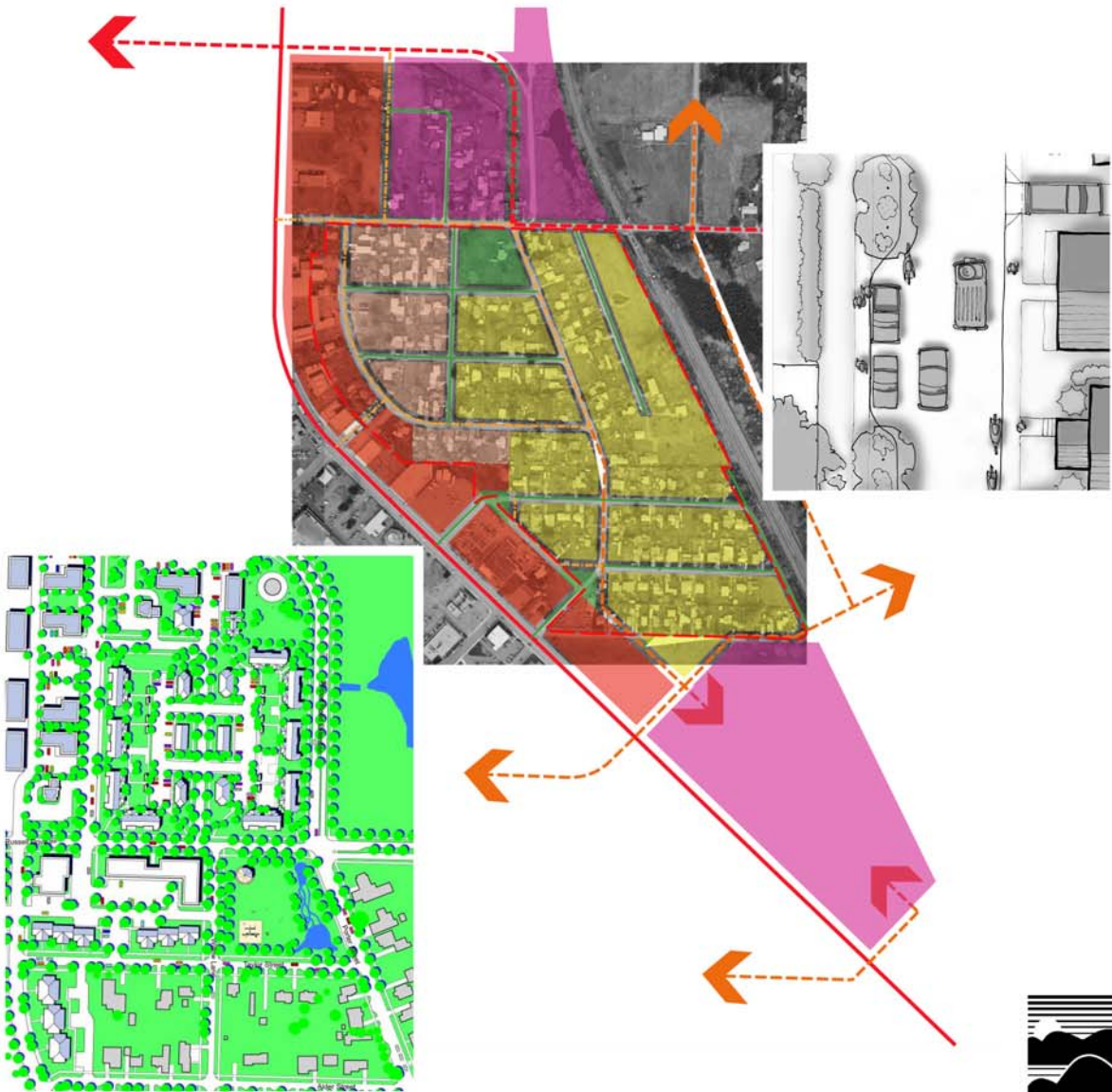


CITY OF LEBANON

Russell Drive Area Mixed Use Neighborhood Center Plan

Final Draft
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RUSSELL DRIVE AREA MIXED USE NEIGHBORHOOD CENTER PLAN

An Oregon Transportation and Growth Management Project
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PREFACE

The Russell Drive Area Mixed Use Neighborhood Center Plan is a project financed by a Transportation and Growth Management (TGM) grant from the State of Oregon. The purpose of the project is to integrate multi-modal transportation and highway access management with mixed-use land development. The planning process included five phases: 1) Project Start Up, 2) Collection of Data and Preparation of Technical Studies, 3) Plan Development and Refinement, 4) Preparation of a Final Plan, and 5) Preparation of an Implementation Strategy and Presentations.

This document is the final draft plan, prepared for Phase 4, Task 14: Prepare final version of Russell Drive Mixed Use Neighborhood Center Plan. Preferred land use and multi-modal transportation plans are presented, along with street sections and an illustrative plan depicting what mixed use development might look like within a neighborhood center. The plan includes the elements of commercial development, housing, infrastructure and design, and annexation.

The Russell Drive Plan establishes direction for future development and redevelopment in the Russell Drive area. It promotes the principles of pedestrian scaled design, provision of urban infrastructure and services, and preservation of neighborhood character.

I. BACKGROUND

A. Project Area Overview

The Russell Drive area is located south of downtown Lebanon, west of the Burlington Northern railroad tracks and east of the Santiam Highway (Highway 20). The northern boundary of the area is Russell Drive, and the southern boundary is Gilbert Street. The study area is roughly 52 acres in size, and is developed with approximately 150 older single-family residences. To the west of the study area is a mix of neighborhood and highway commercial development along the highway. The majority of the study area is located outside the city limits, but its entirety is located within the Lebanon Urban Growth Boundary (UGB).

It became apparent early in the project that the plan would need to consider land uses and transportation connections outside the study area boundaries. Consequently, the plan diagram contained herein shows land use and transportation facilities north to Airport Road, west to Highway 20, south to the vicinity of Cascade Drive, and east to approximately one block east of the railroad.

The Russell Drive area is located within the boundaries of the Cheadle Lake Urban Renewal District. The Urban Renewal Plan contains an analysis of existing conditions and demographic data and action items including infrastructure and other development projects. The highest priority action item affecting the study area is the construction of a collector road east of Highway 20. Extension of water, sanitary sewer, and stormwater facilities through the area are also proposed.

B. Project Objectives

As stated in the project scope of work, the project objectives are as follows.

1. Prepare a plan for development and redevelopment of the Project Area that can be built incrementally and that includes an off-highway mixed-use center. This entails:
 - a land use pattern with more efficient use of land and higher residential densities;
 - corresponding changes to the Comprehensive Plan and development codes.
2. Coordinate effectively with the ongoing City Transportation System Plan process.
3. Create a local street network that reduces local traffic reliance on Highway 20.
4. Conduct a traffic analysis/impact study to ensure that:
 - changes in street and access management comply with Oregon Department of Transportation (ODOT/Agency) standards;

- traffic is focused in appropriate patterns, to include design of the local street system (including new frontage road and possible closure of one Highway access point) to:
 - bring all streets up to City standards with sidewalks, bike lanes and/or multimodal paths, and other pedestrian/bicycle amenities;
 - establish off-highway multi-modal connectivity with commercial areas and neighborhoods to the north, east and southeast, as well as the new elementary school and recreational areas to the east.
5. Evaluate opportunities for future multi-modal transportation facilities, such as a passenger rail transit station in the area (complementing the Downtown Depot facility) that could also serve as a hub for other transit services (e.g., buses).
 6. In concert with the area's new street/multi-modal transportation plan, develop a plan for other urban services and a strategy to implement it. (The lack of urban services and paved streets provides the opportunity to reconfigure the area to more efficiently provide connectivity and the full range of services).
 7. Develop an affordable housing strategy and implementation plan to:
 - encourage the development and redevelopment of attractive affordable housing that enhances the livability of the neighborhood;
 - assist persons in the neighborhood with housing needs (e.g., displaced persons; those who might qualify for housing subsidies) that could be addressed through cooperative efforts with Linn County Affordable Housing.

C. Public Input

Public input was gathered at three public meetings held on July 9, September 21, and December 3, 2002. At the first meeting, residents were presented with an overview of the project, an analysis of existing conditions, and a slideshow depicting examples of mixed use development that might work in the Russell Drive neighborhood. Roughly forty questions were put to the consultant team, which were then answered in writing and distributed to the attendees at the second meeting. Many of the questions had to do with how to get urban services to the neighborhood and how to preserve its residential character and affordability.

At the second public meeting, participants broke into teams and created their own land use and transportation plan for the Russell Drive Neighborhood. Some common themes of the teams' work include:

- Neighborhood residents want to see the neighborhood kept intact. Don't place a new frontage road in the middle of the neighborhood. Don't split the neighborhood.
- Preserve residential character, residential uses.
- Keep options open. Whatever decisions are made now, keep options open for the future. What we do now should still work 20 years from now.
- Pedestrian safety is an issue throughout the neighborhood.
- All three of the team alternatives moved the through-route eastward from the original Primrose alignment.

- There is general sentiment in favor of annexation and development of water and sewer facilities. Make it happen sooner rather than later.

At the third public meeting, participants were presented with two draft plan alternatives: the Porter Alternative and the Primrose Alternative. Each plan featured different land use and transportation layouts, and different locations for a potential future neighborhood park. At the end of the meeting, participants placed a dot on a map showing where they thought the park should be located. Preferences are summarized on the attached Park Location Preference map and were incorporated into the second draft plan diagrams. Comments at this public meeting included preference for the Porter alternative, desire to have a neighborhood park with minimal impacts on existing residences, and continued concern about property impacts from road improvements.

Comments on the second draft alternatives were received from the Technical Advisory Committee on January 8, 2003, and the Planning Commission and City Council on January 15. Those comments informed the recommended plan concepts and the various components of the first and second drafts of the plan, which were revised to become the final draft plan presented here.

D. Summary of Plan Alternatives

A brief summary of the two plan alternatives is presented below. A more detailed description of each alternative, including graphics, is found in the Plan Appendix (Appendix A).

1. Alternative 1: Porter

The Porter alternative was based on the assumption that a single collector roadway would run through the neighborhood, connecting Airport Road to an extension of Market Street. This alternative focused automobile traffic onto the collector roadway, relying on a coarse-grained transportation system, taking the existing rural (paving only) profile of Porter Street, and upgrading it to an urban collector complete with curbs, gutters, sidewalks, street trees, and utilities.

2. Alternative 2: Primrose

The basic premise of the Primrose alternative was to provide a finer-grained transportation system throughout the study area, spreading lower volumes of traffic over roadways of intermediate classifications. Both Porter and Primrose would be improved as a neighborhood collector, a new roadway classification combining collector and local road design elements. Porter and Primrose split at their intersection and continue to independent connections with Russell Drive to the north of the study area.

E. Overview of Recommended Plan Concepts

The Porter and Primrose Alternatives started with some similar features and some dissimilar features. As the alternatives were refined into second drafts, they became more similar and the preferred elements began to naturally emerge. The preferred plan constitutes the desirable features of the original Porter and Primrose alternatives.

