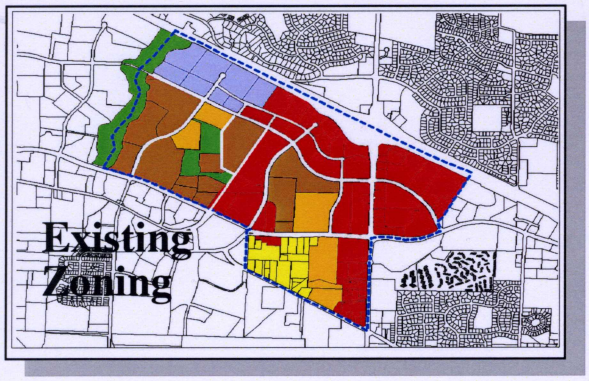
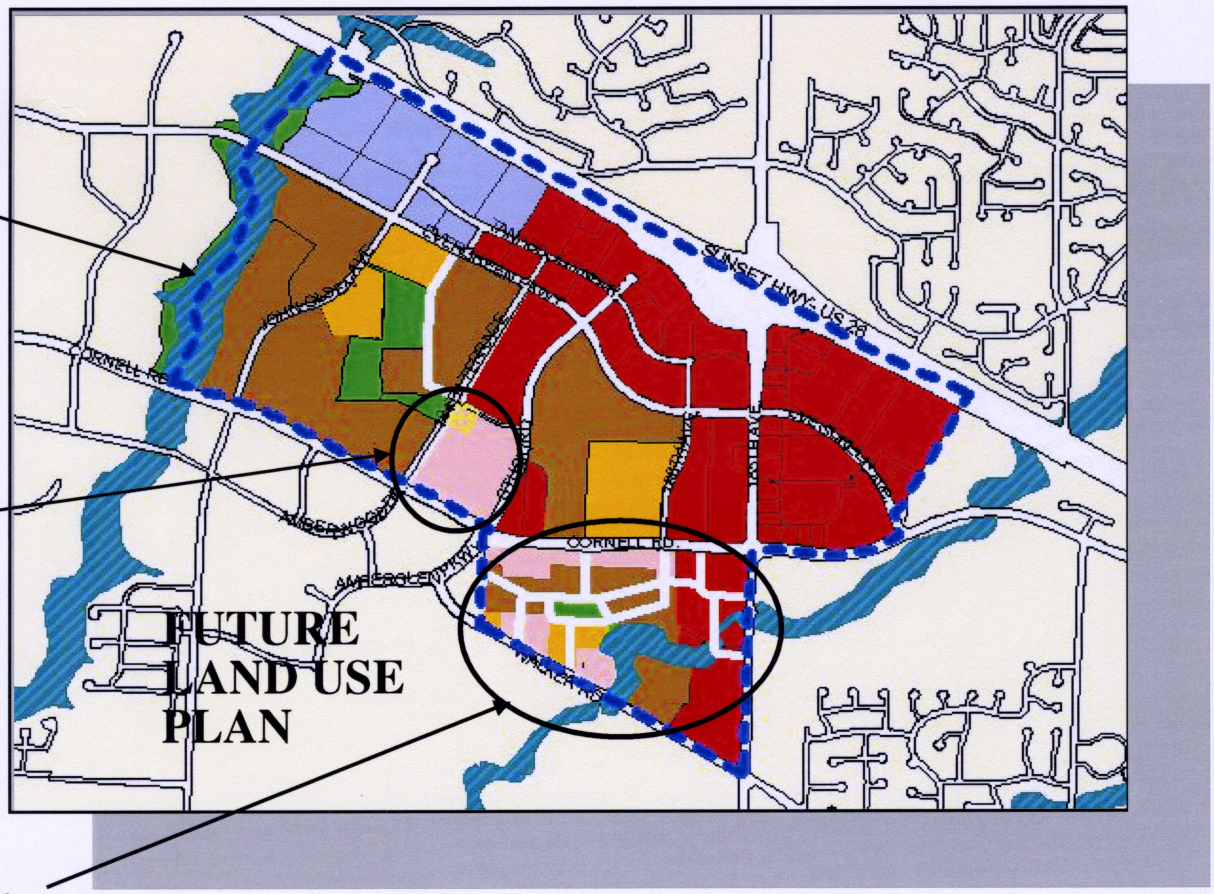


TANASBOURNE TOWN CENTER PLAN

The Planning Area,

Town Center Core Area,

The Cornell-Walker Roads Superblock



City of Hillsboro, Oregon

November 2000

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Preface

The Tanasbourne Town Center Plan represents the City of Hillsboro's planning response to the adopted Metro 2040 Growth Concept which designates the Tanasbourne area of the City as a "2040 Town Center". The Plan reflects the collective ideas of the Tanasbourne community and, particularly, the land use planning input from property owners and other interested parties who will be directly affected by its recommendations.

The Tanasbourne Town Center Plan planning process began in 1997 as part of the City's Periodic Review Work Program. The Town Center Plan is Work Task No. 9 of that Program. Under the Program, the City is required to:

- Develop a plan for a detailed Town Center Plan for the Tanasbourne/Amberglen area;
- Address land uses, street designs, utilities, civic uses, design standards and needed community facilities and features;
- Address light rail transit, public transit services and non-auto travel modes;
- Develop a model plan for other Regional 2040 Town Centers; and,
- Implement measures for the Metro Functional Land Use Plan pursuant to HB 2709.

The products from this task must include an approved Town Center Plan and adopted City comprehensive plan and zoning ordinance amendments that implement the Plan.

This project was funded in part by a grant from the Transportation and Growth Management (TGM) Program, which is a joint program of the Oregon Department of Transportation and the Oregon Department of Land Conservation and Development. A Village Center Planning Advisory Committee was formed to guide plan development (see previous page for a list of members and affiliations). The City thanks all participants in the Plan development process for their time and effort to create a successful plan that will be implemented over the next several years.

Upon adoption, the Tansbourne Town Center Plan will be a "Community Plan" in accordance with Section 1(II)(B) of the Hillsboro Comprehensive Plan. Amendments to the City's Zoning Ordinance will be needed to implement the Town Center Plan. Key to successful plan implementation is development of a new mixed-use zone. Allowing for mixed-use development will enable the City to implement the 2040 Growth Concept, which recommends mixed-use zoning for Regional Centers, Town Centers, Station Communities and Main Streets. Mixed-use development allows the City to increase densities and to promote more compact urban development as well as to provide the type of development that is supportive of alternative travel modes, which is one of the primary ideas behind the 2040 Growth Concept. By orienting new growth into these mixed-use areas, the City can make the 2040 Growth Concept a reality.

Although the Town Center Plan has a 20-year time horizon, build-out is anticipated to occur before the year 2015 if current market conditions continue in the near future. The City also looks to directing new mixed-use growth into the Tanasbourne area to meet its Metro Functional Plan allocations for new housing units and jobs.

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Overview

The Tanasbourne Town Center Planning Area is one of 26 town centers in the Portland metropolitan region designated by the Regional Urban Growth Goals and Objectives and the adopted Metro Region 2040 Growth Concept. These Metro planning documents call for more intensive urban uses and greater building and development mass within Metro 2040 regional and town centers than could otherwise occur under existing land use regulations and policies. The intent of these planning documents is to facilitate more pedestrian- and transit-oriented development and design, which are key defining features of a town center.

THE TOWN CENTER PLAN SEEKS TO ESTABLISH A TRUE "TOWN CENTER" AT TANASBOURNE THAT IS MORE INTENSELY DEVELOPED THAN MOST OTHERS, AND TO CREATE A FOCAL POINT WITHIN THE TOWN CENTER THAT UNIFIES THE VARIOUS SURROUNDING LAND USES BY SERVING AS THE CENTERPIECE FOR TOWN CENTER ACTIVITIES.

To adapt previous planning for the area to the new requirements, the City of Hillsboro, with the help of a State Transportation Growth Management Planning Grant and the support of Washington County and Metro, set out to prepare the Tanasbourne Town Center Plan (TCP).

Two key objectives of the TCP are to implement applicable State, City and Metro land use and transportation policies through public and private development plans and initiatives within the Planning Area, and to establish a 2040 town center that implements these policies, the planning needs of the local community and the development objectives of private stakeholders.

This document describes the TCP, describes the planning process followed in forming the plan, articulates the generalized land-use plan for the TCP, and describes the planning goals and development/design guidelines for the Planning Area.

This Plan's target audience is much broader than the City, public agencies and private businesses and individuals who took part in formulating the Plan. The Plan may be useful in other communities that are doing Region 2040 Town Center Planning in a suburban context. The Plan concepts are potentially applicable in other Region 2040 town centers and would consequently be of interest to stakeholders and participants in town center planning elsewhere in the Metro region.

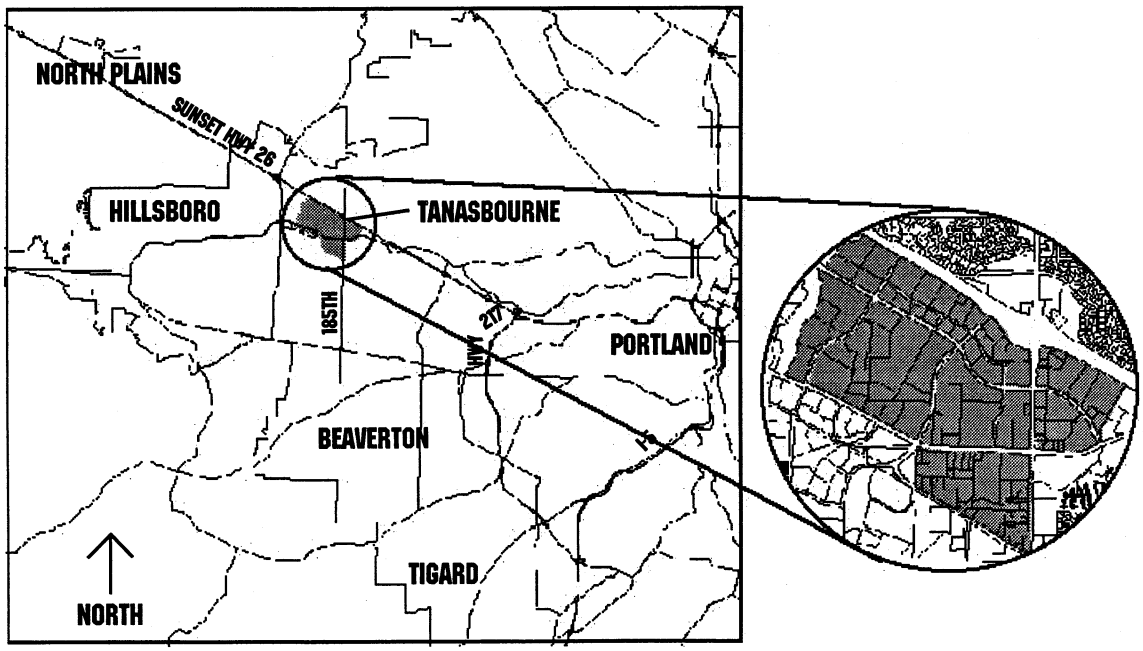
THE TANASBOURNE TOWN CENTER PLANNING AREA: WHERE AND WHAT

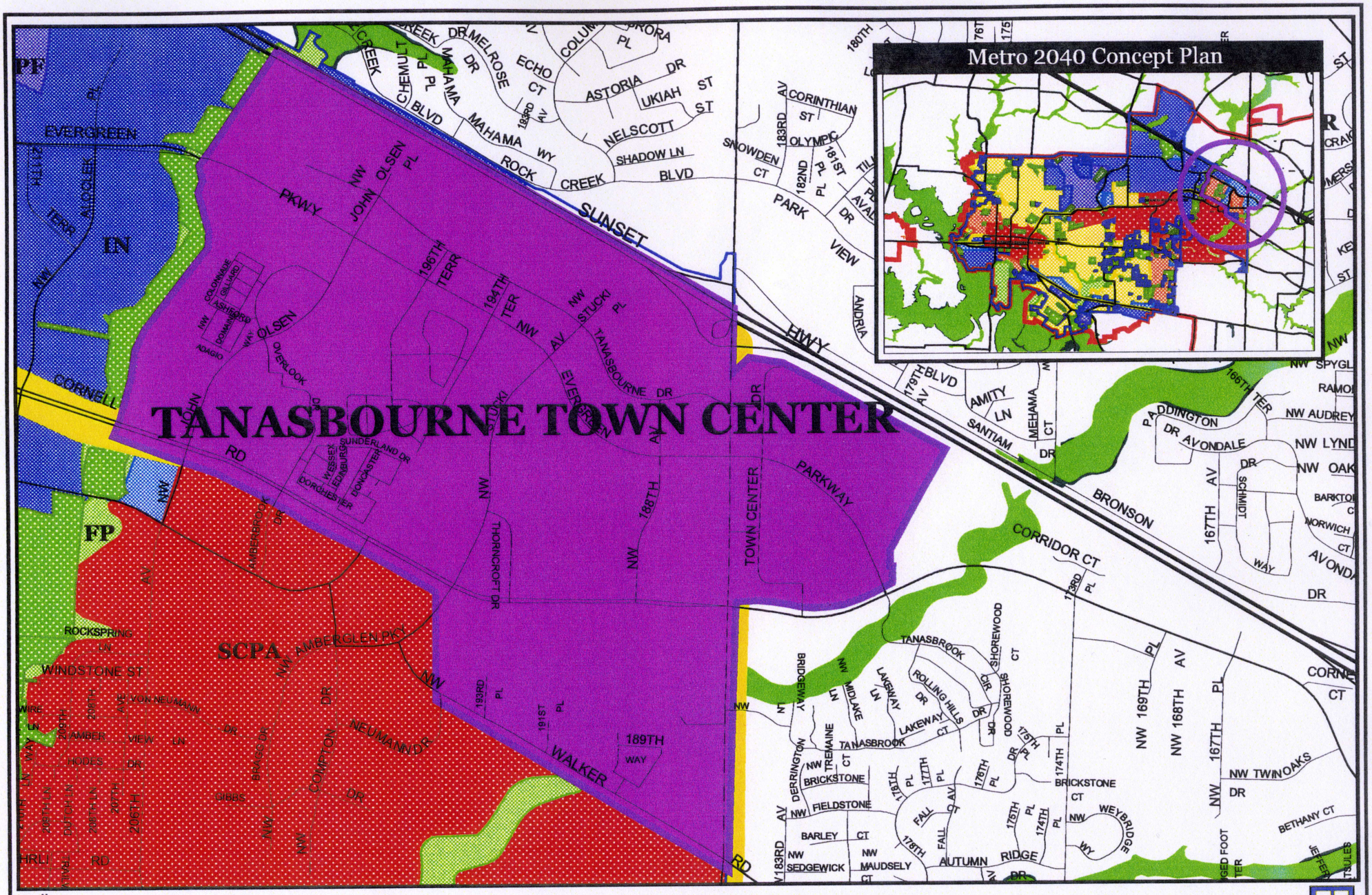
Located within the City of Hillsboro and Washington County, Oregon, the Planning Area is bounded by the Sunset Highway (US Highway 26) on the north, Rock Creek on the west, Walker and Cornell Roads on the south, NW 185th Avenue on the east between Cornell and Walker Roads and the Tanasbourne Town Center Shopping Center. Its generalized location is shown on Exhibit 1.

The Area contains about 509 acres, of which about 80% is already developed in a mix of relatively new multi-family, office and retail structures as is discussed further in Part I.

The Planning Area was determined by the City after Metro designated it as a "town center" in the general area of NW 185th Avenue and the Sunset Highway (see Exhibit 2). The Planning Area boundaries were based on the nature of the town center concept, existing recent development and clearly defined physical boundaries.

Project Vicinity Map
(Exhibit 1)





TANASBOURNE TOWN CENTER PLAN

Tanasbourne Town Center Planning Area
Exhibit 2

Legend

- Wash. County
- C Commercial
- FP Flood Plain
- IN Industrial
- OS Open Space
- PF Public Facility
- SCPA Station Community Planning Area
- INNER METRO 2040 Inner Neighborhoods
- OUTER METRO 2040 Outer Neighborhoods
- FEMA designated 100yr floodplain
- Corridors
- Parks and Schools
- Tanasbourne Town Center Planning Area

Plot date: November 2, 1999

SCALE 1 inch = 1320 feet

SOURCE:
City of Hillsboro Planning
City of Hillsboro GIS - Current as of December, 1998
METRO's Regional Land Information System (RLIS) - Current as of November, 1998

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THE CONCEPT OF A 2040 TOWN CENTER

Town centers are one of 10 "land use design types" under the Metro Region 2040 Growth Concept and the Metro Functional Plan. When the planning process began, the "town center" was a new concept that had not yet been clearly defined. Although there is now a general understanding of what "town center" means, it is not specific or formulistic, except in regard to a density goal that applies within such a center. Thus, intensive development having an average overall density of 40 people (residents and employees) per acre is only one of a few defining features of the town center design type.

A 2040 "town center" should provide shopping, employment, cultural and recreational opportunities, which are intended to serve not just its residents, but also tens of thousands of people drawn from surrounding areas. This is a second defining feature of "town centers.

A 2040 "town center" should emphasize transit service, multi-modal travel and transportation alternatives to the automobile. This is a third defining feature of "town centers". The Metro Framework Plan explains that town centers should function as strong business and civic communities with excellent multi-modal arterial street access and high-quality public transportation with strong connections to regional centers and other major destinations. Higher density population and employment densities within town centers are expected to make it more feasible and convenient to walk (or bike) to one's destination within these centers. This is accomplished by making distances shorter through greater concentration and appropriately mixing land uses.

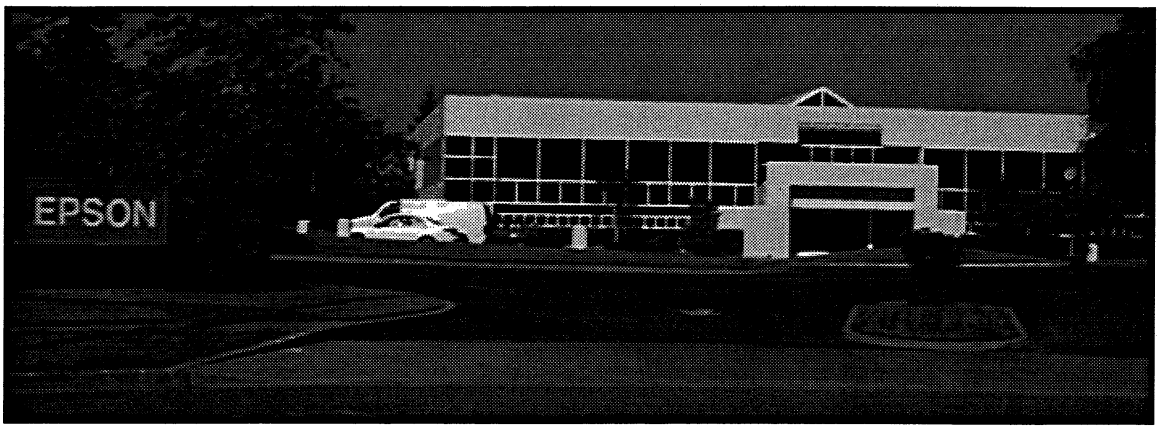
The Metro Region 2040 Growth Concept defines four levels of centers (based on population, employment and physical size): central city (downtown Portland), regional centers, town centers and station communities. The station communities, some of which overlap with the other centers in Hillsboro, cover a half-mile radius (somewhat more than 500 acres) around light-rail and transit stations and are expected to have a higher density (45 people per acre) than town centers.

Some centers are based on traditional downtowns (Hillsboro's downtown will be a regional center; downtowns in Lake Oswego, Oregon City, and Forest Grove are designated town centers). A number of town centers are in more automobile-oriented areas, with some based on existing commercial areas within established communities (for example, in Hillsdale and Cedar Mill). Other town centers, (for example in Happy Valley and Damascus), would be newly created to accommodate the retail and service needs of projected population growth. In short, each regional and town center will be unique in character and its precise mix of uses. (For more on regional land use design types, see Metro's Regional Urban Growth Goals and Objectives.)

In the late 1960s, Standard Insurance Company began purchasing property near the Sunset Highway at the western end of what is now called the Sunset Corridor eventually acquiring over 1,000 acres. In the early 1980s, Standard began developing about 850 acres as a master-planned, horizontally mixed land use project known as "Tanasbourne". Natural and improved site amenities within the Tanasbourne Area, and intensive capital investments by major developers and institutions have attracted businesses and residents to the area. Tanasbourne is now one of Oregon's largest mixed-use communities, including industrial, multi-family residential, office and retail uses. Tanasbourne also includes 50 acres of parks and greenways as development amenities. The current land uses reflect the actual construction of much of Standard's initial master planned Tanasbourne project.

Background

The portion of the Tanasbourne area situated within the Town Center Planning Area includes planned multi-family residential, retail, business offices and light industrial uses. Most of the remaining undeveloped (or underdeveloped) sites within the Town Center Planning Area are under construction or in the private development planning stage. Development of these sites are intended to be guided by this Plan in order to achieve the concepts and goals of a Metro 2040 town center.



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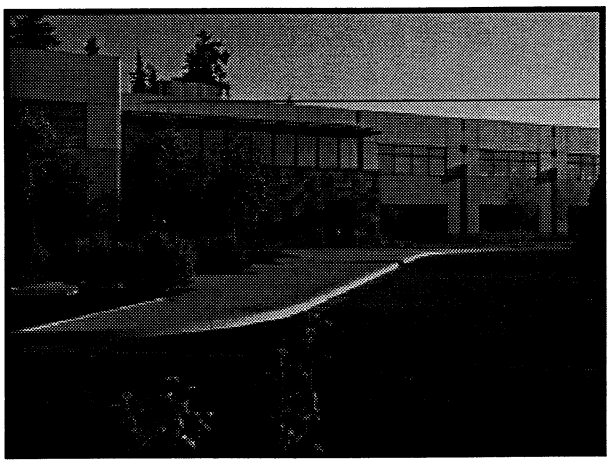
The parts of the Tanasbourne area situated outside the Town Center Planning Area are located immediately to the west across Rock Creek and contain primarily office and light industrial uses. Under Standard's master plan for Tanasbourne, the land directly east of Cornelius Pass Road has developed as a light industrial park with office and flex-space. An Epson factory, a US Postal Service distribution center, a Bank of America processing and administrative center, and the headquarters of retailer Norm Thompson are among the uses. Many of the remaining sites located between Cornelius Pass Road and Rock Creek (west of the Town Center Planning Area) are under construction or are in the planning stage of development.

Beginning in the 1980s, parts of the Town Center Planning Area were annexed to Hillsboro. Most of it is now within the City. Most of the Area's street and public infrastructure systems were built or enlarged in connection with development occurring in the Area since the mid 1980s. These systems were designed and built to have sufficient capacity to support both existing and additional urban development. However, a number of State, Regional and City transportation system requirements that affect growth and development in the Planning Area must be met to enable the area to be transformed into a 2040 town center. These include providing multi-modal linkages among developments inside and near the Planning Area and improved multi-modal connections



NORM THOMPSON

from the Area to nearby light rail transit service. In addition, more pedestrian and bike routes are needed within private properties in the area to supplement and connect with those routes that exist along public roadways.

About 80% of the Planning Area is already fully developed, mostly since 1985. Since 1995, there has been significant multi-family housing construction and the arrival of several major retailers. The recentness of development makes it likely most of these newer structures will remain intact and functional beyond the 20-year horizon of the Town Center Plan. Therefore, the Plan incorporates these existing land uses.

Only roughly 20% of the land within the Planning Area is undeveloped or underdeveloped, although planning projects for most of these underutilized areas were underway before the Area was designated a "town center". Some 60 acres of undeveloped land fortuitously situated near the Planning Area's geographic center, are the focus of a key component of the Town Center Plan, a proposed more intensive "Mixed-Use Pedestrian Corridor Area". This is discussed at Part 3.3.1 (page 52) of this report.

The southeast part of the Planning Area outside the original Tanasbourne area, includes three clusters of single-family homes. Input from their owners during Town Center Plan formulation suggests that some of these properties and some nearby commercial sites probably will be redeveloped to more intensive land uses in the foreseeable future. Together with adjacent undeveloped property, they form a second key component of the Plan, the "Cornell-Walker Roads Superblock" (sometimes referred to as the "Superblock"). It is discussed at Part 3.3.4 (page 62) of this report.

TO BE A REGION 2040 CENTER, RATHER THAN JUST AN URBAN ENCLAVE, AN AREA MUST BE INTEGRATED WITH ITS SURROUNDINGS AND SERVE AS THE FOCAL POINT OF URBAN ACTIVITIES FOR THE LARGER COMMUNITY THAT INCLUDES THE SURROUNDING AREAS. THIS CREATION OF SUCCESSIVELY BROADER COMMUNITIES RANGING FROM 2040 MAIN STREETS UP TO 2040 REGIONAL CENTERS IS ONE OF THE UNIQUE ASPECTS OF THE 2040 CONCEPT BEING REALIZED THROUGH THE TOWN CENTER PLAN.

Most of the owners of larger undeveloped parcels within the Planning Area have already developed holdings in other parts of the larger Tanasbourne Area. They are, in general, large, experienced, well-capitalized businesses that have already produced quality development in the Tanasbourne area. Proposed project plans for their undeveloped holdings address existing Regional and City land use planning policies. These owners and developers have been coordinating their project plans with the City to assure that their projects implement 2040 Town Center design concepts and development principles, supported by market research. Their market research documents support for more intensive, mixed-use, innovative development within the Planning Area and especially within a proposed Town Center Core Area. This type of development would be consistent with and implement the Region 2040 Town Center design concepts applicable to the Planning Area. **Consequently, the Town Center Plan recognizes and incorporates these existing and planned projects as integral parts of the Plan.**

ACCOMODATING FURTHER GROWTH: PLANNING AREA HOUSEHOLD AND EMPLOYMENT 2017 FORECAST

Title 1, Table 1 of Metro's Functional Plan forecasts and allocates 14,812 new households and 58,247 new employees to be accommodated inside the existing Hillsboro Urban Growth Boundary between 1994 and 2017. Of these, approximately 66% (9,758) of the households and 35% (20,338) of the employees must be accommodated within 2040 "mixed-use areas." (These are a category of land use "design types" developed by Metro that include regional and town centers). These are city-wide requirements; the Functional Plan leaves some aspects of the disbursement of the 2017 household and employee targets among mixed-use areas within Hillsboro to local comprehensive plan designation.

Metro planning staff suggested to the City and Village Center Planning Advisory Committee (VPAC) that based on Metro's assignment of its 1994 forecast of households and employees in 2017 in accordance with Regional Traffic Analyses Zones (TAZ) within Hillsboro, the Town Center should accommodate 7% (1,037) of the new households and 10% (5,821) of the new employees. (This suggestion, in a Metro Memorandum dated November 21, 1996, is not a requirement under the Functional Plan).

The Metro household and employment forecasts for the Planning Area are proving to be conservative. City building permit records indicate that households in the Planning Area already greatly exceed the 1,386 households recommended for 2017.*

*Source: Hillsboro Building Permit Data, July 1997.

The newness of existing development and other circumstances dictate a planning approach for the Plan's 20-year horizon that focuses on the undeveloped and underdeveloped portions of the Planning Area as the opportunity areas where the core of a true 2040 Town Center at Tanasbourne can be established. Therefore, the Town Center Plan proposes land uses in these areas that create a

TOWN CENTER PLAN OBJECTIVES

The Tanasbourne Town Center Plan sets forth a "Town Center" plan for the Tanasbourne Town Center Planning Area which prescribes integrated land uses, development intensities, street routes and designs, public utilities and infrastructure, institutional and civic uses, and urban design standards that are to apply to future development within the Planning Area. It also identifies community facilities and features needed to support existing and planned land uses within the Area. Finally, it specifies amendments to the City Comprehensive Plan and Zoning Ordinances needed to implement the Plan.

The Town Center Plan implements applicable Regional and State transportation planning policies and rules that facilitate multi-modal travel and less reliance on vehicular travel to and from the Planning Area. A detailed matrix description of how the Plan 's Policy Provisions implement applicable State and Regional growth management and transportation planning policies is contained in Appendix "A". For the Planning Area, the matrix identifies development and design principles and guidelines that facilitate the use of non-automobile travel modes by residents, employees and visitors. This is in addition to Plan provisions that seek to maximize pedestrian accessibility among land uses and activities planned within the Area.

The Town Center Plan land uses also contain ample development capacity to accommodate the household and job growth recommended for the Area as a result of Metro's Population and Employment 2017 Forecasts.

town center core environment and complementary surrounding uses. The Plan also establishes land use development, urban design and Plan implementation principles and strategies for these areas that support the creation of that environment. While these principles and strategies would apply immediately to new developments within the developable sites, they also provide town center planning guidance for all other properties throughout the Planning Area should they undergo renovation and redevelopment in the long-term future. Thus, a significant part of the process followed in preparing the Town Center Plan and this Report has been to articulate and draft a set of *Town Center Plan Guiding Principles and Development/Urban Design Strategies.* They are the heart of the Plan and their presentation in Part 3, (page 41) is an important part of this Report.

The Area-wide Town Center Plan Guiding Principles and Development/Urban Design Strategies as well as more detailed urban design guidelines that are to apply to the portions of the Planning Area expected to be developed in the near future, are the result of a consensus-based Town Center Planning process that actively recruited public and community input into Plan formulation. The principal mechanism for this input was the *Tanasbourne Village Center Planning Advisory Committee (VPAC)*.

Because significant development in the Planning Area was already underway as the Town Center Plan was being formed, Plan formulation focuses upon influencing and guiding already ongoing,

private land-use and site-development activities in ways that orient their character and design toward achieving City and Region 2040 town center policies, applicable State transportation planning directives and other Town Center objectives. In essence, much of the planning involved directing, influencing, encouraging and coordinating ongoing and concurrent public and private planning and development activities towards achieving 2040 Town Center design principles and Metro 2017 Functional Plan housing and employment targets applicable to the Planning Area. The key features of the Town Center Plan that were the focus of this process were the Plan's land use concepts and recommendations concerning the **Town Center Core Area and the Cornell-Walker Roads Superblock.**

By participating in the Town Center Planning process, Planning Area property owners were able to rise above their own development interests to pursue together a common, collective development of these owners regarding future growth, land uses and guiding development principles within the Planning Area.

Part 1
Existing Conditions & Trends

The Tanasbourne Town Center Planning Area is a large part of the northeastern portion of Hillsboro. The area is generally bounded on the north by Sunset Highway, on the east by NW 185th Avenue and the Tanasbourne Town Center Shopping Center, on the south by Walker and Cornell Roads and on the west by Rock Creek as shown on Exhibit 1 (See page 2). The current land use of properties in the general area are shown on Exhibit 3 (See page 13). Existing Hillsboro comprehensive plan land use designations for the Planning Area are summarized in Table 1.

Table 1
Hillsboro Comprehensive Plan Land Use Designations for the Planning Area Before the TCP

Acres	Percentage of area	Designated use (zoning)
236.1	42	Commercial (C-1, C-4)
41.5	7	Office and employment (M-P)
277.6	50	Total non-residential
247.1	44	Multi-family (A-3, A-4)[1]
21.5	4	Duplex (A-1)
268.6	48	Total residential
12.5	2	Park[2]
559	-	Total area

[1] Actual existing uses conform to the Zoning Map for the Area, although prior to being zoned for multi-family housing, single-family homes were built on some parcels. Public street areas are not included in the table.

[2] Park space has no specific zoning or use designations, but is separated out here. In the Comprehensive Plan, this tract owned by Hillsboro will be developed as a park.

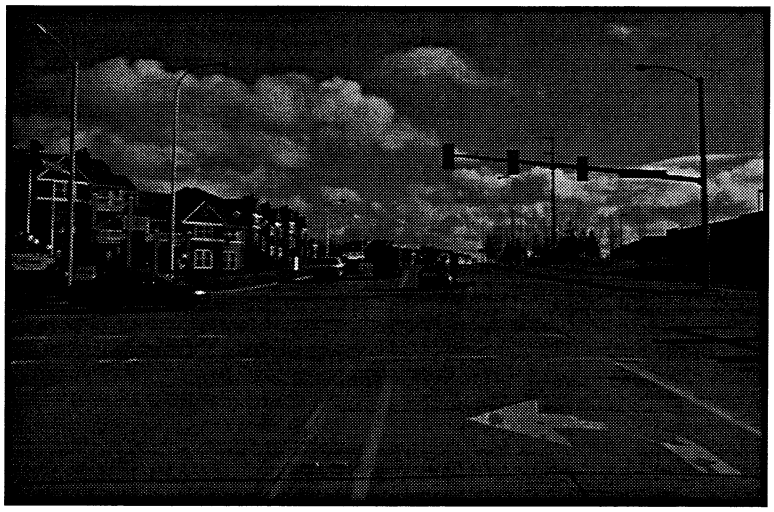
Source: Hillsboro Comprehensive Plan and Zoning maps dated July 1997.

1 Planning Area Description & Surrounding Land Uses

1.1. Planning Area Description

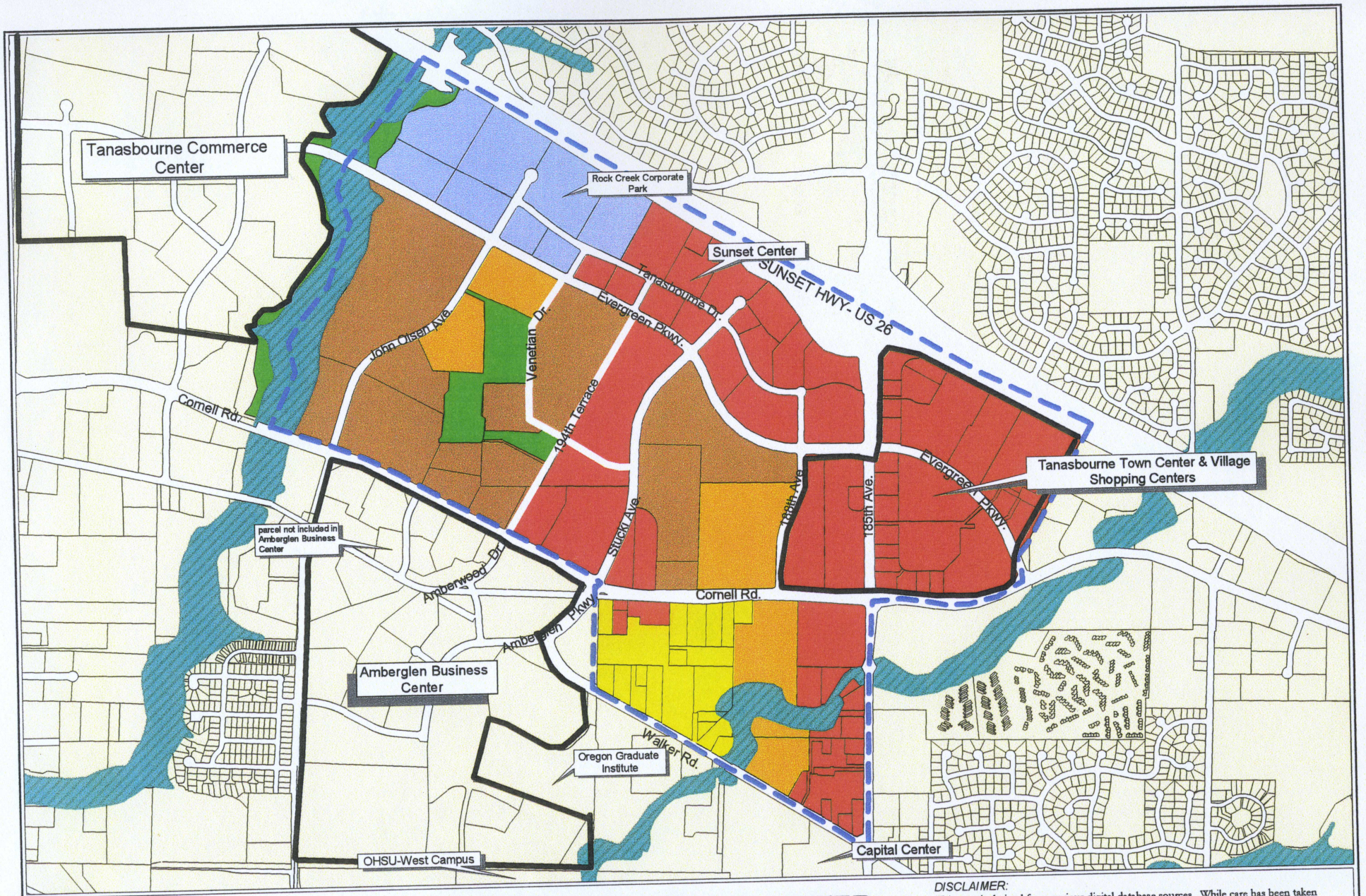
The Tanasbourne Town Center Planning Area is about 80% developed with a mix of multi-family residential, office, medical clinic and retail uses. Until now, the pattern of development in the Planning Area has been single uses (i.e., commercial, offices, apartments, etc.) on physically separated parcels. However, roughly 100 acres within the area are vacant and the bulk of these acres are concentrated within areas identified in this Report as the *"Town Center Core Area"* and the *"Cornell-Walker Roads Superblock"*. The Planning Area is comprised of gently rolling topography that rises from lower elevations along the southern portions of the Area to slightly higher elevations along the Sunset Highway.

NW 185th Avenue, which crosses over the Sunset Highway at an interchange is a major arterial that also serves through truck traffic. The segment of NW 185th Avenue north of NW Cornell Road is seven lanes wide. It is five lanes wide south of Cornell Road. Most of the parcels along 185th Avenue within the Planning Area contain relatively new retail or commercial uses that are described in Part 1 under Retail.



NW CORNELL ROAD

NW Cornell Road and NW 185th Avenue were the only two local primary roadways that existed in the Planning Area prior to its acquisition and initial development by Standard Insurance. Today, NW Cornell Road is a major, 5-lane arterial and through truck route. Several years ago 1.4 miles of NW Cornell Road were realigned and improved between Stucki Avenue and Cornelius Pass Road. In contrast, most of the 2-lane stretch of Walker Road west of 185th Avenue that bounds the Planning Area on the south still has a rural quality, providing access for two pockets of single-family homes built in the late 1960s and early '70s.



