	Very low delay; most vehicles do not stop.
B (Desirable)	>10 and <20 seconds	>10 and <15 seconds	Low delay resulting from good progression, short cycle lengths, or both.
C (Desirable)	>20 and <35 seconds	>15 and <25 seconds	Higher delays with fair progression, longer cycle lengths, or both.
D (Acceptable)	>35 and <55 seconds	>25 and <35 seconds	Noticeable congestion with many vehicles stopping. Individual cycle failures occur.
E (Unsatisfactory)	>55 and <80 seconds	>35 and <50 seconds	High delay with poor progression, long cycle lengths, high V/C ratios, and frequent cycle failures.
F (Unsatisfactory)	>80 seconds	>50 seconds	Very long delays, considered unacceptable by most drivers. Often results from over-saturated conditions or poor signal timing.

Source: 2000 Highway Capacity Manual, Transportation Research Board.

In its adopted Transportation Element of the Comprehensive Plan, Marion County considers LOS D or better to be acceptable for roadway segments in rural areas, which is the level at which concerns regarding adequate capacity typically arise. At intersections, the County considers LOS D or a volume/capacity ratio (V/C) of 0.85 or better to be acceptable for signalized and four-way stop intersections, and LOS E or a V/C ratio of 0.90 or better for other unsignalized intersections. The City of Aumsville does not currently have an adopted traffic operational standard.

Summary of Intersection Traffic Operations

The analysis of existing 30th HV traffic operations was conducted using a Synchro traffic simulation model developed specifically for the study area intersections. This model includes field-verified geometrics and other relevant physical data for each intersection. Analysis procedures follow guidelines in the ODOT Transportation Planning and Analysis Unit (TPAU) Analysis Procedures Manual.

Table 2-7 summarizes existing (2008) traffic operations for the 30 HV at study area intersections. The table includes overall intersection V/C ratios, average intersection delay, and intersection LOS. V/C ratios above 1.0 are useful indicators of potential concerns such as sub-optimal signal timing or inadequate turn lane storage. Intersection analysis worksheets are included in *Technical Memorandum #6: Existing Conditions*. Currently, the study area intersections generally experience minimal delays and operate within acceptable operational standards.

Table 2-7. 2008 Traffic Operations Analysis Summary

Unsignalized Intersection	Critical Movement	V/C Ratio	Critical Delay (sec/vehicle)	Critical LOS
Shaw Highway @ Brownell Drive	WBT	0.04	9.5	A
	SBL	0.00	8.9	A
	SBL	0.05	8.6	A
Shaw Highway @ OR 22 WB Ramps	EBL	0.06	12.7	B
	EBR	0.05	9.1	A
Shaw Highway @ OR 22 EB Ramps	WBL	0.40	14.5	B
	WBR	0.03	9.3	A
1st Street @ Del Mar Drive	EB All	0.11	12.0	B
1st Street @ Willamette Street	WB All	0.03	10.5	B
1st Street @ Cleveland Street	EB All	0.04	11.1	B
1st Street @ Church Street	EB All	0.04	10.8	B
11th Street @ Cleveland Street	WB All	0.01	10.3	B
11th Street @ Lincoln Street	EB All	0.02	10.0	B
	WB All	0.03	10.8	B
11th Street @ Olney Street	EB All	0.07	10.9	B
	WB All	0.08	11.1	B

Notes:
V/C ratio is a ratio between traffic volumes and the roadway or intersection's capacity.
LOS means intersection level of service.
"Critical Delay" and "Critical LOS" refers to the delay or LOS experienced for the specific intersection traffic movement listed.

Intersection Traffic Queuing

Vehicle back-ups or "queues" at an intersection can have an effect on traffic safety and operations. Queues that exceed the available storage space at turn lanes can "spill back" and block the adjacent through lanes, creating a temporary reduction in capacity and increased delay. These traffic spill backs can also provide an unexpected obstruction in the through lane

that could result in a crash. In through lanes, long queues can block access to turn lanes, driveways, and minor street approaches, in addition to spilling back into other intersections.

For purposes of this report, the 95th percentile vehicle queue length has been used to identify where potential traffic queuing problems might currently exist. Calculation of the 95th percentile queue is based on the Two-Minute Rule[2] and relies on count data documented in the intersection operations worksheets that are included in Appendix E of *Technical Memorandum #6: Existing Conditions*. Analysis results are summarized in Table 2-8.

Table 2-8. Summary of Intersection Queuing

Intersection / Movement	Existing Storage (ft)	2008 Queue (ft)
Shaw Highway @ Brownell Drive		
Westbound Through	*	25 ft
Southbound Left	*	0 ft
OR 22 @ WB Ramps		
Eastbound Left	Major lane	25 ft
Eastbound Right	50 ft	35 ft
OR 22 @ EB Ramps		
Westbound Left	Major Lane	175 ft
Westbound Right	50 ft	25 ft
1st Street @ Del Mar Drive		
Eastbound	*	50 ft
1st Street @ Willamette Street		
Westbound	*	25 ft
1st Street @ Cleveland Street		
Eastbound	*	25 ft
1st Street @ Church Street		
Eastbound	*	25 ft
1st Street @ Main Street		
Southbound	*	90 ft
Eastbound Left	70 ft	**115 ft**
8th Street @ Main Street		
Northbound	*	70 ft
Southbound	*	40 ft
11th Street @ Main Street		
Northbound	*	0 ft
Southbound	*	130 ft
11th Street @ Church Street		
Westbound	*	0 ft
11th Street @ Cleveland Street		
Westbound	*	0 ft
11th Street @ Lincoln		
Eastbound	*	0 ft
Westbound	*	0 ft
11th Street @ Olney Street		
Eastbound	*	35 ft
Westbound	*	40 ft

* Single approach lane
BOLD means that queue exceeds available vehicle storage.

[2] The Two Minute Rule is a rule of thumb methodology that estimates the length of traffic back-up for major street left turns and minor street movements at unsignalized intersections based on a two-minute stoppage of the turning traffic.

Traffic queuing results shown in Table 2-8 indicate that at the intersection of 1st Street with Main Street, traffic in the eastbound left turn lane currently exceeds the available vehicle storage for this movement.

Crash History

Crash data for the study area intersections were provided by ODOT for a five-year period from 2003 through 2007. Analysis of this data was conducted for both roadway segments through the study area and the key intersections. Crash data and analysis worksheets are included in Appendix F of *Technical Memorandum #6: Existing Conditions*.

Roadway Segment Crash Analysis

Roadway segment crash data is analyzed on the basis of accidents per million vehicle miles of travel (MVMT), which considers both the number of crashes and the level of exposure to crashes expressed in terms of the total traffic volume carried along the roadway segment.

Table 2-9 identifies crash data for one mile segments of OR 22 in Aumsville study area, as well as crash rates along selected major street segments within the UGB. Using 5-year crash data, analysis indicates that two local street segments experience crash rates greater than 1.0/MVMT. Review of crash data for city street segments indicated that the predominant type of crash involves angle or turning movement collisions at public and private access points. The segment of OR 22 experienced crash rates below the average crash rate of 0.73 for all Statewide Highways (expressways) in Oregon for 2007, (according to the ODOT Crash Rate Table II). A review of the data for OR 22 indicates that the predominant collision type is sideswipes/overtaking.

Table 2-9. 2003-2007 Roadway Segment Crash History

	Crash Type					Crash Severity			Total	
Segment	Rear-end	Turn	Angle	Side-swipe/ Over taking	Other	PDO	Injury	Fatal	Reported Crashes	Crash Rate/ MVMT
OR 22 (1/2 mile on either side of Shaw Highway interchange)	0	1	0	3	2	4	2		6	0.16
11th Street (Main to Olney)	1	1	4	0	1	3	4		7	1.88
Main Street (1st to 11th)	2	5	0	0	0	5	2		7	1.45
Shaw Hwy/1st Street (Brownell to Main)	1	6	4	0	2	4	5		9	0.67

Source: ODOT 2008.
Notes: PDO means Property Damage Only. "Other" crashes include backing, pedestrian collisions, and hitting fixed objects.
MVMT means million vehicle miles of travel.

11th Street (Aumsville Highway), Main Street and Shaw Highway/1st Street are designated as urban and rural major collectors in the federal functional classification system. 2007 crash rates for state highways with these designations were identified for comparison purposes to provide context for understanding the significance of the crash rates calculated for these facilities. According to ODOT Crash Rate Table II in 2007 an average crash rate of 0.86 was experienced on all state highway urban collectors (in suburban locations). In 2007, an average crash rate of 1.30 was experienced on all state highway rural major collectors. This indicates

that the crash experience along 11th Street and Main Street is higher than the statewide average for facilities with somewhat similar characteristics.

The ODOT Project Safety Management System tracks crash data by district for segments and specific sites. The Safety Investment Program Segment Ratings rate the number of fatal/injury crashes per 5 mile segments from Category 1 (zero crashes) to Category 5 (more than 10 crashes). Using 2005-2007 data, OR 22 in the study area is rated as a Category 2 (1 to 2 fatal/injury crashes per 5 mile segment). According to the Safety Priority Index System (SPIS) there are no crash sites in the study area that require monitoring or mitigation.

Intersection Crash Analysis

The number of crashes per million entering vehicles (MEV) is used to calculate an intersection's "crash rate." The rate is then compared to crash rates on similar types of facilities throughout Oregon. A rate greater than other similar facilities is commonly used as a threshold to identify locations that warrant further analysis, potentially leading to implementation of measures to improve safety. Table 2-10 identifies crash rates and types and severity at study area intersections. None of the study intersections exceed the rate on similar facilities, and, therefore no further analysis is recommended.

Table 2-10. 2003-2007 Study Area Intersection Crash History

	Crash Type					Crash Severity			Total	
Intersection	Rear-end	Turn	Angle	Side-swipe/ Over-taking	Other	PDO	Injury	Fatal	Reported Crashes	Crash Rate/ MEV
Shaw Hwy @ Brownell									0	0.00
Shaw Hwy @ OR 22 WB Ramps									0	0.00
Shaw Hwy @ OR 22 EB Ramps									0	0.00
1st t @ Del Mar	1						1		1	0.09
1st @ Willamette									0	0.00
1st @ Cleveland		1				1			1	0.15
1st @ Church		2				1	1		2	0.32
1st @ Main		3				2	1		3	0.26
8th @ Main	1	2				2	1		3	0.35
11th @ Main	1					1			1	0.12
11th @ Church									0	0.00
11th @ Cleveland									0	0.00
11th @ Lincoln									0	0.00
11th @ Olney		1	4			2	3		5	0.78

Source: ODOT 2006.
Note: PDO means Property Damage Only and MEV means Million Entering Vehicles. "Other" crashes include sideswipes and head on collisions.

Public Input on Transportation Service and Facility Needs

During the development of the existing transportation system inventory and needs analysis input was provided by the TAC and PAC. Key issues or concerns raised included:

- Inconsistencies in street functional classification between City and County systems including changing the existing arterial designation on 8th Street between Main Street and the UGB to Urban Collector.
- Narrowness of 1st Street between OR 22 and Main Street is problematic in that there can be conflicts between general traffic and large (16-foot wide) farm equipment when these machines move through the city from field to field. Additionally, there are no pedestrian or bicycle facilities along this street, and there exist large drainage ditches which raise the cost of widening the road and/or adding sidewalks.
- Difficulty in making left turns out of the grocery store (at 1st and Main) during the PM peak hour (4 to 5 PM).
- Delays exiting from the bank on Main Street and potential sight distance problem.
- Potential sight distance problem on 1st Street at Church Street looking to the left due to setback of historic house. This can affect emergency vehicles traveling from the fire station at 5th and Church Streets that need to travel north on 1st Street.
- Potential problems with sight distance and adequate turning radii along Olney Street in the vicinity of industrial development along this corridor.
- Potential need for signalization at the intersection of 1st and Main Streets.
- Need to enhance and add to the sidewalk system in the older portion of the city including:
    - Pedestrian crossings for people crossing Main Street to reach the Post Office or grocery store (a crossing at 3rd Street was emphasized).
    - Improvements to the south frontage of Main Street (recent sidewalk improvements were made to the north side and a similar improvement with street lighting is envisioned along the south side).
    - More protected pedestrian crossing of Main Street at 11th Street near the city park. Curb extensions and/or median refuges are not encouraged along Main Street due to the movement of the large farm equipment along both this street and 1st Street.
    - School zone flasher for southbound traffic approaching school zone on 11th Street in vicinity of Olney Street.
    - Crosswalks along 1st Street.
- Train noise at rail crossing locations, most of which are currently ungated. Some concern was also expressed about the roughness of pavement at the crossing locations.

2.4 BICYCLE AND PEDESTRIAN SYSTEM FACILITIES AND NEEDS

Bicycle System

The Oregon Bicycle and Pedestrian Plan (OBPP) categorizes bicycle facilities into the following four major classifications:

- **Shared roadway** – Bicycles and vehicles share the same roadway area under this classification. The shared roadway facility is best used where there is minimal vehicle traffic to conflict with bicycle traffic.

- **Shoulder bikeways** – This bicycle facility consists of roadways with paved shoulders to accommodate bicycle traffic.
- **Bike lanes** – Separate lane adjacent to the vehicle travel lane for the exclusive use of bicyclists are considered bike lanes.
- **Bike paths** – These bicycle facilities are exclusive bicycle lanes separated from the roadway.

Two kinds of bicycle facilities are located in Aumsville, shoulder bikeways and bicycle lanes. As shown in Figure 5-1, bike lanes exist along Main Street from 11th Street to 1st Street.

Pedestrian System

As shown in Figure 5-2, Aumsville has relatively good coverage by a pedestrian circulation system. This system is primarily comprised of sidewalks, although in some locations a widened shoulder is provided. In many locations, sidewalks have been constructed as part of adjacent land development activity including both public and private projects. However, even with the comprehensive coverage that is available, many of the existing pedestrian facilities do not connect with each other and/or provide a continuous, uninterrupted pathway. Most notable is the lack of sidewalk facilities along 1st Street/Shaw Highway along its entire length. Additionally, there are no sidewalks along the west side of much of 11th Street, portions of Cleveland Street, Church Street, Washington Street, the south side of Willamette Street or Bishop Road. The manufactured home parks located north of Mill Creek Road and east of the Willamette Valley Railroad also lacks sidewalks.

There are a variety of local destinations in Aumsville that attract pedestrians. Many of these attracters are located on Main Street and include retail, service, and employment uses. The relatively small size of Aumsville indicates that walking could be a reasonable means for making short trips to reach a variety of destinations. Typically, a comfortable pedestrian walking distance would be about one-half mile. Encouraging pedestrian activities can not only decrease the use of a personal automobile, but can also provide benefits for retail businesses and general community health.

Some pedestrian circulation issues were raised by the PAC for the TSP. These issues emphasized the need to add pedestrian improvements along 1st Street/Shaw Highway, to enhance pedestrian crossings of Main Street as the bulk of the city's residential development lies on the opposite side of the street from the grocery store and post office, and to improve pedestrian access to the Porter Boone Park near the intersection of 11th and Main Streets. Improved street lighting for pedestrian safety was also mentioned.

Evaluation of the Bicycle and Pedestrian System

The bicycle and pedestrian systems in the Aumsville study area were evaluated to identify any existing deficiencies – particularly in terms of safety and/or convenience to users. The evaluation includes a discussion of accessibility to major non-motorized destinations such as schools, parks, the downtown area, and other important locations. Factors considered in the evaluation of deficiencies include, but are not limited to:

- Location(s) of any significant conflicts between pedestrians and bicycles with vehicles
- Routes most likely to provide "bike friendly" use throughout the study area including linkages with all major trip generators

- Deficiencies along key walking and bicycling routes for students traveling to and from Aumsville Elementary School
- Collector and arterial streets that lack adequate sidewalks and bikeways
- Areas where street connections or off-street accessways or trails that would enhance safety or convenience for pedestrian bicycle travel within the community

Bicycle and Pedestrian Destinations

It is important when planning a network of bicycle and pedestrian facilities that key destinations be identified and likely or desired travel routes be determined. Table 2-11 presents a summary of bicycle and pedestrian trip attractors located in the Aumsville area. These include destinations that could attract commute, utilitarian, transit access and/or recreational trips.

Table 2-11. Bicycle and Pedestrian Trip Attractors in the Aumsville Area

Summary of Types of Trip Attractors
Schools, Community College and Training Centers
Library
Parks, open spaces, and recreational facilities
Shopping areas and retail centers
Employment centers
Public facilities and community centers
Cultural, historical and tourist destinations
City Hall, Court House, and other government offices
Transit connections-School Bus Stops
Social Services

When options are available, pedestrians and cyclists generally choose a route that provides the best balance of the following desirable characteristics:

- Directness between the origin and destination points
- Minimal gradients to be negotiated
- A high quality and well-maintained surface
- Lower volumes of motor vehicle traffic
- Adequate space for allowing faster traffic to safely pass
- Pleasant environmental surroundings
- Minimal number of stops or delays

Barriers to Pedestrian and Bicycle Travel

To accommodate and increase the share of biking and walking trips in Aumsville, bicycle and pedestrian infrastructure is needed to form safe connections between destinations. Pedestrian and bicycling barriers include a wide variety of physical features that make it difficult or less safe for pedestrians and bicyclists to travel. Some of the barriers observed in Aumsville are described below.

Bicycling Barriers

- Absence of bike lanes on arterials and collectors
- Poor maintenance of facilities, particularly narrow shoulders in certain locations
- High volumes/speed of motor vehicle traffic

- Lack of places to safely store bicycles at destinations (bike racks)
- Frequent driveway crossings along arterial or collector streets
- Discourteous or inattentive drivers
- Lack of lighting and security along routes

Pedestrian Barriers

- Gaps in sidewalk system
- Utility poles, signal control boxes, signs, and trees in walkways
- Poor maintenance of facilities, particularly along shoulders in certain locations
- Lack of designated crossings opportunities
- Intersection crossing safety, particularly for children going to/from school or community recreational facilities
- Lack of lighting and security along routes
- Discourteous or inattentive drivers

Safe Routes to School

The City of Aumsville currently has one public school within the city limits, the Aumsville Elementary School on 11th Street south of the intersection with Olney Street. Currently, there are sidewalks on one side of 11th Street, adjacent to the school. These sidewalks continue for several blocks; however, they do not extend all the way into town. The Willamette Valley Baptist School, a private facility serving pre-school through 12th grades, is located off Willamette Street immediately east of 1st Street. Sidewalks are provided along one side of Willamette Street in the vicinity of this school, but there are no sidewalks, shoulders or bike lanes along 1st Street.

Several improvements to the pedestrian environment in the vicinity of the Aumsville Elementary School were identified by the PAC. Suggested improvements included: adding a flasher for the existing school zone, segregating bus traffic on Olney Street from autos entering the school site on Aumsville Highway, and providing for bus turns across Aumsville Highway.

Safe and convenient pedestrian and bicycle facilities are of special importance in the vicinity of schools to enable easier and healthier ways for children to walk and bicycle to and from school. The Safe Routes to Schools program is administered by ODOT with funds received from the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) transportation bill for Safe Routes to School programs. The purpose of the program is to inventory and develop enhancements for pedestrian and bicycle facilities within the walk zone (one mile) of schools.

2.5 EXISTING TRANSIT NEEDS

Inventory of Public Transportation Services and Facilities

Public transportation service in Aumsville is provided by the Chemeketa Area Regional Transportation System (CARTS). CARTS is a partnership between Marion, Polk and Yamhill Counties and is operated by Salem Area Mass Transit District (Cherriots). CARTS provides fixed route bus service to communities along the OR 22 corridor between the Salem Transit Mall and the Gates park-and-ride (Route 30 Canyon Connector), stopping in Aumsville. From this route, riders can connect to other CARTS routes and travel throughout the Willamette Valley. The primary objective of the CARTS program is to coordinate the resources dedicated to providing access to medical services, employment, educational,

shopping and recreational opportunities for senior citizens, disabled and economically disadvantaged residents.

CARTS provides three daily round-trips, Monday through Friday. Currently, no service is provided on Saturday, Sunday, or holidays. Schedule information is available on-line: www.cherriots.org. There are two bus stops located in Aumsville – one at the Aumsville Community Center on Main Street and the other on Mill Creek Road east of 1st Street near the mobile home park. Ticket prices are set for Youth (6-18), Adults (19-59), Seniors (60+) and Disabled. The cost of travel for an Adult ranges from $2.00 for a one-way trip, $4.00 for a round-trip and $55.00 for a month-pass. In 2000, the Canyon Connector had 5,223 annual trips which increased to 6,655 in 2001.[3] Funding to operate CARTS is available from several different federal and state sources and through fares paid by individual riders.

Trip Link also provides transportation services in the study area for individuals meeting certain eligibility criteria. Trip Link is a call center with a network of 20 to 25 transportation providers under contract including Cherriots which services the Aumsville area. Trip Link arranges transportation throughout the State of Oregon for rides to medical appointments for individuals who qualify for Medicaid-Plus. (Eligibility for Medicaid is determined by the person's case worker.)

There are currently no taxi companies based in Aumsville, but there are several taxi companies operating out of the Salem area which service the City of Aumsville.

School Transportation Service

Aumsville Elementary School and Cascade Junior and Senior High Schools are part of Cascade School District. Aumsville Elementary School is located on 11th Street in the City of Aumsville. Cascade Junior and Senior Highs are located approximately three miles southwest of Aumsville. School bus services are made available to all public schools.

Transit Service Population in Aumsville

Information in the 2000 Census was used to identify the number of people in Aumsville more likely to use, or be reliant upon, public transportation or paratransit services. Public transportation services are generally targeted to serve the needs of two groups:

- People who are transportation disadvantaged who do not have, or cannot operate, an automobile to obtain medical, educational, social, or recreational services and employment; and
- People who presently use a car but would use other transportation alternatives to commute to work.

Data from the 2000 Census were used to determine the number of transportation disadvantaged Aumsville residents. Transportation disadvantaged individuals were characterized as those who were:

- Aged between 12 and 15 years, inclusive (old enough to travel locally without a parent but too young to drive)
- Aged over 64
- Non-institutionalized individuals traveling outside the home with a disability who were between 16 and 64 years of age

[3] Marion County Rural Transportation System Plan 2005 Update.

In Aumsville, this group included 531 individuals (229 between 12 and 15, 176 over 64, and 126 with a disability between 16 and 64) who travel outside the home. This represents 17.7 percent of Aumsville's total population in 2000. 80 individuals between 16 and 64 inclusive were also identified as having incomes below the federal poverty level. This represents about 3 percent of Aumsville's 2000 population. While there may be some overlap between the disabled and the low income groups between the ages of 16 and 64, the data indicates nearly 20 percent of Aumsville's population could be defined as transportation disadvantaged. A total of 116 families with incomes below or near the federal poverty level were also identified in this Census which represents about 13.8% of Aumsville's households.

Data from the 2000 Census show the workforce over 16 in Aumsville was 1,366 people, or about 45 percent of the population. Driving alone was the most common way to get to work (79.3 percent). A smaller number of individuals participated in carpools (14.2 percent), walked (1.4 percent), or road a bicycle (0.5 percent). Less than 0.1 percent of the work force used public transportation which largely did not exist in Aumsville prior to 2000. The average travel time to work was 25.3 minutes, with 17.9 percent of the work force traveling to employment outside of Marion County.

Transit Service Priorities

The Salem Area Mass Transit District (SAMTD) is defined as the "governing body" responsible for the distribution of Special Transportation Funds (STF) throughout Marion and Polk Counties. Theses funds are for the benefit of seniors and disabled persons. The SAMTD has delegated responsibility for distributing these funds to their Special Transportation Advisory Committee (STAC). In August 1998, the STAC and SAMTD adopted a strategic plan, "Moving Toward Action, the Marion and Polk Counties' Regional Transportation Enhancement Plan (RTEP)." The RTEP outlined the following points:

- Transportation services for the transportation disadvantaged are a recognized, significant local and regional transportation service inadequacy.
- The transportation disadvantaged are recognized as all persons without the ability or capability to use personal conveyance to travel. These include but are not limited to:
    - Seniors – Anyone 60 years of age or older.
    - Mobility Limited – A person 16 years of age or older who has a temporary or permanent physical, mental, or emotional impairment that substantially limits them from going outside their place of residence alone.
    - Youth – Anyone between 12 and 16 years of age.
    - Resource Limited – Individuals in a household with low to moderate incomes who are unable to meet basic human needs due to lack of financial resources and who generally may have no personal auto access.

2.6 NEEDS FOR OTHER TRAVEL MODES

Existing Rail Service

There is one railroad currently operating within the City of Aumsville, the Willamette Valley Railroad. The rail line runs generally north-south parallel to 1st Street. There are three at-grade railroad crossings within the Aumsville City Limits. There is one crossing on Mill Creek Road just to the east of the intersection of 1st Street with Main Street. This crossing is indicated by pavement markings, flashers, bells and cross-bars. There are no protective gates

nor is there illumination. There is a crossing on 1st Street between Cleveland and Willamette Streets. This crossing is indicated by pavement markings, cross-bars and Yield signs. Another crossing is located on Del Mar Drive west of 1st Street. This location has pavement markings, cross-bars and is stop sign-controlled. There is also an at-grade railroad crossing on the westbound on-ramp from Shaw Highway to OR 22 which has advance signage warning, flashers and gates.

The Willamette Valley Railroad leases this line from Union Pacific Railroad, and operates service between Aumsville and the Norpac food-packaging plant in Stayton and then northward to Woodburn via Mt. Angel and Silverton. This line is only used for freight movement; and the line operates in "excepted track" status which minimizes maintenance costs but means that passenger travel is not permitted and that freight traffic must move at very slow speeds (maximum 10 mph) [4]. According to the 2001 Oregon Rail Plan (ORP) *"Designation of excepted track is the prerogative of railroad operations and conveys exemption from compliance with certain FRA (Federal Railroad Administration) regulations (including): roadbed rules pertaining to drainage and vegetation; track geometry rules pertaining to cross level of track in curves; track structure rules relating to ballast, crossties, condition of rail and rail-fastenings and related track appliances"*. Trains carrying passengers may not run over excepted track. As noted in the ORP *"For the most part, excepted status has been invoked for marginal, lightly used lines and auxiliary track. The ability to exempt track in certain situations has been helpful in maintaining train service to communities that might otherwise have lost their railroad to abandonment."*

According to information included in the Marion County Rural TSP, freight activity is increasing on this line and is expected to continue to increase in the future. The Willamette Valley Railroad has been seeking to improve the line to provide for faster track speeds. Anecdotal information provided by the PAC for the TSP indicates that this rail line averages about 2 trains per day. This volume is not perceived as a problem but train noise is a concern. Some interest was expressed in the provision of crossing gates, particularly on 1st Street north of Cleveland and on Mill Creek Road to the east of 1st Street. The crossing at this latter location was considered rough.

The ORP identified several funding needs for the Willamette Valley Railroad which could possibly be eligible for state grant funding assistance. Identified needs included improvements to rails, crossties and turnouts.

Amtrak provides passenger rail service in the Willamette Valley and connects to major destinations throughout the United States. Aumsville residents wanting to travel on Amtrak can catch this service at the railroad passenger depot in Salem, approximately 10 miles away.

Existing Air Service

There are no airports within the Aumsville study area. The nearest airport is the privately owned Flying E Aerodrome approximately three miles west of town. There is one aircraft based at this airport and it has a 2,300 foot by 45 foot runway[5].

The nearest publicly-owned airport is Salem's McNary Field located 10 miles from Aumsville. McNary Field currently has no regularly scheduled passenger service; however, it does accommodate regular cargo service for United Parcel Service (UPS) and Sport Air

[4] Marion County Rural Transportation System Plan 2005 Update.
[5] Federal Aviation Administration, Airport Runway Data
http://www.faa.gov/airports_airtraffic/airports/airport_safety/airportdata_5010/

Travel, and serves as a point facility with the Oregon National Guard[6]. This facility serves a wide-range of charter and corporate users that provide connections to Nevada and other locations. It is also home to a number of businesses providing services such as fuel sales, aircraft parking, flight training, aircraft rental, aircraft maintenance, catering, and courtesy transportation[7]. There are approximately 208 airplanes based at McNary Field, and it has two runways, the largest of which is approximately 5,811 foot by 150 foot[8]. In 2005, McNary Field had a total of 48,608 operations. An operation is a landing or take-off. This is projected to increase in 2025 to 74,351 operations annually.

The nearest scheduled commercial air passenger service can be found at Portland International Airport (PDX) approximately 67 miles from Aumsville. This airport is home to approximately 109 based aircraft and has three runways, the largest of which is 11,000 foot by 150 foot[9].

Existing Pipeline Service

Not often considered as transportation facilities, pipelines carry liquids and gases very efficiently, and the use of pipelines reduces the number of trucks and rail cars carrying fluids such as natural gas, oil, and gasoline. There are three pipelines operating in Marion County, a petroleum distribution pipeline owned by Santa Fe Pipeline, Inc., and two natural gas pipelines owned by Northwest Pipeline Corp. and Northwest Natural Gas. The Santa Fe Pipeline Inc. and Northwest Pipeline Corp.'s pipelines run generally north-south paralleling Interstate 5 near Salem. The Northwest Natural Gas pipeline runs through Salem. None of these pipelines run through the Aumsville study area.

Existing Water Transportation Facilities and Activities

There are no navigable waterways within the City of Aumsville and therefore no possibility for water transportation services.

[6] Marion County Rural Transportation System Plan 2005 Update.
[7] Oregon Department of Aviation, Salem Municipal Airport – McNary Field – Individual Airport Report February 2008.
[8] Federal Aviation Administration, Airport Runway Data
http://www.faa.gov/airports_airtraffic/airports/airport_safety/airportdata_5010/
[9] Federal Aviation Administration, Airport Runway Data
http://www.faa.gov/airports_airtraffic/airports/airport_safety/airportdata_5010/

3. COMMUNITY DEVELOPMENT AND FUTURE TRANSPORTATION SYSTEM NEEDS

This chapter presents a discussion of existing land use patterns, population and employment in the Aumsville study area, including a perspective of historical community development over time. Land use data was provided by the City and includes a summary of existing zoning and development patterns, along with estimates of vacant and developable property that could be put into urban uses in the future. Population and employment data was based on information provided by the 2000 US Census, population estimates provided by the Portland State University Center for Population Studies and other resources.

The chapter also presents a discussion of future community population growth trends and identifies the land uses changes anticipated to occur to support this growth.

3.1 COMMUNITY DESCRIPTION AND HISTORY

The City of Aumsville is located in the Mid-Willamette Valley, nine miles east of Oregon's capital, Salem. The City is situated on the south side of OR 22 (North Santiam Highway) which provides its major connection to the regional transportation system via a grade-separated interchange at Shaw Highway.

Historical Overview

The first settlers in what became the City of Aumsville arrived in 1843, the same year as the conference at Champoeg voted to establish a provisional government for Oregon under the flag of the United States. After Oregon became a United States Territory, Congress passed the Donation Land Claim Act of 1850 which granted land to settlers residing in the Territory as of December 1, 1850. 320 acres were given to single men and 640 acres were given to married couples. Settlers, who came by December 1, 1855, received half of the above amounts. After 1855, pioneers secured their land under the Homestead Act. The land was no longer free for the taking as it required a purchase price of $1.25 per acre.[10]

During the 1850's and 1860's, the community which became Aumsville began to grow with the establishment of a school, church, flourmill and other buildings. The town got its name in 1863 after the death of Amos Davis, the son-in-law of early settler Henry Turner. Turner was fond of Amos, known as "Aumus", and named the young community Aumusville in Davis' honor. Over time, the community came to be called Aumsville. In 1864, Henry Turner and another early settler, Henry Smith, platted the town.

The first store in Aumsville opened in 1866. In 1868, the post office was moved from Condit (about two miles to the south) into Aumsville. The first school located within the town of Aumsville itself was held in a blacksmith shop located at the southeast corner of Main Street and West Stayton Road. In 1893, a school was built between Main and Church Streets on 9th Street.

Aumsville Depot
Source: City of Aumsville website

In 1922, the Amos Davis School was opened at the same location and was used until 1972,

[10] Historical information about Aumsville was obtained from the City's website on November 20, 2008. Information prepared for the city by and credited to the Aumsville Historical Society.

although the high school closed at this location and became part of Cascade High School in 1950.

In 1880, the Oregonian Railway Company began operating on a narrow gauge track from Ray's Landing on the Willamette River through St. Paul, Woodburn, Silverton, Pratum, Macleay, Shaw, Aumsville, West Stayton, and on to Scio, Brownsville, and Coburg. The train made two trips each day, northbound in the morning and southbound in the evening. It carried both passengers and freight. Passenger train service was discontinued about 1925.

Aumsville has historically functioned as a rural trading center as it was centrally located for many farmers in the area. The addition of the railroad enhanced this function as roads to Salem and other Willamette Valley destinations were either non-existent or of very poor quality, even into the early years of the 20th Century.

The population of Aumsville has grown erratically over the past 130 years. In 1878 the population was recorded at 40 persons, growing to 150 by 1893 and 400 by 1917. The population dropped significantly during the First World War such that by 1920 it stood at 171 persons. The population level has slowly grown from that point to 300 in 1960, 590 in 1970, and 1,650 in 1990.

The Modern Community

During the decade between 1990 and 2000, the population of Aumsville grew from 1,650 persons to 3,003 persons representing an increase of over 80 percent or an annualized rate of 6.17 percent. The 2008 certified population estimate is 3,535 persons, while the population estimate for 2015 is 4,177, and 5,706 for 2030[11].

Modern Aumsville remains a rural center which also has a diversity of employment opportunities within reasonable driving distance. Based on the 2000 US Census, there were 1,387 employed persons residing in Aumsville. The 2002 *Economic Opportunities Analysis* estimated that approximately 341 employees commuted to local jobs within the City while the rest (1,046 employees) traveled to destinations outside of the city such as Stayton or Salem. This translates into one local worker for every three who commute outside of Aumsville.

Aumsville is actively seeking new and/or expanded employment opportunities to be located within the city. A key justification for the recent UGB expansion was to add industrially-zoned land to the city's resource base. Additionally, the adoption of the new ID zone is also intended to provide employment opportunities within the city. As indicated in the Zoning and Comprehensive Plan amendment for the ID zone, there were many reasons for its adoption. First of all, it was envisioned that the zone would help the city to take full economic advantage of the OR 22 interchange by providing high quality access to high value employment uses, particularly those that are most dependent on freeway access. The new zone would also help to add to the City's industrial land supply to encourage employment growth within the community. The second primary objective was to provide a more attractive entrance to the city as greater emphasis would be placed on design elements for land development projects.

3.2 EXISTING LAND USE CHARACTERISTICS

This section presents a discussion of existing land uses in the Aumsville UGB and anticipated development over the 20-year planning horizon based on the recent population forecasts

[11] 2030 Population Forecast for cities in Marion County, Marion County, May 2009.

prepared for the city by Portland State University (as noted above). The discussion of future development expectations includes two scenarios: Scenario 1 – development within the City's existing UGB, and Scenario 2 –20-year development including land outside the existing UGB. Since the existing UGB is expected to accommodate less than 10 years of development for the city, a UGB expansion will be needed to meet the requirements of a full 20 years of growth. The TSP analysis focuses on both of these scenarios to ensure consistency with the requirements of Oregon State Planning Goal 12 and ODOT's TSP planning guidelines.

The UGB for the City of Aumsville is approximately 640 acres in size. The land within the city limits is subject to the Aumsville land use ordinances and policies including the Comprehensive Plan and the Development Ordinance. The Comprehensive Plan uses seven designations for all lands within the City: Industrial (I), Public (P), Residential Multi-Family (RM), Residential Single Family (RS), Commercial (CL), Commercial Business District (CL) and Interchange Development (ID). See Table 3-1 for a summary of the acreage of land in the City of Aumsville by land use category. Existing zoning is illustrated in Figure 3-1.

Table 3-1. City of Aumsville Comprehensive Plan Designations

Designation	Acreage
Residential Single Family (RS)	231.7
Residential Multi-Family (RM)	135.4
Commercial / CBD [1] (CL)	28.3
Interchange Development (ID)	59.5
Industrial (I)	111.4
Public(P)	73.0

Note: [1] CBD means Commercial Business District
Source: City of Aumsville, 2009.

Most of the land in single family designation is situated north of Cleveland Street, and generally west of 5th Street and east of 11th Street. Some relatively new single family residential development has been constructed west of 11th Street between Cleveland and Lincoln Streets, and in the eastern portion of the city, and largely south of Willamette Street with a small subdivision to the north of Willamette Street. Multi-family residential designations are located largely south of Washington Street, between Church and Cleveland Streets, between 5th and 1st Streets south of Del Mar Drive, and along Willamette Street. There are also two large mobile home parks located north of Mill Creek Road between Klein Street and Highberger Loop.

Commercially-designated land typically clusters along Main Street between 11th and 1st Streets and is identified for Commercial Business District (CBD) uses. Other commercial property is located south of the CBD between 8th Street and the railroad tracks. Industrial development is largely concentrated along Mill Creek Road east of the railroad tracks and in the northwestern corner of the city north of Olney Street. Public uses include the Aumsville Elementary School on 11th Street south of Olney Street, the City's sewage treatment facility in the northern portion of the city (east of and adjacent to industrial uses along Aumsville Highway), Porter Boone and Mill Creek Community Parks, the Aumsville Civic Center in the block bounded by 5th Street, Church Street, 6th Street and Main Street, and the County facilities near the western edge of the UGB on Mill Creek Road. Within the Civic Center complex are located the city police department, fire department, the Chester Bridges Memorial Community Center, City Hall, and the Aumsville Museum and History Center.

The ID zone was recently adopted by the City and is intended to provide flexibility to develop property near the OR 22 interchange. While primarily industrial in nature, the zone will also include a reasonable variety of commercial activities such as offices or highway-

related businesses that do not conflict with existing businesses in downtown Aumsville. As indicated in the Zoning and Comprehensive Plan amendment for the ID zone, there were many reasons for its adoption. First of all, it was envisioned that the zone would help the city to take full economic advantage of the OR 22 interchange by providing high quality access to high value employment uses, particularly those that are most dependent on freeway access. The new zone would also help to add to the City's industrial land supply to encourage employment growth within the community. The second primary objective was to provide a more attractive entrance to the city as greater emphasis would be placed on design elements for land development projects.

3.3 POTENTIAL FUTURE DEVELOPABLE LAND

This section discusses potential future land development in the Aumsville study area including both within and in addition to the existing UGB. These development forecasts will form the basis upon which the growth in future traffic volumes and the evaluation of improvement needs is founded.

Within Existing Urban Growth Boundary

As noted above, the City of Aumsville's UGB is 640 acres in size. An assessment of buildable lands[12] for this area was performed by the City's planning consultant, so as to predict the type and location of likely future development (a summary of this assessment is included in Appendix C). This land use survey was initially performed in the Fall 2006, and was updated to account for the recent subdivisions and an expansion of the UGB. The land use survey is based on the existing Aumsville Comprehensive Plan and Zoning Ordinance designations for property within the City Limits. For parcels outside of the city limits but within the UGB, land uses are categorized by the expected City zoning for each parcel.

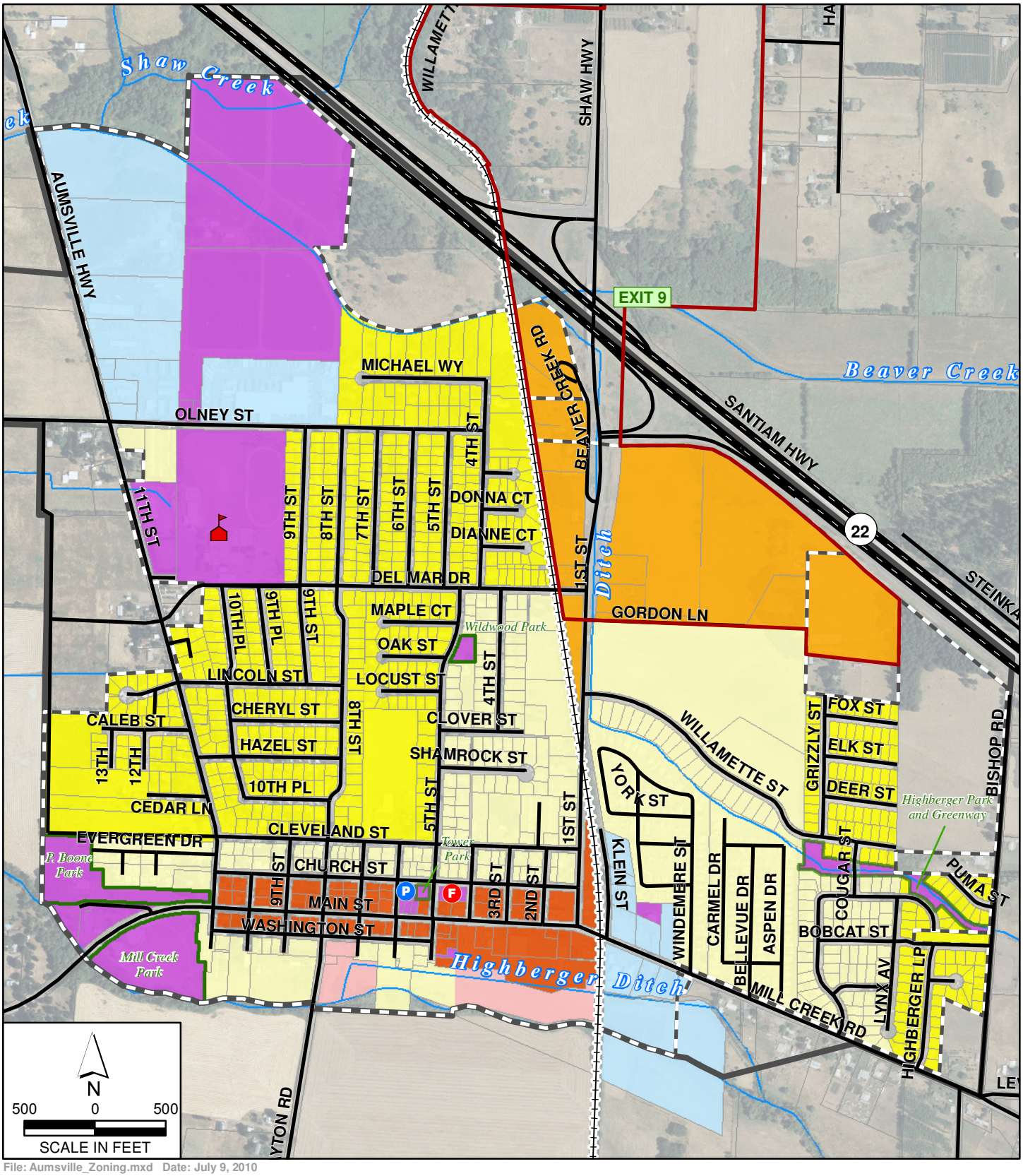
The land use survey identifies existing developed parcels, parcels with redevelopment potential, vacant parcels, and parcels that are currently occupied by "non-optimal" uses. These categories are defined as follows:

- Developed – Parcels which are built upon without space for additional development
- Redevelopable – Parcels which are built upon with space for additional development
- Vacant – Parcels without existing urban land uses
- Non-optimal use – A use that is not the primary development type as designated under the zoning code. Examples of non-optimal uses include: residential development in a CL, I or ID zone, or industrial or commercial development in an RS or RM zone.

Buildable lands include those with potential for redevelopment, those that are currently vacant and those currently supporting non-optimal land uses that are assumed to redevelop.

For purposes of the land use survey, all area measurements are described in acres. Area is determined parcel by parcel based on information contained on the Marion County Tax Assessor maps. For all non-industrial parcels where assessor maps did not display parcel areas, the parcel dimensions were used to estimate a square footage which was converted to acres. The conversion to acres was done by placing ranges of square footages into acreage

[12] Buildable acreage does not include land that is physically constrained (for example, wetlands, flood hazards, steep slopes).



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- Highway
- Street Centerline
- Willamette Valley Railroad
- Aumsville Fire Department
- Aumsville Elementary School
- Aumsville Police Department
- Interchange Area Management Plan Boundary
- City Limits
- Urban Growth Boundary
- Taxlot
- Park
- Streams and Drainage Ditches
- Commercial
- Commercial Business District
- Industrial
- Interchange Development
- Public
- Residential Multi-Family
- Residential Single-Family

Figure 3-1

Aumsville Zoning Designations

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categories delineated by one-hundredth acre in size. The area of all industrially zoned parcels was determined by the Marion County Tax Assessor's database. The only estimations on these areas occurred when lots included a portion outside the UGB. For two unusual parcels the following assumptions were made:

- Parcel 82W24C lot 1800 – is Compost Oregon which includes no buildings but uses all the land with working compost distribution piles and trucking lanes. This parcel was assumed to be fully developed.
- Parcel 82W25B lots 100 and 101 – are covered with trailers. It was assumed that this parcel was fully developed.

Table 3-2 summarizes the amount of available buildable land, by land use type[13], within the study area. Figure 3-2 shows the location of Transportation Analysis Zones (TAZs) for the area within the UGB. TAZs are used to aggregate generally homogeneous land uses into specific geographic areas for the purpose of estimating future traffic demand and assigning that demand to the surrounding street system. Figure 3-3 illustrates the approximately location of developable land within the UGB. A detailed breakdown of buildable lands by parcel is included in Appendix B of *Technical Memorandum #5: Inventory*.

As noted in the table, there is an estimated 251 acres available for development within the existing Aumsville UGB. Slightly more than 94 acres is zoned for single family residential uses which could accommodate approximately 417 new dwelling units (at 4.44 dwelling units per acre per the Aumsville Comprehensive Plan). This represents a population increase of nearly 1,169 persons (based on the 2.8 persons per household rate assumed in the Comprehensive Plan). Approximately 31 acres is zoned for multi-family residential uses which could accommodate about 247 new dwelling units (at 7.96 per acre) and 691 persons.

Table 3-2. Aumsville Buildable Acreage Within Existing UGB

TAZ	Comprehensive Plan Zoning Designation	Buildable Acreage
#1	Single Family Residential	1.71
	Industrial	2.37
	Public	0.5
#2	Industrial	41.03
#3	Single Family Residential	25.15
	Multi-Family Residential	0.67
	Public	3.0
#5	Interchange Development	7.73
#6	Interchange Development	47.89
#7	Single Family Residential	35.99
	Multi-Family Residential	9.18
	Public (school)	12.07
#8	Multi-Family Residential	8.75
	Commercial (CBD)	0.87
	Interchange Development	1.05
#9	Single Family Residential	5.73
	Commercial (CBD)	0.25
	Public	0.20

[13] "Land use types" represent Zoning designations as described in Table 3-1.

Table 3-2. Aumsville Buildable Acreage Within Existing UGB

TAZ	Comprehensive Plan Zoning Designation	Buildable Acreage
#10	Single Family Residential	0.18
	Multi-Family Residential	0.24
	Commercial (CBD)	1.10
#11	Single Family Residential	14.35
#12	Multi-Family Residential	6.28
	Commercial	0.77
#13	Industrial	4.59
#14	Single Family Residential	11.14
	Multi-Family Residential	5.68
	Commercial	0.67
	Industrial	2.07
	Total Residential Single Family	94.24
	Total Residential Multi-Family	30.80
	Total Commercial (including CBD)	3.66
	Total Interchange Development	56.67
	Total Industrial	50.06
	Total Public	15.77
	Total Buildable Acreage	**251.20**

A modest amount of commercially-zoned land is available for development within the UGB (about 4 acres), however, the Interchange Development zone could also be used to accommodate appropriate commercial development that met the purpose of the zone and did not adversely compete with the downtown commercial core. Approximately 12 acres of the land designated as "public" represents the proposed school on the Baptist Church property along 1st Street.

Potential Urban Growth Boundary Expansion

An analysis was conducted by the City in coordination with DLCD to identify the additional acres by zoning type that are expected to be needed over the next 20 years within the Aumsville UGB to meet community growth expectations.

In general, it is anticipated that UGB expansion will occur predominantly to the east and west of the city due to the physical constraints that exist on the north and south (e.g., wetland and 100-year floodplains/floodways). *Technical Memorandum 5: Inventory* presents a detailed assessment of the likely locations by tax lot where this expansion could occur (see Appendix D of the TSP). However, it should be noted that future growth may not actually occur exactly as depicted in this appendix. The tax lot descriptions are meant to serve as a guide for mapping and traffic analysis purposes as a part of the TSP process. Table 3-3 presents a summary of the anticipated 20-year growth outside of the existing Aumsville UGB.

The land uses in Table 3-3 have been spatially organized by TAZ A through D (to distinguish them from the TAZs within the UGB which are numbered). These new TAZs are illustrated in Figure 3-4.

As indicated in the table, the UBG expansion in TAZ A would add approximately 26 acres of publicly-owned space to be developed for community park uses. The park would be located east of Bishop Road and would be accessed via the planned easterly extension of Del Mar Drive. 28.46 acres of single family residential uses are proposed for the area east of Bishop Road and generally south of the park. This area would be accessed by Bishop Road and Leverman Road and, based on densities in the City's existing Comprehensive Plan, would

include 126 dwelling units. A small 2-acre neighborhood commercial use would be developed on the northeast quadrant of Bishop Road and Leverman Road.

Table 3-3. Aumsville Buildable Acreage Outside Existing UGB

TAZ	Comprehensive Plan Zoning Designation	Buildable Acreage
A	Community Park	26.64
	Single Family Residential	28.46
	Neighborhood Commercial	2.06
B	Neighborhood Commercial	5.94
C	Industrial	7.95
D	Industrial	4.72
	Multi-Family Residential	15.43
	Total Residential Single Family	28.46
	Total Residential Multi-Family	15.43
	Total Commercial (including CBD)	8.0
	Total Industrial	12.67
	Total Public	26.64
	Total Buildable Acreage	**91.2**

TAZ B would include an additional 5.9 acres of commercial use located along the south side of Mill Creek Road, both to the east and west of Bishop Road. Development in this area would be constrained by the existing 100-year floodplain in this area (see Figure 3-4).

TAZ C is located on the west side of 11th Street, north of the existing UGB and is significantly constrained by the existing floodplain associated with Beaver Creek. Approximately 8 acres of industrial property have been identified in this TAZ.

TAZ D is located on the south side of Olney Street immediately to the west of the existing UGB. Industrial development within this TAZ is anticipated to occur along the southern edge of Olney Street for a total of approximately 4.7 acres. Multi-family residential development is proposed for the area south of the industrial property along Olney Street and west of the existing UGB for a total of 15.4 acres. Based on densities in the city's existing Comprehensive Plan, 122 dwelling units could be developed on this acreage.