The key recommended plan concepts include:

- Preserving residential character
- Preserving existing affordable housing
- Accommodating street improvements within existing rights-of-way as much as possible
- Including traffic calming features and strong pedestrian and bicycle connections in the design
- Establishing a land use transition from more intense to less intense from west to east, including buffering from the highway
- Providing opportunities for limited commercial services in the neighborhood mixed use area
- Providing a neighborhood park
- Facilitating annexation and extension of city utilities

II. PREFERRED LAND USE PLAN

The preferred land use plan is depicted in Figure 1. As shown on the diagram, land use generally progresses from more intensive commercial uses along the highway to less intensive residential uses near the railroad. A neighborhood mixed use area provides a transition between the commercial and residential designations. The neighborhood park is centrally located on the south side of Russell Drive.

In addition, transportation challenges at the western ends of Russell Street and Truman Street are resolved by retaining right of way connections but planning for barriers to through auto access. These spaces become mini-parks, places where pedestrians and bicyclists can get through and amenities such as open space and landscaping could be provided. If needed for connectivity in the future, vehicle access could be restored.

A. Proposed Land Use Designations

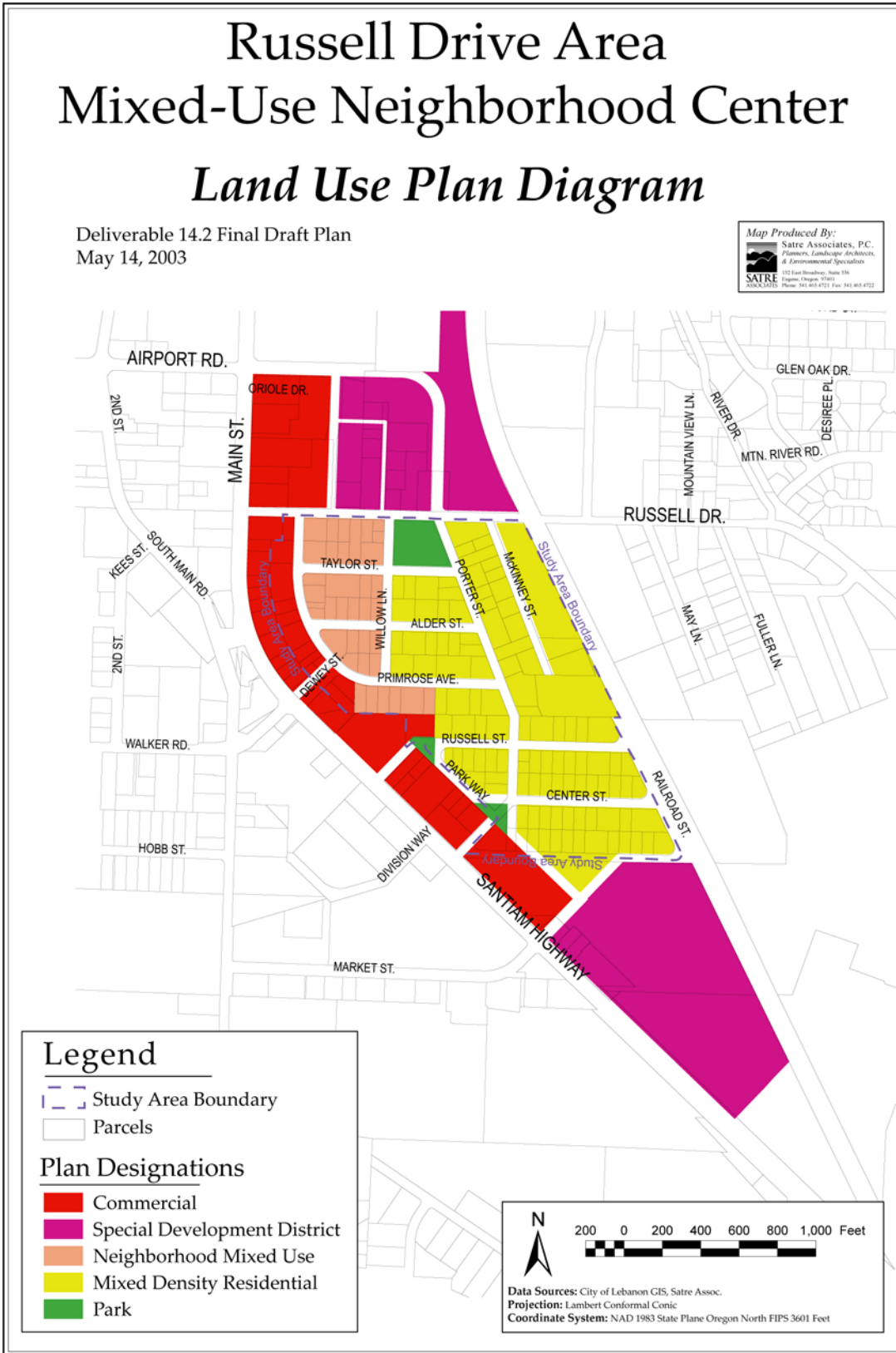
The preferred plan utilizes four plan designations: Commercial, Neighborhood Mixed Use, Mixed Density Residential, and Parks. Outside the study area is an additional designation: Special Development District, applied to the area south of the proposed Market Street extension and north of Russell Drive. The intended land uses within each of these designations are described below.

This plan assumes that development will happen incrementally over time. As infill does occur, residential density in the study area will increase. However, there is not a recommended mandatory increase in density in this plan. Density will be a function of the development standards (minimum lot size, setbacks, etc.) in the Lebanon Zoning Ordinance. A summary of potential buildout in the study area, including future numbers of dwellings and total population, is found in the Plan Appendix (Appendix B).

1. Commercial

The Commercial designation lies along the western edge of the study area and is primarily developed with highway commercial uses. The Commercial designation is proposed to expand to include all of the properties on the west side of Primrose Street. The plan encourages this area to transform over time into a mix of uses that preserve the through movement of the highway and better blend into the neighborhood. Residential uses are allowed by current zoning if located above commercial uses. New development should consolidate access points onto the highway, provide internal pedestrian and vehicular connections, and complement the character of the neighborhood.

Figure 1: Preferred Land Use Plan



2. Neighborhood Mixed Use

Neighborhood Mixed Use is a new comprehensive plan designation intended as primarily residential, with flexibility to allow neighborhood commercial services. Commercial activity should not occupy more than 5,000 square feet in any single structure. The types of businesses envisioned in this area include a coffee shop, deli, bakery, small office, or day care. Implementation of this designation would be through a new Neighborhood Mixed Use zone combining elements of the Neighborhood Commercial and Mixed Density Residential zones.

3. Mixed Density Residential

Mixed Density Residential is an existing comprehensive plan designation applied in the heart of the Russell Drive neighborhood. The intent is to allow for continued use of existing residences, with gradual infilling and redevelopment on larger parcels. Unit types could include single family detached (the predominant existing unit type), small lot single family detached, single family attached, row house, condominium, and garden apartment. Implementation would be through the existing Residential Mixed Density (RM) zone.

4. Parks

The park designation is applied to the block bounded by Russell Drive, Porter, Taylor, and Willow Streets. It is envisioned as a neighborhood green, with open areas, pathways, benches, a gazebo, landscaping, and a play structure. No parking or restrooms are envisioned due to the small size of the park and the proximity to the residents it is intended to serve.

Two small triangles are designated as Parks where Russell Street and Truman Street are proposed to be closed to through auto traffic. These areas are intended to function as pocket parks, establishing a break in land use between the streets on either side. Amenities could include landscaping, benches, or hard surface improvements such as a plaza. Pedestrian and bicycle access would be preserved.

B. Changes in Land Use Designation

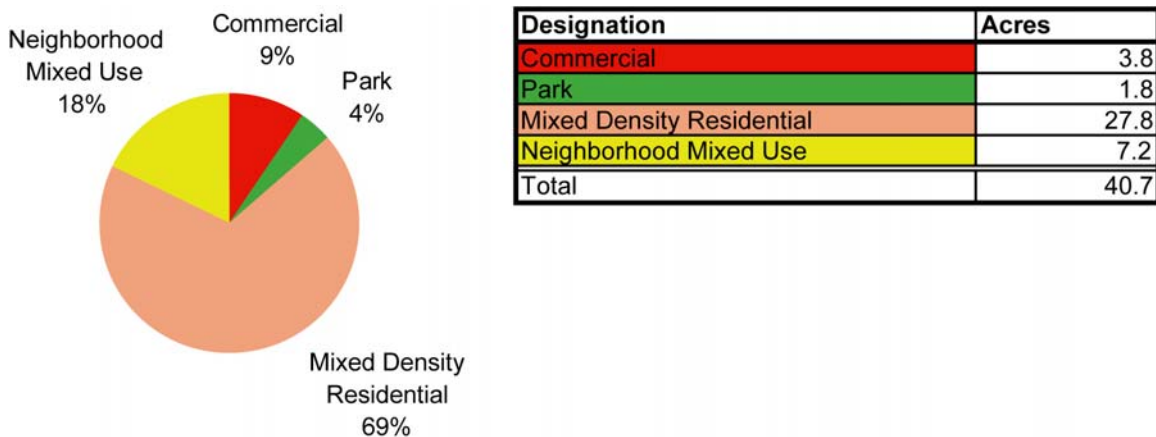
The comparison between existing and proposed land use designations within the study area is shown in Figures 2 and 3 below.

As shown in the figures, the proposed land use arrangement adds two new designations to the Russell Drive area, Neighborhood Mixed Use and Parks. In addition, the plan expands the Commercial area to include all of the properties on the west side of Primrose Street. The pie chart in Figure 3 illustrates the more balanced distribution of land use designations promoted by the plan.

Figure 2: Existing Land Use Designations



Figure 3: Proposed Land Use Designations



C. Commercial Development Plan

The results of the commercial market analysis conducted for this plan are not optimistic in terms of demand for commercial development within the study area. The analysis found that there exists an oversupply of commercial space in Lebanon, and that 25% of the city’s commercial development is located within a quarter mile of the study area. Given these existing conditions, the market for commercial development is likely limited to such businesses as specialty retail, small restaurants and coffee shops.

The preferred plan responds to the findings of the commercial market analysis by restricting the commercial designation primarily to its existing location along the highway, and promoting the concept of a flexible neighborhood mixed use designation, where commercial

development could occur if demand should increase. The neighborhood mixed use designation is geared toward the types of services most likely to succeed in this location.

Planned improvements that will positively influence the demand for commercial development in the study area include improving streets throughout the study area and extending public utilities to serve the neighborhood.

Figure 4: Example of Neighborhood Commercial Development



Source: neighborhoodsLAB

D. Housing Plan

Of the four proposed land use designations, mixed density residential occupies the largest share of the study area (69%). Another 18% is planned for neighborhood mixed use. Housing is the heart of the Russell Drive neighborhood. Over the course of the planning process, residents made it clear they want their neighborhood to retain its quiet residential character. However, much of the existing housing stock is in need of repair or replacement, and none of it is served by public water or sanitary sewer service.

The proposed plan allows for continued use of existing residences, gradual infill, and development of additional housing on larger properties. The two most critical issues related to housing in this neighborhood are livability and affordability. Still important, but to less of a degree, are density and design. The neighborhood is already developed at approximately six units per net acre in some areas, which is measurably denser than the rest of the city. In addition, many of the building blocks of great neighborhoods - skinny streets, short blocks, proximity to commercial services - are already in place. Thus, the proposed plan builds on what already exists and creates the vehicle for the Russell Drive neighborhood to reach its full potential.