Legend

- Multi-Family 13-20 DU's Per Acre
- Multi-Family 21-30 DU's Per Acre
- Industrial
- Commercial
- Single Family
- Park
- Floodplain
- Planning Boundary

SCALE 1 Inch = 1300 Feet

TANASBOURNE TOWN CENTER PLAN

Exhibit 3: Existing Zoning

Plot Date: November 2, 1999

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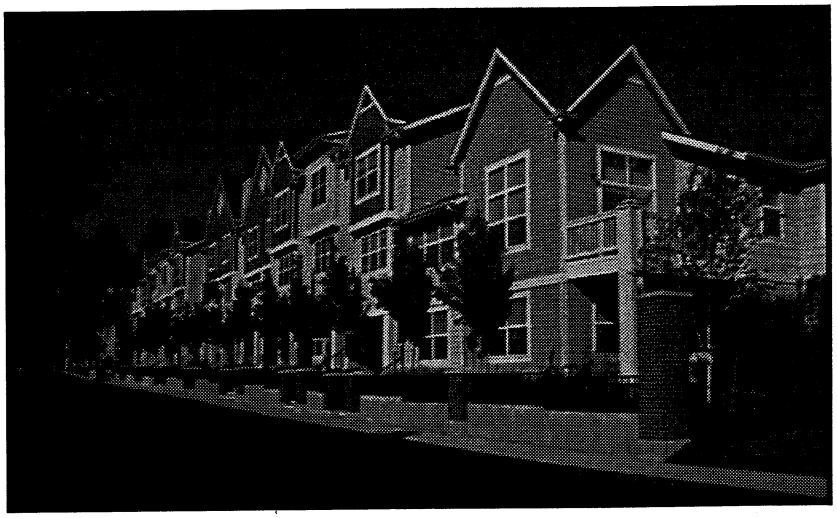
SOURCE:
City of Hillsboro Planning- Current - June 1, 1999 and
Washington County GIS- Current - May, 1999

Development of the larger Tanasbourne project by Standard Insurance and its various development partners included the construction of three new major roads that serve the Town Center Planning Area. The Area is bisected east-west by NW Evergreen Parkway, a tree-lined boulevard and north-south by Stucki and John Olsen Avenues. Along these routes and most other newer interior streets in the Town Center Planning Area, sidewalks and extensive landscaping, including trees, have been installed. These roadways, pedestrian ways and landscaping amenities frame the entire Planning Area and provide visual and physical linkages that tie together its existing and developing areas. Also, they set an underlying infrastructure for future development within the Planning Area.

North of Evergreen Road and within the Planning Area, development of two corporate office parks (the Rock Creek Corporate Center and the Sunset Center) has begun. The land in the northwest corner of the Planning Area is zoned for light industry.

The area between NW Evergreen Parkway and NW Cornell Road, bisected by Stucki Avenue and directly west of the existing Tanasbourne Village retail shopping center, has recently been developed with higher density residential units (garden apartments, a retirement complex and townhouses). For most of the undeveloped land in this area existing City land use policies allow for additional higher density multi-family housing, which is being constructed by Trammell Crow Residential. A 136-unit extended-stay hotel on Cornell Road east of Stucki Avenue has been developed on 3.71 acres next to a recently built retirement residence (1997; 108 units, 2.49 acres). Kaiser Permanente's Sunset Medical Center (1989), is also located in this area on the southwest corner of the intersection of Stucki Avenue and Evergreen Parkway. As discussed later, the undeveloped land along the west side of Stucki Avenue directly north of Cornell Road will become the Town Center Core Area.



LIONS GATE, A HIGH DENSITY TANASBOURNE TOWNHOUSE DEVELOPMENT

A triangular block formed by Cornell Road, Walker Road and NW 185th Avenue, never part of the original Tanasbourne project, is now called the "Cornell-Walker Roads Superblock". Existing retail development in the Superblock primarily fronts on NW 185th Avenue. This includes the Sunset Square retail shopping center and the Tanasbourne Medical Plaza. There are also apartments on Walker Road immediately west of the shopping center.

Within the southern and western portion of the Superblock an amalgam of zoning districts, land uses and open areas exist. These include a medium-density apartment zone, a mix of commercial uses, undeveloped land (some of it in the Bronson Creek floodplain), and single-family zoning and residences. The existing land uses are generally oriented outward toward and have direct access to Walker and Cornell Roads. The owners of smaller parcels in this area of the Superblock have varying individual plans for their properties that range from continuing single-family use, consolidating their holdings with surrounding neighbors and making their combined properties available to developers for more intensive land uses. The Tanasacres Nursery including its retail operation covers 12.51 acres facing Cornell Road, and is one of the larger single-ownership parcels in the Superblock.

Existing retail areas within the Planning Area and along the west side of NW 185th Avenue encompass the long-established Tanasbourne retail shopping center and the Sunset Square retail shopping center abutting and directly accessing to NW 185th Avenue. In addition, existing newer land uses situated in the area south of the Sunset Highway, west of NW 185th Avenue and north of Evergreen Parkway include several restaurants, a 13-screen movie complex and two hotels owned and operated by the Marriot Hotel corporation. An additional full service hotel is planned.

The Town Center Planning Area has two waterways: Rock Creek which runs along the western limit of the Planning Area and Bronson Creek which cuts through the southerly portion of the Superblock. The Rock Creek Corridor is being developed as a public greenway and includes a pedestrian trail and bike path system

BRONSON CREEK

along the creek and through the adjacent natural area, connecting under the Sunset Highway to Rock Creek Boulevard. Bronson Creek passes diagonally through the southerly portions of the Superblock. An apartment development fronting on Walker Road is located along the southern and eastern portions of the Bronson Creek floodplain.

1.1.1 Surrounding Land Uses

The Planning Area is generally surrounded by the Rock Creek residential neighborhood north of the Sunset Highway and residential neighborhoods to the east comprised of mixed single-family subdivisions and apartment complexes. Directly west of the Planning Area, extensive newer office complexes and light industrial uses have developed which include Epson, a regional US Post Office Distribution Center, Westbrook Corporate Park, a BPA Substation, the Melvin Mark office complex, Microtek, Etec, Norm Thompson and several other flex-office buildings. Directly south of the Planning Area, a variety of medical research, office parks and light manufacturing uses have recently been developed. These uses include the Capital Center, Amberglen Business Park, Oregon Health Science University - West Campus, Oregon Regional Primate Center, Oregon Graduate Institute, and two Westside Light Rail Transit Stations (Quatama and Willow Creek/185th Avenue Stations). Residential communities to the south of the Planning Area include the Amberview residential neighborhood, the Briar Creek Apartments and the Villages at Quatama Station apartment complexes.

1.2 Existing and Planned Projects

Development projects in the Town Center Planning Area have been mostly carried out by regional and national companies that have made long-term commitments and investments in the Area. As a result, the quality of existing developments in the Area compares favorably to similar high quality master planned developments in the Portland area.

The overall private master development plan for the larger Tanasbourne project, which includes the Town Center Planning Area describes a multi-use community containing retail, residential, office space and light manufacturing uses. The pace of implementation of this master plan has been determined largely by market demand over time for each type of land use. Today, all of the different types of land uses described by the plan except light manufacturing, exist inside the Planning Area.

1.2.1 Housing

The growing population size within the Planning Area reflects the Area's close proximity and housing role in relation to retail and office employment areas inside the Planning Area, substantial employment centers in northeast Hillsboro, the research/graduate education facilities immediately south of the Area, and the Area's easy and direct access to the Sunset Highway.

Existing and developing housing in the Planning Area are predominantly higher density apartment projects averaging more than 20 units per acre. As such, they are consistent with recommended 2040 Town Center residential densities. There were multi-family units in 9 projects on 170 acres at the time the Plan was first being formulated (1996-97) and several new multi-family projects have begun construction since that time. Since that time an additional 998 dwelling units have been completed or are under construction. A total of 3,763 dwelling units have been built or are currently under construction. There is a mix of 1-, 2-, and 3-bedroom, and garden and townhouse units. All are rental housing, although some units are designed as townhomes and are planned to be sold for private residential use in the future. At Planning Area build-out, around 5,500 multi-family housing units are projected (see Table 7).

Table 2
Major Existing or Committed Projects in the Planning Area Before the Plan

Residential [1]	
The Club at Tanasbourne	(352 apartments, ERP, 1990)
The Colonnade	(268 townhouses, TCRS, 1990)
Creekside at Tanasbourne	(150 units, HSC, 1995)
Greenbrier	(176 apartments, SREM, 1996)
Landmark Apartments	(285 units, Essex, 1990)
Lions Gate	(phase I, 181 townhouses, TCRS, 1996)
Lions Gate	(phase II, 174 townhouses, TCRS, 1997)
Rock Creek Landing	(480 apartments, TCRS, 1990)
Rock Creek Retirement Residence	(108 units, 1996)
Tanasbourne Terrace	(373 apartments, ERP, 1987)
Thorncroft Farms	(340 apartments, TCRS, 1997)
The Verandas at Hazel Grove	(496 apartments, TCRS, 1990)
Total	**3,383 apartments/townhouses**
Commercial	
Evergreen Parkway	(13 screens, Act III Cinemas, 1997)
Homeplace	(Tanasbourne Town Center, 1997)
Ross	(Tanasbourne Town Center, 1997)
Office and Other Commercial:	
Target	(Tanasbourne Town Center, 1997)
Barnes & Noble	(Tanasbourne Town Center, 1997)
Haggen	(Tanasbourne Town Center, 1997)
Mervyn's	(Tanasbourne Town Center, 1997)
Office Depot	(Tanasbourne Town Center, 1997)
Homegate Studios	(136-unit extended stay hotel, Homegate Hospitality)
Tanasbourne Corporate Center phase 1	(600,000 sq. ft, Melvin Mark Cos. and Standard Insurance)
Marriott Residence Inn	(242-unit extended stay hotel. Marriott)
Marriott Residence Courtyard	(155-unit motel, Marriott)

This table includes all the residential projects in the Planning Area plus non-residential projects started or in advanced planning during 1996-97. Dates in parentheses identify when the project opened or when its construction began. For Residential the number of units and manager are also given.

[1] All Residential projects within the Planning Area are multi-family. Essex is Essex Property Trust; ERP is Equity Residential Properties; HSC is HSC Real Estate; SREM is Summit Real Estate Management; TCRS is Trammell Crow Residential Services.

There are 15 detached single-family homes located within the Cornell-Walker Roads Superblock Area. All were built before 1975 on relatively large lots with direct access to Walker or Cornell Roads. All are on land now zoned for multi-family use. Based on input from the owners of these residential properties, there is no expectation of future new detached single-family construction within the Superblock. As discussed later, many of these parcels may be consolidated and redeveloped into multi-family housing or mixed-use developments.

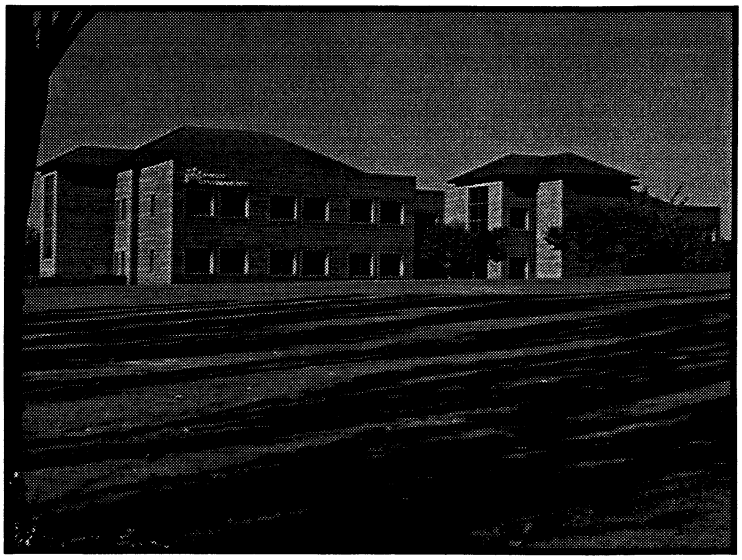
1.2.2 Office Space

The Planning Area had just one office building in 1996, a real estate broker's office. The Master Plan for the "Sunset Center" at Tanasbourne, has obtained preliminary Planned Unit Development approval from the City of Hillsboro. It will contain about 600,000 square feet of flex office space in six multi-storied buildings on about 23.5 acres on the north side of Tanasbourne Drive between Stucki and John Olsen Avenues and paralleling the Sunset Highway.

A corporate headquarters campus known as the Rock Creek Corporate Center has been built north of and adjacent to NW Tanasbourne Drive east of NW John Olsen Place. The site totals 9.04 acres and includes three buildings totaling 142,000 square feet of building area. Other smaller office projects are planned for various properties inside and next to the Planning Area, including the continuing development of the Amberglen Business Park directly south of the Planning Area. The Amberglen Business Park has the potential for 2.4 million square feet of office and flex space. Of the 2.4 million square feet potential approximately 1.2 million square feet has been built or is under construction.

1.2.3 Medical Offices

Two of the region's major health care providers have medical services facilities in the Planning Area. Both expect to expand them significantly. Tuality Healthcare, which operates its principle hospital in downtown Hillsboro, has an Urgent Care clinic in the Tanasbourne Medical Plaza located at the southwest corner of NW 185th Avenue and Cornell Road. The Plaza also includes two Tuality Healthcare and Providence Health System facilities — a medical office building (in which the Urgent Care Clinic is located) and the Health and Lifestyle Center, which is in a converted church. Tuality Healthcare and Providence Health System have joint plans to build two additional medical office buildings near these existing facilities.



KAISER PERMANENTE MEDICAL AND DENTAL OFFICES

Kaiser Permanente, one of the largest health maintenance organizations (HMO) in the Portland region, has medical and dental offices at the southwest corner of NW Evergreen Parkway and Stucki Avenue. Kaiser also expects to add space to its existing facility. Kaiser is also involved in a joint development planning effort concerning the Town Center Core Area that includes part of its surplus holdings.

1.2.4 Retail

Within the Town Center Planning Area there were approximately 763,000 square feet of retail space in early 1997 mostly east of as well as along NW 185th Avenue. At Planning Area build-out, an additional 690,000 square feet of retail uses is expected. Almost half of that amount would be located within the Town Center Core Area.

A previous retail shopping development known as the "Tanasbourne Mall", was located on parcels directly east of the NW 185th Avenue/Sunset Highway Interchange. The parcels now contain larger merchants such as Target and Mervyn's. The Mall was torn down in the early 1990s and redeveloped as part of a much larger existing "Tanasbourne Town Center" shopping center.

Along the east side of NW 185th Avenue is the existing Tanasbourne Town Center, a major shopping area containing dozens of retail stores, restaurants, service providers, and the like interspersed among shared off-street surface parking areas. At build-out, this area will have over 650,000 square feet of total retail space. North of NW Evergreen Parkway this retail area includes several major stand-alone stores i.e., Target, Mervyn's, Ross, Ethan Allen and Homeplace. South of NW Evergreen Parkway are several stand-alone and multi-tenant mall buildings. Retail stores south of NW Evergreen Parkway include Barnes & Noble, Petco, Office Depot, Hollywood Video, and a Haggen supermarket.

EXISTING "TANASBOURNE TOWN CENTER" EAST OF NW 185TH AVENUE

Two shopping centers along the west side of NW 185th Avenue feature grocery and other retail

EXISTING "TANASBOURNE TOWN CENTER" EAST OF NW 185TH

outlets that cater to the daily shopping and personal convenience needs of residents throughout Tanasbourne and the surrounding residential communities. The "Tanasbourne Village Shopping Center" between Evergreen Parkway and Cornell Road has over 220,000 square feet of retail space. The Sunset Square Shopping Center located on the northwest corner of NW 185th Avenue and Walker Road has about 96,000 square feet of retail space.

The design of much of the existing shopping centers and stand alone retail uses predates the adoption of the most current State and Regional transportation growth management and land use policies. Many of the retail uses front on parking lots rather than on a street as generally required by current Regional and State transportation growth management policies. Because of their recent establishment and, in many cases, long-term lease agreements including 99-year leases, it is unlikely these existing land uses will be able to comply with such new rules within the 20-year time frame of the Town Center Plan unless market factors prompt their earlier termination or major alteration.

HAGGEN SUPERMARKET

1.2.5 Industrial

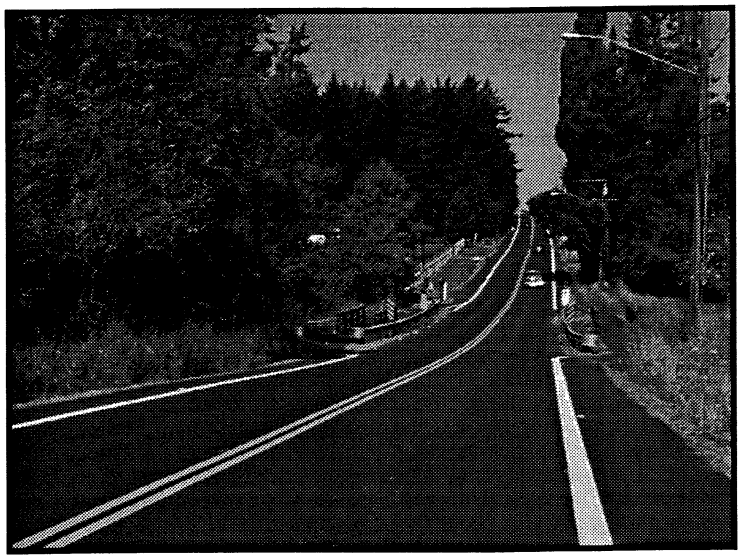
There are no industrial uses currently within the Planning Area. A proposed private development (ADC Kentrox) that would contain 98,337 square feet of light industrial space on 9 acres located on Tanasbourne Drive directly east of Rock Creek has been put on hold.

1.3 Transportation

The existing transportation system within the Town Center Planning Area is discussed more fully in Section 4.2 of this report in connection with changes to the system proposed within the City Transportation System Plan (TSP) Update (DKS Associates, 1997). Discussion of existing and planned automobile, pedestrian, bicycle and public transit facilities within the Planning Area in this document is augmented by more detailed information about these facilities in the TSP. Proposed transportation system improvements in this Town Center Plan are intended to be consistent with those prescribed for the Planning Area in the TSP.

1.3.1 Existing Streets and Roads

Stucki and John Olsen Avenues are primary collector streets running north-south within the Town Center Planning Area. They link land uses in the Area on adjoining properties to nearby east-west arterials which include Cornell Road, Walker Road and Evergreen Parkway. NW 185th Avenue is a major arterial that accommodates north-south automobile travel in mid-Washington County. It provides primary access to the Area from the Rock Creek residential community directly north of the Sunset Highway and residential to the south in the Aloha and Cooper Mountain areas. In the vicinity of the Planning Area, NW 185th Avenue experiences heavy traffic congestion during peak hour travel times.



WALKER ROAD LOOKING WEST AT BRONSON CREEK

To the west, the next north/south cross-over route across the Sunset Highway is Cornelius Pass Road (exit 62). To the east, the closest Sunset Highway interchange to the Planning Area with a north-south access is Cornell Road (exit 65). South of the Area, Baseline Road provides an east-west link to the City of Beaverton (east) and to the rest of the City of Hillsboro (west). Other east-west collector street links are proposed in the Light Rail Station Community Planning Areas located south of the Planning Area.

Traffic counts obtained as part of the City TSP update indicate substantial PM peak hour traffic volumes along most of the roadways in the Planning Area as shown in the following table.

Table 3
Tanasbourne Town Center Planning Area
Existing ADT and PM Peak Hour Traffic Volumes (1997)

Roadway	Traffic Volumes ADT	Traffic Volumes PM Peak
Sunset Highway	82,300	
NW 185th (Walker to Cornell Road)		2,700
NW 185th (Cornell to Sunset Highway)		3,200
NW 185th (Sunset Highway to Rock Creek Blvd.)		3,200
Evergreen Parkway (185th to Stucki Avenue)		1,200
Evergreen Parkway (Stucki Avenue to John Olsen Avenue)		1,000
Evergreen Parkway (John Olsen Avenue to Rock Creek)		900
Cornell Road (185th to Stucki Avenue)		900
Cornell Road (Stucki Avenue to John Olsen Avenue)		1,800
Cornell Road (John Olsen Avenue to Rock Creek)		1,600
Stucki Avenue (Evergreen Road to Cornell Road)		150
John Olsen Avenue (Evergreen Road to Cornell Road)		400
NW Walker Road (185th to Stucki Avenue)		1,100

Source: Hillsboro Transportation System Plan, Figure 3-4, (DKS Associates, 1997).

The City's updated Transportation System Plan (1998) does not prescribe significant modifications to most of the existing road network within the Planning Area. Many of these roadways are relatively new and have sufficient travel capacity to support the development of 2040 recommended Town Center densities (i.e., 40 people per acre) in the Area based on TSP (and Regional RTP) modeling results. Improvements are needed and proposed in the TSP, however, to NW 185th Avenue, Walker Road, and the interchange at 185th Avenue and the Sunset Highway. Several new local interior streets are also planned. These improvements are needed to adequately serve new proposed mixed-

NW 185TH AVENUE

use (and 2040 Town Center densities) within the Town Center Core Area and the Cornell-Walker Roads Superblock.

As part of the City TSP update, the existing Level of Service (LOS)[1] of various intersections in the Planning Area was determined. The results of that research are shown in the following table.

Table 4
Tanasbourne Town Center Plan
Existing Level of Service (LOS) During PM Peak Hour Travel (1997)

Intersection	PM Peak Hour Level of Service
185th/Evergreen Parkway	"C"
185th/Cornell Road	"D"
185th/Walker Road	"D"
Stucki Avenue/Cornell Road	"C"
Stucki Avenue/Evergreen Road (unsignalized)	"B" (minor street left turn LOS) "D" (minor street left turn LOS)
John Olsen Avenue/Cornell Road	"B"
John Olsen Avenue/Evergreen Road (unsignalized)	"B" (major street left turn LOS) "D" (minor street left turn LOS)

25

[1] "Level of Service (LOS)" correlates traffic volume data to descriptions of traffic performance at intersections. LOS is used as a measure of effectiveness for intersection operation. It is similar to a "report card" rating based upon average vehicle delay. LOS "A", "B" and "C" indicate conditions where traffic moves without significant delays over periods of peak travel demand. LOS "F" represents conditions where average vehicle delay exceeds 60 seconds per vehicle entering a signalized intersection and demand has exceeded the intersection's capacity. This condition is typically evident in long queues and delays.

LOS "D" or better is generally the accepted standard for signalized intersections in urban conditions. Unsignalized intersections provide level of service for major and minor street turning movements. For this reason, LOS "E" or even "F" conditions at unsignalized intersections generally provide a basis to study the intersections further and to determine availability of acceptable gaps, safety and traffic signal warrants.

The LOS standards for a morning/afternoon 2-hour peak travel period for Town Centers are prescribed in the adopted Metro Urban Growth Management Functional Plan as follows:

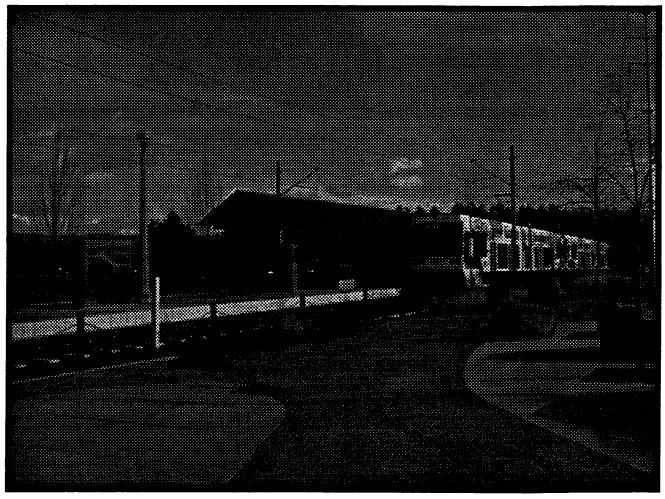
- the preferred operating standard for the 1st and 2nd hour is LOS "E"
- the acceptable operating standard for the 1st hour is LOS "F" and for the 2nd hour is LOS "E".

The LOS analysis results indicate that Planning Area intersections generally are performing at acceptable levels at the present time. Within the Town Center Plan's 20-year time horizon, it is anticipated that major development within the Planning Area will likely include only the establishment of mixed-use and other developments at 2040 Town Center densities primarily within the Town Center Core Area and the Cornell-Walker Roads Superblock based on known private development plans described later in this report. Such increased densities in these two areas may erode the existing LOS (and capacities) at a few of these intersections, mainly along NW 185th Avenue, to unacceptable levels requiring effective corresponding traffic congestion mitigation measures to be taken.

1.3.2 Light Rail and Bus Transit Service

The Town Center Planning Area is located about a mile north of two West Side Light Rail Transit Stations. These are the Quatama/NW 205th Avenue and the Willow Creek/SW 185th Avenue Light Rail Transit Stations. Both transit stations are accessible from the Planning Area via direct automobile, pedestrian and bike routes along NW 206th Avenue and NW 185th Avenue. A planned extension of Amberglen Parkway described in the City's TSP will provide a relatively direct route between the Town Center Core Area and the Quatama/205th Avenue station.

Nine Tri-Met bus routes (including 3 shuttle routes) serve the entire City of Hillsboro. Five of them provide transit service within the Planning Area: Route 89 (Tanasbourne Route) provides service between the Rock Creek neighborhoods and the Tanasbourne Area as well as service between the Sunset Transit Center to the Tanasbourne Area via Cornell Road. Route 48 (Cornell Route) and Route 47 (Baseline Route) connects the Tanasbourne Area with the Hillsboro Transit Center located in downtown Hillsboro. Route 48 travels on Cornell Road to its intersection with NW 185th Avenue, where it heads south on NW 185th Avenue terminating at the 185th Avenue/Willow Creek Transit Center (TC). Additional east-west service is provided by Route 47 (Baseline Route). Route 47 travels east from the Hillsboro Central/SE 3rd Avenue Transit Center along Baseline Road turning north onto NW 231st/229th Avenues then heading east on NW Evergreen Parkway before it turns south on NW 185th Avenue and it also terminates at the 185th Avenue/Willow Creek Transit Center. Shuttle service is provided to the Cornell-Walker Roads Superblock by Route 49S (Willow Creek Route). This shuttle route is a result of employers in the area teaming up with Tri-Met to create bus service that connects employment areas to MAX. Route 49S makes a loop using Walker Road through the Oregon Graduate Institute campus. Route 52 (Farmington-NW 185th Route) provides north-south transit service to the Planning Area via NW 185th Avenue and east-west service from 185th Avenue TC to the Beaverton TC. This route provides a regional connection between Portland Community College's Rock Creek Campus and the City of Beaverton.



QUATAMA/205TH AVENUE LIGHT RAIL STATION

1.3.3 Bike and Pedestrian Facilities

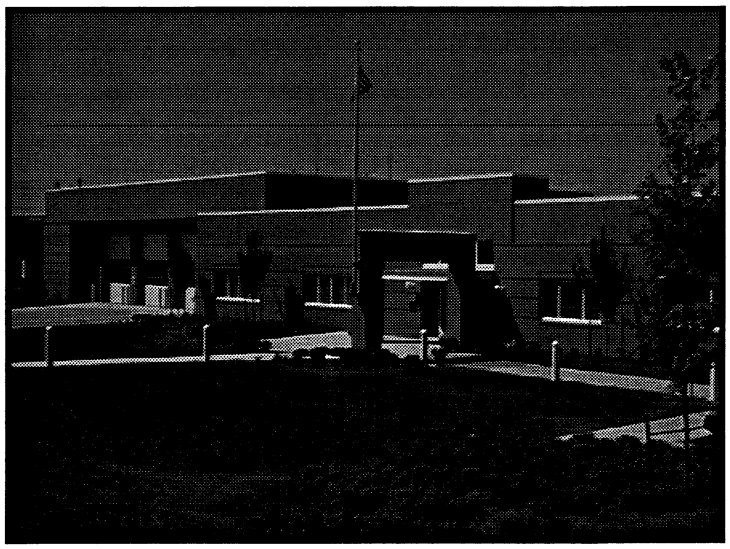
The City's TSP states that in general, Hillsboro has limited existing connectivity for bicyclists traveling to activity centers within the City. The situation is different in the Planning Area. It has a well developed bikeway system running along most of its existing roadways. The system was developed as the Area developed according to the original private Tanasbourne master development plan. NW 185th Avenue, Cornell Road and Evergreen Parkway have bikeways that link to bike routes within areas surrounding the Planning Area. Bikeways along a portion of Walker Road and Stucki Avenue provide interior bikeway circulation throughout the Area. The Rock Creek Greenway Bikeway connects Tanasbourne to the Rock Creek Neighborhood located north of the Sunset Highway.

The existing pedestrian sidewalk system within the Planning Area is well developed. All roadways in the Area except along portions of Walker Road have sidewalks. A need exists, however, for a non-sidewalk pedestrian network between and among private projects throughout the Area. This would enable residents and employees to move throughout the Area more efficiently along pedestrianways other than those adjacent to streets, but connected to the existing sidewalk system.

Pedestrian counts taken during the preparation of the City TSP reveal that pedestrian crossing safety problems occur along NW 185th Avenue. In 1997, TSP pedestrian movement data shows that the intersection of NW 185th Avenue and Walker Road and the NW 185th Avenue/Sunset Highway are the third and fourth busiest pedestrian travel points in the City.

1.4 Infrastructure and Public Services

Most of the public infrastructure systems within the Town Center Planning Area were built or enlarged since the mid 1980s in connection with development in the Area. These systems have the capacity to support both existing and additional urban development within the Area. Privately provided services also generally have adequate capacity or plans to increase levels as demand increases.



EVERGREEN PARKWAY FIRE STATION

The existing water, sanitary sewer, and storm drainage systems in the Planning Area are shown in Exhibit 11 and are discussed in Part 4. Public safety and services, parks and private infrastructure are discussed below.

1.4.1 Public Services and Schools

A Hillsboro police sub-station has been established at a site on Cornell Road immediately west of Rock Creek from the Planning Area. There is a fire station operated by the Tualatin Valley Fire and Rescue District (TVFRD) on NW 185th Avenue immediately north of the Sunset Highway. Neither TVFRD or the City plans to build a new fire station within the Planning Area. A new City Fire Station has been built and is in operation at a site on Evergreen Parkway approximately 1.5 miles from the heart of the Planning Area.

There is a City of Hillsboro branch library on the west side of NW 185th Avenue in the Tanasbourne Village Shopping Center.

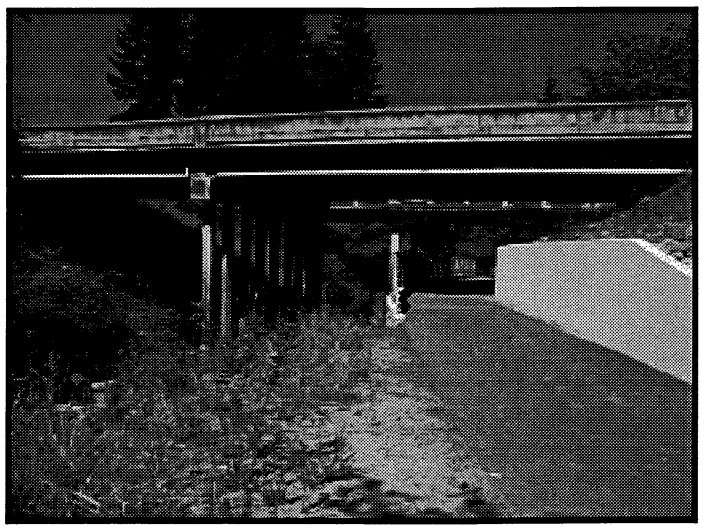
Most of the existing and planned housing within the Planning Area is expected to be occupied by newer multi-family, single or unrelated tenant occupants who generally do not have school-age children. There are no schools within the Planning Area and none are planned. Children from the Area attend the Beaverton School District's McKinley Elementary (located east of NW 185th Avenue

between Walker and Cornell), Five Oaks Intermediate School and Westview High School. District school buses provide transportation.

There is also a privately run day care facility located on Evergreen Parkway that provides day care for infants 6-weeks and older and classes for children up to age 10.

1.4.2 Parks and Open Spaces

Rock Creek and its floodplain are located between the Sunset Highway and Amberwood Drive and contain about 41 acres of natural areas along the west edge of the Planning Area. This greenway corridor was donated to the City of Hillsboro Parks and Recreation Department by Standard Insurance in the early 1990s. Consistent with Metro's plan for a greenway along the Rock Creek corridor, the City has constructed a pedestrian/bikeway through this natural area. The pedestrian/bikeway runs north-south from Rock Creek Boulevard under the Sunset Highway, across Evergreen Parkway to its current terminus at a point on John Olsen Avenue midway between Evergreen Parkway and Cornell Road. In the future, it is proposed to be extended south along Rock Creek to Cornelius Pass Road.



ROCK CREEK BIKEWAY CONNECTION UNDER THE SUNSET HIGHWAY

Within the Planning Area, parks, plazas and open spaces are being planned by both the City's Parks and Recreation Department and the private sector. These new facilities include gathering places provided by the public sector, which will be integral parts of the proposed Town Center Core Area[1]. These gathering places would be connected to a forested park area and a nearby City ballfield. Together, these facilities will provide recreation space to residents, workers and visitors in the surrounding Mixed-Use Pedestrian Corridor Area, which contains relatively dense multi-family housing neighborhoods.

Land use proposals for the Cornell-Walker Roads Superblock also include development of a City park somewhere near the center of the Superblock. In addition, residential and office developments

[1] The Town Center Plan's graphics referring to the Plaza are for illustrative purposes only.

within and near the Planning Area that are built and under construction have landscaped open space as an integral part of their design.

1.4.3 Communications

General Telephone (GTE) provides telephone services to the Planning Area. GTE has conduit in all public streets in the Area and within the Tanasbourne Town Center. Existing facilities are adequate to meet the needs of existing development in the Planning Area. Especially along Evergreen Parkway, expanded telephone capacity is expected to be required as additional office and multi-family construction is completed.

Part 2
Creating the Town Center Plan

The community land use planning techniques and process used to formulate the Town Center Plan responded to a unique set of circumstances affecting the Planning Area. These circumstances included opportunities that were limited by several factors: on-going private development/land acquisition and lease negotiations that affected those areas; and, evolving applicable state, regional, and city planning policies. Existing uses, forecasts for further growth and the private development plans and desires of the various stake-holders also had an influence in shaping the planning techniques and process. The planning process used to prepare the Tanasbourne Town Center Plan (TCP) is described below.

2.1 The Planning Process

It was recognized at the onset of the project that a purely regulatory planning approach alone may not result in the plan's implementation and could discourage stakeholders' enthusiasm toward participating in the Planning process. The Plan and the process had to coordinate and guide ongoing and imminent development within the Planning Area under prospective and recently approved private development projects and plans. More generally, successful plan formulation and implementation meant working with stakeholders actively involved in the Area's development in order to attain their participation in and acceptance of a plan and its principles.

From the City's perspective, the planning process needed to direct, influence, encourage, and coordinate ongoing public and private planning and development activities within the Area in ways that would implement applicable City, Regional and State transportation planning policies. In general, the Town Center planning process was straight-forward and non-contentious. Most of the area was recently developed and reasonably conforms with Metro Region 2040 Town Center goals and guidelines applicable to the Area. Extensive new development and redevelopment are issues for only about one-fourth of the Planning Area. Thus, the TCP land use planning focused

primarily on the two areas within the Planning Area that are still largely undeveloped or underdeveloped.

A key part of the planning process was the creation of a project planning advisory committee, to assist and advise the project consultants. The Hillsboro City Council appointed 19 local residents, property owners and business people, along with 4 representatives of government bodies with an interest in the Plan to serve on a Village Center Planning Advisory Committee (VPAC). The Committee met regularly during each stage of plan preparation. VPAC members and the interests they represented are listed in Table 5.

Plan formulation resulted primarily from intensive, ongoing dialog and interaction among the VPAC, government representatives, landowners, other interested citizens and organizations, and the project consultants.

Table 5
The Village Center Planning Advisory Committee

Committee Member	Interest Represented
Loren Henry	Developers Diversified Realty Corp.
Bob Iwasaki (Vice Chair)	Iwaski Nursery
Reg Wobig	Kaiser Permanente Health Foundation
Bill Medak	Kaiser Permanente Health Foundation
Bob LeFeber	Retail Community
Jim Mark	Melvin Mark Development Co.
Dr. P Michael Conn	STAR Park, Inc.(OHSU, OGI, OSSHE, CAPITAL Center et al.)
Richard K Schoebel	Pan Pacific Development
Bill Bugenhagen	Amberglen, Inc.
Kelly Puziss	The Puziss Property
Brian Puziss	The Puziss Property
Trond Ingvaldsen	Standard Insurance Co., Inc.
Clyde Holland	Trammell Crow Residential
Manny Berman	Tuality Health Care-Sisters of Providence
Tom Luckey	The Luckey Property
Muriel Jones	Cornell/Walker Road Property Owner
Marvin Lamascus	Cornell/Walker Road Property Owner
Linda Jalowy	Cornell/Walker Road Property Owner
Richard Porn (Chair)	Sunset Corridor Association
Ex Officio:	
Ray Valone	Metro
Mary Webber	Metro
Lidwien Rahman	ODOT, Region 1
Tracy Lester	ODOT, Region 1

2.1.1 Plan Work Program

Preparation of the Town Center Plan followed a project work program that had three components.

Public Involvement Program. One of the first tasks was to establish a public involvement program. The program was formulated with the advice and approval of the Hillsboro Citizen Involvement Advisory Committee (CIAC). Through this program, the Town Center Plan's goals and objectives were established. In accordance with the program, parties who were affected by or simply interested in the Plan were kept aware of the emergence of its various elements through several public information open houses. Table 6 lists the meetings held.