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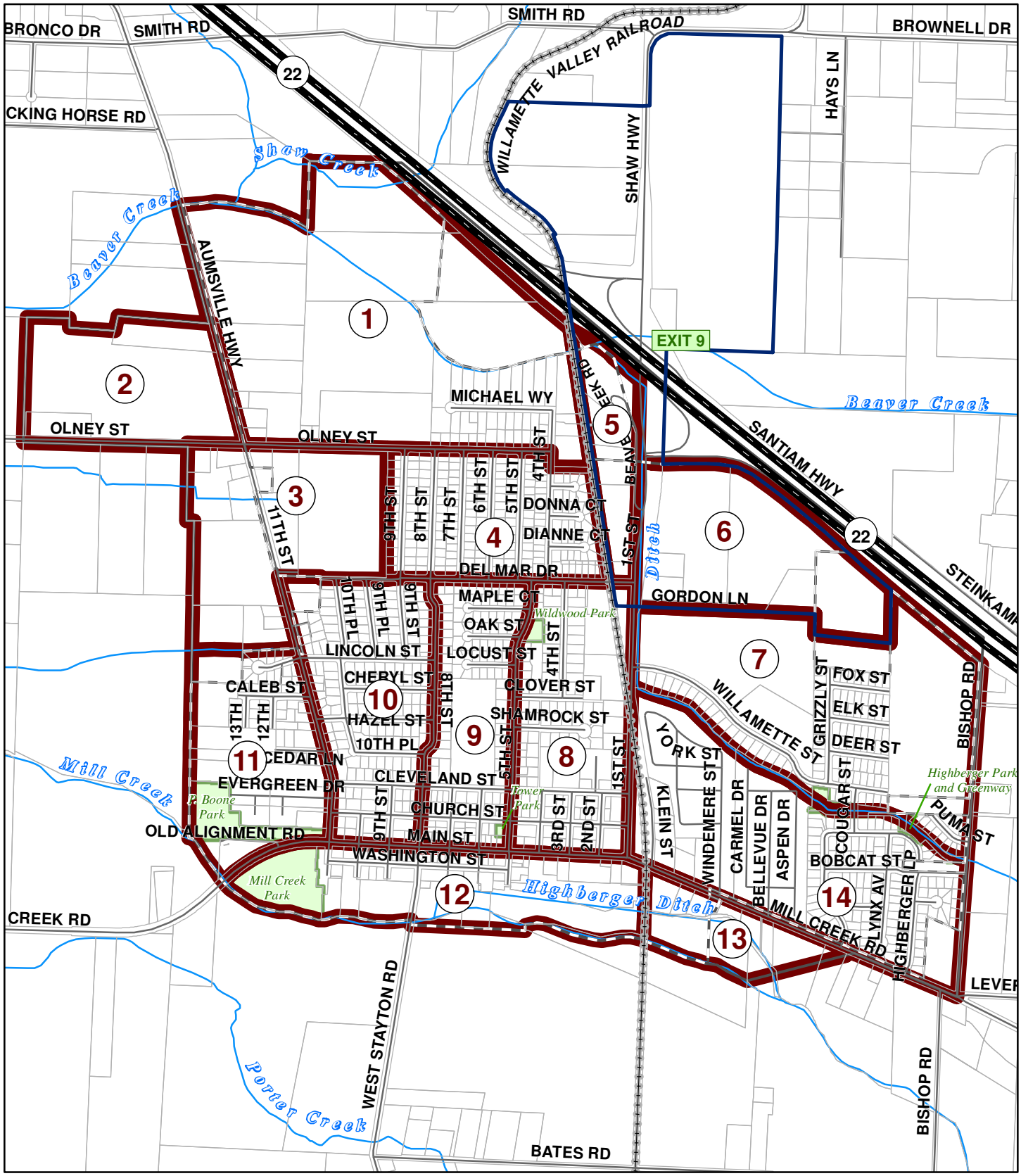

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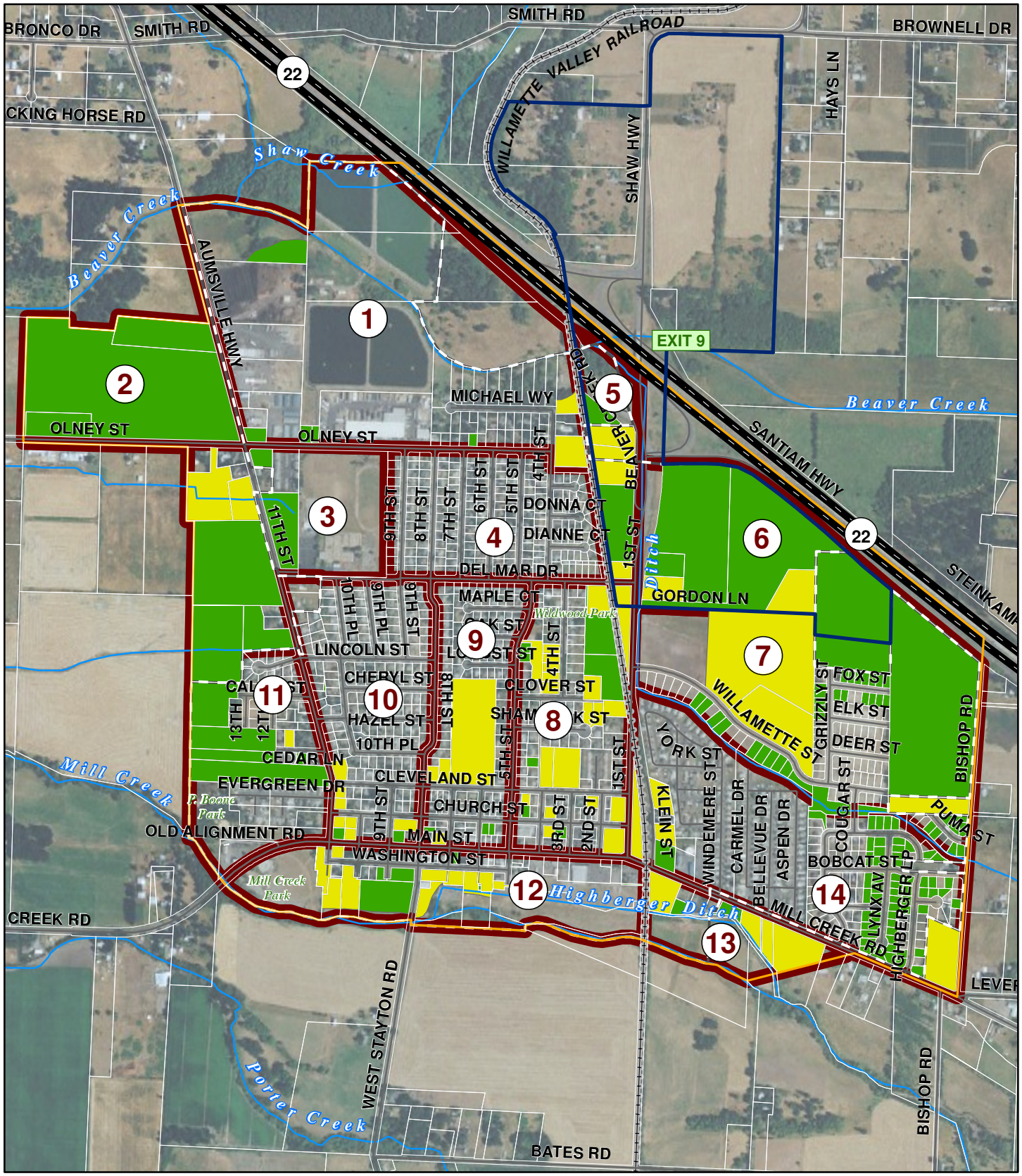
N

500 0 500

SCALE IN FEET

- TAZ Boundary
- Interchange Area Management Plan Boundary
- Highway
- Street Centerline
- Willamette Valley Railroad
- City Limits
- Urban Growth Boundary
- Taxlot
- Park
- Streams and Drainage Ditches

Figure 3-2
Aumsville Transportation Analysis Zones



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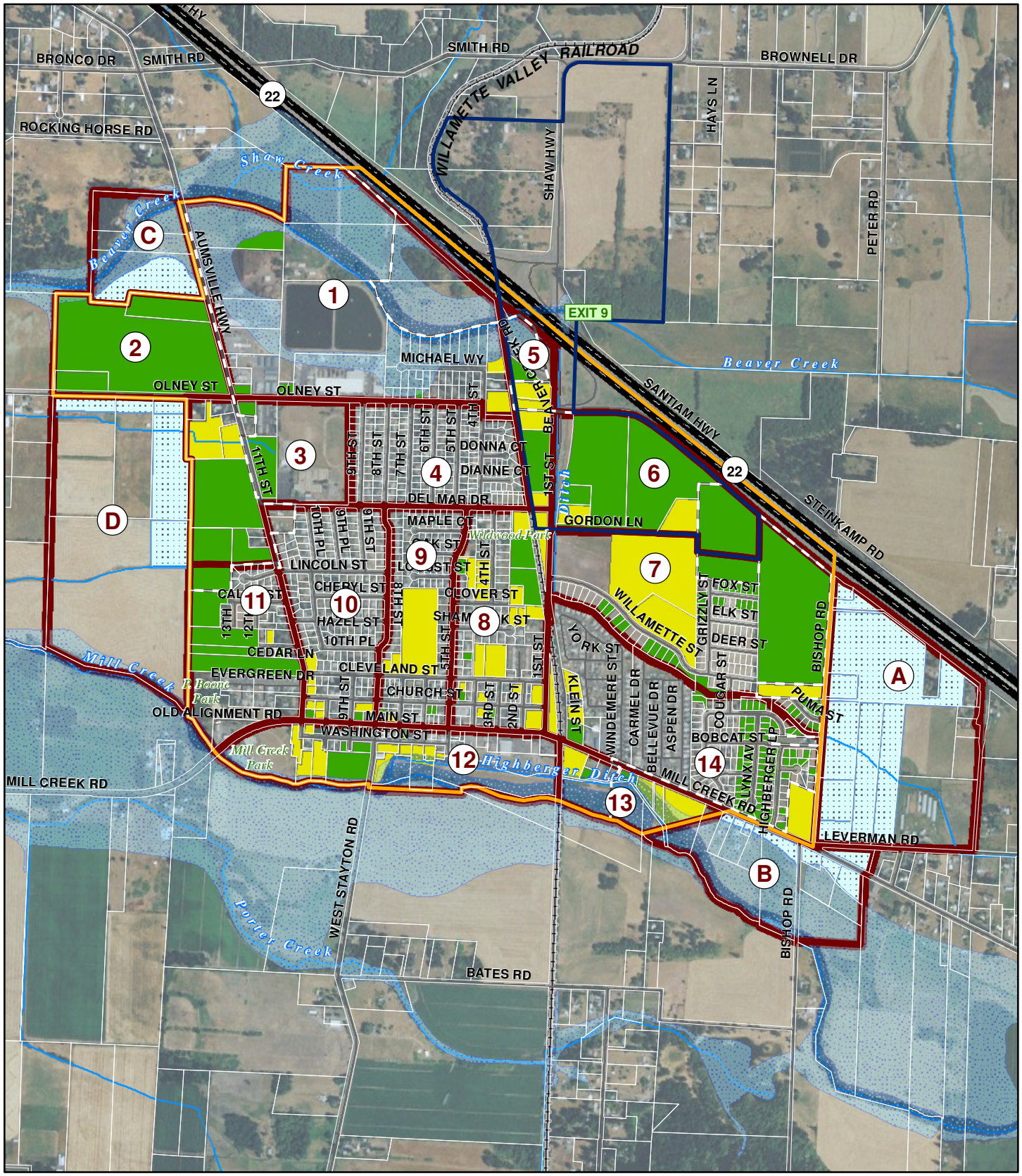
500 0 500

SCALE IN FEET

- Vacant Buildable Lands Inventory
- Partially Vacant Buildable Lands Inventory
- TAZ Boundary
- Interchange Area Management Plan Boundary
- Urban Growth Boundary
- City Limits
- Highway
- Street Centerline
- Willamette Valley Railroad
- Streams and Drainage Ditches

Figure 3-3
Buildable Lands
Within the Aumsville UGB



File: Aumsville_Buildable_LocalArea.mxd Date: March 2010

- Vacant Buildable Lands Inventory
- Partially Vacant Buildable Lands Inventory
- Buildable Lands Outside of UGB
- TAZ Boundary
- Interchange Area Management Plan Boundary
- Urban Growth Boundary
- City Limits
- Highway
- Street Centerline
- Willamette Valley Railroad
- Streams and Drainage Ditches
- 100 Year Flood Area
- Floodway

N

500 0 500

SCALE IN FEET

Figure 3-4
Buildable Lands
Outside the Aumsville UGB

4. ROADWAY ELEMENT

This chapter documents an assessment of needs, deficiencies, policies and improvement options affecting the street system within the Aumsville UGB. Included is a discussion of the local and statewide policy context for developing and maintaining this part of the transportation system, an evaluation of needs and deficiencies in the existing and projected future (2030) system, and a discussion of various improvement strategies for enhancing and expanding this system.

Information contained in this chapter was taken largely from the existing conditions inventory discussed in Chapter 2, the transportation-related goals and policies of the City's Comprehensive Plan, and the analysis of future community growth and development expectations which are discussed in this chapter.

4.1 2030 TRAFFIC FORECASTS

Analysis Methodology

The anticipated future land development patterns presented in Chapter 3 form the basis for the projection of 2030 intersection traffic volumes and the analysis of likely future transportation system deficiencies. The analysis in this chapter was conducted in accordance with the procedures outlined in ODOT's "Analysis Procedures Manual" for a Level 2 cumulative assessment and key assumptions were developed in consultation with TPAU. Analysis included two land development scenarios: Scenario 1 focused on build-out within the existing UGB and Scenario 2 included an expansion of the UGB to accommodate growth that could occur within the 20-year planning horizon. The analysis was based on a multi-step process that included:

- *Estimating future traffic volumes:*
    - Based on the buildable lands inventory documented in Chapter 3 estimates were made of the number of 30th HV trips that could be generated by each land use category in each TAZ for both scenarios. For purposes of the analysis in this report the 30 HV represents the PM peak hour.
    - The trips generated by each TAZ were assigned to the surrounding street system using trip distribution assumptions that had been developed in consultation with TPAU using known data about existing travel patterns including commuter trips to/from the Aumsville area.
    - Using the trips that were assigned to various street and highway segments in the study area, turning movement projections were developed for each key intersection. Separate turning movement projections were developed for the two land use scenarios.
- *Conducting traffic operations analysis to identify future congestion levels and locations.*
    - Traffic operations analysis was conducted using these turning movement projections and assuming that only minor changes would be made in the existing street system to accommodate planned and pending roadway improvements. These included the development of an easterly leg to the intersection of 1st Street with Del Mar Drive to ultimately connect with Bishop Road and the extension of Cleveland Street westward from 11th Street to the UGB.

- Anticipated future year (2030) transportation system deficiencies were identified based on the results of the traffic operations analysis.

The details of each analysis step are described below. For further information the reader is referred to *Technical Memorandum #7: Future Conditions*.

Trip Generation

Table 4-1 presents the trip generation rates used in developing future traffic volume estimates for the Aumsville TSP. For the most part, the trip generation process is based on the PM peak hour rates published by the Institute of Transportation Engineers (ITE) in its publication "Trip Generation, 7th Edition". For the Interchange Development zoning category, a composite trip generation rate was developed based on a variety of land uses as identified in the traffic impact analysis study prepared for the Beaver Creek Professional Center[14]. This development was assumed to include a variety of land uses such as banks, restaurants, a motel, and office buildings. To develop this composite rate, the total peak hour trip-making estimate for the 38+ acres of development that was covered by the traffic study was divided by the acreage to develop inbound, outbound and total 30th HV rates. Trip generation for the public use identified as water treatment facility is assumed to be nominal during the 30th HV.

Table 4-1. Aumsville Trip Generation Rates

			PM Peak Trip Generation Rates		
Land Use	**Units**	**ITE Code**	**Entering**	**Exiting**	**Total**
Single Family Residential (RS)	DUs	210	0.64	0.37	1.01
Multi-Family Residential (RM)	DUs	221	0.38	0.20	0.58
Commercial (CL)	KSF	820	1.84	1.91	3.75
Interchange Development (ID)	Acres	TIA	10.57	13.44	24.01
Industrial (I)	Acres	130	1.86	6.98	8.84
Public (P) - Water Treatment	Est				
Public (P) - Elem School	KSF	520	0.54	0.67	1.21
Public (P) - Government Bldg	KSF	730	0.38	0.83	1.21

Note: DUs means dwelling units, KSF means thousand square feet

By applying the trip generation rates in Table 4-1 to the land use forecasts documented in Chapter 3, estimates were made of future traffic volumes attributable to community growth for the two land use scenarios. Estimates for each TAZ and land use category are summarized in Table 4-2 (for Scenario 1) and Table 4-3 (for Scenario 2). It should be noted that in some of the TAZs there is existing development that is assumed to be redeveloped for different uses over time (e.g., transition of residential to Interchange Development). Since traffic attributable to these existing uses is included in the existing turning movement counts that were documented and evaluated in Chapter 2, this existing traffic must be subtracted from the zone before new traffic generated by redeveloped is included. The net result of subtracting old trips and adding new trips is shown in the table as "Net Trips with Redevelopment". Additionally, for some of the anticipated commercial development, a modest 10 percent reduction was made to total trips from that land use to account for pass-by trips attracted to retail development. These trips are already on the street system and represent stops for shopping before the motorist continues to their final destination.

[14] "Revised Traffic Impact Analysis, RMA Development, Inc. Proposed Annexation, ATEP, Inc., May 30, 2007.

Scenario 1 – Build-out within UGB

As indicated in Table 4-2, a total of 2,852 new 30th HV trips are anticipated to be generated by community growth within the UGB between 2009 and 2030. 1,273 of these trips are expected to be entering each TAZ (e.g., returning home from work), and 1,580 trips are expected to be leaving each TAZ (e.g., leaving work). Appendix C of *Technical Memorandum #7: Future Conditions* provides more detail related to trip generation estimates.

Table 4-2. Aumsville Trip Generation – Scenario 1: UGB Build-out

			2030 PM Peak Hour Trips		
TAZ	**Land Use**	**Units**	**Inbound**	**Outbound**	**Total**
1	Single Family Residential	8 DUs	5	3	8
	Industrial	2.37 acres	4	17	21
	Public (water treatment facility)	0.5 acres	1	1	2
	Total New Trips		***10***	***21***	***31***
2	Industrial	41.03 acres	76	287	363
	Total New Trips		***76***	***287***	***363***
3	Single Family Residential	112 DUs	71	42	113
	Multi-Family Residential	5 DUs	2	1	3
	Public (elementary school)	32.67 KSF	18	22	40
	Total New Trips		***91***	***65***	***156***
4	No new development		0	0	0
5	Interchange Development	7.73 acres	82	104	186
	Net Trips with Redevelopment		13	20	33
	Total New Trips		***95***	***124***	***219***
6	Interchange Development	47.89 acres	506	644	1,150
	Net Trips with Redevelopment		5	10	15
	Total New Trips		***511***	***654***	***1,165***
7	Single Family Residential	160 DUs	102	60	162
	Multi-Family Residential	73 DUs	28	15	43
	Public (elementary school)	131.44 KSF	72	87	159
	Total New Trips		***202***	***162***	***364***
8	Multi-Family Residential	70 DUs	26	14	40
	Commercial	18.95 KSF	35	36	71
	Interchange Development	1.05 acres	11	14	25
	Commercial Pass-by Trips		(3)	(4)	(7)
	Total New Trips		***69***	***60***	***129***
9	Single Family Residential	25 DUs	16	10	26
	Commercial	5.45 KSF	10	10	20
	Public (government building)	4.36 KSF	2	4	6
	Commercial Pass-by Trips		(1)	(1)	(2)
	Total New Trips		***27***	***23***	***50***
10	Single Family Residential	1 DU	1	0	1
	Multi-Family Residential	2 DUs	1	0	1
	Commercial	23.96 KSF	44	46	90
	Commercial Pass-by Trips		(4)	(5)	(9)
	Total New Trips		***42***	***41***	***83***

Table 4-2. Aumsville Trip Generation – Scenario 1: UGB Build-out

			2030 PM Peak Hour Trips		
TAZ	**Land Use**	**Units**	**Inbound**	**Outbound**	**Total**
11	Single Family Residential	64 DUs	41	24	65
	Total New Trips		***41***	***24***	***65***
12	Multi-Family Residential	50 DUs	19	10	29
	Commercial	16.77 KSF	31	32	63
	Commercial Pass-by Trips		(3)	(3)	(6)
	Total New Trips		***47***	***39***	***86***
13	Industrial	4.59 acres	9	32	41
	Total New Trips		***9***	***32***	***41***
14	Single Family Residential	49 DUs	31	19	50
	Multi-Family Residential	45 DUs	17	9	26
	Industrial	2.07 acres	5	19	24
	Total New Trips		***53***	***47***	***100***
	Grand Total New Trips		***1,273***	***1,579***	***2,852***

Note: DUs means dwelling units, KSF means thousand square feet

Scenario 2 – Plus UGB Expansion

Trip generation estimates for land development outside of the existing Aumsville UGB were prepared in the same manner as discussed above. The quantity and location of buildable lands were identified, aggregated into TAZs and then multiplied by the trip generation rates presented in Table 4-1. The results of this process are presented in Table 4-3 below.

Table 4-3. Aumsville Trip Generation – Scenario 2: Plus UGB Expansion

			2030 PM Peak Hour Trips		
TAZ	**Land Use**	**Units**	**Inbound**	**Outbound**	**Total**
A	Single Family Residential	126 DUs	80	47	127
	Commercial	44.87 KSF	82	86	168
	Community Park	26.64 acres	1	1	2
	Total New Trips		***163***	***134***	***297***
B	Commercial	129.37 KSF	238	247	485
	Commercial Pass-by Trips		(24)	(25)	(49)
	Total New Trips		***214***	***222***	***436***
C	Industrial	7.95 acres	15	55	70
	Total New Trips		***15***	***55***	***70***
D	Multi-Family Residential	123 DUs	46	25	71
	Industrial	4.72 acres	9	33	42
	Total New Trips		***55***	***58***	***113***
	Grant Total New Trips		***447***	***469***	***916***

According to Table 4-3, it is anticipated that the buildable lands outside of the UGB would generate approximately 920 trips in 30th HV would impact the key intersections in the Aumsville study area.

Trip Distribution

Trip distribution assumptions for traffic volumes generated by anticipated new development in the Aumsville UGB are presented in Figure 4-1. These assumptions are based on a review of existing intersection turning movement patterns and peak period traffic directionality, as

well as date provided by the city concerning commuter trip patterns to/from destinations outside of the city.

2030 PM Peak Hour Traffic Volumes

Using the trip generation rates and trip distribution assumptions discussed above, peak hour (30th HV) turning movement projections were developed for both land use scenarios at the fourteen study area intersections listed below.

- Shaw Highway @ Brownell Drive
- Shaw Highway @ OR 22 WB Ramps
- Shaw Highway @ OR 22 EB Ramps
- 1st Street @ Del Mar Drive
- 1st Street @ Willamette Street
- 1st Street @ Cleveland Street
- 1st Street @ Church Street
- 1st Street @ Main Street
- 8th Street @ Main Street
- 11th Street @ Main Street
- 11th Street @ Church Street
- 11th Street @ Cleveland Street
- 11th Street @ Lincoln Street
- 11th Street @ Olney Street

Existing lane configurations and traffic control for these intersections is shown in Figure 4-2, while turning movement projections for Scenario 1 are presented in Figure 4-3, and in Figure 4-4 for Scenario 2.

4.2 2030 PM PEAK HOUR DEFICIENCIES

The analysis of projected 2030 PM traffic operations was conducted using a Synchro traffic simulation model which was developed for the existing conditions analysis described in Chapter 2. This model was modified to accommodate the addition of an easterly leg at the intersection of 1st Street with Del Mar Drive. As indicated in the discussion of existing traffic operations analysis, this model includes geometrics, other relevant physical data, and existing traffic control for each intersection.

Analysis results were compared with existing mobility standards to determine where deficiencies in the system might exist. These mobility standards were discussed in greater detail in Chapter 2 and include:

- A maximum V/C standard for OR 22 of 0.85. The V/C ratio relates the magnitude of traffic traveling through an intersection with its theoretical capacity. Thus a V/C ratio of 0.85 would indicate that 85 percent of available intersection capacity has been consumed.
- A maximum LOS standard for Marion County streets and intersections of D (except for side street movements at stop-controlled intersections where LOS E is acceptable). Aumsville did not have an adopted mobility standard so the County's standards were used in this analysis by default.

It should be noted that the mobility standards associated with any future roadway or intersection improvement options at the OR 22 interchange with Shaw Highway is 0.70 for the eastbound ramp intersection which is located within the Aumsville UGB, and 0.60 for the westbound ramp intersection which is located immediately outside of the UGB.

Scenario 1: UGB Build-out

Intersection Traffic Operations

Table 4-4 summarizes existing (2008) traffic operations for the 30th HV at the intersections in the study area. Data in these tables includes the overall intersection V/C ratios, average intersection delay, and intersection LOS. V/C ratios above 1.0 are useful indicators of

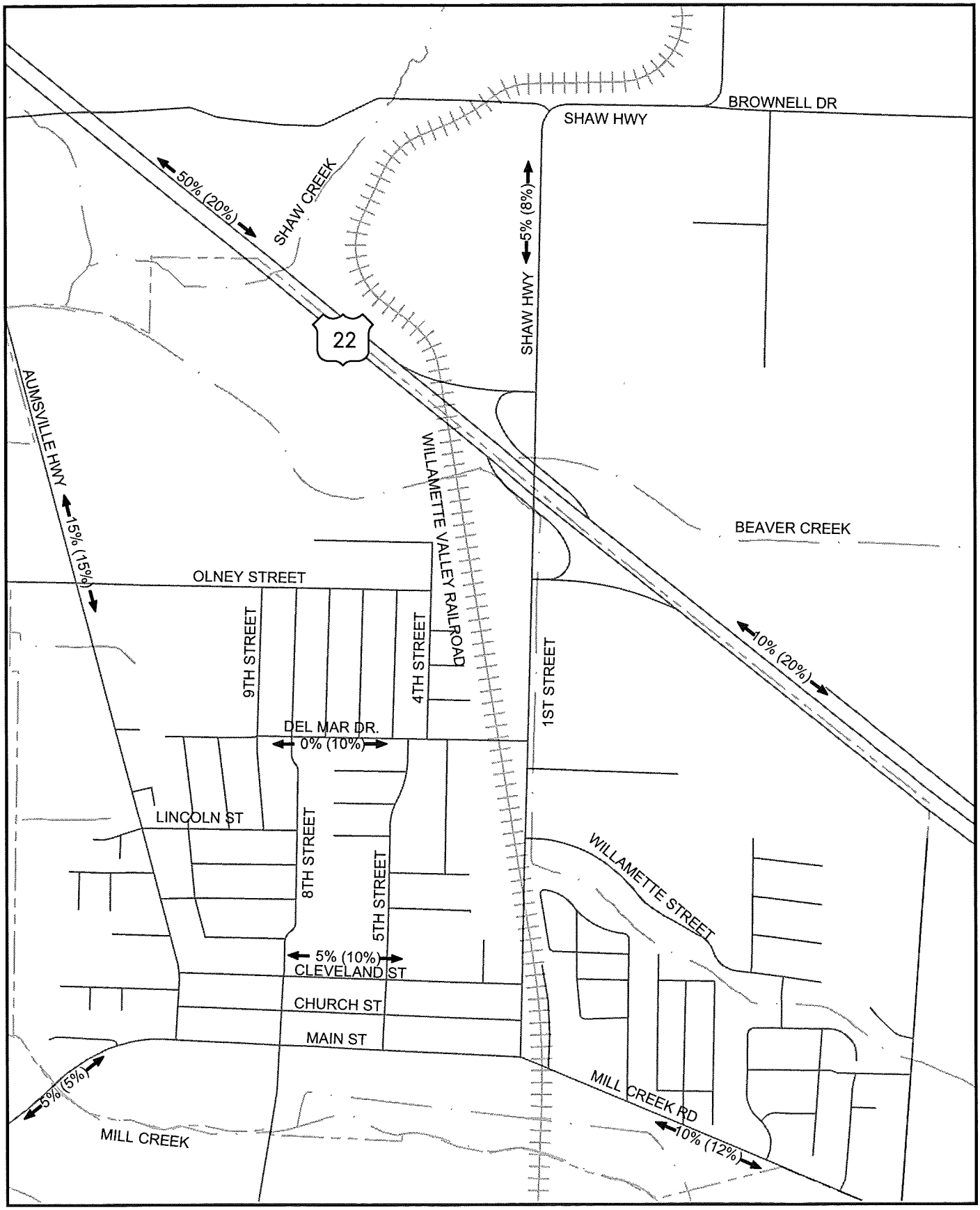
potential concerns such as sub-optimal signal timing or inadequate turn lane storage. Intersection analysis worksheets are included in Appendix D of *Technical Memorandum #7: Future Conditions*.

Table 4-4. 2030 30th HV Traffic Operations Analysis – Scenario 1: UGB Build-out

Unsignalized Intersection	Critical Movement	V/C Ratio	Critical Delay (sec/vehicle)	Critical LOS
Shaw Highway @ Brownell Drive	WBT	0.07	10.9	B
	SBL	0.01	9.1	A
	SBL	0.01	9.1	A
Shaw Highway @ OR 22 WB Ramps	EBL	0.38	75.8	F
	EBR	0.37	12.1	B
Shaw Highway @ OR 22 EB Ramps	WBL	**>2.00**	**>150.0**	**F**
	WBR	0.07	13.7	B
1st Street @ Del Mar Drive	EB All	**>2.00**	**>150.0**	**F**
	WB All	**>2.00**	**>150.0**	**F**
1st Street @ Willamette Street	WB All	0.32	15.7	C
1st Street @ Cleveland Street	EB All	0.43	25.9	D
1st Street @ Church Street	EB All	0.07	14.1	B
1st Street @ Main Street	NB All	0.15	31.7	D
	SB All	**1.94**	**>150.0**	**F**
	EBL	0.18	8.8	A
8th Street @ Main Street	NB All	0.36	19.7	C
	SB All	0.32	23.1	C
11th Street @ Main Street	SB All	0.67	27.7	D
11th Street @ Church Street	WB All	0.01	9.5	A
11th Street @ Cleveland Street	EB All	0.03	16.0	C
	WB All	0.12	14.8	B
11th Street @ Lincoln Street	EB All	0.03	13.1	B
	WB All	0.05	10.7	B
11th Street @ Olney Street	EB All	**1.68**	**>150.0**	**F**
	WB All	0.56	26.7	D

Notes:
"Critical Delay" and "Critical LOS" refers to the delay or LOS experienced for the specific intersection traffic movement listed.
NB means northbound, SB means southbound, EB means eastbound and WB means westbound. EBL refers to eastbound left turning movement.
BOLD indicates movements that exceed acceptable operational standard.

As indicated in Table 4-4, many of the existing intersections in the Aumsville UGB study area are expected to operate within their applicable performance standard thresholds with the addition of 2030 30th HV traffic. However, there are other locations where the standards are exceeded and a future deficiency is identified. These locations include: the eastbound ramps for OR 22 at Shaw Highway, the intersection of 1st Street with Del Mar Drive (for stop-controlled side street traffic), the southbound movement at the intersection of 1st Street with Main Street, and the eastbound movement on Olney Street at 11th Street.



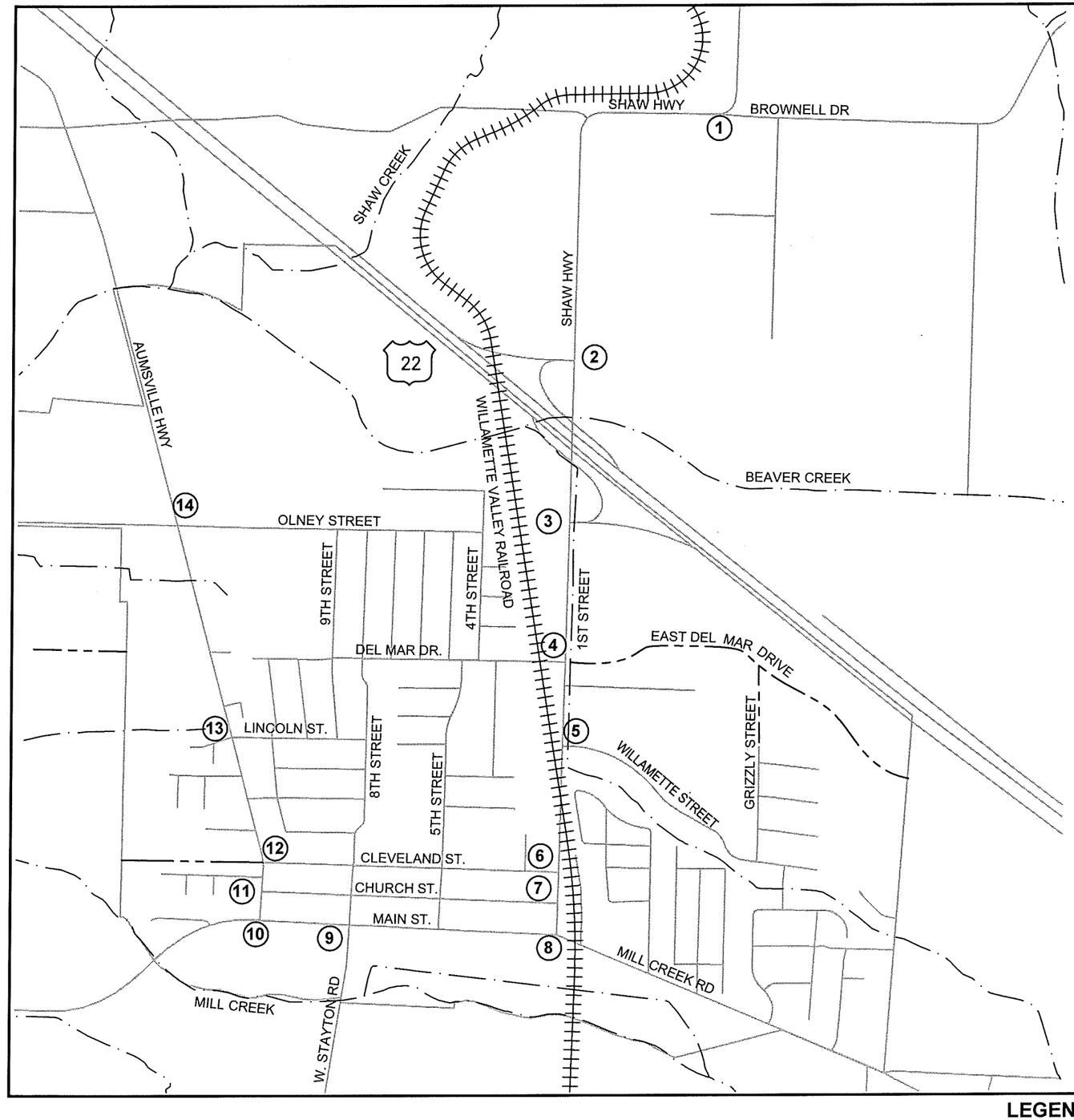
N

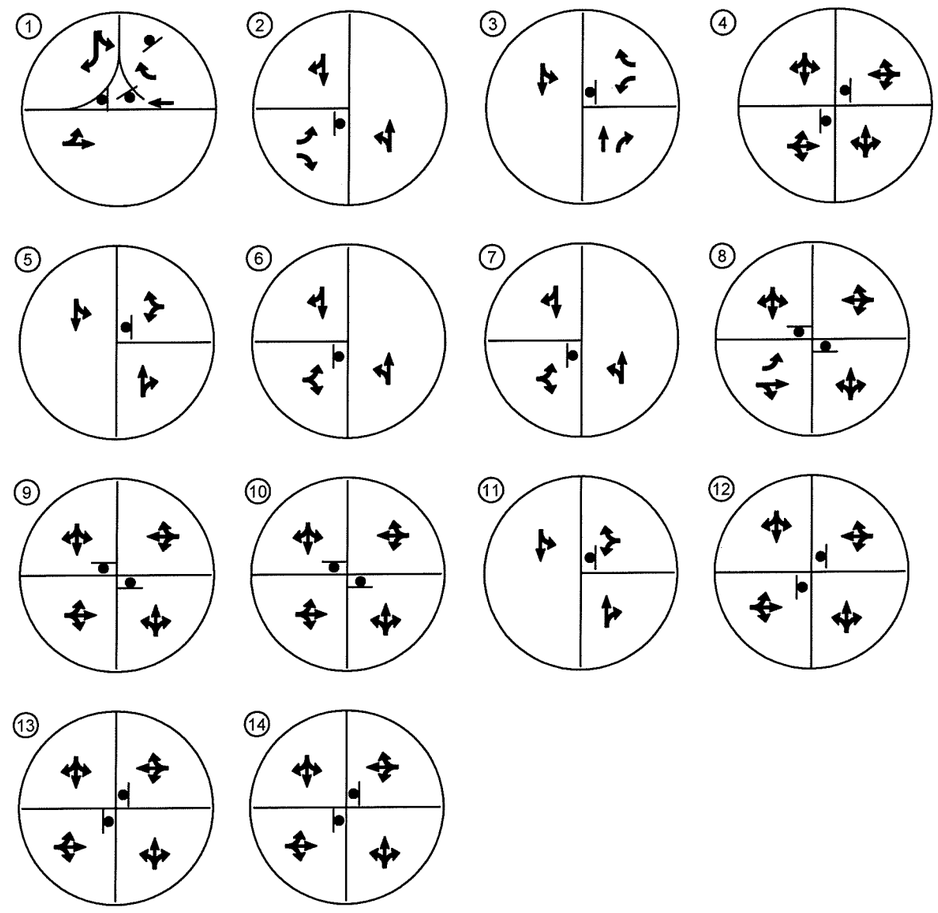
LEGEND

←XX→ PERCENT OF TOTAL TRAFFIC GENERATED BY EMPLOYMENT DEVELOPMENT (COMMUTERS)

←(XX)→ PERCENT OF TOTAL TRAFFIC GENERATED BY COMMERCIAL DEVELOPMENT (OTHER TRIPS)

Figure 4-1
Aumsville Trip Distribution Assumptions





LEGEND

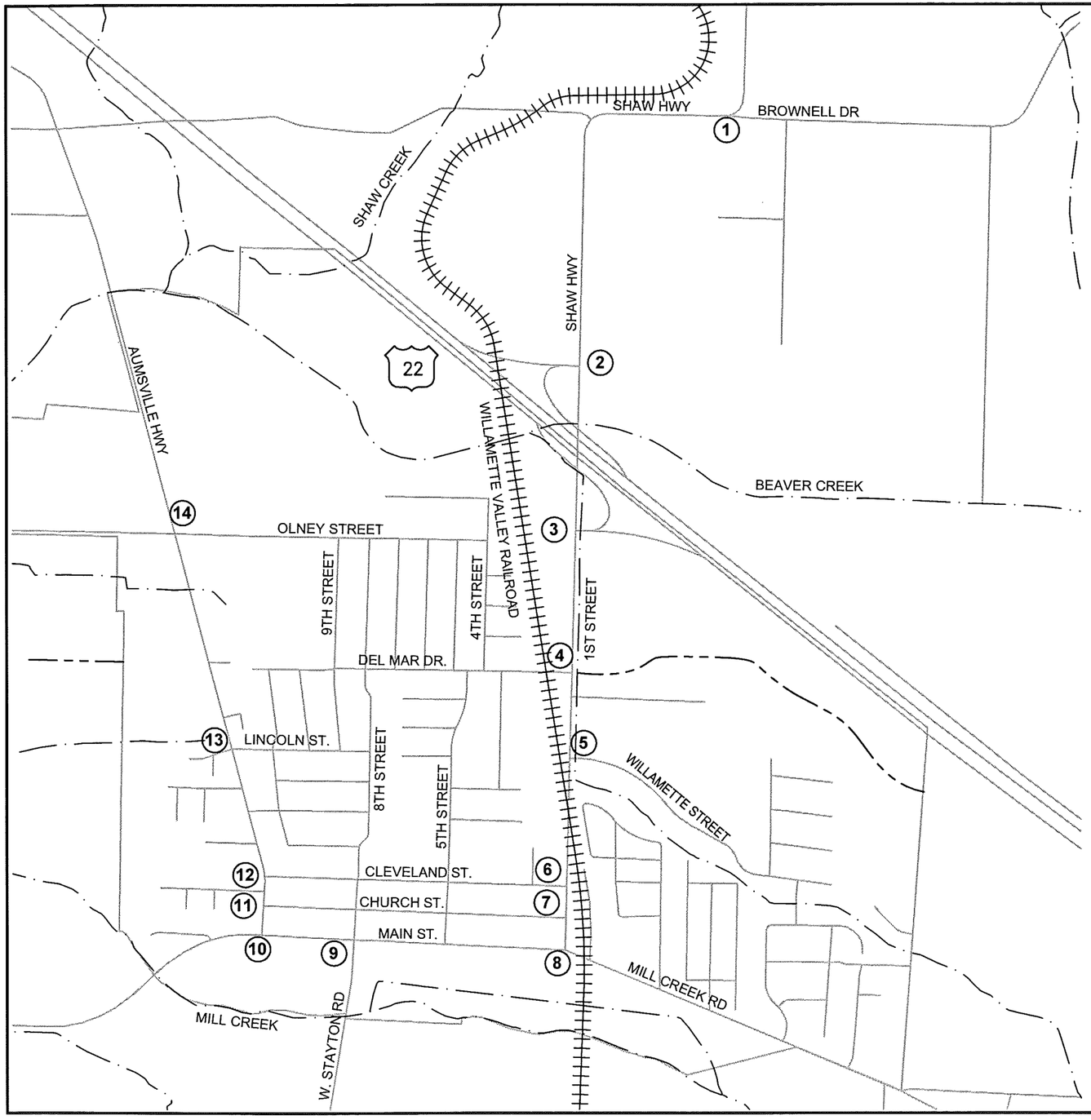
TRAVEL LANE

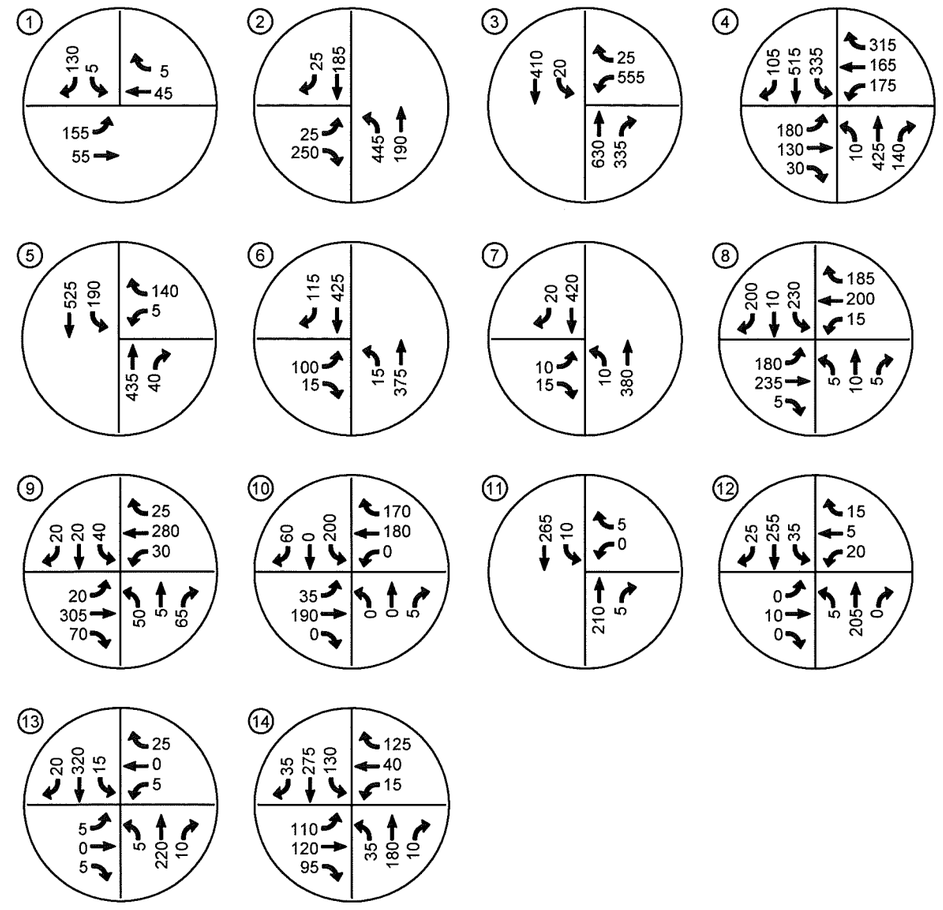
STOP SIGN

PROPOSED STREET EXTENSIONS

N

Figure 4-2
Future No-Build Intersection Characteristics





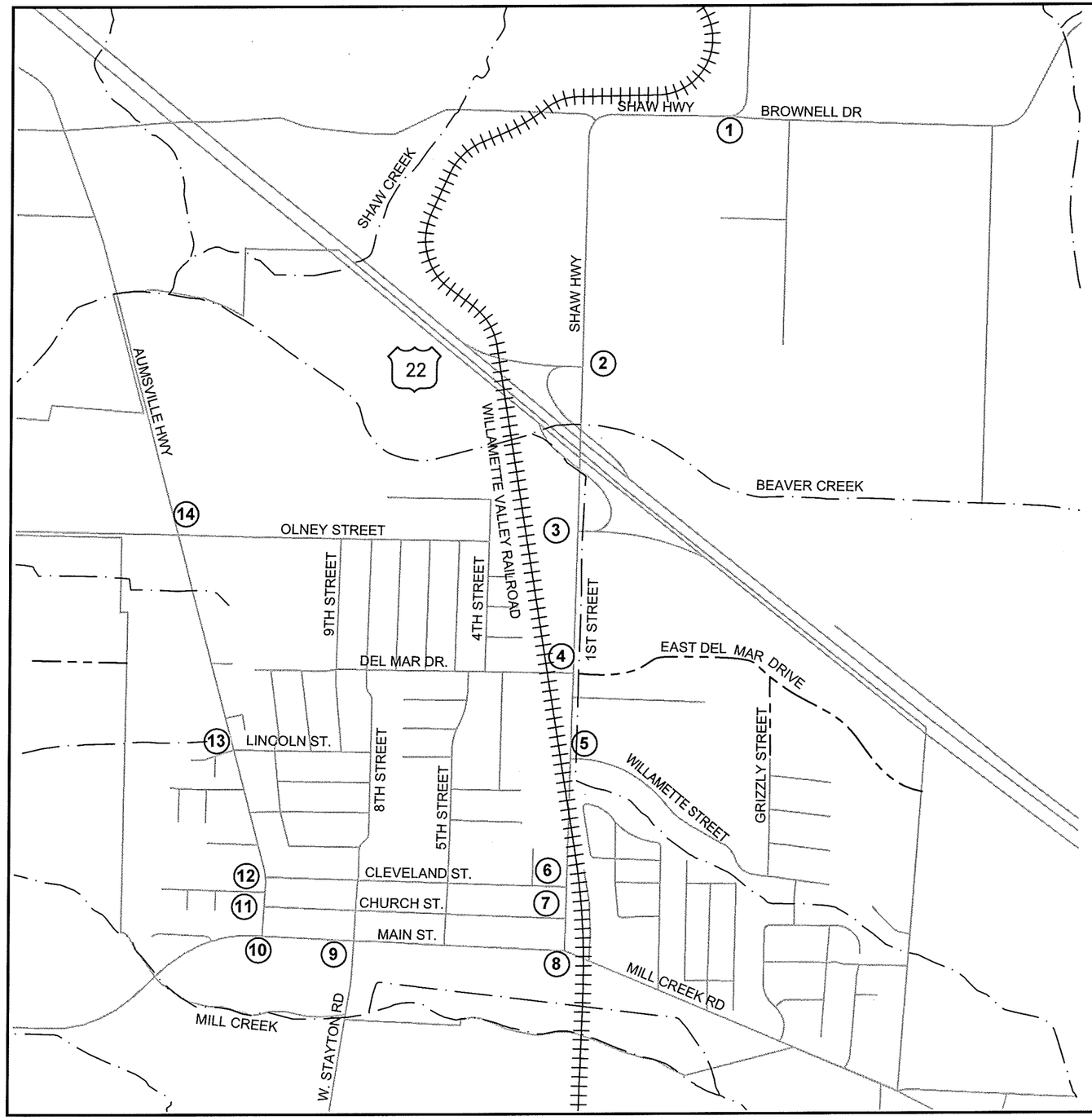
LEGEND

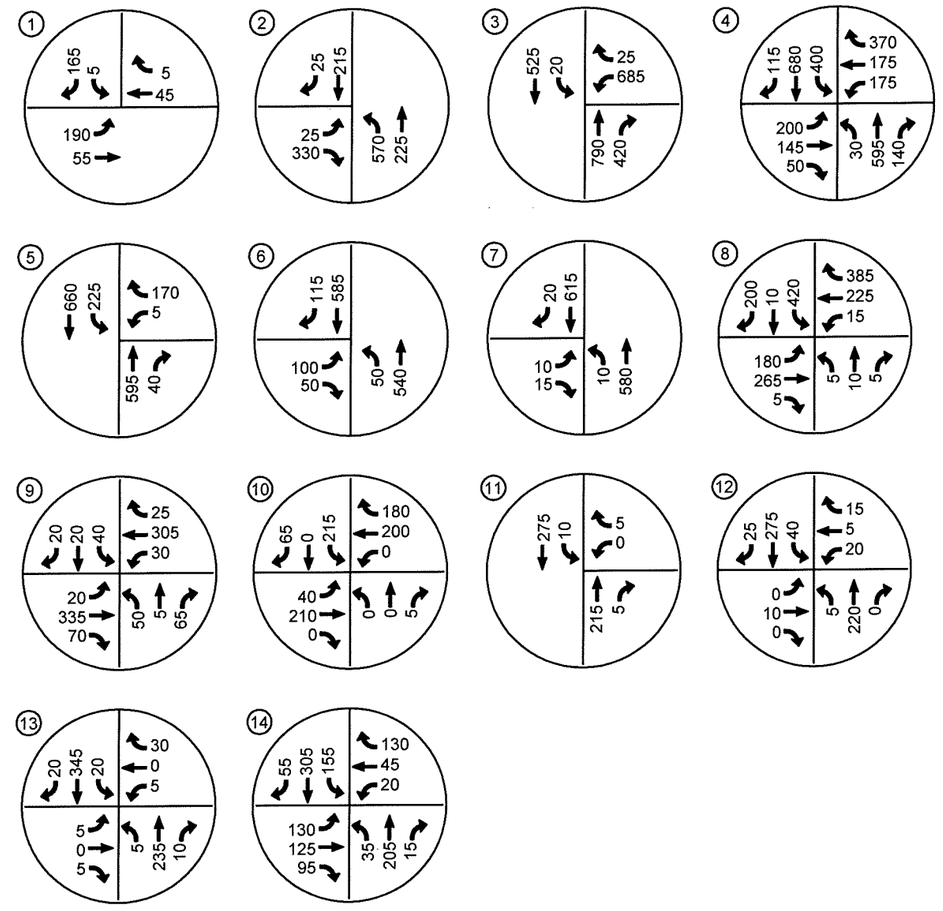
XXX → TURNING MOVEMENT VOLUME BY DIRECTION OF TRAFFIC

PROPOSED STREET EXTENSIONS

N

Figure 4-3
2030 30th HV Intersection
Turning Movements For Development
Within UGB





LEGEND

XXX → TURNING MOVEMENT VOLUME BY DIRECTION OF TRAFFIC

PROPOSED STREET EXTENSIONS

N

Figure 4-4
2030 30th HV Intersection
Turning Movements Plus Development
Outside UGB

Intersection Traffic Queuing

Vehicle back-ups or "queues" at an intersection can have an effect on traffic safety and operations. Queues that exceed the available storage space at turn lanes can "spill back" and block the adjacent through lanes, creating a temporary reduction in capacity and increased delay. These traffic spill backs can also provide an unexpected obstruction in the through lane that could result in a crash. In through lanes, long queues can block access to turn lanes, driveways, and minor street approaches, in addition to spilling back into other intersections.

For purposes of this report, the 95th percentile vehicle queue length has been used to identify where potential traffic queuing problems might currently exist. Calculation of the 95th percentile queue is based on the anticipated arrival patterns, duration of interruptions, and the ability of the intersection to recover from momentary heavy arrival rates. Traffic queuing analysis is based on the Two Minute Rule and relies on count data documented in the intersection operations worksheets that are included in *Technical Memorandum #7: Future Conditions.* Analysis results are summarized in Table 4-5.

Traffic queuing results shown in Table 4-5 indicate that the eastbound right turn movement at the intersection of OR 22 with the westbound ramps would exceed its available vehicle storage, as would the eastbound left turn at the intersection of 1st Street with Main Street. Traffic queues are expected to spill back into the adjacent intersection for the westbound movement on Del Mar Drive at 1st Street (based on anticipated site plan for development of this facility) and the southbound movement on 1st Street at Main Street. It is further anticipated that eastbound traffic on Del Mar Drive may periodically queue back over the railroad tracks while waiting to turn onto 1st Street.

Table 4-5. 2030 30th HV Intersection Queuing – Scenario 1: UGB Build-out

Intersection / Movement	Existing Storage (ft)	2030 Queue (ft)
Shaw Highway @ Brownell Drive		
Westbound Through	*	40 ft
Southbound Left	*	0 ft
OR 22 @ WB Ramps		
Eastbound Left	Major lane	25 ft
Eastbound Right	50 ft	**210 ft**
OR 22 @ EB Ramps		
Westbound Left	Major Lane	450 ft
Westbound Right	50 ft	25 ft
1st Street @ Del Mar Drive		
Eastbound	*	**280 ft** (1)
Westbound	*	**550 ft** (2)
1st Street @ Willamette Street		
Westbound	*	125 ft
1st Street @ Cleveland Street		
Eastbound	*	100 ft
1st Street @ Church Street		
Eastbound	*	25 ft
1st Street @ Main Street		
Southbound	*	**375 ft** (2)
Eastbound Left	70 ft	**150 ft**

Table 4-5 Continued. 2030 30th HV Intersection Queuing – Scenario 1: UGB Build-out

Intersection / Movement	Existing Storage (ft)	2030 Queue (ft)
8th Street @ Main Street		
Northbound	*	100 ft
Southbound	*	70 ft
11th Street @ Main Street		
Northbound	*	0 ft
Southbound	*	220 ft
11th Street @ Church Street		
Westbound	*	0 ft
11th Street @ Cleveland Street		
Eastbound	*	25 ft
Westbound	*	35 ft
11th Street @ Lincoln		
Eastbound	*	0 ft
Westbound	*	30 ft
11th Street @ Olney Street		
Eastbound	*	275 ft
Westbound	*	150 ft

Notes: Estimated using Two-Minute Rule.
* Single approach lane
BOLD means that queue exceeds available vehicle storage.
(1) Traffic could spill back over railroad crossing.
(2) Traffic could periodically block adjacent upstream intersections.

Scenario 2: Plus UGB Expansion

Intersection Traffic Operations

Table 4-6 summarizes future (2030) traffic operations for the 30th HV at the intersections in the study area for conditions that include anticipated development both within the existing Aumsville UGB and in selected locations outside the UGB. Data in these tables includes the overall intersection V/C ratios, average intersection delay, and intersection LOS. V/C ratios above 1.0 are useful indicators of potential concerns such as sub-optimal signal timing or inadequate turn lane storage. Intersection analysis worksheets for this future scenario are included in Appendix E of *Technical Memorandum 7: Future Conditions*.