Of great concern during the planning process was the impact the planned improvements would have on existing residents' property. The plan minimizes displacement by utilizing existing road alignments as much as possible, locating the park on a single tax lot not developed with a permanent residence, and promoting a gradual approach to infill and redevelopment at the discretion of individual property owners.

Linn County Affordable Housing (LCAH) is interested in partnering with the City and the County in an effort to address housing needs in the Russell Drive area. The Cheadle Lake Urban Renewal District plan documented the poor condition of much of the existing housing stock. This documentation can be used in applying for Community Development Block Grant money for housing rehabilitation loans, which could greatly improve the standard of living in the study area. At the same time, the City and County are exploring ways to pool resources in order to construct a catalyst improvement project, potentially the full improvement of Porter Street. In the future, once urban services are available to the area as a whole, it may make sense for LCAH to pursue the construction of affordable housing to serve residents of the Russell Drive area. In the short term, housing rehabilitation offers greater potential for funding and results.

The mixed density residential designation is proposed to accommodate a range of housing types, including standard single family detached, small lot single family detached, single family attached, row house, condominium, and garden apartment. Recommended design standards will be flexible enough to allow affordable construction while ensuring compatibility with existing residential development. Design standards are covered in Section V.

Figure 5: Example of Medium Density Residential Development



Source: neighborhoodsLAB

III. TRANSPORTATION PLAN

A. Roadway Classifications and Multi-Modal Features

The recommended Russell Drive area transportation plan strives to achieve the objective of moving local trips off the Santiam Highway while preserving the neighborhood's quiet residential character. It provides for the diversion of arterial traffic from Russell Drive onto Airport Road, which is proposed to extend eastward from its current terminus east of the Highway and curve south to meet Russell Drive at Porter Street. The section of Russell Drive between the Airport Road connection and Highway 20 becomes a neighborhood collector street lined with mixed use. All transportation modes are planned for as shown on the Transportation Diagram in Figure 6.

Porter and Primrose are both improved as Neighborhood Collectors until their confluence, where the street becomes a full collector. Bicycle lanes are located on both sides of the street. Pedestrian access is improved through the realignment of the Dewey Street intersection with Highway 20 and the use of sidewalk extensions at intersections throughout the neighborhood. In most locations, setback sidewalks are employed to improve pedestrian safety.

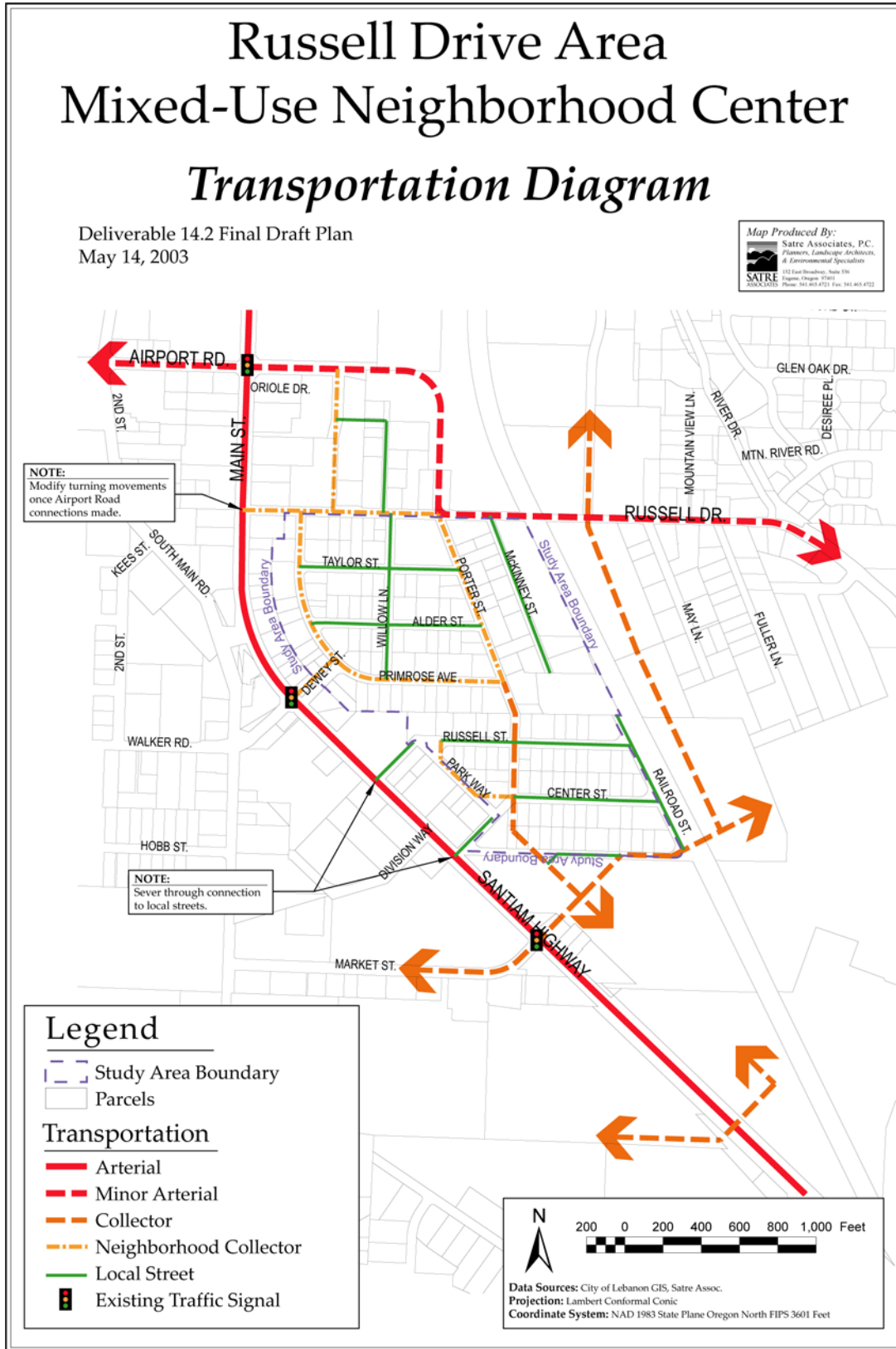
Transit service is provided by the Linn County Shuttle and Valley Retriever (Bend-Newport). Bus service in Lebanon is available through the Dial-a-Bus shuttle service.

The plan improves the overall operational functioning of the highway adjacent to the study area. With proposed plan designations, improved functioning of Highway 20 results from several factors including:

- Improved connectivity within the study area
- Construction of the Airport Road/Russell Drive connection
- Elimination of through motor vehicle access from Russell and Truman Streets
- Eventual extension of the Porter/Primrose collector south to Cascade Drive
- Eventual modification of the Highway 20/Russell Drive intersection to encourage traffic use at signalized intersections to the north and south

Once the Airport Road connection is made, a problem intersection in the neighborhood - the Russell Drive and Highway 20 intersection – should be modified to improve functioning, most likely by limiting turning movements to right-in, right-out. In addition, through access from the highway to the neighborhood is proposed to be eliminated on Truman and Russell Streets. The street segments adjacent to the highway would continue to serve the abutting commercial development, but the closure of through vehicle connections would minimize commercial auto traffic on local streets. The complete results of the transportation analysis of the proposed land use and transportation plan are found in the Plan Appendix (Appendix C).

Figure 6: Proposed Transportation Diagram



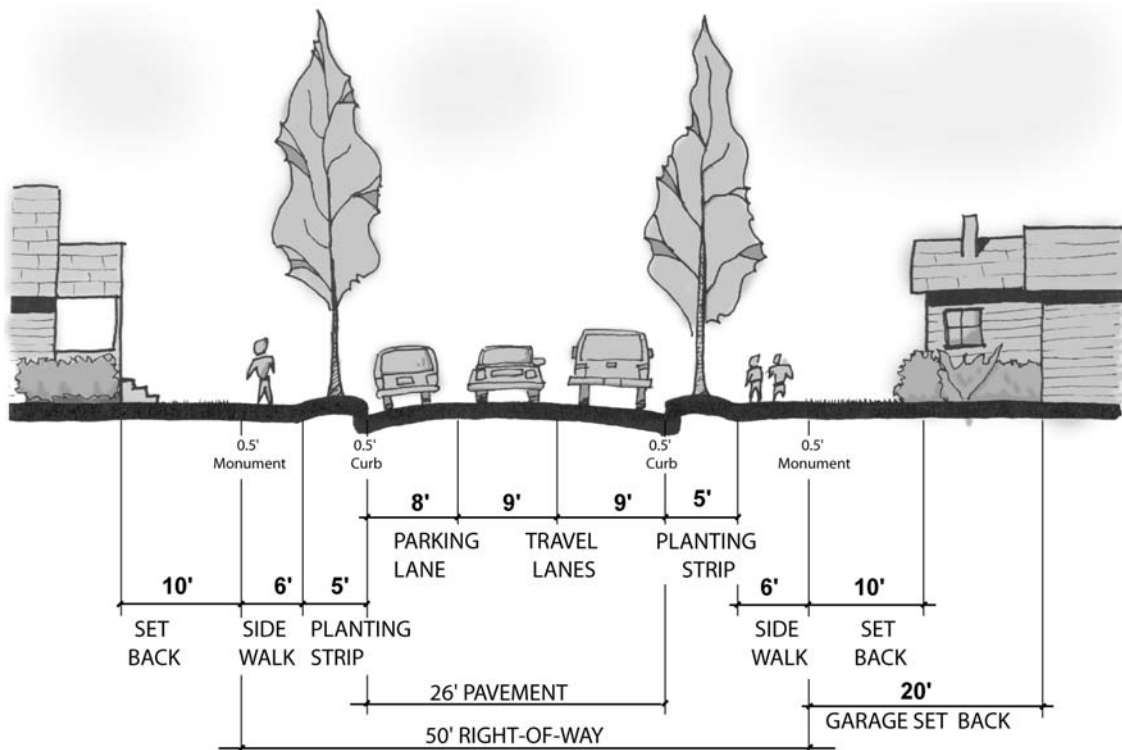
B. Roadway Profiles

The roadway profiles have been designed to stay within existing rights-of way to the extent possible, to slow traffic, and to respond to adjacent land uses. The hierarchy of street classifications is intended to direct arterial traffic to Airport Road and Highway 20, collector traffic to Porter and Primrose, and local traffic to the rest of the neighborhood streets. Porter Street would be extended south to connect with future extensions of Market Street and Cascade Drive. The street sections presented here are designed specifically for the Russell Drive neighborhood and would not necessarily be applied elsewhere in the city.

1. Local Streets

As shown in Figure 7, the local street includes 26 feet of pavement within a 50' right of way, accommodating an eight foot parking lane on one side of the street and two nine-foot travel lanes. Five-foot planting strips and six-foot setback sidewalks are located on both sides of the street, giving a sense of security and separation from cars to pedestrians.