Table 6
Public Involvement Activities:
Project Team Meetings with Various Groups

Date	Group	Items Discussed
1996		
Oct 31	VPAC	Introductory Project Meeting
Nov 06	VPAC	Principles Subcommittee meeting to begin subcommittee formulation of the Principles & Strategies.
Nov 21	VPAC	Technical discussions and presentations. Preliminary Town Center Principles & Strategies discussed.
Dec 12	VPAC	Technical discussions and presentations. Draft Town Center Principles and Strategies reviewed.
1997		
Jan 22	Planning officials	Metro, ODOT, DLCD, Tri-Met, and Washington County officials met with Metro Growth Management Services staff to review and discuss compliance with applicable plans and policies.
Feb 06	VPAC	Core Area and Superblock concepts presented.
Feb 25-26	Property owners	Separate meetings with individuals and groups of property owners.
Mar 13	Cornell-Walker Rd. Neighborhood	Review existing conditions and proposed private plans
Apr 09	Cornell-Walker Rd. Neighborhood	Review design concepts, gather input, and build consensus for design refinement of Superblock plan
Apr 16-18	Property owners	Separate meetings with individuals and groups of property owners.
Apr 17	VPAC	Present more Core Area and Superblock concepts and transportation issues.
Apr 24	VPAC	Presentations of architects and consultants working with Melvin Mark Companies, Standard Insurance, Trammel Crow Residential, and ADC Kentrox on proposed private development plans.
Apr 29	General public	Open House at Tanasbourne Public Library.
May 08	Cornell-Walker Rd. Neighborhood	Review latest design and gather feedback from residents.
May 15	VPAC	Present draft Plan outline, discuss City Transportation System Plan proposals affecting Planning Area.
Jun 19	VPAC	Present draft Plan.
Jun 26	General public	Open House at the Courtyard by Marriott hotel in Tanasbourne.

VPAC is the Village Center Planning Advisory Committee, whose members are listed in Table 5. The Project Team are the consultants involved in the planning process.

Area-wide and Site-specific Reconnaissance and Visioning. A key plan preparation step was the review of public and private land use plans affecting the Planning Area. These included the Metro Region 2040

Growth Concept and Regional Urban Growth Goals and Objectives, the Metro Functional Plan, the East Hillsboro Station Community Plan (related to light rail), the City Comprehensive Plan and Zoning Ordinances, and the Tanasbourne Master Plan, as well as nearby development plans. The Town Center Plan takes these into account and addresses applicable aspects. This task also included conducting a physical-design visioning process from which initial Town Center land use concepts were formed, after having conducted an analysis of the Planning Area's development opportunities and constraints.

Preparation of the Plan. With what was learned during the public involvement program and the area-wide and site-specific reconnaissance and visioning program, actual preparation of the Plan involved articulating its several components. The Plan itself is presented in Part 3.

MAJOR ADJOINING PROJECTS

South of the Planning Area major development is underway. Immediately south of Cornell Road between Stucki Avenue and Cornelius Pass Road is Amberglen, a 217-acre office and light-industry park being developed by Birtcher Property Services for AmberJack, Ltd, under a PUD approved in 1992. It is being built on property acquired in 1991 from the Oregon Graduate Institute, which kept 80 acres of its original holdings (south of Walker Road). Initial development has been primarily 50,000-to-60,000 square foot multi-use one-floor office-flex space buildings, but in 1997 work began on three-to-four story Class A office buildings available for lease to the general public, the first in that category in Hillsboro.

The Oregon Regional Primate Research Center (ORPRC) Concept Master Plan was prepared by ORPRC in anticipation of merging with Oregon Health Sciences University (OHSU) and to create a Science, Technology and Research Park (STAR Park, Inc.) with its neighbors — the Oregon Graduate Institute (OGI), the Center for Advanced Partnerships in Technology and Learning (Capital) Center and the Amberglen Business Park. About 185 acres (74%) of the 250-acre ORPRC tract are developable; at the time, only the 15-acre core campus was developed with about 200,000 square feet of space and 190 employees. The Plan proposes adding 1.0 million square feet of research and support buildings to accommodate an additional 1,510 employees by the year 2017. This would be on 106 developed acres (including the already-developed 15 acres). East of this, with frontage on NW 185th Avenue, 21 acres would be available for other development. To the west between Bronson Creek and NW 206th Avenue 58 acres would be available for other uses.

The ORPRC and Town Center plans affect each other and several issues need to be resolved as each progresses:

- Transportation planning including alignment and capacity of Amberglen Parkway.
- Connection with Salix Terrace and a planned east-west road through the ORPRC planning area from NW 185th Avenue to 206th Avenue.
- Light rail transit access (Tanasbourne's access to light rail needs to be coordinated with OHSU campus and ORPRC).

2.1.2 Public Involvement

Because the planning process had to be closely coordinated and integrated with concurrent private planning and development activities, intensive stakeholder and public involvement in the planning process was sought and occurred in a number of ways. The diverse types of project meetings listed in Table 6 illustrate this effort.

Public and Private Outreach. The City and project consultants sought to engage all possible stakeholders in an effort to determine the best ways to insure their participation in the planning process and obtain stakeholders' support of the resulting Plan.

Research. The consultants gathered and analyzed a wide variety of data regarding economics, demographics, transportation, infrastructure, and sites. The data provides the technical foundation for the Plan.

Interviews. One of the most effective means of uncovering critical market data and information on private development plans is confidential interviews with area and neighboring stakeholders — including businesses, property owners, private citizens — and public officials. Use of confidential interviews were a key to gathering useful information regarding stakeholders' interests in the Planning Area. 35

Education. Successful planning strategies are based on a clear understanding of the underlying economic and regulatory forces. Thus, the planning process endeavored to see that all participants, including the consultants, shared data and opinions as much as possible. As part of this effort, time was devoted to evaluating, defining and, refining Area strengths, weaknesses and opportunities.

Concept and Design Testing. The design process was used as both a facilitation tool and a means to define and achieve consensus on Area planning issues and strategies. Focusing on design gave participants a way to see beyond their own interests. The City, VPAC and the consultants brought together planners, architects, engineers, economists, marketing consultants, and public agency representatives to work on Town Center design concepts.

Visioning. The Planning Area visioning and the resulting development guidelines and design principles to be applied within the Area were formulated by the VPAC and its subcommittees. These principles and guidelines are articulated in the next section of this report.

Charrettes and Design Workshops. Most of the recommended land uses and their design features prescribed in the Town Center Plan derive from design Charrettes conducted by the project consultants during VPAC and special project meetings. The design and architectural consultants who participated in the Charrettes[2] also included professionals who prepared project plans for some of the major landowners in the Area.

[2] "Charrette" is the name applied to a process of continuous redesign and refinement until the feedback of participants has been incorporated. In other words, things are kept fluid until a consensus is reached.

Part 3

The Tanasbourne Town Center Plan (TCP)

This document describes the contents and elements of the Tanasbourne Town Center Plan (TCP). "The Plan" will be incorporated into the City's Comprehensive Plan by City ordinance amending that Plan, becoming a "Community Plan" of the City.

Town Center Plan Maps are included in this document. Some of the maps will become part of a "Tanasbourne Town Center Community Plan". Other Plan Maps reflect information already contained in the City's Comprehensive Land Use and Transportation System Maps. Finally, amendments to the City's Zoning Ordinance that will implement the Plan's land use, urban design and other recommendations also will be initiated for City adoption.

THE KEY PURPOSE OF THE TOWN CENTER PLAN IS TO IMPLEMENT METRO 2040 TOWN CENTER DESIGN AND LAND USE OBJECTIVES, STATE AND REGIONAL TRANSPORTATION PLANNING OBJECTIVES, AS WELL AS CITY POLICY PRIORITIES. THIS PLANNING PROJECT RECOGNIZES THAT QUALITY DEVELOPMENT AND PUBLIC POLICY IMPLEMENTATION OFTEN IMPROVE WHEN THERE HAS BEEN A FOCUSED, YET FLEXIBLE AND CO-OPERATIVE PLANNING PROCESS. TO THIS END, THE PLANNING PROCESS CONCENTRATED ON FORMING A PLAN AND APPLYING AN IMPLEMENTATION STRATEGY THAT PROVIDES LAND USE AND URBAN DESIGN POLICY DIRECTION TO ENABLE PRIVATE DEVELOPMENT PROJECTS WITHIN THE AREA TO ADDRESS PUBLIC POLICIES BUT ALSO TO ACCOMPLISH MARKET OBJECTIVES.

REGULATORY CONTEXT

Once approved by the Hillsboro City Council, the Town Center Plan will become part of the City's Comprehensive Plan. The Comprehensive Plan is the guiding document with which private land development plans and land use regulations and actions must comply. A comprehensive land use plan is implemented through a zoning map and land use regulations governing such things as permitted uses, subdivisions, land partitions, and development and design.

Comprehensive plans are subject to ORS 197 statutory provisions, The Statewide Planning Goals and State Administrative Rules administered by the Oregon Department of Land Conservation and Development (DLCD). Adopted functional plans of the Portland Metropolitan Service District (Metro) also apply to comprehensive plans. The Town Center Plan's compliance with applicable State and Regional planning policies and standards is described in Parts 3, 4, and 5 and in greater detail in Appendix "A".

3 Plan Elements

The Tanasbourne Town Center Plan (TCP) elements include the following:

- **Guiding Principles and Development/Urban Design Strategies**
- **General Land Use Plan (Map)**
- **Transportation System Improvements**
- **Implementation**

TCP Planning Area development policies are expressed in the Plan as guiding principles and urban design strategies for development. The TCP General Land Use Plan Map graphically expresses the application of these policies in the Planning Area. The TCP transportation system map describes the transportation network needed to support the land uses prescribed in the General Land Use Plan. This network is graphically shown in the Recommended Street and Pedestrian Circulation Pattern Map (Exhibit 10). Finally, the TCP implementation element identifies City Comprehensive Plan and zoning measures that will be needed after Plan adoption to guide private development in accordance with the General Land Use Plan.

As applied to the Planning Area through the City's Comprehensive Plan, the TCP principles and strategies formulated by the VPAC are intended to be "community development performance guidelines" as follows:

- **Proposed Overall Town Center Guiding Principles** articulate basic area-wide community development objectives to be achieved over time through new developments and redevelopment.

- **Proposed Development/Urban Design Strategies** articulate specific development/urban design features to be sought by the City within new and redeveloped land uses.

The *Guiding Principles* and *Development/Urban Design Strategies* substantially conform with state and regional planning policies and rules that apply to the Planning Area. The matrix presented in Appendix "A" describes their consistency with applicable state and regional policies and rules.

3.1 Guiding Principles and Strategies

The Town Center Plan features *Overall Town Center Guiding Principles* and *Development/Urban Design Strategies*. Formulated and approved by the VPAC through several meetings in the early stages of the planning process, these principles and strategies guided formulation of the other elements of the Town Center Plan.

The Guiding Principles and Development/Urban Design Strategies express land use, design, and implementation strategies to be applied to new developments, major renovations and redevelopment throughout the Planning Area. Thus, they form the policy reference by which current and future individual land use proposals are to be evaluated for Town Center Plan consistency. They are also intended to guide future revisions of the Plan in response to changing circumstances.

TOWN CENTER PLAN APPLICABILITY

The policies and standards set forth in this Town Center Plan are directed primarily at properties within the Planning Area that are presently undeveloped, underdeveloped or being redeveloped for which a new land use, including new buildings and structures, are proposed for development. These Plan application parameters recognize that much of Tanasbourne comprise recent developments that already contribute towards the creation of a Region 2040 Town Center at Tanasbourne.

Under prior planning efforts, Tanasbourne began to emerge as a significant mixed-use community capably serving the City's and region's major employment center and the surrounding residential areas. A major goal of this TCP is to further accelerate and assure the construction of a complete 2040 Town Center containing one or more focal points or core areas for concentrated, pedestrian-oriented development linking the various parts of the Planning Area together to form a community in the full sense of the word.

As used in this Plan, "redevelopment" means changing the use of property to a different land use either by its demolition and redevelopment, or by adding other new uses within the property by increasing the size of existing buildings on the property to accommodate the new uses such that the total building square footage within the property exceed 50% or more of the total square footage of building that existed prior to the expansion. "Renovation" means major interior alteration of a property - but not an increase of its present building size - to accommodate a major interior expansion of its existing use or adding a new use on the property. Renovation does not include cosmetic or lesser buildings or site modifications, such as movement of entries, altering facades or a reconfiguration of parking or landscaping. "Underdeveloped" means simply increasing the existing square footage of building on a property by more than 50% to accommodate an existing use as well as an expansion of that use. "Redevelopment," "renovation" and "underdeveloped" do not include construction of new structure parking buildings to serve existing uses.

It is not the intent of this Plan to create non-conforming use/design situations where a building or improvement is involuntarily destroyed and a continuance of its current use is sought through reconstruction or reinstallation (but not expansion) of the destroyed building or facilities. In such circumstances, the owner is entitled to rebuild the same type of structure for the same use at approximately the same size as the previous building or improvement.

OVERALL TOWN CENTER GUIDING PRINCIPLES

- A safe, attractive and convenient Town Center Core Area(s) should protect and enhance the economic health and social vitality of the entire Town Center Planning Area.
- The Tanasbourne Town Center may consist of one or more activity centers that integrate with, and add value to the entire Town Center Planning Area.
- Flexible Town Center planning and development/urban design guidelines and land development approval processes will be established and applied throughout the Planning Area in order to be sensitive to changes in the market and regulatory environment while protecting the Planning Area's environmental quality and economic and residential vitality and public health, safety and general welfare.

3.2 Town Center Development/ Urban Design Strategies

When formulating the Town Center Development/Urban Design Strategies, the VPAC identified, evaluated, and discussed many planning and urban design issues both in the abstract and in reference to specific private developments proposed within the Area. The Strategies approved by the VPAC are presented in the illustrated text boxes entitled "Town Center Development/Urban Design Strategies" on the next few pages.

In addition to the Guiding Principles and Development/Urban Design Strategies, special Planning Area Landscape Buffering Strategy and Design Techniques and Streetscape Design Components are presented in the next few pages. They address design, aesthetic consistency and compatibility among new and existing land use developments. Some of them may be incorporated into the City's Zoning Ordinance as special City design review provisions.

Land use/development design guidelines that apply to development throughout the entire Planning Area are described in 3.1 and 3.2 of this Chapter. Additionally, the building facade should be pedestrian friendly and visible, easy to access and parking conveniently accessible. All of these are site design priorities considered by this Plan. Finally, the Plan encourages site design practices throughout the entire Planning Area that facilitate more intensive use of properties if market opportunities for such "retrofitting" arise from time to time in the future. Thus, in the Planning Area parking lots are encouraged to be laid out as blocks with perimeter drive lanes containing sidewalks and street trees in a manner that facilitates pedestrian access. On individual properties, the possibility of additional retail, office, residential and structured parking is retained through careful site planning.

TOWN CENTER DEVELOPMENT/URBAN DESIGN STRATEGIES

1. Encourage building one or more public or private squares, plazas, or buildings that provide an easily identifiable and recognized physical, social, and ceremonial community focal point within the Tanasbourne Town Center.
2. Encourage parks, plazas, schools, churches, public buildings, and other gathering places and uses which complement and support the key focal point(s) of the Town Center.
3. Encourage a mix of residential, retail, workplace and civic uses that contribute to home and business needs of the community in convenient proximity to the Town Center focal points.

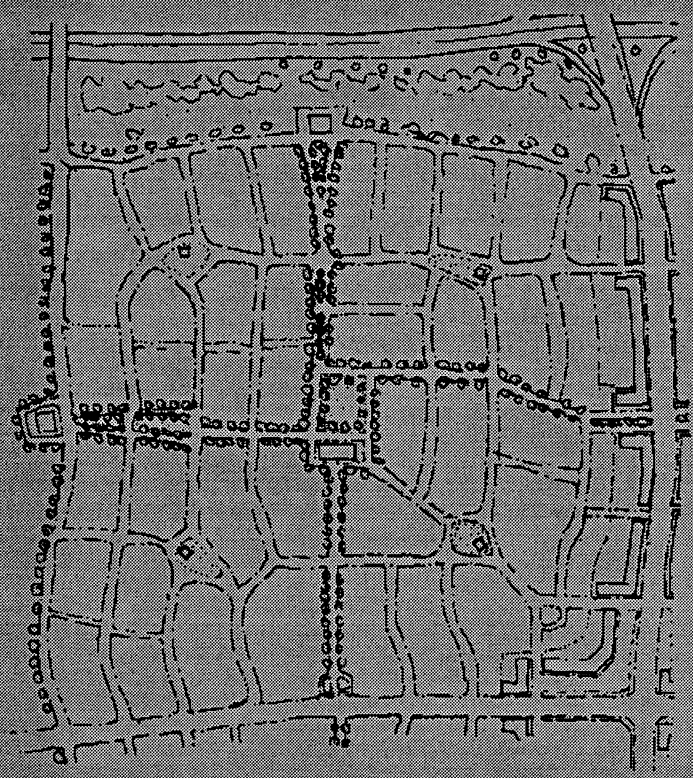
4. Encourage upgraded, attractive building facades, storefronts and signage that enliven the street experience, increase retail and other types of desirable traffic, and contribute to the Town Center focal points as an amenity and people destination.

TOWN CENTER STRATEGIES CONTINUED

5. Encourage a business environment that contains adequate automobile access and parking, building visibility, adequate supporting infrastructure and other market amenities.

6. Encourage a range and variety of attractive, new and recycled housing at costs which accommodate age group and economic diversity.

7. Encourage a network of safe, convenient and beautiful streets and pathways that provide alternative travel routes and parking options, while facilitating walking, biking and wheelchair uses.



8. Encourage development and redevelopment patterns that achieve compatibility between compact development and preservation of significant natural resources.

9. Encourage compatibility with, and appropriate connections to surrounding properties and land uses, as well as to other parts of the Region.

10. Encourage flexible, simplified and streamlined regulations and codes that reward positive changes in development patterns.

LANDSCAPE BUFFERING STRATEGY AND DESIGN TECHNIQUES

- Where incompatible uses and activities are unavoidable, provide landscape buffering or separation techniques to mitigate the conflicts.
- Use dense stands or hedges of evergreens or other appropriate plants.

- Incorporate trees, vines, planters, or other plantings into the architectural theme of buildings and their outdoor spaces to subdue differences in architecture and bulk and avoid inharmonious or discordant edges.
- Establish vertical landscape elements to screen views into or between windows and defined outdoor spaces where privacy is important, such as where larger buildings are proposed next to side or rear yards of smaller buildings.
- Use arbors or provide plantings in connection with a screen panel, garden wall, privacy fence, or security fence to avoid the visual effect created by unattractive screening or fencing.
- Use berming or other grade changes to alter views, subdue sound, change the sense of proximity and channel pedestrian movement.
- Use pathways or other landscape improvements to border, enclose and define areas.

STREETSCAPE DESIGN COMPONENTS

- Ensure significant canopy shading to reduce glare and heat build up.
- Contribute to visual quality and continuity within and between developments.

- Provide screening and mitigation of potential conflicts between activity areas and site elements.
- Provide safe, convenient and attractive pedestrian and bicycle access and mobility within the streetscape.
- Reinforce and extend any existing patterns of outdoor spaces and vegetation where practicable.
- Support functional purposes such as spatial definition, visual screening, creation of privacy and management of microclimate or drainage.
- Enhance the appearance of the residential and non-residential development.
- Protect significant trees, natural systems and habitat.
- Provide sidewalks or nearby pathways and bicycle lanes or paths.

3.3 Land Uses

The Town Center General Land Use Plan prescribes the recommended land uses for the entire Planning Area. Detailed land use planning and urban design recommendations in this Town

Table 7
Acknowledged Existing and Planned Uses Incorporated into the Town Center Plan, (June 1999)

Existing	Planned	Total	Employees	Use (unit of measure)
13	4	17	-	Parks (acres)
0	98,337	98,337	212	Light industrial (sq ft)
762,018	0	762,018	2,654	Office space (sq ft)
0	286,626	286,626	1,104	Corporate headquarters (sq ft)
83,373	158,627	242,000	1,376	Medical office (sq ft)
788,079	664,656	1,452,735	2,426	Retail (sq ft)
745	27	772	204	Hotels (rooms)[2]
1,921	1,450	3,371	67	Theaters (seats)[3]
16	8	24	13	Gas stations (pumps)
1,624	0	1,624	8	Auto care (sq ft)
21,983	6,000	27,983	107	Banks (sq ft)
13,712	6,000	19,712	215	Restaurants, fast food (sq ft)
31,585	22,750	54,335	496	Restaurants, sit down (sq ft)
112	0	112	11	Care facility (units)
15	0	15	-	Single-family (homes)
3,757	1,619	5,376	-	Multi-family (units)
			8,893	Total employees
			5,502	Total dwelling units

Information in this Table is based on existing land uses and known private site development plans of land owners within the Planning Area, as of June 1999. Since 1999, "planned" uses shown in the second column of this table include proposed new land uses within the Town Center Core Area and the Cornell-Walker Roads Superblock. The projects listed in the table were either underway or in advanced planning stages when the Town Center planning process began. Because they contribute to establishing a people-oriented Region 2040 Town Center, most of the land use proposals of major land owners are consistent with the adopted Metro Region 2040 Growth Concept. They also enable the City to accommodate the Metro Functional Plan 2017 household and employment allocations assigned to the Planning Area. These projects and proposals are incorporated as part of the Plan.

Town Center Plan recognition of existing and proposed land uses in the Table is not intended to prescribe precise land uses, floor areas, number of units, etc. for specific parcels within the Planning Area. Rather, it simply acknowledges that the urban growth and urban uses reflected in the Table are anticipated to occur and are being accommodated by this Plan. For example, some adjustments to the figures in the "Planned" column of this Table may occur although they are not expected to be significant or material.

[1] Employees is the total number of people projected to work in each use category.
[2] Planned rooms include expansion of existing hotels.
[3] The planned screens and seats opened in August 1997 in a building next to the existing complex.

Center Plan focus on three sub-areas: the Mixed-Use Pedestrian Corridor Area, the Town Center Core Area and the Cornell-Walker Roads Superblock. These are undeveloped and underdeveloped areas in which new and major redevelopment appear imminent based on known existing private plans and representations of property owners. Elsewhere in the Planning Area, the Town Center General Land Use Plan recognizes and incorporates existing development and projects (see Table on preceeding page), which are considered recommended land uses by this Plan. The General Land Use Plan Map is shown in Exhibit 4. The Plan Map will be incorporated into the City's Comprehensive Plan as part of the Tanasbourne Town Center Community Plan.

The Plan's recognition of the existing and committed land uses in Table 7 is not intended to be fixed over the entire 20-year plan period. It simply acknowledges that the existing and proposed uses identified in the Table perform well when evaluated against the Plan's overall Guiding Principles and Development/Urban Design Strategies. The Plan acknowledges that uses identified in the Table have occurred, or are anticipated to occur and are being accommodated by this Plan. It also acknowledges that these uses can achieve 2040 Town Center design objectives; and, enable the City to accommodate Metro Functional Plan 2017 household and employment allocations assigned to the Planning Area.

TOWN CENTER PLAN - CITY TSP COORDINATION

Mixed-use areas are not proposed for other portions of the Town Center Planning Area at this time for several reasons. First, most of the already developed portions of the Planning Area have relatively new land uses, which are expected to remain in place beyond the year 2015 planning horizon of the Town Center Plan. Second, the Level of Service (LOS) along certain portions of NW 185th Avenue adjoining the Planning Area will fall below LOS "D" as a result of traffic projected to be generated from the Planning Area at Area build-out. At Area build-out, the LOS along NW 185th Avenue would still comply with Title 6 of the Metro Functional Plan and the City TSP. However, extensive mixed-use development throughout the Planning Area would generate even more traffic than is currently estimated from the planned land uses reflected in the Town Center Plan. The results would lower the LOS of many more streets and intersections in the Area below level "D" as prescribed in the City's TSP for most intersections and streets in the Area. Limiting mixed-use development only to the Town Center Core Area and along portions of the Superblock reflects a conscious planning choice to maintain LOS "D" performance at most of the intersections and streets in the Planning Area as prescribed in the City's TSP and sought by the State Transportation Planning Rule (OAR 660-12-0060(1)).

The general land uses recommended by this Town Center General Land Use Plan are multi-family residential, commercial uses, light industrial uses and parks. A key Plan objective is to allow compatible mixing of uses (horizontally and vertically) within individual properties only inside the Town Center Core Area and a selected area in the Cornell-Walker Roads Superblock as shown on the General Land Use Plan Map. This achieves City and 2040 Town Center objectives without violating State Transportation Planning Policies. Such mixing helps create a pedestrian-active Town Center environment. City approval of any actual mixing of uses (horizontally and vertically) in the Core Area and identified portions of the Superblock is subject to a City determination that the proposed mixed-use projects will carry out the TCP Guiding Principles and Development/Urban Design Strategies.

When viewed in a broader, Planning Area-wide perspective, a horizontal mixing of residential, public, retail and employment land use has already occurred throughout most of the Town Center Planning Area. The portions of the Town Center Core Area and the Superblock shown as "Mixed-Use" Areas on the General Land Use Map are designated to identify properties where vertical and horizontal mixing of uses within individual parcels are contemplated by the Plan, but not required. These "Mixed-Use" designations are intended to provide incentives for private initiative to mix land uses within the affected properties, providing a catalyst for the evolution of people-oriented focal points for the entire Town Center Area.

Recently built and proposed developments throughout other parts of the Planning Area are incorporated into this Plan. They already reflect several of the urban design strategies that are contained in the Development/Urban Design Strategies.

Some of the details describing planned future development within the Core Area and the Superblock are presented in this Plan document covering the Core Area and the Superblock. The Town Center Land Use Plan acknowledges that the Core Area will develop in accordance with known private land uses for the area. This Plan recognizes and incorporates those land use concepts because they are consistent with 2040 Town Center objectives.

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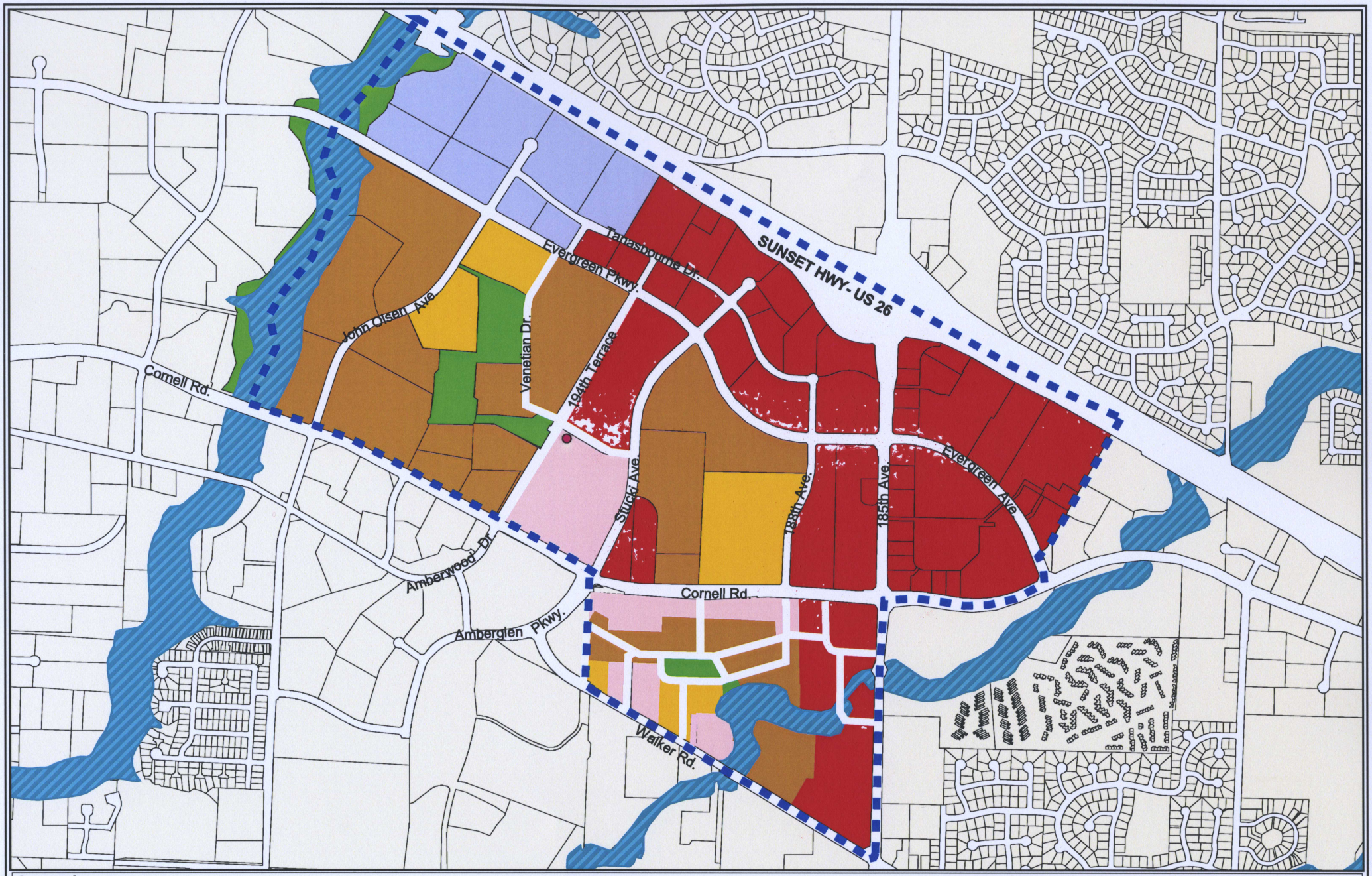


Legend

- Multi-Family 17-23 DU's Per Acre
- Multi-Family 24-30 DU's Per Acre
- Industrial
- Commercial
- Mixed Use
- Park
- Floodplain
- Planning Boundary
- Plaza *{Location(s) & Size to be Determined}*

TANASBOURNE TOWN CENTER PLAN

Exhibit 4: General Land Use Plan

Plot Date: November 14, 2000

DISCLAIMER:

This map is derived from various digital database sources. While care has been taken to insure the accuracy of the infomation shown on this page, the City of Hillsboro assumes no responsibility or liability for any errors or ommissions in this information. All data presented on this map is continually updated and is current as of the dates listed above. This map is provided "as is".

SOURCE:

City of Hillsboro Planning- Current - June 1, 1999 and
Washington County GIS- Current - May, 1999

3.3.1 Mixed-Use Pedestrian Corridor Area

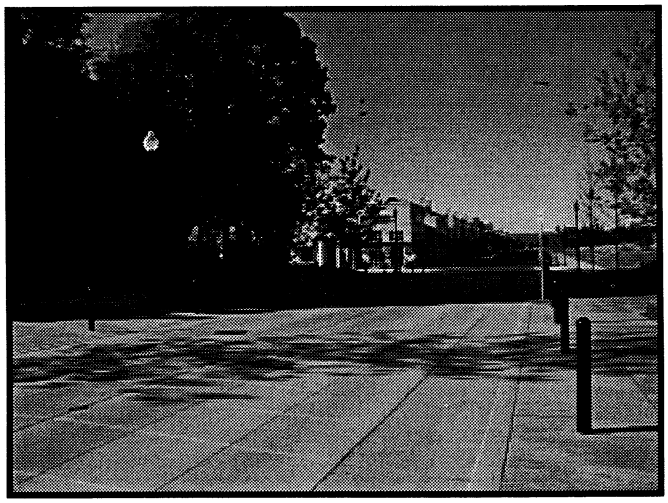
The Mixed-Use Pedestrian Corridor Area within the Planning Area contains about 60 acres of developing land owned by Standard Insurance, the Kaiser Permanente Foundation and Trammell Crow Residential (TCR). The Corridor Area is located west of Stucki Avenue between Evergreen Parkway and Cornell Road as shown in Exhibit 5.

Recommended land uses and roadway, pedestrian and bicycle travel facilities within this Corridor Area reflect the private development plans of the landowners and their developers which have been coordinated and adjusted through the Town Center Planning process to implement Region 2040 Town Center design concepts. For example, TCR is building about 1,000 apartment and townhouse units at densities exceeding 24 units per acre in the Corridor Area. Within the Town Center Core Area, also a part of the Corridor Area, the development of approximately 225,000 to 365,000 square feet of retail shopping, as well as about 135,000 square feet of office space is proposed. Kaiser anticipates expanding its Sunset Medical Office from its current size of approximately 49,000 square feet to a total of about 136,000 square feet on the 16.5 acres Kaiser owns within the Corridor Area. Roughly 5 acres of the Kaiser site could be used for mixed-use development in the future. The proposed land uses and public facilities anticipated within the Corridor Area and shown in Exhibit 6 are recognized by the Town Center Plan. 53

3.3.2 Pedestrian Features of the Corridor Area

The following is a description of the Corridor Area's pedestrian-oriented development features that secure its role as one of the primary people activity centers within the Tanasbourne Town Center.

NW 194th Terrace. A linear pedestrian and activity-oriented corridor (NW 194th Terrace), created by a pedestrian-scale street has been constructed within the Corridor Area and will provide opportunities for multi-modal travel. Along its southern portion, the corridor leads to the planned retail and employment uses within the Town Center Core Area. This corridor will provide a link for office



NW 194TH TERRACE

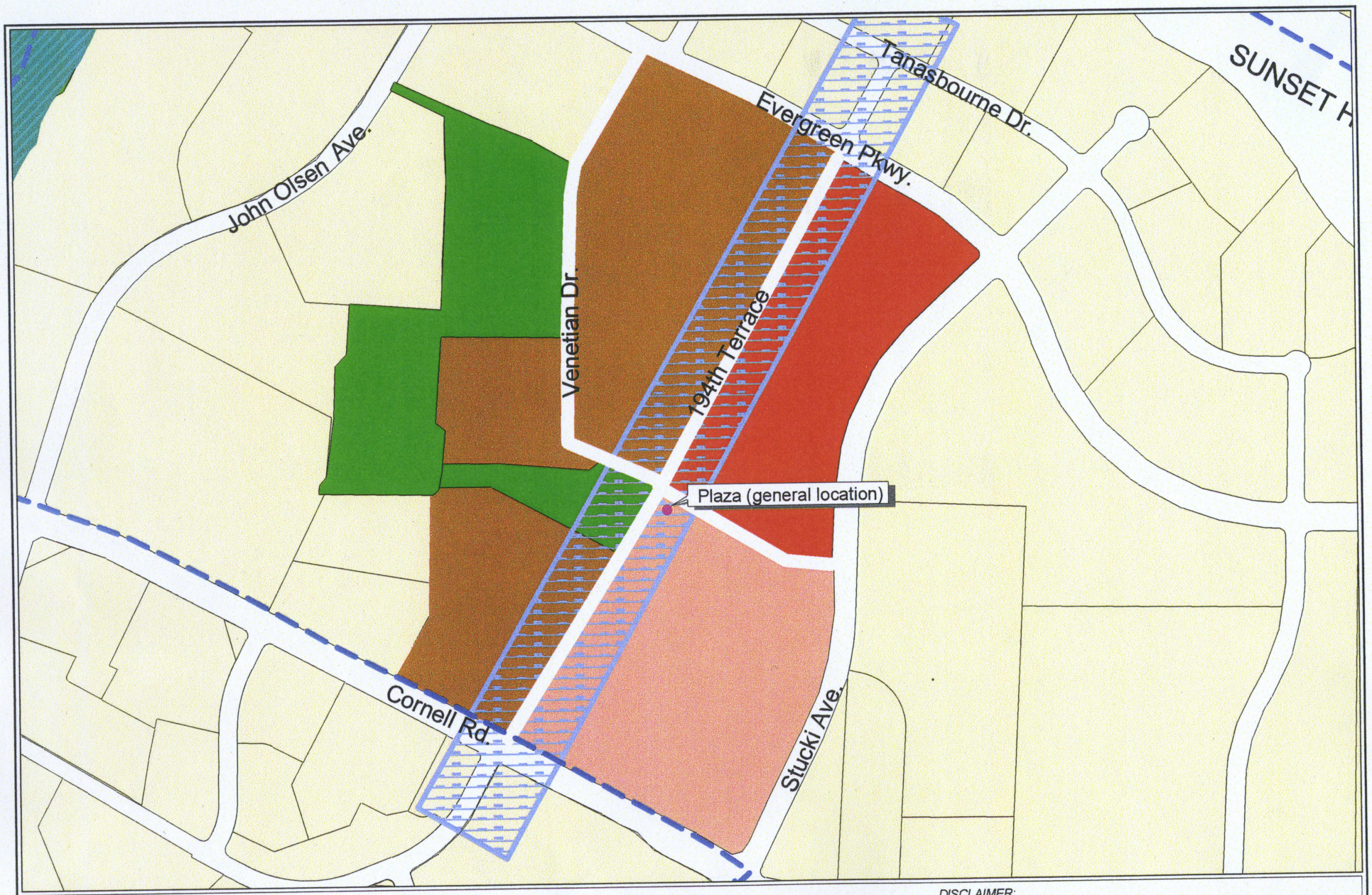
complexes north of Evergreen and office complexes south of Cornell to be connected to the Town Center Core Area. At the north end of the corridor currently approved plans call for smaller, pedestrian-oriented convenience shops facing open plaza spaces serving workers and visitors at the Sunset Center. NW 194th Terrace will serve as the activity central spine of the Core Area. Along that spine, pedestrian, bicycle and slow-moving vehicular travel (including on-street parking) will occur.

NW 194th Terrace will support and complement the planned land uses within the 60-acre Mixed-Use Pedestrian Corridor Area. It will become a north-south axis of the Pedestrian Corridor Area providing a pedestrian-friendly link between residential, office, retail and other uses in the Core Area (See Exhibit 6). It is designed to include a single traffic lane in each direction, with a center turn lane as necessary, wider sidewalks, buffered by curbs and lanscaping within its right of way to accomodate future pedestrian traffic. NW 194th Terrace connects the homes, businesses, and planned pedestrian activities within the Pedestrian Corridor with 770,000 square feet of office space being
54 built immediately to the north along Tanasbourne Drive and with the 2.4 million square feet of office and flex space located in the Amberglen Business Center located directly south of Cornell Road. On-street parking will be permitted where the street passes between the Palladia Apartments and the existing Kaiser Sunset Medical Center. (See Exhibit 7 for a summary of lane and parking widths for NW 194th Terrace). Access from NW 194th Terrace from adjoining properties is described in Table 8.

Table 8
Pedestrian Corridor — Evergreen Parkway to Cornell Road

Land Use Activity	Planned Access
LionsGate, Phase II	Direct pedestrian access from property
Townhouses and apartments	Local connector streets
Garden apartments	Direct pedestrian access and local connector streets
Mixed use	
retail emphasis	Internal roads connections[1] Plaza pedestrian access
residential emphasis	Internal roads connections[1] Direct access Internal walkway system
Kaiser Sunset Medical Center	Direct access from property Internal roads connections[1]

[1] Private internal streets directly link to public collectors or arterials.