Table 4-6. 2030 30th HV Traffic Operations Analysis – Scenario 2: Plus UGB Expansion

Unsignalized Intersection	Critical Movement	V/C Ratio	Critical Delay (sec/vehicle)	Critical LOS
Shaw Highway @ Brownell Drive	WBT	0.08	11.6	B
	SBL	0.01	9.1	A
	SBL	0.01	9.3	A
Shaw Highway @ OR 22 WB Ramps	EBL	**0.82**	**>150.0**	**F**
	EBR	0.51	14.6	B
Shaw Highway @ OR 22 EB Ramps	WBL	**>2.00**	**>150.0**	**F**
	WBR	0.09	17.1	C
1st Street @ Del Mar Drive	EB All	**>2.00**	**>150.0**	**F**
	WB All	**>2.00**	**>150.0**	**F**
1st Street @ Willamette Street	WB All	0.51	24.1	C
1st Street @ Cleveland Street	EB All	**0.89**	**90.4**	**F**
1st Street @ Church Street	EB All	0.12	21.7	C

Table 4-6 Cont. 2030 30th HV Traffic Operations Analysis –Scenario 2: Plus UGB Expansion

Unsignalized Intersection	Critical Movement	V/C Ratio	Critical Delay (sec/vehicle)	Critical LOS
1st Street @ Main Street	NB All	**0.33**	**80.4**	**F**
	SB All	**>2.00**	**>150.0**	**F**
	EBL	0.34	11.1	B
8th Street @ Main Street	NB All	0.41	23.0	C
	SB All	0.37	27.3	D
11th Street @ Main Street	SB All	0.84	46.8	E
11th Street @ Church Street	WB All	0.01	9.8	A
11th Street @ Cleveland Street	EB All	0.03	17.0	C
	WB All	0.13	15.8	C
11th Street @ Lincoln Street	EB All	0.04	15.9	C
	WB All	0.08	11.7	B
11th Street @ Olney Street	EB All	**>2.00**	**>150.0**	**F**
	WB All	**>2.00**	**>150.0**	**F**

Notes:
V/C ratio is a ratio between traffic volumes and the roadway or intersection's capacity.
LOS means intersection level of service.
"Critical Delay" and "Critical LOS" refers to the delay or LOS experienced for the specific intersection traffic movement listed.
Note: NB means northbound, SB means southbound, EB means eastbound, WB means westbound. EBL refers to eastbound left turning movements.
BOLD indicates movements that exceed acceptable operational standard.

As indicated in Table 4-6, traffic operational deficiencies can be expected to occur in several locations including both intersections of Shaw Highway with OR 22 (for left turns from the off-ramps); for stop sign-controlled side street movements at the intersections of 1st Street with Del Mar Drive, Cleveland Street, and Main Street; and for the east- and westbound movements on Olney Street with 11th Street.

Intersection Traffic Queuing

Vehicle back-ups or "queues" at an intersection can have an effect on traffic safety and operations. Queues that exceed the available storage space at turn lanes can "spill back" and block the adjacent through lanes, creating a temporary reduction in capacity and increased delay. These traffic spill backs can also provide an unexpected obstruction in the through lane that could result in a crash. In through lanes, long queues can block access to turn lanes, driveways, and minor street approaches, in addition to spilling back into other intersections.

For purposes of this report, the 95th percentile vehicle queue length has been used to identify where potential traffic queuing problems might currently exist. Calculation of the 95th percentile queue is based on the anticipated arrival patterns, duration of interruptions, and the ability of the intersection to recover from momentary heavy arrival rates. Traffic queuing analysis is based on the Two-Minute Rule and relies on count data taken from the intersection operations worksheets in *Technical Memorandum #7: Future Conditions*. Analysis results are summarized in Table 4-7.

Traffic queuing results shown in Table 4-7 indicate that available vehicle storage will be exceeded in a number of locations. These include the eastbound right turn lane at the intersection of OR 22 with the westbound ramps at Shaw Highway, and the eastbound left turn lane at the intersection of 1st Street with Main Street.

Additionally, substantial traffic queues are anticipated for through traffic movement at several locations including: the westbound left turn lane at the intersection of OR 22 with the

eastbound ramps at Shaw Highway (575-foot back-up is anticipated), the westbound direction on Del Mar Drive at 1st Street with an estimated queue in excess of 600 feet., and 1st Street at Main Street with a southbound queue of 525 feet. It is further anticipated that eastbound traffic on Del Mar Drive may periodically queue back over the railroad tracks while waiting to turn onto 1st Street.

Table 4-7. 2030 30th HV Intersection Queuing – Scenario 2: Plus UGB Expansion

Intersection / Movement	Existing Storage (ft)	2030 Queue (ft)
Shaw Highway @ Brownell Drive		
Westbound Through	*	40 ft
Southbound Right	*	0 ft
OR 22 @ WB Ramps		
Eastbound Left	Major lane	25 ft
Eastbound Right	50 ft	**280 ft**
OR 22 @ EB Ramps		
Westbound Left	Major Lane	575 ft
Westbound Right	50 ft	25 ft
1st Street @ Del Mar Drive		
Eastbound	*	**330 ft** (1)
Westbound	*	**605 ft** (2)
1st Street @ Willamette Street		
Westbound	*	140 ft
1st Street @ Cleveland Street		
Eastbound	*	125 ft
1st Street @ Church Street		
Eastbound	*	25 ft
1st Street @ Main Street		
Southbound	*	**525 ft** (2)
Eastbound Left	70 ft	**150 ft**
8th Street @ Main Street		
Northbound	*	100 ft
Southbound	*	70 ft
11th Street @ Main Street		
Northbound	*	0 ft
Southbound	*	235 ft
11th Street @ Church Street		
Westbound	*	0 ft
11th Street @ Cleveland Street		
Eastbound	*	25 ft
Westbound	*	35 ft
11th Street @ Lincoln		
Eastbound	*	0 ft
Westbound	*	30 ft
11th Street @ Olney Street		
Eastbound	*	300 ft
Westbound	*	170 ft

Notes:
Estimated using Two-Minute Rule.
* Single approach lane
BOLD means that queue exceeds available vehicle storage.
(1) Traffic could spill back over railroad crossing.
(2) Traffic could periodically block adjacent upstream intersections.

4.3 DEVELOPMENT AND EVALUATION OF IMPROVEMENT OPTIONS

Range of Improvement Options Considered

To address the existing and future transportation system deficiencies, a series of improvement options were developed and evaluated. These options include such actions as:

- Improvements to existing facilities such as lengthening or adding lanes, traffic control, intersection modifications, shoulder widening and/or added bicycle lanes.
- New facilities to provide increased connectivity within Aumsville and/or to provide sidewalks.
- TSM measures such as access management to improve the operations of the existing roadway system, and/or installation of traffic signals.
- TDM measures such as carpooling, telecommuting, flextime, employer-based transit, or other strategies to reduce travel demand on the roadway system.
- Land use changes to reduce or modify travel demand.

Development of Criteria to Evaluate Improvement Options

Transportation Goals and Objectives

The development of evaluation criteria is based on the goal and objective policy statements developed for the Aumsville TSP. The TSP goal and its supporting objectives were prepared for the City's Comprehensive Plan and are presented in *Technical Memorandum #2: Goals and Criteria*. They articulate the community's vision of a system of transportation facilities and services that provide for local needs and maintain the City's commitment to managing growth, supporting economic development, and preserving it's small town quality of life. The goal of the TSP is *"To provide a balanced, multi-modal, safe, convenient, and efficient transportation system for Aumsville"*.

Supportive objectives focus on:

- Facilitating mobility and accessibility of community residents in a safe and efficient manner.
- Supporting the development of all transportation modes to reduce reliance on single-occupant automobiles.
- Enhancing bicycle, pedestrian and transit facilities and services.
- Protecting existing rail facilities.
- Using the TSP to help guide land use decisions.
- Cooperating with ODOT and Marion County to development and implement transportation improvements.
- Regularly developing and updating a CIP to guide roadway improvements and repair.
- Involving the public in the transportation planning process.

Evaluation Criteria

Evaluation criteria were developed from these goals and objectives to guide the development and assessment of transportation system improvement options. These criteria were intended to measure the effectiveness of proposed strategies to ensure the long-term safety and operations of the community's transportation system. Ten criteria are presented below in five major categories of performance measurement:

- Mobility and Accessibility:

  - Provide for smooth traffic movement through the OR 22/Shaw Highway interchange consistent with OHP criteria, and at other key intersections consistent with City and Marion County operational standards.
  - Enhance multi-modal system connectivity for all users.
  - Ensure consistency of improvement recommendations with City and County Comprehensive Plans, the OHP, the Oregon Transportation Plan (OTP), the TPR, and ODOT design and access management standards.
- Safety:
  - Strive to improve safety of the transportation system for all travel modes.
- Multi-modal Transportation:
  - Ensure adequate and safe access and circulation for non-motorized travel modes.
  - Provide a balanced transportation system that accommodates all modes of travel.
- Built and Natural Environment:
  - Minimize potential impacts to the built and/or natural environment associated with any potential improvements.
  - Minimize potential impacts on available ID zoned land available for economic development.
- Fiscal:
  - Minimize construction costs of any potential improvements.
  - Evaluate potential improvements in relation to anticipated funding levels.

Evaluation Process

Using the evaluation criteria described above, an evaluation process was conducted for the range of multi-modal improvement options developed to address existing and potential future transportation deficiencies in the study area. The intent of this process is to identify the positive benefits that each option may have for addressing deficiencies, cost implications, compatibility with ODOT design standards and regulations, and any obvious environmental "fatal flaws" or potential for significant environmental mitigation.

4.4 EVALUATION OF IMPROVEMENT OPTIONS WITH SCENARIO 1: UGB BUILD-OUT

This section presents a summary of the analysis of various street and highway improvement options for Scenario 1 based on the evaluation process and criteria described above. Included in this discussion are the following:

- Summary of Roadway Improvement Needs
- Evaluation of Mobility and Accessibility Impacts
- Safety
- Multi-modal Transportation
- Rail Transportation Issues
- Built and Natural Environment

Summary of Roadway Improvement Needs

Traffic operations analysis results indicate that many of the existing intersections in the Aumsville UGB study area are expected to operate within their applicable performance standard thresholds with the addition of 2030 peak hour traffic volumes (30^{th} HV or 30^{th}

highest hour volumes were used for this analysis). However, there are several locations where the standards would be exceeded and a future deficiency has been identified. These locations include:

- **Shaw Highway at OR 22**: For left turns from the eastbound off-ramp (V/C > 2.0, LOS F)
- **1st Street at Del Mar Drive**: For eastbound and westbound stop-controlled side street movements (V/C >2.0, LOS F)
- **1st Street at Main Street**: For the southbound stop sign controlled side street movements (V/C 1.94, LOS F)
- **11th Street at Olney Street**: For the eastbound stop sign controlled movements (V/C 1.68, LOS F)

In addition to the estimated traffic delays noted in the bullets above, some vehicle turning movements would experience longer traffic back-ups (or queues) than their available storage. For example, analysis of traffic queues indicates that the eastbound right turn movement at the OR 22/westbound ramp intersection would exceed its available vehicle storage, as would the eastbound left turn at the intersection of 1st Street with Main Street. Traffic queues are expected to spill back into the adjacent intersection for the westbound movement on East Del Mar Drive at 1st Street (based on anticipated site plan for development of this facility) and the southbound movement on 1st Street at Main Street. It is further anticipated that eastbound traffic on Del Mar Drive may periodically queue back over the railroad tracks while waiting to turn onto 1st Street.

Evaluation of Mobility and Accessibility Impacts

The evaluation of mobility impacts focused on performance measures such as V/C ratios, intersection delay and intersection LOS. An initial step in the development of intersection improvements was the identification of locations where traffic signal, all-way stop sign, and/or turn lane warrants would be met. This analysis provides useful input in developing intersection improvements in that it provides a range of reasonable strategies that could be applied. The warrant analysis is presented below.

Signal Warrant Analysis

ODOT uses Signal Warrants 1, Case A and Case B, from the *Manual on Uniform Traffic Control Devices* (MUTCD), which deal primarily with high volumes on the intersecting minor street and high volumes on the major-street. The unsignalized intersections were evaluated for preliminary signal warrants using the minimum vehicular traffic and interruption of continuous flow warrants, Case A and Case B, respectively. The analysis indicates that the following study intersections would meet Case A and/or B preliminary signal warrants for Scenario 1.

- OR 22 eastbound Ramp at Shaw Highway
- 1st Street at Del Mar Drive
- 1st Street at Cleveland Street
- 1st Street at Main Street
- 11th Street at Olney Street (Aumsville Highway)

Analysis worksheets are included in *Technical Memorandum 8: Transportation Needs and Potential Improvements*. Meeting preliminary warrants is necessary to install an improvement, but it does not mean the turn lane, stop sign or signal should be recommended nor does it guarantee installation. Considerations to be evaluated in recommending an

improvement include safety concerns, alternatives to signalization, signal systems issues (including spacing and progression impacts), delay, traffic queuing, bike and pedestrian needs, location of railroad grade crossings, access requirements or restrictions, consistency with local plans, and local agency support. The ODOT Regional Traffic Engineer, County or City Engineer (dependent on jurisdiction) would make the final decision on the installation of a turn lane and the State Traffic Engineer on the recommendation of the Regional Engineer for a signal. Roundabouts may also be considered as an intersection traffic control treatment instead of signalization.

For Scenario 1 the intersection of 11th Street with Main Street would have sufficient volumes on the minor street to meet both Case A and/or Case B signal warrants, but insufficient volumes on the major street. The MUTCD also provides guidelines for the consideration of an all-way stop as intersection control. An all-way stop may be considered where minimum volume on the major approach is at least 300 vehicles for any 8 hours, and the minor street at least 200 vehicles. Also considered is the average delay for the minor street which should be at least 30 seconds per vehicle for the peak hour, and the magnitude of pedestrian traffic and their conflict with vehicle turning movements. An all-way stop may also be considered as an interim measure where a traffic control signal is justified. Projected traffic volumes and delay for the side street movements at this intersection would approach but may not meet these criterion for all-way stop installation. This intersection should be monitored as development occurs on the west side of Aumsville to evaluate the need for all-way stop and/or traffic signal installation in the future.

Turning Lane Warrant Analysis

Intersections that did not meet preliminary signal warrants were evaluated for left turn and right turn lane warrants, and for stop sign control. Turning lane warrants were met for Scenario 1 at:

- 1st Street at Willamette Street – Northbound right (if speed limit remains at 45 mph) and southbound left turn lanes.
- 1st Street at Church Street – Northbound left turn lane.
- 8th Street at Main Street – Eastbound and westbound left turn lanes.
- 11th Street at Main Street – Eastbound left and westbound right turn lanes.

The remaining study intersections that don't meet signal warrants also did not meet warrants for either left or right turn lanes.

Intersection Operations Analysis

Table 4-8 summarizes the results of intersection operations analysis for roadway system improvements associated with Scenario 1. Scenario 1 includes those actions designed to address the 2030 PM peak hour travel needs associated with build-out of remaining developable land within the existing Aumsville UGB. Worksheets for Scenario 1 operations analysis are included in Appendix C of *Technical Memorandum 8: Transportation Needs and Potential Improvements*.

As indicated in Table 4-8, build out of the UGB would require that some improvements be made to the existing interchange of Shaw Highway with OR 22. In large part, this improvement need is related to the development of approximately 57 acres of ID zoned land along 1st Street near OR 22. Access to this development would be via the intersection of 1st Street with an easterly extension of Del Mar Drive and most traffic to/from the ID zone is expected to use the OR 22 interchange.

Table 4-8. 2030 PM Peak Hour Levels of Service with Scenario 1: UGB Build-out

No.	Intersections	Improvement	Critical Movement	PM Peak Hour V/C Ratio	PM Peak Hour Avg Delay (sec./veh.)	PM Peak Hour LOS
1	Shaw Highway @ Brownell Drive	• None needed	--	--	--	--
2	Shaw Highway @ OR 22 WB Ramps	• None needed	--	--	--	--
3	Shaw Highway @ OR 22 EB Ramps	• Signalize and add SB left, 2nd NB thru and 2nd WB left	--	0.55	11.9	B
		• Signalize and add SB Left and 2nd WB Left *	--	0.76	15.8	B
4	1st Street @ Del Mar Drive	• Signalize • Align with new road to east of 1st Street including addition of 2nd NB thru, NB left, 2nd SB thru, SB left, EB left, WB left, and WB right	--	0.79	21.7	C
5	1st Street @ Willamette Street	• Add SB left	SB left WB All	0.19 0.33	9.2 16.0	A C
6	1st Street @ Cleveland Street	• None needed	--	--	--	--
7	1st Street @ Church Street	• None needed	--	--	--	--
8	1st Street @ Main Street	• Signalize	--	0.77	14.2	B
9	8th Street @ Main Street	• Modify SE corner curb radii to better accommodate large trucks	--	--	--	--
10	11th Street @ Main Street	• None needed	--	--	--	--
11	11th Street @ Church Street	• None needed	--	--	--	--
12	11th Street @ Cleveland Street	• None needed	--	--	--	--
13	11th Street @ Lincoln Street	• None needed	--	--	--	--
14	11th Street @ Olney Street	• Signalize	--	0.72	12.4	B

Source: Parametrix, Inc. 2009
Note: V/C means volume-to-capacity ratio, LOS means Level of Service. * Preferred concept.

The first set of improvements identified in the table above for the eastbound ramp of the interchange were intended to meet the ODOT HDM mobility requirements for new improvements (e.g., V/C $\leq$ 0.70). Proposed improvements include installation of a traffic signal and development of dual westbound left turn lanes to accommodate the substantial traffic volume anticipated for this movement (e.g., > 500 vehicles in the PM peak hour). The addition of a second northbound through lane was considered at this intersection to achieve the V/C standard of 0.70. However, it should be noted that this improvement would require widening of the existing bridge over OR 22 to provide two receiving lanes north of the eastbound ramp intersection.

Traffic impacts associated with the large ID zone will also require significant improvements at the intersection of 1st Street with Del Mar Drive to accommodate the high volume of traffic entering and leaving the site. Since this intersection is located within the city limits on a road under the jurisdiction of Marion County, the applicable performance standard is intersection LOS D, along with a V/C ratio of 0.85.

Three other intersection improvements were identified with Scenario 1. These include 1st Street at Main Street and 11th Street at Olney Street where signalization is recommended. Improvement to 1st Street at Willamette Street would include the addition of a southbound left turn lane to reduce the risk of rear end crashes by southbound moving vehicles. Left turn lane warrants would be met at this location where the existing posted speed is 45 mph.

Safety Considerations

Locations that present safety concerns are typically those experiencing existing crash problems, sight distance limitations, awkward configurations, or other factors that could affect intersection or roadway safety. Key safety issues in Aumsville include:

- Roadway segment safety along Main and 11th Streets where crash rates currently exceed rates experienced by similar facilities. Consideration should be given to:
  - Implementing access management strategies to reduce the number of driveways as development activity provides opportunities.
  - Widening the south side of Main Street and both sides of 11th Street to provide for parking and/or bicycle facilities. The additional space could help to reduce crashes between turning and through-moving vehicles.
  - Evaluating a speed zone reduction along Main Street through the city from 30 mph to 25 mph.
  - Address sight distance constraints on Main Street eastbound approaching the railroad crossing.
- The Marion County Rural TSP identifies the need for an improvement at the intersection of Bishop and Leverman Roads near Mill Creek Road which currently has an awkward configuration with poor sight distance.
- As part of the pending improvement project along 1st Street, consideration should be given to sight distance improvements on Church Street at 1st Street looking to the north.
- Evaluation should be made of potential sight distance restrictions and vehicle turning radii along Olney Street through the industrial area.

Multi-modal Transportation

Each of the proposed roadway and/or intersection improvements discussed earlier in this chapter would include provision for added bicycle lanes and sidewalks to improve safety, mobility and connectivity by accommodating the travel needs of these users. If additional transit bus stops are added to the system presently serving Aumsville, consideration should be given to any improved bicycle and/or pedestrian facilities that might be needed to provide safe and convenient access to these stops.

Integration with Railroad

The existing Willamette Valley Railroad trackage passes through Aumsville in a generally north/south direction parallel to 1st Street. There are three at-grade railroad crossings within the Aumsville City Limits. There is one crossing on Mill Creek Road just to the east of the intersection of 1st Street with Main Street. This crossing is indicated by pavement markings,

flashers, bells and cross-bars. There are no protective gates nor is there illumination. There is a crossing on 1st Street between Cleveland and Willamette Streets. This crossing is indicated by pavement markings, cross-bars and Yield signs. Another crossing is located on Del Mar Drive west of 1st Street. This location has pavement markings, cross-bars and is stop sign-controlled. Just outside of the city limits, there is also an at-grade railroad crossing on the westbound on-ramp from Shaw Highway to OR 22 which has advance signage warning, flashers and gates.

Input from ODOT Rail Division staff[15] indicates that some improvements to existing crossings may be needed in conjunction with implementation of selected roadway projects. These include:

- *Del Mar Drive Rail Crossing* - Any modification of Del Mar Street to the west of 1st Street associated with the proposed intersection enhancement may require installation of automatic flashing lights and gate signals at the existing crossing to accommodate an increase in projected traffic volumes. If the crossing is signalized along with signalization at the 1st Street/Del Mar Drive intersection, then the traffic and crossing signals should be interconnected with Traffic Signal Preemption Control (TSPC). The sidewalk crossings along Del Mar Drive approaching but not crossing the tracks will need to be authorized by Rail Division Order and completed over the track.
- *1st Street Rail Crossing* – The major challenge at this crossing is the severely skewed 15-degree angle of the road and track intersection. Sidewalks should cross the tracks at a near 90-degree angle. This requirement coupled with the proposed street widening in the area south of Willamette Drive will require right-of-way acquisition. According to ODOT Rail staff, any widening of 1st Street within 360 feet of the track will require that the widening be carried over the track intersection and may require installation of automatic signals at the crossing. Additionally, there are several driveways within 100 feet of the crossing that will need to be combined or relocated further from the crossing.
- *Main Street Rail Crossing* – Signalization of the intersection of 1st and Main Streets will require interconnection by TSPC with the existing automatic crossing signals (located approximately 180-feet) east of the intersection. According to ODOT Rail staff, it is recommended that automatic gates be added to the existing flashing light signals at the crossing.

Built and Natural Environment

There are several key challenges that must be addressed in the development of some of the proposed transportation system improvements in the Aumsville study area. These include:

- Minimize impacts on the existing drainage ditch running parallel to and east of 1st Street/Shaw Highway from approximately the OR 22 interchange area to Willamette Street. Relocation of this ditch will likely be required to implement the proposed widening project along 1st Street and this must be done in a manner that retains the water transportation function while minimizing water quality impacts from the project.
- Address the need for water quality treatment associated with various widening projects, particularly along 1st Street.

[15] Email to Naomi Zwerdling from Michael Hays, ODOT Rail Division, September 29, 2009, and follow-up conversations during November 2009.

- Minimize impacts on the existing 100-year floodplains to the north and west of the city, as well as to the south along Mill Creek.
- Minimize impacts to the existing Willamette Valley Railroad crossing locations on the OR 22 westbound on-ramp, 1st Street, Del Mar Drive and Main Street. Due to the very low volume and speeds of existing train traffic along this line, improvements to add gated crossings at existing ungated locations are not proposed.
- The proposed improvements along 1st Street/Shaw Highway, particularly in the vicinity of the OR 22 interchange provide the street system capacity needed to accommodate the economic development potential of the City's new ID zone.

4.5 EVALUATION OF IMPROVEMENT OPTIONS WITH SCENARIO 2: PLUS UGB EXPANSION

This section presents a summary of the analysis of various street and highway improvement options with Scenario 2 based on the evaluation process and criteria described earlier in this chapter. Included in this discussion are the following:

- Summary of Roadway Improvement Needs
- Evaluation of Mobility and Accessibility Impacts

Summary of Improvement Needs

Based on the analysis of traffic volumes that would be generated with the UGB expansion (these are additive to the volumes based on development within the UGB), traffic operational deficiencies can be expected to occur in several locations. These would include:

- **Shaw Highway at OR 22**: For left turns from the off-ramps at both intersections (westbound V/C 0.82, LOS F; eastbound V/C > 2.0, LOS F)
- **1st Street at Del Mar Drive**: For eastbound and westbound stop sign-controlled side street movements (V/C >2.0, LOS F)
- **1st Street at Cleveland Street**: For eastbound stop sign controlled side street movements (V/C 0.89, LOS F)
- **1st Street at Main Street**: For northbound and southbound stop sign controlled side street movements (southbound V/C >2.0, LOS F, northbound V/C 0.33, LOS F)
- **11th Street at Olney Street**: For eastbound and westbound stop sign controlled side street movements (V/C >2.0, LOS F for both directions)

Traffic queuing results indicate that available vehicle storage will be exceeded in a number of locations. These include the eastbound right turn lane at the intersection of OR 22 with the westbound ramps at Shaw Highway, and the eastbound left turn lane at the intersection of 1st Street with Main Street.

Additionally, substantial traffic queues are anticipated for through traffic movement at several locations including: the westbound left turn lane at the intersection of OR 22 with the eastbound ramps at Shaw Highway (575-foot back-up is anticipated), the westbound direction on East Del Mar Drive at 1st Street with an estimated queue in excess of 600 feet, and 1st Street at Main Street with a southbound queue of 525 feet. It is further anticipated that eastbound traffic on Del Mar Drive may periodically queue back over the railroad tracks while waiting to turn onto 1st Street.

Evaluation of Mobility and Accessibility Impacts

Intersection Operations Analysis – Scenario 2

Table 4-9 summarizes the results of intersection operations analysis for Scenario 2. Scenario 2 includes those actions designed to address the 2030 PM peak hour travel needs associated with a proposed 91-acre UGB expansion as described in *Technical Memorandum #7: Future Conditions*. Worksheets for Scenario 2 operations analysis are included in *Technical Memorandum 8: Transportation Needs and Potential Improvements*.

The UGB expansion is expected to result in a 2030 V/C of 0.82 for eastbound left turns at the intersection of Shaw Highway with the OR 22 westbound ramps. This falls within the OHP standard of 0.85. Signalization would be required to address the long delays experienced with this movement; however, signal warrants would not be met at this location. Since the movement meets ODOT's V/C standard and, since the impacted volume is low (25 vehicles in the peak hour), no improvement is recommended. It is recommended that the northbound through lane be restriped to provide for separated through and left turn movements as traffic volumes increase and left turn warrants are met (these warrants would be met with 2030 traffic volumes). This would enhance safety for northbound-moving traffic by separating through and turning traffic movements.

Additional improvements would be required at the intersection of Shaw Highway with the OR 22 eastbound ramps to accommodate the added traffic associated with the UGB expansion. Consideration was given to three options:

- Option 1 - Signalize and provide 2 northbound and southbound through lanes, a northbound right turn lane, a southbound left turn lane, dual westbound left turn lanes and a single westbound right turn lane – V/C 0.69
- Option 2- Signalize and provide a single northbound through lane, 2 southbound through lanes, a northbound right turn lane, a southbound left turn lane, dual westbound left turn lanes and a single westbound right turn lane – V/C 0.93
- Option 3 – Signalize and provide a separate direct ramp for traffic from eastbound OR 22 to southbound 1st Street, a single northbound through lane, 2 southbound through lanes, a northbound right turn lane, a southbound left turn lane, and a westbound right turn lane – V/C 0.71

Option 1 would require widening of the existing bridge over OR 22 between the eastbound and westbound ramp termini as there is insufficient space on the existing structure to provide for a single southbound lane and two northbound lanes. This would be a very expensive option.

Option 2 would not meet the OHP mobility standard (existing = 0.85) and the UGB expansion would cause additional degradation of operating performance beyond the level anticipated with UGB Build-out.

Option 3 would provide two ramps for traffic exiting the freeway at Shaw Highway – one would merge with Shaw Highway heading south into Aumsville, and the other would provide for traffic heading north toward Shaw (using the existing ramp which would be modified to provide for right turning traffic only onto Shaw Highway. The eastbound-to-southbound traffic heading into Aumsville would be added to the southbound through traffic already on Shaw Highway as it passes through the intersection of the highway with the OR 22 eastbound ramps. Elimination of green time for the large westbound-to-southbound movement at that intersection (as would exist under Options 1 and 2) would significantly improve traffic

operations at the intersection resulting in a V/C of 0.71. This could be accommodated with the mobility standard of 0.85. Further conceptual design would be necessary to determine the feasibility of these options, as well as the need for right-of-way acquisition, extension of on-ramp(s), and ramp spacing along OR 22. As appropriate, this assessment should be conducted as part of future UGB Expansions.

Table 4-9. 2030 PM Peak Hour Levels of Service – Scenario 2: Plus UGB Expansion

				PM Peak Hour		
No.	**Intersections**	**Improvement**	**Critical Movement**	**V/C Ratio**	**Average Delay (sec./veh.)**	**LOS**
1	Shaw Highway @ Brownell Drive	• None needed	--	--	--	--
2	Shaw Highway @ OR 22 WB Ramps	• Widen and restripe for separate NB left	NB Left EB Left EB Right	0.53 **0.82** 0.51	9.8 **>200.0** 14.6	A **F** B
3	Shaw Highway @ OR 22 EB Ramps	• (1) Signalize and add SB left, 2nd NB and SB thrus and 2nd WB left	--	0.69	13.1	B
		• (2) Signalize and add SB left, 2nd SB thru, and 2nd WB left	--	0.93	24.8	C
		• (3) Signalize and add direct ramp for east-to-south traffic, 2nd SB thru, and SB left *	--	0.71	3.4	A
4	1st Street @ Del Mar Drive	• Signalize • Add 2nd NB thru, NB left, 2nd SB thru, dual SB lefts, EB left, WB left, and WB right	--	0.79	22.7	C
5	1st Street @ Willamette Street	• Add SB left	SB Left WB All	0.28 0.49	10.6 22.7	B C
6	1st Street @ Cleveland Street	• Signalize • Add NB left	--	0.64	6.8	A
7	1st Street @ Church Street	• Install median and convert Church to right-in/right-out	EB Right	0.04	13.3	B
8	1st Street @ Main Street	• Signalize • Add SB left and WB right	--	0.75	12.2	B
9	8th Street @ Main Street	• Modify SE corner curb radii to accommodate large trucks	--	--	--	--
10	11th Street @ Main Street	• None needed	--	--	--	--
11	11th Street @ Church Street	• None needed	--	--	--	--
12	11th Street @ Cleveland Street	• None needed	--	--	--	--
13	11th Street @ Lincoln Street	• None needed	--	--	--	--
14	11th Street @ Olney Street	• Signalize • Add NB and SB lefts	--	0.64	9.9	A

Source: Parametrix, Inc. 2009
* Preferred concept

Improvements to the intersection of 1st Street with Del Mar Drive would be needed to accommodate additional traffic attracted to the easterly extension of Del Mar Drive when it is fully extended to Bishop Road to serve development in part of the proposed UGB expansion. A second southbound left turn lane would be required, necessitating provision of two eastbound through lanes on Del Mar Drive for at least several hundred feet from the intersection.

Improvement to the intersection of 1st Street and Willamette Street would include the addition of a southbound left turn lane as described above.

It is proposed that the intersection of 1st Street with Cleveland Street be signalized to better accommodate traffic using Cleveland Street to head out of the core residential and business areas of the city. For safety and to avoid rear end collisions, it is also proposed that a northbound left turn lane be added at this intersection.

Due to the low volume of traffic anticipated to use the Church Street leg of the intersection with 1st Street and because of potential traffic back-ups on 1st Street from Main Street (expected to exceed 20 feet), it is proposed that a median be placed in the center of 1st Street to restrict turns from Church Street to right-in and right-out. This would improve traffic operations for left turning traffic at Main Street and would enhance traffic safety.

Two additional turn lanes are proposed to be added at the intersection of 1st Street with Main Street. One would accommodate southbound left turning traffic and the other would serve westbound right turning traffic. These two movements are expected to grow substantially with the proposed UGB expansion to the east of Bishop Road and along Mill Creek Road.

At the intersection of 11th Street with Olney Street, Scenario 2 would include the addition of north and southbound left turn lanes to enhance traffic operations and improve safety.

4.6 RECOMMENDATIONS

This section includes a discussion of both short- and long-term improvements that could be implemented to enhance the existing and anticipated future roadway transportation system in Aumsville. Short-term improvements typically focus on solutions of existing safety or traffic operational problems or on such activities as signing, pavement marking, pedestrian crossings, and the like that can be easily implemented. Preferred short-term improvements are discussed below.

Functional Classification of Roads and Highways

As noted in Chapter 2, functional classification provides a systematic basis for determining future right-of-way and improvement needs, and can also be used to provide general guidance as appropriate or desired for vehicular street design characteristics. The functional classification of a street is typically based on the relative priority of traffic mobility and access functions that are served by the street. At one end of the spectrum of mobility and access are freeways, which emphasize moving high volumes of traffic, allowing only highly controlled access points. At the other end of the spectrum are residential cul-de-sac streets, which provide access only to parcels with direct frontage and allow no through traffic. Between the ends of this spectrum are state highways, arterials, collectors and local streets, each with a decreasing emphasis on mobility and more emphasis on land access.

Figure 2-2 illustrates the Aumsville street network and the roadway functional classification system for public streets located within the UGB as presented in the City's Comprehensive Plan. This classification system includes three categories of streets: Arterial, Collector and Local as defined in the City's Comprehensive Plan, Transportation Element. These street

classifications are defined in Chapter 2 and are recommended for endorsement in the Aumsville TSP.

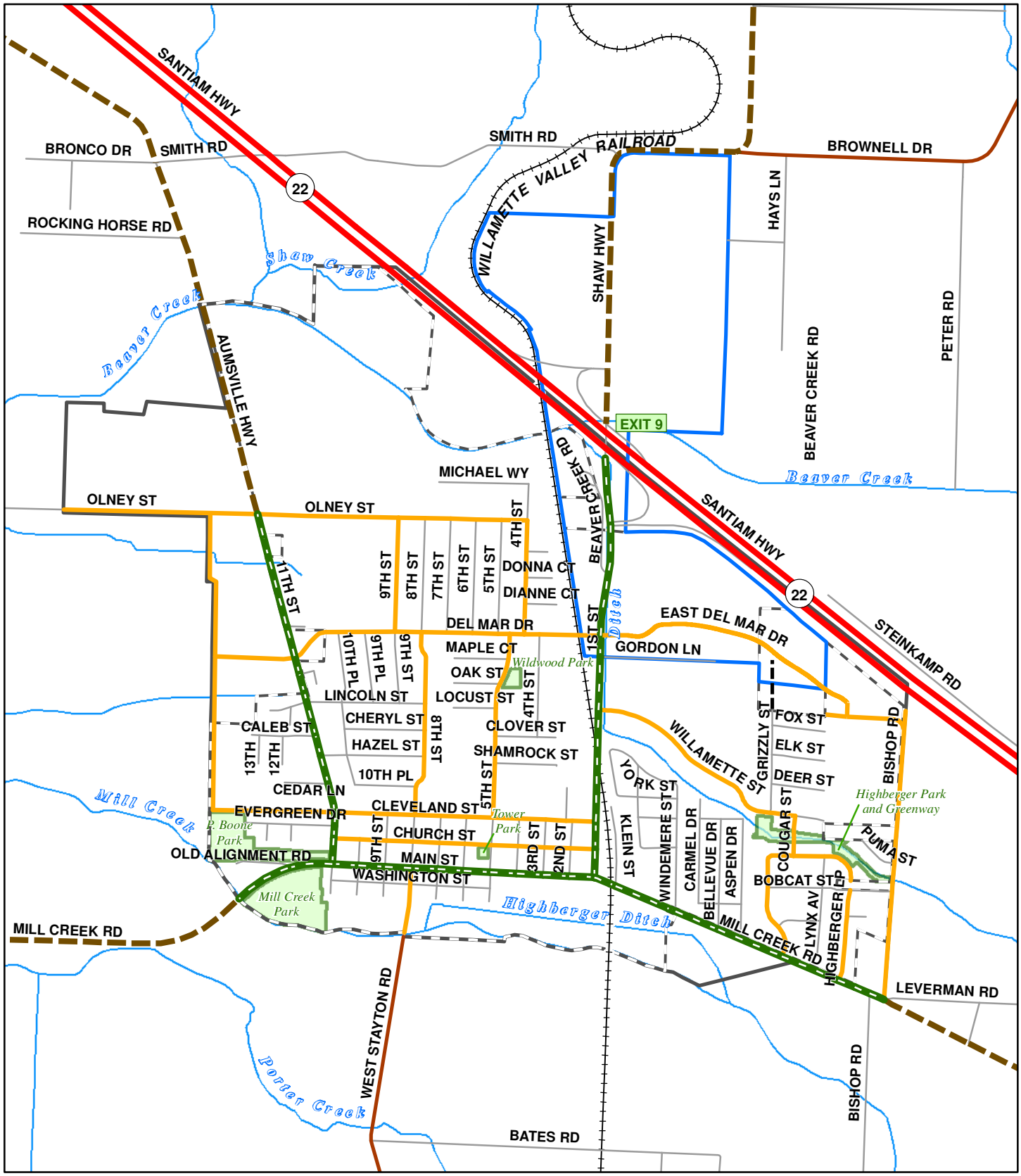
Figure 4-5 presents the recommended functional classification system for the Aumsville UGB. This system includes the following changes from the prior system (see Figure 2-2).

- 8th Street between southerly UGB and Main Street – designation changed from urban arterial to urban collector for consistency with Marion County's classification to the south.
- Extension of Del Mar Drive from western terminus to UGB – this new street should be designated as an urban collector.
- Extension of Cleveland Street from 11th Street west to UGB – this new street should be designated as an urban collector.
- 14th Street – this is a proposed new street running north/south and parallel to the city's western UGB between Olney Street and Cleveland Street. 14th Street should be designated as an urban collector.
- Olney Street from 11th Street to the western UGB – to support development in the northwest quadrant of Olney Street at 11th Street and to serve potential future UGB expansion this street should be designated as an urban collector.
- East Del Mar Drive (new street) from 1st Street to Bishop Road – this street should be designated as an urban collector.
- Grizzly Street from East Del Mar Drive to Willamette Street – designate as an urban collector to provide connectivity between East Del Mar Drive and Willamette Street.

Safety Considerations

Some of the existing safety concerns that were identified during the assessment of existing transportation conditions would be addressed by one or more of the short- or long-term improvement recommendations identified in this chapter. Additional safety issues that should be addressed include:

- In conjunction with roadway improvement projects and/or land development activities, implement access management strategies along Main, 1st and 11th Streets to minimize the number of driveways to reduce collisions and enhance safety.
- Evaluate a speed zone reduction along Main Street through the city from 30 mph to 25 mph.
- Address sight distance constraints on Main Street eastbound approaching the railroad crossing.
- As part of the pending improvement project along 1st Street, consideration should be given to sight distance improvements on Church Street at 1st Street looking north.
- Evaluation should be made of potential sight distance restrictions and vehicle turning radii along Olney Street through the industrial area.
- Work cooperatively with Marion County to address the need for improvements at the intersection of Bishop and Leverman Roads near Mill Creek.



File: Aumsville_FunctionClass.mxd Date: July 9, 2010

- Principal Arterial (ODOT)
- Urban Arterial (Aumsville)
- Urban Collector (Aumsville)
- Rural Major Collector (Marion County)
- Rural Minor Collector (Marion County)
- Local Road
- Willamette Valley Railroad
- Interchange Area Management Plan Boundary
- City Limits
- Urban Growth Boundary
- Park
- Streams and Drainage Ditches

N

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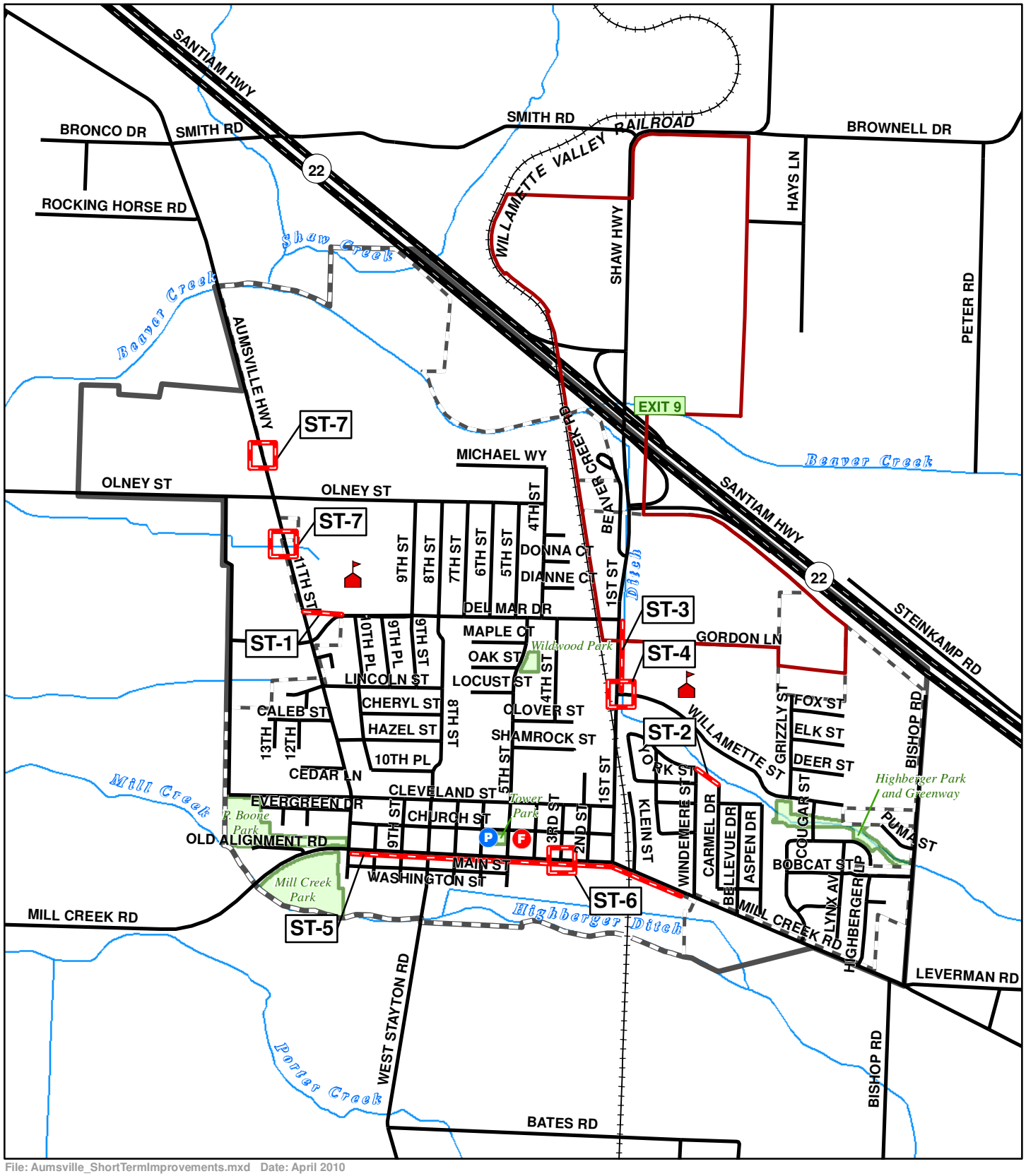
SCALE IN FEET

Figure 4-5

Recommended Functional Classification



File: Aumsville_ShortTermImprovements.mxd Date: April 2010

- Highway
- Street Centerline
- Willamette Valley Railroad
- Aumsville Fire Department
- School
- Aumsville Police Department
- Interchange Area Management Plan Boundary
- City Limits
- Urban Growth Boundary
- Park
- Streams and Drainage Ditches
- Short-Term Transportation Improvements
- ST-6 (Project Number)

N

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SCALE IN FEET

Figure 4-6
Short-Term Transportation Improvements

Short Term Improvements

Through the evaluation of the existing transportation system in Aumsville, the following potential short-term improvement opportunities have been identified and are illustrated in Figure 4-6:

- #ST-1: Pedestrian connection between Del Mar Drive and 11th Street.
- #ST-2: Pedestrian connections between Carmel Street and Windemere Street.
- #ST-3: Develop multi-use path on the east side of 1st Street, east of drainage ditch using the existing church and perhaps other easements, from Willamette Street north, with select designated crossings of drainage and 1st Street to the west.
- #SR-4: Add southbound left turn lane on 1st Street at Willamette Street as an interim improvement pending the long-term widening of 1st Street as discussed below under "Long-Term Improvements". A concept drawing illustrating this improvement is included as Figure E-1 in Appendix E.
- #ST-5: Consider adding traffic calming treatments to slow traffic along Main Street such as street trees, mixed pavement treatment and/or other visual traffic calming improvements.
- #ST-6: Designate and install signage at pedestrian crosswalks.
- #ST-7: Consider adding flashers for 20 mph speed zone for southbound traffic entering the City and approaching the intersection with Olney Street, and/or other measures to calm or slow traffic near the Aumsville Elementary School. Evaluate options for segregating bus traffic on Olney Street from autos entering the school site on 11th Street.

General Considerations for Short-Term and On-going Implementation

- Encourage multi-modal circulation connectivity and discourage cul-de-sacs, require pedestrian/bicycle connections between adjacent streets and neighborhoods.
- Review existing arterials and collectors and restripe with bicycle lanes or wide curb lanes where practical.
- Install street furnishings and amenities such as benches, lighting, signing, bicycle racks, and artwork in the public right-of-way. Relocate utilities/amenities to be located outside of sidewalk area and in furniture zone or buffer strips where practical
- Implement access management practices for new or redeveloping properties to minimize or -reduce the number of driveways onto arterial and/or collector roadways. Consider driveway consolidation where possible.

Long-Term Improvements

This section documents the assessment of transportation system improvement options to address long-term needs associated with community growth through 2030. As noted previously, two land use scenarios have been evaluated. The first of these scenarios addresses the implications of building out all undeveloped or underdeveloped land within the City's existing UGB consistent with the current Comprehensive Plan. Since land remaining within the existing UGB may not be able to accommodate the City's 20-year need for residential, employment, and other supportive land uses, the second scenario focuses on transportation implications associated with a potential UGB expansion. This scenario would represent a

more aggressive "case study" option from the standpoint of 20-year improvement needs. The assumptions inherent in the expansion are more fully described in *Technical Memorandum #7: Future Conditions*.

Table 4-10 summarizes the recommended street system improvements identified for the two land use scenarios. Long-term recommendations for Scenario 1 are shown in Figure 4-7. Long-term recommendations for Scenario 2 are illustrated Figure 4-8. Figure 4-9 diagrams recommended improvements for each intersection. Improvements associated with Scenario 1 would have priority for implementation.

Table 4-10. Recommended Street Improvements

No.	Intersections	Scenario 1: Improvements Needed with UGB Build-out	No.	Scenario 2: Improvements Needed with UGB Build-out Plus Expansion
	Shaw Highway @ Brownell Drive	• None needed		• None needed
	Shaw Highway @ OR 22 WB Ramps	▪ None needed	X-1	• Widen and restripe for separate NB left
1	Shaw Highway @ OR 22 EB Ramps	▪ Signalize and add SB left, and 2nd WB left ▪ Widen 1st Street south of intersection for approx. 600 feet to provide 2 northbound and 2 southbound thru lanes	X-2	• Add direct ramp from OR 22 for east-to-south traffic merging into 2nd SB thru • Signalize intersection and add SB left. Modify existing off-ramp to allow right turns only • Widen 1st Street south of intersection for approx. 600 feet to provide 2 northbound and 2 southbound thru lanes
2	1st Street @ Del Mar Drive	• Install traffic signal, and widen to add 2nd NB and SB thru lanes approx. 500 feet north of intersection and 300 feet south • Align with new road to east of 1st Street including addition of left turn lanes for all movements, and WB right turn lane • Transition back to single NB and SB thru lanes between Del Mar Drive and Willamette Street ▪ Improve railroad crossing of Del Mar west of intersection and install automatic gates, interconnect with signal on 1st	X-3	• Same as Scenario 1 plus addition of second SB left turn lane
3	East Del Mar Drive, 1st Street to Bishop Road	• Construct new 2-lane urban roadway left turn lanes where appropriate, bike lanes and sidewalks	X-4	• Same as Scenario 1
4	1st Street @ Willamette Street	• Install southbound left turn lane • Complete transition for approx. 300 feet from north and improve 2-lane cross-section with bike lanes and sidewalks for approx. 650 feet to south • Install railroad crossing gates and relocate local street access on west side of 1st Street	X-5	• Same as Scenario 1

Table 4-10 Continued. Recommended Street Improvements

No.	Intersections	Scenario 1: Improvements Needed with UGB Build-out	No.	Scenario 2: Improvements Needed with UGB Build-out Plus Expansion
	1st Street @ Cleveland Street	• None needed	X-6	• Signalize • Add NB left turn lane
	1st Street @ Church Street	• None needed	X-7	• Install median and convert Church access to right-in/right-out
5	1st Street @ Main Street	• Signalize intersection, add bike lanes and sidewalk enhancements • Install automatic RR gates and interconnect with signal at 1st	X-8	• Same as Scenario 1 plus addition of SB left and WB right turn lanes
6	8th Street @ Main Street	• Modify SE corner curb radii to accommodate large trucks	X-9	• Same as Scenario 1
	11th Street @ Main Street	• None needed		• None needed
	11th Street @ Church Street	• None needed		• None needed
	11th Street @ Cleveland Street	• None needed		• None needed
	11th Street @ Lincoln Street	• None needed		• None needed
7	11th Street @ Olney Street	• Signalize	X-10	• Same as Scenario 1 plus addition of NB/SB left turn lanes
8	Willamette Street, eastern terminus to Puma Street	• Complete street connection to Bishop Road	X-11	• Same as Scenario 1
9	14th Street, Olney Street to Cleveland Street	• Construct new urban street with bike lanes and sidewalks	X-12	• Same as Scenario 1
10	Del Mar Drive, 14th Street to 11th Street	• Construct new urban street with bike lanes and sidewalks	X-13	• Same as Scenario 1
11	Cleveland Street, 14th Street to 11th Street	• Construct new urban street with bike lanes and sidewalks	X-14	• Same as Scenario 1

Source: Parametrix, Inc. 2009

Intersection Improvements

The following paragraphs summarize and describe the improvement recommendations made for each intersection, including a short explanation of key project elements.

OR 22 Ramps at Shaw Highway (#1, #X-1 and #X-2)

The eastbound OR 22 ramp would require improvement under both scenarios, and the westbound ramp would requirement improvement under the UGB expansion scenario. The improvements proposed for the westbound ramp includes widening and restriping for a northbound left turn lane to reduce conflicts between turning traffic and traffic desiring to proceed northbound toward Shaw. Left turn lane warrants would be met at this location. It should be noted that for a design speed of 55 mph, 835-feet would be required to develop this turn pocket. As only 540-feet of space is available between the bridge and the ramp intersection, a design exception would be required.

The improvements proposed for the eastbound ramp under both scenarios could include signalization of the intersection, the addition of a southbound left turn lane, and the addition

of a second southbound through lane which is what is included in the cost estimate. With a design speed of 55 mph, 835-feet would be required to develop the southbound left turn pocket and only 625-feet of space is available. This improvement would also require a design exception. For conditions with UGB Build-out (Scenario 1), it is also recommended that a second westbound left turn lane be provided. See Figure E-2 in Appendix E for an illustration of this concept.