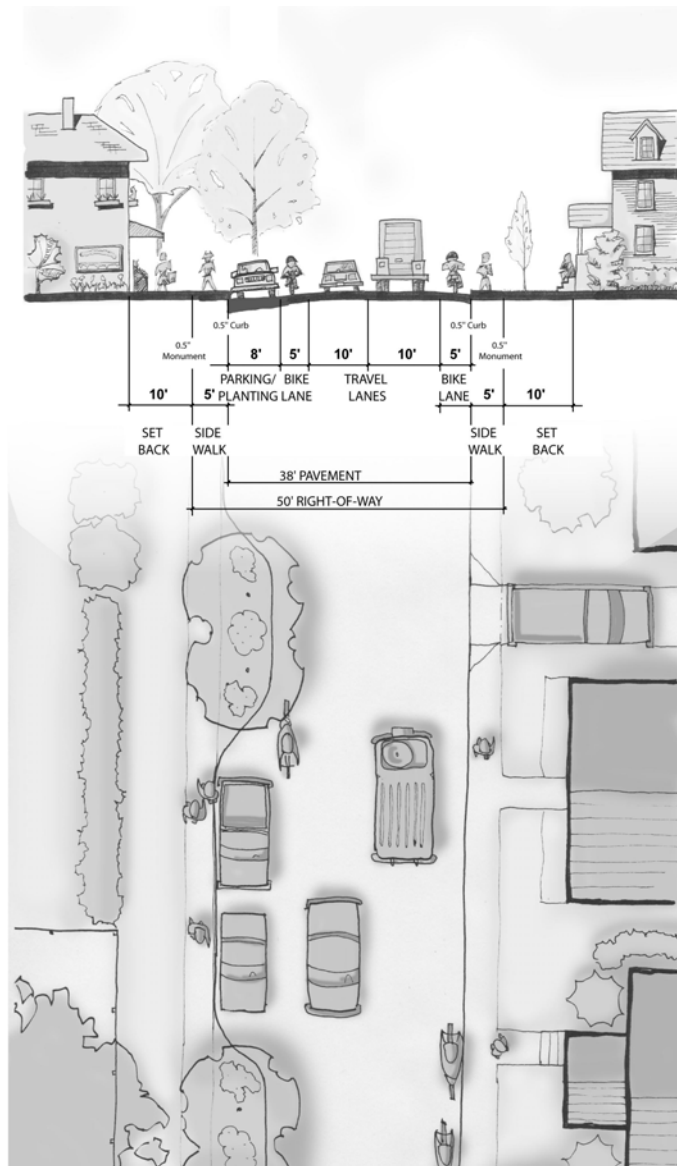
Figure 7: Local Street Profile



2. Neighborhood Collector Streets

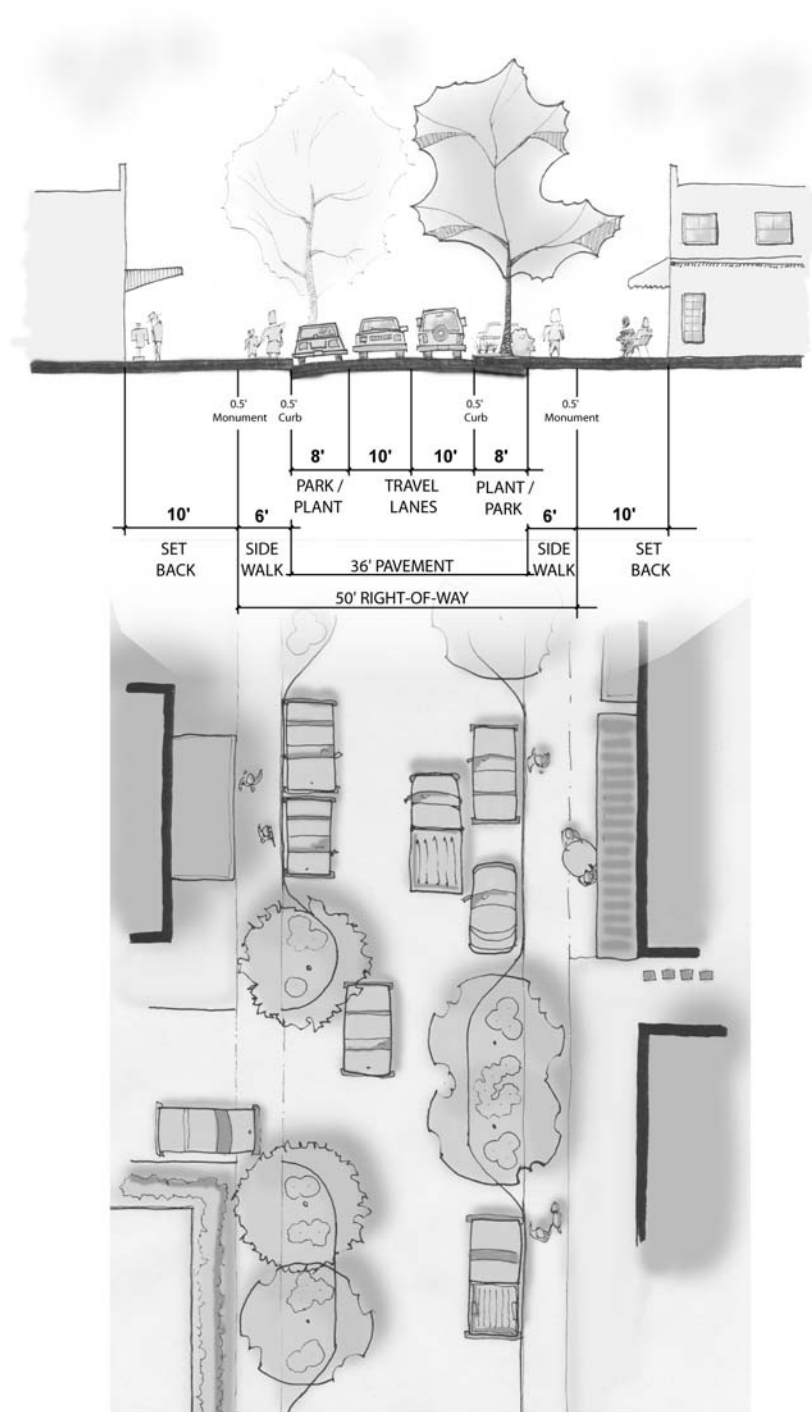
The neighborhood collector profile is shown in Figure 8 as it would be constructed on Porter Street. Pavement is proposed to be 38 feet wide within a 50 foot right-of-way. Two 10-foot travel lanes provide adequate room for collector volume traffic, but encourage slower speeds. There are 5-foot bicycle lanes on both sides of the street. An 8-foot parking lane is accommodated on the west side of the street, interspersed with planting area where parking is not needed. At intersections with local streets, curb extensions and tree planters are proposed to give a neighborhood scale to the street while minimizing crossing distance for pedestrians. The Porter neighborhood collector has 5-foot sidewalks on both sides. While there is not room for a dedicated, continuous planting strip within the right-of-way, tree planting should be encouraged on private property adjacent to the right-of-way.

Figure 8: Neighborhood Collector Profile – Porter Street



The neighborhood collector as applied to Primrose Street is shown in Figure 9. The drawing reflects the mixed use nature of planned development along Primrose, and proposes 6-foot sidewalks and parking on both sides of the street, alternating with planted bulb-outs. Paving width is 36 feet.

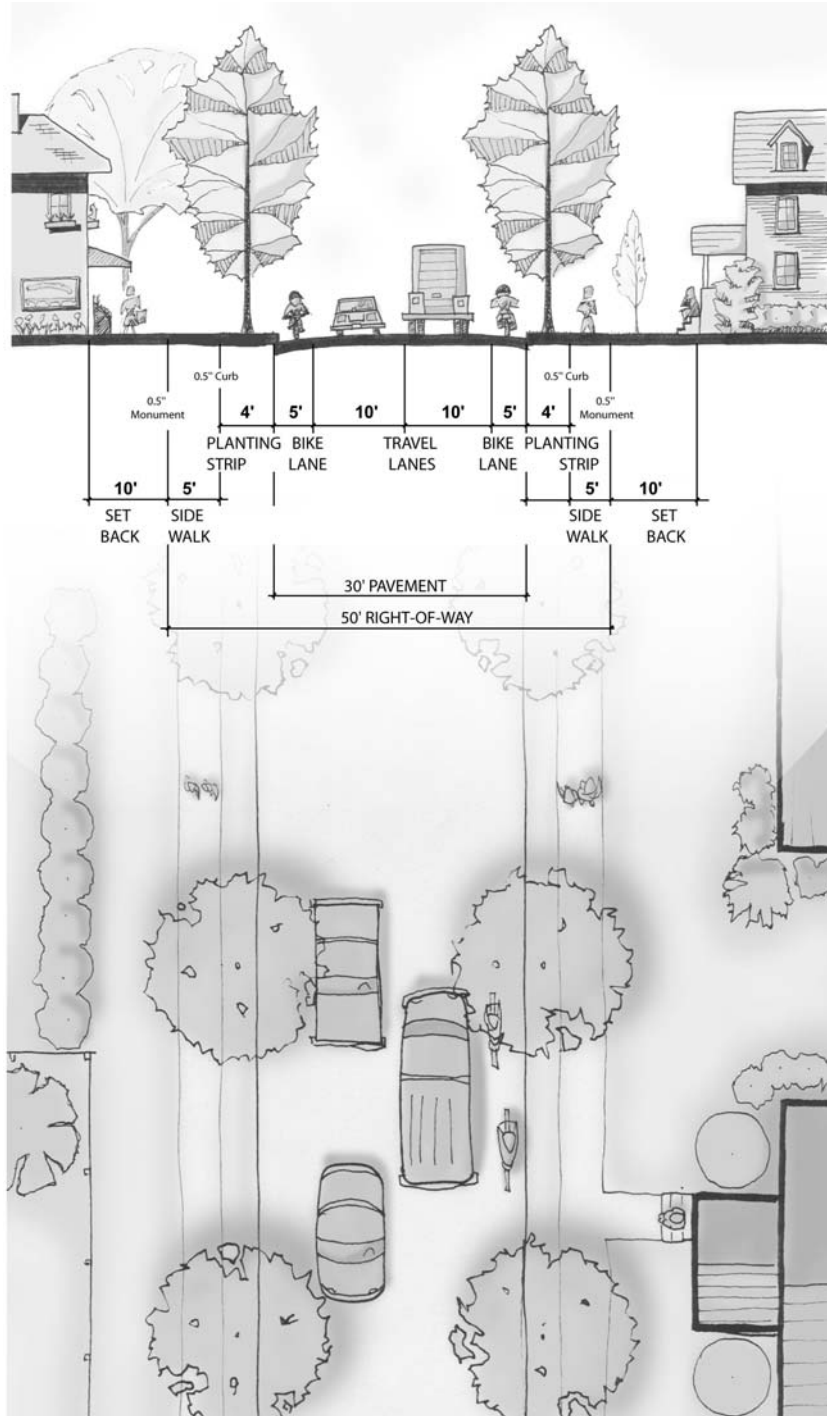
Figure 9: Neighborhood Collector Profile – Primrose Street



3. Collector Streets

The Collector profile, as shown in Figure 10, provides two ten-foot travel lanes, two 5-foot bicycle lanes, 4-foot planting strips, and five-foot setback sidewalks. The Collector classification is applied to Porter Street south of its intersection with Primrose.