Legend

- Planning Boundary
- Multi-Family 21-30 DU's Per Acre
- Commercial
- Mixed Use
- Park
- Pedestrian Coordior
- Floodplain
- Plaza *Note: location(s) & size to be determined*

TANASBOURNE TOWN CENTER PLAN

Exhibit 5: Mixed-Use Pedestrian Corridor Area

Plot Date: November 2, 1999

N W E S

SCALE 1 Inch = 500 Feet

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Streetscape design strategies implemented throughout the Planning Area also apply along NW 194th Terrace. These are discussed on page 46.

Interior streets. Pedestrian scale streets within the Pedestrian Corridor are being built to connect the extensive surrounding multi-family areas with retail and commercial uses planned within the Town Center Core Area. These will be clearly defined pedestrian zones featuring sidewalks with clearly marked crossings. Automobile access to the Core Area from the exterior major arterials - Cornell Road, Stucki Avenue and Evergreen Parkway - will comply with public access management requirements.

3.3.3 Town Center Core Area

Within the Mixed-Use Pedestrian Corridor Area, 19 acres located near the intersection of Cornell Road/Stucki Avenue may contain mixed-use development, mixed both vertically and horizontally. This Town Center Core Area is expected to become the centerpiece and focal point of the Tanasbourne Town Center, and will likely become the retail, residential, business, civic and social hub of the larger Tanasbourne community. This concentration of mixed-use development opportunities within and near the Core Area is intended to shift the focus of Metro Region 2040 Town Center designation at the Tanasbourne area away form the retail uses along NW 185th Avenue and toward the planned Mixed-Use Pedestrian Corridor Area and, especially, toward the Town Center Core Area.

THE TOWN CENTER CORE AREA PRESENTS THE BEST OPPORTUNITY WITHIN THE PLANNING AREA FOR IMPLEMENTING 2040 TOWN CENTER DESIGN OBJECTIVES QUICKLY. IN SUPPORTING PUBLIC USES SUCH AS CIVIC GATHERING SPACES AND OTHER URBAN AMENITIES, IT ENHANCES THE URBAN DESIGN AND PLANNING COHESION OF THE ENTIRE AREA.

The 60-acre Mixed-Use Pedestrian Corridor Area is anticipated to have office, retail and multi-family uses in both separated and mixed-use forms. Planned development within the Core Area will contribute the retail and service components of this Corridor Area mixture of uses.

Within the Planning Area, parks, plazas and open spaces are being planned by both the City's Parks and Recreation department in conjunction with major land owners in the area. These new facilities include the planned development within the Core Area of one or more publicly accessible plazas or similar spaces that are to be linked either directly or through pedestrian walkways with each other,

and with a nearby public park planned for development across 194th Terrace. The development of these plazas or open spaces shall be designed to link physically with the park/open space across 194th Terrace so that, together, all of these spaces form a continuous and unified area for recreation, as well as enable safe pedestrian travel between the Core Area and the high density residential properties within the Mixed-Use Pedestrian Corridor Area. City land use and development regulations should be applied in ways that ensure that the design and spatial arrangement of Core Area uses achieve both the 2040 Town Center design concepts, applicable State transportation planning rules relating to multi-modal travel, pedestrian and bike travel, as well as the private objectives of the projects.

Uses. The 19-acre (gross) Core Area (15.5 net buildable acres) will be predominantly retail, however, some office use and other compatible uses either mixed with or separate from the retail uses would be permissible. Substantial amounts of higher density multi-family housing are being developed immediately west of the Core Area across NW 194th Terrace. Additional multi-family development has also been constructed east of the Core Area across Stucki Avenue. The Core Area
58 is designated for "Mixed-Use" to allow a future ability within the Core Area to have a vertical as well as horizontal mixing of uses should future opportunities or economic reasons encourage such a mixing of uses.

Scale. The Core may accommodate both large- and small-scale retail uses serving an extended market area.

Access. Trips to and from the Core Area from immediately surrounding neighborhoods are expected to be by various modes, including walking and biking, while trips from the larger Core Area's market area are likely to be by automobile, because there is a lack of convenient frequent local bus service to the Area. Although local bus service will improve, vehicular access with adequate parking will continue to be important and required. Structured parking is encouraged. Core Area planning accommodates and encourages transit, pedestrian and bike trips to and within the Core Area by providing interior local street and pathway connections that include attractive sidewalks, biking and transit opportunities.

Form: The general land use (commercial and residential) plan designations for the Commercial Core Area provide flexibility to develop an urban form that can meet the operational and financial requirements of retailers. A vertical mix of uses and increased land use intensity is encouraged.

Legend

- Floodplain
- Park
- Pedestrian Cooridor
- Planning Boundary
- Plaza *Note: location(s) and size to be determined*

N W E S

SCALE: 1 Inch = 600 Feet

TANASBOURNE TOWN CENTER PLAN

Exhibit 6: Town Center Core Area Concept

Plot Date: November 2, 1999

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Legend

- All Way Stop Controlled Intersection
- All Way Stop Controlled Intersection
- Turn Depends on Site Planning

SCALE 1 Inch = 500 Feet

TANASBOURNE TOWN CENTER PLAN

Exhibit 7: Future Street Configuration

Plot Date: November 2, 1999

DISCLAIMER:
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Washington County GIS- Current - May, 1999

3.3.4 Town Center "Cornell-Walker Roads Superblock" Plan

The Cornell-Walker Roads Superblock represents another unique and current opportunity within the Town Center Planning Area to implement the Region 2040 town center concepts. Containing approximately 76 acres, the Superblock is bounded by Cornell Road, NW 185th Avenue, Walker Road and Stucki Avenue. A parcel forming the western tip of the Superblock is not within the Planning Area. It comprises land within the Amberglen Business Center, which has been planned through the City's Light Rail Station Area Planning effort. Because the Superblock involves redevelopment and fragmented ownership, redevelopment may take longer in the Superblock than the new development within the Town Center Core Area. There are currently 15 single-family homes, many of whose owners are expected to participate in redevelopment eventually. Exhibit 8 shows the proposed General Land Use Plan for the **Superblock.**

3.3.5 Neighborhood Elements

The Superblock is ripe for new development and redevelopment. However, it requires carefull planning and design to protect existing homes and businesses that wish to participate in redevelopment later rather than now. In light of this, in addition to the *Town Center Guiding Principles* and the *Town Center Development/Urban Design Strategies* that apply throughout the Planning Area, redevelopment and design within the Superblock are also subject to the *"Cornell-Walker Roads Superblock Neighborhood Elements"*. Formulated as a result of special meetings with affected property owners and residents and endorsed by the VPAC, the Elements are implemented by the General Land Use Plan for the Superblock.

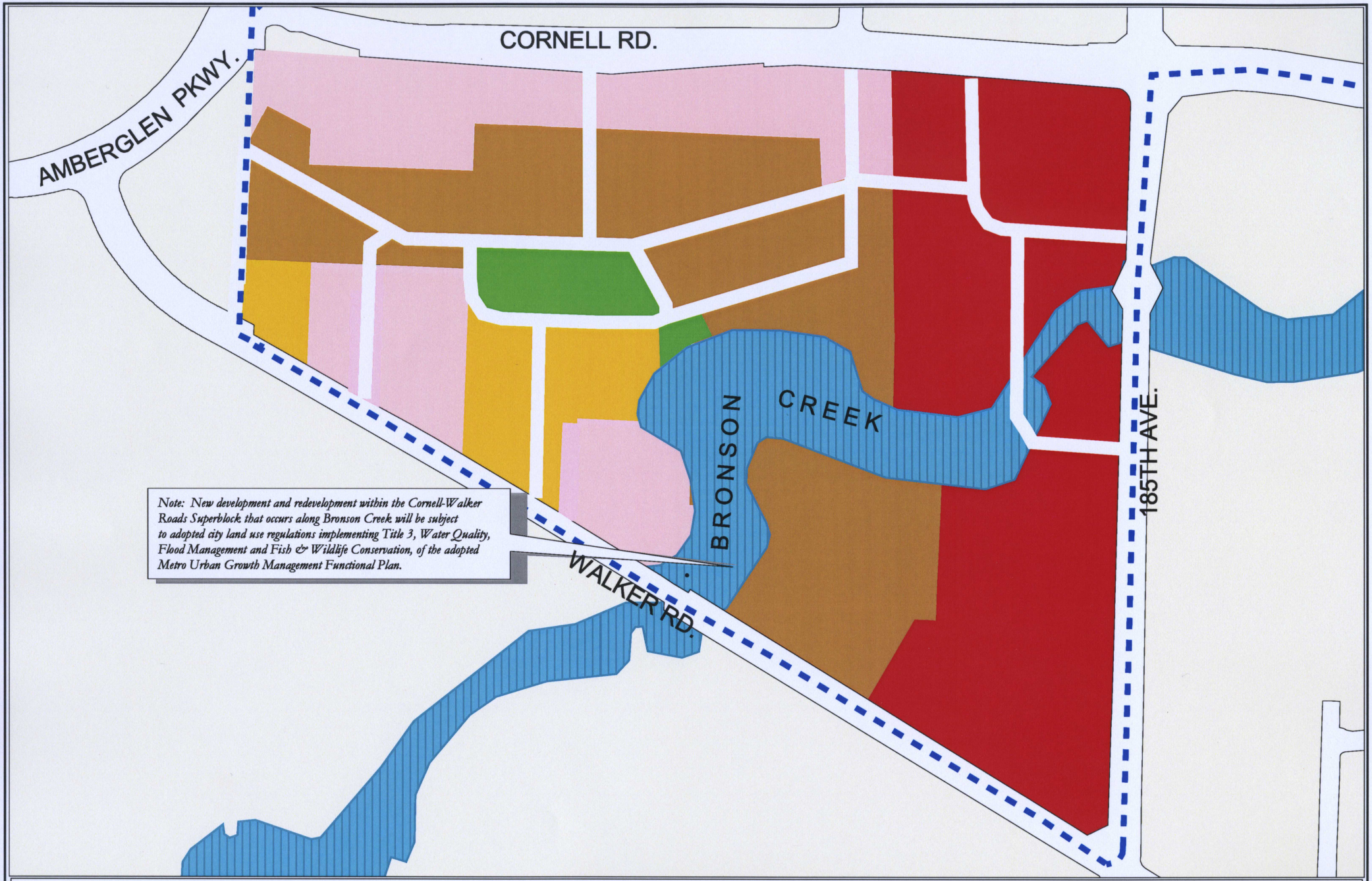
Together, the Superblock General Land Use Plan Map and the "Cornell-Walker Road Superblock Neighborhood Elements" will be incorporated into the City's implementing ordinances by zoning ordinance amendments to the City's development review regulations. These development policies will guide future development within the Superblock. They are the Plan's policy basis for preparing and applying City mixed-use zone standards for application to actual redevelopment within the area.

Consistent with the general thrust of the Town Center Plan, these development policies do not fix the precise locations of specific types of land uses including any mixing of uses within the Superblock. The precise and final locations of such land uses will be established at the time of Development Review or Planned Unit Development approval. These development policies describe the preferred general land use pattern and general locations of interior streets to be achieved within the Superblock. This approach was preferred by the Village Center Planning Advisory Committee and the majority of the Superblock landowners.

Cornell-Walker Roads Superblock Neighborhood Elements

- New developments will be consistent with Town Center Guiding Principles and Development/Urban Design Strategies.
- Medium- to high-density residential neighborhoods with supporting commercial uses are permitted at appropriate locations.
- The minimum residential density for new housing developments inside the block is 18 units per acre.
- Neighborhood commercial uses including offices and first-floor retail are permitted at appropriate locations.
- General building heights are a minimum of 2 stories and a maximum of 70 feet.
- Development within 100 feet of existing Walker Road single family homes is limited to 14 units per acre, with 2-story maximum building heights.
- Development will easily accomodate pedestrian and bicycle travel.
- Greenway trail connections to and along Bronson Creek are encouraged[1].
- Access and overlook to Bronson Creek wetlands will be provided.
- Pedestrian and vehicular connections between the complex containing the Providence Tanasbourne Medical Clinic, Providence Health and Life Style Center, Tuality Urgent Care and the Sunset Square shopping center to the south will be provided.
- The development of strong pedestrian connection(s) across Cornell Road safely linking the Core Area with the Superblock will be developed as a part of the development of the Superblock.
- There will be 2 signaled road connections from the block to Cornell Road.
- There will be 2 or 3 signaled road connections from the block to Walker Road.
- There will be 1 or 2 east-west streets inside the block that connect to north-south streets that access Cornell and Walker Roads.
- Parking lots directly adjacent to Cornell and Walker Roads will be kept to a minimum.
- A usable park within the block of about 2 acres will be provided.

[1] New development and redevelopment within the Cornell-Walker Roads Superblock that occur along Bronson Creek will be subject to adopted City land use regulations implementing Title 3, Water Quality, Flood Management and Fish and Wildlife Conservation, of the adopted Metro Urban Growth Management Functional Plan.



Legend

- Multi-Family 17-23 DU's Per Acre
- Multi-Family 24-30 DU's Per Acre
- Commercial
- Mixed Use
- Park
- Floodplain
- Planning Boundary

SCALE 1 Inch = 400 Feet

TANASBOURNE TOWN CENTER PLAN

Exhibit 8: Cornell /Walker Roads Superblock

Plot Date: November 14, 2000

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Part 4

Transportation and Infrastructure Development

This part of the Town Center Plan Report addresses the transportation system improvements needed to support the Plan's proposed land uses as shown in the Town Center General Land Use Plan Map. It also describes how the planned transportation system for the Town Center Planning Area satisfies applicable public policy priorities and plans. In addition, it looks at other public infrastructure including water, sanitary sewer and storm drainage.

4 Transportation

This section describes how the Town Center Plan complies with applicable State and Regional transportation policies and the City's Transportation System Plan. The Town Center Planning Area encompasses five Metro Traffic Analyses Zones (TAZ) (See Exhibit 9). The existing transportation system within the Planning Area is described in Part 1.3 of this report. The planned extension of NW 194th Terrace to become a potential pedestrian axis linking within the Town Center Core Area is described in Part 3.3.2.

4.1.1 Mode Split Assumptions

The Town Center Plan identifies forecasted Mode Split Assumptions within the Planning Area. The Metro travel-demand forecast model provides transit mode shares (or "mode split") at the TAZ level throughout the region based on the forecasted year 2015 land uses and regional transportation network (which includes light rail transit (LRT) service).

Table 9 summarizes the transit mode share data for the TAZ's in the Planning Area, showing inbound and outbound trips. For perspective, the transit share for some other TAZ are also shown.

4.1.2 Trip Generation

The Town Center Plan also estimates the trip generation that will occur upon full implementation of the land uses recognized and recommended by the Plan and shown on the General Land Use Plan Map. As part of the City's Transportation System Plan, DKS Associates reviewed all existing and planned land uses within the Town Center Planning Area. The results are shown in Tables 10 and 11.

Table 9
Transit Shares for Trip Analysis Zones (TAZ) in the Planning Area, in percentages

Metro TAZ #	Transit share for trips From	To	Area and predominant uses
203	2	1	
210	1	1	
211	1	1	
For comparison:			
728	3	5	Mall 205 (mid-sized mall adjacent to a freeway with a 300-space Park & Ride lot served by 3 bus lines).
29	13	12	NW 23rd Ave, Portland (urban "main street" mixed-use near downtown with frequent bus service 20 hours a day, 7 days a week, and limited parking). These are among the highest transit shares in the region.

Source: DKS Associates, Inc., 1997 October

Table 10
Daily Trips Generated

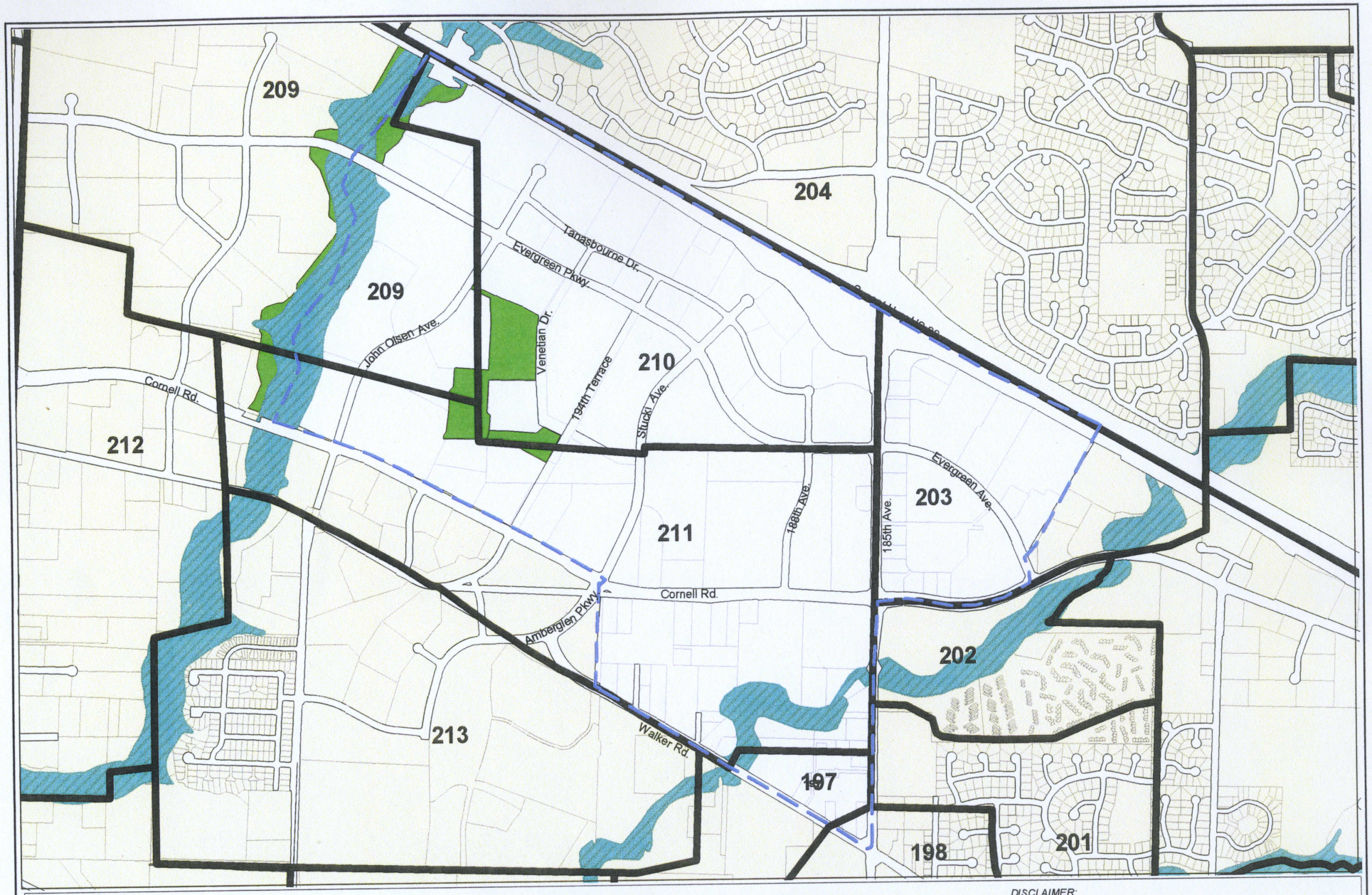
Retail	Residential	Other	Total	
31,036	2,780	1,249	35,065	1997
59,082	4,421	4,170	67,673	Development
28,046	1,641	2,921	32,608	Additional Trips
90	59	234	93	Percentage increase

Table 11
Daily Transit Trips

To	From	
1052	1403	1997
2030	2707	Build-out[1]
3	4	Percentage of trips using transit

Derived by applying the modal split assumption to estimates of the number of trips in Table 11.

[1] Assumes the ratios of transit to non-transit (automobile) trips to and from the Area remain constant.



Legend

- Floodplain
- TAZ Boundary
- Park
- Planning Boundary

N W E S

SCALE: 1 Inch = 1300 Feet

TANASBOURNE ⊛ TOWN CENTER PLAN

Exhibit 9: Traffic Analysis Zones

Plot Date: November 2, 1999

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4.1.3 Mixed-Use Pedestrian Corridor Area Trips

A traffic impact analysis for the Mixed-Use Pedestrian Corridor Area using the land use designation changes shown on the General Land Use Plan Maps was prepared by DKS Associates (See Appendix B). The Mixed-Use Pedestrian Corridor Area includes the Town Center Core Area. It is estimated that all of the existing and planned land uses within the Mixed-Use Pedestrian Corridor Area would generate about 120 fewer daily afternoon peak trips to the Pedestrian Corridor Area than the peak trips that could be generated if this area developed according to City comprehensive plan land use designations existing prior to City approval of HCP 1-97. This estimate does not include vehicular trip reductions that may result from combining nearby residential and commercial uses within the Town Center Core Area.

A Planned Unit Development (PUD) application (HCP 1-97) was recently approved by the City for property situated between NW Evergreen Parkway and the Sunset Highway, west of Stucki Avenue. Initiated jointly by Standard Insurance and the Melvin Mark Development Company, it proposes development of the "Sunset Center at Tanasbourne", an office park. This project directly complements and supports the creation of a mixed-use area within the Town Center Core Area.

The Town Center Core Area will provide employment and shopping opportunities as well as urban conveniences and amenities such as restaurants that are within walking or biking distances of high-density residential and employment areas within and near the Mixed-Use Pedestrian Corridor Area.

4.1.4 Superblock Trips

The traffic impact study (Appendix B) for the Town Center Planning Area also reviewed the roadway level-of-service (LOS) impacts of potential trips that would be generated from the Superblock under two scenarios: First, trips generated at build-out of the Superblock under current City zoning. Second, trips generated at build-out under the planned Superblock land use pattern. A detailed discussion of the results of this review is contained in Appendix B. The review found that:

- There was no significant difference in the impacts on level of service of surrounding roadways under either scenario as level of service results did not change in both cases. The level of service of roadways and intersections within the Town Center Area and surrounding communities at build-out of the Superblock as planned, would generally remain at LOS "D" if improvements to these roadways already planned in the TSP are made as proposed. The exceptions would be at

intersections along NW 185th Avenue (Cornell Road/185th Avenue and Walker Road/185th Avenue), which would drop to a level below LOS "D" but still be in compliance with the LOS standards prescribed in Title 6 of the Metro Functional Plan.

- The proposed Superblock land use plan could produce a 27% internal trip capture rate under certain circumstances described in Appendix B, including the development of some mixed-uses in the area.

- Vehicle trip generation within the Superblock would be slightly less under the Superblock land use plan than under build-out based on existing City zoning of the area, assuming a 27% internal trip capture rate.

- Mixed-use development within the Superblock will reduce external trips and create an opportunity to increase the use of alternative travel modes.

4.2 Specific Transportation System Improvements

The Town Center Plan adopts and incorporates several specific transportation system improvements recommended for the Planning Area by the new City Transportation System Plan Update (July 1999). These improvements, which are described below, are needed to support existing and planned land uses within the Planning Area at build-out and to maintain roadway Level of Service (LOS) D throughout most of the Area at build-out consistent with the new City TSP (LOS D means utilization at 80% to 90% of roadway/intersection design capacity).

Consistent with Title 6 of the adopted Metro Urban Growth Management Functional Plan the proposed roadway improvements are recommended by the TSP because alternative transit or transportation mode analysis conducted by DKS Associates indicated no significant changes to the mode split shares identified in Section 4.2.2 in the foreseeable future. When made, these improvements will enable most of the Area's transportation system to operate at LOS D throughout the active planning horizon of 20 years, thereby exceeding the LOS standard for Regional 2040 Town Centers established by Title 6. As the Area approaches build-out, traffic mitigation improvements will be needed at two intersections along NW 185th Avenue where it crosses Walker and Cornell Roads and at the Evergreen Road/Cornelius Pass intersection.

4.2.1 Improvements Along the Sunset Highway

The State Transportation Planning Rule (OAR 660-12) has generated transportation-related policies and standards that apply to the Planning Area and need to be addressed by the Town Center Plan. These include provisions within the State's Transportation System Plan that concern US Highway 26 (the Sunset Highway), which links the Planning Area to the regional and state transportation systems, and provisions encouraging the development and use of multi-modal travel, including such alternative modes as public transit and bicycle and pedestrian travel.

The key Sunset Highway issues relating to the Tanasbourne Town Center Plan concern needed improvements to the Highway as part of ODOT's Sunset Corridor Plan in order to maintain its capacity and functional levels of service while providing adequate access to and from the Planning Area. These issues are addressed in the City's Transportation System Plan.

The City TSP concluded that, without improvements increasing Sunset Highway capacity, each of its interchanges serving Hillsboro will fail to provide adequate future levels of service. The TSP makes several recommendations relating to maintaining Sunset Highway capacity at its NW 185th Avenue Interchange and near the Planning Area that are incorporated into and recommended by the Town Center Plan, they are as follows:

- Add turning lanes from NW 185th Avenue onto the east-bound freeway on-ramp.
- Support the City of Beaverton, Washington County and ODOT in development of an overpass extending NW 173rd Avenue north over the Sunset Highway to connect with NW Bronson Street. Metro modeling using EMME2 software indicates an immediate lessening impact on traffic volumes along NW 185th Avenue if this project is completed, because it reduces the need for traffic detour to NW 185th Avenue simply to cross the highway.
- Widen the highway immediately to 6 lanes (3 in each direction) from the current 4 lanes from where 6 lanes currently ends (at the Cedar Hills Blvd. interchange) to the NW 185th Avenue interchange, about 3 miles. Further extend the 6 lanes west 2 miles to the Jackson School Road intersection soon after the year 2015, to deal with anticipated heavy ramp volumes at the Cornelius Pass Road and Shute Road interchanges.

The TSP also proposes a new overpass crossing the Sunset Highway to the west of NW 185th Avenue, between NW Cornelius Pass Road and NW Shute Road. Its impact on easing traffic volumes along NW 185th Avenue, would not be as dramatic as the NW 174th Avenue extension, but would help. This new overpass would benefit the Sunset Highway, Shute Road and Cornelius Pass Road interchanges.

Even with both new crossings of the Sunset Highway, the segment of NW 185th Avenue south of Cornell Road will continue to operate over capacity. The City TSP recommends eventually widening this segment of NW 185th Avenue, when existing capacity has been reached, from 5 to 7 lanes to maintain an acceptable level of service and roadway performance. The connection of planned east-west roads in the area immediately south of the Planning Area by proposed new north-south routes within the Superblock will help draw some traffic away from this segment of NW 185th Avenue. Projects directly south of the Superblock include extending Amberglen Parkway as a 3-lane roadway from Walker Road to NW 206th Avenue and extending Salix from the light rail station to Walker Road as a 2-3 lane roadway.

4.2.2 Planning Area Streets and Roadways

The City's TSP prescribes functional roadway classifications that will apply to roadways within the Town Center Planning Area and are consistent with those in the Metro Regional Motor Vehicle System, Draft 3.0 July 1997. Classifications, and their corresponding design features for the primary roadways in the Area are shown in Table 12 and 13. These are incorporated by reference into the Town Center Plan.

Table 12
Roadway Classification

As Established by the Transportation System Plan Roadway Functional Classification Map, 1997

Route	Classification
North-South	
NW 185th Ave	Arterial
NW 188th Ave Extension	Neighborhood Street
NW 191st Ave Extension	Neighborhood Street
Stucki Ave:	
Northern end to Cornell	Collector
Cornell to Walker	Arterial
NW 194th Ave Extension	Collector
John Olsen Rd.	Collector
East-West	
Evergreen Rd.	Arterial
Cornell Rd.	Arterial
Walker Rd.	Arterial

The characteristics of the classifications are explained in Table 13.

Table 13
Street Improvements Recommended by the City Transportation System Plan

Street	Segment	Project Description
NW 185th Ave	Cornell Rd. to Walker Rd.	Widen to 7 lanes (multi-modal)
NW 188th Ave Extension	Cornell Rd. south	Build new neighborhood street provide access to Cornell from within the Superblock.
NW 191st Ave Extension	Cornell Rd. to Walker Rd.	Build new Neighborhood Street, including use of Neighborhood Traffic Management, for greater connectivity to, from, and within the proposed Town Center Core and adjoining residential areas.
Superblock east-west connector	NW 188th to 191st Ave	Build new 2-3 lane local collector to serve center of Superblock.
NW 194th Terrace Extension	Evergreen Pkwy to Cornell Rd.	Build new 2-3 lane collector to serve the proposed Town Center Core

The City TSP states that most of the Area's roadway system, with the improvements listed in Table 13 and recommended by the TSP, will function at Level of Service (LOS) D throughout the Planning Area at build-out of all existing and planned land uses shown on the Town Center General Land Use Plan Map. This would put the roadways in substantial compliance with Title 6 of the Metro Functional Plan.

4.2.3 Pedestrian and Bicycle Facilities

Several recommended and prioritized City TSP strategies that apply to the Planning Area address State Transportation Planning Rule (TPR) bicycle and pedestrian requirements. These are incorporated by reference into the Plan to guide the development of pedestrian and bike facilities within the Area:

- Where sidewalks and bikeways generally exist, fill gaps through public projects and private development approval conditions.

- Signalize pedestrian crossings whenever existing/projected traffic volumes/flows require.
- Construct bike lanes with arterial and collector roadway improvement projects, except on local/minor collector streets in Main Street mixed-use area where wide sidewalks and on-street parking are planned.
- Provide pedestrian corridors to transit stations and transit stops and bicycle corridors for recreational needs.
- Provide pedestrian and bicycle corridors that commuters might use.
- Connect key pedestrian and bicycle corridors to schools, parks, recreational uses and activity centers.
- Provide pedestrian and bicycle corridors that connect neighborhoods.
- Provide bicycle corridors that facilitate mobility to and within commercial areas.

Additionally, several City TSP policies apply to all future developments within the Planning Area:

- Bikeways and pedestrian facilities must be constructed on major, new or reconstructed arterial and collectors as part of the roadway project.

- Convenient access to existing or planned bike and pedestrian facilities must be provided from nearby schools, parks, public facilities and retail areas.

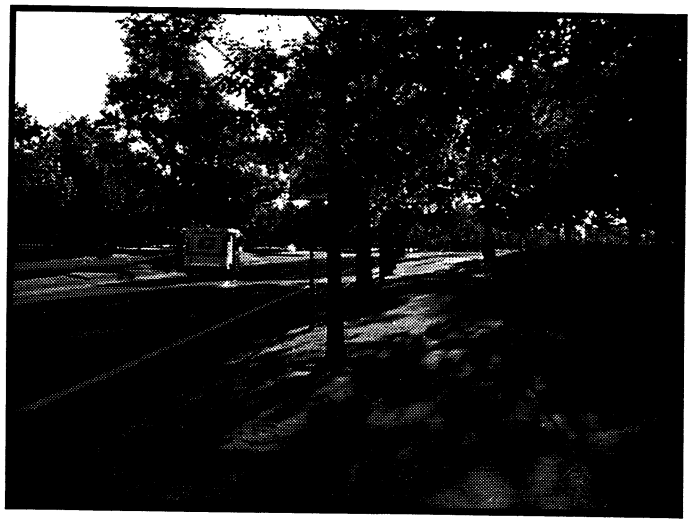
- Nearby community service, commercial, and high-employment industrial land uses must be conveniently accessible to pedestrians, bicyclists and transit riders.

- Local streets must be designed to facilitate street connectivity and limit out-of-direction travel. Connectivity must be provided to and from activity centers and destinations, with priority for pedestrian connections.

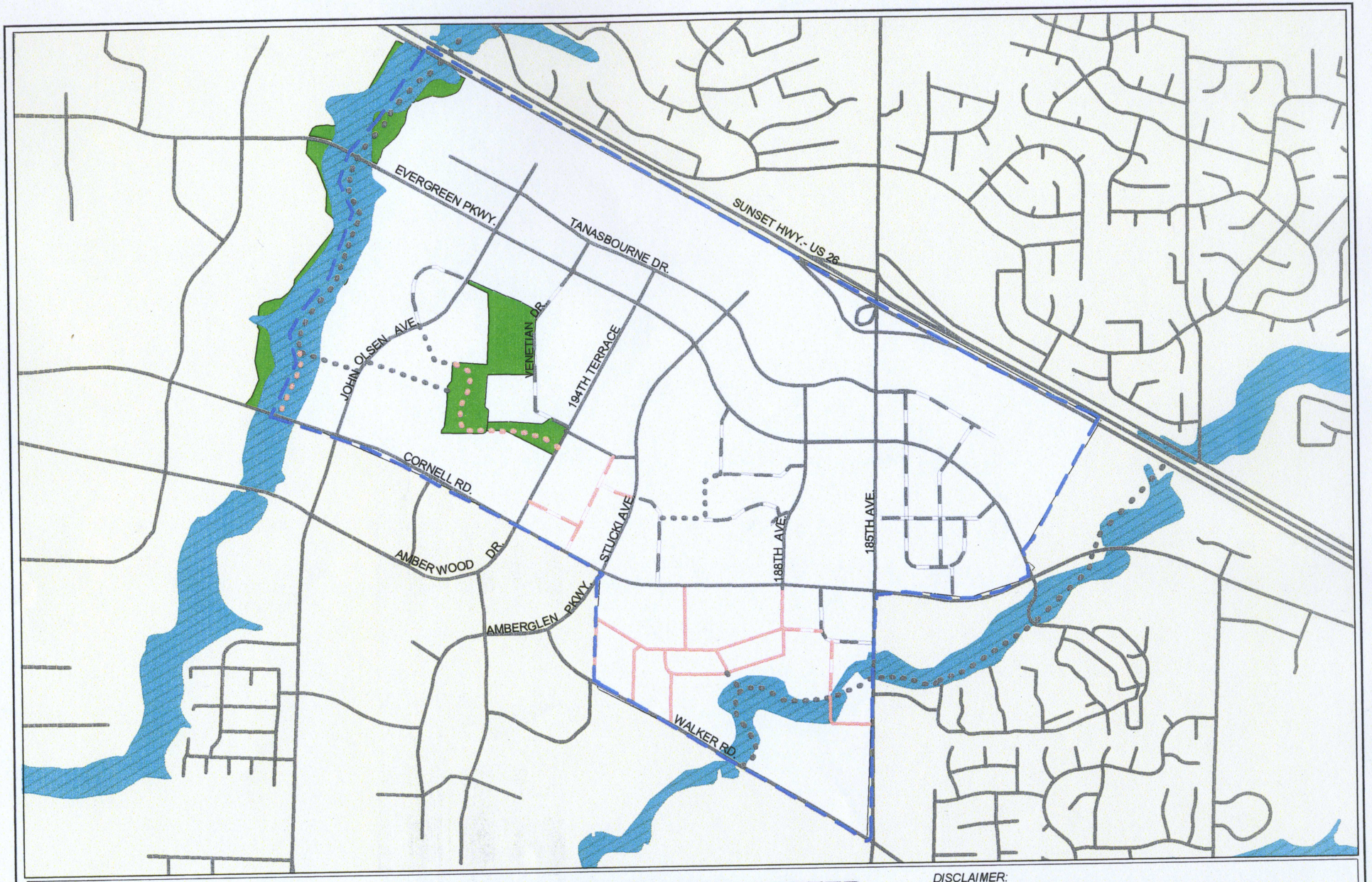
- Regional trails should be linked to Hillsboro's bicycle and pedestrian plans. (The Rock Creek Greenway will have a major regional trail; a trail in the Bronson Creek Corridor is also proposed).

4.2.4 Specific Pedestrian and Bicycle Facility Improvements

All streets within the Planning Area either have sidewalks or will have sidewalks when a street is fully improved or property adjacent to a street develops. Bike lanes are provided along NW 185th Avenue, Evergreen Parkway, Cornell Road, Stucki Road, and the rebuilt portions of Walker (that is, along the shopping center and apartments) and are proposed for NW 188th Avenue. A multi-use pedestrian bike path along Rock Creek exists from Rock Creek Boulevard north of the



SIDEWALK AND BIKE LANE ALONG EVERGREEN PARKWAY



Legend

- Existing Streets
- Proposed Streets
- Existing Private Drives
- Proposed Private Drives
- Existing Pedestrian Connections
- Proposed Pedestrian Connections
- Planning Boundary
- Park
- Floodplain

SCALE 1 Inch = 1300 Feet

TANASBOURNE ⊛ TOWN CENTER PLAN

Exhibit 10: Recommended Street and Pedestrian Circulation Pattern

Plot Date: November 2, 1999

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Sunset Highway to John Olsen Avenue at a point midway between Evergreen Parkway and Cornell Road. Existing and proposed local streets will accommodate bicycles on the roadway in Mixed-Use Areas, where low traffic volumes and speeds occur.

The TSP describes a "Pedestrian Master Plan" and a "Bicycle Master Plan" that show the location of existing and future pedestrian and bike facilities systems in the Planning Area and corresponding "Action Plans" that identify future improvements needed to complete the systems.

4.2.5 Public Transportation

The extension of Westside Light Rail Transit (MAX) Service in September 1998 by Tri-Met (the Tri-County Metropolitan Transportation District of Oregon) changed how transit service was provided in Washington County and the Cities of Beaverton and Hillsboro. Bus routes were added and/or altered to serve light rail stations south of the Tanasbourne Area at the 185th Avenue/Willow Creek Transit Center. The 185th Avenue/Willow Creek Transit Center also includes a Park and Ride Facility. Six bus routes (including 5 that provide service to the Tanasbourne Area) stop at the Willow Creek Transit Center allowing connections to light rail as well as transfer points to other bus routes.

Five Tri-Met bus routes currently serve the Tanasbourne Area - an increase of two bus routes prior to the extension of Westside Light Rail service. With the exception of the 49S (a shuttle route that primarily serves Oregon Graduate Institute and the Amberglen Business Center), all of the Tanasbourne Town Center bus routes provide weekend service to the Area. Routes 47 and 48 connect the Tanasbourne Area with the Hillsboro Transit Center (located in downtown Hillsboro). Route 47 (Baseline) travels east along Baseline Road, turning north on NW 231st/229th Avenues then heading east on NW Evergreen Parkway before it turns south on NW 185th Avenue and terminates at the 185th Avenue Transit Center (TC). Route 48 (Cornell) is a more direct route which travels on Cornell Road to its intersection with NW 185th Avenue, where it heads south on NW 185th Avenue terminating at the 185th Avenue/Willow Creek Transit Center.