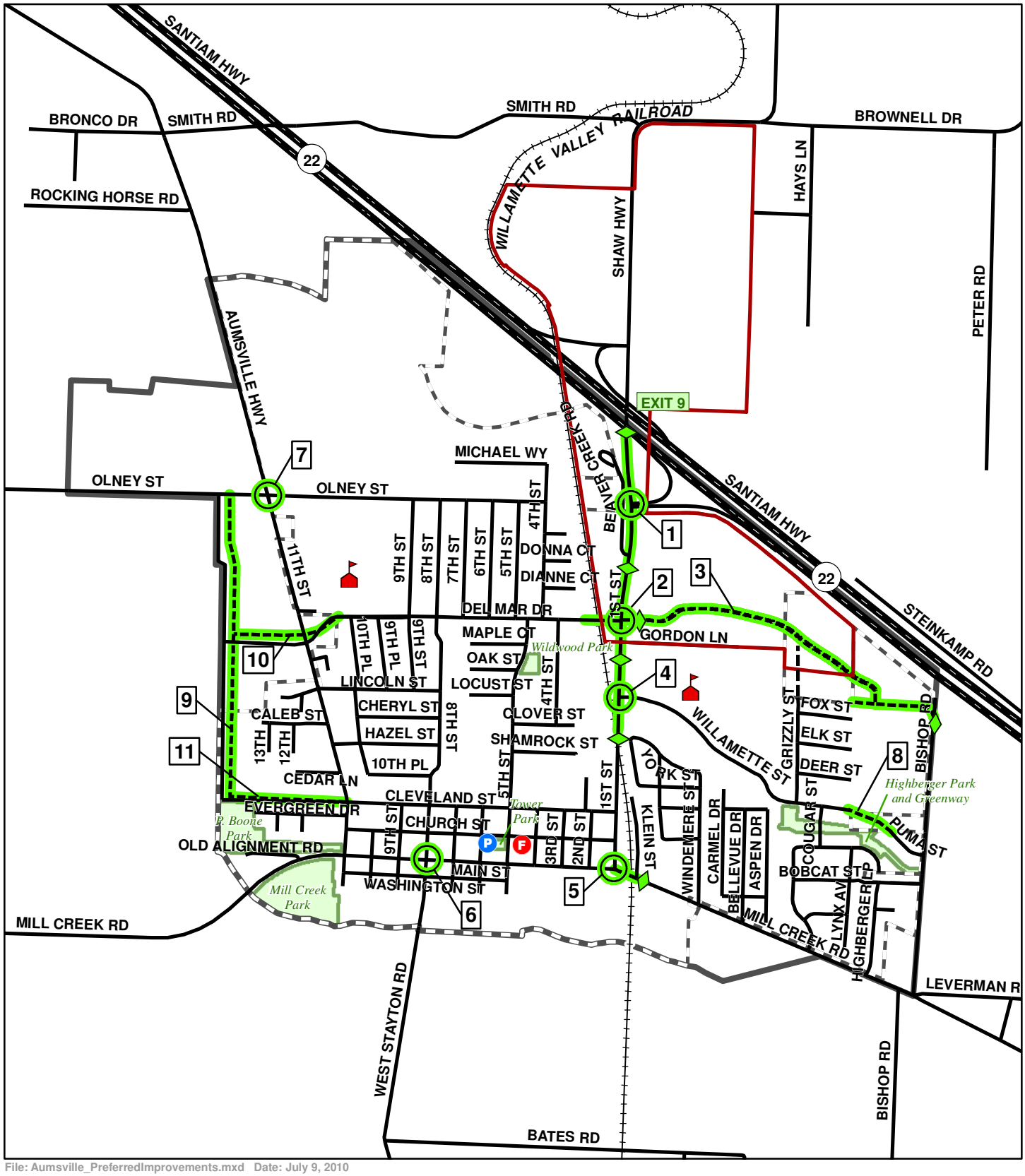
For Scenario 2 (Plus UGB Expansion) it is recommended that consideration be given to relocating the westbound left turning movements to a new and separate single lane off-ramp which merges onto 1st Street as an add lane heading southbound. This merge would occur north of the existing eastbound ramp intersection to provide two southbound through lanes at the intersection. Only westbound right turns toward Shaw will be accommodated at the existing intersection which could be signalized. Signalization is included in the cost estimate prepared for this project, but other improvement concepts could be considered as the project nears implementation.

1st Street and Del Mar Drive Intersection (#2, #X-3)

In the future the east leg of this intersection will be improved to provide access to large undeveloped parcels of ID zoned property. The new east leg should provide separate left, through and right turn lanes for westbound traffic. Separate left turn lanes should also be added to the other approaches. Preliminary signal warrants for the intersection would be met for both scenarios. According to ODOT Rail staff, as a part of this intersection improvement it will be necessary to improve Del Mar Drive to the west of the intersection across the existing railroad at-grade crossing and to install automatic gates. These gates must be interconnected with the new traffic signal at 1st Street. See Figure E-3 in Appendix E for an illustration of this concept. With Scenario 2, additional improvements needed would include adding a second southbound left turn lane. It should be noted that this will require two receiving lanes for future traffic desired to access the ID zoned area and other destinations along Bishop Road. As an alternate to constructing this second turn lane, consideration should be given to connecting Willamette Street to Bishop Road via Puma Street and accommodating the south-to-eastbound traffic added by the UGB Expansion via this route.

1st Street and Willamette Street Intersection (#4, X-5)

The addition of a southbound left turn lane is warranted and recommended under both scenarios. The left turn lane will improve safety and capacity of 1st Street by providing a space for turning vehicles to wait without interrupting through traffic flow. See Figure E-4 in Appendix E for an illustration of this concept. Improvements to 1st Street in the vicinity of Willamette Street will include providing a full urban cross-section with bike lanes and sidewalks. Additionally, automatic gates at the railroad at-grade crossing are recommended consistent with the comments received from ODOT rail staff.



File: Aumsville_PreferredImprovements.mxd Date: July 9, 2010

N

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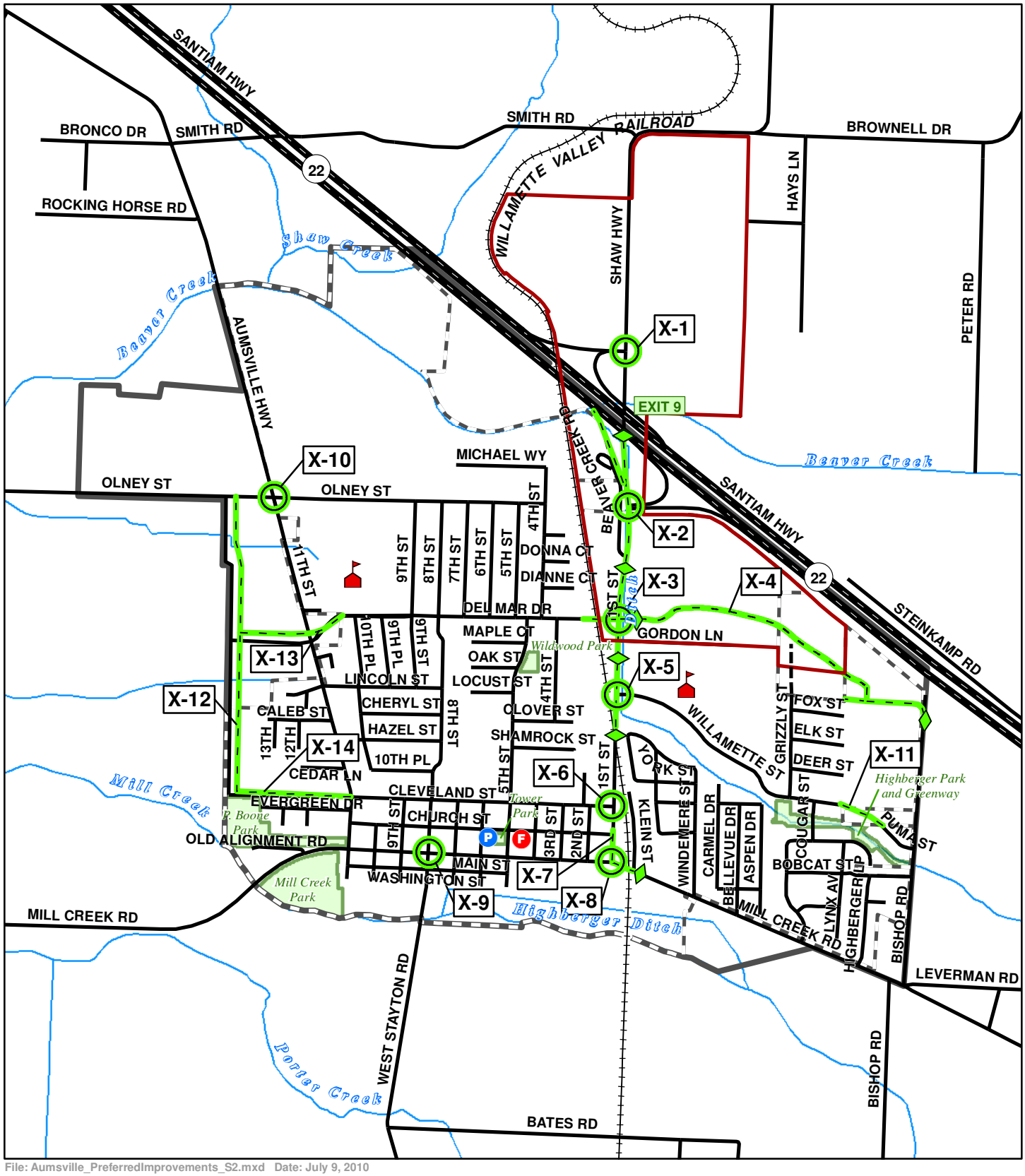
SCALE IN FEET

- Highway
- Street Centerline
- Willamette Valley Railroad
- Aumsville Fire Department
- School
- Aumsville Police Department
- Project Limits
- Interchange Area Management Plan Boundary
- City Limits
- Urban Growth Boundary
- Park
- Streams and Drainage Ditches
- New Road
- Intersection and Street Improvements
- 6 (Project Number)

Figure 4-7

Long-Term Street Improvements with Scenario 1: UGB Build-out



File: Aumsville_PreferredImprovements_S2.mxd Date: July 9, 2010

- Highway
- Street Centerline
- Willamette Valley Railroad
- Aumsville Fire Department
- School
- Aumsville Police Department
- Project Limits
- Interchange Area Management Plan Boundary
- City Limits
- Urban Growth Boundary
- Park
- Streams and Drainage Ditches
- Intersection and Street Improvements
- X-6 (Project Number)

N

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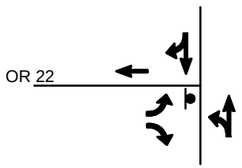
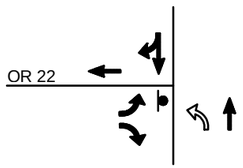
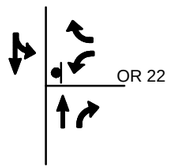
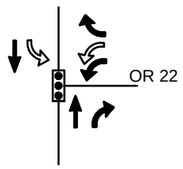
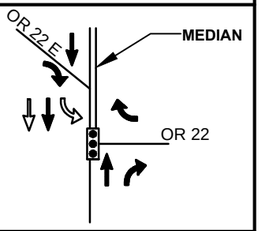
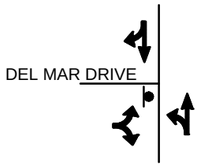
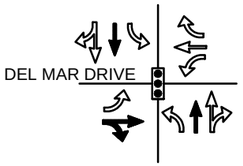
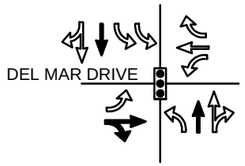
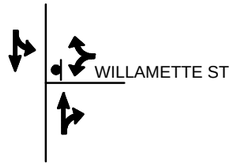
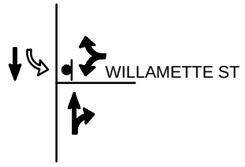
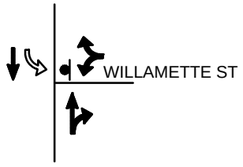
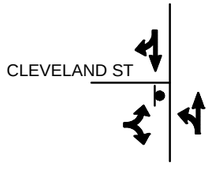
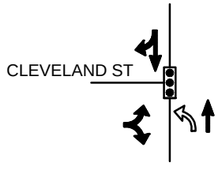
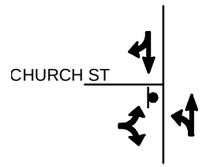
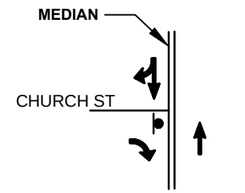
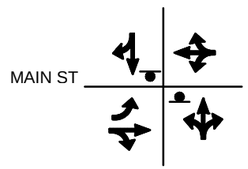
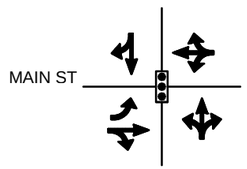
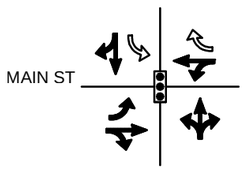
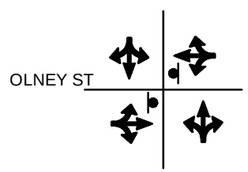
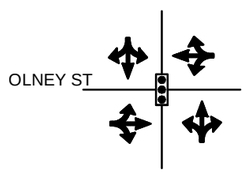
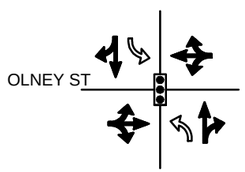
SCALE IN FEET

Figure 4-8

Long-Term Street Improvements with Scenario 2: Plus UGB Build-out

EXISTING	SCENARIO 1: UGB	SCENARIO 2: UGB PLUS
WESTBOUND HWY-22 RAMP AT SHAW HWY 	**NO CHANGE**	
EASTBOUND HWY-22 RAMP AT SHAW HWY 		
1st STREET AT DEL MAR DRIVE 		
1st STREET AT WILLAMETTE STREET 		
1st STREET AT CLEVELAND STREET 	**NO CHANGE**	

EXISTING	SCENARIO 1: UGB	SCENARIO 2: UGB PLUS
1st STREET AT CHURCH STREET 	**NO CHANGE**	
1st STREET AT MAIN STREET 		
11th STREET AT OLNEY STREET 		

LEGEND

- EXISTING TRAVEL LANE
- PROPOSED TRAVEL LANE
- EXISTING STOP SIGN
- NEW STOP SIGN
- NEW TRAFFIC SIGNAL

N

Figure 4-9
Recommended Intersection Improvements

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1st Street and Cleveland Street Intersection (#X-6)

No improvements are proposed for the intersection under Scenario 1. A northbound left turn lane is warranted under Scenario 2. The left turn lane will improve safety and capacity of 1st Street by providing a space for turning vehicles to wait without interrupting the through traffic flow. A signal is also warranted at the intersection to provide sufficient gaps in traffic for the eastbound traffic to enter 1st Street. Cleveland Street is expected to function as an alternative to Main Street for some trips and is one of the few through connections to 1st Street from the west side of the city.

1st Street and Main Street Intersection (#5, #X-7, #X-8)

This intersection is expected to fail and to meet preliminary signal warrants under both scenarios. Installation of a traffic signal is recommended under Scenario 1. Under Scenario 2, in addition to signalization, a separate southbound left turn lane and a westbound right turn lane are needed to accommodate growth associated with the UGB Expansion. In either scenario, the southbound traffic back-up during the 2030 PM peak hour period, is expected to extend to and past Church Street. Therefore, it is recommended for safety and smooth traffic operations that turning movements on Church Street where it joins 1st Street be restricted to right-in, right-out movements only for Scenario 2. Based on comments received from ODOT rail, signalization of the intersection of 1st Street with Main Street will also require installation of automatic gates at the railroad at-grade crossing just to the east of the intersection.

8th Street and Main Street Intersection (#6, #X-9)

Aumsville is a farming center for a portion of Marion County east of I-5 and running along OR 22. As such, it attracts many large farm vehicles during harvest season. A common route used by these vehicles when traveling through the city is to enter the UGB heading north from West Stayton Road/8th Street, turning right onto Main Street, turning left onto 1st Street and then heading north on 1st Street exiting the city onto Shaw Highway in the vicinity of the OR 22 interchange. Anecdotal information provided by the PAC indicates that the northbound right turn from 8th Street onto Main Street is frequently difficult for these large vehicles which must either swing wide across Main Street in the oncoming traffic lane, travel up over the existing curb return on the southwest corner of the intersection, or both. To more safely accommodate these vehicles, it is recommended that the curb radii on this corner be lengthened. Further analysis of design vehicles and their requirements should be undertaken to determine the precise dimensions of this modification. Consideration should be given to minimizing potential impacts on pedestrian movement including any increases to street crossing distances.

11th Street and Main Street Intersection

The intersection would not meet preliminary signal warrants. Traffic volumes at this intersection should be monitored over time and consideration should be given to installing all-way stop control as a precursor to signalization if and when appropriate. Consideration should also be given to restriping the westbound approach to this intersection to provide a right turn lane that will help improve traffic operations at the intersection. The all-way stop will also help to improve pedestrian safety at the intersection as traffic levels increase.

11th Street and Olney Street Intersection (#7, #X-10)

This intersection is expected to fail and would meet preliminary signal warrants under both scenarios. For Scenario 1, installation of a traffic signal is proposed. In addition to the signal, separate northbound and southbound left turn lanes are needed to accommodate growth associated with Scenario 2.

Street Improvements

The following paragraphs describe several recommended street improvements in the Aumsville UGB needed to accommodate traffic through the 2030 planning horizon. Improvements are primarily focused on new street construction to serve anticipated community growth.

East Del Mar Drive Extension (#3, #X-4)

Suburban collector road through residential area with bike lanes, landscaping and sidewalks.

As indicated in the City's existing Comprehensive Plan, future development of the ID zoned property to the south and east of the OR 22/Shaw Highway interchange will require development of a new collector street to provide access. The proposed alignment of this road extends from 1st Street at the intersection with Del Mar Drive east to Bishop Road at the city's existing UGB. The proposed collector alignment will provide an east/west connection between two parts of the existing street network, and provide additional north/south access to future industrial land uses. The proposed collector will require a more detailed refinement study to determine the preferred alignment as industrial development occurs in this area. It should be noted that the 90o turn in the easterly residential portion of this street could be modified to provide a more direct connection while still using a curvilinear alignment to keep speeds down (see photo for an example.

Willamette Street Extension (#8, #X-11)

This project would involve completion of the missing street segment between the current eastern terminus of Willamette Street and the western terminus of Puma Street. Completion of this connection would provide for through traffic movement between 1st Street and Bishop Road consistent with the Urban Collector function of the street.

New Local Street(s) Serving Future West Side Development (#9, 10 & 11, #X-12, 13, & 14)

The City's existing Comprehensive Plan also identified the need for new local streets to serve future development on the west side of the existing UGB, connecting this development with 11th and Olney Streets as appropriate. The local street system is proposed to have a new north/south street to provide access and circulation west of and parallel to 11th Street. This proposed alignment (14th Street) would extend from Cleveland Street on the south to Olney Street on the north. This new alignment would connect with Olney Street approximately 500-feet west of 11th Street, consistent with Marion County intersection spacing policy.

Access from 11th Street to the residen)tial properties on the west would be provided by an extension of Cleveland Street from 11th to 14th Streets, and a new access road across from the Aumsville Elementary School that could be connected with Del Mar Drive at its current westerly terminus.

Klein Street Extension

As an alternative to building the recommended improvements along 1st Street, consideration was given to an option that would involve widening and extending Klein Street north from Main Street/ Mill Creek Road to connect with 1st Street immediately north of the existing railroad crossing. With this alternative, the existing railroad crossing would be closed and 1st Street north of Cleveland Street would be cul-de-sac'd to provide local property access only. All north/south through trips between Main Street and OR 22 would be made via the combined 1st Street/Klein Street alignment. This concept is illustrated as Figure E-5 in Appendix E.

While this alternative would eliminate the need for costly improvements to the existing at-grade railroad crossing on 1st Street it would have several major disadvantages as follows:

1. Building an arterial street of sufficient width to accommodate a single travel lane in each direction with bicycle lanes and sidewalks would require more right-of-way than currently exists in the area between the railroad tracks and the existing mobile homes along York Street. Building the roadway to arterial standards would require the acquisition of several homes and the relocation of residents. This would have significant cost implications.
2. An enlarged and signalized intersection would need to be created on Main Street at the intersection with Klein Street. As this intersection is very closely located to the railroad crossing on Main Street, the traffic signal would need to be interconnected with the future railroad signals and gates to prevent vehicles from being trapped on the tracks when a train is passing through. The existing separation between the tracks and the intersection of 1st Street with Main Street provides for better, and potentially safer, traffic operations.
3. The combined 1st Street/Klein Street alignment would reduce east/west connectivity in Aumsville by eliminating the ability that motorists currently have to travel along Cleveland Street and then transition up the Willamette Street using a short section of 1st Street to complete the connection. If the railroad crossing on 1st Street is eliminated, this connection would also be eliminated.
4. The cost of the Klein Street extension and connection to 1st Street is estimated to be nearly $2 million higher than the 1st Street improvements without considering the cost of right-of-way for either alternative.

Based on the foregoing, further consideration of the Klein Street extension is not recommended.

Standards and Policies

To support the recommendations for physical improvements to the street system in Aumsville, several policy recommendations have also been identified and are discussed below. These include:

- Identification of a truck route system within the UGB to include the following streets:
  - 1st Street
  - Main Street
  - 11th Street
  - Olney Street from the westerly UGB to the west side of 9th Street
  - West Stayton Road from Main Street to Mill Creek Bridge
  - East Del Mar Drive in the ID-zoned area

- Add an industrial street classification to the City's Development Ordinance.
- Add provision for requiring and preparing Traffic Impact Analyses (TIAs) to the City's Development Ordinance to guide identification of impacts associated with the future development and the assignment of mitigation responsibilities. It is recommended that the TIA requirements be modeled on those used by Marion County. Key elements of the TIA requirements for the City will include: defining the magnitude of development that would trigger the need for this document, requiring review of bicycle and pedestrian system connectivity in addition to evaluating motor vehicle impacts and mitigation, providing flexibility to accommodate the trip generation characteristics of unusual uses not covered by the ITE Manual (e.g., requiring trip generation surveys of at least three similar uses), and preparation by an Oregon registered Traffic Engineer or Civil Engineer with expertise in traffic engineering. Marion County's TIA requirements can be found at: http://www.co.marion.or.us/PW/Engineering/analysis.htm.
- Establish Level of Service (LOS) D for signalized intersections and LOS D for stop controlled movements at unsignalized intersections as the City's traffic operational performance standard.
- Reduce the existing mobility standard for the westbound ramp terminal of the OR 22/Shaw Highway interchange to V/C = 0.50 to manage traffic growth within the existing UGB and to preserve roadway and intersection capacity for future UGB expansion(s).

Access Management

Access management can be implemented by a variety of means. These include median controls (e.g., raised concrete medians), driveway spacing and/or driveway consolidation (so that there are fewer driveways serving one parcel or multiple parcels), requiring that driveways be placed on lower order streets where a parcel abuts both higher and lower order streets, and intersection spacing to reduce the number of conflict points or signal-controlled locations along a street as the frequency of these locations can reduce the benefits of effective signal timing progression.

Access management can be most effectively implemented during the land development process when access locations and localized street improvements can be adapted to ensure that adjacent street traffic-carrying functions are not degraded. Access management controls are more difficult to implement along streets with developed property due to possible right-of-way limitations and/or the concerns of property owners about business or on-site circulation impacts. In these cases, access controls can be incorporated into a roadway improvement project.

Access Management Recommendations

Access management recommendations focus primarily on an approach to meet the requirements of Division 51 in the vicinity of the OR 22/Shaw Highway interchange. Recommended policy and action strategies are incorporated into the IAMP for this interchange and include the following provisions:

- Access spacing requirements shall be implemented consistent with, and meet or exceed the minimum standards in the 1999 OHP, Policy 3C, as follows:
    - When new approach roads are planned or constructed near the interchange, the nearest intersection on a crossroad shall be no closer than 1,320 feet from the interchange, unless no alternative exists for providing property access and/or

local street circulation. Measurement is taken from the ramp intersection or the end of a free flow ramp terminal merge lane taper.

- Existing private accesses shall be closed along 1st Street where access control has been purchased by ODOT and when alternative access to public roads is provided.
- Deviations are permitted for new access for farm and forestry equipment and associated farm uses, as defined in Oregon Revised Statue (ORS) 215.203, on lands zoned for exclusive farm use, and accepted forest practices on those lands that are within the boundary of the OR 22/Shaw Highway Interchange Area Management Plan (IAMP), but only when access meeting the standards identified above is unfeasible.
- Deviations will be permitted for three existing driveways serving farm uses north of the OR 22/Shaw Highway westbound ramp termini (one on the east side located approximately 600-feet north of the termini, one located on the west side approximately 770-feet north, and one located on the west side approximately 1,280-feet north). No changes in existing land uses that would impact the use of these driveways are anticipated. Additionally, no improvements are recommended for the highway in the TSP, but improvements may be needed as part of the future UGB expansion.
- Deviations will also be permitted for two existing driveways and two existing street intersections south of the OR 22/Shaw Highway eastbound ramp termini. The existing driveways include: an access point to existing farm property located on the east side approximately 470-feet south (this access point will become an emergency only access route to approved development in the southeast quadrant of the interchange) and an existing driveway for a single family residence located on the west side approximately 960 feet south. The two street intersections include Beaver Creek Road located on the west side approximately 440-feet south of the termini, and Del Mar Drive located approximately 1,125-feet south. It is anticipated that the existing intersection of Gordon Lane with 1st Street will be closed and future access to this property will occur via a connection to East Del Mar Drive.

- The City and County shall work with ODOT to implement the operational, physical and access recommendations identified in the TSP.

Street Cross-Sections

Table 4-11 presents recommended cross-sections for build-out of the street recommendations in the TSP. As indicated in the table …

Table 4-11. Roadway Cross-Section Requirements

Street	Limits	Classification	Right-of-Way Width	Curb-to-curb Width
1st Street	OR 22 EB interchange to Del Mar Drive	Arterial	TSP – 94 ft UGB+ 104 ft	74 ft (1) 84 ft (2)
1st Street	Del Mar Drive to north of Willamette Street	Arterial	80 ft	60 ft
1st Street	North of Willamette Street to Main Street	Arterial	70 ft	50 ft
Main Street	West city limits to east city limits	Arterial	60 ft	40 ft

Table 4-11 Continued. Roadway Cross-Section Requirements

Street	Limits	Classification	Right-of-Way Width	Curb-to-curb Width
11th Street	North of Olney Street to south of Olney Street (3)	Arterial	70 ft	50 ft
11th Street	South of Olney Street to Main Street	Arterial	60 ft	40 ft
Del Mar Drive	Vicinity of railroad to 1st Street	Collector	60 ft	40 ft
East Del Mar Drive	1st Street to approximately 500 feet east	Collector	TSP – 82 ft UGB+ - 94 ft	62 ft (4) 74 ft (5)
East Del Mar Drive	From east of 1st Street through ID zone (6)	Collector	70 ft	50 ft

(1) Four 12-foot through lanes, single NB and SB 14-foot left turn lanes, 6-foot bike lanes, 5-foot sidewalks, and 5-foot planter/utility strips.
(2) Four 12-foot through lanes, dual 24-foot SB left turn lanes, single NB 12-foot left turn lanes with 12-foot NB shadow lane, 6-foot bike lanes, 5-foot sidewalks, and 5-foot planter/utility strip.
(3) Added width to accommodate NB and SB left turns lanes on 11th Street at Olney Street.
(4) Two 12-foot through lanes, one 12-foot WB right turn lane, one 14-foot WB left turn lane, 6-foot bike lanes, 5-foot sidewalks, and 5-foot planter/utility strips.
(5) One 12-foot WB through lanes, two 12-foot EB through lanes, one 12-foot WB right turn lane, one 14-foot WB left turn lane, 6-foot bike lanes, 5-foot sidewalks, and 5-foot planter/utility strips.
(6) Two 12-foot through lanes, continuous or intersection-specific 14-foot left turn lane(s), 6-foot bike lanes, 5-foot sidewalks, and 5-foot planter/utility strips.

5. BICYCLE AND PEDESTRIAN ELEMENT

5.1 OVERVIEW

This chapter documents the review and assessment of needs, deficiencies, policies, improvement options and recommendations affecting the bicycle and pedestrian transportation systems within the Aumsville UGB. Included is an evaluation of needs and deficiencies in the existing systems, a discussion of various short-, mid- and longer-term improvement strategies for enhancing and expanding these systems, and a summary of recommended improvements.

Information contained in this chapter was obtained largely from the existing conditions inventory discussed in Chapter 3. The development, evaluation and recommendation of improvements relied on the City's adopted policies related to non-motorized transportation and public input received during the planning process.

5.2 OVERVIEW OF IMPROVEMENT NEEDS

Aumsville has relatively good coverage by a pedestrian circulation system. This system is primarily comprised of sidewalks, although in some locations a widened shoulder is provided. The only designated bicycle lane in Aumsville is along Main Street between 1st and 11th Streets. Notable deficiencies in the existing pedestrian system include:

- Along 1st Street/Shaw Highway for its entire length
- Along the west side of much of 11th Street
- Along portions of Cleveland Street, Church Street, and Washington Street
- Along the south side of Willamette Street
- Along the entire length of Bishop Road
- The mobile home subdivision located north of Mill Creek Road and east of the Willamette Valley Railroad also lacks sidewalks

During the development of the existing transportation system inventory and needs analysis, input was provided by the PAC and TAC. Key issues or concerns raised included:

- Narrowness of 1st Street between OR 22 and Main Street is problematic in that there can be conflicts between general traffic and large (16-foot wide) farm equipment when these machines move through the city from field to field. Additionally, there are no pedestrian or bicycle facilities along this street, and there exist large drainage ditches which raise the cost of widening the road and/or adding sidewalks.
- Need to enhance and add to the sidewalk system in the older portion of the city including:
    - Pedestrian crossings for people crossing Main Street to reach the Post Office or grocery store (a crossing at 3rd Street was emphasized and this improvement has been approved by Marion County and awaits installation of ADA-compliant ramps for implementation).
    - Improvements to the south frontage of Main Street (recent sidewalk improvements were made to the north side and a similar improvement with street lighting is envisioned along the south side).
    - More protected pedestrian crossing of Main Street at 11th Street near the city park. Curb extensions and/or median refuges are not encouraged along Main

Street due to the movement of the large farm equipment along both this street and 1st Street.

- School zone flasher for southbound traffic approaching school zone on 11th Street in vicinity of Olney Street.
- Crosswalks along 1st Street.

The City and Marion County recently received a grant from ODOT to add bicycle and pedestrian system improvements along a segment of 1st Street north of Main Street. On the west side of 1st Street these improvements would extend northward to Willamette Street. On the east side, they would extend north to Cleveland Street.

5.3 OPPORTUNITIES TO IMPROVE BICYCLE AND PEDESTRIAN TRAVEL IN AUMSVILLE

Continuity of facilities and connections to desired destinations are essential to encourage both bicycle and pedestrian travel. There is a lack of clear connections between some of these destinations in Aumsville. The bikeway and walkway system in Aumsville should provide circulation to these key destinations, as well as connecting different areas of town and neighborhoods.

Roadway improvements on existing streets should provide for safer pedestrian and bicycle facilities and should consider ADA requirements. The primary focus of bicycle and pedestrian facility improvements in Aumsville should rely on the existing street and highway system. Improvement efforts should attempt to address existing barriers and could include the following:

- Provide continuous sidewalks on arterial and collector roadways such as 1st and 11th Streets
- Enhance crossing safety of 1st Street, 11th Street, and Main Street/Mill Creek Road through the development of staged improvements
- Indentify pedestrian and bikeway-only connections between existing streets and cul-de-sacs, building on opportunities such as providing a non-motorized connection from the western terminus of Del Mar Drive to 11th Street or by connecting Carmel Drive to Windemere Street
- Provide way-finding or guide signage
- Streetscape improvements, including amenities such as bike racks, street trees for shade and traffic calming

The identification of additional critical routes and treatment options is an important step in focusing further planning efforts on the bicycle and pedestrian system, prioritizing investment projects for improving or creating new bicycle and pedestrian facilities, and promoting a positive walking and bicycling environment. In addition to infrastructure improvements, a more comprehensive approach to improving walking and bicycling in the Aumsville area may be needed to address identified barriers. These improvement options will be discussed in greater detail as the transportation planning process continues.

5.4 CONSIDERATIONS IN FURTHER REFINING IMPROVEMENT RECOMMENDATIONS

The "Four E's" – Engineering, Education, Enforcement, and Encouragement – are tools that can be used to improve walking and bicycling in Aumsville. Though the City of Aumsville

does not have direct control over implementing all of these tools, using the "Four E's" to engineer, operate, and maintain quality bicycle and pedestrian facilities is a critical element in producing a comfortable and safe environment for all users. The *engineering* solutions to improve the quality of the pedestrian and bicycle network include:

- Traffic calming
- Circulation requirements
- Street crossing treatments
- Designing for special pedestrian populations (ADA compliance)
- Roadway, bikeway and pedestrian facility design
- Path, trail, and sidewalk design including landscaping and features
- Traffic management
- Access and on-street parking management

Education can be a powerful tool for changing behavior, perception, and improving safety. Pedestrians, bicyclists, and motorists alike can benefit from educational tools and messages that teach them the rules, rights, and responsibilities of various modes of travel.

Enforcement of traffic laws and regulating pedestrians, motorists, and other roadway users is a key element for ensuring a safe and healthy walking environment. Enforcement programs can be used to educate transportation facility users about the traffic laws that govern them, serve as periodic reminders to obey traffic rules, encourage safer behaviors, and monitor and protect public spaces.

Encouragement activities target individuals, organizations, or events to promote walking and bicycling, create awareness about bicycling and pedestrian issues, and inform others in the ways that bikeable and walkable places foster healthier, more livable communities. Employers, retailers, and schools may offer incentives to encourage bike and pedestrian travel as well as organizing fun events. In order to attract more users to bicycling and walking, the activity should also be enjoyable and fun. Opportunities to increase the enjoyment of these activities should be considered as this plan progresses.

5.5 BICYCLE AND PEDESTRIAN FACILITY IMPROVEMENT RECOMMENDATIONS

Evaluation of the existing bicycle and pedestrian system in the Aumsville UGB indicates that there are opportunities to provide additional facilities to increase connectivity, safety and access to major bicycle/pedestrian trip generators such as the elementary school and shopping opportunities. In some locations, the installation of bicycle and pedestrian facilities can be incorporated into recommended roadway improvement projects, which should consider ADA requirements. In other locations, suggestions for specific non-motorized improvements have been identified that focus on providing for bicycles and pedestrians using the existing street and highway system and new connectivity.

Table 5-1 summarizes recommended improvements to the bicycle and pedestrian system. These recommendations are also illustrated in Figures 5-1 and 5-2 for bicycles and pedestrians, respectively. This list of improvement projects is intended to address the following

- Provide continuous bicycle and pedestrian facilities on arterial and collector roadways, focusing on north/south and east/west routes that provide continuous access through Aumsville to connect neighborhoods, businesses, school, and parks. The arterial roadways of 1st Street, 11th Street, and Main Street are critical routes for bicycles and pedestrians, as well as motorized vehicles. The lack of existing facilities

and growth in future traffic volumes make it critical to provide improvements along these routes to ensure safe and efficient travel for all users.

- Provide a network with access to important community destinations. The improvements listed would enhance safety and connectivity to key community destinations such as parks, schools, civic buildings, retail centers and neighborhoods. The network includes different types of facilities such as standard sidewalk and bike lane in more urban developed areas, and multi-use paths and shoulders at the urban/rural interface.
- Identify pedestrian and bikeway-only connections between existing streets. These connections provide an opportunity for encouraging bicycling and walking by reducing the distance to other facilities and destinations such as a neighbor's house, school, or businesses. These opportunities should be considered as development applications are submitted, as well as identifying opportunities with the existing system such as providing a non-motorized connection from the western terminus of Del Mar Drive to 11th Street.
- Additionally locations were identified where crossing safety enhancements should be considered and are shown on Figure 5-2. These may occur with signalization and/or other intersection improvements or may be considered separately. The enhancements would be specific to the location but may include additional lighting, refuges, marked crosswalks, special pavement treatments, warning signage, and/or signalization.

Table 5-1. Bicycle and Pedestrian Improvement Projects

Project Location	Project Limits	Project Description	Needs
1st Street	WB OR 22 to Beavercreek Road	Provide shoulder bikeway-walkway	Continue facilities to connect to areas north of the city
1st Street	Willamette Street to Beavercreek Road	Install bicycle lanes	Critical arterial connection to growth areas and private school
1st Street	Cleveland Street to Willamette Street	Add sidewalk and bicycle lane on east side of 1st Street.	Critical arterial connection to growth areas and private school
Main Street/Mill Creek Road	11th Street to Porter Boone Park Entrance	Add bicycle lanes	Continue bike lanes on Main Street and provide connection to recreation opportunities
Main Street	11th to 3rd Street	Complete sidewalk gaps on the south side of Main Street	Critical arterial connection to community centers
Main Street/Mill Creek Road	1st Street to Bishop Road	Complete sidewalk gap and add bike lanes on north side and shoulder on south side	Critical arterial connection to future park and growth areas and private school
Bishop Road	Mill Creek Road to future park	Install multi-use path	Connection to growth areas and future park
11th Street	Main Street to Olney Street	Add bicycle lanes	Critical arterial connection to growth areas and school

Table 5-1 Continued. Bicycle and Pedestrian Improvement Projects

Project Location	Project Limits	Project Description	Needs
11th Street	South of Olney Street intersection	Complete sidewalk on east side to Olney	Complete critical connection to growth areas and school
11th Street	Main Street to Hazel Street	Complete sidewalks	Complete critical arterial connection to growth areas
Del Mar Drive	10th Street to 11th Street	Install multi-use path connection	Connectivity to reduce out of direction travel and connects neighborhoods/arterials
Cleveland Street	11th Street to 1st Street	Complete sidewalks	Completes east-west route that serves downtown uses and connects neighborhoods/arterials
5th Street	Main Street to Cleveland Street	Complete sidewalks	Completes north-south route that serves park and Main Street uses
Willamette Street	Eastern terminus to Puma Street	Install multi-use path connection	Connectivity to reduce out of direction travel and connects neighborhoods/arterials
Carmel Drive to Windermere Street	--	Install multi-use path connection	Connectivity to reduce out of direction travel and connects neighborhoods/arterials
1st Street to York Street	--	Install multi-use path connection	Connectivity to reduce out of direction travel and connects neighborhoods/arterials
Mill Creek Trail	11th Street to 1st Street	Investigate feasibility of trail development	Provides a recreational corridor that connects the east and west portions of the city

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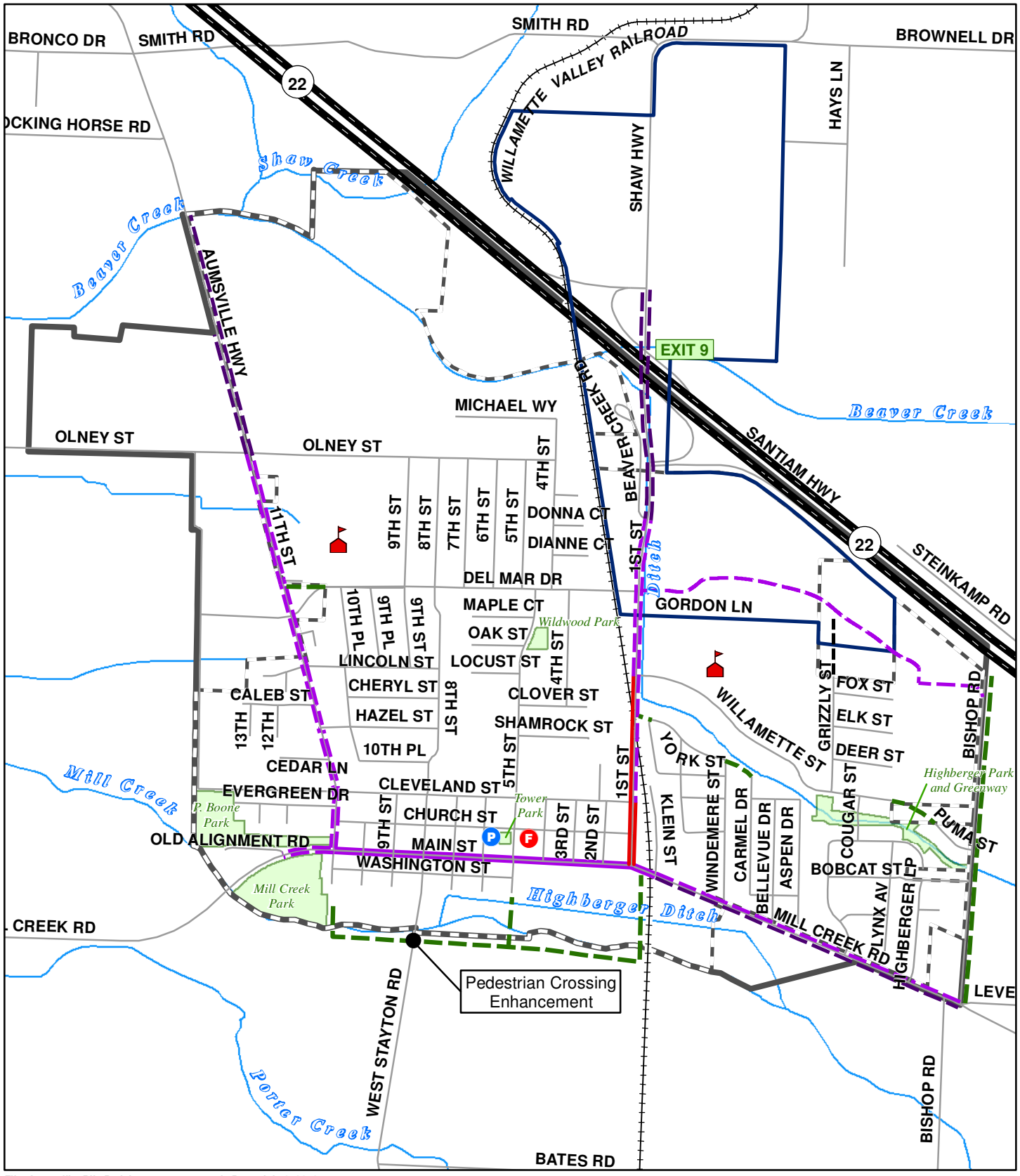


File: Aumsville_BikePed_Improvements.mxd Date: July 9, 2010

N

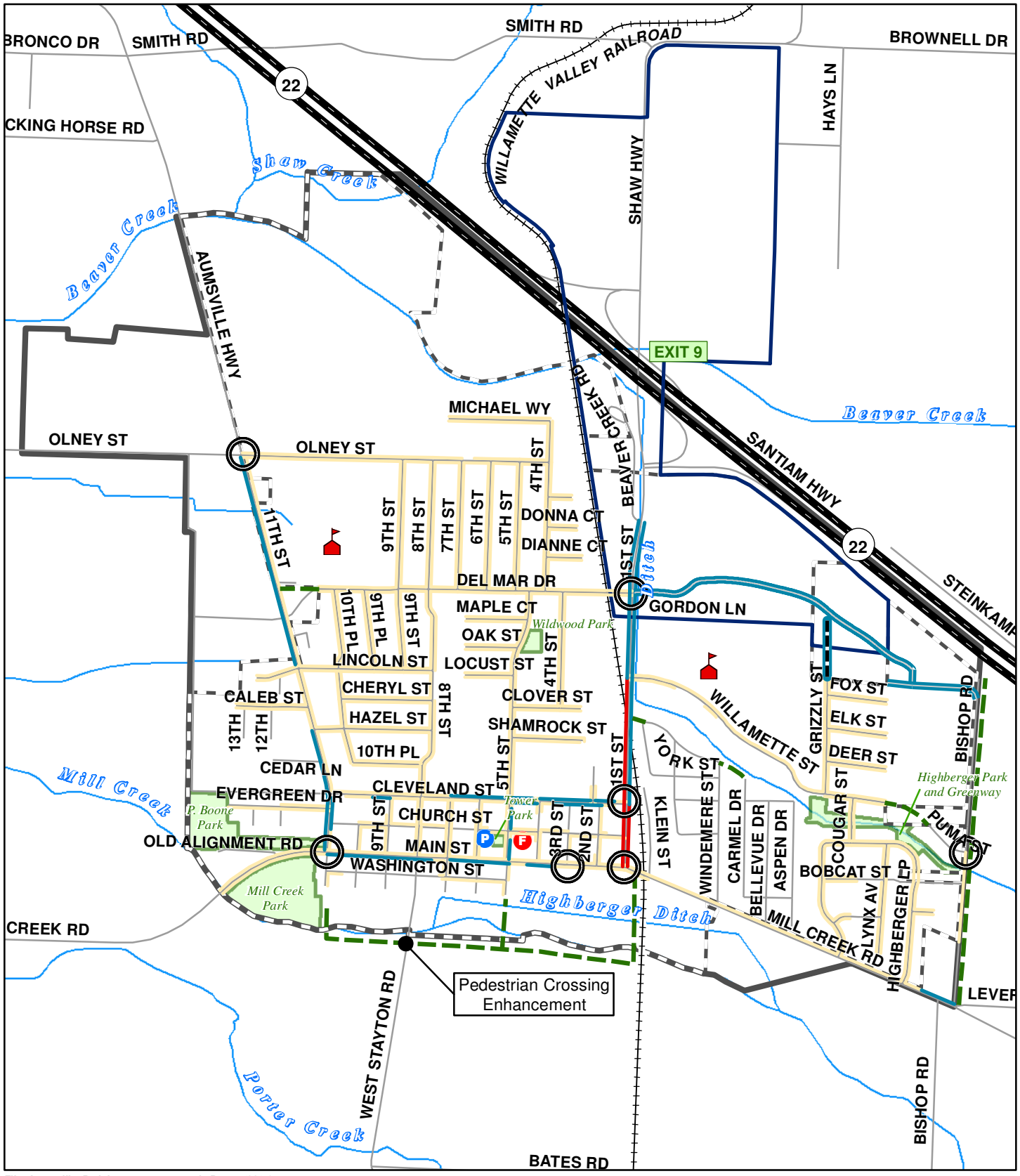
500 0 500

SCALE IN FEET

- Highway
- Street Centerline
- Willamette Valley Railroad
- Aumsville Fire Department
- School
- Aumsville Police Department
- Interchange Area Management Plan Boundary
- City Limits
- Urban Growth Boundary
- Taxlot
- Park
- Streams and Drainage Ditches
- Bicycle Lane
- Pending Improvement
- Proposed Bike Lanes
- Proposed Multi-Use Path
- Proposed Shoulder Bikeway

Figure 5-1

Existing Bicycle Facilities and Proposed Improvement Projects



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N

500 0 500

SCALE IN FEET

- Highway
- Street Centerline
- Willamette Valley Railroad
- Aumsville Fire Department
- School
- Aumsville Police Department
- Interchange Area Management Plan Boundary
- City Limits
- Urban Growth Boundary
- Taxlot
- Park
- Streams and Drainage Ditches
- Existing Pedestrian Facility
- Pending Improvement
- Proposed Multi-Use Path
- Proposed Sidewalk Improvements
- Potential Crosswalk Location

Figure 5-2
Existing Pedestrian Facilities and Proposed Improvement Projects

6. PUBLIC TRANSPORTATION ELEMENT

This chapter documents a review and assessment of needs, deficiencies, improvement options, and recommendations affecting the public transportation system within the Aumsville UGB. Included is a discussion of the local and regional policy context for developing and maintaining this travel mode, an evaluation of needs and deficiencies in the existing system, a discussion of various improvement strategies for enhancing and expanding this system, and recommendations for the City. Public transportation service in Aumsville is provided by CARTS. CARTS is a partnership between Marion, Polk and Yamhill Counties and is operated by Cherriots.

This chapter also discusses TDM strategies that could be implemented in Aumsville. TDM is a general term used to describe any action that removes single occupant vehicle trips from the roadway network during peak travel demand periods. Some of these strategies could be used to help meet public transportation needs for the City's residents.

6.1 OVERVIEW OF IMPROVEMENT NEEDS

Transit needs in Aumsville can be characterized into two broad categories: service needed by those individuals who are transit-dependent (e.g., those without access to an automobile including youth, elderly, and/or low income persons), and those who might find transit a preferable alternative to driving alone to work. Analysis of census data indicates that approximately 20 percent of Aumsville's population could be defined as transportation disadvantaged (elderly or youth). A total of 116 families with incomes below or near the federal poverty level were also identified in this Census which represents about 13.8 percent of Aumsville's households.

Data from the 2000 Census show the workforce over 16 in Aumsville was 1,366 people, or about 45 percent of the population. Driving alone was the most common way to get to work (79.3 percent). A smaller number of individuals participated in carpools (14.2 percent), walked (1.4 percent), or road a bicycle (0.5 percent). Less than 0.1 percent of the work force used public transportation which largely did not exist in Aumsville prior to 2000. The average travel time to work was 25.3 minutes, with 17.9 percent of the work force traveling to employment outside of Marion County. The 2003 *Economic Opportunities Analysis* estimated that approximately 75 percent of the workers residing in Aumsville traveled to work destinations outside of the city such as Stayton or Salem. Based on this assessment, there is a potential market for additional transit service to/from Aumsville to meet the needs of the transit dependent and local commuters.

6.2 PUBLIC TRANSPORTATION AND TRANSPORTATION DEMAND MANAGEMENT RECOMMENDATIONS

Public Transportation

CARTS currently provides fixed route bus service that connects Aumsville with the Salem Transit Mall and to other communities along the OR 22 corridor eastward to the Gates park-and-ride lot (Route 30 Canyon Connector). This service offers three round trips each weekday with no service on Saturday or Sunday. From this route, riders can connect to other CARTS routes and travel throughout the Willamette Valley. The primary objective of the CARTS program is to coordinate the resources dedicated to providing access to medical services, employment, educational, shopping and recreational opportunities for senior citizens, disabled and economically disadvantaged residents. There are two bus stops located

in Aumsville – one at the Aumsville Community Center on Main Street and the other on Mill Creek Road east of 1st Street at the mobile home park. As Aumsville continues to grow, it will be important to ensure that good public transportation service is provided to local residents. Improvement opportunities that could be considered include:

- Adding one or more round trips each day, primarily to serve destinations in Salem.
- Adding Saturday or Sunday service
- Adding more bus stops in Aumsville to provide adequate walking or bicycling accessibility as the community continues to grow.

CARTS regularly updates its transit plans and should review the demand for additional services to Aumsville on an on-going-basis.

Transportation Demand Management

As community growth occurs, the number of vehicle trips and travel demand in the area will also increase. The ability to change travel behavior by visitors and residents alike and to provide mode choice alternatives to the single occupant automobile will help to accommodate this growth.

Generally TDM strategies focus on reducing vehicle miles of travel and promoting alternative modes of travel with the objective of maximizing the efficiency of the existing transportation system and reducing the need for additional roadway capacity. In Oregon, much of this focus has been on major employers due to the requirements of the Employee Commute Options (ECO) rules that were adopted by the Oregon Legislature in 1993. A primary goal of the ECO program has been to improve air quality in the major metropolitan areas of the state ensuring that the federal National Ambient Air Quality Standards are met.

There is a considerable body of literature related to TDM strategies that has been developed over the past 30 years, to help achieve air quality standards, to reduce energy consumption, and to improve overall roadway system performance. Research indicates that a comprehensive set of policies and programs implemented on an areawide basis can be effective in reducing vehicle miles of travel[16]. However, it is important to note that for many of these measures to be effective, they should consist of more than just low cost, non-controversial measures such as ridesharing, priority parking, flexible work hours and/or a compressed work week, and telecommuting.

More effective TDM measures include such activities as parking and/or congestion pricing, vanpooling, improved transit service, provision of extensive and interconnected walking and bicycling networks, and a variety of employer-based "market" strategies. TDM measures can also include land use actions such as higher density or mixed use development and growth management (Smart Growth) strategies. Most importantly, an effective TDM program needs to be tailored to the area it serves.

Table 6-1 highlights some of the potential TDM strategies that could be considered in the Aumsville area.

[16] *"The Potential for Land Use Demand Management Policies to Reduce Automobile Trips"*, ODOT, by ECO Northwest, June 1992.

Table 6-1. Transportation Demand Management Strategies

Strategy	Description	Potential Trip Reduction
Transit-Supportive Strategies		
Bus Service Improvements	Provide additional service, clarify use of system for residents and employees	4-30% increase in transit ridership
Park-and-Ride Facilities	Provide commuter parking at urban-fringe transit stops	N/A
Employer-Based Strategies		
Provide Vanpools	Employees that live near each other are organized into a vanpool for their trip to work. The employer may subsidize the cost of operation and maintaining the van. Most effective for longer distance trips (e.g., > 10-15 miles)	15-25% (company provided van with fee) 30-40% (company subsidized van)
Alternate Work Schedule/ Telecommute	Employees perform regular work duties at home or at a work center closer to home rather than commuting to a work site. May be full time or part-time. Would likely require home computer.	7-10% of commute trips
Rideshare	Shared trip to/from work by persons with close trip origin and destination locations and similar start/finish work times.	2-7% of commute trips
Compressed Work Week	Schedule where employees work their regularly scheduled number of hours in fewer days per week.	7-8% (9 day/80hr) 16-18% (4 day/40 hr) 32-36% (3 day/36 hr)
Bicycle/Pedestrian Supportive Strategies		
Bicycle System Improvements	Development of increased system connectivity with support facilities (e.g. parking)	1-4% reduction in SOVs
Encouragement, Promotional, and Individualized Marketing Programs	To provide information about the benefits of trip reductions and encourage access to and use of programs.	6% reduction in SOVs
Safe Routes to Schools	Focus on providing improved bicycle and pedestrian access between residential areas and schools.	13% reduction in SOVs
Land Use Strategies		
"Smart Growth" Projects	Higher density, mixed use, growth management, neo-traditional planning (with neighborhoods that encourage walking, bicycling and transit use)	N/A
Jobs/Housing Balance	Provide balance between jobs and housing within sub-sectors of a community to reduce longer-distance commuting. May also embrace affordable housing strategies near employment centers.	N/A
Street Connectivity	Provide a well-connected street and multi-modal system to allow for a wider dispersion of trips and increased use of alternative modes.	N/A

Table 3-6 Continued. Transportation Demand Management Strategies

Strategy	Description	Potential Trip Reduction
Land Use Strategies Continued		
Transit/Pedestrian Friendly Urban Design	Enhance safety, accessibility, amenities and aesthetics of the pedestrian environment and transit facilities to encourage use. Specific measures could include: prominent crosswalks, complete sidewalk networks, traffic calming devices like curb extensions, streetscape enhancements/landscaping, proximity of buildings to sidewalks vs. setbacks that require walking through parking lots, skinny streets.	N/A

Sources of trip reduction estimates: "Guidance for Estimating Trip Reductions from Commute Options", Oregon Department of Environmental Quality, August 1996, and "Evaluation of Potential Measures for Achieving Modal Targets, Final Report", Metro, June 2005. Note SOVs represent Single Occupant Vehicles.