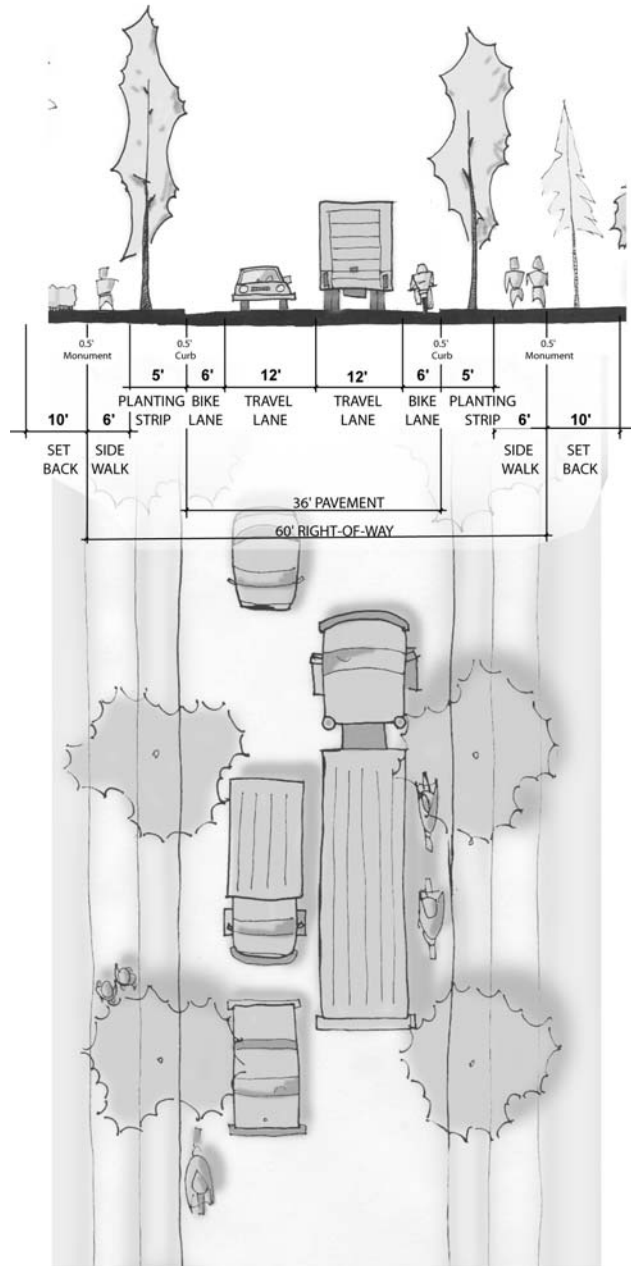
Figure 10: Collector Street Profile – Porter Street South of Primrose



4. Minor Arterial Streets

The minor arterial profile shown in Figure 11 illustrates Russell Drive as it curves north to meet the extension of Airport Road. Travel lanes are 12' wide to accommodate truck traffic, and 6-foot bike lanes are located on both sides of the street, providing a route to the new elementary school east of the study area. Five-foot planting strips and six-foot setback sidewalks are proposed on both sides of the street. Where a center turn lane is required, sidewalks become curbside and the planting strips are eliminated.

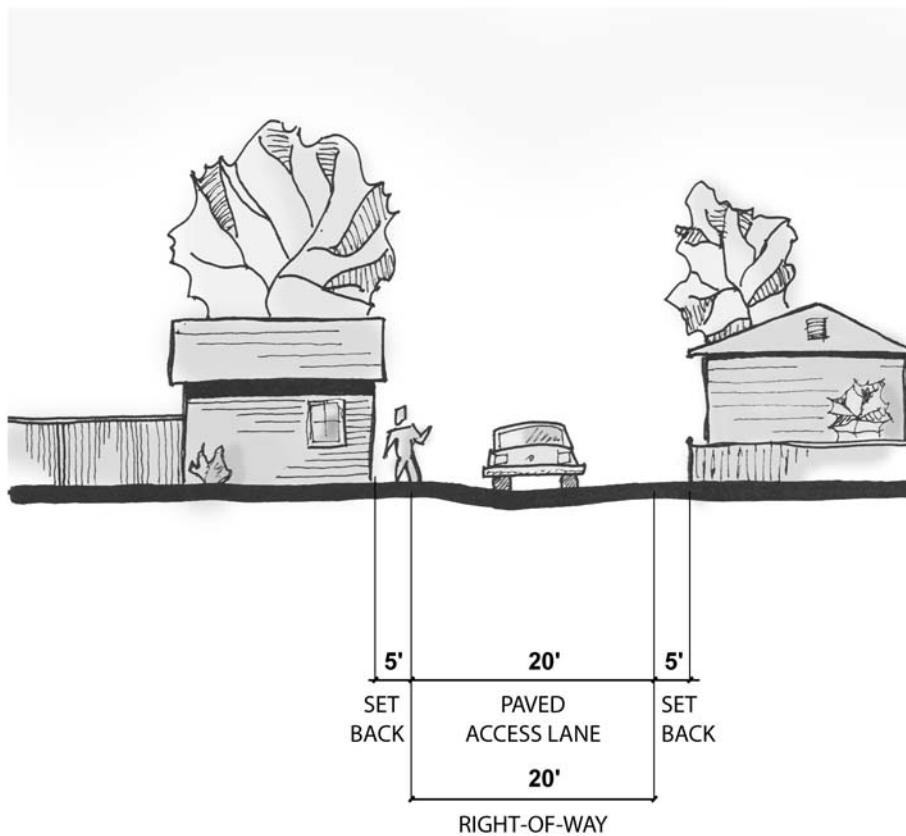
Figure 11: Minor Arterial – Russell Drive/Airport Road



5. Potential Future Access

In addition to roads depicted on the transportation diagram, the plan also recommends potential future access roads to be contemplated when certain parcels in the study area redevelop. The locations of these potential future accessways are shown in Figure 13. These locations, however, are conceptual. Actual locations will be tailored to fit development or redevelopment as it occurs. The accessways could be local streets, following the local street profile, or somewhat skinnier alleyways. Alleyways are proposed as an alternative to local streets when vehicle access is only needed to serve a few properties. Alleyways can also be used as service drives, providing access to garages while the local streets function more for pedestrian access.

Figure 12: Potential Future Access - Alleyway



6. Recommended Street Section Locations

Figure 14 provides a key to the recommended locations of each of the proposed street types within the study area.

Figure 13: Potential Future Access

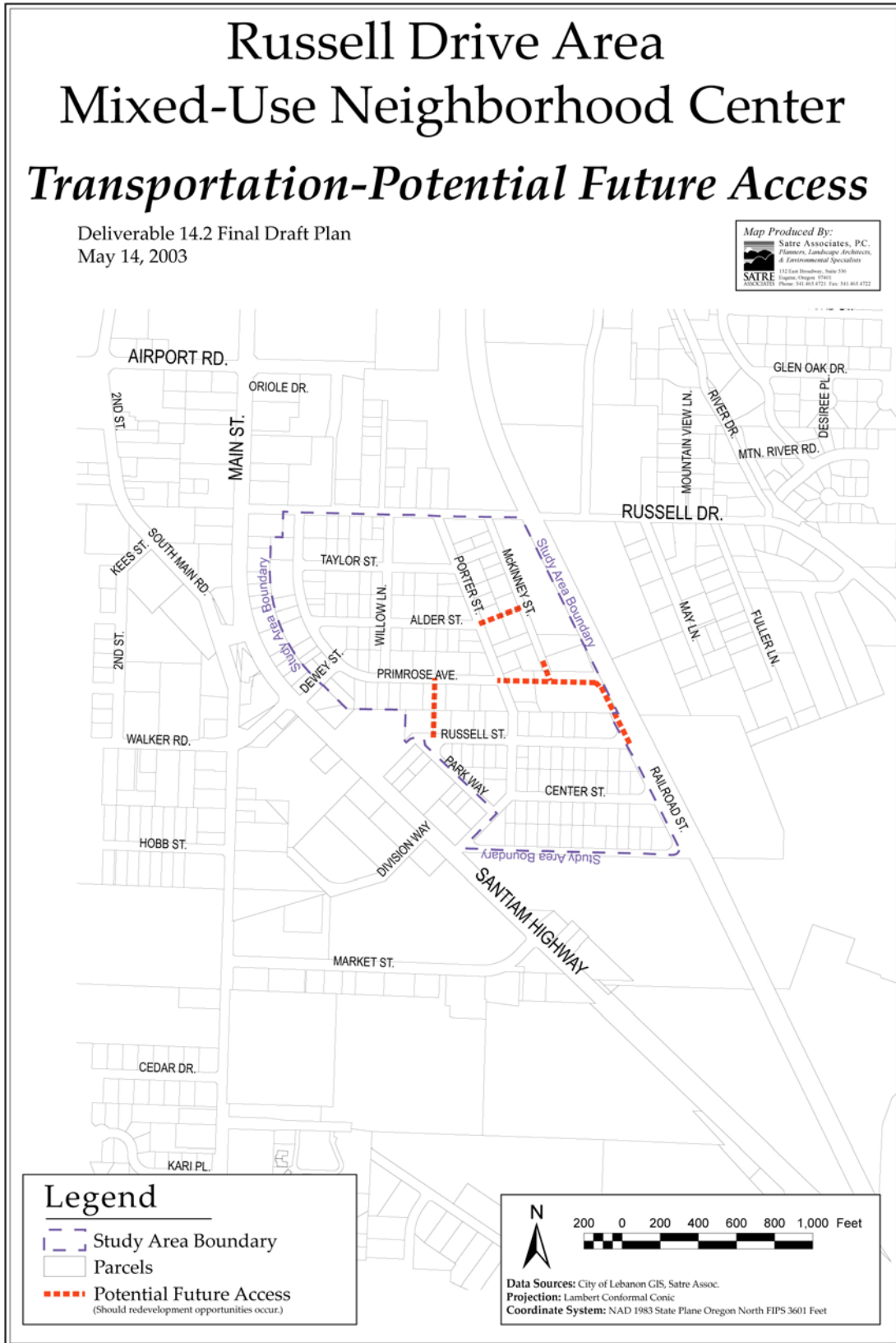
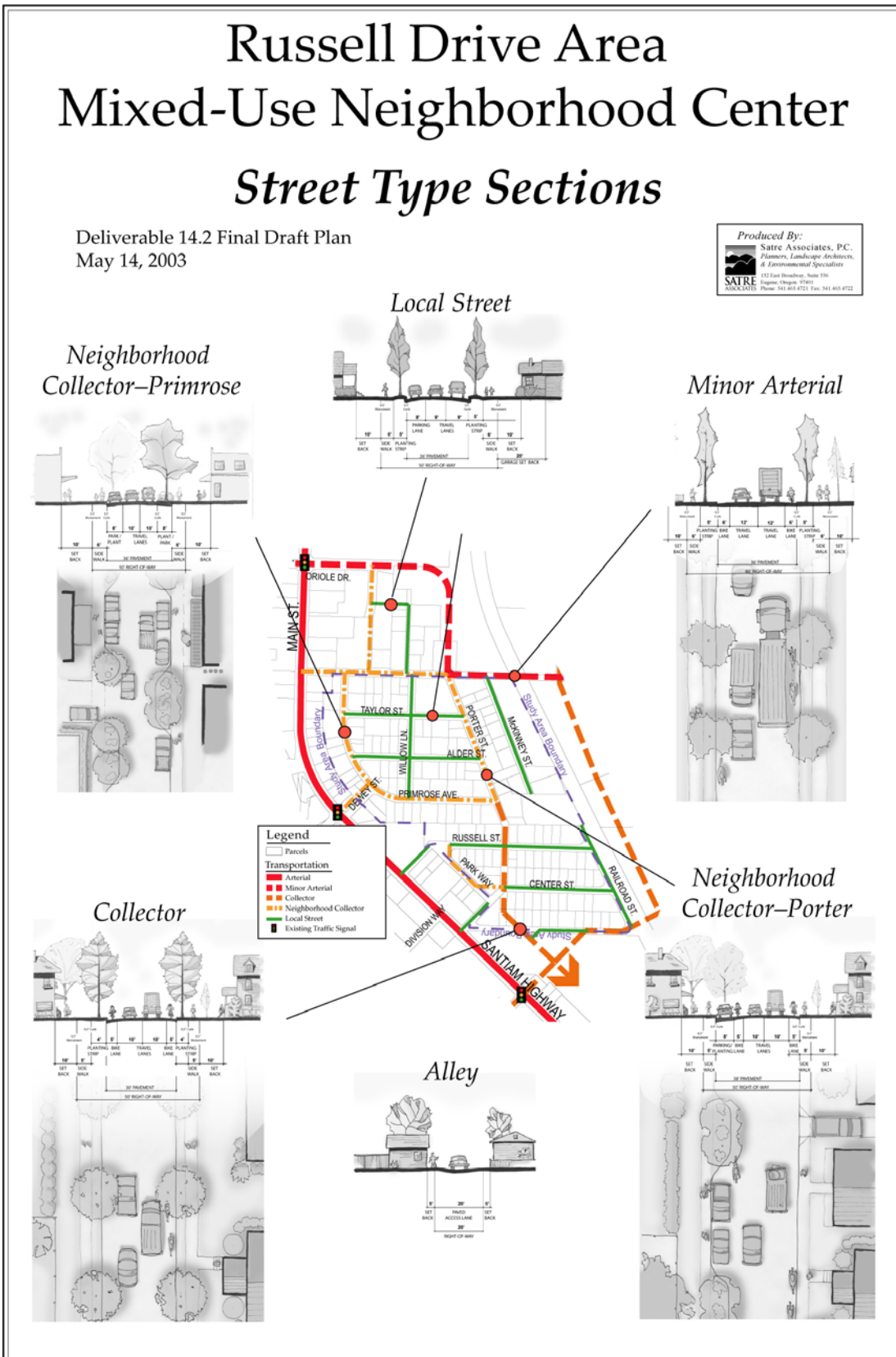