Route 52 (Farmington-185th) provides both north-south transit service via 185th Avenue and east-west service from 185th Avenue TC to the Beaverton TC. This route provides a regional connection between Portland Community College's Rock Creek Campus and the City of Beaverton. The connection between the Rock Creek neighborhoods and the Tanasbourne Area is provided by Route 89 (Tanasbourne). Route 89 also provides transit service between the Sunset Transit Center to the Tanasbourne Area via Cornell Road.

Route 49S (Willow Creek Shuttle) is the only shuttle service provided in the Tanasbourne Area. This shuttle route is a result of employers in the area teaming up with Tri-Met to create bus service that connects employment areas to MAX. Route 49S passes through the Oregon Graduate Institute as it makes a loop using Walker Road.

4.3 Infrastructure

Public infrastructure including water, sanitary sewer, and storm drainage are discussed in this section.

4.3.1 Water

The water system serving the Planning Area is performing adequately and has sufficient capacity to serve the Area at build-out. There are no known supply or quality deficiencies or problem areas. No future improvements are planned at this time.

The system is maintained, and water is supplied by the Tualatin Valley Water District. The Area is served by a 12-inch ductile iron pipe (DIP) within the NW Evergreen Parkway right-of-way, a 20-
80 inch concrete cylinder pipe (CCP) within Cornell Road and a 16-inch DIP within NW 185th Avenue. The system also has a 10-inch DIP in NW Tanasbourne Drive and 8-inch DIPs in John Olsen Avenue, Stucki Avenue and Walker Road. All of these waterlines were built within the last 10 years.

4.3.2 Sewer

The existing Washington County Unified Sewerage Agency (USA) sewer system serving the area is performing adequately. There are no known sewer system deficiencies or problems within the Planning Area.

The Area is served by a 48-inch concrete line running along Rock Creek and a 24-inch concrete line along Bronson Creek. The system also includes a 10-inch concrete sewer line in NW 185th Avenue and 8-inch sewer lines in NW Tanasbourne Drive, NW Evergreen, Cornell and Stucki Roads.

The City of Hillsboro Sewer Master Plan recommends enlarging the 8-inch line within Stucki Avenue to a 10-inch line, building an 8-inch line from Rock Creek to NW Tanasbourne Drive. These should enable the system to adequately serve the Area at build-out.

4.3.3 Storm Drainage

The existing storm drainage system serving the Area is performing adequately. There are no known storm drainage system deficiencies or problems. Drainage systems along NW Evergreen Parkway, NW Tanasbourne Drive, and Cornell Road flow directly into Rock Creek. A system along NW 185th Avenue carries runoff into Bronson Creek.

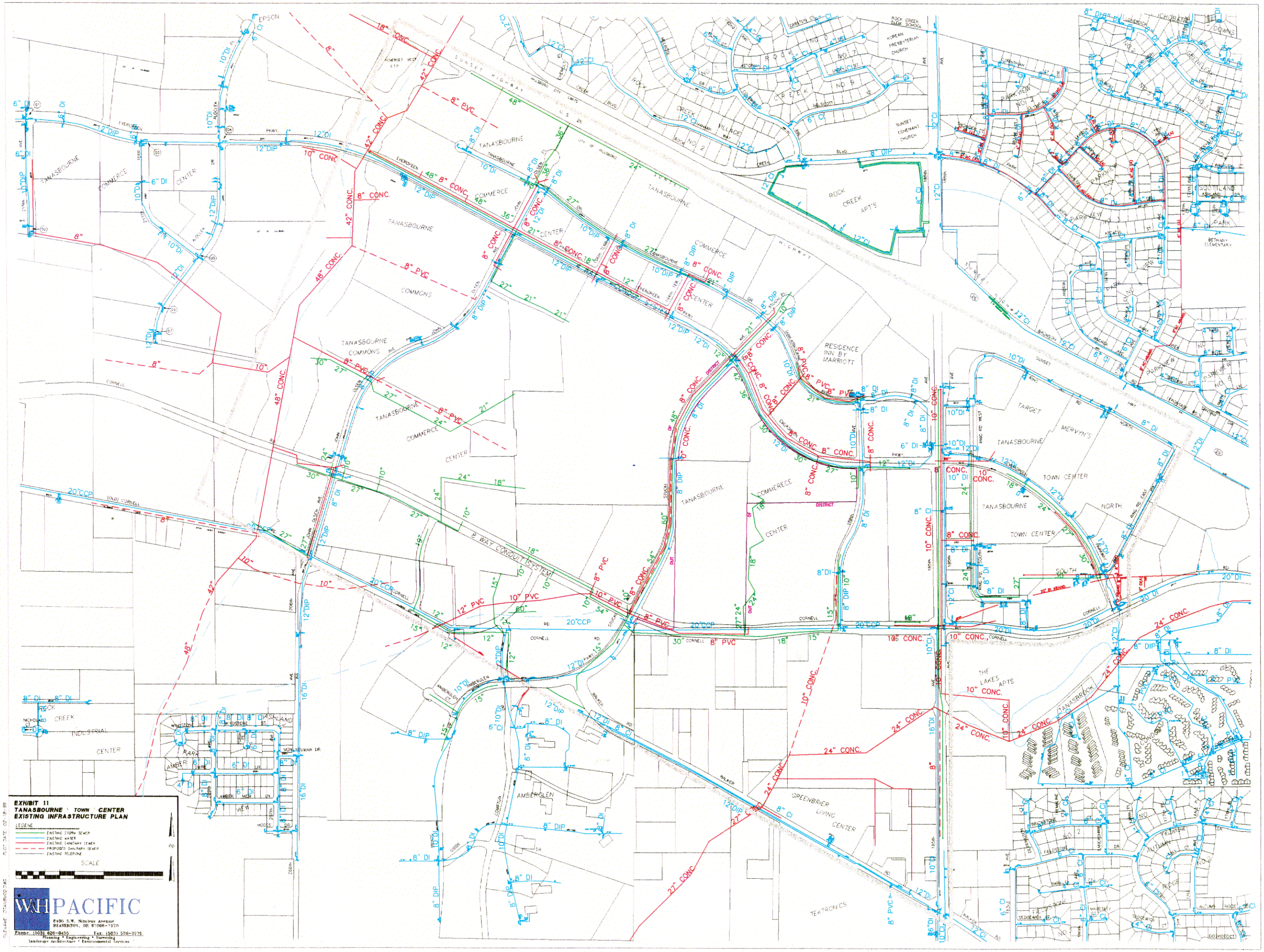
EXHIBIT 11
TANASBOURNE TOWN CENTER
EXISTING INFRASTRUCTURE PLAN
LEGEND
EXISTING STORM SEWER
EXISTING WATER
EXISTING SANITARY SEWER
PROPOSED SANITARY SEWER
EXISTING TELEPHONE
SCALE
W.H. PACIFIC
8405 S.W. Nimbus Avenue
BEAVERTON, OR 97008-7120
Phone: (503) 626-0455 Fax: (503) 526-0776
Planning • Engineering • Surveying
Landscape Architecture • Environmental Services
PLOT DATE: 02-18-99
FILENAME: 0TANBW02.DWG
TANASBOURNE
COMMERCE
CENTER
COMMONS
TANASBOURNE COMMONS
ROCK CREEK VILLAGE
ROCK CREEK APT'S
RESIDENCE INN BY MARRIOTT
TARGET
MERVYN'S
TANASBOURNE TOWN CENTER
NORTH
SOUTH
THE LAKES APTS
GREENBRIER LIVING CENTER
TEKTRONICS
AMBERGLEN
ROCK CREEK INDUSTRIAL CENTER
8 WAY CONDUIT SYSTEM
CORNELL
SUNSET HIGHWAY
PARKVIEW
SCOTTLAND PARK
BETHANY ELEMENTARY
SUNSET COVENANT CHURCH
KOREAN PRESBYTERIAN CHURCH
ROCK CREEK ELEM SCHOOL
EPSON
48" CONC.
42" CONC.
24" CONC.
27" CONC.
8" PVC
10" PVC
12" PVC
12"DIP
10" CONC.
8" CONC.
8" DIP
8" DI
6" DI
10"DI
12"DI
16"DI
20"CCP
30" CORNELL
18" CONC.
10" CONC.

Part 5
Town Center Plan Implementation

Adoption and enforcement of implementing land use regulations for a plan do not alone result in plan implementation. Successful implementation also requires working with stakeholders associated with a planning area and attaining their acceptance and implementation of plan goals, policies and strategies.

5 How Implementation Occurs

In Hillsboro, City land use plans are implemented by applying City zoning and other land use regulations to private land use applications and by constructing public facilities in accordance with approved City Public Facility Plans. Implementation of the Town Center Plan public facility recommendations relating to transportation system improvements and proposed new park facilities will occur through City, State, Regional, County and special-district capital budgets and operating programs through which such facilities are funded and constructed. Implementation of these recommendations also will occur through the City land use permit processes as private development proposals trigger the need for construction within areas targeted for new or improved sewer, water, roads, parks and other facilities.

Implementation of the Town Center Land Use Plan and consistent private-sector plans filed for projects within the Planning Area will occur in several ways. First, all the Town Center Plan elements (i.e., The General Land Use Plan or Special Tanasbourne Town Center Development Policies) will be incorporated into the City's comprehensive plan by the adoption of this Plan as a City "Community Plan".

The City's Zoning Ordinance also will be amended to include a new Mixed-Use Zone that will enable the development of mixed land uses in areas designated for potential mixed-use development in

the Town Center General Land Use Plan. This new zone will give affected property owners the ability, upon application for such zoning, to develop mixed uses on their properties. The Mixed-Use Zone will also enable them to develop non mixed uses on their properties that are consistent with the policy provisions of the Town Center Plan as well as the Town Center General Land Use Plan. Together with the existing City Planned Unit Development (PUD) Zone (Section 127 of the Zoning Ordinance) and Development Review and Approval Ordinance (Sec. 133 of the Zoning Ordinance), the new Mixed-Use Zone will provide alternative enabling land use regulations that implement the Town Center Plan. The new Mixed-Use Zone will apply to the Town Center Core Area and the Mixed-Use area designated within the Cornell-Walker Roads Superblock. The new Mixed-Use Zone will be prepared as a part of the development of a new City Community Development Code beginning in the Fall of 1999 as part of the City's Periodic Review.

Finally, the Town Center Plan transportation system recommendations and elements will be implemented through City and private sector implementation of provisions in the City TSP applicable to the Planning Area relating to arterials and collectors, pedestrian and bikeway facilities, transit and other travel modes. In addition, interior roadways and pedestrian and bikeway systems within the Core Area and Superblock are to be implemented as conditions of land use permit approvals sought by the owners of properties in these two areas.

5.1 Private-Sector Implementation

Under adopted State and regional transportation growth management and land use policies, much of the existing retail development in the Area could not now be built as originally designed. Because long-term agreements including 99-year leases underlie most of this development, it is likely that such development will attain only partial complete compliance with these policies within the Town Center Plan's 20-year horizon. For existing developments, the Plan thus envisions incremental compliance as specific projects seek to renovate or redevelop. Landowners and developers early in the process agreed that the goal of the Town Center Plan was to assure over time that redevelopment conforms with the Plan's principles, strategies and guidelines. These principles are intended to govern City review of future redevelopment projects as they arise.

5.2 Stakeholder Commitment to the Plan

Town Center Planning Area stakeholders actively participated in setting proposed land uses and project densities within the Town Center Core Area and the Cornell-Walker Roads Superblock that implement the 2040 town center design for the Area. Representatives of most of the stakeholders are members of the VPAC.

Regarding undeveloped and underdeveloped parts of the Planning Area, the stakeholders generally agreed these areas would develop in accordance with private development plans that have been recently permitted under City planning permits, or are in the process of attaining City permits, provided they are consistent with the Town Center Overall Guiding Principles and Development/ Urban Design Strategies and, thus, generally implement the Region 2040 Town Center design concepts.

These agreed-to parameters served to focus Town Center land use planning on integrating and coordinating City and private development priorities for the Planning Area, and on detailed land use planning only for the undeveloped and underdeveloped areas — that is, the Town Center Core Area and the Cornell-Walker Roads Superblock.

As part of requiring that development plans satisfy Town Center Guiding Principles and the 2040 town center design objectives, the stakeholders and VPAC recommended applying an approach to Town Center planning that transcends traditional public sector, prescriptive style land use planning. The preferred approach provides land use designations and implementing regulations that reflect a private-public partnership and the need for flexibility in the face of evolving conditions. This cooperative spirit has created a strong commitment by Planning Area developers to implement the Plan.

Appendix A

Tanasbourne Town Center Plan: Compliance with Applicable State and Regional Growth Management and Transportation Planning Provisions

The following matrix describes how the Tanasbourne Town Center Plan complies with applicable State and Metro growth management and transportation planning policies. It identifies Town Center Plan guiding principles, development and urban design strategies that upon application to new developments and redevelopment projects within the Town Center Planning Area will implement regional and state policies. There are three areas where Town Center principles apply: Town Center Guiding Principles and Development/Urban Design Strategies, which apply throughout the Planning Area, the Town Center Core Area and the Cornell-Walker Roads Superblock.

The Principles, Strategies and Elements are general (Town Center Principles and Development/Urban Design Strategies) as well as specific (Town Center Core Area and the Cornell-Walker Roads Superblock). They were developed with the advice of the Tanasbourne Village Center Planning Advisory Committee (VPAC) and were approved by that Committee.

The purpose of the matrix is to show how the Town Center Overall Guiding Principles, Development/Urban Design Strategies and Cornell-Walker Roads Superblock Neighborhood Elements are substantially consistent with applicable State and Metro growth management and transportation planning policies contained in the Metro Urban Growth Management Functional Plan, the Metro Framework Plan, and relevant provisions in the State Transportation Planning Rule as incorporated into the City's Zoning Ordinance. Consistency is shown by cross-referencing particular Town Center principles, strategies and urban design provisions with adopted State and Regional provisions that

are to be implemented by the referenced principle, strategy and/or provision. The matrix does not attempt to demonstrate a word for word matching of Town Center policy provisions with state or regional provisions. Instead it matches substantive directions contained in the principles with regional and state provisions.

The matrix documents the consistency of various Town Center policy provisions and development guidelines with related measures in the adopted Metro Growth Management Functional Plan, Titles 1 through 7. Additionally, the matrix identifies consistencies among Town Center provisions with related policies in several Chapters of the Metro Framework Plan. Finally, the matrix describes detailed compliance of certain Town Center principles, strategies, etc. with specific transportation planning policies and rules contained in OAR Chap. 660, Div. 12, the Oregon Transportation Planning Rule (TRP). The matrix focuses especially on TPR policies relating to building design and orientation to streets, multi-modal travel opportunities, and street connectivity which apply to the local and collector streets in the Town Center Planning Area and pedestrian and bike travel and pathway routes. At the City level, provisions in Section 133, Development Review and Section 84, Off-Street Parking of the Hillsboro Zoning Ordinance implement the TPR.

Code Regulations	Metro					State	City	
Plan Titles and ZOA Sections	Title 1	Title 2	Title 6	Title 7	Metro Framework Plan	OAR 660-12	ZOA Section 133 Development Review	ZOA Section 84. Off-St. Parking
A. A safe, convenient and attractive public or private town center(s) should protect and enhance the economic and social vitality and health of the study area.			All		LU 1.4		I.	
B. The "Town Center" may consist of one or more physical locations which integrate with and add value to the surrounding Tanasbourne area	Section 3				LU 1.1, LU 1.10		I.	
C. Flexible Ctr. planning, design guidelines & development approval processes should accommodate changes in the mkt. place & regulatory environment while protecting the area's economic & residential vitality & preserving public health, safety & welfare	Section 3		All		LU 1.4		I.	
Town Center Strategies								
1. Encourage one or more public and/or private squares, plazas or buildings that provide an easily identifiable and recognized physical, social and ceremonial focal point(s).	Section 3				LU 1.10		V.A.1.	
2. Encourage parks, plazas, schools, churches, public buildings and other gathering places and uses which complement and support the Center(s).	Section 3		Section 3		LU 1.10, P 3.5		V.A.1.	
3. Encourage a mixture of residential, retail, workplace and civic uses that contribute to home and business needs of the community, in convenient proximity to the Center(s).	Section 3		Section 3		LU 1.1, LU1.10		V.B.	
4. Encourage upgraded, attractive building facades, storefronts and signage that enliven the street experience, increase retail and other types of desirable traffic and contribute to the Center(s) as an amenity and destination.	Section 6.D.				LU 1.10	045 4.b & c	V.A.2. & VI.C	
5. Encourage a business environment that contains adequate public and private vehicle access and parking, building visibility, infrastructure and other market amenities.	Section 5.C.	All	Sections 1-4		LU 1.4, T 2.6, 2.17.4	045 3.b	V.A.6-8,10,15, 18 & VII.C	A.
6. Encourage a range and flexibility of attractive, new and recycled housing and costs which accommodate age group and economic diversity.	Section 4.B., 6.D.			All	LU 1.1, LU 1.2, LU 1.3, LU 1.10		V.A.2.	
7. Encourage a network of safe, convenient and beautiful streets and pathways that provide alternative traffic routes and parking options while facilitating walking, biking and wheelchair uses.		Sections 1,2	Sections 1-4		T 2.6, T 2.9, T 2.10, T 2.11, T 2.14, T 2.15	045 3.b	V.A..9,10,15,18,22, 23, VI.A, VII.A,B.	
8. Encourage development and redevelopment patterns that achieve compatibility between compact development and preservation of natural resources.	Section 5.C.	Section 1.			LU 1.1, LU 1.12		V.A.3-5,11,12.	
9. Encourage compatibility with and appropriate connection to surrounding properties and land uses, as well as the region.		All	Sections 1-4		LU 1.1, LU 1.6		V.A.9,18,25, VII.A-C.	
10. Encourage flexible, simplified and streamlined regulations and codes that reward positive changes in development patterns.	Section 4.B.	Sections 1,2	Sections 1-4	Section 2			V.A.13,16, 17.	

Code Regulations Plan Titles and ZOA Sections	Metro Title 1	Title 2	Title 6	Title 7	State Metro Framework Plan	City O A R 660-12	ZOA Section 133 Development	ZOA Section 84. Off-St. Parking
Cornell-Walker Roads Superblock Neighborhood Elements								
1. Medium to high density residential community with supporting commercial uses.	Sections 3		Section 3		LU 1.1, LU 1.3			
2. Development consistent with Town Center Principles.					LU 1.1, LU 1.10			
3. Pedestrian/bike accommodating and friendly.		All	Sections 1-4	Section 1	LU 1.10, T 2.14, T 2.15	045 3.b	V.A.9,10,15,18 & B-D, VI, VII.	
4. Residential density minimum 14 dwelling units per acre.	Section 4, 7.A.				LU 1.3			
5. Neighborhood Commercial uses including offices and first floor retail.	Section 2, 3	Section 3			LU 1.1	045 4.b & c		
6. General building heights: Minimum of 2 stories, maximum of 70 feet.	Section 2.A. & 4						V.2.	
7. Development around existing Walker Road homes: Within 100 feet of homesites. maximum 14 units/acre, 2 story (e.g. townhouses).								
8. Develop greenway trail connections.					P 3.5	045 4.b & B		
9. Provide access and overlook to Bronson Creek wetlands.					P 3.5			
10. Develop pedestrian and vehicular connections to Tuality/St. Vincent Medical Plaza and Sunset Square Shopping Plaza.			Sections 1-4		T 2.2.1, T 2.6	045 3.b & D		
11. Provide 2 signalized road connections to Cornell Road.			Sections 3,4			T 2.19		
12. Provide 2 to 3 road connections to Walker Road.			Sections 3,4			T 2.19	045 4.b & B	
13. 1 to 2 east-west streets which connect to north-south Cornell/ Walker access streets			Sections 3,4			T 2.19	045 3.b & D	
14. Minimize parking lots directly adjacent to Cornell and Walker Road.		Sections 1,2	Section 2		P 3.17	045 4.b, B & D		V. A.
15. Provide 2 +/- acre useable park within the area.			Section 2			P 3.5		V.A.
16. Provide flexibility for Amberglen to expand as a part of the neighborhood plan.	Section 6				LU 1.13			
Town Center Core Neighborhood Elements								
1. Allow mixed-use with residential, commercial, office, and public uses.	Sections 3 & 7		Section 3			LU1.1 LU1.10		
2. Provide high density residential opportunity (min. 14 du/ac - avg. 24 du/ac.).	Section 7			Section 1		LU 1.3		
3. Development consistent with town center principles.					LU 1.1, LU 1.10			
4. Pedestrian/bike accommodating and friendly.		All	Sections 1-4		LU 1.10, T 2.14, T 2.15	045 3.b	.VA.9,10,15, 18 & B-D, VI, VII.	
5. General building heights between 18 to 75 feet.							V.A.2.	
6. Develop strong pedestrian connections to surrounding neighborhood.		Sections 1,2	Sections 1-4		LU 1.10, T 2.6, T 2.114, T 2.14	045 4.b & B	.V.A.9,15,18,23 & VI.A-D, VIII.A, B.	
7. Provide urban town square on N.W. corner at center.					LU 1.1, LU 1.10	045 3.C		
8. Explore location of public library and police and precinct in Town Center.					LU 1.10			
9. Provide a convenient internal pedestrian circulation system.		All	Sections 1-4		LU 1.10, T 2.6, T 2.11.4, T 2.14	045 3., 4.B.	VII.C.2.	
10. Provide strong pedestrian connection to Town Square and existing City Park.			Sections 1-4		LU 1.10, T 2.6, T 2.11.4, T 2.14	045 3.b, 4.b & B	VIII A.,B.	
11. Encourage shared or structural parking.		Section 2			T 2.17		VII C.7.	All

Appendix B

Tanasbourne Transportation Analysis Working Paper

Introduction

In the summer of 1997, key property owners within the Tanasbourne Town Center Planning Area initiated a transportation study supplementing the City's Transportation System Plan (TSP) planning effort which was being undertaken by the City of Hillsboro for the same area at the same time. During the period of time between the summer of 1997 and fall 1998, development in the Planning Area led to the implementation of some of the subarea recommendations of the proposed Town Center Plan (for example 194th Avenue and the Kaiser Gardens(Palladia)/ Lions Gate residential development). The preliminary draft TSP was used to provide input to the Regional Transportation Planning effort being undertaken by Metro. The TSP provided the framework document for the transportation analysis of the Tanasbourne Town Center.

This working paper summarizes the background information collected for the study area, the review of land uses in the Tanasbourne area, TSP transportation analysis findings and listing of recommended transportation improvements for the area. The study area for the Tanasbourne Town Center project is bounded by US Highway 26 to the north, Rock Creek to the west, Cornell and Walker Roads to the south and NW 185th Avenue and the City of Beaverton boundary to the east. The City Transportation System Plan dated May 1999 should be used together with this working paper in providing background and findings for this Plan.

Background Information

An inventory of traffic conditions was conducted in the fall of 1996 and has been used as a consistent base condition for analysis for the City TSP and this Town Center Planning Area Transportation System evaluation. Table 1 summarizes the traffic performance at 10 key area intersections within the Town Center Area.

While the 1996 data represents a base condition for analysis, there have been significant changes in traffic volume for the area. For example, Evergreen Parkway was completed since 1996. Its opening had resulted in significant increases in traffic on Evergreen within the study area. At the same time, traffic on Cornell Road has not changed significantly. Table 2 provides a historical summary of traffic volumes on both Evergreen and Cornell at Stucki Avenue between 1996 and 1998.

92 Bicycle lanes and pedestrian sidewalks have been installed as development has occurred in the past ten years in the Tanasbourne area. All the arterial and collector streets in the study area have bicycle lanes and sidewalks with only a segment of Walker Road west of 185th Avenue being an exception. While sidewalks do exist today, the current connectivity of streets and existing land use patterns are not especially conducive to walking trips between sub-areas of the Town Center.

Table 1
Intersection Performance – PM Peak Hour
1996/97 Data

Intersection	Average Stopped Delay	Volume-to-Capacity Ratio	Level of Service
Cornell/185th	26.0	0.82	D
Cornell/Stucki	16.1	0.41	C
Cornell/John Olsen	12.3	0.61	B
Cornell/Cornelius Pass	24.2	0.87	C
Evergreen/185th	21.8	0.73	C
Evergreen/Stucki	8.1	0.60	B
Evergreen/John Olsen	12.4	0.74	B
Evergreen/Cornelius Pass	21.1	0.80	C
185th/US 26 W/B Ramps	21.9	0.97	C
185th/US 26 E/B Ramps	4.2	0.64	A

Transit service to the study area is provided by five Tri-Met routes (49S, 47, 48, 52, and 89). These routes were recently reconfigured when Westside LRT service began in September 1998. Generally, current service is at 30 minute headways during peak times. Some routes are limited service (weekday only, peak only). Both the 185th Avenue route and Cornell Road-to-Walker Road route are considered Primary Bus routes in the Regional Public Transportation System providing linkages to the residential areas north and south, the light rail station at Baseline/185th (Willow Creek) and employment areas east (Nike/Tektronix/Sequent) and west (Intel).

Table 2
Traffic Volume Changes
Total E/B + W/B Approach Volumes in PM Peak Hour

	Cornell Road at Stucki		Evergreen at Stucki	
1996	5/96	1723	2/96	926
1997	5/97	1814	12/97	1674
1998	4/98	1683		

Table 3
Functional Classifications/Designations

City of Hillsboro

Route	Functional Class	Bicycle	Pedestrian
185th Avenue	Arterial	Lane	Master Plan Route
Cornell Road	Arterial	Lane	Master Plan Route
Walker Road	Arterial	Lane	Master Plan Route
Evergreen Parkway	Arterial	Lane	Master Plan Route
John Olsen Avenue	Collector	-	Master Plan Route
194th Avenue	Collector	Bicycle Way	Master Plan Route
Stucki Avenue	Collector	Lane	Master Plan Route
188th Avenue	Collector	Bicycle Way	Master Plan Route

Washington County

Route	Functional Class	Bicycle	Transit	Through Truck
185th Avenue	Major Arterial	On-street	Transit Street	Route
Cornell Road	Major Arterial	On-street	Regional Trunk	Route
Walker Road	Minor Arterial	-	Transit Street	-
Evergreen Prkwy	Minor Arterial	On-street	Transit Street	-
John Olsen Ave	Major Collector	-	-	-
194th Avenue	Collector	-	-	-
Stucki Avenue	Minor Arterial	-	-	-
188th Avenue	-	-	-	-

Metro

Route	Motor Vehicle	Regional Street	Bicycle	Pedestrian	Transit	Freight
185th	Major Arterial	Regional Blvd/ Street	Regional Corridor	Transit/Mixed Use Corridor	Primary Bus	Road Connectors
Cornell	Major Arterial	Regional Blvd/ Street	Regional Corridor	Transit/Mixed Use Corridor	Primary Bus	Road Connectors
Walker	Minor Arterial	Community Street.	Community Connector	Transit/Mixed Use Corridor	Primary Bus	-
Evergreen	Minor Arterial	Urban Road Com. Blvd.	Regional Access	-	-	-
John Olsen	Regional Collector	Urban Road	-	-	-	-
194th	-	-	-	-	-	-
Stucki	Regional Collector	Urban Road	Community Connector	-	-	-
188th	-	-	-	-	-	-

Functional Classification

The key roadways in the study area share functional classification designations with three jurisdictions (the City, Washington County and Metro). Table 3 summarizes the key designations in the study area. Generally, all the agency designations are consistent (although different terminology is used) with the only excpetion being Hillsboro and Metro's designation of Stucki Avenue as a collector while the 1998 Washington County Transportation Plan identifies it as a minor arterial.

Land Use

A detailed inventory of land use was conducted for the Tanasbourne Town Center Planning Area. Land use data was obtained from the primary landholders of the area which include Standard Insurance, Trammell Crow Residential and Melvin Mark Development and from the Town Center planning team. The Town Center plan recognizes and reflects the current City Comprehensive land use designations for the majority of the lands in the study area. Only two areas are subject to changes of historical zoning designations. The first is the area bounded by Cornell/Stucki/Evergreen and identified in the Town Center Plan as the Town Center Mixed-Use Pedestrian Corridor Area. This area was reviewed for a zone change in 1997 which was approved. The second area with a significant change to land use in the Town Center Area is referred to in the Town Center Plan as the Cornell-Walker Roads Superblock (the block bounded by 185th/Cornell/Walker/Amberglen Parkway). This area is primarily undeveloped to the west and has the most vacant land within the Town Center area.

The majority of land is built out within the study area. The primary areas where significant vacant land exists: 1) Walker/Cornell/185th/Amberglen (the Town Center Commercial/Mixed-Use Core Area), 2) 194th/Stucki/ Cornell; and Evergreen/194th/US 26/196th (the Cornell-Walker Roads Superblock). All other lands in the study area are nearly built-out or otherwise committed to development. Table 4 outlines the existing land use (early 1998) and the changes foreseen with the Tanasbourne Town Center Area. Much of the land in the Town Center does not change from existing uses or those uses contemplated in the Comprehensive Plan. The following two sections describe in more detail the changes proposed by the Tanasbourne Town Center Plan in the two subareas noted above.

Table 4
Land Use Summary (1998)

Land Use	ITE Code	Existing	Planned Additional	Town Center Total Land Use	Units
Light Industrial	110	0	98,337	98,337	SF
Apartments	220	3,690	1,680	5,370	DU
Congregate Care	252	111	0	111	DU
Hotel	310	0	250	250	RM
Business Hotel	312	520	520	520	RM
Parks	411	22	22	22	AC
Theater	443	3,371	0	3,371	Seat
Church	560	42,035	0	42,035	SF
Office	710/4	88,350	1,004,880	1,093,230	SF
Medical Office	720	83,373	201,527	284,900	SF
Retail	820	888,882	563,853	1,452,735	SF
Restaurant	832	31,585	22,750	54,335	SF
Fast Food	834	13,712	6,000	19,712	SF
Auto Care	840	1,624	0	1,624	SF
Gas Station	845	8	0	8	PMP

SF = Square Feet, DU = Dwelling Units, AC = Acres, PMP = Pumps/Fueling Positions, RM = Rooms

95

Town Center Core Area. The area adjacent to the Kaiser Permanente facility near 194th Avenue has recently developed into multi-family housing. The remaining vacant land is planned for retail/commercial/mixed-use and institutional use (medical offices). A rezone of this subarea occurred in 1997. The analysis of the rezoning indicated that the subarea would generate nearly the same level of vehicle trips with the prior zoning designation or within the proposed zoning. The current plans for this subarea have changed as development plans have been refined. The table in the appendix compares the trip generation of the current land use proposals described in the May 1997 memo. The net result is the same - fewer weekday PM peak hour vehicle trips than under the prior zoning of the land as retail and institutional uses.

Cornell-Walker Roads Superblock. This subarea was subject to detailed planning by the Tanasbourne Town Center planning team since it is relatively undeveloped. The Town Center planners identified a mixed-use concept of development for part of the Superblock that would deviate from the current A1/A4/C1/C4 zoning designations. An analysis was conducted of the land use and trip generation potential of the subarea with existing zoning and with proposed Superblock land uses. The proposed land use plan for this subarea would result in an interconnected, pedestrian-friendly land use pattern that includes some optional mixed-use development opportunities. Based upon this proposed pattern, the trip generation analysis for the Superblock reflected not only the trip generation capacity of the land uses, but also an estimate of the potential for trip capture/internal trip making due to the mixed-use nature of the plan. Research from the Institute of Transportation

Engineers for a commercial/residential development of the scale planned for this subarea indicates the potential for a 27% internal trip capture[1]. The 27% reduction was selected based upon four considerations:

- A Superblock that is well interconnected, pedestrian friendly and has a mix of uses that are mutually supportive.
- Selecting data from ITE research that most closely matches the proposed conditions for the subarea.
- Having adjacent uses that are also supportive and reachable from within the Superblock by walk/ bicycle/transit trips (employment opportunities to the south and southwest; retail opportunities to the north and northwest).
- Using City Development Review procedures to assure the level of pedestrian and bicycle connectivity as defined in the Zoning Ordinance.

With this rate of internal trip making between mixed-uses in an interconnected development, the vehicle trip generation of the Superblock would be slightly less than it would be under the current zoning designations. This internal trip capture or reduction of external trips is consistent with the Transportation Planning Rule section 660-0123-060 (5) which identifies this procedure in consideration of rezoning of land uses.

Mode Split Analysis

Using the Metro Travel Demand Forecast Model, the percentage of future trips from the Town Center Planning Area using transit was analyzed. Table 5 summarizes the transit percentage in 2015 given existing transit service (LRT and local transit). The transit percentage target for Town Center and Transit Station Areas as established by Metro is approximately 12 percent. While the modeling analysis indicates that this percentage can be achieved in the Willow Creek/185th LRT station area, the balance of land in the Town Center is unable to achieve this split without some changed conditions. To improve the transit split for the Tanasbourne Town Center Planning Area, the following recommendations should be considered:

[1] Trip Generation, Fifth Edition, Institute of Transportation Engineers, 1991, page I-42.

- Implement frequent transit service (15 minute headways in peaks) on routes designated by Metro (as Primary Bus 185th, Cornell, Walker - Tri-Met routes 48, 52, 59).

During development review, require direct pedestrian connections to bus stops on Primary Bus routes (existing and future).

- Emphasize pedestrian linkages between adjacent uses for the undeveloped commercial lands.

- Direct paths to adjacent land uses and the LRT stations should be established.

- Develop linkages to a Bronson Creek multi-use path as a means to deliver transit riders between the commercial and mixed-use areas and bus stops on 185th Avenue and Walker Road.

- Enhanced transit service between areas north of Cornell in the Town Center and the LRT stations at Willow Creek and Quatama (utilizing a combination of potential study area streets such as (but not limited to) Stucki/Amberglen, the new east-west collector, John Olsen/206th and Walker Road should be considered. Tri-Met shuttle routes 42S and 49S should be considered for expanded route coverage and headways. Coordinate with employers/stakeholders on shuttle route planning and funding. 97

- Utilize minimum parking ratios in the Zoning Ordinance consistent with Metro parking ratios.

- With a significant increase in employment uses planned for the Town Center Area, develop Transportation Demand Management plans (as noted in the following section) to encourage transit use and alternative modes.

Table 5
Transit Percentage
For TAZ's in Town Center Area in 2015 plus comparison to other areas in Portland Region

TAZ	Trips to ZonePM Peak	Trips from ZonePM Peak
203 (US 26/185th/Cornell)	1%	2%
210 (w/o 185th, s/o US 26, e/o Rock Creek)	1%	1%
211 (both sides of Cornell w/o 185th to Aloclek)	1%	1%
195 (area near Willow Creek/185th LRT station)	18%	6%
29 (23rd Avenue area of Portland)	12%	13%
728 (Mall 205 area of Portland)	5%	3%
714 (near Lloyd District, north of Broadway in Portland)	16%	7%
780 (Hawthorne District area of Portland)	14%	6%

Trip Reduction Potential

One of the primary reasons for considering refinement of land use in the two relatively undeveloped subareas in the Town Center Planning Area was to consider a mix of use and design features that would reduce the level of external vehicle trip making. The prior land use zoning has large separated areas of retail, housing and institutional uses. By providing an interconnected blend of retail, commercial, employment and housing, trips that otherwise would have had to travel on arterial streets for access can be made by other modes (walk, bicycle, transit) or can be made on internal streets (not using arterials).

Recent research describes factors that most influence the potential use of alternative modes. Density, mixed-use development, pedestrian-friendly design, transit oriented development, neo-traditional design and congestion/parking pricing have all been discussed as means to reduce vehicle trips. Recent findings indicate that many of these have marginal influence on travel behavior[2]; however, the most significant vehicle reductions can be achieved through high quality access to alternative modes and/or pricing strategies. Since pricing strategies are being discussed at a regional level and are difficult to address locally, the focus for the Tanasbourne Town Center Area should be on high quality alternative mode access.

Accessibility in this discussion refers to providing access to choices for trip making. Choices for trip making include having multiple services and/or activities nearby within walking distance (mixed-use). Choices also include provision of alternative mode facilities that meet the needs and expectations of people not using their autos which include direct-well lit pedestrian paths, bicycle lanes and lockers, and reliable transit service all the time. Finally, choices mean being located within reasonable walking distance of high capacity transit. Each of these is discussed below.

Mixed-Use. Several mixed-use centers in suburban settings have been built in the United States. However, little quantitative research is available regulating the actual mode split of these centers. The first study is part of nationwide research into the influence of land use mix and design on transit use. This study evaluated the probability of trips made by alternative modes based upon distance to work and land use type. Mixed-use centers resulted in 50 to 100% increases in the probability of walk and bicycle commuting compared to single use centers. This is most important within one mile of the center.

[2] Cervero, Robert, Urban Design Issues Related to Transportation Modes, Designs and Services for Neo-Traditional Developments, University of California, Berkeley, 1997.
Handy, Susan, Travel Behavior Issues Related to Neo-Traditional Developments –A Review of the Research, University of Texas, 1997.
Influence of Land Use Mix and Neighborhood Design on Transit Demand, TCRP Project H-1, Transportation Research Board, March 1996.
Mode of Access and Catchment Areas of Rail Transit, TCRP Project H-1, Transportation Research Board, March 1996.
Analysis of Indirect Source Trip Activity at Regional Shopping Centers, California Air Resources Board, November 1993.
Also refer to Appendix Table 1 for review of research on land use measures and travel demand.

Two other studies provide mode split data for mixed-use centers; one in the Washington, DC area and one in California (see appendix for excerpts). In both studies, transit mode share of 10 percent is fully achievable in a suburban setting, but not by mix of uses alone. Other examples in suburban settings show 2 to 6 percent of trips on transit (similar to that forecast by the Metro model, noted above). While it is difficult to separate the defining difference(s), the lowest percentages of transit correspond to cases defined as having poor choices for alternative modes. The benefit of a mixed-use center can quickly be lost without sidewalks providing direct connections and distances between uses that are manageable for pedestrians. While mixing of land uses is not the only factor, it is a contributing factor in reducing vehicle trips. Table 6 summarizes the alternative mode shares and characteristics of several suburban centers. While the mode shares are the result of several factors, the combination of good access to transit service and mixed-use typically produces the greatest alternative mode shares. These results provide a range of potential for transit in settings similar to the Tanasbourne Town Center.