7. AIR, TRUCK FREIGHT, RAIL, WATER AND PIPELINE TRANSPORTATION ELEMENT

This chapter presents a short discussion of air, truck freight, rail, water and pipeline transportation in the Aumsville study area. Included is a brief overview of existing and anticipated future needs, improvement options considered where appropriate and recommendations.

7.1 AIR TRANSPORTATION

There are no airports within the Aumsville study area and the TSP makes no recommendations concerning airport facilities or air transportation services. The nearest airport is the privately owned Flying E Aerodrome approximately three miles west of town. There is one aircraft based at this airport and it has a 2,300 foot by 45 foot runway[17]. The nearest publicly-owned airport is Salem's McNary Field located 10 miles from Aumsville. The nearest scheduled commercial air passenger service can be found at Portland International Airport (PDX) approximately 67 miles from Aumsville. This airport is home to approximately 109 based aircraft and has three runways, the largest of which is 11,000 foot by 150 foot[18].

7.2 TRUCK FREIGHT

OR 22 has been designated by ODOT as a State Freight highway. The City of Aumsville restricts the operation of trucks in excess of 20,000 lbs. gross weight on city streets except on designated truck routes, for delivery purposes, or to serve businesses at industrial sites adjacent to the street. City designated truck routes include:

- Main Street
- 1st Street
- 11th Street from the northern city limits to Main Street
- 8th Street from the southerly city limits to Main Street

Improvement Needs and Recommendations

Aumsville is a farming center for a portion of Marion County east of I-5 and running along OR 22. As such, it attracts many large farm vehicles during harvest season including semi-trucks and 16-foot wide combines moving from field to field to harvest crops and providing other necessary services. A common route used by these vehicles when traveling through the city is to enter the UGB heading north from West Stayton Road/8th Street, turning right onto Main Street, turning left onto 1st Street and then heading north on 1st Street exiting the city onto Shaw Highway in the vicinity of the OR 22 interchange. Anecdotal information provided by the TSP PAC indicates that the northbound right turn from 8th Street onto Main Street is frequently difficult for these large vehicles which must either swing wide across Main Street in the oncoming traffic lane, travel up over the existing curb return on the southwest corner of the intersection, or both. To more safely accommodate these vehicles, it is recommended that the curb radii on this corner be lengthened. Further analysis of design

[17] Federal Aviation Administration, Airport Runway Data
http://www.faa.gov/airports_airtraffic/airports/airport_safety/airportdata_5010/
[18] Federal Aviation Administration, Airport Runway Data
http://www.faa.gov/airports_airtraffic/airports/airport_safety/airportdata_5010/

vehicles and their requirements should be undertaken to determine the precise dimensions of this modification. Consideration should be given to minimizing potential impacts on pedestrian movement including any increases to street crossing distances.

Other key freight mobility issues identified by the PAC included: the narrow cross-section along 1st Street where there are conflicts between large agricultural vehicles and traffic moving in the opposite direction; turning radius at the intersection of Main and 1st Streets for the southbound right turn movement, and conflicts between improving pedestrian crossings of Main Street and the movement of large vehicles along Main Street. Recommended improvements along 1st Street and at the intersection of 1st Street with Main Street will help to address the needs of these large vehicles.

Recommended Truck Route System

The recommended truck route system for the Aumsville UGB will include the following streets:

- 1st Street for its entire length
- Main Street/Mill Creek Road through the entire UGB
- 11th Street from Main Street to the northern UGB
- Olney Street from the west side of 9th Street to the western UGB
- West Stayton Road from Main Street to Mill Creek Bridge

7.3 RAIL FACILITIES AND SERVICE

Identification of Needs and Issues

There is one railroad currently operating within the City of Aumsville, the Willamette Valley Railroad. The rail line runs generally north/south through the UGB parallel to 1st Street. There are three at-grade railroad crossings within the Aumsville City Limits. One crossing is located on Mill Creek Road/Main Street just to the east of the intersection with 1st Street. This crossing is indicated by pavement markings, flashers, bells and cross-bars. There are no protective gates nor is there illumination. There is a crossing on 1st Street between Cleveland and Willamette Streets. This crossing is indicated by pavement markings, cross-bars and Yield signs. Another crossing is located on Del Mar Drive west of 1st Street. This location has pavement markings, cross-bars and is stop sign-controlled. Just outside of the city limits, there is an at-grade railroad crossing on the westbound on-ramp from Shaw Highway to OR 22 which has advance signage warning, flashers and gates.

According to information included in the Marion County Rural TSP, freight activity is increasing on this line and is expected to continue to increase in the future. The Willamette Valley Railroad has been seeking to improve the line to provide for faster track speeds. The 2001 ORP identified several funding needs for the Willamette Valley Railroad which could possibly be eligible for state grant funding assistance. Identified needs included improvements to rails, crossties and turnouts.

Amtrak provides passenger rail service in the Willamette Valley and connects to major destinations throughout the United States. Aumsville residents wanting to travel on Amtrak can catch this service at the railroad passenger depot in Salem, approximately 10 miles away.

Improvements and Recommendations

Input from ODOT Rail Division staff[19] indicates that some improvements to existing crossings may be needed in conjunction with implementation of selected roadway projects as described in Chapter 4. The specific details of these improvements will be determined based on formal application, hearing and written order to proceed with the necessary improvements. Potential improvements include the following:

- *Del Mar Drive Rail Crossing* - Any modification of Del Mar Street to the west of 1st Street associated with the proposed intersection enhancement may require installation of automatic flashing lights and gate signals at the existing crossing to accommodate an increase in projected traffic volumes. If the crossing is signalized along with signalization at the 1st Street/Del Mar Drive intersection, then the traffic and crossing signals should be interconnected with Traffic Signal Preemption Control (TSPC). The sidewalk crossings along Del Mar Drive approaching but not crossing the tracks will need to be authorized by Rail Division Order and completed over the track.
- *1st Street Rail Crossing* – The major challenge at this crossing is the severely skewed 15-degree angle of the road and track intersection. Sidewalks should cross the tracks at a near 90-degree angle. This requirement coupled with the proposed street widening in the area south of Willamette Drive will require right-of-way acquisition. According to ODOT Rail staff, any widening of 1st Street within 360 feet of the track will require that the widening be carried over the track intersection and may require installation of automatic signals at the crossing. Additionally, there are several driveways within 100 feet of the crossing that will need to be combined or relocated further from the crossing.
- *Main Street Rail Crossing* – Signalization of the intersection of 1st and Main Streets will require interconnection by TSPC with the existing automatic crossing signals (located approximately 180-feet) east of the intersection. According to ODOT Rail staff, it is recommended that automatic gates be added to the existing flashing light signals at the crossing.

7.4 PIPELINE FACILITIES

There are no major pipeline facilities in the Aumsville UGB. The pipeline system is confined to public utilities such as sewer and water service and no recommendations are included in the TSP.

7.5 WATER TRANSPORTATION FACILITIES

There are no navigable waterways within the City of Aumsville and therefore no possibility for water transportation services.

[19] Email to Naomi Zwerdling from Michael Hays, ODOT Rail Division, September 29, 2009 and subsequent follow-up conversations in November, 2009.

8. FUNDING AND IMPLEMENTATION PLAN

This chapter presents a discussion of the costs associated with implementing the 20-year recommendations in the Aumsville TSP, and both existing and potential future sources of funding for transportation improvements.

8.1 COSTS OF TRANSPORTATION IMPROVEMENT RECOMMENDATIONS

Planning level cost estimates have been prepared for short-and long-term transportation system improvement, including both land development Scenarios 1 and 2. Table 8-1 summarizes estimates for short-term improvements, while Table 8-2 presents estimates associated with land development Scenario 1. Short-term improvements are illustrated in Figure 4-6, while improvements included in Scenario 1 are shown in Figure 4-7. Table 8-3 presents cost estimates for each recommended bicycle/pedestrian project. Table 8-4 summarizes cost estimates associated with Scenario 2. These improvements are shown in Figure 4-8.

The street system improvement estimates in Tables 8-2 and 8-4 are not additive, but have been developed to stand independently to reflect the full cost of transportation infrastructure improvements associated with full UGB build-out and UGB build-out plus expansion as defined in the TSP development process. Cost estimation worksheets are included in Appendix F.

It should be noted these planning level cost estimates do not reflect the cost of right-of-way acquisition. This exclusion is due to the fact that no preliminary design details were prepared for the recommended improvements (this level of analysis is not normally done in conjunction with a TSP), and the lack of detailed information related to the precise boundaries of existing public rights-of-way. A further unknown which makes it difficult to develop the right-of-way component of project cost estimates is uncertainty regarding whether the necessary right-of-way will be dedicated as part of a land development application eliminating the need for public expenditure. Specific details concerning right-of-way acquisition needs and costs will be refined during project design.

Planning Level Cost Estimates for Short-Term Improvements

Several transportation system improvements were identified to address existing or short-term needs. These are summarized in Table 8.1 which also includes estimated costs.

Table 8-1. Short-Term Improvement Projects

No.	Project Location	Project Limits	Project Description	Cost Estimate
ST-1	Pedestrian pathway	Western terminus of Del Mar Drive to 11th Street	Provide multi-use pathway	$30,000
ST-2	Pedestrian pathway	Carmel Street to Windermere Street	Provide multi-use pathway	$15,000
ST-3	1st Street	Willamette Street to approx. Gordon Lane	Provide multi-use pathway on east side of 1st Street, east of drainage ditch using existing church right-of-way	$35,000
ST-4	At intersection	1st Street at Willamette Street	Add southbound left turn lane as interim improvement	$273,000

Table 8-1 Continued. Short-Term Improvement Projects

No.	Project Location	Project Limits	Project Description	Cost Estimate
ST-5	Main Street	Within City Limits	Consider adding traffic calming treatments to slow traffic	Not estimated
ST-6	At intersection	Main Street and 3rd Street	Install pedestrian crossing including ADA-compliant ramps	$18,000
ST-7	11th Street	Approaching Olney Street southbound	Add school warning flashers. Other improvements require further development to estimate costs	$25,000

The addition of a southbound left turn lane on 1st Street at Willamette Street is funded as part of the development approval for the adjacent Baptist Church and School and would be made pending the long-term widening of 1st Street as discussed below under "Long-Term Improvements". A concept drawing illustrating this improvement is included as Figure E-1 in Appendix E. Estimated cost for this improvement is $273,000 excluding right-of-way. Some right-of-way acquisition may be needed to complete this improvement along the west side of 1st Street the extent of which will be determined during design.

Planning Level Cost Estimates for Scenario 1: UGB Build-out

Table 8-2 presents preliminary cost estimates for the projects included in Scenario 1 as illustrated in Figure 4-7 and described in Chapter 4.

Table 8-2. Roadway Improvement Projects – Scenario 1 (UGB Build-out)

No.	Project Location	Project Limits	Project Description	Preliminary Cost Estimate
1	OR 22 EB Ramps @ Shaw Highway	At intersection	• Install traffic signal and widen to add southbound left turn lane, and dual westbound left turn lanes • Widen 1st Street south of intersection for approx. 600 feet 2 northbound and 2 southbound thru lanes	$1,600,000
2	1st Street @ Del Mar Drive Continued	At intersection	• Install traffic signal, and widen to add 2nd NB and SB thru lanes approx. 500 feet north of intersection and 300 feet south, left turn lanes for all movements, and WB right turn lane • Transition back to single NB and SB thru lanes between Del Mar Drive and Willamette Street • Improve railroad crossing of Del Mar west of intersection and install automatic gates, interconnect with signal on 1st	$3,500,000 (partial developer construction)
3	East Del Mar Drive Extension	1st Street to Bishop Road	• Construct new 3-lane urban roadway to serve ID zoned development	Developer constructed

Table 8-2. Cont. Roadway Improvement Projects – Scenario 1 (UGB Build-out)

No.	Project Location	Project Limits	Project Description	Preliminary Cost Estimate
4	1st Street @ Willamette Street	At intersection	• Install southbound left turn lane • Complete transition for approx. 300 feet from north and improve 2-lane cross-section with bike lanes and sidewalks for approx. 650 feet to south • Install railroad crossing gates and relocate local street access on west side of 1st Street	$2,300,000
5	1st Street at Main Street	At intersection	• Signalize intersection, add bike lane and sidewalk enhancements • Install automatic railroad gates and interconnect with signal at 1st	$1,800,000
6	8th Street at Main Street	At intersection	• Widen curb radii on southwest corner to accommodate large farm equipment and other vehicles turning from the south on 8th Street to the east on Main Street.	$24,000
7	11th Street and Olney Street	At intersection	• Signalize intersection	$650,000
8	Willamette Street	Eastern terminus to Puma Street	• Complete street connection to Bishop Road	Developer constructed
9	14th Street	Olney Street to Cleveland Street	• Construct new urban street with bike lanes and sidewalks	Developer constructed
10	Del Mar Drive	14th Street to 11th Street	• Construct new urban street with bike lanes and sidewalks	Developer constructed
11	Cleveland Street	14th Street to 11th Street	• Construct new urban street with bike lanes and sidewalks	Developer constructed
			Totals	**$9,874,000**

Note: Due to level of detail in conceptual design no right-of-way acquisition estimates could be reasonably provided. Accordingly, this potential cost is not included in the project estimates. It should be noted that this cost could be significant including such activities as land acquisition and relocation.

Table 8-3 presents preliminary cost estimates for the bicycle and pedestrian system improvement projects included in Scenario 1. These are described in detail in Chapter 5

Table 8-3. Bicycle and Pedestrian Improvement Projects – Scenario 1 (UGB Build-out)

No.	Project Location	Project Limits	Project Description	Cost Estimate
21	1st Street	WB OR 22 to Beavercreek Road	Provide shoulder bikeway-walkway	To be included in Street Improvement Project
22	1st Street	Beavercreek Road to Willamette Street	Install bicycle lanes	To be included in Street Improvement Project

Table 8-3. Bicycle and Pedestrian Improvement Projects – Scenario 1 (UGB Build-out)

No.	Project Location	Project Limits	Project Description	Cost Estimate
23	1st Street	Willamette Street to Cleveland Street	Install sidewalk and bicycle lane on east side of 1st Street.	To be included in Street Improvement Project
24	Main Street/Mill Creek Road	Porter Boone Park Entrance to 11th Street	Install bicycle lanes	$117,000
25	Main Street	11th to 3rd Street	Complete sidewalk gaps on the south side of Main Street	$480,000
26	Main Street/Mill Creek Road	1st Street to Bishop Road	Complete sidewalk gap and add bike lanes on north side and shoulder on south side	$420,000
27	Bishop Road	Mill Creek Road to future park	Install multi-use path	$163,000
28	11th Street	Olney Street to Main Street	Install bicycle lanes	$408,000
29	11th Street	South of Olney Street	Complete sidewalk on west side to Olney	$198,000
30	11th Street	Main Street to Hazel Street	Complete sidewalks	$289,000
31	Del Mar Drive	10th Street to 11th Street	Install multi-use path connection	$40,000
32	Cleveland Street	11th Street to 1st Street	Complete sidewalks	$240,000
33	5th Street	Cleveland Street to Main Street	Complete sidewalks	$90,000
34	Willamette Street	Eastern terminus to Puma Street	Install multi-use path connection	$40,000
35	Carmel Drive to Windermere Street	--	Install multi-use path connection	$30,000
36	1st Street to York Street	--	Install multi-use path connection	$30,000
37	Mill Creek Trail	11th Street to 1st Street	Investigate feasibility of trail development	NA
			Totals	**$2,545,000**

Planning Level Cost Estimates for Scenario 2: Plus UGB Expansion

Table 8-4 presents preliminary cost estimates for the projects included in Scenario 2. It should be noted that improvements in Table 8-4 do not assume that the improvements in Table 8-2 have previously been made – in other words, they are not assumed to be phased and the cost estimates for Scenario 2 are completely independent of the estimates for Scenario 1. At such time as TSP recommendations are developed, project phasing will be considered and cost estimates adjusted accordingly.

Table 8-4. Roadway Improvement Projects – Scenario 2 (Plus UGB Expansion)

No.	Project Location	Project Limits	Project Description	Cost Estimate
X-1	OR 22 WB Ramps @ Shaw Highway	At intersection	• Widen and restripe to provide NB left turn lane	$300,000
X-2	OR 22 EB Ramps @ Shaw Highway	At intersection	• Modify existing eastbound off ramp to provide direct connection to southbound 1st with addition of 2nd southbound through lane to receive vehicles exiting the freeway. • Install traffic signal at intersection and widen to add a southbound left turn lane. Modify existing off-ramp to allow right turns only. • Widen 1st Street south of intersection for approx. 600 feet to provide 2 northbound and 2 southbound thru lanes	$3,400,000 (partial developer construction)
X-3	1st Street @ Del Mar Drive	At intersection	• Install traffic signal, and widen to add 2nd NB and SB thru lanes approx. 500 feet north of intersection and 300 feet south, left turn lanes for all movements, WB right turn lane, 2nd SB left turn lane. • Transition back to single NB and SB thru lanes between Del Mar Drive and Willamette Street • Improve railroad crossing of Del Mar west of intersection and install automatic gates, interconnect with signal on 1st	$3,700,000
X-4	East Del Mar Drive Extension	1st Street to Bishop Road	• Construct new 3-lane urban roadway to serve ID zoned development	Developer constructed
X-5	1st Street @ Willamette Street	At intersection	• Install southbound left turn lane • Complete transition for approx. 300 feet from north and improve 2-lane cross-section with bike lanes and sidewalks for approx. 650 feet to south • Install railroad crossing gates and relocate local street access on west side of 1st Street	$2,600,000
X-6	1st Street at Cleveland Street	At intersection	• Install signal when warranted and add NB left turn lane	$590,000
X-7	1st Street at Church Street	At intersection	• Restrict to right-in, right-out	$12,000
X-8	1st Street at Main Street	At intersection	• Signalize intersection, add bike lane and sidewalk enhancements • Add SB left turn lane and WB right turn lane • Install automatic railroad gates and interconnect with signal at 1st	$1,900,000

Table 8-4 Cont. Roadway Improvement Projects – Scenario 2 (Plus UGB Expansion)

No.	Project Location	Project Limits	Project Description	Preliminary Cost Estimate
X-9	8th Street at Main Street	At intersection	• Widen curb radii on southwest corner to accommodate large farm equipment and other vehicles turning from the south on 8th Street to the east on Main Street.	$24,000
X-10	11th Street and Olney Street	At intersection	• Signalize intersection • Add NB and SB left turn lanes	$720,000
X-11	Willamette Street	Eastern terminus to Puma Street	• Complete street connection to Bishop Road	Developer constructed
X-12	14th Street	Olney Street to Cleveland Street	• Construct new urban street with bike lanes and sidewalks	Developer constructed
X-13	West Del Mar Drive	14th Street to 11th Street	• Construct new urban street with bike lanes and sidewalks	Developer constructed
X-14	Cleveland Street	14th Street to 11th Street	• Construct new urban street with bike lanes and sidewalks	Developer constructed
			Totals	**$13,246,000**

Note: Due to level of detail in conceptual design no right-of-way acquisition estimates could be reasonably provided. Accordingly, this potential cost is not included in the project estimates. It should be noted that this cost could be significant including such activities as land acquisition and relocation.

8.2 FUNDING TRANSPORTATION SYSTEM IMPROVEMENTS

The purpose of this section is to estimate future funding available for transportation projects within the Aumsville study area over the life of the planning period (through 2030). Specifically, this section summarizes transportation revenue sources and programs historically used by the City of Aumsville, develops funding forecasts for the short (2015), medium (2020), and long-term (2030), and identifies potential new revenue sources to address a projected revenue shortfall.

Past Trends in Transportation Funding

Historically, the City of Aumsville has received transportation funding primarily from three sources; municipal allotments of state gas tax receipts, a variety of grants, and other funds provided by the city. Table 8-5 below summarizes transportation projects constructed from funding received from all sources since 1996, adjusted to 2009 dollars using ODOT's Oregon Highway Construction Cost Trends Composite Index[20]. The table also illustrates average annual revenue from each source over the 13-year period.

[20] Transportation funds expended in all years are adjusted to 2009 dollars using information available at: www.oregon.gov/ODOT/HWY/ESTIMATING/docs/cost_trends/Table.pdf

Table 8-5. Past and Present Aumsville Transportation Projects (1996-2009)

			Funding Sources			
Date	**Location**	**Improvements Completed**	**ODOT Gas Tax**	**Grants**	**Other City Funds**	**Total Project Cost**
1996	8th @ Washington	Overlay and storm drainage	$118,618	$25,000		$143,618
1996	6th, 11th & Washington	Street overlays	$43,574			$43,574
1997	Michael Way & Del Mar 5th to 8th)	Street overlays	$57,212			$57,212
1997	Darla, Donna & Dianne	Street overlays	$53,992			$53,992
1998	5th Street, Main to Shamrock	Street overlays	$38,904			$38,904
1998	6th Street, Church to Cleveland	Street overlays	$8,010			$8,010
1998	S. 7th Street & N. 7th Street, Church to Cleveland	Street overlays	$10,298			$10,298
2000	Locust Court	Street overlays	$17,410			$17,410
2000	5th Street, Shamrock to Del Mar	Street overlays	$54,134			$54,134
2000	7th & Olney Streets	Street overlays	$48,800			$48,800
2001	Olney Street	Overlay and sidewalk improvements	$87,378	$25,000		$112,378
2002	Oak, Clover & Maple Streets	Street overlay	$42,730			$42,730
2003	5th & Del Mar Streets	Street lighting upgrade	$3,636			$3,636
2004	S 7th Street, Washington to Main)	Overlay, curb and sidewalks	$28,459	$25,000		$53,459
2004	11th Street sidewalk	Extension with storm drainage	$16,691			$16,691
2005	N 4th Street	Overlay & curb replacements	$33,292			$33,292
2006	N 5th and 6th Streets	Street overlays	$80,588			$80,588
2008	Main Street	Downtown improvements	$151,082	$300,000	$62,264	$513,346
2008	4th, Cougar and Cheryl	Sidewalk and curb replacements	$13,339			$13,339
2008	N 7th Street	Street overlay	$57,993			$57,993
2009	6th Street and Church Street	Curb, sidewalk, parking improvements	$57,100			$57,100
		Total ODOT Gas Tax		$1,023,240	Per Year	$78,711
		Total Grants		$375,000	Per Year	$28,846
		Total Other City Funds		$62,264	Per Year	$4,790
		TOTAL		**$1,460,504**	**Per Year**	**$112,347**

As discussed in Table 8-5, an average of approximately $112,300 dollars per year is spent on transportation projects in Aumsville. Grants have been an important source of funding for transportation infrastructure improvements in Aumsville, as evidenced by the recent award of $699,000 from ODOT to improve the cross-section of 1st Street between Willamette and Main Streets. This improvement would construct sidewalks and bike lanes on both sides of 1st Street from Main Street to Cleveland Street, and on the west side of 1st Street from Cleveland Street to Willamette Street. The project is estimated to cost $1,038,000. In conjuction with the ODOT grant, Marion County will contribute in-kind preliminary and construction engineering in the amount of $205,000 with the City providing a match of $134,000.

Transportation Funding Sources

Included below is a discussion of the most readily available sources of transportation funding for cities in Oregon, some of which have already been used to fund transportation projects in Aumsville in the past. The City of Aumsville should become familiar with programs that haven't been used in the past to ensure available funding is maximized to complete priority projects.

State and Federal Funding

Federal Surface Transportation Program/State Highway Funding

As the recipient and distributor of Federal Highway Administration funding, ODOT is the primary distributor of federal and state transportation funding. ODOT allocates funding through updates to the STIP. Aumsville is included within Region 2 of the ODOT STIP. Projects selected for inclusion in the STIP must be consistent with the goals and objectives of the OTP, and its modal plans for highways, public transportation, freight and passenger rail, and bicycle and pedestrian facilities. Eligible projects are usually selected from a list of prioritized improvements, such as those included in the Aumsville TSP and other related refinement plans or studies. Input and testimony from the general public, the local Area Commission on Transportation, and local government representatives play an important role in getting specific projects on the STIP.

STIP project costs will likely be subject to escalation to reflect rising material costs (such as oil and steel). The combined result of fixed federal/state funding allocations and annual project cost escalation means fewer improvements can be implemented over time. It should be noted that the state has begun to require contributions from local jurisdictions for some projects when development has significant traffic impacts. An example of this are improvements on U.S. Highway 101 near Lincoln City, and Highway 18 near Valley Junction. Cost sharing may become more common if federal funds decrease in the future. It is expected that local contribution to or cost sharing for projects such as interchanges and bridges will continue.

The paragraphs below summarize some of the specific federal/state programs that could be useful in Aumsville.

Special Small City Allotment

ODOT administers the Special Small City Allotment (SCA) program that provides funding of up to $25,000 to cities with populations under 5,000. The SCA funds are from the state gas tax, and may be used to fund improvements to a city's local transportation system.

State Motor Vehicle Fund

The State of Oregon collects gas taxes, vehicle registration fees, overweight/overheight fines and weight/mile taxes and distributes a portion of these revenues to counties and cities using an allocation formula. The State distributes a local share to cities based on a per capita rate.

Revenues vary from year to year as the allocation formula can vary. Funds can be used for capital improvements or maintenance. While the gas tax provides needed transportation system revenue, it is unlikely to keep pace with future maintenance needs. Over time fuel efficiency and the appearance of hybrid or mixed-fuel vehicles offset the future purchasing power of the gas tax.

Special Public Works Fund and Immediate Opportunity Fund

The Special Public Works Fund (loans and grants) and Immediate Opportunity Fund (grants) provides funding for public works that encourage economic and community development, such as supporting private projects resulting in creation or retention of permanent jobs. Loans that are provided through the Special Public Works Fund are typically available at below market rates.

Oregon Transportation Infrastructure Bank (OTIB)

The Oregon Transportation Infrastructure Bank (OTIB) is a statewide revolving fund available to local governments to provide long-term (up to 30-years) low interest loans designed to promote innovative transportation funding solutions. Project must be Federal-Aid eligible. OTIB funds can be spent on engineering, environmental permitting, right-of-way, construction, and project management. Applications are accepted on an ongoing basis.

Oregon Immediate Opportunity Fund

The Immediate Opportunity Fund program, managed by ODOT and the Oregon Economic and Community Development Department (OECDD), provides a maximum of $500,000 for public road work associated with an economic development related project of regional significance, provided the project creates primary employment. Additionally, although lesser shares will be considered, the grantee should provide an equal local match.

Bicycle and Pedestrian Grant Program

The State Bicycle and Pedestrian Grant Program provides funds for highways, county roads and local streets where improvements are needed for pedestrians and/or bicyclists. Eligible project types include: ADA upgrades, completing short sections of missing sidewalks or bike lanes, street crossing improvements, intersection improvements and minor widening for bike lanes or shoulders.

Community Development Block Grants

The Federal Department of Housing and Urban Development administers the Community Development Block Grant Program. Funds are allocated based on city size and Demographics, such as income levels and housing standards. In some communities, street reconstruction projects in older neighborhoods have been funded by this program. Many other cities use these funds to provide or improve the sidewalk system in older neighborhoods, particularly in the vicinity of schools.

Local Funding

The paragraphs below summarize local options for funding projects in Aumsville.

City Gas Tax

The City could levy a per gallon tax on fuel sold in Aumsville. Typical taxes range from $0.01 to $0.03 per gallon and Woodburn, Tillamook, and The Dalles are examples of communities that have used such a tax. The City could contract with the State Fuel Tax Branch to collect and administer the tax.

Local Vehicle Registration Fee

This would operate similarly to the existing statewide system. Although the method has been discussed, no City or county governments have implemented such a program.

Local Property Tax Levies/Street Bonds

Street Bonds can be of two types: Revenue Bonds and General Obligation Bonds. Revenue bonds are typically secured by local gas tax receipts, street utility fees or other transportation-related stable revenue stream. General Obligation Bonds, which must be approved by majority of the voters and which are typically secured by a property tax, also can be used to finance transportation improvements. Because of the high costs of bond underwriting, is not usually viable for funding single projects that cost less than $2,000,000.

Local Improvement Districts (LIDs)

LIDs levy special assessment charges on property owners within a defined area such as a neighborhood, street frontage or industrial/commercial district, with each property assessed a portion of total project cost. LIDs are commonly used for street paving, drainage, parking facilities and sewer lines. The justification for such levies is that many of these public works improvements provide a direct benefit or enhancement to the value of nearby land, thereby providing direct financial benefits to its owners. LIDs are typically used for local street projects that cannot be funded through other means. State law and city code govern the formation of LIDs, the assessment methodology, and other factors. LIDs are usually funded by the participants, but may also be combined with other funding sources to leverage all available resources. LIDs can be initiated by property owners or the City, and the collected funds are commonly used to repay debt on bonds incurred to undertake the infrastructure improvements. These bonds are guaranteed by payments from the affected properties through a property lien that sunsets when the LID share is paid off. LIDs typically require at least 51 percent of the affected properties to approve the LID. Costs can be determined based on road frontage or square footage.

Reimbursement District or Zone of Benefit District

Public or private entities that build road systems can be compensated by future property owners at a proportional rate, as development occurs. Usually limited to private construction of roads, this mechanism can be useful for public/private developments. Implementation of these districts requires local legislative action.

Road User or Street Utility Fees

This method would charge City residents and nonresidential users a monthly or yearly fee for use of the City road system, similar to water and sewer utility fees. User fees go to maintenance activities and have been instituted in a number of communities. The City of Medford's TSP, for example, recommends that the Medford user fee generate over $100 million over the 20-year life of the plan. A fee of this type would free up other local transportation dollars (such as gas tax receipts) to be used for constructing transportation projects.

Transportation System Development Charges (SDCs)

SDCs are one-time fees paid by land developers to cover a portion of the increased system capacity needed to accommodate new development. Development charges are calculated to include the costs of impacts on services, such as increased school enrollment, parks and recreation use, or traffic congestion. There are many cities in the Willamette Valley that currently levy TSDCs. This funding mechanism is discussed in greater detail in the following section.

Other Miscellaneous Revenue Sources

Other revenue for transportation facilities could be raised from a variety of smaller sources most of which are generated locally including:

- Developer share of specific projects
- Developer Street Lighting Fees
- Developer Street Signing Fees
- Jurisdictional Transfers from Marion County

Transportation maintenance, safety, and capacity improving projects can be funded by a variety of governmental entities and private parties. Though some types of transportation funding can be reasonably estimated for future years (such as gas tax revenues), other funding sources are more difficult to predict (such as grant awards). Given uncertainty surrounding future transportation revenues, this section will rely on past trends, and assumptions about the development of new fee revenue, to estimate the potential availability of future transportation funding.

Calculation of TSDC Rates and Revenues

A potential new source of funding for the City would involve adoption of a Transportation System Development Charge (TSDC). A TSDC is a one-time fee paid by new development to help cover the cost of infrastructure needed to accommodate the growth in trips caused by the development. For the purpose of estimating the potential additional dollars a City of Aumsville TSDC could generate, an analysis was conducted based on the community growth expectations in the Aumsville UGB, and the extent and cost of transportation improvements needed to accommodate that growth. These two factors are of key importance in identifying the level of TSDCs that could be reasonably charged by the City to provide funding for transportation infrastructure. The analysis process and conclusions are described in greater detail in Appendix G.

Calculation of the likely maximum TSDC that could be charged by the city follows a simple mathematical formula that involves dividing the total cost of infrastructure improvements eligible for TSDC funding (e.g., **Cost Basis**) by a numeric estimation of the magnitude of community growth between 2008 and 2030 (e.g., **Capacity Basis** of the community that is expressed in terms of an equivalent to a single family dwelling unit of EDU).

The total cost basis eligible for funding through a TSDC in Aumsville (based on UGB build-out) was developed using the total project cost estimates presented earlier in this chapter for Scenario 1. Per the requirements of ORS 223.297 – 223.314 only improvements that provide added capacity to the transportation system to accommodate new growth can be included in development of an improvement fee-based TSDC program. Accordingly, each improvement project was assessed to determine to the degree to which it served new development and factors were applied to determine the magnitude of eligible costs. This analysis process is presented in Appendix G and summarized in the table included in that appendix.

Based on this analysis, the total Cost Basis for calculating a maximum TSDC for Aumsville would be $9,458,000. Divided by the 21-years in the planning period from 2010 to 2030, it is estimated that the maximum TSDC could raise approximately $450,380 per year. It should be noted that TSDC revenue will not always be available at this level – some years would likely be more and some would be less depending on the magnitude and type of development activity occurring in the City in a given year.

Calculation of the total Capacity Basis is estimated using community growth expectations as defined in *Technical Memorandum #7: Future Conditions*. This report includes an assessment of the number of new dwelling units, square footage of commercial and public

land uses, or acres of industrial development that could be expected to be built in the UGB by 2030. This growth was converted to EDUs to simplify the calculation process. An EDU is estimated by converting the daily trips generated by all land uses to a number that is equivalent to the trip generation of a single family home. Thus, if a single family home equals 1 EDU, a multi-family home (apartment, condo, duplex, etc.) would have an EDC of less than 1. This is because multi-family homes typically generate fewer trips than single family homes. Commercial development, which generates significantly more daily trips than a single family home, would have an EDU significantly higher than 1. Based on the analysis of community growth expectations a total of 2,785 new EDUs are anticipated in the UGB by 2030.

When the total Cost Basis is divided by the total Capacity Basis, a maximum improvement fee per EDU can be determined. For Aumsville, the calculation results in an estimated $3,396 per EDU (or single family home). It should be stressed that this is the maximum amount that could reasonably be levied by the City as a TSDC based on the improvement fee approach given the development and project cost assumptions inherent in this analysis. Lesser amounts could be levied; however, these would also raise less revenue for making needed transportation improvements, requiring that the necessary funding be obtained from some other source.

To provide some context for evaluating a TSDC fee greater than $3,000 per single family home, a comparison was conducted with TSDCs charged by other jurisdictions around the state of Oregon. That comparison indicates that, based on a November 2002 TSDC study of seven cities in the greater Portland metropolitan area determined the average TSDC for a single-family home was approximately $2,542/unit[21]. In May of 2007 the League of Oregon Cities conducted a survey of System Development Charges of various types levied by a variety of cities in Oregon. TSDCs were included in this survey. The results indicate that for a single family dwelling unit fees charged by communities in Oregon varied substantially from a low of $327 in Sheridan to a high of $5,656 in Grants Pass. The average among the communities surveyed (which did not include all cities with TSDCs in Oregon) was just under $2,500 for a single family home. Examples of single family dwelling unit equivalent rates in 2007 for other Willamette Valley cities include Stayton at $2,562, Philomath at $2,330, Wilsonville at $3,082, Woodburn at $3,286, and (as of June 2009) Silverton at $3,908 per single family home.

Summary of Transportation Funding

Table 8-6 presents estimates of the availability of transportation funding in future years, starting in 2010, based on past funding availability and the possibility of creating a TSDC at the maximum level discussed above. The table is divided into funds available in the short (2015), medium (2020), and long term (2030), to help determine what timeline to establish for the development of future transportation projects. For purposes of analyzing available transportation revenue for capital improvements, existing revenues from gas tax, other city funds, and approximately one half of grant funds are deducted to account for on-going operations and maintenance expenses.

As shown in Table 8-6, a total of nearly $11 million is estimated to be available to the City for capital improvement projects through the 21-year planning period, of which nearly $9.5 million (or 87 percent) would be generated by a TSDC implemented in 2010 at the maximum eligible amount. As noted previously, forecasts assume a relatively constant level of funding

[21] Analysis of System Development Charges in the City of Portland
http://www.regulatoryimprovement.ci.portland.or.us/exhibits/exhibitI.asp

from all sources. In reality, funding may vary considerably from year-to-year as grants are won and TSDC-eligible development occurs.

Table 8-6. Estimated Future Transportation Revenue

Source	Annualized Revenue	2010-2015	2016-2020	2021-2030	Totals
ODOT Gas Tax	$170,000/year	$1,020,000	$850,000	$1,700,000	$3,570,000
Grants	$28,846/year	$169,500	$144,000	$289,000	$602,500
Other City Funds	$4,790/year	$28,700	$24,000	$47,000	$99,700
TSDC	$450,380/year	$2,702,000	$2,252,000	$4,504,000	$9,458,000
	Sub-Total	$3,920,200	$3,270,000	$6,540,000	$13,730,200
Operations and Maintenance		($810,000)	($675,000)	($1,350,000)	($2,835,000)
Total Available for Capital Projects		$3,110,200	$2,595,000	$5,190,000	$10,895,200

Notes: TSDC or Transportation System Development Charge is based on future development projection

Cost and Funding Comparison with Scenario 1

Table 8-7 presents a summary comparison of the total cost of improvements in the preferred plan with the anticipated funding that could be raised from the City's current sources and with the addition of a TSDC at the level of $3,396 per EDU (or single family dwelling unit equivalent). As indicated in the table, Aumsville could experience a funding gap of approximately $1,524,000 over the 21-year planning period.

Table 8-7. Preferred Improvement Plan, Summary of Costs and Funding for Capital Improvement Projects

	Value
Total Project Costs (2010-2030)	$12,419,000
Total Estimated Funding for Capital Projects	$10,895,200
Funding Gap (deficit)	**($1,523,800)**

Note 1: This analysis assumes that four projects on the list of preferred improvements would be funded by Developer Exactions and are not included in the above analysis. These improvements are necessary to provide the basic access and circulation to effectively develop and market these properties and are not assumed to be a city responsibility.

Note 2: Project costs do not include right-of-way acquisition or relocation (if necessary) as to the level of detail in conceptual design makes it difficult to reasonably estimate the extent of acquisition required. These costs could be significant, particularly for improvements along 1st Street.

It is important to note that the recommended projects on the State of Oregon, Aumsville or Marion County transportation systems that are included in the Aumsville TSP are not guaranteed funding and implementation through inclusion in this document. They cannot be considered to be reasonably likely to be constructed during the planning horizon. Consequently, these projects cannot be relied upon to support plan amendments or zone changes (including amendments to the urban growth boundary) to achieve compliance with Oregon Administrative Rule 660-012-0060 unless or until they are included, as appropriate, in the adopted Statewide Transportation Improvement Program (STIP), County CIP or City Visioning Plan (or CIP) or a specific funding source is identified and supported by any of the three jurisdictions in writing or a funding plan that is supported by any of the three jurisdictions in writing is developed.

8.3 FUNDING ANALYSIS INCLUDING UGB EXPANSION

This section identifies the TSDC rate and level of revenue that could be generated if an Aumsville TSDC were developed to include the development that could occur with the potential UGB expansion scenario evaluated in this TSP.

Calculation of TSDC Rates and Revenues

Following the same analysis process described above and using the transportation infrastructure cost estimates (see Table 8-3) for Scenario 2 as a starting place, the Cost Basis for calculating a TSDC would be $10,390,000. Using the community growth expectations presented in Chapter 4 (Tables 4-2 and 4-3) a total of 3,783 EDUs are anticipated for the UGB and expanded UGB area by 2030. This represents the TSDC Capacity Basis. Dividing the Cost Basis by the Capacity Basis yields a maximum TSDC rate of $2,746 (see Appendix G for more details).

As with the earlier discussion concerning calculation of a TSDC for conditions with UGB build-out, that this is the maximum amount that could reasonably be levied by the City as a TSDC based on the improvement fee approach given the development and project cost assumptions inherent in this analysis. Lesser amounts could be levied; however, these would also raise less revenue for making needed transportation improvements, requiring that the necessary funding be obtained from some other source. It should also be stressed that the calculations in this rate assume that the proposed UGB expansion would include both the areas identified in the TSP and the same types and intensities of development. If different areas are included in the UGB and different land uses identified, then the maximum TSDC for conditions with a UGB expansion will be different.

Table 8-8 presents estimates of the availability of transportation funding in future years with the proposed UGB expansion, starting in 2010. As with the analysis presented in Table 8-4, the information in this table is based on past funding availability and the possibility of creating a TSDC at the maximum level discussed above for land use Scenario 2. The table is divided into funds available in the short (2015), medium (2020), and long term (2030), to help determine what timeline to establish for the development of future transportation projects. As with the discussion for Scenario 1, existing revenues from gas tax, other city funds, and approximately one half of grant funds are deducted to account for on-going operations and maintenance expenses.

Table 8-8. Estimated Future Transportation Revenue with UGB Expansion

Source	Annualized Revenue	2010-2015	2016-2020	2021-2030	Totals
ODOT Gas Tax	$170,000/year	$1,020,000	$850,000	$1,700,000	$3,570,000
Grants	$28,846/year	$169,500	$144,000	$289,000	$602,500
Other City Funds	$4,790/year	$28,700	$24,000	$47,000	$99,700
TSDC	$494,762/year	$2,968,000	$2,474,000	$4,948,000	$10,390,000
	Sub-Total	$4,186,200	$3,492,000	$6,984,000	$14,662,200
Operations and Maintenance		($810,000)	($675,000)	($1,350,000)	($2,835,000)
Total Available for Capital Projects		$3,376,200	$2,817,000	$5,634,000	$11,827,200

Notes: TSDC or Transportation System Development Charge is based on future development projection.

As shown in Table 8-8, a total of nearly $12 million is estimated to be available to the City for capital improvement projects through the 21-year planning period, of which nearly $10.4 million (or 88 percent) would be generated by a TSDC implemented in 2010 at the maximum eligible amount. As noted previously, forecasts assume a relatively constant level of funding

from all sources. In reality, funding may vary considerably from year-to-year as grants are won and TSDC-eligible development occurs.

Cost and Funding Comparison with Scenario 2

Table 8-9 presents a summary comparison of the total cost of improvements in the preferred plan with the anticipated funding that could be raised from the City's current sources and with the addition of a TSDC at the level of $2,746 per EDU (or single family dwelling unit equivalent). As indicated in the table, Aumsville could experience a funding gap of approximately $1,419,000 over the 21-year planning period.

Table 8-9. Summary of Project Costs and Funding including UGB Expansion

	Value
Total Project Costs (2010-2030)	$13,246,000
Total Estimated Funding	$11,827,200
Funding Gap (deficit)	**($1,418,800)**

Note 1: This analysis assumes that four projects on the list of preferred improvements would be funded by Developer Exactions and are not included in the above analysis. These improvements are necessary to provide the basic access and circulation to effectively develop and market these properties and are not assumed to be a city responsibility.

Note 2: Project costs do not include right-of-way acquisition or relocation (if necessary) as to the level of detail in conceptual design makes it difficult to reasonably estimate the extent of acquisition required. These costs could be significant, particularly for improvements along 1st Street.

APPENDIX A

Street System Inventory

City of Aumsville
Street Inventory, Maintenance Summary and Condition Evaluation
(1-31-2009 Final)

Street	Section	Jurisdiction	Classification	Speed Limit (MPH)	Length (feet)	ROW Width (feet)	Street Width (feet)	Existing Street Improvements								On-Street Parking	Year Last Overlayed	2009 Condition Rating	Very Poor Length	Poor Length	Fair Length	Good Length	Very Good Length
								Year Built	Surface Type	Curbs		Sidewalks		Travel Lanes	Bicycle Lane								
										LT	RT	LT	RT										
ANTELOPE ST	HIGHBERGER LP TO LYNX AVE	CITY	LOCAL	25	507	60	40	2004	AC	Y	Y	1/2	1/2	2	N	N/A		VERY GOOD					507
BISHOP ROAD	MAIN ST N TO NEW ST. IMPROVEMENTS	COUNTY	COLLECTOR	*	560	40	20		AC	N	N	N	N	2	N	N/A		FAIR			560		
BISHOP ROAD	NE ST. IMPROVEMENTS TO BOBCAT ST	COUNTY	COLLECTOR	*	540	50	30	2006	AC	Y	N	Y	N	2	N	N/A		VERY GOOD					540
BISHOP ROAD	BOBCAT ST TO PUMA LN	COUNTY	COLLECTOR	*	300	50	30	2006	AC	Y	N	Y	N	2	N	N/A		VERY GOOD					300
BISHOP ROAD	PUMA LN TO 200' NO OF PUMA LN	COUNTY	COLLECTOR	*	200	50	30	2006	AC	Y	N	Y	N	2	N	N/A		VERY GOOD					200
BISHOP ROAD	200' N OF PUMA LN TO CITY LIMITS	COUNTY	COLLECTOR	*	1150	40	20		AC	N	N	N	N	2	N	N/A		FAIR			1150		
BOBCAT ST	HIGHBERGER LP TO LYNX AVE	CITY	LOCAL	25	595	60	40	2004	AC	Y	Y	1/2	1/2	2	N	N/A		VERY GOOD					595
BOBCAT ST	LYNX AVE TO HIGHBERGER LP	CITY	LOCAL	25	350	40	24	2004	AC	Y	Y	1/2	1/2	2	N	N/A		VERY GOOD					350
BOBCAT ST	HIGHBERGER LP TO BISHOP RD	CITY	LOCAL	25	550	40	24	2004	AC	Y	Y	N	N	2	N	N/A		VERY GOOD					550
CALEB ST	11TH ST TO 12TH ST	CITY	LOCAL	25	325	60	40	2006	AC	Y	Y	Y	Y	2	N	Y		VERY GOOD					325
CALEB ST	12TH ST TO 13TH ST	CITY	LOCAL	25	215	60	40	2006	AC	Y	Y	Y	Y	2	N	N/A		VERY GOOD					215
CALEB ST	13TH ST W TO END	CITY	LOCAL	25	110	60	40	2006	AC	Y	Y	Y	Y	2	N	N/A		VERY GOOD					110
CEDAR LANE	WEST OF 11TH ST	CITY	LOCAL	25	400	48	12		GR	N	N	N	N	2	N	N		VERY POOR	400				
CHERYL ST	8TH ST TO 10TH PLACE	CITY	LOCAL	25	765	60	40	1978	AC	Y	Y	Y	Y	2	N	Y	1995	GOOD				765	
CHURCH ST	1ST ST TO 2ND ST	CITY	COLLECTOR	25	230	60	40	1983	AC	Y	Y	N	1/2	2	N	Y		GOOD				230	
CHURCH ST	2ND ST TO 3RD ST	CITY	COLLECTOR	25	250	60	40	1983	AC	Y	Y	1/2	1/2	2	N	Y		GOOD				250	
CHURCH ST	3RD ST TO 4TH ST	CITY	COLLECTOR	25	250	60	40	1983	AC	Y	Y	N	Y	2	N	Y		GOOD				250	
CHURCH ST	4TH ST TO 5TH ST	CITY	COLLECTOR	25	250	60	40	1983	AC	Y	Y	N	Y	2	N	Y		GOOD				250	
CHURCH ST	5TH ST TO 6TH ST	CITY	COLLECTOR	25	250	60	22		AC	N	1/2	1/2	1/2	2	N	1/2	1988	GOOD				250	
CHURCH ST	6TH ST TO 7TH ST	CITY	COLLECTOR	25	250	60	22		AC	N	N	N	N	2	N	N	1988	GOOD				250	
CHURCH ST	7TH ST TO 8TH ST	CITY	COLLECTOR	25	250	60	22		AC	N	N	N	Y	2	N	N	1988	GOOD				250	
CHURCH ST	8TH ST TO 9TH ST	CITY	COLLECTOR	25	250	60	22		AC	N	Y	N	Y	2	N	N	1988	GOOD				250	
CHURCH ST	9TH ST TO 10TH ST	CITY	COLLECTOR	25	250	60	22		AC	N	N	N	Y	2	N	N	1988	GOOD				250	
CHURCH ST	10TH ST TO 11TH ST	CITY	COLLECTOR	25	250	60	22		AC	N	N	N	N	2	N	N	1988	GOOD				250	
CLEVELAND ST	1ST ST TO 2ND ST	CITY	COLLECTOR	25	230	60	24		AC	N	N	1/2	1/2	2	N	Y		GOOD				230	
CLEVELAND ST	2ND ST TO 3RD ST	CITY	COLLECTOR	25	250	60	24		AC	N	N	N	N	2	N	N		GOOD				250	
CLEVELAND ST	3RD ST TO 4TH ST	CITY	COLLECTOR	25	250	60	24		AC	1/2	N	1/2	N	2	N	N		GOOD				250	
CLEVELAND ST	4TH ST TO 5TH ST	CITY	COLLECTOR	25	250	60	24		AC	N	N	N	1/2	2	N	1/2		GOOD				250	
CLEVELAND ST	5TH ST TO 6TH ST	CITY	COLLECTOR	25	250	60	24		AC	Y	N	Y	N	2	N	Y		GOOD				250	
CLEVELAND ST	6TH ST TO 7TH ST	CITY	COLLECTOR	25	250	60	30		AC	Y	N	Y	N	2	N	Y		GOOD				250	
CLEVELAND ST	7TH ST TO 8TH ST	CITY	COLLECTOR	25	250	60	30		AC	Y	N	Y	Y	2	N	Y		GOOD				250	
CLEVELAND ST	8TH ST TO 9TH ST	CITY	COLLECTOR	25	250	60	30		AC	Y	N	Y	Y	2	N	Y		GOOD				250	
CLEVELAND ST	9TH ST TO 11TH ST	CITY	COLLECTOR	25	500	60	30		AC	N	Y	1/2	Y	2	N	Y		GOOD				500	
CLOVER ST	EAST END TO 4TH ST	CITY	LOCAL	25	180	60	40		AC	Y	Y	Y	Y	2	N	Y	2002	VERY GOOD					180
CLOVER ST	4TH ST TO 5TH ST	CITY	LOCAL	25	390	60	40		AC	Y	Y	Y	Y	2	N	Y	2002	VERY GOOD					390
COUGAR ST	HIGHBERGER LP TO WILLAMETTE ST	CITY	COLLECTOR	25	480	60	40	2004	AC	Y	Y	Y	Y	2	N	Y		VERY GOOD					480
CRYSTAL CT	OFF LINCOLN CT	PRIVATE	PRIVATE	N/A	80	20	20	1997	AC	N	N	N	N	1	N	N/A		VERY GOOD					80
DARLA CT	4TH ST E TO CUL-DE-SAC	CITY	LOCAL	25	230	60	36	1972	AC	Y	Y	Y	Y	2	N	Y		GOOD				230	
DEER ST	GRIZZLY ST E TO END	CITY	LOCAL	25	520		40	2005	AC	Y	Y	Y	Y	2	N	Y		VERY GOOD					520
DELMAR DRIVE	1ST ST TO 4TH ST	CITY	COLLECTOR	25	350	60	40		AC	Y	Y	Y	1/2	2	N	1/2		FAIR			350		
DELMAR DRIVE	4TH ST TO 5TH ST	CITY	COLLECTOR	25	300	60	40	1973	AC	Y	Y	Y	Y	2	N	Y		FAIR			300		
DELMAR DRIVE	5TH ST TO 6TH ST	CITY	COLLECTOR	25	250	60	40	1973	AC	Y	Y	Y	Y	2	N	Y		FAIR			250		
DELMAR DRIVE	6TH ST TO 7TH ST	CITY	COLLECTOR	25	250	60	40	1973	AC	Y	Y	Y	Y	2	N	Y		FAIR			250		
DELMAR DRIVE	7TH ST TO 8TH ST	CITY	COLLECTOR	25	250	60	40	1977	AC	Y	Y	Y	Y	2	N	Y		FAIR			250		
DELMAR DRIVE	8TH ST TO 9TH ST	CITY	COLLECTOR	25	250	60	40	1977	AC	Y	Y	Y	Y	2	N	Y		FAIR			250		
DELMAR DRIVE	9TH ST TO 9TH PL	CITY	LOCAL	25	300	30	22	1996	AC	Y	Y	Y	Y	2	N	Y		GOOD				300	
DELMAR DRIVE	9TH PL TO 10TH ST	CITY	LOCAL	25	260	30	22	1996	AC	Y	Y	Y	Y	2	N	Y		GOOD				260	
DIANNE CT	4TH ST E TO CUL-DE-SAC	CITY	LOCAL	25	320	60	36	1972	AC	Y	Y	Y	Y	2	N	Y		GOOD				320	

City of Aumsville
Street Inventory, Maintenance Summary and Condition Evaluation
(1-31-2009 Final)