Figure 14: Street Type Sections Composite Map



C. Operational Analysis

Operational analyses were completed for 1) 2002 existing conditions, 2) 2020 conditions under existing plan designations, and 3) 2020 conditions under proposed plan designations. The results of item 2 are found in the complete Transportation Analysis in the Plan Appendix (Appendix C). This section contains the results of items 1 and 3.

1. 2002 Existing Conditions

An operational analysis was performed at the existing intersections in the study area vicinity, based on field measurement of existing conditions. 2002 traffic volumes are shown in Figure 2 of Appendix C.

The computer program Synchro, using Highway Capacity Manual techniques, was used to calculate LOS and v/c ratios at the signalized and unsignalized intersections. For signalized intersections, overall intersection operating characteristics are reported and for unsignalized intersections, operating characteristics are reported for all movements having to yield right-of-way. Results of the 2002 operational analysis identifying the v/c ratio, average delay per vehicle and LOS is shown in Table 1 below. See Appendix C for specific analysis data.

Table 1: Operational Analysis – 2002 Existing Conditions

Intersection	Signalized?	Movement ¹	v/c	Delay	LOS
Highway 20/Airport Road	Yes		0.78	24.8	C
		WBL	0.53	165.0	F
Highway 20/Russell Drive	No	WBR	0.23	14.5	B
		SBL	0.18	11.7	B
Highway 20/Dewey Street	Yes		0.61	19.2	B
Highway 20/Russell Street	No	WBL & R	0.05	15.1	C
		SBL	0.01	9.9	A
Highway 20/Truman-Gilbert Street	No	WBL & R	0.17	25.5	D
		SBL	0.06	10.7	B
Highway 20/Market Street	Yes		0.46	9.4	A

¹ WBL = westbound left, WBL&R = westbound left and right, etc.

As illustrated in Table 1, all analyzed intersections currently operate at acceptable v/c ratios and LOS. It should be noted the Highway20/Airport Road intersection is operating near ODOT’s maximum acceptable v/c ratio of 0.80; however, vehicle delay is approximately 25 seconds per vehicle, resulting in LOS ‘C’.

Also, westbound left turn movement delay at the Highway 20/Russell Drive intersection is approximately 165 seconds per vehicle, resulting in LOS ‘F’. While this amount of delay is high, it is common for a stop-controlled movement onto a high volume roadway. As contained in analysis output, the 95th percentile westbound left turn queue length is

only anticipated to be 47 feet. Mitigation to improve movement LOS should be considered if safety issues or unacceptable queue lengths occur.

2. 2020 Conditions Under Proposed Plan Designations

The 2020 operational analysis of proposed plan designations was performed at six study intersections based on assumptions from the Market Analysis portion of this plan, employment and housing projections, and ODOT emme/2 transportation model data. 2020 traffic volumes at the study intersections are shown in Figure 4 of Appendix C.

Results of the 2020 operational analysis identifying the v/c ratio, average delay per vehicle and LOS is shown in Table 2. See Appendix C for specific analysis data.

Table 2: Operational Analysis – 2020 Proposed Plan Designations

Intersection	Signalized?	Movement ²	v/c	Delay	LOS
Highway 20/Airport Road ¹	Yes		0.99	56.8	E
Highway 20/Russell Drive	No	WBL	0.38	50.1	F
		WBR	0.11	14.9	B
		SBL	0.08	12.5	B
Highway 20/Dewey Street	Yes		0.74	14.4	B
Highway 20/Russell Street	No	WBL & R	0.12	27.4	D
		SBL	0.01	10.9	B
Highway 20/Truman-Gilbert Street	No	WBL & R	0.11	47.4	E
		SBL	0.02	11.4	B
Highway 20/Market Street	Yes		0.56	9.1	A

¹ Does not reflect geometric changes constructed with Airport Road improvements.

² WBL = westbound left, WBL&R = westbound left and right, etc.

As illustrated in Table 2, all analyzed intersections will operate at acceptable v/c ratios and LOS as follows.

1) Operation parameters provided for the Highway20/Airport Road intersection assume no geometric changes. Mitigating improvements necessary to provide acceptable intersection operation are outside the plan scope and should be addressed in conjunction with construction of the connection between Airport Road and Russell Drive.

2) Westbound left turn movements at the Highway 20/Russell Drive and Highway 20/Truman-Gilbert intersections are predicted to operate at LOS 'F' and LOS 'E' respectively. While this amount of delay is high, it is common for a stop-controlled movement onto a high volume roadway. Overall, vehicle movements on Highway 20 will continue to operate at an acceptable v/c ratio and LOS.

3) As contained in the analysis output, the 95th percentile westbound left turn queue length is only anticipated to be 97 feet for both the Highway 20/Russell Drive and

Highway 20/Truman-Gilbert Street intersections and will not affect upstream roadway operations. Due to low minor street approach volumes, a traffic signal would not be warranted at either intersection and, additional traffic signals would not meet ODOT spacing standards on Highway 20. Mitigation to improve movement LOS should only be considered if safety issues or unacceptable queue lengths occur.

4) With construction of the Airport Road/Russell Drive connection and improvements to the Highway 20/Airport Road intersection, it is further recommended some type of traffic calming feature be considered at the Highway 20/Russell Drive intersection. Because traffic volumes on the east leg of the intersection, Russell Drive, are anticipated to decrease, the street standard can be reduced and southbound and/or westbound left turns eliminated.

3. Roadway Operational Analysis

Anticipated 2020 PM peak hour roadway volumes and the identified roadway lane capacities were used to determine roadway v/c ratios. These v/c ratios are shown in Figure 14. Specific v/c ratio analysis was not performed for the roadway sections in this report. V/c ratios for Highway 20 were obtained from other ODOT planning documents. V/c ratios for roadways internal to the study area were determined based on general roadway operating capacities, anticipated 2020 development, and engineering judgment.

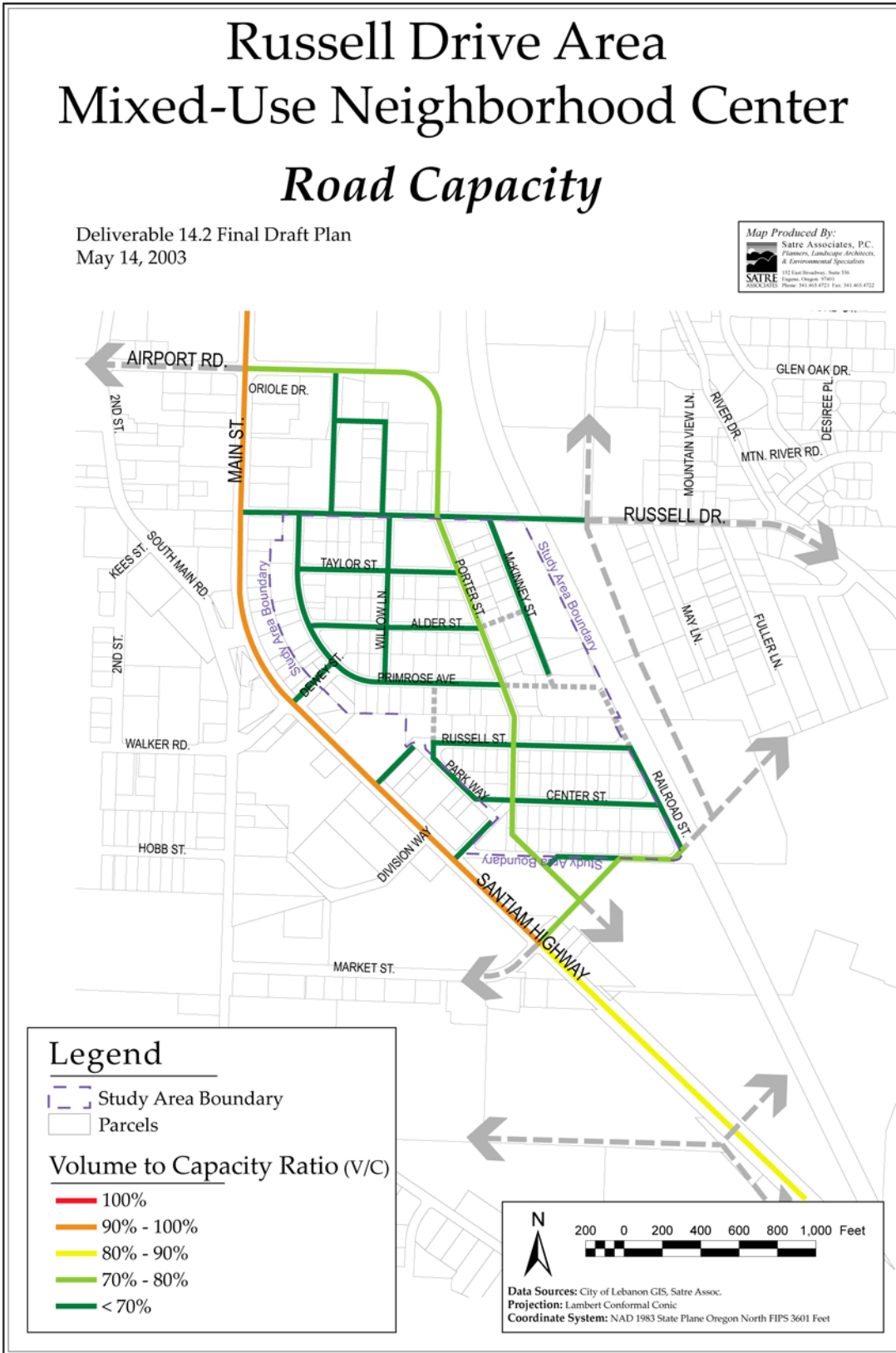
As shown in the figure, v/c ratios *within* the study area are not a significant concern. V/c ratios on Highway 20, *outside* the study area, remain high but are slightly improved from the 2020 current zone designation alternative (see Appendix C) because of increased study area connectivity. While the plan alternative may generate more traffic at full build-out than current zoning, it is not anticipated to generate significantly more traffic within the planning period due to small employment and housing growth assumptions.