Finding: Mixed-use development will reduce external trips and create an opportunity to increase alternative mode use.

Table 6
Alternative Mode Share for Various Suburban Centers

Location	Transit	Use Mix	Pedestrian Environment	Transit Share	Walk/ Bicycle Other
Bethesda, MD (suburban CDB)	Rail station at center	Mixed-Use	Good	14.1%	3.9%
Rock Springs Park, MD (suburban office campus)	Rail station 2 miles away	None	Fair	2.7%	0.2%
Shady Grove, MD (suburban research park)	Rail station 1-3 miles away	None	Poor	2.7%	1.2%
Northern California (suburban shopping center, low density area)	Limited bus service, off-site stops	None	Poor	4.3%	0.7%
Northern California (suburban shopping center, low density area)	Limited bus service, on-site stops	None	Fair	6.4%	2.6%
Northern California (suburban shopping district, medium density)	Limited bus service on-site with shuttle to rail station	Mixed-Use surrounding	Good	10.6%	20.3%
Southern California (suburban shopping district, high density)	Frequent bus service surrounding center	Mixed-Use surrounding	Good	21%	21.7%

Accessible Facilities. The research clearly points to the fact that the alternative mode shares are insignificant in cases where sidewalks, bicycle lanes and bus stops are not provided. The more difficult aspect is not just the provision of these facilities, but their convenience and functional aspects. The existing Tanasbourne Town Center Shopping Center bounded by 185th/Cornell/Sunset Highway provides an example of this. Sidewalks and bicycle lanes are provided, but require travel through large parking areas and roads with multiple conflict areas with autos (even though the overall dimension is less than one half mile). It is not uncommon for people to drive between stores in the center. Compare this with Washington Square where people willingly walk distances well over a half mile. The combination of this fact and the research noted above points to the impact that quality access has on increasing the use of alternative modes. Reducing the number of auto conflict points, creating a compact pedestrian area and organizing uses along local streets that are pedestrian friendly can swing internal trip making to walking trips in the range of 10 to 30 percent of the total.

100 **Finding: Direct high quality access to adjacent land uses and alternative modes has the potential to achieve the Metro Town Center mode split targets.**

Location to Transit. Analysis of suburban rail transit stations in the San Francisco area provides a clear understanding of the value of proximity to transit to alternative mode use. The number of walk trips as a percent of total trips to the rail transit station drop as the distance from the station increases:

- Within 1/8 mile = ~85%
- Within 1/4 mile = ~ 80%
- Within 1/2 mile = ~50%
- Within 1 mile = <10%
- Outside 1 1/4 miles = 0%

The majority of the Town Center Area is outside the one mile radius of the 185th/Willow Creek and 205th/Quatama LRT stations. The two locations within this radius are the two subareas where vacant land exists (the Town Center Core Area and the Superblock). Because of this, the paths from LRT to these subarea should be given special attention to directness of route, pedestrian design, minimal auto crossings and controlled crossing of arterials. For the Superblock subarea, the proposed Salix Drive roadway will provide this link. For the Core Area subarea the proposed Amberglen Parkway will provide the linkage. Traffic signals on Cornell and Walker Roads will provide for safe arterial crossing.

Beyond access to rail transit, the placement of bus stops on-site or immediately adjacent to mixed-use centers affects alternative mode use. Convenient bus stop placement and direct pedestrian connections resulted in 50 to 100% increases in transit mode share in the research noted. Current Tri-Met plans include transit routes on each of the arterial streets in the Town Center.

Finding: Direct paths to the LRT station to/from the Town Center Planning Area via Amberglen Parkway, Salix Drive and 185th Avenue and planning for adjacent bus stops and amenities will help meet the Metro mode split targets.

Other Trip Reduction Strategies for the Town Center. The unique nature of the Tanasbourne Town Center would support other trip reduction strategies, including:

- Bicycle amenities such as lockers and convenient storage. Since many of the bike lanes are built, plans for two multi-use trails accessing the Town Center are part of the TSP (Rock Creek and Bronson Creek) and the terrain in the area is relatively flat, the potential to increase bicycle use in this center is significant.
- Due to the proximity of several high technology employers, planning new residential development with high-capacity communication systems to support telecommuting should be considered.
- The DEQ Employee Commute Options program is required of employers of 50 or more persons. This program provides the framework for various trip reduction strategies and their monitoring.

Traffic Impact Evaluation

Future forecasts for traffic in the Town Center Planning Area were developed utilizing both the detailed land use forecasts (noted above) and the Metro regional travel demand model. The two tools were combined to produce future intersection level forecasts. The forecast includes 2015 growth in all areas of the region plus the Town Center Planning Area. Table 7 summarizes the resulting level of service with the 2015 growth in traffic including the Town Center if only existing funding resources are used for roadway improvements (constrained funding). The lack of capacity in this scenario defines the need for a mitigation plan (outlined in the following section).

Implementing the mitigation plan would result in acceptable levels of service at all study area intersections (LOS "D" in PM peak hour) with two exceptions (185th/Cornell, Evergreen/Cornelius Pass in the study area and 185th/Walker south of the study area). These intersections are forecast to operate at level of service "E" in the PM peak hour even after the mitigation plan is imple-

mented (including the widening of 185th to seven lanes south to Walker). The TSP corridor level of service "D" and Metro Functional Plan Title 6 level of service standards (2020 two-hour period based upon Metro plots) would be met for the Town Center. However, due to the constrained operation of the 185th corridor and the low transit mode split percentages, it is recommended that a rigorous transportation demand management and transit enhancement program be developed as the Town Center develops. This will assure that the level of service standards will be maintained at better than acceptable conditions.

The existing comprehensive plan allows for the Town Center Plan land uses in all areas with the Superblock as the only exception. As stated in the prior land use section, the analysis of this area was conducted both with existing zoning and with the planned Superblock land uses. The results showed no appreciable change in intersection operation. Level of service did not change in either case. As noted above, mixed-use development can reduce external trips by capturing internal trips. To achieve this, the design and development review of this subarea should focus on direct and convenient pedestrian connection between land uses and transit stops.

Much of the street system is built or nearly complete in the entire Town Center Planning Area. Traffic signals are already placed (or conditioned for funding) at the intersections of any collector and arterial street today in the study area. The only exceptions are the intersection of Cornell Road/188th Avenue, the future extension of 188th Avenue south to intersect with Walker Road and the future extension of Salix Drive to intersect with Walker Road. Additionally, most of the local streets in the Town Center Area are built. The exception is in the Superblock subarea. The most important street connections in this subarea are the north-south extension of 188th Avenue from

Table 7
Intersection Performance with Town Center Planning Area
2015 PM Peak Hour

Intersection	2015 Base Case Funded Improvements			2015 With Town Center and Mitigation		
Cornell/185th	>100	1.66	F	57.1	1.10	E
Cornell/188th	F			18.6	0.65	C
Cornell/Stucki	44.1	1.05	E	32.8	0.96	D
Cornell/John Olsen	>100	1.25	F	31.2	0.98	D
Cornell/Cornelius Pass	>100	1.85	F	38.5	0.98	D
Evergreen/185th	>100	2.16	F	37.3	0.96	D
Evergreen/Stucki	F			14.2	0.86	B
Evergreen/John Olsen	F			19.5	0.82	C
Evergreen/Cornelius Pass	>100	2.34	F	48.3	1.00	E
185th/US 26 W/B Ramps	83.3	1.22	F	29.0	0.98	D
185th/US 26 E/B Ramps	48.6	1.26	E	33.9	0.88	C

Cornell to Walker and the east-west connection from Walker to 185th Avenue. The intersection of 188th Avenue at both Cornell and Walker Roads shall be three lanes at the traffic signal. Other local streets in this subarea are needed for local motor vehicle circulation and pedestrian/bicycle connectivity to meet Metro's Title 6 and the TSP standards.

The level of service standards identified by Metro for Town Center areas for Title 6 are met with the mitigation plan. This area would be identified as a stage II corridor analysis area as defined in the TSP. The arterial analysis methodology would be used for monitoring level of service on 185th Avenue, Evergreen Parkway and Cornell Road in the future. With the TSP recommended improvements, the arterial level of service D conditions would be maintained. Further improvement in operating performance can be achieved by the trip reduction elements of the mitigation program.

Mitigation Summary

Based upon the analysis of traffic conditions in 2015, the transportation improvements listed in Table 8 are recommended by this Plan. The improvements are warranted by planned development both within the Tanasbourne Planning Area as well as other developments anticipated to occur outside the Planning Area. They are proposed in order to make the transportation network inside the Planning Area, as well as the larger Citywide roadway system function satisfactorily under the preferred Level of Service standard for the City's roadways established in the adopted City Transportation System Plan (TSP). Therefore, in accordance with chapter 11 of the TSP, funding for the improvements listed in Table 8 is expected to occur through a combination of sources including Traffic Impact Fees (TIF), System Development Charges (SDCs), Gas Tax Allocations, Washington County MSTIP funds, Metro RTP funding, funding from the State and County pursuant to their transportation plans for roadways under their respective jurisdiction, and other developer contributions.

The Town Center Plan also recommends developing a local street network as development occurs. Much of the local street network is in place within the Town Center Area. The Superblock subarea will have the most extensive new local street network. Beyond the improvement plan in Table 8, other recommendations for the Town Center include:

- Emphasize direct and compact pedestrian path connections with minimal auto conflicts between pedestrian entrances to buildings in mixed-use areas, to the LRT stations to the south and to bus stops.

- Coordinate with planning and design of Amberglen Parkway and Salix Drive south of the Town Center to assure high quality, direct, minimal auto-conflict pedestrian and bicycle paths to LRT.

- Work in coordination with Tri-Met to enhance transit services to meet future needs of the Town Center.

- Use the development review process to assure adequate and secure provision of bicycle parking and direct pedestrianways. Consider shared parking and minimum parking ratios in planning mixed-use areas.

- Employers should meet the ECO requirements of DEQ for trip reduction planning.

- Implement mixed-use pedestrian friendly developments that are directly linked together for both subareas of Cornell/Stucki/Evergreen and Walker/Cornell/185th.

Table 8
Transportation Improvement Plan

Location	Description	RTP Status[1]	Cost
Improvements of Areawide Significance[2]			
US 26/174th Underpass	Connect 173rd/Cornell with 174th/Bronson under US 26	RTP 810	$14,800,000
US 26/229th Overcrossing	Connect 229th to Jacobson and West Union over US 26	RTP 743	$6,800,000
US 26 Ramp Meter Areas	Increase meter storage areas at Cornelius Pass and 185th	-	$2,500,000
US 26 ATMS	10% of regional allocation to advance freeway management	RTP 2	$4,000,000
US 26 Six Lanes	Murray to 185th	RTP 27	$26,000,000
US 26 Auxilliary Lanes	Shute to 185th	-	$20,000,000
East-West Collector	Cornelius Pass to Salix south of Walker	RTP 728	$7,600,000
Amberglen Parkway Ext.	Von Newman to 206th (part of development to south)	-	$2,100,000
Town Center Motor Vehicle Improvements			
Walker Road	5 Lanes 185th to Amberglen Parkway	RTP 754	$2,300,000
185th Avenue	7 Lanes Cornell to Walker	-	$13,200,000
188th Avenue Extension	New Road between Cornell and Walker	-	$2,400,000
Traffic Signals	185th (1), Walker (2), Cornell (3), Evergreen (1), Stucki	-	$1,600,000
Traffic Management	ITS plan for 185th, Cornell, Evergreen, Walker	RTP 2b+	$1,500,000
Evergreen/Cornelius Pass	Double LT lanes + RT lanes all approaches	-	$3,000,000
Evergreen/185th	SB RT lane, NB double LT lanes	-	$2,500,000
Cornell/Cornelius Pass	WB RT lane, EB double LT lanes	-	$2,500,000
Walker/185th	Double LT lanes on each approach, WB right turn lane	-	$2,250,000
Cornell/185th	NB + SB double left turn lanes, NB RT lane	-	$1,250,000
188th/Cornell	Three Lanes on 188th	-	$500,000
Cornell/Walker Superblock	Local/collector streets (approximately 12,000 feet)	-	$10,000,000
Bicycle Improvements			
Walker Road	Bicycle Lanes 185th to Amberglen Parkway	-	$270,000
Bronson Creek Trail	Multi Use path 185th to Walker	-	$1,000,000
Bicycle Lockers/Storage	Throughout employment/retail/residential areas	-	$250,000
Pedestrian Improvements			
Walker Road	Sidewalks 185th to Amberglen Parkway	-	$180,000
SE Cornell/Stucki Link	Directly connect corner to E/W road in subarea	-	$100,000
Bronson Creek crossing	Link 188th extension directly to 185th/Walker retail area	-	$300,000

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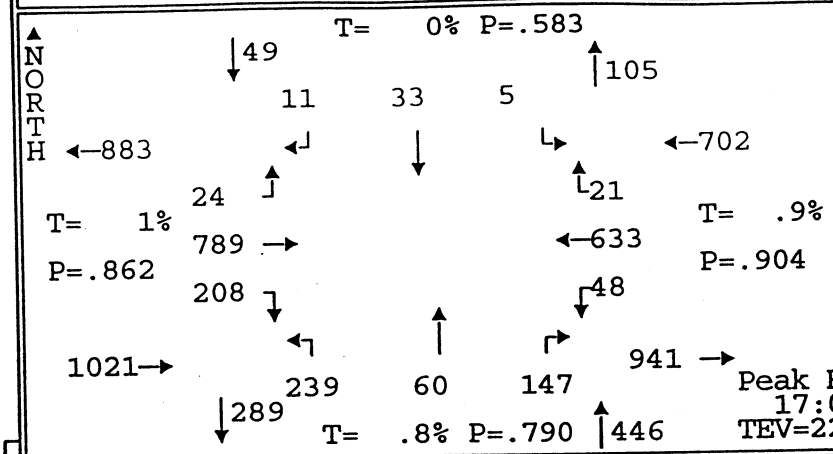
[1] "RTP" means the 1998 draft Metro Regional Transportation System Plan.

[2] The listed transportation projects and their respective cost estimates originate from the adopted City Transportation System Plan (1999, TSP). Table 8 should not be interpreted to mean, and does not reflect or express any existing commitment to fund the design or construction of the transportation improvements listed in the Table on the part of any public agency or private entity which owns or has jurisdiction over any of the transportation facilities identified in the Table. In accordance with Chapter 11 of the TSP, funding for the improvements listed in Table 8 is expected to occur through a combination of sources including Traffic Impact Fees (TIF), System Development Charges (SDCs), Gas Tax allocations, Washington County MSTIP funds, and other developer contributions.

INTERSECTION COUNT SUMMARY

NW STUCKI AVENUE AT NW CORNELL ROAD



DATE OF COUNT: 05/21/96
DAY OF WEEK: Tue
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

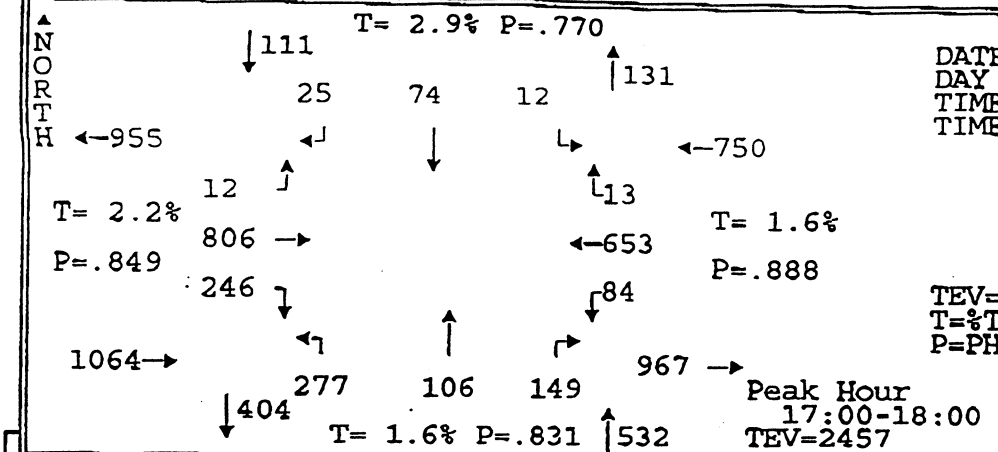
Peak Hour
17:00-18:00
TEV=2218

Traffic Smithy
Traffic Survey Service

TIME PERIOD FROM - TO	EAST BOUND ↓	EAST BOUND →	EAST BOUND ↑	SOUTH BOUND ↲	SOUTH BOUND ↓	SOUTH BOUND ↳	NORTH BOUND ↰	NORTH BOUND ↑	NORTH BOUND ↱	WEST BOUND ↓	WEST BOUND ←	WEST BOUND ↑	ALL
16:00-16:05	6	54	0	2	3	0	9	5	6	8	41	1	135
16:05-16:10	14	69	1	2	0	0	23	7	10	2	59	2	189
16:10-16:15	8	50	3	2	1	0	16	3	8	5	47	0	143
16:15-16:20	9	63	0	0	2	0	20	1	4	3	47	1	150
16:20-16:25	5	50	0	0	3	0	7	4	6	1	43	0	119
16:25-16:30	3	38	0	0	1	0	18	3	10	4	43	2	122
16:30-16:35	10	48	1	2	2	0	17	4	7	7	59	1	158
16:35-16:40	13	53	1	0	2	3	5	4	10	7	54	2	154
16:40-16:45	9	59	5	1	1	0	20	3	13	5	50	1	167
16:45-16:50	19	70	0	1	3	1	12	5	11	1	42	1	166
16:50-16:55	11	57	2	3	3	0	19	4	9	3	43	2	156
16:55-17:00	5	55	5	0	1	1	11	3	7	6	50	2	146
17:00-17:05	14	53	4	1	3	0	23	6	14	4	56	2	180
17:05-17:10	14	61	1	0	1	0	23	9	10	1	69	1	190
17:10-17:15	16	68	3	0	2	0	20	7	12	4	56	1	189
17:15-17:20	17	88	1	1	5	1	31	12	17	2	58	2	235
17:20-17:25	12	64	4	4	7	1	16	4	16	3	47	2	180
17:25-17:30	25	84	1	0	0	2	17	1	9	5	59	3	206
17:30-17:35	16	54	2	2	4	0	13	1	18	5	33	1	149
17:35-17:40	18	84	1	0	6	0	17	4	17	6	56	4	213
17:40-17:45	16	49	1	1	2	0	18	3	8	2	60	2	162
17:45-17:50	22	68	3	1	2	1	24	3	11	8	32	1	176
17:50-17:55	22	61	2	0	1	0	20	5	11	4	53	1	180
17:55-18:00	16	55	1	1	0	0	17	5	4	4	54	1	158
Total Survey	320	1455	42	24	55	10	416	106	248	100	1211	36	4023
PHF	.87	.84	.75	.46	.59	.31	.81	.54	.82	.75	.86	.66	.892
% Trucks	2.5	.8	0	0	0	0	1.2	0	.4	2	.6	8.3	.9
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	2	0	0	0	0	0	0	0	0	5	1	
Hourly Totals													
16:00-17:00	112	666	18	13	22	5	177	46	101	52	578	15	1805
16:15-17:15	128	675	22	8	24	5	195	53	113	46	612	16	1897
16:30-17:30	165	760	28	13	30	9	214	62	135	48	643	20	2127
16:45-17:45	183	787	25	13	37	6	220	59	148	42	629	23	2172
17:00-18:00	208	789	24	11	33	5	239	60	147	48	633	21	2218

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
CORNELL ROAD AT STUCKI AVENUE / AMBERGLEN AVENUE

13296



DATE OF COUNT: 05/08/97
DAY OF WEEK: Thu
TIME STARTED: 16:00
TIME ENDED: 18:00

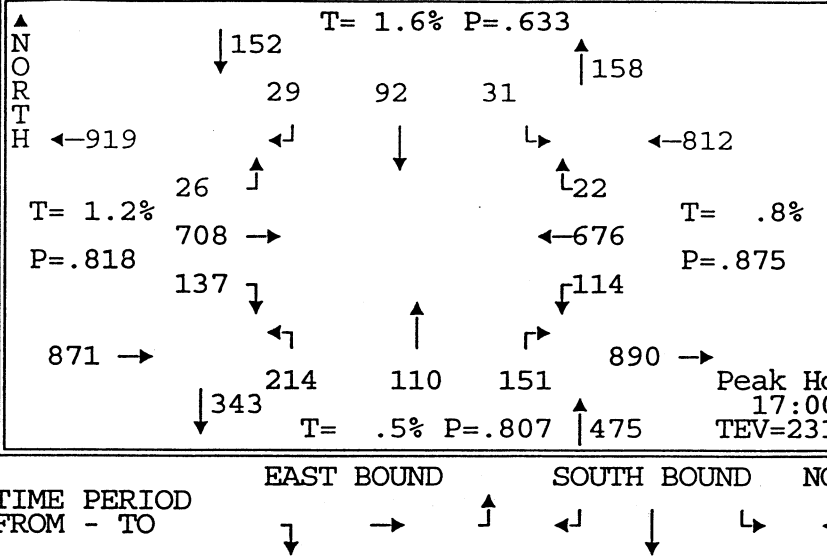
TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

Traffic Smithy
Traffic Survey Service

TIME PERIOD FROM - TO	EAST BOUND ↓	EAST BOUND →	EAST BOUND ↑	SOUTH BOUND ↲	SOUTH BOUND ↓	SOUTH BOUND ↳	NORTH BOUND ↰	NORTH BOUND ↑	NORTH BOUND ↱	WEST BOUND ↓	WEST BOUND ←	WEST BOUND ↑	ALL
16:00-16:05	9	54	3	3	2	0	11	4	9	8	48	1	152
16:05-16:10	22	54	0	2	5	1	20	5	6	3	53	1	172
16:10-16:15	21	46	1	2	2	2	13	7	8	7	53	0	162
16:15-16:20	13	47	0	0	0	2	8	5	8	4	58	0	145
16:20-16:25	8	45	1	4	5	1	10	7	11	3	41	1	137
16:25-16:30	14	35	2	3	5	0	12	1	13	7	59	3	154
16:30-16:35	9	58	0	1	1	0	14	5	10	8	48	2	156
16:35-16:40	20	70	1	1	4	0	15	5	3	4	41	0	164
16:40-16:45	14	49	0	0	2	0	19	12	17	10	62	0	185
16:45-16:50	18	68	0	2	4	1	11	9	8	8	59	2	190
16:50-16:55	23	58	0	0	3	0	29	12	10	17	41	0	193
16:55-17:00	17	38	1	2	1	1	17	5	7	10	49	0	148
17:00-17:05	20	58	1	2	6	0	24	11	16	11	38	0	187
17:05-17:10	8	65	2	1	3	0	20	10	23	8	62	4	206
17:10-17:15	22	93	0	0	6	7	26	18	12	9	51	1	245
17:15-17:20	32	60	1	3	9	0	25	13	9	7	57	0	216
17:20-17:25	23	76	3	1	8	0	18	4	11	5	59	0	208
17:25-17:30	33	83	2	5	8	1	30	11	13	8	52	2	248
17:30-17:35	21	57	0	4	8	1	34	10	22	3	35	0	195
17:35-17:40	20	60	1	3	5	1	18	9	4	10	66	0	197
17:40-17:45	15	77	1	3	7	2	28	5	7	6	57	4	212
17:45-17:50	12	59	1	1	6	0	14	7	12	7	60	1	180
17:50-17:55	22	65	0	2	2	0	23	4	9	7	53	1	188
17:55-18:00	18	53	0	0	6	0	17	4	11	3	63	0	175
Total Survey	434	1428	21	45	108	20	456	183	259	173	1265	23	4415
PHF	.7	.88	.5	.52	.74	.43	.84	.65	.73	.75	.89	.54	.914
% Trucks	2.5	2.2	0	4.4	.9	10	1.3	.5	2.7	2.9	1.3	8.7	1.9
Stopped Buses	0	0	0	0	0	0	0	0	0	0	1	0	
Peds	0	11	0	0	11	0	0	7	0	0	11	0	
Hourly Totals													
16:00-17:00	188	622	9	20	34	8	179	77	110	89	612	10	1958
16:15-17:15	186	684	8	16	40	12	205	100	138	99	609	13	2110
16:30-17:30	239	776	11	18	55	10	248	115	139	105	619	11	2346
16:45-17:45	252	793	12	26	68	14	280	117	142	102	626	13	2445
17:00-18:00	246	806	12	25	74	12	277	106	149	84	653	13	2457

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
CORNELL ROAD AT STUCKI ROAD/AMBERGLEN PARKWAY

16468



DATE OF COUNT: 04/29/98
DAY OF WEEK: Wed
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

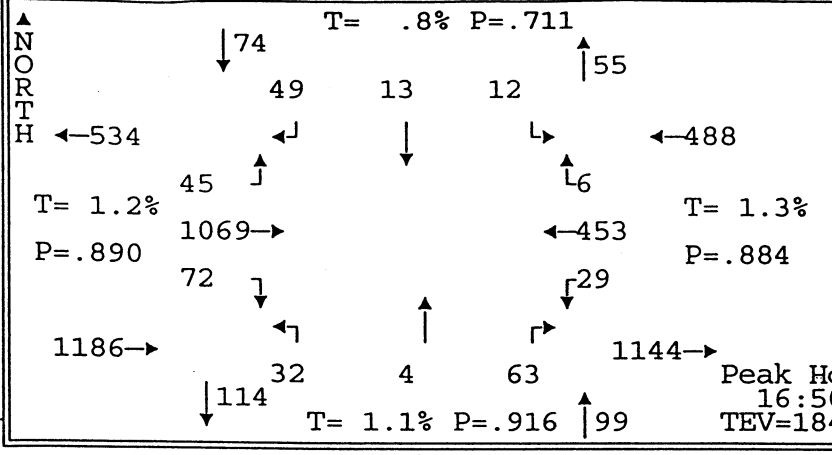
RRAO

Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND ↓	EAST BOUND →	EAST BOUND ↑	SOUTH BOUND ↲	SOUTH BOUND ↓	SOUTH BOUND ↳	NORTH BOUND ↰	NORTH BOUND ↑	NORTH BOUND ↱	WEST BOUND ↓	WEST BOUND ←	WEST BOUND ↑	ALL
16:00-16:05	4	46	0	3	1	2	15	6	6	4	34	2	123
16:05-16:10	11	42	0	2	9	0	16	8	7	5	35	3	138
16:10-16:15	2	67	2	4	1	2	1	4	20	7	46	2	158
16:15-16:20	8	52	1	1	9	8	2	8	14	6	33	4	146
16:20-16:25	9	48	1	2	0	2	15	7	8	3	50	4	149
16:25-16:30	15	53	0	3	7	0	8	3	3	5	60	3	160
16:30-16:35	5	31	2	0	8	0	15	9	9	11	51	2	143
16:35-16:40	14	49	1	4	3	2	8	6	10	8	58	0	163
16:40-16:45	8	60	1	2	2	1	11	12	15	13	54	0	179
16:45-16:50	3	52	2	3	3	1	11	7	11	6	49	1	149
16:50-16:55	6	57	3	0	5	0	15	8	9	6	44	1	154
16:55-17:00	10	49	2	3	4	0	12	3	14	14	52	1	164
17:00-17:05	8	39	5	0	6	2	25	5	13	7	40	0	150
17:05-17:10	16	72	2	2	7	0	15	10	6	7	61	2	200
17:10-17:15	10	53	4	2	10	1	11	13	10	16	58	0	188
17:15-17:20	12	66	0	6	3	0	24	7	13	14	73	1	219
17:20-17:25	11	39	0	5	6	1	14	12	10	7	47	1	153
17:25-17:30	10	60	1	1	15	18	29	11	19	10	37	0	211
17:30-17:35	15	78	0	2	10	2	15	9	11	7	49	16	214
17:35-17:40	15	68	3	1	9	0	21	14	18	9	39	1	198
17:40-17:45	4	81	2	3	5	0	12	4	14	7	73	1	206
17:45-17:50	10	45	0	3	5	3	20	7	12	15	66	0	186
17:50-17:55	14	41	5	3	10	3	15	10	20	1	62	0	184
17:55-18:00	12	66	4	1	6	1	13	8	5	14	71	0	201
Total Survey	232	1314	41	56	144	49	343	191	277	202	1242	45	4136
PHF	.86	.78	.59	.56	.68	.37	.8	.81	.79	.77	.84	.31	.926
% Trucks	1.3	1.2	0	3.6	.7	2	.6	.5	.4	.5	.8	2.2	.9
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	
Peds	0	0	0	0	0	0	0	0	0	0	1	0	
Hourly Totals													
16:00-17:00	95	606	15	27	52	18	129	81	126	88	566	23	1826
16:15-17:15	112	615	24	22	64	17	148	91	122	102	610	18	1945
16:30-17:30	113	627	23	28	72	26	190	103	139	119	624	9	2073
16:45-17:45	120	714	24	28	83	25	204	103	148	110	622	25	2206
17:00-18:00	137	708	26	29	92	31	214	110	151	114	676	22	2310

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT
STUCKI AVENUE AT EVERGREEN PARKWAY

14726



DATE OF COUNT: 12/18/97
DAY OF WEEK: Thu
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

JMCW

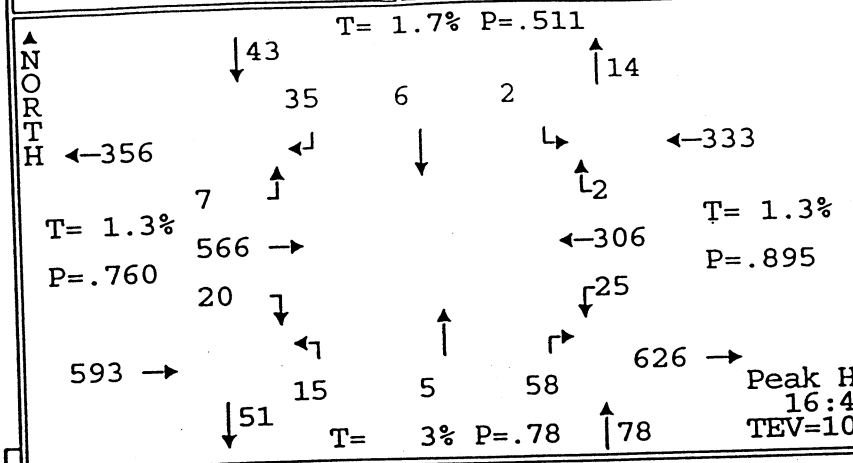
Peak Hour
16:50-17:50
TEV=1847

Traffic Smithy
(503) 641-6333

TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			ALL
	↓	→	↱	↲	↓	↳	↰	↑	↱	↓	←	↑	
16:00-16:05	3	69	4	1	1	0	0	1	7	1	48	0	135
16:05-16:10	2	69	3	3	0	0	2	1	3	2	36	2	123
16:10-16:15	2	54	3	3	0	1	2	0	6	3	49	1	124
16:15-16:20	5	76	0	0	1	0	0	0	5	1	35	0	123
16:20-16:25	1	60	1	5	1	2	1	1	5	3	37	1	118
16:25-16:30	4	88	0	3	0	0	0	1	3	4	43	1	147
16:30-16:35	5	66	1	3	4	0	1	1	6	4	49	0	140
16:35-16:40	4	94	1	1	2	0	1	0	6	1	40	0	150
16:40-16:45	6	76	4	4	1	2	2	0	2	5	32	1	135
16:45-16:50	4	84	2	1	0	0	1	1	8	1	48	1	151
16:50-16:55	5	80	6	9	2	2	4	0	6	3	29	1	147
16:55-17:00	3	80	4	4	1	3	0	0	3	3	36	1	138
17:00-17:05	2	81	6	5	0	0	3	1	7	1	34	0	140
17:05-17:10	5	114	2	2	1	0	3	0	4	3	36	0	170
17:10-17:15	6	75	5	3	3	2	2	0	4	3	41	0	144
17:15-17:20	8	93	0	3	4	0	5	0	8	4	34	0	159
17:20-17:25	9	105	6	5	0	2	2	1	3	2	43	0	178
17:25-17:30	6	105	1	8	2	1	1	1	6	3	32	1	167
17:30-17:35	7	91	3	1	0	0	3	0	5	1	39	0	150
17:35-17:40	5	91	2	1	0	1	3	0	4	0	29	0	136
17:40-17:45	7	76	6	4	0	0	2	0	5	2	50	0	152
17:45-17:50	9	78	4	4	0	1	4	1	8	4	50	3	166
17:50-17:55	3	57	1	4	2	0	1	3	3	1	18	2	95
17:55-18:00	5	75	5	4	1	0	6	2	7	3	43	1	152
Total Survey	116	1937	70	81	26	17	49	15	124	58	931	16	3440
PHF	.78	.88	.7	.68	.41	.6	.8	.5	.93	.73	.88	.5	.916
% Trucks	0	1.3	0	1.2	0	0	0	0	1.6	0	1.3	6.3	1.2
Stopped Buses	0	0	0	0	0	0	0	1	0	0	0	0	
Peds	0	8	0	0	2	0	0	0	0	0	3	0	
Hourly Totals													
16:00-17:00	44	896	29	37	13	10	14	6	60	31	482	9	1631
16:15-17:15	50	974	32	40	16	11	18	5	59	32	460	6	1703
16:30-17:30	63	1053	38	48	20	12	25	5	63	33	454	5	1819
16:45-17:45	67	1075	43	46	13	11	29	4	63	26	451	4	1832
17:00-18:00	72	1041	41	44	13	7	35	9	64	27	449	7	1809

INTERSECTION TURN MOVEMENT COUNT SUMMARY REPORT

VERGREEN PARKWAY AT STUCKIE ENUE



DATE OF COUNT: 02/21/96
DAY OF WEEK: Wed
TIME STARTED: 16:00
TIME ENDED: 18:00

TEV=TOTAL ENTRY VOLUME
T=%TRUCKS BY APPROACH
P=PHF BY APPROACH

Peak Hour
16:40-17:40
TEV=1047

Traffic Smithy
Traffic Survey Service

TIME PERIOD FROM - TO	EAST BOUND			SOUTH BOUND			NORTH BOUND			WEST BOUND			ALL
	↓	→	↑	↲	↓	↳	↰	↑	↱	↳	←	↰	
16:00-16:05	2	28	0	0	0	1	2	0	1	3	24	0	61
16:05-16:10	0	40	0	1	0	0	1	1	1	2	25	0	71
16:10-16:15	1	43	0	0	1	0	1	1	1	1	28	0	77
16:15-16:20	3	47	1	1	1	0	0	0	2	0	23	0	78
16:20-16:25	0	32	0	1	1	0	0	0	4	2	23	0	63
16:25-16:30	1	32	0	2	1	0	0	4	5	0	27	0	72
16:30-16:35	2	31	1	3	0	0	1	1	3	1	24	0	67
16:35-16:40	1	43	0	0	0	0	0	0	4	2	20	0	70
16:40-16:45	0	49	0	6	1	0	2	0	2	3	15	0	78
16:45-16:50	1	54	0	2	0	0	1	0	7	0	26	0	91
16:50-16:55	1	45	1	1	1	0	1	1	3	4	36	0	94
16:55-17:00	1	37	0	2	0	0	1	1	4	1	22	0	69
17:00-17:05	3	56	1	1	0	0	0	1	5	4	22	0	93
17:05-17:10	0	57	0	7	1	1	0	1	7	1	29	0	104
17:10-17:15	4	73	1	3	2	0	1	1	9	2	26	0	122
17:15-17:20	1	37	3	6	1	0	0	0	6	0	31	0	85
17:20-17:25	4	35	0	1	0	1	1	0	4	1	30	1	78
17:25-17:30	2	42	0	3	0	0	2	0	3	3	27	0	82
17:30-17:35	3	40	0	3	0	0	2	0	4	3	24	0	79
17:35-17:40	0	41	1	0	0	0	4	0	4	3	18	1	72
17:40-17:45	4	46	0	1	0	0	0	0	6	0	17	0	74
17:45-17:50	0	46	0	0	1	0	4	0	4	0	32	0	87
17:50-17:55	2	32	0	1	1	0	4	0	5	0	27	0	72
17:55-18:00	0	46	1	0	0	0	0	0	1	2	18	0	68
Total Survey	36	1032	10	45	12	3	28	12	95	38	594	2	190
PHF	.56	.76	.44	.55	.38	.5	.47	.42	.66	.69	.87	.5	.82
% Trucks	0	1.4	0	0	8.3	0	0	8.3	3.2	0	1.2	50	1.
Stopped Buses	0	0	0	0	0	0	0	0	3	0	0	0	
Peds	0	21	0	0	3	0	0	4	0	0	1	0	
Hourly Totals													
16:00-17:00	13	481	3	19	6	1	10	9	37	19	293	0	8
16:15-17:15	17	556	5	29	8	1	7	10	55	20	293	0	100
16:30-17:30	20	559	7	35	6	2	10	6	57	22	308	1	103
16:45-17:45	24	563	7	30	5	2	13	5	62	22	308	2	10
17:00-18:00	23	551	7	26	6	2	18	3	58	19	301	2	10

Default Scenario Thu Dec 31, 1998 16:01:56 Page 1-1

Tanasbourne Town Center
2015 TSP Mitigated Scenario

Scenario Report

Scenario:	Default Scenario
Command:	Command 1
Volume:	Default Volume
Geometry:	Default Geometry
Impact Fee:	Default Impact Fee
Trip Generation:	Default Trip Generation
Trip Distribution:	Default Trip Distribution
Paths:	Default Paths
Routes:	Default Routes
Configuration:	Default Configuration