Street	Section	Jurisdiction	Classification	Speed Limit (MPH)	Length (feet)	ROW Width (feet)	Street Width (feet)	Existing Street Improvements								On-Street Parking	Year Last Overlayed	2009 Condition Rating	Very Poor Length	Poor Length	Fair Length	Good Length	Very Good Length
								Year Built	Surface Type	Curbs		Sidewalks		Travel Lanes	Bicycle Lane								
										LT	RT	LT	RT										
DONNA CT	4TH ST E TO CUL-DE-SAC	CITY	LOCAL	25	270	60	36	1972	AC	Y	Y	Y	Y	2	N	Y		GOOD				270	
ELK ST	GRIZZLY ST E TO END	CITY	LOCAL	25	520	60	40	2005	AC	Y	Y	Y	Y	2	N	Y		VERY GOOD					520
FOX ST	GRIZZLY ST E TO END	CITY	LOCAL	25	525	60	40	2005	AC	Y	Y	Y	Y	2	N	Y		VERY GOOD					525
GRIZZLY ST	WILLAMETTE ST TO DEER ST	CITY	LOCAL	25	290	60	40	2005	AC	Y	Y	Y	Y	2	N	Y		VERY GOOD					290
GRIZZLY ST	DEER ST TO ELK ST	CITY	LOCAL	25	290	60	40	2005	AC	Y	Y	Y	Y	2	N	Y		VERY GOOD					290
GRIZZLY ST	ELK ST TO FOX ST	CITY	LOCAL	25	290	60	40	2005	AC	Y	Y	Y	Y	2	N	Y		VERY GOOD					290
GRIZZLY ST	FOX ST N TO END	CITY	LOCAL	25	145	60	40	2005	AC	Y	Y	Y	Y	2	N	Y		VERY GOOD					145
HAZEL ST	11TH ST TO 10TH PL	CITY	LOCAL	25	200	60	40	1973	AC	Y	Y	Y	Y	2	N	Y		GOOD				200	
HAZEL ST	10TH PL TO 8TH ST	CITY	LOCAL	25	740	60	40	1978	AC	Y	Y	Y	Y	2	N	Y		GOOD				740	
HIGHBERGER LP (W)	MILL CR RD TO ANTELOPE ST	CITY	COLLECTOR	25	330	60	40	2004	AC	Y	Y	Y	Y	2	N	Y		VERY GOOD					330
HIGHBERGER LP	ANTELOPE ST TO BOBCAT ST	CITY	COLLECTOR	25	435	60	40	2004	AC	Y	Y	Y	Y	2	N	Y		VERY GOOD					435
HIGHBERGER LP	BOBCAT ST TO COUGAR ST	CITY	COLLECTOR	25	545	60	40	2004	AC	Y	Y	Y	Y	2	N	Y		VERY GOOD					545
HIGHBERGER LP	COUGAR ST TO LYNX AVE	CITY	COLLECTOR	25	375	60	40	2004	AC	Y	Y	Y	Y	2	N	N/A		VERY GOOD					375
HIGHBERGER LP	LYNX AVE TO BOBCAT ST	CITY	COLLECTOR	25	190	60	40	2006	AC	Y	Y	Y	Y	2	N	N/A		VERY GOOD					190
HIGHBERGER LP	BOBCAT ST TO PANTHER CT	CITY	COLLECTOR	25	340	60	40	2006	AC	Y	Y	Y	Y	2	N	Y		VERY GOOD					340
HIGHBERGER LP	PANTHER CT TO MILL CR RD	CITY	COLLECTOR	25	850	60	40	2006	AC	Y	Y	Y	Y	2	N	Y		VERY GOOD					850
KLEIN ST	NORTH OF MAIN ST	CITY	LOCAL	25	585	40	16		AC	N	N	N	N	2	N	N	1989	GOOD				585	
LINCOLN ST	11TH ST TO 10TH PL	CITY	LOCAL	25	350	60	40	1978	AC	Y	Y	Y	Y	2	N	Y		GOOD				350	
LINCOLN ST	10TH PL TO 9TH PL	CITY	LOCAL	25	310	60	40	1978	AC	Y	Y	Y	Y	2	N	Y	1996	GOOD				310	
LINCOLN ST	9TH PL TO 9TH ST	CITY	LOCAL	25	270	60	40	1995	AC	Y	Y	Y	Y	2	N	Y		GOOD				270	
LINCOLN ST	9TH ST TO 8TH ST	CITY	LOCAL	25	250	60	40	1995	AC	Y	Y	Y	Y	2	N	Y		GOOD				250	
LINCOLN CT	11TH ST W TO END	CITY	LOCAL	25	500	60	40	1997	AC	N	N	Y	Y	2	N	Y	1997	GOOD				500	
LOCUST CT	WEST OF 5TH ST	CITY	LOCAL	25	440	60	40	1990	AC	Y	Y	Y	Y	2	N	Y	2000	VERY GOOD					440
LYNX AVE	CUL-DE-SAC TO ANTELOPE ST	CITY	LOCAL	25	450	60	40	2006	AC	Y	Y	Y	Y	2	N	N/A		VERY GOOD					450
LYNX AVE	ANTELOPE ST TO BOBCAT ST	CITY	LOCAL	25	440	60	40	2006	AC	Y	Y	Y	Y	2	N	N/A		VERY GOOD					440
LYNX AVE	BOBCAT ST TO HIGHBERGER LP	CITY	LOCAL	25	400	60	40	2006	AC	Y	Y	Y	Y	2	N	N/A		VERY GOOD					400
MAIN ST	E CITY LIMITS TO HIGHBERGRE LP E	COUNTY	ARTERIAL	30	600	60	32		AC	N	Y	N	Y	2	N	N		VERY GOOD					600
MAIN ST	HIGHBERGER LP E TO HIGHBERGER LP W	COUNTY	ARTERIAL	30	580	60	32		AC	N	Y	N	Y	2	N	N		GOOD				580	
MAIN ST	HIGHBERGER LP W TO BELLEVUE DR	COUNTY	ARTERIAL	30	640	60	32		AC	N	1/2	N	Y	2	N	N		GOOD				640	
MAIN ST	BELLEVUE DR TO WINDEMERE ST	COUNTY	ARTERIAL	30	470	60	32		AC	N	N	N	Y	2	N	N		GOOD				470	
MAIN ST	WINDEMERE ST TO KLEIN ST	COUNTY	ARTERIAL	30	655	60	32		AC	N	N	N	Y	2	N	N		GOOD				655	
MAIN ST	KLEIN ST TO 1ST ST	COUNTY	ARTERIAL	30	300	60	36		AC	N	N	1/2	Y	2	N	N		GOOD				300	
MAIN ST	1ST ST TO 2ND ST	COUNTY	ARTERIAL	30	250	60	40		AC	Y	Y	Y	Y	2	Y	N	2006	VERY GOOD					250
MAIN ST	2ND ST TO 3RD ST	COUNTY	ARTERIAL	30	250	60	40	1997	AC	Y	Y	Y	Y	2	Y	Y	2006	VERY GOOD					250
MAIN ST	3RD ST TO 4TH ST	COUNTY	ARTERIAL	30	250	60	40	1997	AC	1/2	Y	1/2	Y	2	Y	Y	2006	VERY GOOD					250
MAIN ST	4TH ST TO 5TH ST	COUNTY	ARTERIAL	30	250	60	40	1999	AC	N	Y	1/2	Y	2	Y	Y	2006	VERY GOOD					250
MAIN ST	5TH ST TO 6TH ST	COUNTY	ARTERIAL	30	250	60	40		AC	N	Y	N	Y	2	Y	Y	2006	VERY GOOD					250
MAIN ST	6TH ST TO 7TH ST	COUNTY	ARTERIAL	30	250	60	40		AC	N	Y	N	Y	2	Y	Y	2006	VERY GOOD					250
MAIN ST	7TH ST TO 8TH ST	COUNTY	ARTERIAL	30	250	60	40		AC	N	Y	1/2	Y	2	Y	Y	2006	VERY GOOD					250
MAIN ST	8TH ST TO 9TH ST	COUNTY	ARTERIAL	30	250	60	40		AC	N	Y	N	Y	2	Y	Y	2006	VERY GOOD					250
MAIN ST	9TH ST TO 10TH ST	COUNTY	ARTERIAL	30	250	60	40		AC	N	Y	N	Y	2	Y	Y	2006	VERY GOOD					250
MAIN ST	10TH ST TO 11TH ST	COUNTY	ARTERIAL	30	250	60	40	2005	AC	Y	Y	N	Y	2	Y	Y	2006	VERY GOOD					250
MAIN ST	11TH ST TO CITY LIMITS	COUNTY	ARTERIAL	35	980	80	24	2005	AC	N	N	Y	Y	2	N	N		GOOD				980	
MAPLE ST	W OF 5TH ST	CITY	LOCAL	25	560	50	40	1973	AC	N	N	Y	Y	2	N	Y	2002	VERY GOOD					560
MICHAEL WAY	4TH ST TO 520' W	CITY	LOCAL	25	520	60	40	1973	AC	Y	Y	Y	Y	2	N	Y		FAIR			520		
MICHAEL WAY	520' W TO END	CITY	LOCAL	25	400	60	40	1983	AC	Y	Y	Y	Y	2	N	Y		FAIR			400		
MIRANDA PLACE	E OF 11TH ST	PRIVATE	PRIVATE	N/A	230	20	20	1996	AC	N	N	N	N	1	N	N		VERY GOOD					230
OAK ST	W OF 5TH ST	CITY	LOCAL	25	400	50	40	1973	AC	Y	Y	Y	Y	2	N	Y	2002	VERY GOOD					400

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								Year Built	Surface Type	Curbs		Sidewalks		Travel Lanes	Bicycle Lane								
										LT	RT	LT	RT										
OLNEY ST	4TH ST TO 5TH ST	CITY	COLLECTOR	25	250	60	40	1973	AC	Y	Y	Y	Y	2	N	Y		FAIR			250		
OLNEY ST	5TH ST TO 6TH ST	CITY	COLLECTOR	25	250	60	40	1973	AC	Y	Y	Y	Y	2	N	Y	1993	FAIR			250		
OLNEY ST	6TH ST TO 7TH ST	CITY	COLLECTOR	25	250	60	40	1973	AC	Y	Y	1/2	Y	2	N	Y	1993	FAIR			250		
OLNEY ST	7TH ST TO 8TH ST	CITY	COLLECTOR	25	250	60	40	1977	AC	Y	Y	Y	Y	2	N	Y	1993	FAIR			250		
OLNEY ST	8TH ST TO 9TH ST	CITY	COLLECTOR	25	250	60	40		AC	Y	Y	Y	Y	2	N	Y	1993	FAIR			250		
OLNEY ST	9TH ST TO LAGOON ROAD	CITY	COLLECTOR	25	780	60	40		AC	Y	Y	Y	Y	2	N	Y	1993	FAIR			780		
OLNEY ST	LAGOON ROAD TO 11TH ST	CITY	COLLECTOR	25	600	60	40		AC	Y	Y	N	Y	2	N	Y	2000	GOOD				600	
PANTHER CT	HIGHBERGER LP E TO CUL-DE-SAC	CITY	LOCAL	25	300	60	40	2006	AC	Y	Y	Y	Y	2	N	N/A		VERY GOOD					300
PUMA LN	BISHOP RD W TO END	CITY	LOCAL	25	500	60	40	2006	AC	Y	Y	Y	Y	2	N	N/A		VERY GOOD					500
SHAMROCK CT	E OF 5TH ST	CITY	LOCAL	25	620	60	40	1995	AC	Y	Y	Y	Y	2	N	Y	1995	GOOD				620	
WASHINGTON ST	5TH ST TO 6TH ST	CITY	LOCAL	25	250	60	24		AC	Y	N	Y	N	2	N	Y	1996	GOOD				250	
WASHINGTON ST	6TH ST TO 7TH ST	CITY	LOCAL	25	250	60	24		AC	N	N	Y	N	2	N	N	1996	GOOD				250	
WASHINGTON ST	7TH ST TO 8TH ST	CITY	LOCAL	25	250	60	24		AC	N	N	N	N	2	N	N	1996	GOOD				250	
WASHINGTON ST	8TH ST TO 9TH ST	CITY	LOCAL	25	250	60	24		AC	N	N	N	N	2	N	N	1996	GOOD				250	
WASHINGTON ST	9TH ST TO 10TH ST	CITY	LOCAL	25	250	60	24		AC	N	1/2	N	N	2	N	N	1996	GOOD				250	
WASHINGTON ST	10TH ST TO 11TH ST	CITY	LOCAL	25	250	60	24		AC	1/2	N	1/2	N	2	N	N	1996	GOOD				250	
WILLAMETTE ST	1ST TO GRIZZLY ST	CITY	COLLECTOR	25	2150	60	40	2006	AC	Y	Y	Y	1/2	2	N	N/A		VERY GOOD					2150
WILLAMETTE ST	GRIZZLY ST TO COUGAR ST	CITY	COLLECTOR	25	250	60	40	2005	AC	Y	Y	Y	Y	2	N	N/A		VERY GOOD					250
WILLAMETTE ST	COUGAR ST E TO END	CITY	LOCAL	25	285	60	40	2005	AC	Y	Y	Y	Y	2	N	N/A		VERY GOOD					285
1ST ST	MAIN ST TO CHURCH ST	COUNTY	ARTERIAL	45	230	60	24		AC	N	N	N	N	2	N	N		FAIR			230		
1ST ST	CHURCH ST TO CLEVELAND ST	COUNTY	ARTERIAL	45	230	60	24		AC	N	N	N	N	2	N	N		FAIR			230		
1ST ST	CLEVELAND ST TO WILLAMETTE ST	COUNTY	ARTERIAL	45	1400	60	24		AC	N	N	N	N	2	N	N		FAIR			1400		
1ST ST	WILLAMETTE ST TO DELMAR DRIVE	COUNTY	ARTERIAL	45	705	60	24		AC	N	N	N	N	2	N	N		FAIR			705		
1ST ST	DELMAR DRIVE N TO CITY LIMITS	COUNTY	ARTERIAL	45	200	60	24		AC	N	N	N	N	2	N	N		GOOD				200	
2ND ST	MAIN ST TO CHURCH ST	CITY	LOCAL	25	230	60	22		AC	1/2	Y	1/2	Y	2	N	Y	1991	FAIR			230		
2ND ST	CHURCH ST TO CLEVELAND ST	CITY	LOCAL	25	230	60	22		AC	N	N	N	Y	2	N	Y	1991	FAIR			230		
3RD ST	MAIN ST TO CHURCH ST	CITY	LOCAL	25	230	60	22		AC	N	1/2	N	1/2	2	N	Y	1991	FAIR			230		
3RD ST	CHURCH ST TO CLEVELAND ST	CITY	LOCAL	25	230	60	22		AC	N	N	N	N	2	N	N	1991	FAIR			230		
4TH ST	MAIN ST TO CHURCH ST	CITY	LOCAL	25	230	60	22		AC	N	N	1/2	Y	2	N	N	1991	GOOD				230	
4TH ST	CHURCH ST TO CLEVELAND ST	CITY	LOCAL	25	230	60	22		AC	N	N	1/2	1/2	2	N	N	1991	GOOD				230	
4TH ST	CLOVER ST TO DELMAR DR	CITY	LOCAL	25	980	60	40		AC	Y	Y	Y	Y	2	N	Y	1993	GOOD				980	
4TH ST	DELMAR DR TO DIANNE CT	CITY	COLLECTOR	25	350	60	40	1973	AC	Y	Y	Y	Y	2	N	Y	1993	GOOD				350	
4TH ST	DIANNE CT TO DONNA CT	CITY	COLLECTOR	25	250	60	40	1973	AC	Y	Y	Y	Y	2	N	Y	1993	GOOD				250	
4TH ST	DONNA CT TO DARLA CT	CITY	COLLECTOR	25	250	60	40	1973	AC	Y	Y	Y	Y	2	N	Y	1993	GOOD				250	
4TH ST	DARLA CT TO OLNEY ST	CITY	COLLECTOR	25	350	60	40	1973	AC	Y	Y	Y	Y	2	N	Y	1993	GOOD				350	
4TH ST	OLNEY ST TO MICHEAL WAY	CITY	LOCAL	25	380	60	40	1973	AC	Y	Y	Y	Y	2	N	Y	2004	VERY GOOD					380
5TH ST	WASHINGTON ST S TO END	CITY	LOCAL	25	120	60	40		AC	N	Y	N	Y	2	N	Y	2008	VERY GOOD					120
5TH ST	WASHINGTON ST TO MAIN ST	CITY	LOCAL	25	120	60	40		AC	N	N	N	Y	2	N	Y		FAIR			120		
5TH ST	MAIN ST TO CHURCH ST	CITY	LOCAL	25	230	60	40		AC	Y	Y	Y	1/2	2	N	Y		GOOD				230	
5TH ST	CHURCH ST TO CLEVELAND ST	CITY	LOCAL	25	230	60	40		AC	Y	Y	Y	1/2	2	N	Y		GOOD				230	
5TH ST	CLEVELAND ST TO SHAMROCK ST	CITY	COLLECTOR	25	510	60	40		AC	Y	Y	Y	Y	2	N	Y		GOOD				510	
5TH ST	SHAMROCK ST TO CLOVER ST	CITY	COLLECTOR	25	260	60	40		AC	Y	Y	Y	Y	2	N	Y		GOOD				260	
5TH ST	CLOVER ST TO LOCUST ST	CITY	COLLECTOR	25	300	60	40	1972	AC	Y	Y	Y	Y	2	N	Y		GOOD				300	
5TH ST	LOCUST ST TO OAK ST	CITY	COLLECTOR	25	250	60	40	1972	AC	Y	Y	Y	Y	2	N	Y		GOOD				250	
5TH ST	OAK ST TO MAPLE ST	CITY	COLLECTOR	25	250	60	40	1973	AC	Y	Y	Y	Y	2	N	Y		GOOD				250	
5TH ST	MAPLE ST TO DELMAR DR	CITY	COLLECTOR	25	250	60	40	1973	AC	Y	Y	Y	Y	2	N	Y		GOOD				250	
5TH ST	DELMAR DR TO OLNEY ST	CITY	LOCAL	25	1080	60	40	1973	AC	Y	Y	Y	Y	2	N	Y		VERY GOOD					1080
6TH ST	WASHINGTON ST S TO END	CITY	LOCAL	25	120	60	16		GR	N	N	N	N	2	N	N		POOR		120			
6TH ST	WASHINGTON ST TO MAIN ST	CITY	LOCAL	25	120	60	22		AC	N	N	N	N	2	N	Y	1996	GOOD				120	
6TH ST	MAIN ST TO CHURCH ST	CITY	LOCAL	25	230	60	24		AC	N	1/2	Y	1/2	2	N	Y	1991	GOOD				230	
6TH ST	CHURCH ST TO CLEVELAND ST	CITY	LOCAL	25	230	60	20		AC	N	1/2	1/2	Y	2	N	Y	1998	GOOD				230	

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Street	Section	Jurisdiction	Classification	Speed Limit (MPH)	Length (feet)	ROW Width (feet)	Street Width (feet)	Existing Street Improvements								On-Street Parking	Year Last Overlayed	2009 Condition Rating	Very Poor Length	Poor Length	Fair Length	Good Length	Very Good Length
								Year Built	Surface Type	Curbs		Sidewalks		Travel Lanes	Bicycle Lane								
										LT	RT	LT	RT										
6TH ST	DELMAR DR TO OLNEY ST	CITY	LOCAL	25	1080	60	40	1973	AC	Y	Y	Y	Y	2	N	Y	2006	VERY GOOD					1080
7TH ST	WASHINGTON ST TO MAIN ST	CITY	LOCAL	25	120	60	24		AC	N	N	Y	Y	2	N	Y	1997	VERY GOOD					120
7TH ST	MAIN ST TO CHURCH ST	CITY	LOCAL	25	230	60	40		AC	Y	Y	Y	Y	2	N	Y	2000	VERY GOOD					230
7TH ST	CHURCH ST TO CLEVELAND ST	CITY	LOCAL	25	230	60	40		AC	Y	Y	Y	Y	2	N	Y	2000	VERY GOOD					230
7TH ST	DELMAR DR TO OLNEY ST	CITY	LOCAL	25	1080	60	40	1973	AC	Y	Y	Y	Y	2	N	Y	1993	VERY GOOD					1080
8TH ST	WASHINGTON ST S TO END	CITY	ARTERIAL	35	120	60	24		AC	N	N	N	N	2	N	N		GOOD				120	
8TH ST	WASHINGTON ST TO MAIN ST	CITY	ARTERIAL	25	120	60	24		AC	N	N	N	N	2	N	N		GOOD				120	
8TH ST	MAIN ST TO CHURCH ST	CITY	LOCAL	25	230	60	40	1996	AC	Y	Y	Y	Y	2	N	Y		GOOD				230	
8TH ST	CHURCH ST TO CLEVELAND ST	CITY	LOCAL	25	230	60	40	1996	AC	Y	Y	Y	Y	2	N	Y		GOOD				230	
8TH ST	CLEVELAND ST TO 10TH PL	CITY	COLLECTOR	25	280	60	40	1995	AC	Y	Y	Y	Y	2	N	Y		GOOD				280	
8TH ST	10TH PL TO HAZEL ST	CITY	COLLECTOR	25	330	60	40	1995	AC	Y	Y	Y	Y	2	N	Y		GOOD				330	
8TH ST	HAZEL ST TO CHERYL CT	CITY	COLLECTOR	25	255	60	40	1995	AC	Y	Y	Y	Y	2	N	Y		GOOD				255	
8TH ST	CHERYL CT TO LINCOLN ST	CITY	COLLECTOR	25	260	60	40	1995	AC	Y	Y	Y	Y	2	N	Y		GOOD				260	
8TH ST	LINCOLN ST TO DELMAR DR	CITY	COLLECTOR	25	670	60	40	1994	AC	Y	Y	Y	Y	2	N	Y		GOOD				670	
8TH ST	DELMAR DR TO OLNEY ST	CITY	LOCAL	25	1080	60	40	1977	AC	Y	Y	Y	Y	2	N	Y		GOOD				1080	
9TH ST	WASHINGTON ST TO MAIN ST	CITY	LOCAL	25	120	60	30		AC	Y	N	N	N	2	N	Y		GOOD				120	
9TH ST	MAIN ST TO CHURCH ST	CITY	LOCAL	25	230	60	26		AC	N	N	N	Y	2	N	Y	1991	GOOD				230	
9TH ST	CHURCH ST TO CLEVELAND ST	CITY	LOCAL	25	230	60	24		AC	N	Y	Y	Y	2	N	Y		GOOD				230	
9TH ST	LINCOLN ST TO DELMAR DR	CITY	LOCAL	25	670	60	40	1994	AC	Y	Y	Y	Y	2	N	Y		GOOD				670	
9TH ST	DELMAR DR TO OLNEY ST	CITY	COLLECTOR	25	1080	60	40	1977	AC	Y	Y	Y	Y	2	N	Y		FAIR			1080		
9TH PL	LINCOLN ST TO DELMAR DR	CITY	LOCAL	25	700	60	40	1996	AC	Y	Y	Y	Y	2	N	Y		GOOD				700	
10TH ST	WASHINGTON ST TO MAIN ST	CITY	LOCAL	25	120	60	22		AC	N	N	N	N	2	N	N	1996	GOOD				120	
10TH ST	MAIN ST TO CHURCH ST	CITY	LOCAL	25	230	60	20		AC	1/2	N	N	Y	2	N	Y		FAIR			230		
10TH PL	8TH ST TO HAZEL ST	CITY	LOCAL	25	765	60	40	1978	AC	Y	Y	Y	Y	2	N	Y	1995	GOOD				765	
10TH PL	HAZEL ST TO CHERYL ST	CITY	LOCAL	25	250	60	40	1978	AC	Y	Y	Y	Y	2	N	Y		FAIR			250		
10TH PL	CHERYL ST TO LINCOLN ST	CITY	LOCAL	25	250	60	40	1978	AC	Y	Y	Y	Y	2	N	Y		FAIR			250		
10TH PL	LINCOLN ST TO DELMAR DR	CITY	LOCAL	25	690	60	40	1996	AC	Y	Y	Y	Y	2	N	Y		FAIR			690		
11TH ST	WASHINGTON ST TO MAIN ST	COUNTY	LOCAL	25	120	60	30		AC	N	N	N	N	2	N	N	1996	GOOD				120	
11TH ST	MAIN ST TO CHURCH ST	COUNTY	ARTERIAL	30	230	60	24		AC	N	N	N	1/2	2	N	1/2		GOOD				230	
11TH ST	CHURCH ST TO CLEVELAND ST	COUNTY	ARTERIAL	25	230	60	24		AC	N	N	N	N	2	N	N		GOOD				230	
11TH ST	CLEVELAND ST TO CEDAR LN	COUNTY	ARTERIAL	25	300	60	40		AC	N	Y	N	Y	2	N	Y		GOOD				300	
11TH ST	CEDAR LN TO HAZEL ST	COUNTY	ARTERIAL	25	300	60	40		AC	N	Y	N	Y	2	N	Y		GOOD				300	
11TH ST	HAZEL ST TO CALEB ST	COUNTY	ARTERIAL	25	200	60	40		AC	N	Y	Y	Y	2	N	Y		GOOD				200	
11TH ST	CALEB ST T LINCOLN ST	COUNTY	ARTERIAL	25	350	60	40		AC	N	Y	Y	Y	2	N	Y		GOOD				350	
11TH ST	LINCOLN ST TO OLNEY ST	COUNTY	ARTERIAL	25	1900	60	24		AC	N	N	N	1/2	2	N	Y		GOOD				1900	
11TH ST	OLNEY ST N TO CITY LIMITS	COUNTY	ARTERIAL	25	2200	60	24		AC	N	N	N	N	2	N	Y		GOOD				2200	
12TH ST	CALEB ST S TO END	CITY	LOCAL	25	280	60	40	2007	AC	Y	Y	N	N	2	N	N/A		VERY GOOD					280
13TH ST	CALEB ST S TO END	CITY	LOCAL	25	280	60	40	2007	AC	Y	Y	N	N	2	N	N/A		VERY GOOD					280
																		TOTALS	400	120	12,415	34,595	24,852

Street Length Totals		
	72,382	Linear Feet
	13.71	Miles

2008 STREET CONDITION SUMMARY

CATEGORY	TOTAL	% of TOTAL
VERY POOR	400	0.6%
POOR	120	0.2%
FAIR	12,415	17.2%
GOOD	34,595	47.8%
VERY GOOD	24,852	34.3%
Total	72,382	100%

APPENDIX B

Methods

APPENDIX B- METHODS

This Appendix outlines the approach proposed for traffic analysis and evaluation for the Aumsville Interchange Area Management Plan (IAMP) study. The intent of the chapter is to document key assumptions and methodologies that will be used including: analysis years, travel demand forecasting and methodologies, operational parameters and safety analysis methods.

ANALYSIS YEARS & TIME PERIODS

Transportation analysis will be conducted for the following years:

- Existing year (2008)
- Planning horizon year (2030)

The traffic analysis will be conducted for the 30th highest volume. An overall study area peak hour will be determined by 3-hour turning movement counts that will be collected for most intersections as part of the study. 16-hour counts will be used for the two intersections at the OR 22/Shaw Highway interchange.

EXISTING AND FUTURE TRAFFIC VOLUMES

Turning movements over a 3-hour period were collected for each of the study area intersections, with the exception of the two ramp termini for which 16-hour counts were collected. These counts were taken by ODOT in mid-May and early June of 2008. The peak hour turning movement counts were adjusted to account for seasonal effects according to ODOT Transportation Planning Analysis Unit (TPAU) Analysis Procedures Manual. The ATR Characteristic Table method or the ATR Seasonal Trend Table method was used to develop the 30th highest peak hour traffic volumes. See Table A for a summary of this process.

The derived 30th highest hour design volumes were balanced between adjacent study intersections as outlined by ODOT standards. The existing conditions analysis was conducted using the 30th highest hour volumes. The goal of the study was to assign one study area peak hour for use in the traffic analysis. Based on the count data provided the peak hour is from 4:30 to 5:30 P:M. See attached Table B for a summary of this calculation.

STUDY AREA LIMITS

The project study are includes the City of Aumsville Urban Growth Boundary (see Figure B-1) plus the interchange of OR 22 with Shaw Highway and a strip along Shaw Highway northward through the intersection with Brownell Drive.

STUDY AREA STREETS AND INTERSECTIONS

Table B-1 summarizes the key roadways in the study area and their functional classifications

Table B-1 Study Area Roadways and Functional Classifications

Street	ODOT Classifications	City Classification	Jurisdiction
Bishop Road	Local	Collector	Marion County
Church Street	Minor Collector	Collector	City of Aumsville
Cleveland Street	Minor Collector	Collector	City of Aumsville

Table B-1 Continued. Study Area Roadways and Functional Classifications

Street	ODOT Classifications	City Classification	Jurisdiction
Del Mar Drive	Minor Collector	Collector	City of Aumsville
Highberger Loop	Local	Collector	City of Aumsville
Main Street	Urban Collector	Arterial	Marion County
Olney Street	Minor Collector	Collector	City of Aumsville
Willamette Street	Local	Collector	City of Aumsville
1st Street	Urban Collector	Arterial	Marion County
4th Street	Minor Collector	Collector	City of Aumsville
5th Street	Minor Collector	Collector	City of Aumsville
8th Street (s/o Main Street)	Minor Collector	Arterial	City of Aumsville
8th Street (Cleveland-Olney)	Minor Collector	Collector	City of Aumsville
9th Street (Del Mar to Olney)	Minor Collector	Collector	City of Aumsville
11th Street (n/o Main Street)	Urban Collector	Arterial	Marion County

Table B-2 presents a summary of key study area intersections, jurisdiction, date and time period for turning movement count data collection.

Table B-2 Study Area Intersections

ID #	Intersection	Jurisdiction	Date	Count Hours
21	Shaw Highway @ Brownell Drive	Marion County	5/14/2008	4:30 – 5:30 PM
2	Shaw Highway @ OR 22 WB Ramps	ODOT	5/22-23/2008	4:30 – 5:30 PM
3	Shaw Highway @ OR 22 EB Ramps	ODOT	5/21-22/2008	4:30 – 5:30 PM
4	1st Street @ Del Mar Drive	Marion County	5/13/2008	4:30 – 5:30 PM
5	1st Street @ Willamette Drive	Marion County	5/14/2008	4:30 – 5:30 PM
6	1st Street @ Cleveland Street	Marion County	5/12/2008	4:30 – 5:30 PM
7	1st Street @ Church Street	Marion County	5/12/2008	4:30 – 5:30 PM
8	1st Street @ Main Street	Marion County	5/13-14/2008	4:30 – 5:30 PM
9	8th Street @ Main Street	Marion County	5/19/2008	4:30 – 5:30 PM
10	11th Street @ Main Street	Marion County	5/16/2008	4:30 – 5:30 PM
11	11th Street @ Church Street	Marion County	5/13/2008	4:30 – 5:30 PM
12	11th Street @ Cleveland Street	Marion County	5/19/2008	4:30 – 5:30 PM
13	11th Street @ Lincoln Street	Marion County	5/14/2008	4:30 – 5:30 PM
14	11th Street @ Olney Street	Marion County	6/5/2008	4:30 – 5:30 PM

STATE AND LOCAL MOBILITY STANDARDS

Mobility standards from Marion County and ODOT will be used to determine acceptability of facility operations for this study.

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. These mobility standards consider the classification (e.g., freeway, district) and location (rural, urban) of each state highway. Mobility standards are based on V/C ratios. The 1999 OHP, with amendments adopted by the Oregon Transportation Commission from November 1999 through January 2006, was released on August 23, 2006. This version of the 1999 OHP will be used in this study.

Only one state highway is located within the study area, OR 22 (the North Santiam Highway). OR 22 is a Statewide Highway (expressway), Freight Route and a part of the National Highway System. In the study area OR 22 passes along the edge of the Aumsville Urban Area, is not located in an MPO, and has a

posted speed of 55 mph. Tables B-3 shows the mobility standards for the two ramp terminal intersections on this highway within the study area. The 2003 Oregon Highway Design Manual (HDM) will be used in the determination of mobility standards for acceptability of future facility operations with improvements.

Table B-3. ODOT Mobility Standards

Intersection	ODOT Classification	Control Type	Jurisdiction	Existing or Future No-Build Mobility Standard [1]	Future Build Mobility Standard [1]
OR 22 WB ramps @ Shaw Highway	Statewide (expressway)/Freight Route	Stop	ODOT	0.85	0.70
OR 22 WB ramps @ Shaw Highway	Statewide (expressway)/Freight Route	Stop	ODOT	0.85	0.70

Notes:
[1] Indicates OHP Mobility Standard V/C ratio for stop-controlled roadway approach

Table B-4 shows the mobility standards for each intersection in the study area under Marion County jurisdiction.

Table B-4. Local Agency Mobility Standards

Intersection	Control Type	Jurisdiction	Existing or Future No-Build Mobility Standard	Future Build Mobility Standard
Shaw Highway @ Brownell Drive	TWSC	Marion County	LOS E [1]	LOS E [1]
1st Street @ Del Mar Drive	OWSC	Marion County	LOS E [1]	LOS E [1]
1st Street @ Willamette Street	OWSC	Marion County	LOS E [1]	LOS E [1]
1st Street @ Cleveland Street	OWSC	Marion County	LOS E [1]	LOS E [1]
1st Street @ Church Street	OWSC	Marion County	LOS E [1]	LOS E [1]
1st Street @ Main Street	TWSC	Marion County	LOS E [1]	LOS E [1]
8th Street @ Main Street	TWSC	Marion County	LOS E [1]	LOS E [1]
11th Street @ Main Street	TWSC	Marion County	LOS E [1]	LOS E [1]
11th Street @ Church Street	OWSC	Marion County	LOS E [1]	LOS E [1]
11th Street @ Cleveland Street	OWSC	Marion County	LOS E [1]	LOS E [1]
11th Street @ Lincoln Street	TWSC	Marion County	LOS E [1]	LOS E [1]
Aumsville Hwy @ Olney Street	TWSC	Marion County	LOS E [1]	LOS E [1]

Notes:
[1] For stop-controlled side street traffic movement
LOS = Level of Service
TWSC: Two-Way Stop controlled intersection
OWSC: One-Way Stop controlled intersection (typically T-intersection)

Marion County also uses standards based on volume-to-capacity (V/C) ratios at both signalized and unsignalized intersections in rural areas. For Aumsville these standards would include:

- V/C = 0.85 for signalized intersections
- V/C = 0.90 for the stop controlled movement at unsignalized intersections

The City of Aumsville currently has no adopted intersection performance standards, but desires to use LOS D for both signalized and unsignalized intersection analysis in the development of the TSP. These standards are included the TSP as recommendations for adoption by the City.

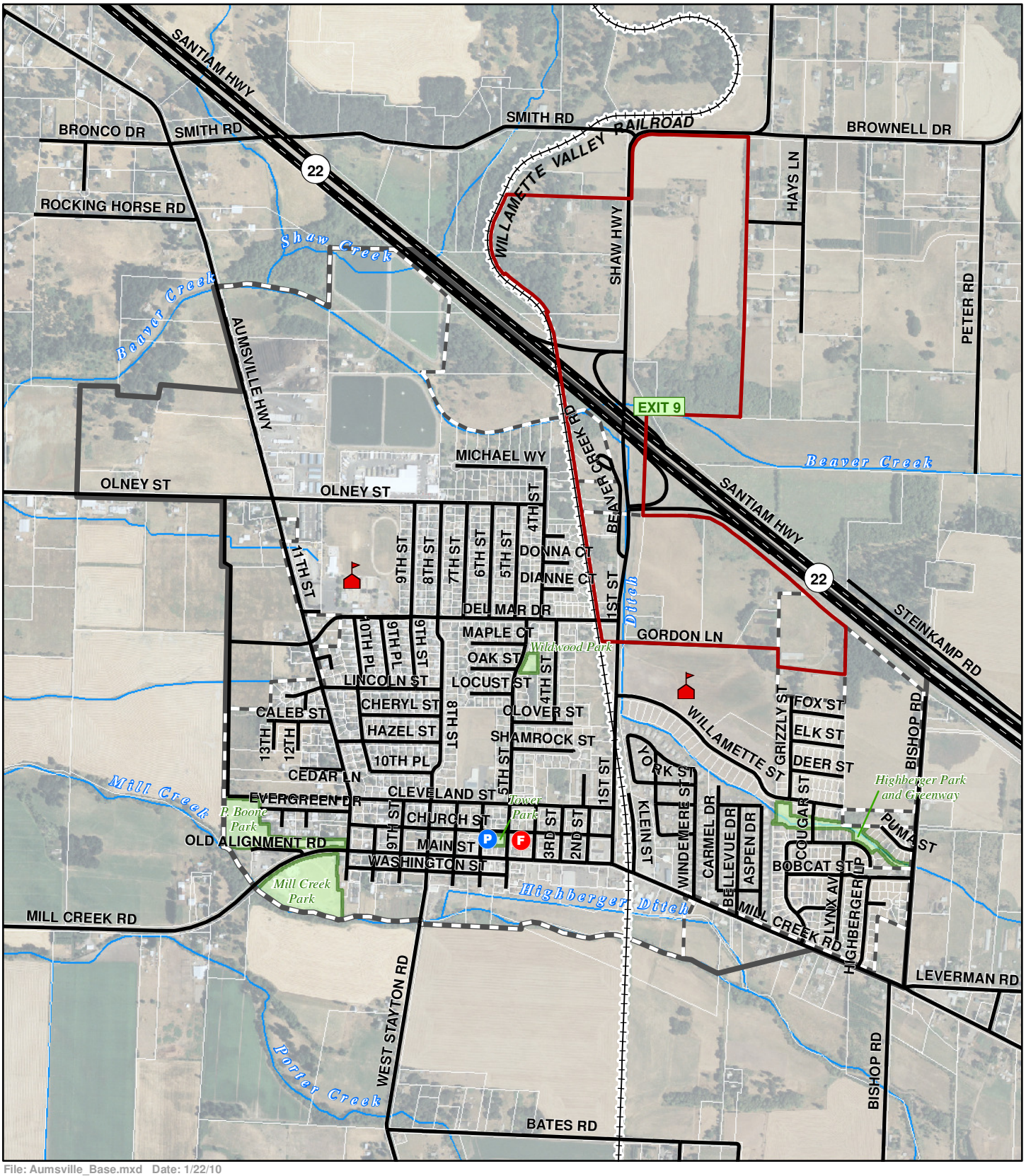
TRAFFIC ANALYSIS SOFTWARE AND INPUT ASSUMPTIONS

Synchro software, version 7, was used for the intersection analysis. The reported results will be the V/C ratios from the HCM report. The assumptions are listed in Table B-5.

Table B-5. Synchro Operations Parameters and Assumptions

	Condition	
Arterial Intersection Parameters	**Existing (2008)**	**No-Build and Build Alternatives**
Peak Hour Factor	From traffic count.	- 0.85 for side street approaches - 0.90 for State Highway Minor Arterials - 0.95 for State Highway Major Arterials If traffic count has higher PHFs than default PHFs, then continue using the existing PHFs [1]
Conflicting Bikes and Pedestrian per Hour	From traffic count, if not provided, assume 10 peds/bikes per approach	From Existing
Area Type	Default	From Existing
Ideal Saturation Flow Rate per Lane (for all movements)	1750	From Existing
Lane Width	Assumed to be 12 feet	From Existing
Percent Heavy Vehicles	From traffic count, otherwise 2%	From Existing
Percent Grade	Assumed to be 0%	From Existing
Parking Maneuvers per Hour	If on-street parking allowed, assume some maneuvers (approx. 1 maneuver per stall)	From Existing
Bus Blockages	Assume 0	From Existing
Intersection signal phasing and coordination	No existing signals in study area	Optimize phase and cycle length, phase sequence and offset (if signals are coordinated)
Intersection signal timing optimization limits	No existing signals in study area	60 to 120 seconds depending on the number of phases [1]
Minimum Green time	No existing signals in study area	Meet pedestrian minimums
Yellow and all-red time	No existing signals in study area	Assume (Y) = 4 seconds and (R) = 1 second
Right Turn on Red	No existing signals in study area	Assume "allow"
Vehicle Queues	95th Percentile, calculated based on an average of 25 feet per vehicle and the 2 Minute Rule for unsignalized intersections	95th Percentile, calculated based on an average of 25 feet per vehicle and: • For isolated intersections use the use 95th Percentile results from Synchro reports for signalized intersections • Use the 2 Minute Rule for unsignalized intersections

[1] Assumptions consistent with *"Analysis Procedures Manual"*, Section 5.3.3, ODOT, TPAU, April 2006.



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SCALE IN FEET

- Highway
- Street Centerline
- Willamette Valley Railroad
- Aumsville Fire Department
- School
- Aumsville Police Department
- Interchange Area Management Plan Boundary
- City Limits
- Urban Growth Boundary
- Taxlot
- Park
- Streams and Drainage Ditches

Figure B-1

Aumsville Study Area

Table A
Seasonal Adjustment of Traffic Volumes

INTNAME	INTID	DATE	Seasonal Adjustment Factor	2008 Adjustment Factor	2008 Total 30 HV Adjustment factor
Shaw Highway at Brownell Drive	1	5/14/2008	1.1313	1.000	1.1313
OR 22 at Shaw Highway WB Ramps	3	5/21-22/2008	1.1313	1.000	1.1313
OR 22 at Shaw Highway EB Ramps	2	5/22-23/2008	1.1313	1.000	1.1313
1st Street at Del Mar Street	4	5/13/2008	1.1313	1.000	1.1313
1st Street at Willamette Street	9	5/14/2008	1.1313	1.000	1.1313
1st Street at Cleveland Street	11	5/12/2008	1.1313	1.000	1.1313
1st Street at Church Street	14	5/12/2008	1.1313	1.000	1.1313
1st Street at Main Street	16	5/13-14/08	1.1313	1.000	1.1313
8th Street at Main Street	18	5/19/2008	1.1313	1.000	1.1313
Aumsville Highway at Main Street	22	5/19/2008	1.1313	1.000	1.1313
Aumsville Highway at Church Street	24	5/13/2008	1.1313	1.000	1.1313
Aumsville Highway at Cleveland Street	25	5/19/2008	1.1313	1.000	1.1313
Aumsville Highway at Lincoln Street	30	5/14/2008	1.1313	1.000	1.1313
Aumsville Highway at Olney Street	32	6/5/2008	1.0944	1.000	1.0944

Calculation Adjustments

2008 ATR CHARACTERISTIC TABLE

SEASONAL TRAFFIC TREND	AREA TYPE	# OF LANES	WEEKLY TRAFFIC TREND	AADT	OHP CLASSIFICATION	ATR	COUNTY	HIGHWAY ROUTE, NAME, & LOCATION	MP	STATE HIGHWAY NUMBER
SUMMER	URBAN FRINGE	4	WEEKDAY	20700	STATEWIDE HIGHWAY (EXPRESSWAY)	24-005	MARION	OR 22, NORTH SANTIAM HWY, EAST OF SHAW-AUMSVILLE INTERCHANGE	10.02	162

Calculation of Seasonal Adjustments

	Summer	Adjustment Factor Peak Period/Count
Peak Period Season Factor	**0.8454**	
Count Date Seasonal Factors		
May(15th)	0.9564	1.1313
June(1st)	0.9252	1.0944

Table B

Summary of All Turning Movements by Intersection - 2008

	Shaw & Brownell	OR22 & Shaw EB	OR22 & Shaw WB	1st & DelMar	1st & Willamette	1st & Cleveland	1st & Church	1st & Main	8th & Main	Aumsville & Main	Aumsville & Church	Aumsville & Cleveland	Aumsville & Lincoln	Aumsville & Olney	Total by Time Period	Forward One-Hour Total
3:00 - 3:15	22	96	63	73	70	69	65	136	121	95	52	53	57	88	1060	4589
3:15 - 3:30	42	96	63	87	87	70	68	136	125	95	64	64	76	86	1159	4772
3:30 - 3:45	42	96	64	129	89	96	88	137	102	95	60	60	60	97	1215	4826
3:45 - 4:00	25	96	64	209	89	49	49	137	74	95	57	60	73	78	1155	5071
4:00 - 4:15	33	87	59	143	90	88	82	149	91	105	76	78	74	88	1243	5210
4:15 - 4:30	25	131	65	90	89	65	65	171	125	89	74	77	66	81	1213	5399
4:30 - 4:45	32	149	99	149	100	93	85	149	137	131	91	92	73	80	1460	5483
4:45 - 5:00	47	114	75	130	108	81	76	140	103	93	73	73	106	75	1294	5270
5:00 - 5:15	42	131	96	133	115	97	100	182	135	111	63	65	63	99	1432	4991
5:15 - 5:30	50	115	63	168	98	84	83	158	101	109	47	50	75	96	1297	n/a
5:30 - 5:45	31	119	67	155	99	70	65	141	95	94	79	82	70	80	1247	n/a
5:45 - 6:00	40	95	63	97	82	64	60	129	87	74	46	48	42	88	1015	n/a
PHF	0.86	0.85	0.84	0.86	0.92	0.91	0.86	0.86	0.87	0.85	0.75	0.76	0.75	0.88		

Red numbers are averaged based on hourly data provided by ODOT.

2008 SEASONAL TREND TABLE																									Peak Period Seasonal Factor
TREND	1-Jan	15-Jan	1-Feb	15-Feb	1-Mar	15-Mar	1-Apr	15-Apr	1-May	15-May	1-Jun	15-Jun	1-Jul	15-Jul	1-Aug	15-Aug	1-Sep	15-Sep	1-Oct	15-Oct	1-Nov	15-Nov	1-Dec	15-Dec	
INTERSTATE URBANIZED	1.0464	1.0740	1.0170	0.9601	0.9494	0.9388	0.9336	0.9283	0.9337	0.9391	0.9242	0.9094	0.9190	0.9286	0.9174	0.9062	0.9243	0.9425	0.9405	0.9385	0.9533	0.9680	0.9935	1.0189	0.9062
INTERSTATE NONURBANIZED	1.2289	1.2793	1.2242	1.1691	1.1138	1.0584	1.0486	1.0388	1.0238	1.0088	0.9682	0.9277	0.9043	0.8810	0.8702	0.8594	0.9079	0.9564	0.9953	1.0342	1.0447	1.0551	1.1168	1.1786	0.8594
COMMUTER	1.0636	1.0755	1.0331	0.9908	0.9727	0.9547	0.9418	0.9288	0.9279	0.9270	0.9141	0.9013	0.9098	0.9182	0.9091	0.8999	0.9113	0.9227	0.9272	0.9317	0.9603	0.9889	1.0203	1.0518	0.8999
COASTAL DESTINATION	1.2282	1.2478	1.1999	1.1521	1.1037	1.0553	1.0573	1.0593	1.0438	1.0283	0.9918	0.9552	0.8973	0.8394	0.8378	0.8362	0.8791	0.9220	0.9877	1.0534	1.1031	1.1527	1.1807	1.2086	0.8362
COASTAL DESTINATION ROUTE	1.5212	1.5414	1.4600	1.3786	1.2893	1.2000	1.2007	1.2013	1.1397	1.0780	1.0265	0.9750	0.8774	0.7797	0.7826	0.7853	0.8578	0.9302	1.0488	1.1674	1.2190	1.2704	1.3857	1.5010	0.7797
AGRICULTURE	1.1476	1.1673	1.1228	1.0783	1.0349	0.9915	0.9789	0.9664	0.9525	0.9386	0.9131	0.8876	0.8851	0.8826	0.8741	0.8655	0.8849	0.9043	0.9280	0.9517	0.9900	1.0284	1.0781	1.1278	0.8655
RECREATIONAL SUMMER	1.8170	1.8345	1.8299	1.8253	1.6477	1.4702	1.4136	1.3570	1.1978	1.0385	0.9668	0.8951	0.8302	0.7654	0.7714	0.7775	0.8249	0.8724	0.9976	1.1228	1.2833	1.4438	1.6216	1.7995	0.7654
RECREATIONAL SUMMER WINTER	1.2150	1.3564	1.4344	1.5124	1.5058	1.4992	1.6281	1.7571	1.6195	1.4819	1.2656	1.0494	0.9617	0.8742	0.8874	0.9006	1.0685	1.2364	1.5359	1.8354	1.8531	1.8709	1.4722	1.0736	0.8742
RECREATIONAL WINTER	0.9113	0.9980	1.0552	1.1123	1.2042	1.2960	1.6435	1.9910	2.0576	2.1242	1.8994	1.6745	1.4749	1.2753	1.2389	1.2025	1.3123	1.4222	1.8315	2.2408	2.5939	2.9470	1.8858	0.8245	0.8245
SUMMER	1.2293	1.2413	1.2077	1.1741	1.1122	1.0503	1.0313	1.0123	0.9843	0.9564	0.9252	0.8940	0.8701	0.8462	0.8458	0.8454	0.8780	0.9107	0.9523	0.9939	1.0408	1.0877	1.1525	1.2174	0.8454
SUMMER < 2500	1.3501	1.3371	1.3140	1.2910	1.1987	1.1064	1.0601	1.0137	0.9600	0.9062	0.8798	0.8535	0.8401	0.8267	0.8291	0.8315	0.8371	0.8427	0.8941	0.9454	1.0283	1.1112	1.2372	1.3633	0.8267

APPENDIX C

Buildable Lands in UGB

APPENDIX C - Buildable Lands Data within Aumsville UGB

					Developed Code			%	Buildable	Use Code				Parcels by Zone						Area by Zone						Buildable are by Zone						Non-Optimal	Non-Optimal	Non-Optimal use area by Zone					
TAZ	Taxlot	Map #	Lot #	Acres	Developed	Partially Vacant	Vacant	Developed	Acres	Resid	Commer	Indus	Zoning	RS	RM	CL	ID	I	P	RS	RM	CL	ID	I	P	RS	RM	CL	ID	I	P	Use	Use Area	RS	RM	CL	ID	I	P
1	082W24C 01700	82W24C	1700	1.87			1	0	1.87				I					1		0	0	0	0	1.87	0	0	0	0	0	1.87	0	0	0	0	0	0	0	0	0
1	082W25A 00300	82W25A	300	0.3			1	0	0.3				P						1	0	0	0	0	0	0.3	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0
1	082W25A 00400	82W25A	400	0.2			1	0	0.2				P						1	0	0	0	0	0	0.2	0	0	0	0	0	0.2	0	0	0	0	0	0	0	0	0
1	082W25AA00200	82W25AA	200	0.63		1		0.5	0.315	1			RS	1						0.63	0	0	0	0	0	0.32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	082W25AA01400	82W25AA	1400	1.6		1		0.25	1.2	1			RS	1						1.6	0	0	0	0	0	1.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	082W25AB00405	82W25AB	405	0.19			1	0	0.19	1			RS	1						0.19	0	0	0	0	0	0.19	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	082W25B 01702	82W25B	1702	0.5			1	0	0.5			1	I					1		0	0	0	0	0.5	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0	0
	TAZ Total			**5.29**				**0.75**	**4.58**											**2.42**	**0**	**0**	**0**	**2.37**	**0.5**	**1.71**	**0**	**0**	**0**	**2.37**	**0.5**		**0**	**0**	**0**	**0**	**0**	**0**	**0**
2	082W25B 00200	82W25B	200	5.03			1	0	5.03				I					1		0	0	0	0	5.03	0	0	0	0	0	5.03	0	0	0	0	0	0	0	0	0
2	082W25B 00300	82W25B	300	32.92			1	0	32.92				I					1		0	0	0	0	32.92	0	0	0	0	0	32.92	0	0	0	0	0	0	0	0	0
2	082W25B 00400	82W25B	400	3.08			1	0	3.08				I					1		0	0	0	0	3.08	0	0	0	0	0	3.08	0	0	0	0	0	0	0	0	0
	TAZ Total			**41.03**				**0**	**41.03**											**0**	**0**	**0**	**0**	**41.03**	**0**	**0**	**0**	**0**	**0**	**41.03**	**0**		**0**	**0**	**0**	**0**	**0**	**0**	**0**
3	082W25B 00900	82W25B	900	3.25		1		0.1	2.93	1			RS	1						3.25	0	0	0	0	0	2.93	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	082W25B 01200	82W25B	1200	2.1		1		0.25	1.58	1			RS	1						2.1	0	0	0	0	0	1.58	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	082W25B 01300	82W25B	1300	12.2			1	0	12.2	1			RS	1						12.2	0	0	0	0	0	12.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	082W25B 01400	82W25B	1400	3			1	0	3				P						1	0	0	0	0	0	3	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
3	082W25B 01500	82W25B	1500	0.67			1	0	0.67				RM		1					0	0.67	0	0	0	0	0	0.67	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	082W25CA00300	82W25CA	300	2.15			1		2.15	1			RS	1						2.15	0	0	0	0	0	2.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	082W25CA00400	82W25CA	400	6.3			1		6.3	1			RS	1						6.3	0	0	0	0	0	6.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TAZ Total			**29.67**				**0.35**	**28.82**											**26**	**0.67**	**0**	**0**	**0**	**3**	**25.15**	**0.67**	**0**	**0**	**0**	**3**		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
5	082W25AA00100	82W25AA	100	0.9			1		0.9	1			ID				1			0	0	0	0.9	0	0	0	0	0	0	0.9	0	0	0	0	0	0	0	0	0	0
5	082W25AA01100	82W25AA	1100	1.65		1		0.25	1.24	1			ID				1			0	0	0	1.65	0	0	0	0	0	0	1.24	0	0	2	0.41	0	0	0	0.41	0	0
5	082W25AA01200	82W25AA	1200	1.15		1		0.5	0.58	1			ID				1			0	0	0	1.15	0	0	0	0	0	0	0.58	0	0	2	0.58	0	0	0	0.58	0	0
5	082W25AA01300	82W25AA	1300	1.75		1		0.25	1.31	1			ID				1			0	0	0	1.75	0	0	0	0	0	0	1.31	0	0	2	0.44	0	0	0	0.44	0	0
5	082W25AD00100	82W25AD	100	3.39			1	0	3.39	1			ID				1			0	0	0	3.39	0	0	0	0	0	0	3.39	0	0	0	0	0	0	0	0	0	0
5	082W25AD15600	82W25AD	15600	0.62		1		0.5	0.31	1			ID				1			0	0	0	0.62	0	0	0	0	0	0	0.31	0	0	2	0.31	0	0	0	0.31	0	0
	TAZ Total			**9.46**				**1.5**	**7.73**											**0**	**0**	**0**	**9.46**	**0**	**0**	**0**	**0**	**0**	**7.73**	**0**	**0**		**1.74**	**0**	**0**	**0**	**1.74**	**0**	**0**
6	081W30 01600	81W30	1600	9.84			1	0.00	9.84	1			ID				1			0	0	0	9.84	0	0	0	0	0	0	9.84	0	0	0	0	0	0	0	0	0	0
6	081W30 01700	81W30	1700	3.01		1		0.1	2.71	1			ID				1			0	0	0	3.01	0	0	0	0	0	0	2.71	0	0	2	0.30	0	0	0	0.30	0	0
6	081W30 01800	81W30	1800	16.7			1	0	16.7	1			ID				1			0	0	0	16.7	0	0	0	0	0	0	16.70	0	0	0	0	0	0	0	0	0	0
6	081W30 02000	81W30	2000	15.33			1	0	15.33				ID				1			0	0	0	15.33	0	0	0	0	0	0	15.33	0	0	0	0	0	0	0	0	0	0
6	081W30 02100	81W30	2100	1.85			1	0	1.85				ID				1			0	0	0	1.85	0	0	0	0	0	0	1.85	0	0	0	0	0	0	0	0	0	0
6	081W30 02200	81W30	2200	1.95		1		0.25	1.46	1			ID				1			0	0	0	1.95	0	0	0	0	0	0	1.46	0	0	2	0.49	0	0	0	0.49	0	0
	TAZ Total			**48.68**				**0.35**	**47.89**											**0**	**0**	**0**	**48.68**	**0**	**0**	**0**	**0**	**0**	**47.89**	**0**	**0**		**0.79**	**0**	**0**	**0**	**0.79**	**0**	**0**
7	081W30 01500	81W30	1500	23.32			1	0	23.32	1			RS	1						23.32	0	0	0	0	0	23.32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30 02300	81W30	2300	24.2		1		0.34	16.09	1			RM		1					0	24.2	0	0	0	0	0	4.02	0	0	0	12.07	0	0	0	0	0	0	0	0	0
7	081W30 02303	81W30	2303	6.27		1		0.6	2.51	1			RM		1					0	6.27	0	0	0	0	0	2.51	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30C 01700	81W30C	1700	2.39		1		0.1	2.15	1			RS	1						2.39	0	0	0	0	0	2.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CA04800	81W30CA	4800	0.15			1		0.15				RS	1						0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CA04900	81W30CA	4900	0.15			1		0.15				RS	1						0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CA05200	81W30CA	5200	0.15			1		0.15				RS	1						0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CA05300	81W30CA	5300	0.15			1		0.15				RS	1						0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CA05400	81W30CA	5400	0.15			1		0.15				RS	1						0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CA05500	81W30CA	5500	0.15			1		0.15				RS	1						0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CA05600	81W30CA	5600	0.15			1		0.15				RS	1						0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CA05700	81W30CA	5700	0.15			1		0.15				RS	1						0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CA05800	81W30CA	5800	0.15			1		0.15				RS	1						0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CA05900	81W30CA	5900	0.15			1		0.15				RS	1						0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CA06000	81W30CA	6000	0.15			1		0.15				RS	1						0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CA06100	81W30CA	6100	0.15			1		0.15				RS	1						0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CA06200	81W30CA	6200	0.15			1		0.15				RS	1						0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CA06600	81W30CA	6600	0.15			1		0.15				RS	1						0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CA06700	81W30CA	6700	0.15			1		0.15				RS	1						0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CA06800	81W30CA	6800	0.15			1		0.15				RS	1						0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CA06900	81W30CA	6900	0.15			1		0.15				RS	1						0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CA07000	81W30CA	7000	0.15			1		0.15				RS	1						0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CA07900	81W30CA	7900	1.23			1		1.23				RS	1						1.23	0	0	0	0	0	1.23	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CA08000	81W30CA	8000	0.39			1		0.39				RS	1						0.39	0	0	0	0	0	0.39	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CA08200	81W30CA	8200	4.13			1		4.13	1			RS	1						4.13	0	0	0	0	0	4.13	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CB00800	81W30CB	800	0.3			1	0	0.3				RM		1					0	0.3	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX C - Buildable Lands Data within Aumsville UGB