4. Summary

All intersections on Highway 20 adjacent the study area are projected to operate at acceptable v/c ratios and LOS throughout the planning period. It is assumed the Highway20/Airport Road intersection will be improved in conjunction with construction of the connection between Airport Road and Russell Drive.

V/c ratios *within* the study area are not a significant concern. V/c ratios on Highway 20, *outside* the study area, remain high but are slightly improved from the 2020 current zone designation alternative due to improved connectivity within the study area, construction of the Airport Road/Russell Drive connection, elimination of through motor vehicle access from Russell Street and Truman Streets, eventual extension of the Porter/Primrose collector south to Cascade Drive, and eventual modification of the Highway 20/Russell Drive intersection to encourage traffic use at signalized intersections to the north and south (see Section III.A above).

Figure 15: Road Capacity



IV. INFRASTRUCTURE AND ANNEXATION PLAN

Much of the planning process in the Russell Drive area has focused on the lack of city water, sanitary sewer, and stormwater facilities in the study area. With regard to this non-transportation infrastructure, this plan promotes some standard strategies for providing the improvements, and some innovative strategies that can work well within the existing conditions of the neighborhood. There is basic agreement among residents, city staff, and elected officials that the area should be outfitted with urban infrastructure; there is less clarity about exactly how this should occur. This plan begins to outline the ways in which the neighborhood might best deal with urbanization.

A. Annexation

Recently, city staff has received inquiries from individual property owners about annexation. As sanitary sewer lines are extended to within close proximity of existing dwellings (about 100 feet), connection becomes feasible. However, lot-by-lot annexation will not address the issue of groundwater pollution of potable water wells from nearby septic tanks and drain fields. If one owner annexes but an adjacent neighbor does not, the problem persists. Thus, it is apparent that a coordinated effort among neighbors is necessary for annexation to achieve its intended goal of efficient, quality urban service provision. The city is currently undergoing a review of its annexation policies and guidelines. Issues include articulation of annexation triggers and funding sources for infrastructure provision.

The most efficient way to outfit the Russell Drive area with urban services is probably to construct the improvements in phases, starting with properties closest to existing water and sanitary sewer lines. Figures 16 and 17 show two options for annexation phasing.

Option 1 (Figure 16) proposes a first phase of annexation extending from the western edge of the study area boundary to one lot east of Willow Street. Utility lines would be extended along Russell Drive, Willow Lane, and portions of Primrose, Alder, and Taylor Streets. Phase 2 continues eastward from Phase 1, incorporating the properties one lot east of Porter Street. Streets that would be outfitted with utilities are the eastern portions of Taylor, Alder, and Primrose, all of Parkway, Porter, and Truman, and the western portion of Russell Street. The final phase would extend to the railroad tracks, extending utilities along McKinney, Center, Gilbert, and the eastern portions of Russell Street.

Option 2 (Figure 17) also places Phase 1 in the northwest corner of the study area, but extends the boundaries east to one lot east of Porter Street. Phase 2 encompasses the southern portion of the study area (from one lot north of Russell Street to the southern study area boundary), and Phase 3 includes the remaining property in the north eastern portion of the study area. Option 2 adds a fourth phase (shown as a hatched overlay), which recognizes the possibility that Porter Street could be improved ahead of other streets in the study area.

Figure 16: Annexation Phasing Option 1

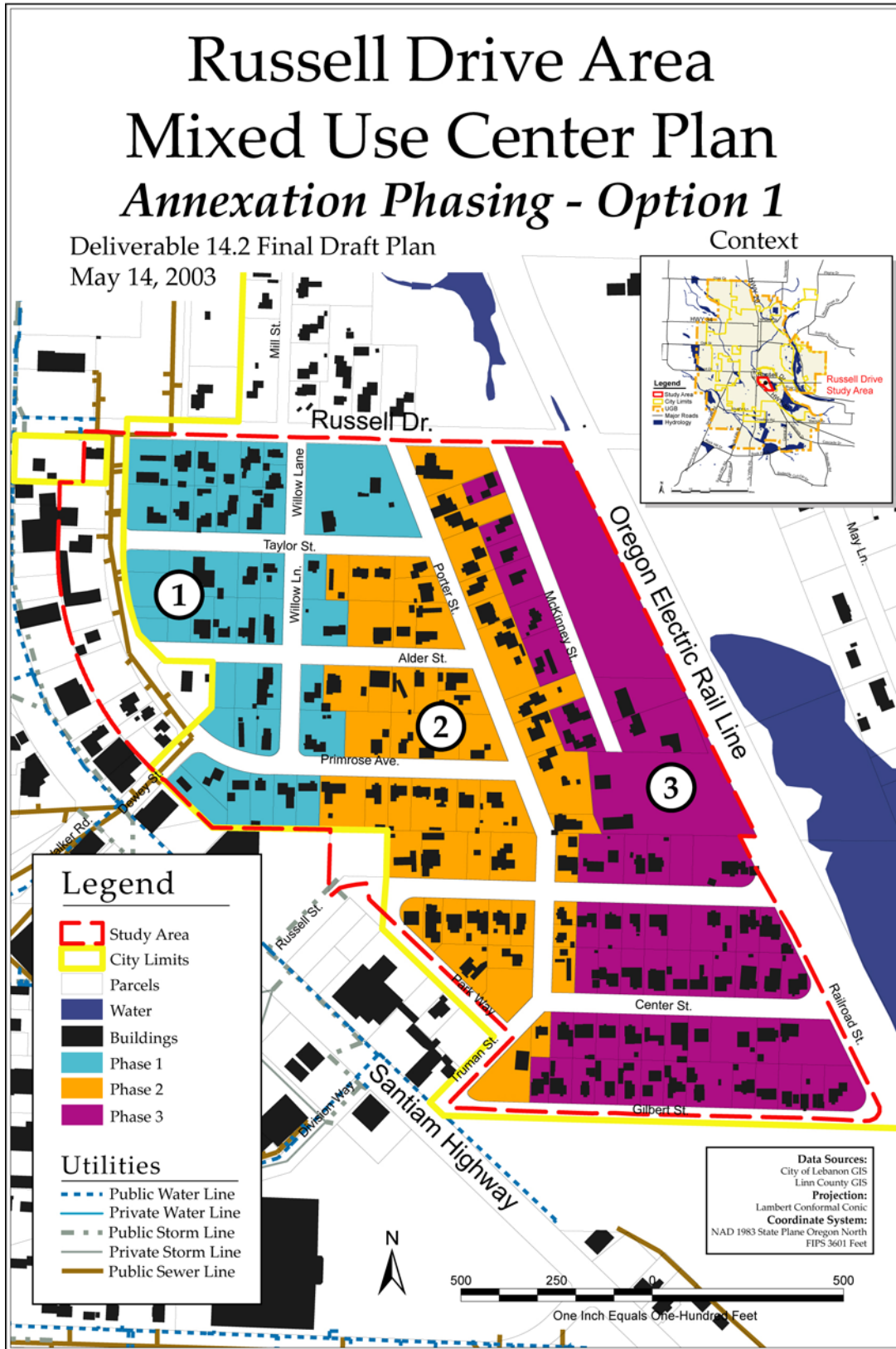
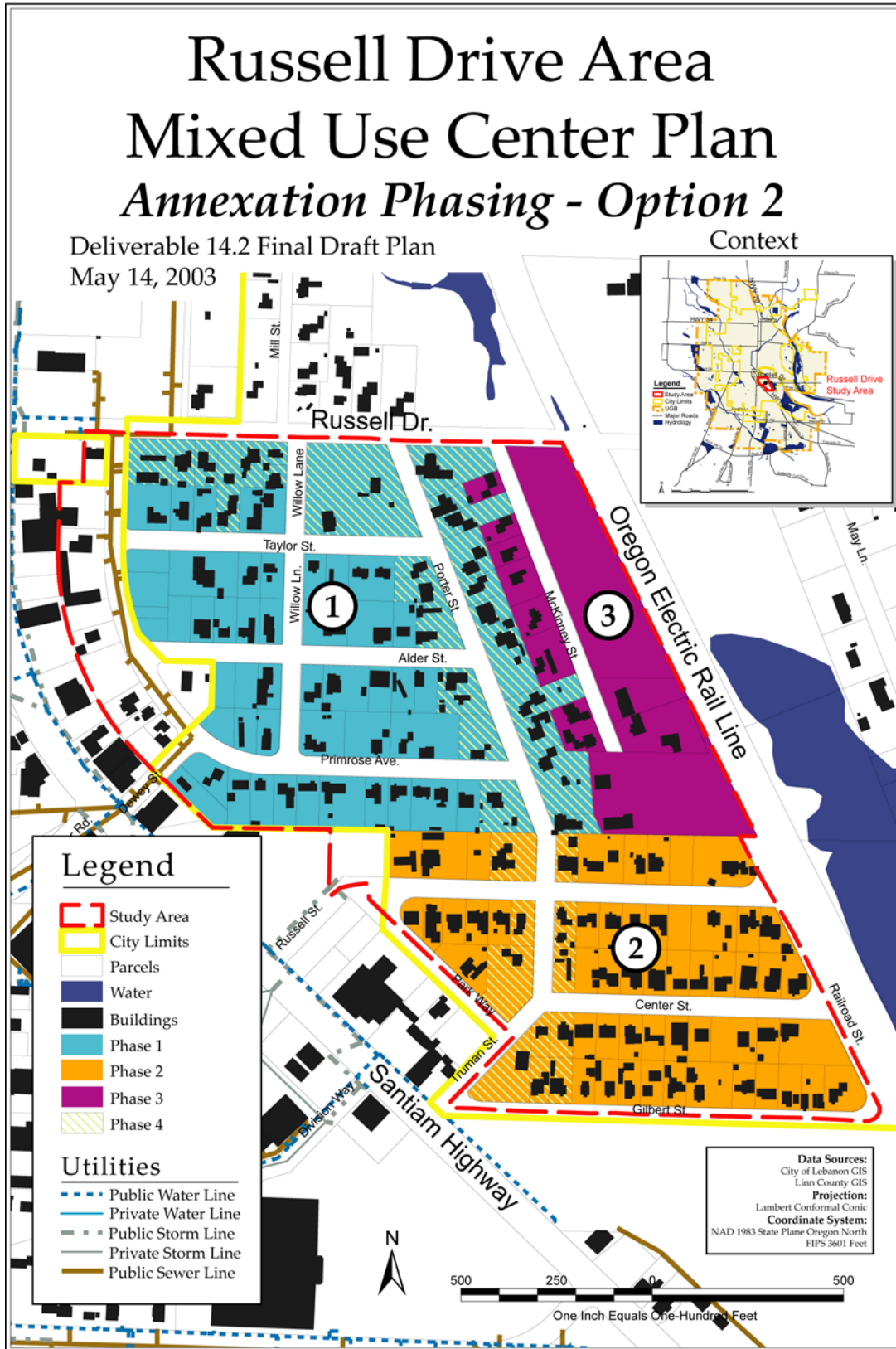


Figure 17: Annexation Phasing Option 2



B. Water and Sanitary Sewer

Throughout the planning process, provision of city water and sanitary sewer service has been one of the central concerns to both the residents of the neighborhood and the city. County Sanitarian staff members have attended the public meetings and answered questions related to septic tank repair and replacement. The condition and location of existing septic systems are real barriers to redevelopment in the neighborhood. However, the problems have not been documented in detail.