Default Scenario Thu Dec 31, 1998 16:01:56 Page 2-1

Tanasbourne Town Center
2015 TSP Mitigated Scenario

Intersection Volume Report
Base Volume Alternative

Node	Intersection	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R
11	185th Avenue/	323	1255	524	90	1788	132	163	1113	314	579	998	74
12	185th/US 26 E	0	2203	0	0	1697	163	191	1	533	0	0	0
13	185th/US 26 W	494	1915	0	0	1085	82	0	0	0	931	0	506
23	Cornell/Corne	63	602	150	255	1073	807	809	1383	103	104	939	261
27	Cornell/John	95	101	78	153	155	96	131	1924	117	91	1302	220
31	Cornell/Stuck	418	258	376	53	348	94	52	1461	407	374	970	28
32	Walker/AmberG	0	380	705	631	413	0	0	0	0	507	0	627
45	Evergreen/Cor	322	1349	181	197	1393	98	521	985	632	307	603	371
46	Evergreen Roa	75	33	196	205	68	176	140	1252	133	253	556	127
47	Evergreen Roa	33	70	101	131	129	69	46	1678	60	56	693	98
48	185th Avenue/	464	1170	91	416	1083	493	922	566	645	134	412	233
159	Cornell Road/	75	150	50	70	100	60	98	941	100	80	833	122

Default Scenario Thu Dec 31, 1998 16:01:56 Page 3-1

Tanasbourne Town Center
2015 TSP Mitigated Scenario

Impact Analysis Report
Level Of Service

Intersection	Base LOS	Base Del/ Veh	Base V/ C	Future LOS	Future Del/ Veh	Future V/ C	Change in
# 11 185th Avenue/Cornell Road	E	57.0	1.109	E	57.0	1.109	+ 0.000 D/V
# 12 185th/US 26 EB ramps	C	18.7	0.880	C	18.7	0.880	+ 0.000 D/V
# 13 185th/US 26 WB ramps	D	29.0	0.979	D	29.0	0.979	+ 0.000 D/V
# 23 Cornell/Cornelius Pass Road	D	38.5	0.975	D	38.5	0.975	+ 0.000 D/V
# 27 Cornell/John Olsen	D	31.2	0.983	D	31.2	0.983	+ 0.000 D/V
# 31 Cornell/Stucki	D	31.9	0.962	D	31.9	0.962	+ 0.000 D/V
# 32 Walker/AmberGlen Pkwy	C	19.5	0.893	C	19.5	0.893	+ 0.000 D/V
# 45 Evergreen/Cornelius Pass	E	47.5	1.001	E	47.5	1.001	+ 0.000 D/V
# 46 Evergreen Road/John Olsen Aven	C	19.5	0.819	C	19.5	0.819	+ 0.000 D/V
# 47 Evergreen Road/Stucki	B	14.2	0.860	B	14.2	0.860	+ 0.000 D/V
# 48 185th Avenue/Evergreen Parkway	D	37.0	0.959	D	37.0	0.959	+ 0.000 D/V
#159 Cornell Road/188th Avenue	C	18.5	0.650	C	18.5	0.650	+ 0.000 D/V

Default Scenario Thu Dec 31, 1998 16:01:56 Page 4-1

Tanasbourne Town Center
2015 TSP Mitigated Scenario

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

Intersection #11 185th Avenue/Cornell Road

Cycle (sec): 120 Critical Vol./Cap. (X): 1.109
Loss Time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 57.0
Optimal Cycle: 180 Level Of Service: E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:		Ovl			Include			Ovl			Ovl	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	2 0	3 0	1	2 0	2 1	0	2 0	2 0	1	2 0	2 0	1
Volume Module:												
Base Vol:	323	1255	524	90	1788	132	163	1113	314	579	998	74
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	323	1255	524	90	1788	132	163	1113	314	579	998	74
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	323	1255	524	90	1788	132	163	1113	314	579	998	74
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	323	1255	524	90	1788	132	163	1113	314	579	998	74
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.03	1.10	1.00	1.03	1.10	1.10	1.03	1.05	1.00	1.03	1.05	1.00
Final Vol.:	333	1381	524	93	1967	145	168	1169	314	596	1048	74
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.98	0.83	0.93	0.97	0.97	0.92	0.97	0.83	0.93	0.98	0.83
Lanes:	2.00	3.00	1.00	2.00	2.79	0.21	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3539	5588	1583	3539	5153	380	3505	3689	1568	3539	3725	1583
Capacity Analysis Module:												
Vol/Sat:	0.09	0.25	0.33	0.03	0.38	0.38	0.05	0.32	0.20	0.17	0.28	0.05
Crit Moves:	****				****			****		****		
Green/Cycle:	0.08	0.39	0.54	0.04	0.34	0.34	0.06	0.29	0.37	0.15	0.37	0.42
Volume/Cap:	1.11	0.64	0.61	0.64	1.11	1.11	0.75	1.11	0.54	1.11	0.75	0.11
Level Of Service Module:												
Delay/Veh:	115.3	19.7	13.2	42.6	79.6	79.6	44.7	86.9	20.0	101.1	22.8	13.9
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	115.3	19.7	13.2	42.6	79.6	79.6	44.7	86.9	20.0	101.1	22.8	13.9
DesignQueue:	21	60	17	6	95	7	11	61	14	35	47	3

Default Scenario Thu Dec 31, 1998 16:01:56 Page 5-1

Tanasbourne Town Center
2015 TSP Mitigated Scenario

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

****

Intersection #12 185th/US 26 EB ramps

****

Cycle (sec): 120 Critical Vol./Cap. (X): 0.880
Loss Time (sec): 9 (Y+R = 4 sec) Average Delay (sec/veh): 18.7
Optimal Cycle: 100 Level Of Service: C

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Permitted			Permitted			Split Phase			Split Phase		
Rights:	Ignore			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	3 0	1	0 0	2 1	0	0 1	0 0	1	0 0	0 0	0
Volume Module:												
Base Vol:	0	2203	1056	0	1697	163	191	1	533	0	0	0
Growth Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	2203	0	0	1697	163	191	1	533	0	0	0
User Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.00	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	0	2319	0	0	1786	172	201	1	561	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	2319	0	0	1786	172	201	1	561	0	0	0
PCE Adj:	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.10	0.00	1.00	1.10	1.10	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	0	2551	0	0	1965	189	201	1	561	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.98	1.00	1.00	0.97	0.97	0.83	0.83	0.83	1.00	1.00	1.00
Lanes:	0.00	3.00	1.00	0.00	2.74	0.26	0.99	0.01	1.00	0.00	0.00	0.00
Final Sat.:	0	5588	1900	0	5047	485	1560	8	1568	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.46	0.00	0.00	0.39	0.39	0.13	0.13	0.36	0.00	0.00	0.00
Crit Moves:		****							****			
Green/Cycle:	0.00	0.52	0.00	0.00	0.52	0.52	0.41	0.41	0.41	0.00	0.00	0.00
Volume/Cap:	0.00	0.88	0.00	0.00	0.75	0.75	0.32	0.32	0.88	0.00	0.00	0.00
Level Of Service Module:												
Delay/Veh:	0.0	19.1	0.0	0.0	15.5	15.5	15.8	15.8	30.8	0.0	0.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	19.1	0.0	0.0	15.5	15.5	15.8	15.8	30.8	0.0	0.0	0.0
DesignQueue:	0	93	0	0	70	7	8	0	24	0	0	0

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Default Scenario Thu Dec 31, 1998 16:01:56 Page 6-1

Tanasbourne Town Center
2015 TSP Mitigated Scenario

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

****

Intersection #13 185th/US 26 WB ramps

****

Cycle (sec): 120 Critical Vol./Cap. (X): 0.979
Loss Time (sec): 13 (Y+R = 4 sec) Average Delay (sec/veh): 29.0
Optimal Cycle: 180 Level Of Service: D

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	2 0	2 0	0	0 0	2 1	0	0 0	0 0	0	1 1	0 0	1
Volume Module:												
Base Vol:	494	1915	0	0	1085	82	0	0	0	931	0	506
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	494	1915	0	0	1085	82	0	0	0	931	0	506
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
PHF Volume:	507	1964	0	0	1113	84	0	0	0	955	0	519
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	507	1964	0	0	1113	84	0	0	0	955	0	519
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.03	1.05	1.00	1.00	1.10	1.10	1.00	1.00	1.00	1.05	1.05	1.00
Final Vol.:	522	2062	0	0	1224	93	0	0	0	1003	0	519
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.94	0.99	1.00	1.00	0.97	0.97	1.00	1.00	1.00	0.94	1.00	0.84
Lanes:	2.00	2.00	0.00	0.00	2.79	0.21	0.00	0.00	0.00	2.00	0.00	1.00
Final Sat.:	3574	3762	0	0	5142	391	0	0	0	3574	0	1599
Capacity Analysis Module:												
Vol/Sat:	0.15	0.55	0.00	0.00	0.24	0.24	0.00	0.00	0.00	0.28	0.00	0.32
Crit Moves:		****		****								****
Green/Cycle:	0.21	0.56	0.00	0.00	0.35	0.35	0.00	0.00	0.00	0.33	0.00	0.33
Volume/Cap:	0.69	0.98	0.00	0.00	0.69	0.69	0.00	0.00	0.00	0.85	0.00	0.98
Level Of Service Module:												
Delay/Veh:	29.9	27.8	0.0	0.0	22.4	22.4	0.0	0.0	0.0	28.2	0.0	50.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	29.9	27.8	0.0	0.0	22.4	22.4	0.0	0.0	0.0	28.2	0.0	50.8
DesignQueue:	28	71	0	0	57	4	0	0	0	48	0	25

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Default Scenario Thu Dec 31, 1998 16:01:56 Page 7-1

Tanasbourne Town Center
2015 TSP Mitigated Scenario

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

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Intersection #23 Cornell/Cornelius Pass Road

****

Cycle (sec): 120 Critical Vol./Cap. (X): 0.975
Loss Time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 38.5
Optimal Cycle: 180 Level Of Service: D

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Protected			Protected			Protected			Protected		
Rights:		Ovl			Ovl			Include			Ovl	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	2 0	1	1 0	2 0	1	2 0	1 1	0	1 0	2 0	1
Volume Module:												
Base Vol:	63	602	150	255	1073	807	809	1383	103	104	939	261
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	63	602	150	255	1073	807	809	1383	103	104	939	261
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	63	602	150	255	1073	807	809	1383	103	104	939	261
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	63	602	150	255	1073	807	809	1383	103	104	939	261
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.05	1.00	1.00	1.05	1.00	1.03	1.05	1.05	1.00	1.05	1.00
Final Vol.:	63	632	150	255	1127	807	833	1452	108	104	986	261
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.90	0.95	0.81	0.91	0.96	0.82	0.93	0.97	0.97	0.93	0.98	0.83
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	2.00	1.86	0.14	1.00	2.00	1.00
Final Sat.:	1719	3619	1538	1736	3654	1553	3539	3433	255	1770	3725	1583
Capacity Analysis Module:												
Vol/Sat:	0.04	0.17	0.10	0.15	0.31	0.52	0.24	0.42	0.42	0.06	0.26	0.16
Crit Moves:	****				****		****				****	
Green/Cycle:	0.04	0.19	0.25	0.16	0.32	0.56	0.24	0.45	0.45	0.06	0.27	0.43
Volume/Cap:	0.98	0.91	0.38	0.91	0.98	0.93	0.98	0.94	0.94	0.94	0.98	0.38
Level Of Service Module:												
Delay/Veh:	114.1	42.0	24.2	53.9	41.7	27.8	47.7	28.3	28.3	84.0	44.7	15.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	114.1	42.0	24.2	53.9	41.7	27.8	47.7	28.3	28.3	84.0	44.7	15.1
DesignQueue:	4	36	8	15	56	27	45	60	4	7	51	10

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Default Scenario Thu Dec 31, 1998 16:01:56 Page 8-1

Tanasbourne Town Center
2015 TSP Mitigated Scenario

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

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Intersection #27 Cornell/John Olsen

****

Cycle (sec): 140 Critical Vol./Cap. (X): 0.983
Loss Time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 31.2
Optimal Cycle: 180 Level Of Service: D

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Protected			Protected			Prot+Permit			Prot+Permit		
Rights:		Include			Include			Include			Include	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	0 1	0	1 0	0 1	0	1 0	1 1	0	1 0	1 1	0
Volume Module:												
Base Vol:	95	101	78	153	155	96	131	1924	117	91	1302	220
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	95	101	78	153	155	96	131	1924	117	91	1302	220
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	100	106	82	161	163	101	138	2025	123	96	1371	232
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	100	106	82	161	163	101	138	2025	123	96	1371	232
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.05	1.05	1.00	1.05	1.05
Final Vol.:	100	106	82	161	163	101	138	2127	129	96	1439	243
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.94	0.92	0.92	0.94	0.93	0.93	0.17	0.97	0.97	0.13	0.97	0.97
Lanes:	1.00	0.56	0.44	1.00	0.62	0.38	1.00	1.89	0.11	1.00	1.71	0.29
Final Sat.:	1787	986	763	1787	1092	677	324	3477	211	239	3154	533
Capacity Analysis Module:												
Vol/Sat:	0.06	0.11	0.11	0.09	0.15	0.15	0.43	0.61	0.61	0.40	0.46	0.46
Crit Moves:	****				****			****		****		
Green/Cycle:	0.06	0.11	0.11	0.10	0.15	0.15	0.71	0.62	0.62	0.63	0.58	0.58
Volume/Cap:	0.98	0.95	0.95	0.95	0.98	0.98	0.60	0.98	0.98	0.63	0.79	0.79
Level Of Service Module:												
Delay/Veh:	105.5	75.0	75.0	79.3	75.9	75.9	26.3	27.9	27.9	12.2	16.3	16.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	105.5	75.0	75.0	79.3	75.9	75.9	26.3	27.9	27.9	12.2	16.3	16.3
DesignQueue:	7	8	6	12	11	7	10	74	5	7	53	9

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Default Scenario Thu Dec 31, 1998 16:01:56 Page 9-1

Tanasbourne Town Center
2015 TSP Mitigated Scenario

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

****

Intersection #31 Cornell/Stucki

****

Cycle (sec): 120 Critical Vol./Cap. (X): 0.962
Loss Time (sec): 20 (Y+R = 4 sec) Average Delay (sec/veh): 31.9
Optimal Cycle: 172 Level Of Service: D

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:		Ovl			Include			Ovl			Ovl	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	2 0	2 0	1	1 0	1 1	0	1 0	2 0	1	2 0	2 0	1
Volume Module:												
Base Vol:	418	258	376	53	348	94	52	1461	407	374	970	28
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	418	258	376	53	348	94	52	1461	407	374	970	28
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	440	272	396	56	366	99	55	1538	428	394	1021	29
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	440	272	396	56	366	99	55	1538	428	394	1021	29
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.03	1.05	1.00	1.00	1.05	1.05	1.00	1.05	1.00	1.03	1.05	1.00
Final Vol.:	453	285	396	56	385	104	55	1615	428	405	1072	29
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.94	0.99	0.84	0.95	0.97	0.97	0.94	0.99	0.84	0.94	0.99	0.84
Lanes:	2.00	2.00	1.00	1.00	1.57	0.43	1.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3574	3762	1599	1805	2902	784	1787	3762	1599	3574	3762	1599
Capacity Analysis Module:												
Vol/Sat:	0.13	0.08	0.25	0.03	0.13	0.13	0.03	0.43	0.27	0.11	0.28	0.02
Crit Moves:	****				****			****		****		
Green/Cycle:	0.13	0.22	0.34	0.05	0.14	0.14	0.05	0.45	0.58	0.12	0.51	0.56
Volume/Cap:	0.96	0.35	0.74	0.61	0.96	0.96	0.56	0.96	0.46	0.96	0.56	0.03
Level Of Service Module:												
Delay/Veh:	57.0	25.7	26.3	43.9	55.7	55.7	40.8	31.3	9.7	59.2	13.4	7.7
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	57.0	25.7	26.3	43.9	55.7	55.7	40.8	31.3	9.7	59.2	13.4	7.7
DesignQueue:	27	15	19	4	23	6	3	67	13	25	38	1

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Default Scenario Thu Dec 31, 1998 16:01:56 Page 10-1

Tanasbourne Town Center
2015 TSP Mitigated Scenario

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

****

Intersection #32 Walker/AmberGlen Pkwy

****

Cycle (sec): 90 Critical Vol./Cap. (X): 0.893
Loss Time (sec): 15 (Y+R = 4 sec) Average Delay (sec/veh): 19.5
Optimal Cycle: 105 Level Of Service: C

****

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:		Ovl			Include			Include			Ovl	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	0 0	1 0	1	2 0	1 0	0	0 0	0 0	0	1 0	0 0	2
Volume Module:												
Base Vol:	0	380	705	631	413	0	0	0	0	507	0	627
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	380	705	631	413	0	0	0	0	507	0	627
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	0	421	782	700	458	0	0	0	0	562	0	695
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	421	782	700	458	0	0	0	0	562	0	695
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.03	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.13
Final Vol.:	0	421	782	721	458	0	0	0	0	562	0	785
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.99	0.84	0.92	0.97	1.00	1.00	1.00	1.00	0.94	1.00	0.84
Lanes:	0.00	1.00	1.00	2.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	2.00
Final Sat.:	0	1881	1599	3505	1845	0	0	0	0	1787	0	3198
Capacity Analysis Module:												
Vol/Sat:	0.00	0.22	0.49	0.21	0.25	0.00	0.00	0.00	0.00	0.31	0.00	0.25
Crit Moves:		****		****						****		
Green/Cycle:	0.00	0.25	0.60	0.23	0.48	0.00	0.00	0.00	0.00	0.35	0.00	0.58
Volume/Cap:	0.00	0.89	0.81	0.89	0.52	0.00	0.00	0.00	0.00	0.89	0.00	0.42
Level Of Service Module:												
Delay/Veh:	0.0	34.4	12.7	30.4	10.9	0.0	0.0	0.0	0.0	28.5	0.0	6.8
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	0.0	34.4	12.7	30.4	10.9	0.0	0.0	0.0	0.0	28.5	0.0	6.8
DesignQueue:	0	17	17	29	13	0	0	0	0	20	0	17

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Default Scenario Thu Dec 31, 1998 16:01:56 Page 11-1

Tanasbourne Town Center
2015 TSP Mitigated Scenario

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

Intersection #45 Evergreen/Cornelius Pass

Cycle (sec): 160 Critical Vol./Cap. (X): 1.001
Loss Time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 47.5
Optimal Cycle: 180 Level Of Service: E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Protected			Protected		
Rights:		Ovl			Ovl			Ovl			Ovl	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	2 0	2 0	1	2 0	2 0	1	2 0	2 0	1	2 0	2 0	1
Volume Module:												
Base Vol:	322	1349	181	197	1393	98	521	985	632	307	603	371
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	322	1349	181	197	1393	98	521	985	632	307	603	371
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	322	1349	181	197	1393	98	521	985	632	307	603	371
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	322	1349	181	197	1393	98	521	985	632	307	603	371
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.03	1.05	1.00	1.03	1.05	1.00	1.03	1.05	1.00	1.03	1.05	1.00
Final Vol.:	332	1416	181	203	1463	98	537	1034	632	316	633	371
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.90	0.94	0.80	0.90	0.94	0.80	0.92	0.97	0.83	0.92	0.97	0.83
Lanes:	2.00	2.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3406	3585	1524	3406	3585	1524	3505	3689	1568	3505	3689	1568
Capacity Analysis Module:												
Vol/Sat:	0.10	0.39	0.12	0.06	0.41	0.06	0.15	0.28	0.40	0.09	0.17	0.24
Crit Moves:	****				****				****	****		
Green/Cycle:	0.10	0.44	0.53	0.07	0.41	0.59	0.18	0.31	0.40	0.09	0.21	0.28
Volume/Cap:	1.00	0.90	0.22	0.90	1.00	0.11	0.84	0.92	1.00	1.00	0.81	0.85
Level Of Service Module:												
Delay/Veh:	85.1	32.3	13.1	72.1	49.1	9.2	47.3	43.3	58.8	86.4	43.2	45.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	85.1	32.3	13.1	72.1	49.1	9.2	47.3	43.3	58.8	86.4	43.2	45.6
DesignQueue:	27	78	8	17	86	4	40	69	37	26	46	25

Default Scenario Thu Dec 31, 1998 16:01:56 Page 12-1

Tanasbourne Town Center
2015 TSP Mitigated Scenario

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

Intersection #46 Evergreen Road/John Olsen Avenue

Cycle (sec): 100 Critical Vol./Cap. (X): 0.819
Loss Time (sec): 12 (Y+R = 4 sec) Average Delay (sec/veh): 19.5
Optimal Cycle: 82 Level Of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:		Include			Include			Include			Include	
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1 1	0	1 0	1 1	0	1 0	1 1	0	1 0	1 1	0
Volume Module:												
Base Vol:	75	33	196	205	68	176	140	1252	133	253	556	127
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	75	33	196	205	68	176	140	1252	133	253	556	127
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	83	36	216	226	75	194	154	1377	146	278	612	140
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	83	36	216	226	75	194	154	1377	146	278	612	140
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.05	1.05	1.00	1.05	1.05
Final Vol.:	83	36	216	226	75	194	154	1446	154	278	642	147
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.75	1.00	0.85	0.84	1.00	0.85	0.95	0.99	0.99	0.95	0.97	0.97
Lanes:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.81	0.19	1.00	1.63	0.37
Final Sat.:	1425	1900	1615	1596	1900	1615	1805	3400	362	1805	2999	687
Capacity Analysis Module:												
Vol/Sat:	0.06	0.02	0.13	0.14	0.04	0.12	0.09	0.43	0.43	0.15	0.21	0.21
Crit Moves:				****				****		****		
Green/Cycle:	0.17	0.17	0.17	0.17	0.17	0.17	0.20	0.52	0.52	0.19	0.51	0.51
Volume/Cap:	0.34	0.11	0.77	0.82	0.23	0.69	0.42	0.82	0.82	0.82	0.42	0.42
Level Of Service Module:												
Delay/Veh:	23.8	22.5	33.0	37.6	23.0	28.8	23.0	15.1	15.1	35.2	10.1	10.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	23.8	22.5	33.0	37.6	23.0	28.8	23.0	15.1	15.1	35.2	10.1	10.1
DesignQueue:	4	2	10	11	3	9	7	43	5	13	19	4

Default Scenario Thu Dec 31, 1998 16:01:56 Page 13-1

Tanasbourne Town Center
2015 TSP Mitigated Scenario

Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

Intersection #47 Evergreen Road/Stucki

Cycle (sec): 100 Critical Vol./Cap. (X): 0.860
Loss Time (sec): 12 (Y+R = 4 sec) Average Delay (sec/veh): 14.2
Optimal Cycle: 94 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Permitted			Permitted			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0	1	1 0	1 0	0	1 0	1 0	1	1 0	1 0	1	1 0
Volume Module:												
Base Vol:	33	70	101	131	129	69	46	1678	60	56	693	98
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	33	70	101	131	129	69	46	1678	60	56	693	98
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
PHF Volume:	40	85	123	160	157	84	56	2046	73	68	845	120
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	40	85	123	160	157	84	56	2046	73	68	845	120
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.05	1.05	1.00	1.05	1.05
Final Vol.:	40	85	123	160	157	84	56	2149	77	68	887	125
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.26	1.00	0.85	0.72	0.95	0.95	0.95	1.00	1.00	0.95	0.98	0.98
Lanes:	1.00	1.00	1.00	1.00	0.65	0.35	1.00	1.93	0.07	1.00	1.75	0.25
Final Sat.:	494	1900	1615	1368	1176	629	1805	3669	131	1805	3264	460
Capacity Analysis Module:												
Vol/Sat:	0.08	0.04	0.08	0.12	0.13	0.13	0.03	0.59	0.59	0.04	0.27	0.27
Crit Moves:					****			****		****		
Green/Cycle:	0.16	0.16	0.16	0.16	0.16	0.16	0.07	0.68	0.68	0.04	0.65	0.65
Volume/Cap:	0.52	0.29	0.49	0.75	0.86	0.86	0.42	0.86	0.86	0.86	0.42	0.42
Level Of Service Module:												
Delay/Veh:	29.9	24.2	25.7	35.6	42.3	42.3	29.8	10.2	10.2	69.1	5.5	5.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	29.9	24.2	25.7	35.6	42.3	42.3	29.8	10.2	10.2	69.1	5.5	5.5
DesignQueue:	2	4	6	8	8	4	3	45	2	4	19	3

Default Scenario Thu Dec 31, 1998 16:01:56 Page 14-1

Tanasbourne Town Center
2015 TSP Mitigated Scenario

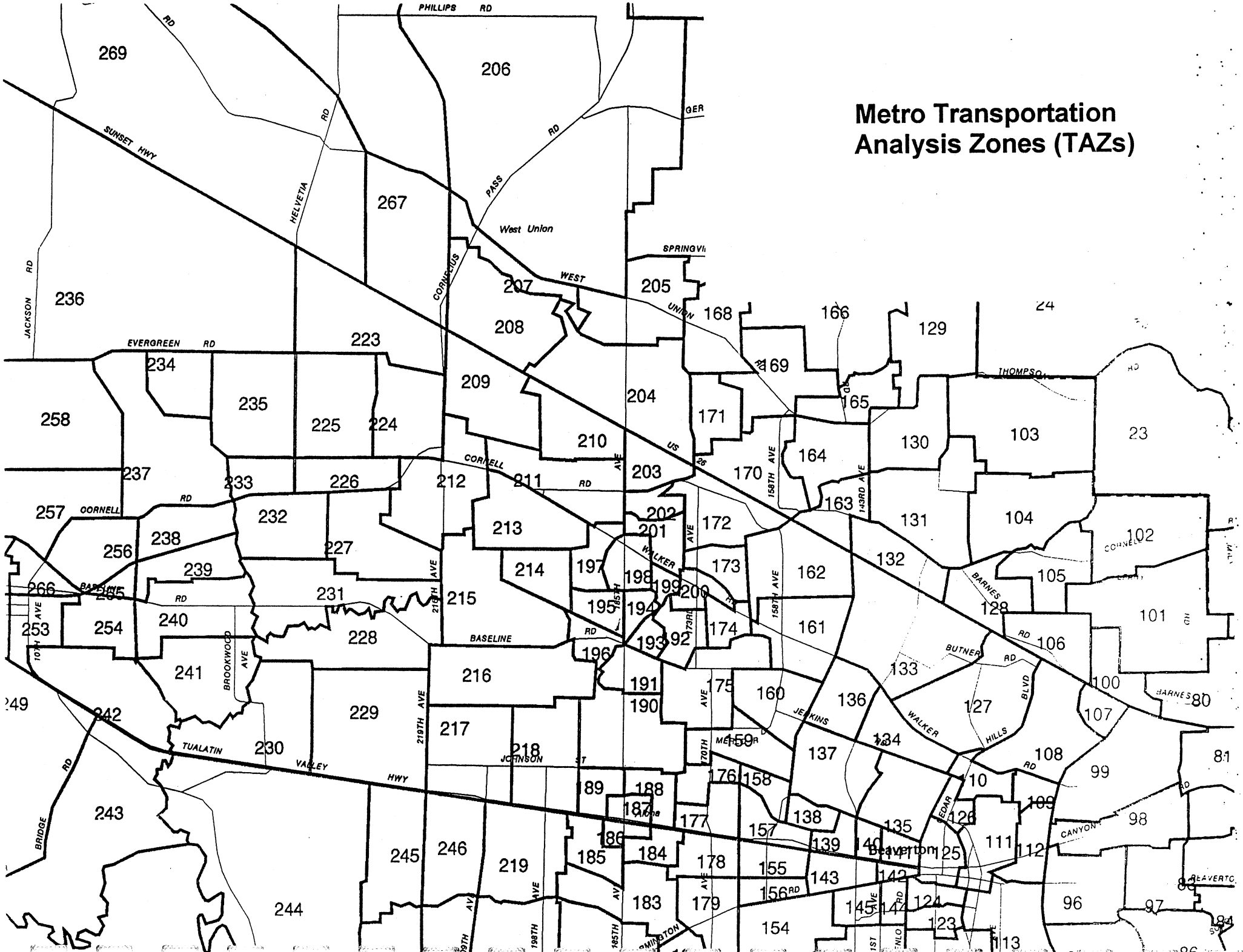
Level Of Service Computation Report
1994 HCM Operations Method (Base Volume Alternative)

Intersection #48 185th Avenue/Evergreen Parkway

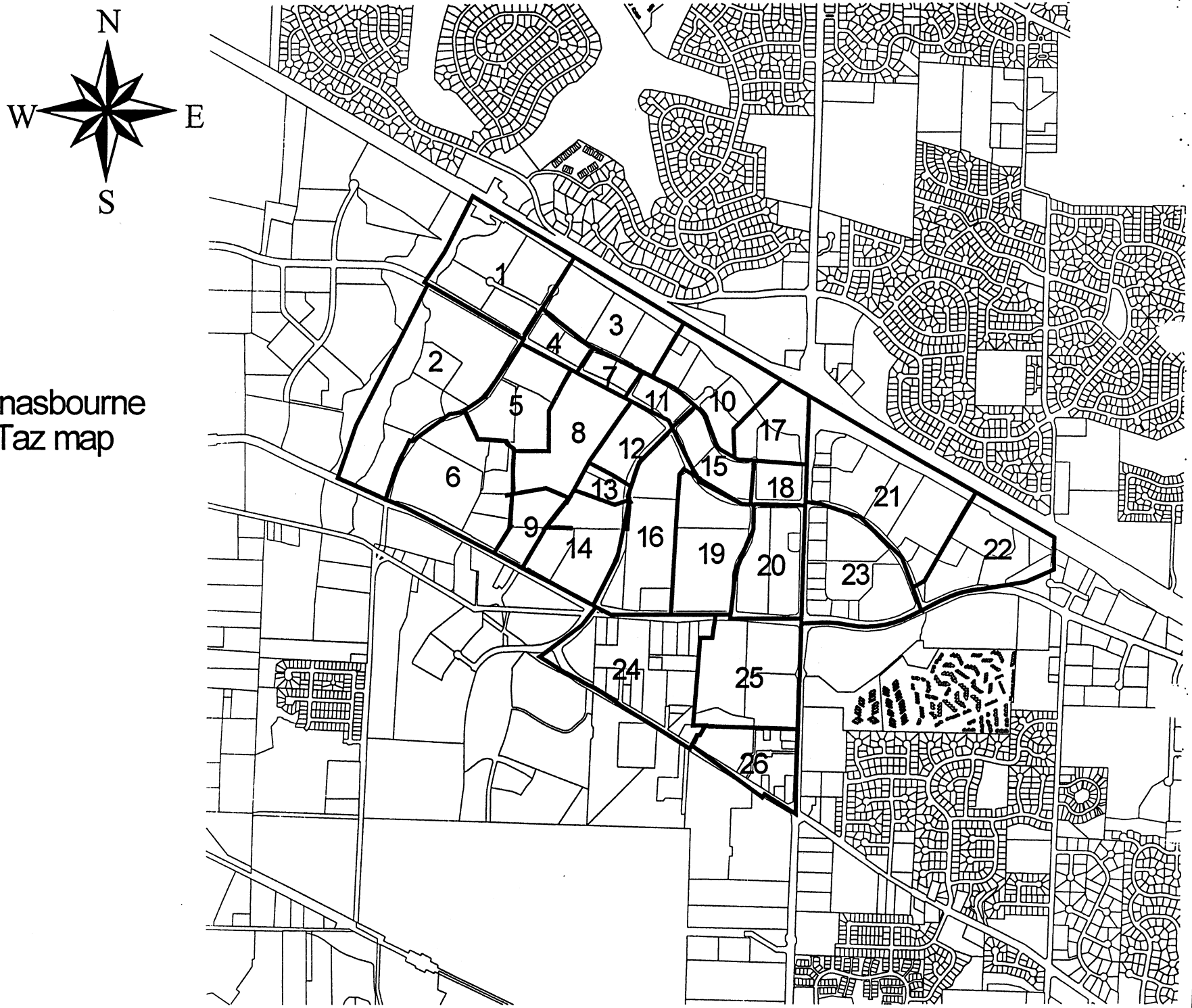
Cycle (sec): 120 Critical Vol./Cap. (X): 0.959
Loss Time (sec): 16 (Y+R = 4 sec) Average Delay (sec/veh): 37.0
Optimal Cycle: 168 Level Of Service: D

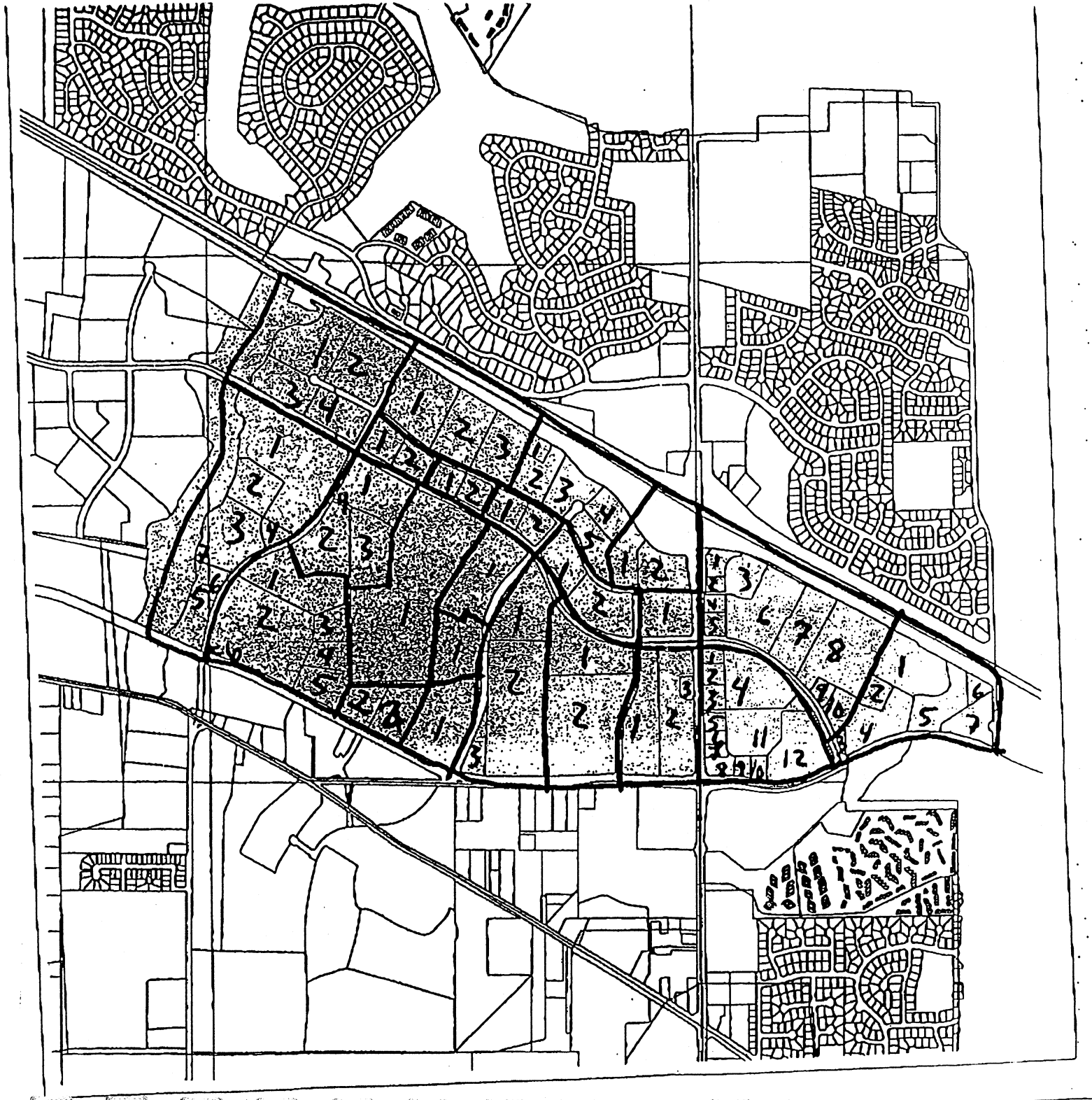
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L -	T -	R	L -	T -	R	L -	T -	R	L -	T -	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Ovl			Ovl			Ovl			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	2 0	3	0 1	2 0	3	0 1	2 0	1	0 1	2 0	1	0 1
Volume Module:												
Base Vol:	464	1170	91	416	1083	493	922	566	645	134	412	233
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	464	1170	91	416	1083	493	922	566	645	134	412	233
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	464	1170	91	416	1083	493	922	566	645	134	412	233
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	464	1170	91	416	1083	493	922	566	645	134	412	233
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.03	1.10	1.00	1.03	1.10	1.00	1.03	1.00	1.00	1.03	1.00	1.00
Final Vol.:	478	1287	91	428	1191	493	950	566	645	138	412	233
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.93	0.98	0.83	0.93	0.98	0.83	0.94	0.99	0.84	0.95	1.00	0.85
Lanes:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	1.00	1.00	2.00	1.00	1.00
Final Sat.:	3539	5588	1583	3539	5588	1583	3574	1881	1599	3610	1900	1615
Capacity Analysis Module:												
Vol/Sat:	0.14	0.23	0.06	0.12	0.21	0.31	0.27	0.30	0.40	0.04	0.22	0.14
Crit Moves:	****				****		****				****	
Green/Cycle:	0.14	0.24	0.29	0.13	0.22	0.50	0.28	0.45	0.59	0.06	0.23	0.35
Volume/Cap:	0.96	0.97	0.19	0.97	0.96	0.62	0.96	0.67	0.69	0.67	0.96	0.41
Level Of Service Module:												
Delay/Veh:	55.1	42.1	20.5	59.1	42.1	15.2	41.8	18.5	12.5	41.5	53.8	19.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	55.1	42.1	20.5	59.1	42.1	15.2	41.8	18.5	12.5	41.5	53.8	19.3
DesignQueue:	28	70	4	26	65	18	49	23	19	9	23	10

Metro Transportation Analysis Zones (TAZs)