					Developed Code			%	Buildable	Use Code				Parcels by Zone						Area by Zone						Buildable are by Zone						Non-Optimal	Non-Optimal	Non-Optimal use area by Zone					
TAZ	Taxlot	Map #	Lot #	Acres	Developed	Partially Vacant	Vacant	Developed	Acres	Resid	Commer	Indus	Zoning	RS	RM	CL	ID	I	P	RS	RM	CL	ID	I	P	RS	RM	CL	ID	I	P	Use	Use Area	RS	RM	CL	ID	I	P
7	081W30CB00900	81W30CB	900	0.3			1	0	0.3				RM		1					0	0.3	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CB01100	81W30CB	1100	0.3			1	0	0.3				RM		1					0	0.3	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CB01200	81W30CB	1200	0.3			1	0	0.3				RM		1					0	0.3	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CB01600	81W30CB	1600	0.25			1	0	0.25				RM		1					0	0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CB01700	81W30CB	1700	0.25			1	0	0.25				RM		1					0	0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CB01800	81W30CB	1800	0.25			1	0	0.25				RM		1					0	0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CB01900	81W30CB	1900	0.25			1	0	0.25				RM		1					0	0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CB02000	81W30CB	2000	0.2			1	0	0.2				RM		1					0	0.2	0	0	0	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CB02100	81W30CB	2100	0.25			1	0	0.25				RM		1					0	0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CD12400	81W30CD	12400	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CD12500	81W30CD	12500	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CD12800	81W30CD	12800	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CD12900	81W30CD	12900	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CD13200	81W30CD	13200	0.3			1	0	0.3				RS	1						0.3	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CD13300	81W30CD	13300	0.3			1	0	0.3				RS	1						0.3	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CD13400	81W30CD	13400	0.3			1	0	0.3				RS	1						0.3	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0
7	081W30CD13500	81W30CD	13500	0.25			1	0	0.25				RS	1						0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0	0
	TAZ Total			**69.35**				**1.035124**	**57.24**											**36.23**	**33.12**	**0**	**0**	**0**	**0**	**35.99**	**9.18**	**0**	**0**	**0**	**12.07**		**0**	**0**	**0**	**0**	**0**	**0**	**0**
8	082W25AD15201	82W25AD	15201	0.05			1		0.05	1			RM		1					0	0.05	0	0	0	0	0	0.05	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25AD15300	82W25AD	15300	1.1		1		0.5	0.55	1			RM		1					0	1.1	0	0	0	0	0	0.55	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25AD15400	82W25AD	15400	1.75			1	1	0	1			RM		1					0	1.75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25AD15500	82W25AD	15500	1.4		1		0.25	1.05	1			ID				1			0	0	0	1.4	0	0	0	0	0	1.05	0	0	2	0.35	0	0	0	0.35	0	0
8	082W25DA00100	82W25DA	100	2			1		2	1			RM		1					0	2	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25DA00200	82W25DA	200	0.7		1		0.25	0.53	1			RM		1					0	0.7	0	0	0	0	0	0.53	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25DA00900	82W25DA	900	0.2		1		0.5	0.1	1			RM		1					0	0.2	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25DA01000	82W25DA	1000	0.2		1		0.5	0.1	1			RM		1					0	0.2	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25DA01100	82W25DA	1100	0.2		1		0.5	0.1	1			RM		1					0	0.2	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25DA01200	82W25DA	1200	0.2		1		0.5	0.1	1			RM		1					0	0.2	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25DA01300	82W25DA	1300	0.2		1		0.5	0.1	1			RM		1					0	0.2	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25DA01800	82W25DA	1800	0.15			1		0.15				RM		1					0	0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25DA01900	82W25DA	1900	0.15			1		0.15				RM		1					0	0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25DA02000	82W25DA	2000	0.81		1		0.33	0.54	1			RM		1					0	0.81	0	0	0	0	0	0.54	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25DA04900	82W25DA	4900	0.15			1		0.15				RM		1					0	0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25DA06600	82W25DA	6600	0.6		1		0.5	0.3	1			RM		1					0	0.6	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25DA07000	82W25DA	7000	1		1		0.25	0.75	1			RM		1					0	1	0	0	0	0	0	0.75	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25DA07100	82W25DA	7100	2		1		0.12	1.76	1			RM		1					0	2	0	0	0	0	0	1.76	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25DA08300	82W25DA	8300	0.38		1		0.5	0.19	1			RM		1					0	0.38	0	0	0	0	0	0.19	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25DA08400	82W25DA	8400	0.41		1		0.5	0.21	1			RM		1					0	0.41	0	0	0	0	0	0.21	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25DD00100	82W25DD	100	0.6		1		0.25	0.45	1			RM		1					0	0.6	0	0	0	0	0	0.45	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25DD00300	82W25DD	300	0.25		1		0.5	0.13	1			RM		1					0	0.25	0	0	0	0	0	0.13	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25DD00900	82W25DD	900	0.15		1		0.5	0.08	1			RM		1					0	0.15	0	0	0	0	0	0.08	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25DD01900	82W25DD	1900	0.15			1	0	0.15	1			RM		1					0	0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25DD02100	82W25DD	2100	0.25		1		0.5	0.13	1			RM		1					0	0.25	0	0	0	0	0	0.13	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25DD02800	82W25DD	2800	0.87		1		0.5	0.44	1			CLB				1			0	0	0.87	0	0	0	0	0	0.44	0	0	0	2	0.44	0	0	0.44	0	0	0
8	082W25DD03100	82W25DD	3100	0.25			1	0	0.25				CLB				1			0	0	0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0
8	082W25DD03200	82W25DD	3200	0.25		1		0.25	0.19	1			CLB				1			0	0	0.25	0	0	0	0	0	0.19	0	0	0	2	0.06	0	0	0.06	0	0	0
	TAZ Total			**16.42**				**9.2**	**10.67**											**0**	**13.65**	**1.37**	**1.40**	**0**	**0**	**0**	**8.75**	**0.87**	**1.05**	**0**	**0**		**0.85**	**0**	**0**	**0.50**	**0.35**	**0**	**0**
9	082W25DA03500	82W25DA	3500	7.81		1		0.33	5.23	1			RS	1						7.81	0	0	0	0	0	5.23	0	0	0	0	0	0	0	0	0	0	0	0	0
9	082W25DB09200	82W25DB	9200	0.33		1		0.5	0.17	1			RS	1						0.33	0	0	0	0	0	0.17	0	0	0	0	0	0	0	0	0	0	0	0	0
9	082W25DB09300	82W25DB	9300	0.5		1		0.33	0.34	1			RS	1						0.5	0	0	0	0	0	0.34	0	0	0	0	0	0	0	0	0	0	0	0	0
9	082W25DC03300	82W25DC	3300	0.1			1	0	0.1				CLB				1			0	0	0.1	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0
9	082W25DC04500	82W25DC	4500	0.3		1		0.5	0.15	1			CLB				1			0	0	0.3	0	0	0	0	0	0.15	0	0	0	2	0.15	0	0	0.15	0	0	0
9	082W25DD03700	82W25DD	3700	0.1			1	0	0.1		1		P						1	0	0	0	0	0	0.1	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0
9	082W25DD03800	82W25DD	3800	0.1			1	0	0.1		1		P						1	0	0	0	0	0	0.1	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0
	TAZ Total			**9.24**				**1.66**	**6.18**											**8.64**	**0**	**0.4**	**0**	**0**	**0.2**	**5.73**	**0**	**0.25**	**0**	**0**	**0.2**		**0.15**	**0**	**0**	**0.15**	**0**	**0**	**0**
10	082W25DB06650	82W25DB	6650	0.01			1	1	0	1			RS	1						0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	082W25DB07400	82W25DB	7400	0.01			1	1	0	1			RS	1						0.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	082W25DB08200	82W25DB	8200	0.35		1		0.5	0.18	1			RS	1						0.35	0	0	0	0	0	0.18	0	0	0	0	0	0	0	0	0	0	0	0	0
10	082W25DC01200	82W25DC	1200	0.22		1		0.5	0.11	1			RM		1					0	0.22	0	0	0	0	0	0.11	0	0	0	0	0	0	0	0	0	0	0	0
10	082W25DC01500	82W25DC	1500	0.25		1		0.5	0.13	1			RM		1					0	0.25	0	0	0	0	0	0.13	0	0	0	0	0	0	0	0	0	0	0	0
10	082W25DC03500	82W25DC	3500	0.45		1		0.5	0.23	1			CLB				1			0	0	0.45	0	0	0	0	0	0.23	0	0	0	2	0.23	0	0	0.23	0	0	0
10	082W25DC03700	82W25DC	3700	0.25		1		0.5	0.13	1			CLB				1			0	0	0.25	0	0	0	0	0	0.13	0	0	0	2	0.13	0	0	0.13	0	0	0
10	082W25DC03800	82W25DC	3800	0.25		1		0.5	0.13	1			CLB				1			0	0	0.25	0	0	0	0	0	0.13	0	0	0	2	0.13	0	0	0.13	0	0	0

APPENDIX C - Buildable Lands Data within Aumsville UGB

					Developed Code			%	Buildable	Use Code				Parcels by Zone						Area by Zone						Buildable are by Zone						Non-Optimal	Non-Optimal	Non-Optimal use area by Zone					
TAZ	Taxlot	Map #	Lot #	Acres	Developed	Partially Vacant	Vacant	Developed	Acres	Resid	Commer	Indus	Zoning	RS	RM	CL	ID	I	P	RS	RM	CL	ID	I	P	RS	RM	CL	ID	I	P	Use	Use Area	RS	RM	CL	ID	I	P
10	082W25DC03900	82W25DC	3900	0.25			1	0	0.25				CLB			1				0	0	0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0
10	082W25DC04000	82W25DC	4000	0.25		1		0.5	0.13		1		CLB			1				0	0	0.25	0	0	0	0	0	0.13	0	0	0	0	0	0	0	0	0	0	0
10	082W25DC04200	82W25DC	4200	0.25			1	0	0.25				CLB			1				0	0	0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0
	TAZ Total			**2.54**				**5.5**	**1.51**											**0.37**	**0.47**	**1.7**	**0**	**0**	**0**	**0.18**	**0.24**	**1.10**	**0**	**0**	**0**		**0.48**	**0**	**0**	**0.48**	**0**	**0**	**0**
11	082W25CA00600	82W25CA	600	3.6			1		3.6	1			RS	1						3.6	0	0	0	0	0	3.6	0	0	0	0	0	0	0	0	0	0	0	0	0
11	082W25CA00700	82W25CA	700	4.86			1		4.86	1			RS	1						4.86	0	0	0	0	0	4.86	0	0	0	0	0	0	0	0	0	0	0	0	0
11	082W25CA01100	82W25CA	1100	1.15			1		1.15	1			RS	1						1.15	0	0	0	0	0	1.15	0	0	0	0	0	0	0	0	0	0	0	0	0
11	082W25CA01200	82W25CA	1200	4.45			1		4.45	1			RS	1						4.45	0	0	0	0	0	4.45	0	0	0	0	0	0	0	0	0	0	0	0	0
11	082W25CA01301	82W25CA	1301	0.27		1		0.5	0.14	1			RS	1						0.27	0	0	0	0	0	0.14	0	0	0	0	0	0	0	0	0	0	0	0	0
11	082W25CA01600	82W25CA	1600	0.15			1		0.15	1			RS	1						0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0	0
11	082W25CA01900	82W25CA	1900	1.6			1	1	0	1			RS	1						1.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	082W25CA02000	82W25CA	2000	5.45			1	1	0	1			RS	1						5.45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	TAZ Total			**21.53**				**2.5**	**14.35**											**21.53**	**0**	**0**	**0**	**0**	**0**	**14.35**	**0**	**0**	**0**	**0**	**0**		**0**	**0**	**0**	**0**	**0**	**0**	**0**
12	082W25DC05000	82W25DC	5000	0.15			1	0	0.15				CLB			1				0	0	0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0
12	082W25DC06000	82W25DC	6000	0.25		1		0.5	0.13	1			CLB			1				0	0	0.25	0	0	0	0	0	0.13	0	0	0	0	0	2	0.13	0	0	0.13	0	0	0
12	082W25DC06200	82W25DC	6200	1.52		1		0.125	1.33	1			RM		1					0	1.52	0	0	0	0	0	1.33	0	0	0	0	0	0	0	0	0	0	0	0
12	082W25DC06500	82W25DC	6500	0.15			1	0	0.15				RM		1					0	0.15	0	0	0	0	0	0.15	0	0	0	0	0	0	0	0	0	0	0	0
12	082W25DC06600	82W25DC	6600	0.25			1	0	0.25				RM		1					0	0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0
12	082W25DC06700	82W25DC	6700	0.53		1		0.5	0.27			1	CL			1				0	0	0.53	0	0	0	0	0	0.27	0	0	0	0	0	0	0	0	0	0	0
12	082W25DC06800	82W25DC	6800	0.41		1		0.5	0.21	1			RM		1					0	0.41	0	0	0	0	0	0.21	0	0	0	0	0	0	0	0	0	0	0	0
12	082W25DC06900	82W25DC	6900	0.67		1		0.1	0.60	1			RM		1					0	0.67	0	0	0	0	0	0.60	0	0	0	0	0	0	0	0	0	0	0	0
12	082W25DC07000	82W25DC	7000	0.73		1		0.75	0.18			1	CL			1				0	0	0.73	0	0	0	0	0	0.18	0	0	0	0	0	0	0	0	0	0	0
12	082W25DC07300	82W25DC	7300	2.78			1	0	2.78	1			RM		1					0	2.78	0	0	0	0	0	2.78	0	0	0	0	0	0	0	0	0	0	0	0
12	082W25DC07500	82W25DC	7500	0.83		1		0.75	0.21	1			RM		1					0	0.83	0	0	0	0	0	0.21	0	0	0	0	0	0	0	0	0	0	0	0
12	082W25DC07600	82W25DC	7600	0.82		1		0.5	0.41	1			RM		1					0	0.82	0	0	0	0	0	0.41	0	0	0	0	0	0	0	0	0	0	0	0
12	082W25DD06200	82W25DD	6200	0.47		1		0.5	0.24	1			RM		1					0	0.47	0	0	0	0	0	0.24	0	0	0	0	0	0	0	0	0	0	0	0
12	082W25DD06800	82W25DD	6800	0.15		1		0.5	0.08	1			RM		1					0	0.15	0	0	0	0	0	0.08	0	0	0	0	0	0	0	0	0	0	0	0
12	082W25DD06900	82W25DD	6900	0.01			1	0	0.01				RM		1					0	0.01	0	0	0	0	0	0.01	0	0	0	0	0	0	0	0	0	0	0	0
12	082W25DD07000	82W25DD	7000	0.02			1	0	0.02				RM		1					0	0.02	0	0	0	0	0	0.02	0	0	0	0	0	0	0	0	0	0	0	0
12	082W25DD07501	82W25DD	7501	0.05			1	0	0.05				CLB			1				0	0	0.05	0	0	0	0	0	0.05	0	0	0	0	0	0	0	0	0	0	0	0
	TAZ Total			**9.79**				**4.73**	**7.05**											**0**	**8.08**	**1.71**	**0**	**0**	**0**	**0**	**6.28**	**0.77**	**0**	**0**	**0**		**0.13**	**0**	**0**	**0.13**	**0**	**0**	**0**
13	081W30C 02400	81W30C	2400	2.91		1		0.25	2.18	1			I					1		0	0	0	0	2.91	0	0	0	0	0	2.18	0	2	0.73	0	0	0	0	0.73	0
13	081W30C 02500	81W30C	2500	0.84		1		0.25	0.63	1			I					1		0	0	0	0	0.84	0	0	0	0	0	0.63	0	2	0.21	0	0	0	0	0.21	0
13	081W30C 02600	81W30C	2600	0.59		1		0.25	0.44	1			I					1		0	0	0	0	0.59	0	0	0	0	0	0.44	0	2	0.15	0	0	0	0	0.15	0
13	081W30C 02700	81W30C	2700	0.36			1	0	0.36				I					1		0	0	0	0	0.36	0	0	0	0	0	0.36	0	0	0	0	0	0	0	0	0
13	081W30C 02700	81W30C	2700	0.5			1	0	0.5				I					1		0	0	0	0	0.5	0	0	0	0	0	0.5	0	0	0	0	0	0	0	0	0
13	081W30C 03000	81W30C	3000	1.91		1		0.75	0.48			1	I					1		0	0	0	0	1.91	0	0	0	0	0	0.48	0	0	0	0	0	0	0	0	0
	TAZ Total			**7.11**				**1.50**	**4.59**											**0**	**0**	**0**	**0**	**7.11**	**0**	**0**	**0**	**0**	**0**	**4.59**	**0**		**1.09**	**0**	**0**	**0**	**0**	**1.09**	**0**
14	081W30C 00400	81W30C	400	1.12		1		0.4	0.67			1	I			1				0	0	1.12	0	0	0	0	0	0.67	0	0	0	0	0	0	0	0	0	0	0
14	081W30C 00500	81W30C	500	1		1		0.25	0.75	1			I					1		0	0	0	0	1	0	0	0	0	0	0.75	0	2	0.25	0	0	0	0	0.25	0
14	081W30C 00700	81W30C	700	0.64		1		0.5	0.32	1			I					1		0	0	0	0	0.64	0	0	0	0	0	0.32	0	2	0.32	0	0	0	0	0.32	0
14	081W30C 00800	81W30C	800	1			1	0	1				I					1		0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
14	081W30C 02300	81W30C	2300	4.15		1		0.25	3.11	1			RS	1						4.15	0	0	0	0	0	3.11	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD02300	81W30CD	2300	0.28			1	0	0.28	1			RM		1					0	0.28	0	0	0	0	0	0.28	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD04800	81W30CD	4800	0.25			1	0	0.25				RS	1						0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD04900	81W30CD	4900	0.25			1	0	0.25				RS	1						0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD05000	81W30CD	5000	0.3			1	0	0.3				RS	1						0.3	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD05100	81W30CD	5100	0.3			1	0	0.3				RS	1						0.3	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD05200	81W30CD	5200	0.2			1	0	0.2				RM		1					0	0.2	0	0	0	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD05300	81W30CD	5300	0.23			1	0	0.23				RM		1					0	0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD05400	81W30CD	5400	0.23			1	0	0.23				RM		1					0	0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD05500	81W30CD	5500	0.23			1	0	0.23				RM		1					0	0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD05600	81W30CD	5600	0.3			1	0	0.3				RM		1					0	0.3	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD05700	81W30CD	5700	0.3			1	0	0.3				RM		1					0	0.3	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD05800	81W30CD	5800	0.25			1	0	0.25				RM		1					0	0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD05900	81W30CD	5900	0.3			1	0	0.3				RM		1					0	0.3	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD06000	81W30CD	6000	0.25			1	0	0.25				RM		1					0	0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD06100	81W30CD	6100	0.25			1	0	0.25				RM		1					0	0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD06200	81W30CD	6200	0.3			1	0	0.3				RM		1					0	0.3	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD06300	81W30CD	6300	0.3			1	0	0.3				RM		1					0	0.3	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD06400	81W30CD	6400	0.3			1	0	0.3				RM		1					0	0.3	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD06500	81W30CD	6500	0.25			1	0	0.25				RM		1					0	0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX C - Buildable Lands Data within Aumsville UGB

					Developed Code			%	Buildable	Use Code				Parcels by Zone						Area by Zone						Buildable are by Zone						Non-Optimal	Non-Optimal	Non-Optimal use area by Zone					
TAZ	Taxlot	Map #	Lot #	Acres	Developed	Partially Vacant	Vacant	Developed	Acres	Resid	Commer	Indus	Zoning	RS	RM	CL	ID	I	P	RS	RM	CL	ID	I	P	RS	RM	CL	ID	I	P	Use	Use Area	RS	RM	CL	ID	I	P
14	081W30CD06600	81W30CD	6600	0.23			1	0	0.23				RM		1					0	0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD06700	81W30CD	6700	0.23			1	0	0.23				RM		1					0	0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD06800	81W30CD	6800	0.25			1	0	0.25				RM		1					0	0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD06900	81W30CD	6900	0.25			1	0	0.25				RM		1					0	0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD07000	81W30CD	7000	0.25			1	0	0.25				RM		1					0	0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD07100	81W30CD	7100	0.25			1	0	0.25				RM		1					0	0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD07200	81W30CD	7200	0.25			1	0	0.25				RM		1					0	0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD07300	81W30CD	7300	0.25			1	0	0.25				RS	1						0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD07400	81W30CD	7400	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD07500	81W30CD	7500	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD07600	81W30CD	7600	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD07700	81W30CD	7700	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD07800	81W30CD	7800	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD07900	81W30CD	7900	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD08000	81W30CD	8000	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD08100	81W30CD	8100	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD08200	81W30CD	8200	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD08300	81W30CD	8300	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD08400	81W30CD	8400	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD08500	81W30CD	8500	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD08600	81W30CD	8600	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD08700	81W30CD	8700	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD09200	81W30CD	9200	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD09300	81W30CD	9300	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD09400	81W30CD	9400	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD09600	81W30CD	9600	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD10100	81W30CD	10100	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD10600	81W30CD	10600	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD10700	81W30CD	10700	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD10800	81W30CD	10800	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD10900	81W30CD	10900	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD11000	81W30CD	11000	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD11200	81W30CD	11200	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD11500	81W30CD	11500	0.23			1	0	0.23				RS	1						0.23	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD12000	81W30CD	12000	0.25			1	0	0.25				RS	1						0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD12200	81W30CD	12200	0.2			1	0	0.2				RS	1						0.2	0	0	0	0	0	0.2	0	0	0	0	0	0	0	0	0	0	0	0	0
14	081W30CD12300	81W30CD	12300	0.25			1	0	0.25				RS	1						0.25	0	0	0	0	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0	0
	TAZ Total			**21.62**				**1.40**	**19.56**											**12.18**	**5.68**	**1.12**	**0**	**2.64**	**0**	**11.14**	**5.68**	**0.67**	**0**	**2.07**	**0**		**0.57**	**0**	**0**	**0**	**0**	**0.57**	**0**
	Grand Total			**291.73**	**0**	**63**	**147**	**30.47**	**210.16**					**88**	**73**	**17**	**13**	**14**	**5**	**107.37**	**61.67**	**6.30**	**59.54**	**53.15**	**3.70**	**94.24**	**30.79**	**3.67**	**56.67**	**50.06**	**15.77**		**5.78**	**0**	**0**	**1.25**	**2.87**	**1.66**	**0**

APPENDIX D

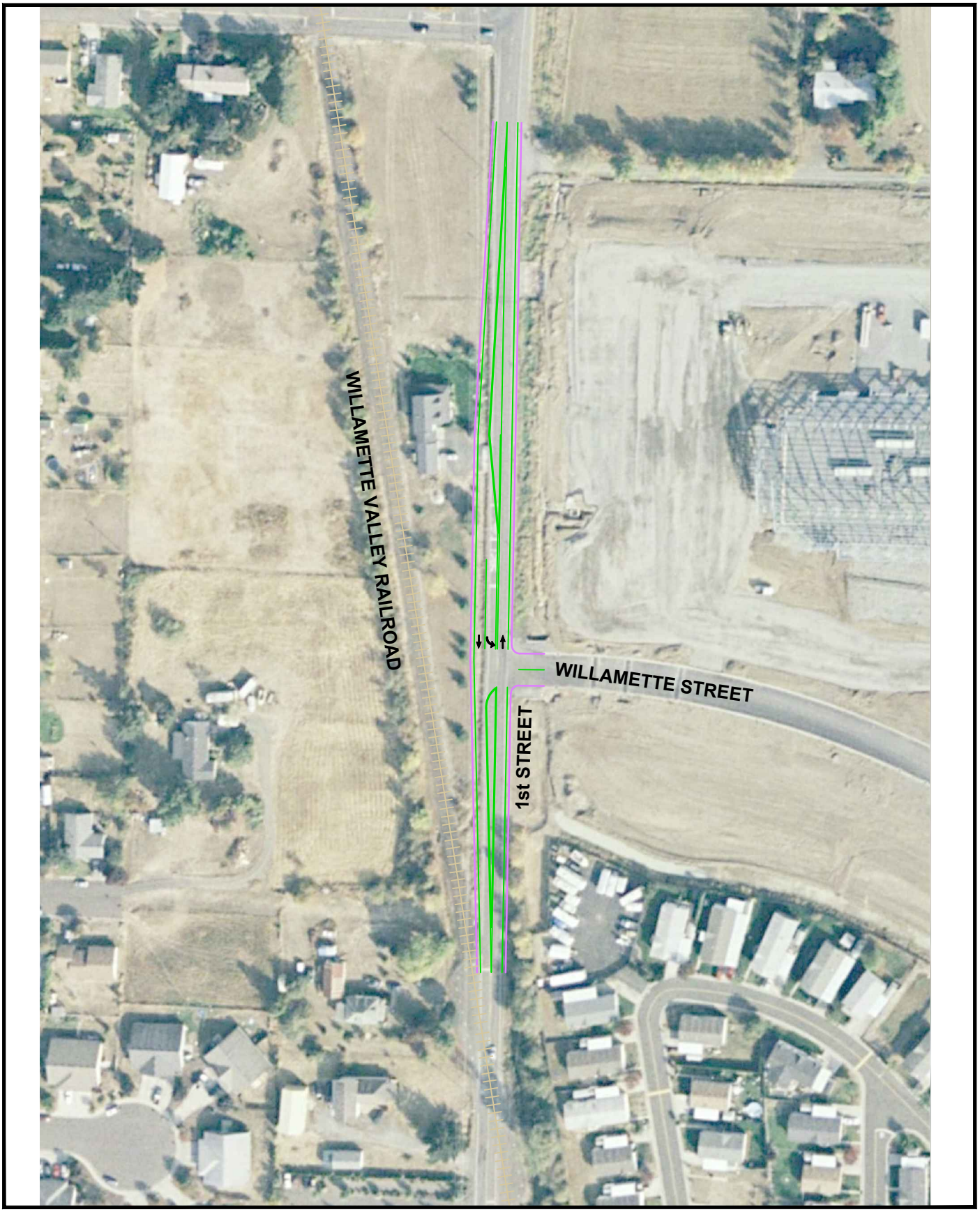
Buildable Lands outside UGB

APPENDIX D
2030 Buildable Lands Outside Aumsville UGB

TAZ	Taxlot	Lot #	Buildable Acres	Comments
A	081W30D	300	0.79	Community park
A	081W30D	400	1.31	Community park
A	081W30D	500	2.67	Community park
A	081W30D	600	21.87	Community park
A	081W30D	700	1.82	SF residential
A	081W30D	800	6.77	SF residential
A	081W30D	900	3.60	North half - SF residential
A	081W30D	900	2.06	South half - N-hood commercial
A	081W30D	1000	8.35	SF residential
A	081W30D	1100	7.92	SF residential
	TAZ Total		**57.16**	
	Total Park		*26.64*	
	Total SF Res		*28.46*	
	Total Comm.		*2.06*	
B	081W31AB	600	1.62	N-hood commercial
B	081W31AB	700	0.73	Outside of floodplain - N-hood commercial
B	081W31AB	800	0.69	Outside of floodplain - N-hood commercial
B	081W31AB	900	0.71	Outside of floodplain - N-hood commercial
B	081W30B	100	1.35	Outside of floodplain - N-hood commercial
B	081W30B	200	0.21	Outside of floodplain - N-hood commercial
B	081W30B	300	0.17	Outside of floodplain - N-hood commercial
B	081W30B	400	0.23	Outside of floodplain - N-hood commercial
B	081W30B	500	0.23	Outside of floodplain - N-hood commercial
	TAZ Total		**5.94**	
C	082W24C	501	7.95	Industrial
	TAZ Total		**7.95**	
D	082W25B	500	2.21	North part along Olney - Industrial
D	082W25B	600	1.33	North part along Olney - Industrial
D	082W25B	700	1.18	North part along Olney - Industrial
D	082W25B	700	10.4	South part - Multi-family residential
D	082W25C	100	5.03	Northeastern part as wide as 082W25C 700 - Multi-family residential
	TAZ Total		**20.15**	
	Total Industrial		*4.72*	
	Total MF Res		*15.43*	
	Total SF Res		28.46	
	Total MF Res		15.43	
	Total Comm		8.00	
	Total Industrial		12.67	
	Total Park		26.64	
	GRAND TOTAL		**91.2**	

APPENDIX E

Improvement Concepts



DATE: Mar 25, 2010 FILE: PO2395051F-10

N

0 150'

SCALE IN FEET

LEGEND

TRAFFIC SIGNAL

RAILROAD CROSSING

EDGE OF PAVEMENT

SIDEWALK / CURB

STRIPPING

Figure E-1
Interim Improvement
1st Street At
Willamette Street

DATE: Mar 25, 2010 FILE: PO2395051F-08

N

0 150'

SCALE IN FEET

LEGEND

TRAFFIC SIGNAL

RAILROAD CROSSING

EDGE OF PAVEMENT

SIDEWALK / CURB

STRIPPING

Figure E-2
OR HWY 22 EB Ramps At Shaw Highway
UGB Build-out

DATE: Mar 25, 2010 FILE: PO2395051F-08

N

0 150'

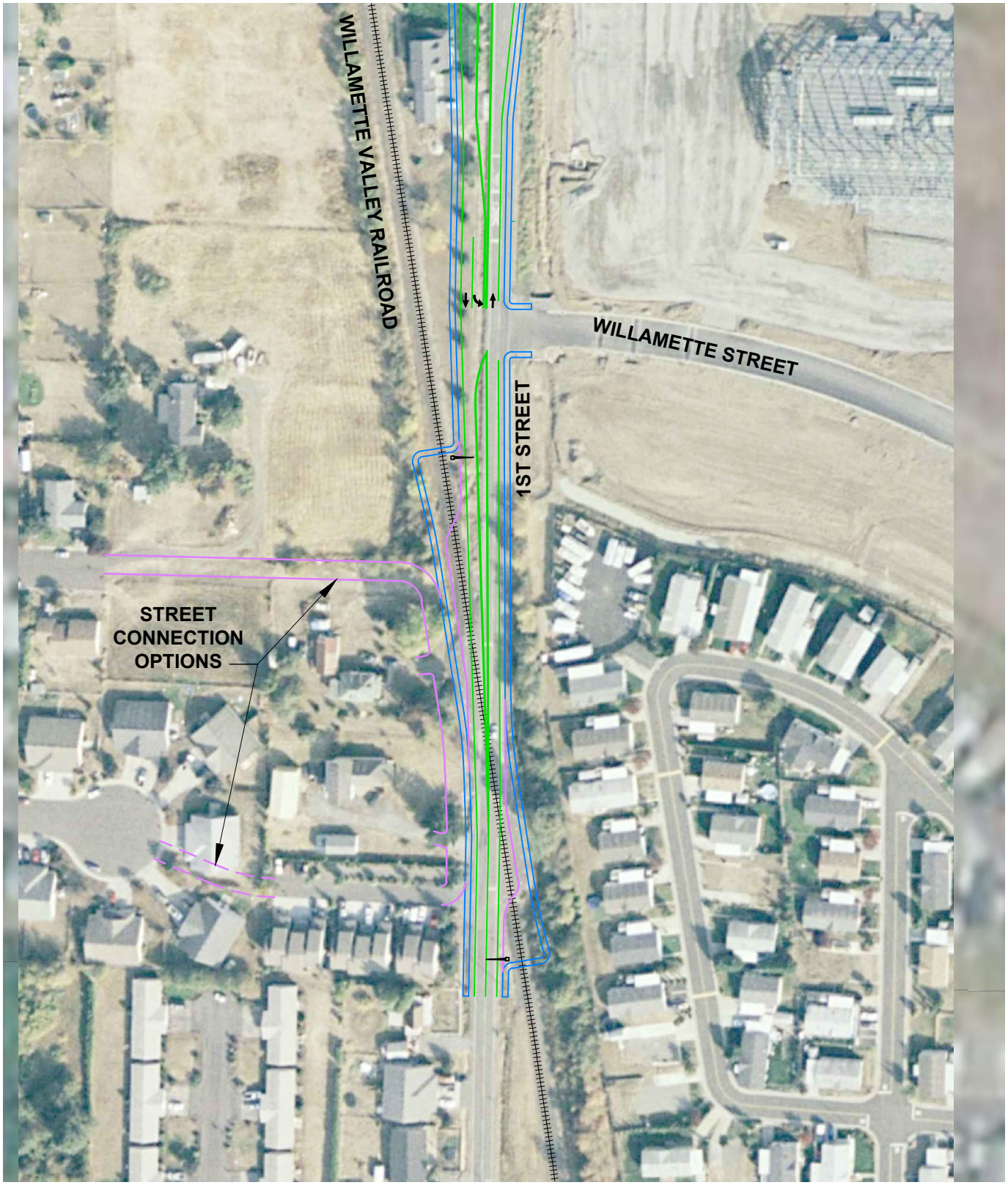
SCALE IN FEET

LEGEND

TRAFFIC SIGNAL

RAILROAD CROSSING
EDGE OF PAVEMENT
SIDEWALK / CURB
STRIPPING

Figure E-3
1st Street At Del Mar Drive
UGB Build-out



DATE: Mar 25, 2010 FILE: PO2395051F-08

N

0 150'

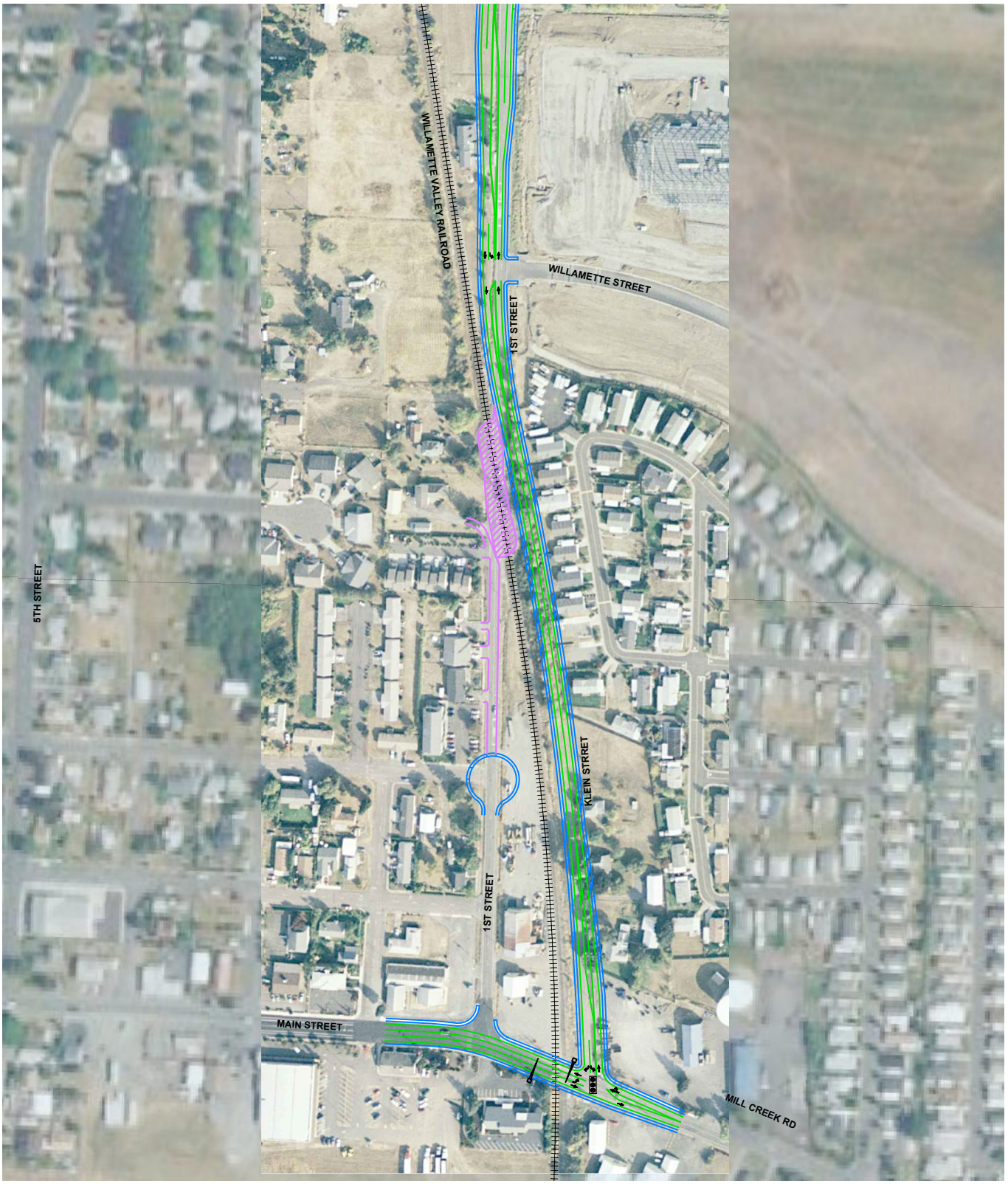
SCALE IN FEET

LEGEND

TRAFFIC SIGNAL

RAILROAD CROSSING
EDGE OF PAVEMENT
SIDEWALK / CURB
STRIPPING
ALTERNATE LOCAL ACCESS

Figure E-4
1st Street At Willamette Street
UGB Build-out



DATE: Jul 14, 2010 FILE: PO2395051F-11

N

0 300'

SCALE IN FEET

LEGEND

TRAFFIC SIGNAL

RAILROAD CROSSING

EDGE OF PAVEMENT

SIDEWALK / CURB

STRIPPING

EXISTING SURFACING REMOVAL

Figure E-5
1st Street / Klein St. Realignment

APPENDIX F

Cost Estimation

Planning Estimate (Parametrix)

Project Number	ST-1
Section Summary	Western Terminus of Del Mar Drive to 11th Street
Roadway Classification	NA
Improvement	Provide 8' Multi Use Path

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$1,544
2	AGGREGATE BASE	130	TON	25.00	$3,250
3	SEEDING-LANDSCAPING	0.1	LS	5,000.00	$500
4	EARTHWORK	140	CY	12.00	$1,680
5	EROSION CONTROL	0.1	AC	5,000.00	$500
6	LEVEL 2, 1/2 INCH DENSE HMAC	75	TON	80.00	$6,000
7	DRAINAGE	10%	LS	1.00	$1,190
8	CLEARING AND GRUBBING	5%	LS	1.00	$656
9	SIGNING	2%	LS	1.00	$276
10	TRAFFIC CONTROL	5%	LS	1.00	$703
11	SURVEYING	5%	LS	1.00	$689
	ROADWAY CONSTRUCTION SUBTOTAL				$17,000
	CONTINGENCY(40%)				$6,800
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$6,000
	TOTAL				$29,800

Planning Estimate (Parametrix)

Project Number	ST-2
Section Summary	Carmel Street to Windermere Street
Improvement	Provide 8' Multi Use Path

This Project will require ROW which is not included in the estimate

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$750
2	AGGREGATE BASE	60	TON	25.00	$1,500
3	SEEDING-LANDSCAPING	0.05	LS	5,000.00	$250
4	EARTHWORK	70	CY	12.00	$840
5	EROSION CONTROL	0.05	AC	5,000.00	$250
6	LEVEL 2, 1/2 INCH DENSE HMAC	35	TON	80.00	$2,800
7	DRAINAGE	10%	LS	1.00	$560
8	CLEARING AND GRUBBING	5%	LS	1.00	$310
9	SIGNING	5%	LS	1.00	$326
10	TRAFFIC CONTROL	5%	LS	1.00	$342
11	SURVEYING	5%	LS	1.00	$326
	ROADWAY CONSTRUCTION SUBTOTAL				$8,300
	CONTINGENCY(40%)				$3,300
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$2,900
	TOTAL				$14,500

Planning Estimate (Parametrix)

Project Number	ST-3
Section Summary	Willamette Street to Approx Gordon Lane
Improvement	Provide 8' Multi Use Path

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$1,794
2	AGGREGATE BASE	150	TON	25.00	$3,750
3	SEEDING-LANDSCAPING	0.15	LS	5,000.00	$750
4	EARTHWORK	150	CY	12.00	$1,800
5	EROSION CONTROL	0.15	AC	5,000.00	$750
6	LEVEL 2, 1/2 INCH DENSE HMAC	85	TON	80.00	$6,800
7	DRAINAGE	10%	LS	1.00	$1,390
8	CLEARING AND GRUBBING	5%	LS	1.00	$762
9	SIGNING	2%	LS	1.00	$320
10	TRAFFIC CONTROL	5%	LS	1.00	$816
11	SURVEYING	5%	LS	1.00	$800
	ROADWAY CONSTRUCTION SUBTOTAL				$19,700
	CONTINGENCY(40%)				$7,900
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$6,900
	TOTAL				$34,500

Planning Estimate (Parametrix)

Project Number	ST-6
Section Summary	Main Street and 3rd Street
Improvement	Install Pedestrian Crossing including ADA Compliant Ramps

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$901
2	ADA SIDEWALK RAMPS	2	EACH	2,000.00	$4,000
3	CROSSWALK STRIPING	1	EACH	2,500.00	$2,500
4	SIGNING	10%	LS	1.00	$650
5	TRAFFIC CONTROL	20%	LS	1.00	$1,430
6	SURVEYING	5%	LS	1.00	$429
	ROADWAY CONSTRUCTION SUBTOTAL				$9,900
	CONTINGENCY(40%)				$4,000
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$3,500
	TOTAL				$17,400

Planning Estimate (Parametrix)

Project Number	ST-7
Section Summary	Approaching Olney Street Southbound Add School Warning
Improvement	Flashers

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$1,323
2	CROSSING FLASHER	2	EACH	5,000.00	$10,000
3	SIGNING	5%	LS	1.00	$500
4	TRAFFIC CONTROL	20%	LS	1.00	$2,100
5	SURVEYING	5%	LS	1.00	$630
	ROADWAY CONSTRUCTION SUBTOTAL				$14,600
	CONTINGENCY(40%)				$5,800
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$5,100
	TOTAL				$25,500

1st Street @ Willamette Street - Turn Lane Only

				Engineer's Estimate (Parametrix)	
ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	1	LS	10.00%	$14,160
2	HMAC	800	TON	$ 80.00	$64,000
3	AGGREGATE BASE	480	TON	$ 25.00	$12,000
5	PAVEMENT STRIPING	5880	LF	$ 0.25	$1,470
7	EARTHWORK	1110	CY	$ 15.00	$16,650
9	EROSION CONTROL (%)	1	LS	4.00%	$3,760
10	LANDSCAPING (%)	1	LS	2.00%	$1,880
11	ILLUMINATION (%)	1	LS	4.00%	$3,760
12	DRAINAGE/WATER QUALITY (%)	1	LS	10.00%	$9,410
13	CLEARING AND GRUBBING (%)	1	LS	3.00%	$2,820
14	UTILITY RELOCATION (%)	1	LS	5.00%	$4,710
15	SIGNING (%)	1	LS	1.50%	$1,410
16	TRAFFIC CONTROL (%)	1	LS	15.00%	$14,120
17	SURVEYING (%)	1	LS	6.00%	$5,650
	ROADWAY CONSTRUCTION SUBTOTAL				**$155,800**
	CONTINGENCY			**40%**	**$62,320**
	PRELIMINARY ENGINEERING			**10%**	**$21,810**
	ROADWAY CONSTRUCTION ENGINEERING			**15%**	**$32,720**
	CONSTRUCTION & ENGINEERING TOTAL				**$272,650**

#1 - OR22 EB Ramps @ Shaw Hwy - Scenario 1 (UGB Build-out)

				Engineer's Estimate (Parametrix)	
ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	1	LS	10.00%	$81,260
2	HMAC	1600	TON	$ 80.00	$128,000
3	AGGREGATE BASE	990	TON	$ 25.00	$24,750
4	PAVEMENT STRIPING	9000	LF	$ 0.25	$2,250
5	TRAFFIC SIGNAL	1	EACH	$ 250,000.00	$250,000
6	EARTHWORK	1410	CY	$ 15.00	$21,150
7	RETAINING WALL	3200	SF	$ 35.00	$112,000
8	EROSION CONTROL (%)	1	LS	5.00%	$26,910
9	LANDSCAPING (%)	1	LS	2.00%	$10,760
10	ILLUMINATION (%)	1	LS	5.00%	$26,910
11	DRAINAGE/WATER QUALITY (%)	1	LS	12.00%	$64,580
12	CLEARING AND GRUBBING (%)	1	LS	3.00%	$16,140
13	UTILITY RELOCATION (%)	1	LS	3.00%	$16,140
14	SIGNING (%)	1	LS	2.00%	$10,760
15	TRAFFIC CONTROL (%)	1	LS	15.00%	$80,720
16	SURVEYING (%)	1	LS	4.00%	$21,530
	ROADWAY CONSTRUCTION SUBTOTAL				**$893,860**
	CONTINGENCY			**40%**	**$357,544**
	PRELIMINARY ENGINEERING			**10%**	**$125,140**
	ROADWAY CONSTRUCTION ENGINEERING			**15%**	**$187,710**
	CONSTRUCTION & ENGINEERING TOTAL				**$1,564,254**

#2 - 1st Street @ Del Mar Drive - Scenario 1 (UGB Build-out)

				Engineer's Estimate (Parametrix)	
ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	1	LS	10.00%	$180,480
2	HMAC	2880	TON	$ 80.00	$230,400
3	AGGREGATE BASE	2500	TON	$ 25.00	$62,500
4	CONCRETE CURB AND SIDEWALK	2880	LF	$ 50.00	$144,000
5	12 INCH DRAIN PIPE, 5 FT DEPTH	2500	LF	$ 45.00	$112,500
6	CONCRETE INLET	12	EACH	$ 1,800.00	$21,600
7	PAVEMENT STRIPING	12680	LF	$ 0.25	$3,170
8	TRAFFIC SIGNAL	1	EACH	$ 250,000.00	$250,000
9	EARTHWORK	3570	CY	$ 15.00	$53,550
10	RR CROSSING SIGNAL	1	EACH	$ 500,000.00	$500,000
11	EROSION CONTROL (%)	1	LS	3.00%	$41,330
12	LANDSCAPING (%)	1	LS	1.50%	$20,670
13	ILLUMINATION (%)	1	LS	3.00%	$41,330
14	WATER QUALITY (%)	1	LS	5.00%	$68,890
15	CLEARING AND GRUBBING (%)	1	LS	3.00%	$41,330
16	UTILITY RELOCATION (%)	1	LS	3.00%	$41,330
17	SIGNING (%)	1	LS	1.50%	$20,670
18	TRAFFIC CONTROL (%)	1	LS	7.00%	$96,440
19	SURVEYING (%)	1	LS	4.00%	$55,110
	ROADWAY CONSTRUCTION SUBTOTAL				**$1,985,300**
	CONTINGENCY			**40%**	**$794,120**
	PRELIMINARY ENGINEERING			**10%**	**$277,940**
	ROADWAY CONSTRUCTION ENGINEERING			**15%**	**$416,910**
	CONSTRUCTION & ENGINEERING TOTAL				**$3,474,270**

#4 - 1st Street @ Willamette Street - Scenario 1 (UGB Build-out)

				Engineer's Estimate (Parametrix)	
ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	1	LS	10.00%	$121,900
2	HMAC	1740	TON	$ 80.00	$139,200
3	AGGREGATE BASE	1660	TON	$ 25.00	$41,500
4	CONCRETE CURB AND SIDEWALK	1950	LF	$ 50.00	$97,500
5	12 INCH DRAIN PIPE, 5 FT DEPTH	1600	LF	$ 45.00	$72,000
6	CONCRETE INLET	8	EACH	$ 1,800.00	$14,400
7	PAVEMENT STRIPING	11930	LF	$ 0.25	$2,983
8	EARTHWORK	2360	CY	$ 15.00	$35,400
9	RR CROSSING SIGNAL	1	EACH	$ 500,000.00	$500,000
10	EROSION CONTROL (%)	1	LS	4.00%	$36,120
11	LANDSCAPING (%)	1	LS	1.50%	$13,540
12	ILLUMINATION (%)	1	LS	3.00%	$27,090
13	WATER QUALITY (%)	1	LS	5.00%	$45,150
14	CLEARING AND GRUBBING (%)	1	LS	3.00%	$27,090
15	UTILITY RELOCATION (%)	1	LS	3.00%	$27,090
16	SIGNING (%)	1	LS	1.50%	$13,540
17	TRAFFIC CONTROL (%)	1	LS	10.00%	$90,300
18	SURVEYING (%)	1	LS	4.00%	$36,120
	ROADWAY CONSTRUCTION SUBTOTAL				**$1,340,923**
	CONTINGENCY			**40%**	**$536,369**
	PRELIMINARY ENGINEERING			**10%**	**$187,730**
	ROADWAY CONSTRUCTION ENGINEERING			**15%**	**$281,590**
	CONSTRUCTION & ENGINEERING TOTAL				**$2,346,612**