Along with street improvements, water and sanitary sewer service are integral to the success of this plan. Properties must be annexed into the city limits before they can be served with city utilities (see annexation discussion). The difficulty becomes one of cost, which will be a particular burden for residents of the Russell Drive neighborhood. Sources of funding need to be explored on an ongoing basis by the city, the County, and the residents. The Urban Renewal District provides one financial tool; state and federal grant sources provide additional possibilities if public health hazards are declared in the neighborhood.

C. Stormwater

In an effort to simultaneously reduce costs, improve water quality, and decrease the volume and rate of stormwater runoff, this plan originally proposed utilizing surface stormwater drainage in certain locations as an alternative to underground piped systems.

To evaluate the potential benefits of surface drainage, stormwater peak flow and runoff volume estimates were completed by the University of Oregon *neighborhoodsLAB*. Measurement results indicated that by utilizing open stormwater facilities, runoff volume would decrease due to the fact that some of the water would filter slowly into the ground. The use of surface drainage also reduces peak flow of stormwater, and the construction cost is considerably less than conventional piped systems. In case studies done for West Corvallis and Toledo, the *neighborhoodsLAB* found a potential for 6%-16% savings over piped systems, depending on the specific design attributes.¹

However, there are multiple drawbacks to utilizing open stormwater facilities on public streets in the Russell Drive area. First and foremost, right-of-way widths are constrained, and swales require greater width than underground systems. For swales to be included in the street sections, other elements would have to be removed, such as bicycle lanes, planting strips, or parking lanes. Secondly, swale systems do not exist in other parts of the city and maintenance regimes are untested. Thirdly, existing topography in the study area could make it very difficult to establish the gentle grades needed for street side swales to function properly. Therefore, this plan proposes conventional piped storm drainage systems within existing public rights-of-way.

¹neighborhoodsLAB, "Measuring Infrastructure in New Community Development," 1999, and "Stormwater Management Component" of the Specific Area Management Plan for the North Sturdevant Road Area, Toledo, 2002.

The concept of open drainage may still be useful within the context of the evolution of the Russell Drive area. For example, property owners can implement the concept on their individual lots by disconnecting their roof drains from the public system, and creating rain gardens to handle stormwater in their yards. These concepts are illustrated in the Plan Appendix (Appendix E). In addition, there is an opportunity to implement open drainage concepts where right-of-way has yet to be acquired, for example in the vicinity of the Airport Road extension.

V. DESIGN PLAN

The design plan contains an illustrative plan demonstrating the type of development that could be built to satisfy the requirements of the Russell Drive Area Mixed Use Neighborhood Center Plan. The illustrative plan depicts the intended character of the streets, buildings, and pedestrian spaces in the heart of the neighborhood, along Russell Drive. Proposed development standards regulate how new sites are laid out, and design guidelines describe how new buildings can be designed to fit into the neighborhood.

The standards and guidelines in this plan are intended to create a human-scale, interesting, attractive environment in which to live, shop, and recreate. Standards emphasize bicycle and pedestrian friendliness and de-emphasize auto orientation. The goal of the design plan is to lead to the gradual development of neighborhood with an appropriately scaled mixed-use element, where residents like to spend time in the park and on the streets in addition to within private dwellings.

A. Illustrative Plan

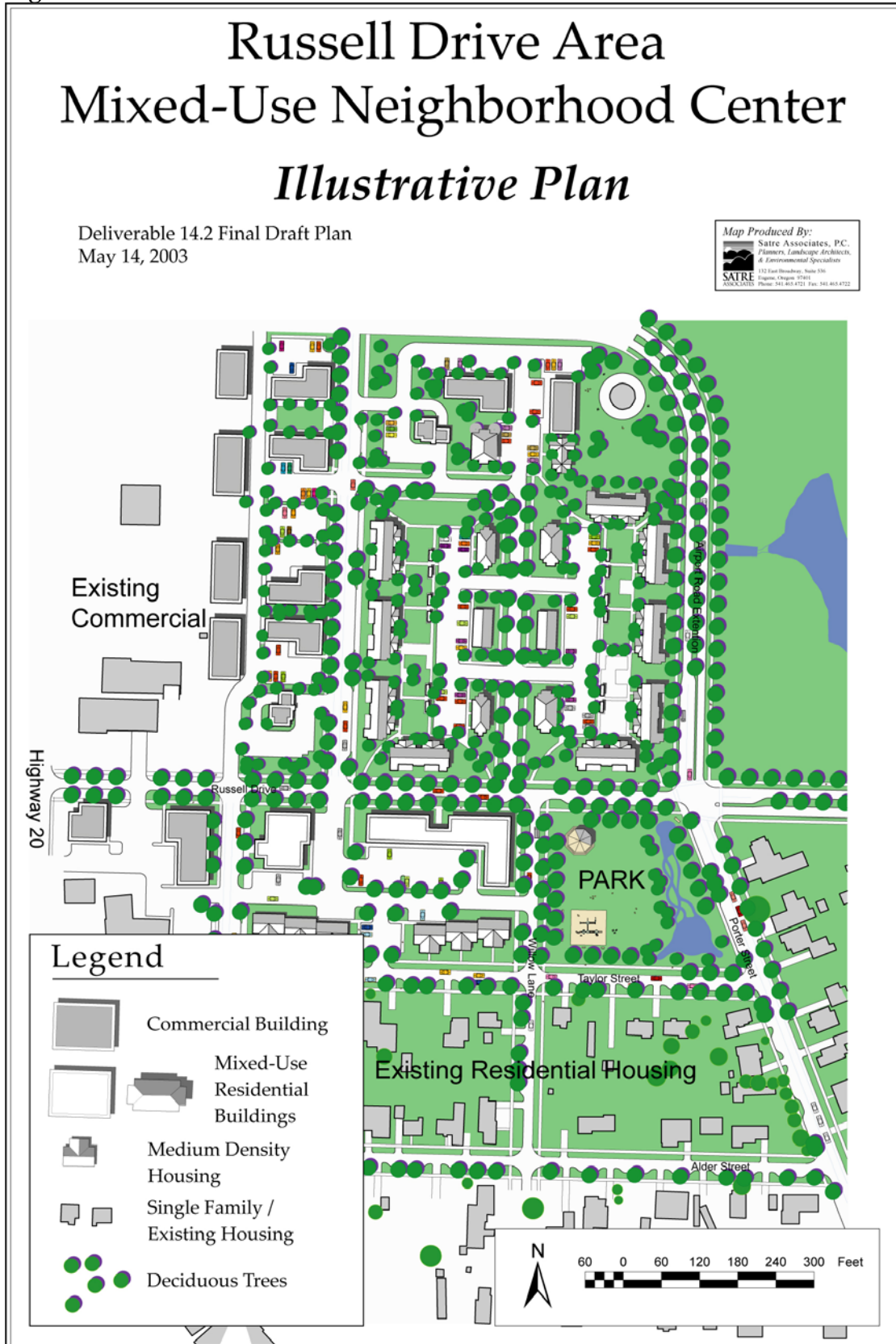
The illustrative site plan shows a development concept that could be built within the parameters of the recommended land use designations, permitted uses, development standards, and design guidelines. It depicts the kind of re-development that would succeed through the development review process once the Russell Drive Area Plan is adopted as part of the Lebanon Comprehensive Plan.

The illustrative plan is **not** intended to become an adopted development plan. The Russell Drive Plan does not require site features - buildings, parking, pedestrian ways, landscaping, plazas - to be the same size or shape or be placed in the exact locations as depicted on the illustrative plan. It merely demonstrates how the requirements of the plan could be accomplished on the ground.

The elements of the illustrative plan that reflect recommended plan requirements include:

- Placement, scale, and orientation of commercial, residential, and mixed use buildings
- Location of parking behind or beside buildings
- Building façade articulation, roof pitch, and materials
- Pedestrian amenities including plazas and interconnected pathways
- Neighborhood park featuring gazebo and play structure
- Traffic calming features

Figure 18: Illustrative Plan



B. Site Development Standards

1. New residential development should achieve an average density of at least 6 units per net acre in both the Neighborhood Mixed Use area and the Mixed Density Residential area. This equates to an average lot area of 7,260 square feet per dwelling, which is similar to the existing lot sizes in several areas of the neighborhood.
2. No parking areas should be located between buildings and public streets, unless there is no interior location to provide parking, in which case it should abut the lowest classification street.
3. Future accommodation for bus stops along Airport Road or Russell Drive should be considered during development review for properties abutting those streets.
4. Multiple pedestrian amenities should be used to create a pedestrian environment along Russell Drive. These could include plazas, benches, planters, and decorative paving.
5. In the Neighborhood Mixed Use area, commercial uses should be neighborhood scale; no commercial activity should occupy more than 5,000 square feet within a single structure. Outright permitted uses should be those listed as items a through l, n, and t in the Mixed Use Zone (Section 4.310 of the Lebanon Zoning Ordinance).
6. As redevelopment occurs along Highway 20 and Primrose Street, access points should be coordinated to meet ODOT access management standards.

C. Commercial Design Guidelines

1. Building entries should face streets or corners.
2. Maximum building length should be 200 feet.
3. Windows should cover at least 25% of street-side facades.
4. Building exteriors should consist of quality, attractive materials

D. Residential Design Guidelines

1. Row houses, courtyard apartments, condominiums, low-rise apartment buildings, and small-lot attached and detached housing are examples of allowable housing types in the mixed density residential area. Residential flats or lofts above ground floor retail are encouraged in the Neighborhood Mixed Use areas.
2. All roofs should slope with a pitch similar to nearby buildings.
3. Building exteriors should be surfaced with quality, attractive materials (horizontal lap siding is the predominant surface existing in the neighborhood).
4. Every dwelling unit should have at least one patio or balcony that is a minimum of 100 square feet in size.