Scenario 1: UGB Build-out

Project Number	5
Section Summary	Main Street/Mill Creek at 1st Street
Roadway Classification	Arterial
Improvement	Associated bike lane and sidewalks Signalize intersection

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$92,870
2	AGGREGATE BASE	100	TON	25.00	$2,500
3	SEEDING-LANDSCAPING	1	LS	8,000.00	$8,000
4	EARTHWORK	50	CY	15.00	$750
5	EROSION CONTROL	0.15	AC	5,000.00	$750
6	LEVEL 2, 1/2 INCH DENSE HMAC	50	TON	80.00	$4,000
7	CONCRETE CURB AND SIDEWALK	200	LF	50.00	$10,000
8	CONCRETE INLET	2	EACH	1,800.00	$3,600
9	CONCRETE MANHOLE	1	EACH	3,000.00	$3,000
10	12 INCH DRAIN PIPE, 5 FT DEPTH	80	LF	45.00	$3,600
11	SIGNAL AND INTERCONNECT	1	LS	250,000.00	$250,000
12	RAILROAD GATE & SIGNAL	1	LS	500,000.00	$500,000
12	BIKE LANE STENCIL	4	EA	75.00	$300
13	PAVEMENT STRIPING	400	LF	0.25	$100
14	CLEARING AND GRUBBING	5%	LS	1.00	$39,300
15	SIGNING	2%	LS	1.00	$16,500
16	TRAFFIC CONTROL	5%	LS	1.00	$42,100
17	SURVEYING	5%	LS	1.00	$44,200
	ROADWAY CONSTRUCTION SUBTOTAL				$1,021,600
	CONTINGENCY(40%)				$408,600
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$357,600
	TOTAL				$1,787,800

Project Number	6
Section Summary	Main Street at 8th Street
Roadway Classification	Arterial
Improvement	Associated bike lane and sidewalks Signalize intersection

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$1,230
2	AGGREGATE BASE	10	TON	25.00	$250
3	SEEDING-LANDSCAPING	1	LS	2,000.00	$2,000
4	EARTHWORK	50	CY	15.00	$750
5	EROSION CONTROL	0.15	AC	5,000.00	$750
6	LEVEL 2, 1/2 INCH DENSE HMAC	15	TON	80.00	$1,200
7	CONCRETE CURB AND SIDEWALK	50	LF	50.00	$2,500
8	CONCRETE INLET	1	EACH	1,800.00	$1,800
9	12 INCH DRAIN PIPE, 5 FT DEPTH	25	LF	45.00	$1,125
12	PAVEMENT STRIPING	100	LF	0.25	$25
13	CLEARING AND GRUBBING	5%	LS	1.00	$500
14	SIGNING	2%	LS	1.00	$200
15	TRAFFIC CONTROL	5%	LS	1.00	$600
16	SURVEYING	5%	LS	1.00	$600
	ROADWAY CONSTRUCTION SUBTOTAL				$13,500
	CONTINGENCY(40%)				$5,400
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$4,700
	TOTAL				$23,600

Project Number	7
Section Summary	Aumsville Hwy/11th Street at Olney Street
Roadway Classification	Arterial
Improvement	Signalize intersection Associated bike lane and sidewalks

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$33,806
2	AGGREGATE BASE	100	TON	25.00	$2,500
3	SEEDING-LANDSCAPING	1	LS	8,000.00	$8,000
4	EARTHWORK	50	CY	15.00	$750
5	EROSION CONTROL	0.15	AC	5,000.00	$750
6	LEVEL 2, 1/2 INCH DENSE HMAC	50	TON	80.00	$4,000
7	CONCRETE CURB AND SIDEWALK	200	LF	50.00	$10,000
8	CONCRETE INLET	2	EACH	1,800.00	$3,600
9	CONCRETE MANHOLE	1	EACH	3,000.00	$3,000
10	12 INCH DRAIN PIPE, 5 FT DEPTH	80	LF	45.00	$3,600
11	SIGNAL	1	LS	250,000.00	$250,000
13	PAVEMENT STRIPING	400	LF	0.25	$100
14	CLEARING AND GRUBBING	5%	LS	1.00	$14,315
15	SIGNING	2%	LS	1.00	$6,012
16	TRAFFIC CONTROL	5%	LS	1.00	$15,331
17	SURVEYING	5%	LS	1.00	$16,098
	ROADWAY CONSTRUCTION SUBTOTAL				$371,900
	CONTINGENCY(40%)				$148,800
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$130,200
	TOTAL				$650,900

Planning Estimate (Parametrix)

Project Number	24
Section Summary	Main Street/Mill Creek-11th St to Boone Park
Roadway Classification	Arterial
Improvement	Add bike lanes

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$6,072
2	AGGREGATE BASE	350	TON	25.00	$8,750
3	SEEDING-LANDSCAPING	1	LS	8,000.00	$8,000
4	EARTHWORK	50	CY	12.00	$600
5	EROSION CONTROL	0.2	AC	5,000.00	$1,000
6	LEVEL 2, 1/2 INCH DENSE HMAC	350	TON	80.00	$28,000
7	BIKE LANE STENCIL	4	EA	75.00	$300
8	PAVEMENT STRIPING	1200	LF	0.25	$300
9	DRAINAGE	10%	LS	1.00	$4,700
10	CLEARING AND GRUBBING	5%	LS	1.00	$2,348
11	SIGNING	2%	LS	1.00	$1,080
12	TRAFFIC CONTROL	5%	LS	1.00	$2,754
13	SURVEYING	5%	LS	1.00	$2,892
	ROADWAY CONSTRUCTION SUBTOTAL				$66,800
	CONTINGENCY(40%)				$26,700
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$23,400
	TOTAL				$116,900

Planning Estimate (Parametrix)

Project Number	25
Section Summary	Main Street- 11th St to 1st St
Roadway Classification	Arterial
Improvement	Complete Sidewalks

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$24,899
2	AGGREGATE BASE	370	TON	25.00	$9,250
3	SEEDING-LANDSCAPING	1	LS	40,000.00	$40,000
4	EARTHWORK	200	CY	12.00	$2,400
5	EROSION CONTROL	0.15	AC	5,000.00	$750
6	CONCRETE CURB AND SIDEWALK	2200	LF	50.00	$110,000
7	LUMINAIRES	1	EACH	2,500.00	$2,500
8	ADA SIDEWALK RAMPS (DUAL)	8	EACH	2,500.00	$20,000
9	CONCRETE DRIVEWAY APPROACH	5	EACH	1,800.00	$9,000
10	DRAINAGE	10%	LS	1.00	$19,390
11	CLEARING AND GRUBBING	5%	LS	1.00	$8,120
12	SIGNING	2%	LS	1.00	$4,428
13	TRAFFIC CONTROL	5%	LS	1.00	$11,292
14	SURVEYING	5%	LS	1.00	$11,857
	ROADWAY CONSTRUCTION SUBTOTAL				$273,900
	CONTINGENCY(40%)				$109,600
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$95,900
	TOTAL				$479,400

Planning Estimate (Parametrix)

Project Number	26
Section Summary	Main Street/Mill Creek-1st to Bishop Road
Roadway Classification	Arterial
Improvement	Bike lane-sidewalk shoulder

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$21,812
2	AGGREGATE BASE	1055	TON	25.00	$26,375
3	SEEDING-LANDSCAPING	1	LS	5,000.00	$5,000
4	EARTHWORK	225	CY	12.00	$2,700
5	EROSION CONTROL	0.5	AC	5,000.00	$2,500
6	LEVEL 2, 1/2 INCH DENSE HMAC	1285	TON	80.00	$102,800
7	ADA SIDEWALK RAMPS (DUAL)	1	EACH	2,500.00	$2,500
8	CONCRETE CURB AND SIDEWALK	500	LF	50.00	$25,000
9	PAVEMENT STRIPING	6000	LF	0.25	$1,500
10	BIKE LANE STENCIL	4	EA	75.00	$300
11	DRAINAGE	10%	LS	1.00	$16,870
12	CLEARING AND GRUBBING	5%	LS	1.00	$8,419
13	SIGNING	2%	LS	1.00	$3,879
14	TRAFFIC CONTROL	5%	LS	1.00	$9,892
15	SURVEYING	5%	LS	1.00	$10,387
	ROADWAY CONSTRUCTION SUBTOTAL				$239,900
	CONTINGENCY(40%)				$96,000
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$84,000
	TOTAL				$419,900

Planning Estimate (Parametrix)

Project Number	27
Section Summary	Bishop Road
Roadway Classification	NA
Improvement	10 ft Multi-use Path

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$8,466
2	AGGREGATE BASE	755	TON	25.00	$18,875
3	SEEDING-LANDSCAPING	1	LS	5,000.00	$5,000
4	EARTHWORK	225	CY	12.00	$2,700
5	EROSION CONTROL	1	AC	5,000.00	$5,000
6	LEVEL 2, 1/2 INCH DENSE HMAC	420	TON	80.00	$33,600
7	DRAINAGE	10%	LS	1.00	$6,520
8	CLEARING AND GRUBBING	5%	LS	1.00	$3,585
9	SIGNING	2%	LS	1.00	$1,506
10	TRAFFIC CONTROL	5%	LS	1.00	$3,839
11	SURVEYING	5%	LS	1.00	$4,031
	ROADWAY CONSTRUCTION SUBTOTAL				$93,100
	CONTINGENCY(40%)				$37,200
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$32,600
	TOTAL				$162,900

Planning Estimate (Parametrix)

Project Number	28
Section Summary	11th Street-Main to Olney
Roadway Classification	Arterial
Improvement	Add bike lanes

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$21,181
2	AGGREGATE BASE	380	TON	25.00	$9,500
3	SEEDING-LANDSCAPING	1	LS	25,000.00	$25,000
4	EARTHWORK	110	CY	12.00	$1,320
5	EROSION CONTROL	1	AC	5,000.00	$5,000
6	LEVEL 2, 1/2 INCH DENSE HMAC	1450	TON	80.00	$116,000
7	CONCRETE CURB AND SIDEWALK	100	LF	50.00	$5,000
8	PAVEMENT STRIPING	5000	LF	0.25	$1,250
9	BIKE LANE STENCIL	10	EA	75.00	$750
10	DRAINAGE	10%	LS	1.00	$16,380
11	CLEARING AND GRUBBING	5%	LS	1.00	$8,154
12	SIGNING	2%	LS	1.00	$3,767
13	TRAFFIC CONTROL	5%	LS	1.00	$9,606
14	SURVEYING	5%	LS	1.00	$10,086
	ROADWAY CONSTRUCTION SUBTOTAL				$233,000
	CONTINGENCY(40%)				$93,200
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$81,600
	TOTAL				$407,800

Planning Estimate (Parametrix)

Project Number	29
Section Summary	11th Street-S of Olney-Westside
Roadway Classification	Arterial
Improvement	Add Sidewalks

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$10,282
2	AGGREGATE BASE	110	TON	25.00	$2,750
3	SEEDING-LANDSCAPING	1	LS	10,000.00	$10,000
4	EARTHWORK	80	CY	12.00	$960
5	EROSION CONTROL	1	AC	5,000.00	$5,000
6	ADA SIDEWALK RAMPS (DUAL)	4	EACH	2,500.00	$10,000
7	CONCRETE DRIVEWAY APPROACH	6	EACH	1,800.00	$10,800
8	CONCRETE CURB AND SIDEWALK	800	LF	50.00	$40,000
9	DRAINAGE	10%	LS	1.00	$7,950
10	CLEARING AND GRUBBING	5%	LS	1.00	$3,976
11	SIGNING	2%	LS	1.00	$1,829
12	TRAFFIC CONTROL	5%	LS	1.00	$4,663
13	SURVEYING	5%	LS	1.00	$4,896
	ROADWAY CONSTRUCTION SUBTOTAL				$113,100
	CONTINGENCY(40%)				$45,200
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$39,600
	TOTAL				$197,900

Planning Estimate (Parametrix)

Project Number	30
Section Summary	11th Street-Main to Hazel
Roadway Classification	Arterial
Improvement	Add Sidewalks

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$14,996
2	AGGREGATE BASE	200	TON	25.00	$5,000
3	SEEDING-LANDSCAPING	1	LS	20,000.00	$20,000
4	EARTHWORK	150	CY	12.00	$1,800
5	EROSION CONTROL	0.75	AC	5,000.00	$3,750
6	ADA SIDEWALK RAMPS (DUAL)	4	EACH	2,500.00	$10,000
7	CONCRETE DRIVEWAY APPROACH	3	EACH	1,800.00	$5,400
8	CONCRETE CURB AND SIDEWALK	1400	LF	50.00	$70,000
9	DRAINAGE	10%	LS	1.00	$11,600
10	CLEARING AND GRUBBING	5%	LS	1.00	$5,798
11	SIGNING	2%	LS	1.00	$2,667
12	TRAFFIC CONTROL	5%	LS	1.00	$6,801
13	SURVEYING	5%	LS	1.00	$7,141
	ROADWAY CONSTRUCTION SUBTOTAL				$165,000
	CONTINGENCY(40%)				$66,000
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$57,800
	TOTAL				$288,800

Planning Estimate (Parametrix)

Project Number	31
Section Summary	Del Mar -10th to 11th
Roadway Classification	Collector
Improvement	10 ft Multi-use Path

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$2,054
2	AGGREGATE BASE	175	TON	25.00	$4,375
3	SEEDING-LANDSCAPING	1	LS	1,800.00	$1,800
4	EARTHWORK	80	CY	12.00	$960
5	EROSION CONTROL	0.15	AC	5,000.00	$750
6	LEVEL 2, 1/2 INCH DENSE HMAC	100	TON	80.00	$8,000
7	DRAINAGE	10%	LS	1.00	$1,590
8	CLEARING AND GRUBBING	5%	LS	1.00	$794
9	SIGNING	2%	LS	1.00	$365
10	TRAFFIC CONTROL	5%	LS	1.00	$932
11	SURVEYING	5%	LS	1.00	$978
	ROADWAY CONSTRUCTION SUBTOTAL				$22,600
	CONTINGENCY(40%)				$9,000
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$7,900
	TOTAL				$39,500

Planning Estimate (Parametrix)

Project Number	32
Section Summary	Cleveland St- 11th St to 1st St
Roadway Classification	Collector
Improvement	Complete Sidewalks

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$12,484
2	AGGREGATE BASE	110	TON	25.00	$2,750
3	SEEDING-LANDSCAPING	1	LS	35,000.00	$35,000
4	EARTHWORK	70	CY	12.00	$840
5	EROSION CONTROL	0.15	AC	5,000.00	$750
6	ADA SIDEWALK RAMPS (DUAL)	4	EACH	2,500.00	$10,000
7	CONCRETE DRIVEWAY APPROACH	4	EACH	1,800.00	$7,200
8	CONCRETE CURB AND SIDEWALK	800	LF	50.00	$40,000
9	DRAINAGE	10%	LS	1.00	$9,650
10	CLEARING AND GRUBBING	5%	LS	1.00	$4,827
11	SIGNING	2%	LS	1.00	$2,220
12	TRAFFIC CONTROL	5%	LS	1.00	$5,662
13	SURVEYING	5%	LS	1.00	$5,945
	ROADWAY CONSTRUCTION SUBTOTAL				$137,300
	CONTINGENCY(40%)				$54,900
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$48,100
	TOTAL				$240,300

Planning Estimate (Parametrix)

Project Number	33
Section Summary	5th St- Main to Cleveland St.
Roadway Classification	Collector
Improvement	Complete Sidewalks

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$4,685
2	AGGREGATE BASE	80	TON	25.00	$2,000
3	SEEDING-LANDSCAPING	1	LS	3,000.00	$3,000
4	EARTHWORK	40	CY	12.00	$480
5	EROSION CONTROL	0.15	AC	5,000.00	$750
6	ADA SIDEWALK RAMPS (DUAL)	2	EACH	2,500.00	$5,000
7	CONCRETE CURB AND SIDEWALK	500	LF	50.00	$25,000
8	DRAINAGE	10%	LS	1.00	$3,620
9	CLEARING AND GRUBBING	5%	LS	1.00	$1,812
10	SIGNING	2%	LS	1.00	$833
11	TRAFFIC CONTROL	5%	LS	1.00	$2,125
12	SURVEYING	5%	LS	1.00	$2,231
	ROADWAY CONSTRUCTION SUBTOTAL				$51,500
	CONTINGENCY(40%)				$20,600
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$18,000
	TOTAL				$90,100

Planning Estimate (Parametrix)

Project Number	34
Section Summary	Willamette to Puma St
Roadway Classification	Collector
Improvement	10 ft Multi-use Path

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$2,094
2	AGGREGATE BASE	175	TON	25.00	$4,375
3	SEEDING-LANDSCAPING	1	LS	1,800.00	$1,800
4	EARTHWORK	100	CY	12.00	$1,200
5	EROSION CONTROL	0.15	AC	5,000.00	$750
6	LEVEL 2, 1/2 INCH DENSE HMAC	100	TON	80.00	$8,000
7	DRAINAGE	10%	LS	1.00	$1,610
8	CLEARING AND GRUBBING	5%	LS	1.00	$887
9	SIGNING	2%	LS	1.00	$372
10	TRAFFIC CONTROL	5%	LS	1.00	$950
11	SURVEYING	5%	LS	1.00	$997
	ROADWAY CONSTRUCTION SUBTOTAL				$23,000
	CONTINGENCY(40%)				$9,200
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$8,100
	TOTAL				$40,300

Planning Estimate (Parametrix)

Project Number	35
Section Summary	Carmel Drive to WindermereSt
Roadway Classification	Local St
Improvement	10 ft Multi-use Path

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$1,566
2	AGGREGATE BASE	120	TON	25.00	$3,000
3	SEEDING-LANDSCAPING	1	LS	1,800.00	$1,800
4	EARTHWORK	80	CY	12.00	$960
5	EROSION CONTROL	0.15	AC	5,000.00	$750
6	LEVEL 2, 1/2 INCH DENSE HMAC	70	TON	80.00	$5,600
7	DRAINAGE	10%	LS	1.00	$1,210
8	CLEARING AND GRUBBING	5%	LS	1.00	$606
9	SIGNING	2%	LS	1.00	$279
10	TRAFFIC CONTROL	5%	LS	1.00	$710
11	SURVEYING	5%	LS	1.00	$746
	ROADWAY CONSTRUCTION SUBTOTAL				$17,200
	CONTINGENCY(40%)				$6,900
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$6,000
	TOTAL				$30,100

Project Number	36
Section Summary	1st St to York St
Roadway Classification	Local St
Improvement	10 ft Multi-use Path

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$1,566
2	AGGREGATE BASE	120	TON	25.00	$3,000
3	SEEDING-LANDSCAPING	1	LS	1,800.00	$1,800
4	EARTHWORK	80	CY	12.00	$960
5	EROSION CONTROL	0.15	AC	5,000.00	$750
6	LEVEL 2, 1/2 INCH DENSE HMAC	70	TON	80.00	$5,600
7	DRAINAGE	10%	LS	1.00	$1,210
7	CLEARING AND GRUBBING	5%	LS	1.00	$606
8	SIGNING	2%	LS	1.00	$279
9	TRAFFIC CONTROL	5%	LS	1.00	$710
10	SURVEYING	5%	LS	1.00	$746
	ROADWAY CONSTRUCTION SUBTOTAL				$17,200
	CONTINGENCY(40%)				$6,900
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$6,000
	TOTAL				$30,100

#X-1 - Westbound Hwy-22 Ramp at Shaw Hwy - Turn Lane (UGB Expansion)

				Engineer's Estimate (Parametrix)	
ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	1	LS	10.00%	$15,300
2	HMAC	940	TON	$ 80.00	$75,200
3	AGGREGATE BASE	430	TON	$ 25.00	$10,750
4	PAVEMENT STRIPING	6420	LF	$ 0.25	$1,605
6	EARTHWORK	620	CY	$ 15.00	$9,300
7	EROSION CONTROL (%)	1	LS	5.00%	$4,840
8	LANDSCAPING (%)	1	LS	2.00%	$1,940
9	ILLUMINATION (%)	1	LS	5.00%	$4,840
10	DRAINAGE/WATER QUALITY (%)	1	LS	12.00%	$11,620
11	CLEARING AND GRUBBING (%)	1	LS	3.00%	$2,910
12	UTILITY RELOCATION (%)	1	LS	3.00%	$2,910
13	SIGNING (%)	1	LS	5.00%	$4,840
14	TRAFFIC CONTROL (%)	1	LS	15.00%	$14,530
15	SURVEYING (%)	1	LS	8.00%	$7,750
	ROADWAY CONSTRUCTION SUBTOTAL				**$168,335**
	CONTINGENCY			**40%**	**$67,334**
	PRELIMINARY ENGINEERING			**10%**	**$23,570**
	ROADWAY CONSTRUCTION ENGINEERING			**15%**	**$35,350**
	CONSTRUCTION & ENGINEERING TOTAL				**$294,589**

#X-2 - OR22 EB Ramps @ Shaw Hwy - With New Hwy 22 Off-ramp (UGB Expansion)

				Engineer's Estimate (Parametrix)	
ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	1	LS	10.00%	$177,520
2	HMAC	4450	TON	$ 80.00	$356,000
3	AGGREGATE BASE	4230	TON	$ 25.00	$105,750
4	PAVEMENT STRIPING	13000	LF	$ 0.25	$3,250
5	TRAFFIC SIGNAL	1	EACH	$ 250,000.00	$250,000
6	EARTHWORK	25490	CY	$ 15.00	$382,350
7	RETAINING WALL	2015	SF	$ 35.00	$70,525
8	EROSION CONTROL (%)	1	LS	5.00%	$58,390
9	LANDSCAPING (%)	1	LS	2.00%	$23,360
10	ILLUMINATION (%)	1	LS	5.00%	$58,390
11	DRAINAGE/WATER QUALITY (%)	1	LS	12.00%	$140,150
12	CLEARING AND GRUBBING (%)	1	LS	3.00%	$35,040
13	UTILITY RELOCATION (%)	1	LS	3.00%	$35,040
14	SIGNING (%)	1	LS	2.00%	$23,360
15	TRAFFIC CONTROL (%)	1	LS	15.00%	$175,180
16	SURVEYING (%)	1	LS	5.00%	$58,390
	ROADWAY CONSTRUCTION SUBTOTAL				**$1,952,695**
	CONTINGENCY			**40%**	**$781,078**
	PRELIMINARY ENGINEERING			**10%**	**$273,380**
	ROADWAY CONSTRUCTION ENGINEERING			**15%**	**$410,070**
	CONSTRUCTION & ENGINEERING TOTAL				**$3,417,223**

#X-3 - 1st Street @ Del Mar Drive - With Dual left turn lanes (UGB Expansion)

				Engineer's Estimate (Parametrix)	
ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	1	LS	10.00%	$189,800
2	HMAC	3410	TON	$ 80.00	$272,800
3	AGGREGATE BASE	3110	TON	$ 25.00	$77,750
4	CONCRETE CURB AND SIDEWALK	2880	LF	$ 50.00	$144,000
5	12 INCH DRAIN PIPE, 5 FT DEPTH	2500	LF	$ 45.00	$112,500
6	CONCRETE INLET	12	EACH	$ 1,800.00	$21,600
7	PAVEMENT STRIPING	14440	LF	$ 0.25	$3,610
8	TRAFFIC SIGNAL	1	EACH	$ 250,000.00	$250,000
9	EARTHWORK	4440	CY	$ 15.00	$66,600
10	RR CROSSING SIGNAL	1	EACH	$ 500,000.00	$500,000
11	EROSION CONTROL (%)	1	LS	3.00%	$43,470
12	LANDSCAPING (%)	1	LS	1.50%	$21,730
13	ILLUMINATION (%)	1	LS	3.00%	$43,470
14	WATER QUALITY (%)	1	LS	5.00%	$72,440
15	CLEARING AND GRUBBING (%)	1	LS	3.00%	$43,470
16	UTILITY RELOCATION (%)	1	LS	3.00%	$43,470
17	SIGNING (%)	1	LS	1.50%	$21,730
18	TRAFFIC CONTROL (%)	1	LS	7.00%	$101,420
19	SURVEYING (%)	1	LS	4.00%	$57,950
	ROADWAY CONSTRUCTION SUBTOTAL				**$2,087,810**
	CONTINGENCY			**40%**	**$835,124**
	PRELIMINARY ENGINEERING			**10%**	**$292,290**
	ROADWAY CONSTRUCTION ENGINEERING			**15%**	**$438,440**
	CONSTRUCTION & ENGINEERING TOTAL				**$3,653,664**

#X-5 - 1st Street @ Willamette Street - With Dual Left turn lanes at Del Mar (UGB Expansion)

				Engineer's Estimate (Parametrix)	
ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	1	LS	10.00%	$137,300
2	HMAC	2120	TON	$ 80.00	$169,600
3	AGGREGATE BASE	1970	TON	$ 25.00	$49,250
4	CONCRETE CURB AND SIDEWALK	2550	LF	$ 50.00	$127,500
5	12 INCH DRAIN PIPE, 5 FT DEPTH	2300	LF	$ 45.00	$103,500
6	CONCRETE INLET	12	EACH	$ 1,800.00	$21,600
7	PAVEMENT STRIPING	13730	LF	$ 0.25	$3,433
8	EARTHWORK	2810	CY	$ 15.00	$42,150
9	RR CROSSING SIGNAL	1	EACH	$ 500,000.00	$500,000
10	EROSION CONTROL (%)	1	LS	4.00%	$40,680
11	LANDSCAPING (%)	1	LS	1.50%	$15,260
12	ILLUMINATION (%)	1	LS	3.00%	$30,510
13	WATER QUALITY (%)	1	LS	5.00%	$50,850
14	CLEARING AND GRUBBING (%)	1	LS	3.00%	$30,510
15	UTILITY RELOCATION (%)	1	LS	3.00%	$30,510
16	SIGNING (%)	1	LS	1.50%	$15,260
17	TRAFFIC CONTROL (%)	1	LS	10.00%	$101,700
18	SURVEYING (%)	1	LS	4.00%	$40,680
	ROADWAY CONSTRUCTION SUBTOTAL				**$1,510,293**
	CONTINGENCY			**40%**	**$604,117**
	PRELIMINARY ENGINEERING			**10%**	**$211,440**
	ROADWAY CONSTRUCTION ENGINEERING			**15%**	**$317,160**
	CONSTRUCTION & ENGINEERING TOTAL				**$2,643,010**

Scenario 2: Plus UGB Build-out

Project Number	X-6
Section Summary	1st Street at Cleveland Street
Roadway Classification	Arterial
Improvement	Signalize intersection Associated bike lane and sidewalks Add NB right turn lanes

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$30,535
2	AGGREGATE BASE	300	TON	25.00	$7,500
3	SEEDING-LANDSCAPING	1	LS	5,000.00	$5,000
4	EARTHWORK	100	CY	15.00	$1,500
5	EROSION CONTROL	0.15	AC	5,000.00	$750
6	LEVEL 2, 1/2 INCH DENSE HMAC	180	TON	80.00	$14,400
7	CONCRETE CURB AND SIDEWALK	200	LF	50.00	$10,000
8	CONCRETE INLET	4	EACH	1,800.00	$7,200
9	CONCRETE MANHOLE	1	EACH	3,000.00	$3,000
10	12 INCH DRAIN PIPE, 5 FT DEPTH	200	LF	45.00	$9,000
11	SIGNAL	1	LS	200,000.00	$200,000
13	PAVEMENT STRIPING	1000	LF	0.25	$250
14	CLEARING AND GRUBBING	5%	LS	1.00	$12,930
15	SIGNING	2%	LS	1.00	$5,431
16	TRAFFIC CONTROL	5%	LS	1.00	$13,848
17	SURVEYING	5%	LS	1.00	$14,540
	ROADWAY CONSTRUCTION SUBTOTAL				$335,900
	CONTINGENCY(40%)				$134,400
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$117,600
	TOTAL				$587,900

Project Number	X-7
Section Summary	1st Street at Church Street
Roadway Classification	Arterial
Improvement	Intall Median

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$600
2	CONCRETE MEDIAN	150	SF	20.00	$3,000
3	PAVEMENT STRIPING	800	LF	0.25	$200
4	SIGNING	50%	LS	1.00	$1,600
5	TRAFFIC CONTROL	25%	LS	1.00	$1,200
	ROADWAY CONSTRUCTION SUBTOTAL				$6,600
	CONTINGENCY(40%)				$2,600
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$2,300
	TOTAL				$11,500

Project Number	X-8
Section Summary	Main Street/Mill Creek at 1st Street
Roadway Classification	Arterial
Improvement	Add SB left and WB right turn lanes Associated bike lane and sidewalks Signalize intersection

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$97,992
2	AGGREGATE BASE	500	TON	25.00	$12,500
3	SEEDING-LANDSCAPING	1	LS	8,000.00	$8,000
4	EARTHWORK	120	CY	12.00	$1,440
5	EROSION CONTROL	0.2	AC	5,000.00	$1,000
6	LEVEL 2, 1/2 INCH DENSE HMAC	300	TON	80.00	$24,000
7	CONCRETE CURB AND SIDEWALK	300	LF	50.00	$15,000
8	CONCRETE INLET	3	EACH	1,800.00	$5,400
9	CONCRETE MANHOLE	1	EACH	3000	$3,000
10	12 INCH DRAIN PIPE, 5 FT DEPTH	200	LF	45.00	$9,000
11	SIGNAL AND INTERCONNECT	1	LS	250,000.00	$250,000
12	RAILROAD GATE & SIGNAL	1	LS	500,000.00	$500,000
13	BIKE LANE STENCIL	4	EA	75.00	$300
14	PAVEMENT STRIPING	1000	LF	0.25	$250
15	CLEARING AND GRUBBING	5%	LS	1.00	$41,495
16	SIGNING	2%	LS	1.00	$17,428
17	TRAFFIC CONTROL	5%	LS	1.00	$44,441
18	SURVEYING	5%	LS	1.00	$46,663
	ROADWAY CONSTRUCTION SUBTOTAL				$1,077,900
	CONTINGENCY(40%)				$431,200
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$377,300
	TOTAL				$1,886,400

Project Number	X-9
Section Summary	Main Street at 8th Street
Roadway Classification	Arterial
Improvement	Associated bike lane and sidewalks Signalize intersection

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$1,230
2	AGGREGATE BASE	10	TON	25.00	$250
3	SEEDING-LANDSCAPING	1	LS	2,000.00	$2,000
4	EARTHWORK	50	CY	15.00	$750
5	EROSION CONTROL	0.15	AC	5,000.00	$750
6	LEVEL 2, 1/2 INCH DENSE HMAC	15	TON	80.00	$1,200
7	CONCRETE CURB AND SIDEWALK	50	LF	50.00	$2,500
8	CONCRETE INLET	1	EACH	1,800.00	$1,800
9	12 INCH DRAIN PIPE, 5 FT DEPTH	25	LF	45.00	$1,125
12	PAVEMENT STRIPING	100	LF	0.25	$25
13	CLEARING AND GRUBBING	5%	LS	1.00	$500
14	SIGNING	2%	LS	1.00	$200
15	TRAFFIC CONTROL	5%	LS	1.00	$600
16	SURVEYING	5%	LS	1.00	$600
	ROADWAY CONSTRUCTION SUBTOTAL				$13,500
	CONTINGENCY(40%)				$5,400
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$4,700
	TOTAL				$23,600

Project Number	X-10
Section Summary	Aumsville Hwy/11th Street at Olney St
Roadway Classification	Arterial
Improvement	Signalize intersection Associated bike lane and sidewalks Add NB and SB right turn lanes

ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	10%	LS	1.00	$37,224
2	AGGREGATE BASE	400	TON	25.00	$10,000
3	SEEDING-LANDSCAPING	1	LS	8,000.00	$8,000
4	EARTHWORK	100	CY	12.00	$1,200
5	EROSION CONTROL	0.15	AC	5,000.00	$750
6	LEVEL 2, 1/2 INCH DENSE HMAC	200	TON	80.00	$16,000
7	CONCRETE CURB AND SIDEWALK	200	LF	50.00	$10,000
8	CONCRETE INLET	4	EACH	1,800.00	$7,200
9	CONCRETE MANHOLE	1	EACH	3000	$3,000
10	12 INCH DRAIN PIPE, 5 FT DEPTH	200	LF	45.00	$9,000
11	SIGNAL	1	LS	250,000.00	$250,000
13	PAVEMENT STRIPING	400	LF	0.25	$100
14	CLEARING AND GRUBBING	5%	LS	1.00	$15,763
15	SIGNING	2%	LS	1.00	$6,620
16	TRAFFIC CONTROL	5%	LS	1.00	$16,882
17	SURVEYING	5%	LS	1.00	$17,726
	ROADWAY CONSTRUCTION SUBTOTAL				$409,500
	CONTINGENCY(40%)				$163,800
	PRELIMINARY & CONSTRUCTION ENGINEERING (25%)				$143,300
	TOTAL				$716,600

1st Street Realignment Between Willamette Street and Main Street

				Engineer's Estimate (Parametrix)	
ITEM NO.	BID ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL
1	MOBILIZATION	1	LS	10.00%	$222,230
2	HMAC	3360	TON	$ 80.00	$268,800
3	AGGREGATE BASE	3220	TON	$ 25.00	$80,500
4	REMOVAL OF SUFACINGS	1500	SY	$ 8.00	$12,000
5	CONCRETE CURB AND SIDEWALK	5230	LF	$ 50.00	$261,500
6	12 INCH DRAIN PIPE, 5 FT DEPTH	4600	LF	$ 45.00	$207,000
7	CONCRETE INLET	25	EACH	$ 1,800.00	$45,000
8	PAVEMENT STRIPING	10600	LF	$ 0.25	$2,650
9	TRAFFIC SIGNAL	1	EACH	$ 250,000.00	$250,000
10	EARTHWORK	4600	CY	$ 15.00	$69,000
11	RR CROSSING SIGNAL	1	EACH	$ 500,000.00	$500,000
12	EROSION CONTROL (%)	1	LS	3.00%	$50,890
13	LANDSCAPING (%)	1	LS	1.50%	$25,450
14	ILLUMINATION (%)	1	LS	3.00%	$50,890
15	WATER QUALITY (%)	1	LS	5.00%	$84,820
16	CLEARING AND GRUBBING (%)	1	LS	3.00%	$50,890
17	UTILITY RELOCATION (%)	1	LS	3.00%	$50,890
18	SIGNING (%)	1	LS	1.50%	$25,450
19	TRAFFIC CONTROL (%)	1	LS	7.00%	$118,750
20	SURVEYING (%)	1	LS	4.00%	$67,860
	ROADWAY CONSTRUCTION SUBTOTAL				**$2,444,570**
	CONTINGENCY			**40%**	**$977,828**
	PRELIMINARY ENGINEERING			**10%**	**$342,240**
	ROADWAY CONSTRUCTION ENGINEERING			**15%**	**$513,360**
	CONSTRUCTION & ENGINEERING TOTAL				**$4,277,998**

APPENDIX G

TSDC Calculations

APPENDIX G
Calculation of TSDCs

1. INTRODUCTION

A Transportation System Development Charge (TSDC) is a one-time fee charged to new development that helps pay the costs of building transportation infrastructure (for example, roads or sidewalks) to support the overall transportation system. There are two types of TSDCs that local governments may adopt – a **reimbursement fee** that requires new development to pay for its share of the existing transportation system that it will use and an **improvement fee** that requires new development to pay for its share of future transportation projects that are needed to accommodate growth. Oregon Revised Statutes (ORS) 223.297 – 223.314 allow local governments to adopt one or both types of TSDC fees, regulates the process for establishing TSDCs, and defines the type of transportation projects that may be built with TSDC funds.

The Aumsville Transportation System Plan (TSP) update process includes an analysis of a TSDC mechanism including calculation of cost basis, capacity basis, and likely funding that could be realized by applying this mechanism (including an estimated maximum fee).

Section 2 of this Appendix outlines the history, regulations, and processes related to updating the TSDC cost basis, capacity basis, and fee. Section 3 of this Appendix proposes a revised TSDC fee resulting from an updated reimbursement and improvement fee cost basis and capacity basis.

2. HISTORY, REGULATIONS AND PROCESS

The City of Aumsville currently does not have a TSDC although many other local jurisdictions in Marion County administer such programs, and Aumsville has SDCs for parks, water, wastewater, and stormwater infrastructure. Calculation of TSDC fees in some nearby cities (e.g., Aurora is an example) are based on Equivalent Dwelling Units (EDUs), with the number of trips generated by a new single family home equaling one (1) EDU. The Institute of Traffic Engineers (ITE) has produced a book which estimates the number of trips different types of development (for example, restaurants, light industrial manufacturers, etc.) produce[1]. For fee assessment purposes, the number of trips a development produces is used to calculate its EDU number and TSDC fee.

As a part of developing the City of Aumsville's TSP, the City has the opportunity to evaluate implementation of a TSDC fee. There are three basic steps to evaluating the fee:

Step 1: Determine the growth in EDUs expected to result from new development over the life of the TSP (2009 to 2030)

Step 2: Determine the dollar value of the transportation infrastructure improvements that will be needed to accommodate traffic associated with new development.

Step 3: Determine the maximum TSDC fee the City may charge by dividing the costs of transportation infrastructure in Step 2 by the total number of new EDUs in Step 1.

Step 1: Determine EDUs

To determine the number of Equivalent Dwelling Units (EDUs) anticipated over the planning period in the Aumsville UGB, a relatively straight-forward process was undertaken. First, an inventory of developable land within the City of Aumsville's Urban Growth Boundary (UGB) was developed in *TSP Final Technical Memorandum #7: Future Conditions*. This inventory was used to estimate the number of future trips expected to result from new development by 2030. This analysis assumed that all residential, commercial,

[1] Trip Generation, 8th Edition, Institute of Transportation Engineers, 2008.

industrial, Interchange Development and publicly-zoned land would be developed by 2030 (in fact demand for population and employment growth may exceed the available developable land within the City).[2]. These new trips have been converted into EDUs per relevant land use type, as shown below:

Calculation of Equivalent Dwelling Units (EDUs)

Land Use Type	Growth	Expected New EDUs (2030)
Single Family Residential	419 Dwellings	419
Multi-Family Residential	245 Dwellings	170
Commercial[3]	65,130 sq. ft. Gross Leaseable Area	263
Interchange Development	56.67 Acres	1,333
Industrial	50.06 Acres	330
Elementary School	164,110 sq. ft. Gross Floor Area	265
Government Office	4,360 sq. ft. Gross Floor Area	5
Total EDUs		**2,785**

Step 2: Determine Cost of Infrastructure

It is proposed that Aumsville consider an improvement fee approach to TSDCs in which developers pay for a share of future transportation projects that are needed to accommodate growth. Calculation of the cost basis for this are described below.

Improvement Fee Cost Basis

Calculation of the cost basis for development of a transportation improvement fee is based on the list of transportation projects needed to provide capacity for future development through 2030. This project list was developed with City staff, elected officials, and the general public through the process of developing the City's 2010 TSP. The TSP includes a proposed project list that will be considered for adoption by the Aumsville City Council. Attached to this Appendix is a table that summarizes this list of projects which can be used to determine an improvement fee cost basis. Included are road and intersection improvements needed to accommodate growth in vehicular traffic, along with proposed new sidewalk and bike lane projects to fill in gaps in the existing system. These additional projects would serve important bicycle and pedestrian routes within the City of Aumsville.

Step 3: Determine the TSDC Fee

As stated above, once the number of future trips (capacity basis) and infrastructure costs (cost basis) are known, the maximum imposable TSDC fee is obtained by dividing the cost basis by the capacity basis. These calculations would take place separately for the reimbursement and improvement TSDC fees. Though the City may charge the maximum TSDC fees possible, the City may also choose to charge a lower fee per EDU if they desire.

3. DRAFT TSDC COST BASIS AND FEES

Attached to this Appendix is a table that summarizes capital improvement project list and total TSDC fee calculation. The following information describes the data found in this table.

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[2] See Technical Memorandum #7 for additional information regarding future development assumptions

[3] The EDUs for commercial developments were reduced by 10 percent, based on the assumption that a conservative 10 percent of trips to commercial developments (for example, trips to a convenience store or gas station) are "pass-by" trips. A trip is considered "pass-by" if it is a stop between another origin and destination. In other words, if someone stops at the grocery store on the way home from work, the trip to the store is not a new trip, it is a part of the person's commute, and the grocery store would not be charged a TSDC fee for the trip.

Table 1: Capital improvement Project (CIP) List and Total TSDC Fee Calculation

TSP ID No. & Project Location and Improvement

Numbers correspond to project descriptions in the Aumsville TSP. Costs are calculated as described in Appendix A of this Technical Memorandum.

Cost

The total estimated project costs were developed, including a 40 percent contingency and preliminary and construction engineering. Cost estimates do not include right-of-way acquisition or geotechnical analysis (if needed).

Capacity Increasing & TSDC Eligible Costs

ORS 223.307(2) states that "improvement fees may be spent only on capacity increasing capital improvements… related to the need for increased capacity to provide service for future users." All the projects on the list are designed exclusively to increase either vehicular capacity at intersections or provide pedestrian and/or pedestrian and bicycling capacity where existing facilities (for example, sidewalks and bike lanes) do not exist. An element of Project #4 – the southbound left turn lane at the intersection of 1st Street with Willamette Street – has been defined as a safety enhancement and not capacity-adding. Additionally, the incremental pedestrian and bicycle system enhancements associated with signalization at the intersection of 1st Street with Main Street are also not included as capacity-enhancing. Therefore, an element of the cost of these projects has been identified as TSDC ineligible and the cost estimate has been reduced by 5 percent accordingly in the attached table.

City Funded

It is anticipated that the City will be the sole jurisdiction funding CIP projects on City and Marion County-owned roadways and it is assumed that the City will contribute 20 percent towards the costs of CIP projects on ODOT facilities.

Growth Serving & Growth Serving Costs

ORS 223.307(2) states that "improvement fees may be spent only on capacity increasing capital improvements… related to the need for increased capacity to provide service for future users." Most bicycle and pedestrian improvement projects specifically designed to provide non-motorized capacity will benefit existing and future users equally. Because TSDC funds cannot be spent on facilities constructed to benefit existing users, only 38 percent of the costs of pedestrian and bicycling projects are included in the TSDC cost-basis (the Aumsville TSP update assumes that by 2030, 38 percent of those living in Aumsville will be new residents). In the case of improvement projects #27 and #34, 100 percent of the costs are assumed to be growth-serving as these projects are located at the edge of the UGB in a currently undeveloped area. It is assumed that the new facilities will almost exclusively serve new residents traveling to other locations. All proposed street and/or intersection projects specifically designed to provide increased vehicular capacity occur at intersections which currently meet applicable Volume/Capacity or Level of Service standards of the jurisdictions which manage them under existing traffic levels. Therefore, 100 percent of the costs for these projects are considered growth serving.

Improvement Fee Cost Basis, Capacity Basis, and Fee

Per Step 1 of Section 2, 2,785 EDUs worth of new development is expected in the City of Aumsville between 2008 and 2030. The improvement fee per EDU is calculated by dividing the improvement fee cost-basis by the new EDUs.

Total TSDC per EDU

Maximum improvement fee-based TSDCs that may be charged under this methodology.

Table 1: Capital Improvement Project (CIP) List and Total TSDC Fee Calculation

TSP ID No.	Project Location and Improvement	Improvement	Cost	Capacity Increasing %	TSDC Eligible Costs	% City Funded	Amount City Funded	Growth Serving %	Growth Related Costs
1	OR 22 EB Ramps @ Shaw Hwy:	- Install traffic signal and widen to add SB left turn lane, and dual WB left turn lanes - Widen 1st Street south of intersection to approx. 600 feet to provide 2 NB and 2 SB thru lanes	$1,600,000	100%	$1,600,000	20%	$320,000	100%	$320,000
2	1st Street @ Del Mar Drive	- Install traffic signal and widen to add 2nd NB and SB thru lanes approx 500 feet north of intersection and 300 feet south, left turn lanes for all movements, and WB right turn lane - Transition back to single NB and SB thru lanes between Del Mar Drive and Willamette Street - Improve railroad crossing of Del Mar west of intersectionand install automatic gates, interconnect with signal on 1st (required as part of roadway improvement)	$3,500,000	100%	$3,500,000	100%	$3,500,000	100%	$3,500,000
4	1st Street @ Willamette Street	- Install southbound left turn lane - Complete transition for approx 300 feet from noth and improvement 2-lane cross-section with bike lanes and sidewalks for approx. 650 feet to south - Install railroad crossing gates and relocate lcoal street access on west side of 1st Street (required as part of roadway improvement)	$2,300,000	95%	$2,185,000	100%	$2,185,000	100%	$2,185,000
5	1st Street at Main Street	- Signalize intersection, add bike lane and sidewalk enhancements - Install automatic railroad gates and interconnect with signal at 1st Street	$1,800,000	95%	$1,710,000	100%	$1,710,000	100%	$1,710,000
7	11th Street and Olney Street	- Signalize intersection	$650,000	100%	$650,000	100%	$650,000	100%	$650,000
24	Main Street/Mill Creek Road, Porter Boone Park to 11th Street	Install bicycle lanes	$117,000	100%	$117,000	100%	$117,000	38%	$44,460
25	Main Street, 11th to 3rd Streets	Complete sidewalk gaps on south side of Main Street	$480,000	100%	$480,000	100%	$480,000	38%	$182,400
26	Main Street/Mill Creek Road, 1st Street to Bishop Road	Complete sidewalk gap and add bike lanes on north side and shoulder on south side	$420,000	100%	$420,000	100%	$420,000	38%	$159,600
27	Bishop Road, Mill Creek Road to future park	Install multi-use path	$163,000	100%	$163,000	100%	$163,000	100%	$163,000
28	11th Street, Olney to Main Streets	Install bicycle lanes	$408,000	100%	$408,000	100%	$408,000	38%	$155,040
29	11th Street, south of Olney Street	Complete sidewalk on west side to Olney	$198,000	100%	$198,000	100%	$198,000	38%	$75,240
30	11th Street, Main to Hazel Streets	Complete sidewalks	$289,000	100%	$289,000	100%	$289,000	38%	$109,820
31	Del Mar Drive, 10th to 11th Streets	Install multi-use path	$40,000	100%	$40,000	100%	$40,000	38%	$15,200
32	Cleveland Street, 11th to 1st Streets	Complete sidewalks	$240,000	100%	$240,000	100%	$240,000	38%	$91,200

TSP ID No.	Project Location and Improvement	Improvement	Cost	Capacity Increasing %	TSDC Eligible Costs	% City Funded	Amount City Funded	Growth Serving %	Growth Related Costs
33	5th Street, Cleveland to Main Streets	Compete sidewalks	$90,000	100%	$90,000	100%	$90,000	38%	$34,200
34	Willamette Street, east terminus to Puma Street	Install multi-use path	$40,000	100%	$40,000	100%	$40,000	100%	$40,000
35	Carmel Drive to Windemere Street	Install multi-use path	$30,000	100%	$30,000	100%	$30,000	38%	$11,400
36	1st Street to York Street	Install multi-use path	$30,000	100%	$30,000	100%	$30,000	38%	$11,400

Note: Projects in the TSP that are not included in this table were not considered for TSDC eligibility.

Improvement Fee Cost Basis	**$9,457,960**
(divided) Improvement Fee Capacity Basis	**2,785**
Improvement Fee Per EDU	**$3,396.04**

Table 2: Capital Improvement Project (CIP) List and Total TSDC Fee Calculation with UGB Expansion

TSP ID No.	Project Location and Improvement	Improvement	Cost	Capacity Increasing %	TSDC Eligible Costs	% City Funded	Amount City Funded	Growth Serving %	Growth Related Costs
X-1	OR 22 WB Ramps @ Shaw Hwy	- Widen and restripe to rpovide NB left turn lane	$300,000	100%	$300,000	20%	$60,000	100%	$60,000
X-2	OR 22 EB Ramps @ Shaw Hwy:	- Modify existing EB off ramp to provide direct connection to SB 1st with addition of 2nd SB thru lane to receive vehicles exiting freeway - Install traffic signal and widen to add SB left turn lane. Modify existing off-ramp to sllow right turn only, and dual WB left turn lanes - Widen 1st Street south of intersection to approx. 600 feet to provide 2 NB and 2 SB thru lanes	$3,400,000	100%	$3,400,000	20%	$680,000	100%	$680,000
X-3	1st Street @ Del Mar Drive	- Install traffic signal and widen to add 2nd NB and SB thru lanes approx 500 feet north of intersection and 300 feet south, left turn lanes for all movements, and WB right turn lane - Transition back to single NB and SB thru lanes between Del Mar Drive and Willamette Street - Improve railroad crossing of Del Mar west of intersectionand install automatic gates, interconnect with signal on 1st (required as part of roadway improvement)	$3,700,000	100%	$3,700,000	100%	$3,700,000	100%	$3,700,000
X-5	1st Street @ Willamette Street	- Install southbound left turn lane - Complete transition for approx 300 feet from noth and improvement 2-lane cross-section with bike lanes and sidewalks for approx. 650 feet to south - Install railroad crossing gates and relocate lcoal street access on west side of 1st Street (required as part of roadway improvement)	$2,600,000	95%	$2,470,000	100%	$2,470,000	100%	$2,470,000
X-6	1st Street @ Cleveland Street	- Install signal when warranted and add NB left turn lane	$590,000	100%	$590,000	100%	$590,000	100%	$590,000
X-7	1st Street @ Church Street	- Restripe to right-in / right-out movements	$12,000	100%	$12,000	100%	$12,000	100%	$12,000
X-8	1st Street at Main Street	- Signalize intersection, add bike lane and sidewalk enhancements - Add SB left turn lane and WB right turn lane - Install automatic railroad gates and interconnect with signal at 1st Street	$1,900,000	95%	$1,805,000	100%	$1,805,000	100%	$1,805,000
X-10	11th Street and Olney Street	- Signalize intersection	$720,000	100%	$720,000	100%	$720,000	100%	$720,000
24	Main Street/Mill Creek Road, Porter Boone Park to 11th Street	Install bicycle lanes	$117,000	100%	$117,000	100%	$117,000	38%	$44,460
25	Main Street, 11th to 3rd Streets	Complete sidewalk gaps on south side of Main Street	$480,000	100%	$480,000	100%	$480,000	38%	$182,400

TSP ID No.	Project Location and Improvement	Improvement	Cost	Capacity Increasing %	TSDC Eligible Costs	% City Funded	Amount City Funded	Growth Serving %	Growth Related Costs
26	Main Street/Mill Creek Road, 1st Street to Bishop Road	Complete sidewalk gap and add bike lanes on north side and shoulder on south side	$420,000	100%	$420,000	100%	$420,000	38%	$159,600
27	Bishop Road, Mill Creek Road to future park	Install multi-use path	$163,000	100%	$163,000	100%	$163,000	100%	$163,000
28	11th Street, Olney to Main Streets	Install bicycle lanes	$408,000	100%	$408,000	100%	$408,000	38%	$155,040
29	11th Street, south of Olney Street	Complete sidewalk on west side to Olney	$198,000	100%	$198,000	100%	$198,000	38%	$75,240
30	11th Street, Main to Hazel Streets	Complete sidewalks	$289,000	100%	$289,000	100%	$289,000	38%	$109,820
31	Del Mar Drive, 10th to 11th Streets	Install multi-use path	$40,000	100%	$40,000	100%	$40,000	38%	$15,200
32	Cleveland Street, 11th to 1st Streets	Complete sidewalks	$240,000	100%	$240,000	100%	$240,000	38%	$91,200
33	5th Street, Cleveland to Main Streets	Compete sidewalks	$90,000	100%	$90,000	100%	$90,000	38%	$34,200
34	Willamette Street, east terminus to Puma Street	Install multi-use path	$40,000	100%	$40,000	100%	$40,000	100%	$40,000
35	Carmel Drive to Windemere Street	Install multi-use path	$30,000	100%	$30,000	100%	$30,000	38%	$11,400
36	1st Street to York Street	Install multi-use path	$30,000	100%	$30,000	100%	$30,000	38%	$11,400
								Improvement Fee Cost Basis	**$10,389,960**
								(divided) Improvement Fee Capacity Basis	**3,783**
								Improvement Fee Per EDU	**$2,746.49**

APPENDIX H

Technical Memoranda Prepared for TSP

APPENDIX H
TECHNICAL MEMORANDA PREPARED FOR TSP

This appendix lists all of the technical memoranda that were prepared to support development of the Aumsville TSP. These documents were initially prepared in draft form and reviews by members of the Technical Advisory Committee (TAC) who suggested revisions and/or corrections where appropriate. Most of these documents were also reviewed by the Planning Advisory Committee (PAC) who added helpful comments, corrections and perspectives that were ultimately reflected in the final TSP document.

Technical memoranda prepared include:

- Technical Memorandum #1: Purpose and Need
- Technical Memorandum #2: Goals and Criteria
- Technical Memorandum #3: IAMP Boundary and Modeling Requirements
- Technical Memorandum #4: Existing Plans, Policies, Standards and Laws
- Technical Memorandum #5: Inventory
- Technical Memorandum #6: Existing Conditions
- Technical Memorandum #7: Future Conditions
- Technical Memorandum #8: Transportation Needs and Potential Improvements
- Technical Memorandum #9: Preferred Improvements
- Technical Memorandum #10: Costs and Financing