Tanasbourne
Taz map





Parcel Number Reference

Table A-1
Summary of Tanasbourne Town Center Land Use

TAZ	Existing/ Future	Land Use	Use Type	Buildout Amount	Unit	ITE Code	Total PM Trips	PM In Trips	PM Out Trips	Employees
1	F	ADC Kentox (Parcel 1-4 = 26.32 acre)	Corporate Headquarter	286,626	sf	714	401	44	357	1,104
2	E	Rock Creek Landing (Parcel 1,4 = 19.82 acre)	MF	480	du	220	302	206	97	0
2	E	Creekside Apartments (Parcel 5-6)	MF	150	du	220	95	64	30	0
2	E	Colonnade (Parcel 2,3,7 = 1.05 acre)	MF	268	du	220	169	115	54	0
3	F	Building Site (Parcel 1 = 9.04 acres)	Light Industrial	98,337	sf	110	96	12	85	212
3	F	Mark/Standard JV Office (Parcel 2-3 = 13.6 acre)	Office	350,000	sf	710	468	80	388	1,152
4	F	Commercial (Parcel 1-2 = 5.14 acre)	Retail	55,975	sf	820	616	308	308	93
5	E	Landmark Apartments (Parcel 1,2,4)	MF	285	du	220	180	122	57	0
5	E	City Park (Parcel 3)	City Park	11	acre	411	2	1	1	0
6	E	Verandas (Parcel 1,2)	MF	496	du	220	312	212	100	0
6	E	Lion's Gate (Parcel 3,4,5)	MF	181	du	220	114	78	36	0
6	E	City Park	City Park	6	acre	411	1	1	1	0
7	F	Commerial (Parcel 1 = 1.88 acre)	Retail	20,473	sf	820	325	163	163	34
7	F	Commercial (Parcel 2 = 1.96 acre)	Retail	21,344	sf	820	334	167	167	36
8	F	Garden Apartments	MF	324	du	220	204	139	65	0
8	F	Mid Rise Apartments	MF	173	du	220	109	74	35	0
9	F	Lion's Gate II	MF	174	du	220	110	75	35	0
10	F	Mark/Standard JV Office (Parcel 1-3 = 9.65 acre)	Office	250,000	sf	710	365	62	303	823
10	E	Marriot Courtyard (Parcel 4 = 3.71 acre)	Business Hotel	140	room	312	87	56	30	28
10	F	Office Building (Parcel 5 = 1.15 acre)	Office	12,524	sf	710	40	7	33	41
10	F	Old Spaghetti Factory (Parcel 5 = 2.56 acre)	Sit Down Restaurant	12,750	sf	832	207	116	91	116
11	F	Commercial (Parcel 1 = 2.5 acre)	Retail	27,225	sf	820	390	195	195	45
11	F	Commercial (Parcel 2 = 2.38 acre)	Retail	25,918	sf	820	378	189	189	43
12	F	Future Kaiser Permamente medical office (Parcel 1 = 10.65 acre)	Medical Office	88,427	sf	720	361	108	253	427
13	E	Existing Kaiser Permamente medical office (Parcel 1 = 5.85 acre)	Medical Office	48,573	sf	720	198	59	139	235
14	F	Mixed Use Development	MF	200	du	220	126	86	40	0
14	F	Retail Center	Retail	300,000	sf	820	1,788	894	894	501
15	E	Act III Theatre Inc. (1921 seats) - Existing	Theatre	1,921	seats	443	499	320	180	38
15	F	Act III Theatre - New	Theatre	1,450	seats	443	377	241	136	29

Table A-1
Summary of Tanasbourne Town Center Land Use

TAZ	Existing/ Future	Land Use	Use Type	Buildout Amount	Unit	ITE Code	Total PM Trips	PM In Trips	PM Out Trips	Employees
16	E	Tanasbourne Terrace (Parcel 1)	MF	187	du	220	118	80	38	0
16	F	Cornell Apartments (Parcel 2)	MF	340	du	220	214	146	69	0
16	E	Rock Creek Retirement	Congregate Care Facility	111	du	252	19	11	8	11
16	E	Extended Stay Hotel	Business Hotel	136	room	312	84	55	30	27
16	F	Commercial (Parcel 3 = 2.38 acre)	Retail	25,918	sf	820	378	189	189	43
17	E	Marriot Residence Inn (Parcel 1)	Business Hotel	122	room	312	76	49	26	24
17	F	Full Service Hotel (Marriott) (Parcel 2 = 4.16 acre)	Hotel	250	room	310	190	103	87	100
18	E	Stanford's	Sit Down Restaurant	8,500	sf	832	5,015	2,808	2,207	78
18	E	Red Robin	Sit Down Restaurant	6,500	sf	832	3,835	2,148	1,687	59
18	E	US Bank (Parcel 1)	Bank	6,198	sf	912	270	130	141	24
19	E	Tanasbourne Terrace (Parcel 1)	MF	186	du	220	117	80	37	0
19	E	Club at Tanasbourne (Parcel 2)	MF	352	du	220	222	151	71	0
20	E	Tannasbourne Village: Safeway/Payless/Key Bank/Chix'A'Bob/Internationa l Discount Golf/etc.	Retail	211,549	sf	820	1,432	716	716	353
20	E	Shari's Restaurant	Sit Down Restaurant	3,909	sf	832	64	36	28	36
20	E	Chevy's Restaurant	Sit Down Restaurant	6,676	sf	832	109	61	48	61
20	E	Chevron (Parcel 3)	Gasoline/Service Center	8	ump	845	140	70	70	4
21	E	Newport Bay (Parcel 1 = 1.57 acre)	Restaurant	6,000	sf	832	98	55	43	55
21	E	Barbara Sue Seal (Parcel 2 = .71 acre)	Office	6,850	sf	710	26	4	21	23
21	F	Opus Northwest-Centennial Bank (Parcel 3 = 3.61 acre)	Bank	6,000	sf	912	149	72	78	23
	F		Retail	30,000	sf	820	414	207	207	50
21	F	Bernie's Bagels (Parcel 4 = .94 acre)	Retail	9,000	sf	820	186	93	93	15
21	E	Wells Fargo Bank (Parcel 5 = 1.29 acre)	Bank	6,500	sf	912	284	136	147	25
21	E	Target (Parcel 6 = 9.85 acre)	Retail	116,900	sf	820	983	491	491	195
21	E	Mervyn's (parcel 7 = 7.01 acre)	Retail	76,000	sf	820	748	374	374	127
21	F	Opus Northwest/Old Navy/Linens/Ross (Parcel 8 = 12.47)	Retail	116,758	sf	820	982	491	491	195
21	E	Disco Round (Parcel 9 = 1.05 acre)	Retail	10,500	sf	820	158	79	79	18

Table A-1
Summary of Tanasbourne Town Center Land Use

TAZ	Existing/ Future	Land Use	Use Type	Buildout Amount	Unit	ITE Code	Total PM Trips	PM In Trips	PM Out Trips	Employees
21	E	Sleep Country USA (Parcel 10 = 2.14 acre)	Retail	28,350	sf	820	400	200	200	47
22	E	GTE Phone System Office (Parcel 1 = 8.22 acre)	Office	60,000	sf	710	128	22	106	197
22	E	WCCCA (Dispatch Center) (Parcel 2 = 2 acre)	Office	21,500	sf	710	60	10	50	71
22	F	Future Medical/Dental Building (Parcel 3 = 3.56 acre)	Medical/Dental Office	42,900	sf	720	175	53	123	207
22	E	Water Retention Pond for Tanasbourne Center (Parcel 4 = 3.45 acre)		0		110				0
22	E	Tualatin Hills Park and Recreation (Parcel 5 = 5.34 acre)	City Park	5	acre	411	1	1	1	0
22	F	Larry Taft and Vicki L. (Vacant) (Parcel 6 = 1.27 acre)	Office	13,830	sf	710	43	7	36	46
22	E	Shepherd of the Valley (Parcel 7 = 3.86 acre)	Church	42,035	sf	560	31	20	11	8
23	E	Pacific Bank /Optical Co./Title Co. (parcel1)	Retail	6,285	sf	912	274	132	143	24
23	E	McDonald's (parcel2)	Fast Food Restaurant	3,610	sf	834	132	69	63	39
23	E	Texaco Star Mart (Parcel 3)	Gasoline/ Service Center	8	ump	845	140	70	70	4
23	E	BlockBuster Music (parcel 5)	Retail	12,000	sf	820	232	116	116	20
23	E	Carl's Jr. (parcel 6)	Fast Food Restaurant	3,050	sf	834	111	58	53	33
23	E	Boston Market (parcel 7)	Fast Food Restaurant	3,052	sf	834	111	58	54	33
23	F	Opus - Shell (Parcel 8)	Gas Station/Car Wash	8	ump	846	129	65	65	4
23	F	Opus (Parcel 9, pad 1)	Fast Food Restaurant	3,000	sf	834	110	57	53	33
23	F	Opus (Pad 2)	Fast Food Restaurant	3,000	sf	834	110	57	53	33
23	E	Oil Can Henry's (parcel 10)	Auto Care Center	1,624	sf	840	5	2	2	8
23	E	BEST/Hollywood Video/Petco/Office Depot/Barnes & Noble/Starbucks/Haggan's/Binyon's Optical/Bruegger's	Retail	211,825	sf	820	1,434	717	717	354
24	E	Cabinet Shop	Retail	2,000	sf	820	74	37	37	3
24	E	Antique Store	Retail	2,500	sf	820	86	43	43	4
24	E	Max & Hildy's	Retail	2,500	sf	820	86	43	43	4
24	F	Retail Center	Retail	13,000	sf	820	244	122	122	22
24	F	Office	Office	74,900	sf	710	150	26	125	246
24	E	Household	Single Family	15	du	210	15	10	5	0
24	F	Apartments	MF	600	du	220	378	257	121	0
24	F	Apartments	MF	200	du	220	126	86	40	0
25	F	Retail Center	Retail	20,000	sf	820	320	160	160	33

Table A-1
Summary of Tanasbourne Town Center Land Use

TAZ	Existing/ Future	Land Use	Use Type	Buildout Amount	Unit	ITE Code	Total PM Trips	PM In Trips	PM Out Trips	Employees
25	F	Apartments	MF	250	du	220	158	107	50	0
25	E	Tanasbourne Medical Office	Medical/Dental Office	34,800	sf	720	142	43	99	168
25	F	Future Tanasbourne Medical Office	Medical/Dental Office	70,200	sf	720	286	86	200	339
25	F	Apartments	MF	90	du	220	57	39	18	0
25	F	Hotel	Hotel	122	room	312	76	49	26	24
25	F	Office	Office	17,000	sf	710	50	9	42	56
25	F	Restaurant	Sit Down Restaurant	10,000	sf	832	436	244	192	91
25	F	Retail Center	Retail	24,000	sf	820	360	180	180	40
26	E	Greenbrier	MF	180	du	220	113	77	36	0
26	E	Sunset Square Shopping Center	Retail	80,000	sf	820	772	386	386	134
26	E	Vet Clinic	Retail	4,000	sf	820	115	58	58	7
26	E	Bank	Bank	3,000	sf	912	131	63	68	11
26	E	Software Electronics	Retail	5,000	sf	820	133	66	66	8
26	E	Burgerville Restaurant	Fast Food Restaurant	4,000	sf	834	146	76	70	44
							33,042	**17,001**	**16,041**	8,902

Unit Abbreviations:

- DU - Dwelling Unit
- SF - Square Feet
- rooms - Hotel rooms
- MF - Multi-Family Residential

TCRP PROJECT H-1
Transit and Urban Form

MODE OF ACCESS AND CATCHMENT AREAS OF RAIL TRANSIT

Prepared for

Transit Cooperative Research Program
Transportation Research Board
National Research Council

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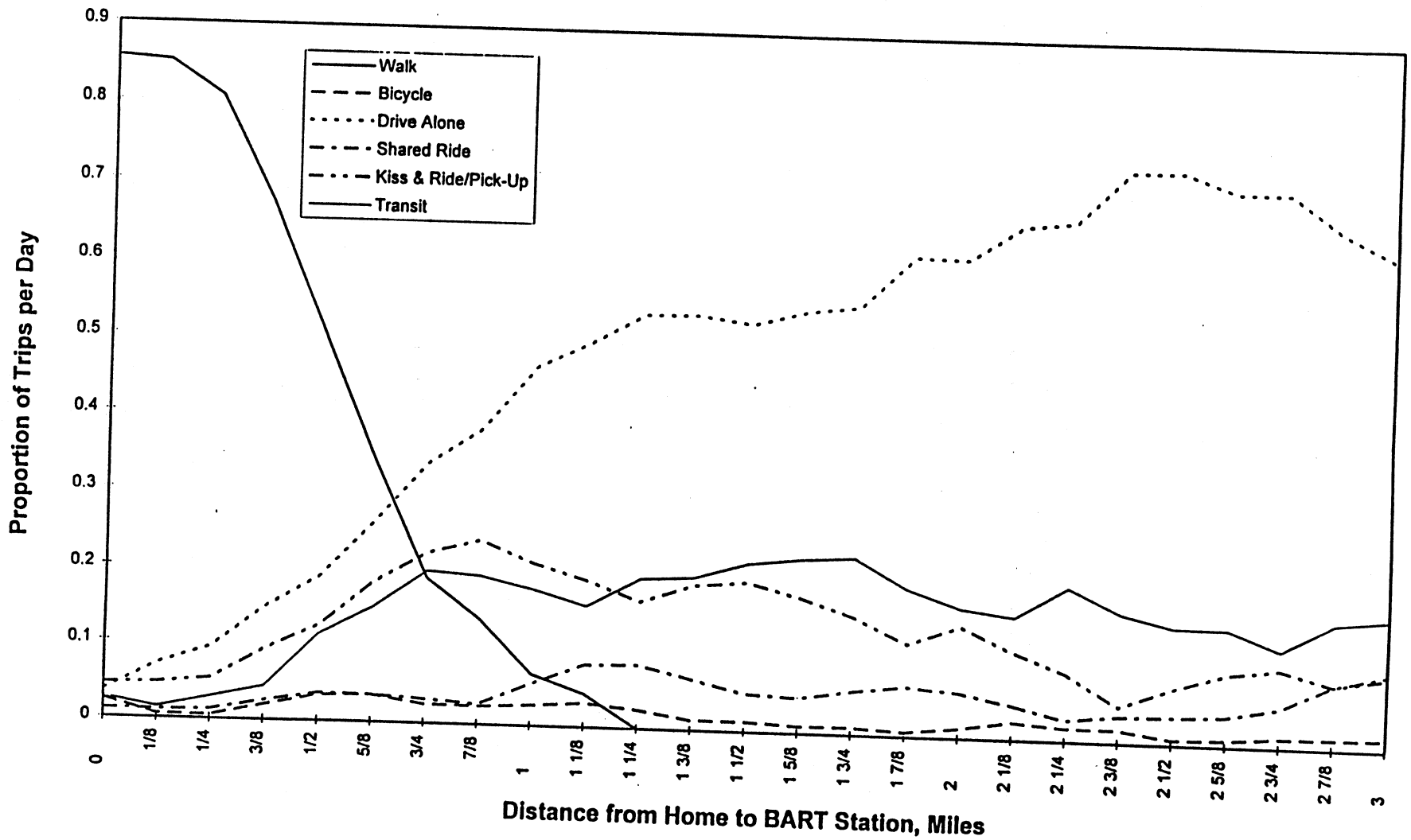
RESEARCH PROGRAMS
TRANSPORTATION RESEARCH BOARD

Parsons Brinckerhoff Quade & Douglas, Inc.
Dr. Robert Cervero
Howard/Stein-Hudson Associates, Inc.
Jeffrey Zupan

March, 1996

Figure 31. Mode of Access/Egress for All Suburban Center BART Commute Trips



ANALYSIS OF INDIRECT SOURCE TRIP ACTIVITY: Regional Shopping Centers

FINAL REPORT

#A132-094

Prepared for:
California Air Resources Board

Prepared by:
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and

K.T. Analytics, Inc.
Phase III Market Research
Transportation Management Services

November 1993

Table 1-2
CASE STUDY SITE CHARACTERISTICS

	SL1	SL2	SM	SH	UH
Location	Suburban	Suburban	Suburban	Suburban	CBD
Density of Surrounding Land Uses	Low	Low	Medium	High	High
Freeway Accessibility	Immediately adjacent	Immediately adjacent	One mile	Immediately adjacent	Two miles
Cost for Parking*	None	None	$0.03	$0.10	$0.26
Transit Service					
Routes	6 bus routes	4 bus routes	3 bus routes Shuttle to rail	11 bus routes	31 bus routes 3 light rail lines
Headways (minutes)	2 routes: peak: 30 off-peak: 60 4 routes: peak: 15-60 off-peak: 30-60	2 routes: 30 2 routes: peak: 15 off-peak: 30	bus routes: peak: 15-60 off-peak: 30-60 shuttle: 20	5 routes: peak: 5-40 off-peak: 12-30 6 routes: peak: 10-30 off-peak: 10-60	bus routes: peak: 6-30 off-peak: 30-60 Light rail: 15-30
Location of transit stop	2 routes: 50 ft from center 4 routes: 250 ft from center	On-site, covered shelter stop	On-site	Border of shopping center, 4 routes across street	23 bus routes: major transfer point All: border of shopping center
Bicycle Amenities	No bike lanes on arterials Bike trail 2 miles south	Two bicycle racks for 20 bicyles	None	Class II bicycle lanes adjacent to center and one block away. 99 bicycle parking spaces in parking structure.	Bicycle racks at trolley station
Pedestrian Amenities	Few dedicated walkways	Sidewalks from bus stop and on residential side of center	Sidewalks to adjoining areas	Sidewalks and crosswalks to all adjoining areas.	Sidewalks to adjoining areas

* Average over all vehicles per trip (includes validation)

(4070/TBL1-2.FNL)

Table 3-1
CHARACTERISTICS OF CASE STUDY SITES USED IN SELECTION PROCESS

Characteristics	SL1	SL2	SM	SH	UH
Location	Northern California	Northern California	Northern California	Southern California	Southern California
Urban/Suburban	Suburban	Suburban	Suburban	Suburban	Urban
Transit Service*	Low Capacity	Low Capacity	Low Capacity	Low Capacity	High Capacity
Parking Pricing	Free	Free	Some Metered/Valet	Some Metered	Hourly, Validation
Mixed-Use	No	No	No	No	Yes
Surrounding Housing	Some Single Family and Apartments	Single Family	CBD Area	Single Family and Apartments	Apartments, High Density
Socioeconomic Level	Medium	Med-High	Med-High	Med-High	Med-High
Market Population**	360,000	828,900	450,000	608,000	450,000
Marketing Strategy**	Traditional Mix	Traditional Mix	Upscale/ Fashion	Upscale/ Fashion	Upscale/ Fashion
Occupancy**	100%	99%	96%	95%	95%
Transportation Strategies	--	--	Shuttle to BART	Free Bus Ticket for $10 Purchase	--

(4070/TBL3-1.FIN)

*Low versus high capacity based on whether there is rail service to the site.
** From *1992 Directory of Shopping Centers in the United States*, Western Volume.

Table 1-1
MODE SHARE BY CASE STUDY

	SL1	SL2	SM	SH	UH
Percent of all trips that are:					
Auto	95.0	91.0	69.1	57.3	38.3
Drive alone	*18.3*	*46.2*	*36.2*	*26.0*	*16.2*
2 people	*39.0*	*33.3*	*24.9*	*22.0*	*14.3*
3+ people	*37.7*	*11.5*	*8.0*	*9.3*	*7.8*
Transit	4.3	6.4	10.6	21.0	32.5
Bicycle	0.0	1.0	1.0	0.0	0.3
Walk	0.7	1.6	19.3	21.7	28.9
Total	100.0	100.0	100.0	100.0	100.0

(407/0/TBC1-1.FNL)

Table 4-4
MODE SHARE BY TRIP PURPOSE AND SHOPPING CENTER
(Percent)

	Shopping	Eating-Out	Entertainment	Personal Errands	Business Errands	Socializing	Other
SL1							
Auto	97.7	92.3	90.0	92.6	71.4	75.0	100.0
Transit	2.3	0.0	10.0	7.4	28.6	18.8	0.0
Walk	0.0	7.7	0.0	0.0	0.0	6.2	0.0
SL2							
Auto	91.3	80.0	80.0	96.6	100.0	87.5	77.8
Transit	6.5	0.0	20.0	3.4	0.0	12.5	11.1
Bicycle	1.3	0.0	0.0	0.0	0.0	0.0	0.0
Walk	0.9	20.0	0.0	0.0	0.0	0.0	11.1
SM							
Auto	78.7	55.3	50.0	50.0	77.8	66.7	17.7
Transit	12.7	4.3	0.0	20.0	11.1	0.0	0.0
Bicycle	0.5	4.3	0.0	0.0	0.0	0.0	0.0
Walk	8.1	36.1	50.0	30.0	11.1	33.3	82.3
SH							
Auto	67.1	34.6	50.0	61.1	71.4	50.0	33.3
Transit	20.0	19.2	23.1	22.2	28.6	33.3	20.0
Walk	12.4	46.2	26.9	16.7	0.0	16.7	46.7
UH							
Auto	57.7	16.7	18.4	50.0	44.4	40.9	25.9
Transit	30.9	22.2	47.4	0.0	33.4	27.3	42.6
Bicycle	0.0	0.0	0.0	12.5	0.0	0.0	0.0
Walk	11.4	61.1	34.2	37.5	22.2	31.8	31.5

(40/AVTBL4-4.FIN)

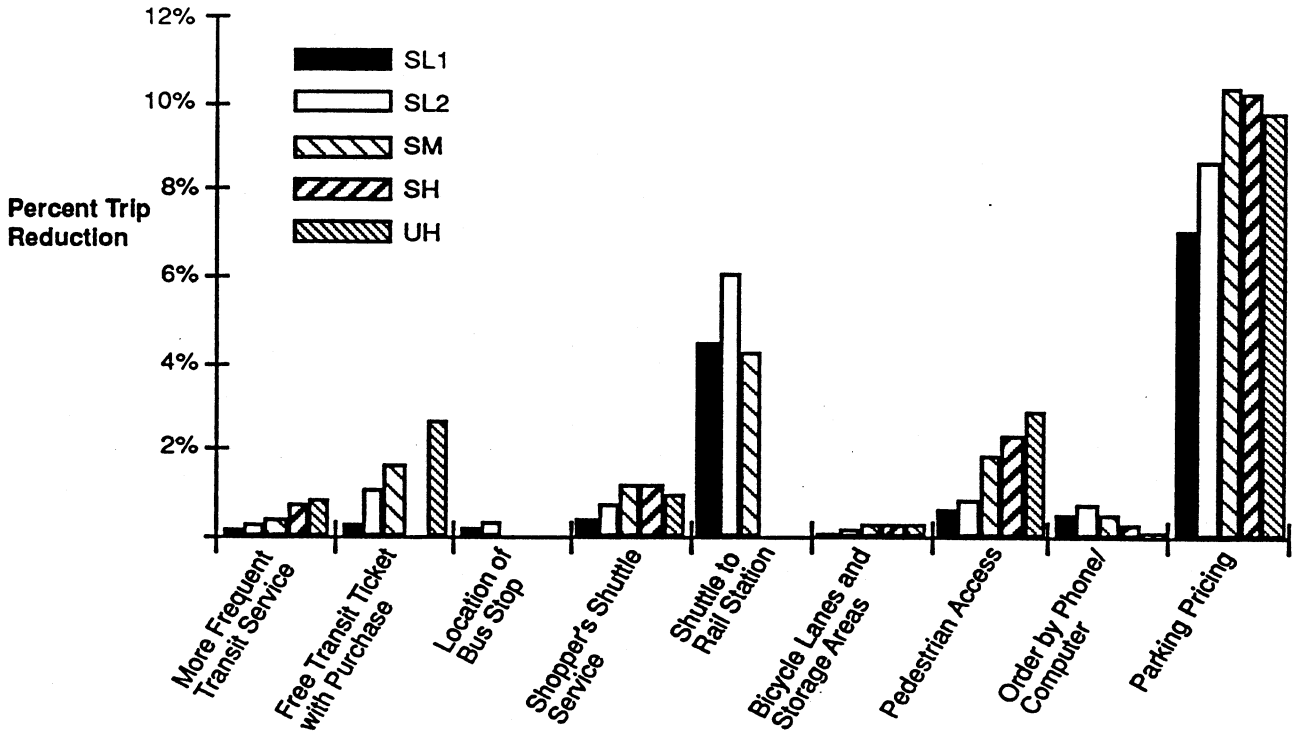

Figure 1-3
Analysis Results

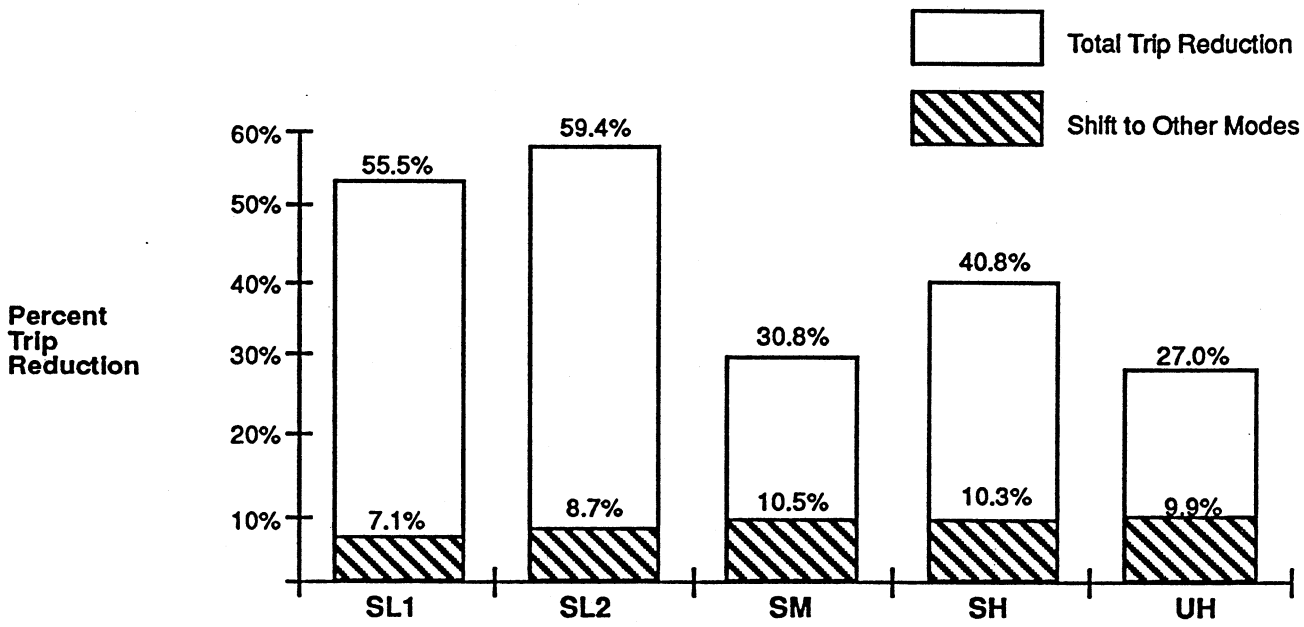

Figure 1-4
Impact of Parking Pricing

TCRP PROJECT H-1
Transit and Urban Form

INFLUENCE OF LAND USE MIX AND NEIGHBORHOOD DESIGN ON TRANSIT DEMAND

Prepared for

Transit Cooperative Research Program
Transportation Research Board
National Research Council

Parsons Brinckerhoff Quade & Douglas, Inc.
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March, 1996

The second set of scenarios, shown in Figure 4, plot probabilities against commute distances ranging from one-eight of a mile to a mile-and-a-half. All other factors remain the same, except that the hypothetical household examined in Figure 4 is assumed to have two automobiles.[12] In general, the same relationship holds: walking and bicycling tends to be much higher in higher-density, mixed-use settings, almost regardless of distance. For someone residing a quarter of a mile from their job, there is a 0.57 likelihood they will walk or bicycle to work if they live in a dense, mixed-use area; if they live in a neighborhood populated only by single-family homes, however, the odds fall to 0.28. Again, the odds are virtually identical if the neighborhood is low-density with mixed uses versus high-density with single uses. The presence of mixed uses has the strongest influence for journeys to work of one mile or less. Beyond one mile, non-residential uses exert a weaker influence on walking and bicycling, as revealed by the tendency for the curves in Figure 4 to converge beyond one mile. Even at a mile and a half commute distance, however, there is a one-quarter chance that someone living in a mid/high-rise neighborhood with surrounding stores will walk or bike to work in these 11 MSAs.

Figure 4. Probability of Commuting by Walking or Bicycling for Four Land-Use Scenarios, as a Function of Commute Distance

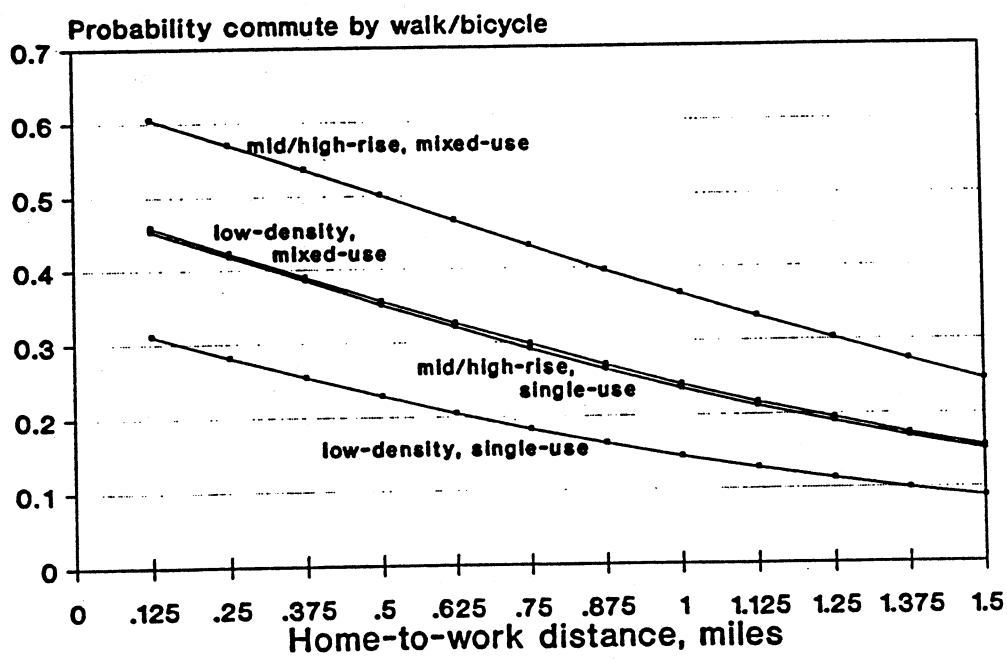

TABLE 1
SUMMARY OF LAND USE MEASURES

LAND USE MEASURE	EFFECTS ON TRAVEL DEMAND	DETERMINANTS OF EFFECTIVENESS
1. Development design		
a) Neo-traditional development	In general, there is little evidence regarding effects of neo-traditional development on travel demand and evidence that does exist often conflicts:[1] • McNally and Ryan found slight increase in total number of trips, Crane found neo-traditional development can either increase or decrease total number of trips. • David Evans Associates found neo-traditional development generates same number of peak trips external to development when no employment center exists within development, however, Stone and Johnson found total peak hour trips decreased by 18.7%. • David Evans and Associates found number of internal auto trips is lower for neo-traditional development. • Average trip length for all trip types is significantly shorter for neo-traditional development (McNally and Ryan, 1993). • McNally and Ryan found 10.6% decrease in total VMT generated by neo-traditional development relative to standard suburban subdivisions. • Crane found that grid designs increase number of vehicle trips made.	Proximity to CBD: • Neo-traditional development with high local accessibility will affect non-work travel more when located at edges of region as compared to within region.[31]
	• Gridded streets can encourage walking, however, they also increase accessibility for motorists. Their ultimate impact likely depends on grains of streets and block patterns. Grids laid out in superblocks will probably induce automobile trips. However, very fine grain grid with intersections every 400 or 500 feet instead of every 1,500 to 2,000 feet will likely deter motoring (Cervero, 1997).[37] • Biggest impacts of mixed land uses and pedestrian-friendly designs are likely to be on non-work trips, and shop trips specifically (Cervero, 1997).[37] • Study of matched pair neighborhoods in San Francisco found 10 to 20 percent higher non-auto mode share for non-work trips for neighborhood with traditional design compared to neighborhood with auto-oriented design (Cervero, 1997).[37]	
b) Mixed-use	• Handy's literature review (1992) found that studies show weak link between land use mix within specific areas and travel patterns for those areas. Impact of land use mix on travel demand patterns has not been analyzed at citywide level.[2]	Policy/Regulatory Environment: • *Type of zoning standards.* Zoning standards should change to allow, and in places require, higher-density mixed-use development. People will use modes

	• Crane (1996) finds mixed use designs decrease demand for car trips.[3] • Frank and Pivo (1994) found that increased land use mixes are associated with increased walking and transit mode shares and reduction in SOV mode share for work trips; land use mix was not found to be significantly correlated with these three mode choice variables for shopping trips. Also, they found that average length of work trips ending in balanced census tracts was 29% shorter than work trips ending in unbalanced areas.[4] • Institute of Transportation Engineers (Colorado/Wyoming Section Technical Committee, 1987) found 8 percent trip reduction associated with mixed land uses.[5] • Ewing, Haliyur, and Page (1994) found that mixed-use communities generate between 2.3 and 2.8 vehicle hours of travel per day compared to 3.4 hours for automobile-oriented suburban communities.[5] • JHK & Associates (1987) found major mixed-use suburban activity center had 7 percent transit use and 25 percent midday walk trips, which is significantly higher than more typical suburban centers which has only 1 percent transit and 16 percent midday walk trips.[5] • No accurate estimate exists of effect on VMT of changes in mix of uses, density, or design, holding all else constant. Existing estimates reveal that each has an impact, but data is not available to make precise estimates of effect on VMT.[6] • Cervero finds that amount of mixed-used development affects proportion of SOV trips: the greater proportion of floor space devoted to retail, the smaller the proportion of SOV trips. Concludes that use mix, density, and levels of parking have modest to moderate influence on commuting behavior.[7] • Even if mixed land uses and high residential densities do not reduce total number of auto trips, they will at least reduce total distance traveled (Christoforidis, 1994).[8]	other than auto only if time spent walking and waiting decreases. Higher densities bring more people within easy walking distance of transit stop. Multiple uses bring destinations together. Performance standards could decrease conflicts between uses that encouraged adoption of standards that physically segregate uses.[32]
	• Kockelman (1997) found that doubling of general mix would result in 10% decrease in VMT/household, 17% decrease in non-work trip VMT/household, and 1% decrease in auto ownership.[38] • Friedman, Gordon, and Peers (1992) found that suburban areas with segregated land uses and hierarchical roadway networks generated 23 percent more trips, had higher drive alone rates (68% versus 49%), and had half the transit share of traditional communities with mixture of uses and gridded street networks.[41] • Kitamura, Mokhtarian, and Laidet (1994) showed that attitudes were more strongly correlated to travel behavior than mixed-land use and density, i.e., that land use – travel relationship was artifact of association between land use and variety of socioeconomic characteristics associated with travel. Concluded that land use policies promoting high densities and more mixed use may not influence travel behavior unless residents' attitudes also changed.[41] • In a study of Seattle area neighborhoods, McCormack et al (1997) found that walk mode splits for mixed-use neighborhoods were about 18%, compared to 3% for suburban neighborhoods.[42] • McCormack et al (1997) showed that average daily trips, number of stops, and number of trip chains were similar for residents of all neighborhood types, but that residents of mixed-use neighborhoods made almost twice as many trips to stops within 2 miles of home than suburban residents.[42]	

	• Residents of two mixed-use neighborhoods in Seattle traveled 27% fewer miles than remainder of North Seattle, 72% fewer than inner suburbs, and 119% fewer than outer suburbs (McCormack et al, 1997).[42] It is suggested that if mixed-use neighborhoods were somehow relocated to suburbs, it would be unlikely that travel characteristics would remain unchanged; however, it is clear that substantial reductions in travel distances can be accomplished with appropriate urban design. • While total daily travel distance differs widely between neighborhood types, McCormack et al (1997) report that total daily travel time is about 90 minutes per person regardless of where they live. This equates to average daily travel speeds ranging from about 12 mph for residents of mixed-use neighborhoods to 25 mph for suburban residents. Variation in travel time by age and family life cycle is also remarkably small.[42]	
c) Transit-oriented design	• Pedestrian modal shares and pedestrian trip generation rates tend to be considerably higher in transit-oriented than auto-oriented neighborhoods, but "islands of transit oriented neighborhoods in a sea of freeway oriented neighborhoods seem to have negligible effects on transit commuting".[9] • Empirical research conducted by Kitamura, et. al. (1994) confirms that high density, access to transit, and having sidewalks generate increased pedestrian travel. Also found that parking availability and distances to nearest bus stop correlate positively with vehicular travel.[10] • Analysis of two neighborhoods with similar incomes located near BART stations showed that neighborhood with transit-oriented design (TOD), with higher densities, and mixture of uses within walking distance of station had 20 percent lower drive-alone mode share for commute trips. In addition, less than 15 percent of BART passengers drove to BART station.[11] • Matched-pair analysis of work trips in pre-and post-war neighborhoods in San Francisco and Los Angeles regions that controlled for income, density, and transit service found that transit-oriented neighborhoods have higher transit mode share (1.3 percent in Los Angeles and 5.1 percent in San Francisco) than do conventional neighborhoods. Walking and bicycling shares were also higher (3.3 percent in Los Angeles and 6.6 percent in San Francisco) (Cervero, et. al., 1993).[12] • Holtzclaw (1994) found that automobile ownership and VMT decrease as residential density and transit accessibility increase.[13] • Travel forecasts for Portland Metro area performed in LUTRAQ Study by Cambridge Systematics in 1992 found that regional TOD-LUTRAQ alternative reduced regional vehicle trips by 7.7 percent and VMT by 13.6 percent. Within TOD's, there were 22 percent fewer home-based car trips and greater than 20 percent transit mode split compared to 10 percent in standard suburbs.[14]	Policy/Regulatory Environment: • *Type of design standards.* Design standards could not only make increased density more acceptable, but could also make transit service better. They could make walking and waiting easier and more pleasant. Negative reaction many people have to higher density can be mitigated by good design. Standards should allow, or in places require, less space devoted to parking. Standards should require good access to buildings by transit, foot, and bicycle as well as by auto.[33]
2. Density of development (general)	• Higher densities decrease number of trips, percentage of trips made by automobile, and total energy, but travel time is increased and trip lengths may be increased (Handy, 1992).[15] • Higher density settlement patterns do yield reduced travel distances (statistically significant), but relationship is not as large as might be expected (Hanson and Schwab, 1987).[16] • Ewing cites literature that high densities generate fewer VMT per capita than do low densities, that trips	Policy/Regulatory Environment: • *Type of zoning standards.* (See discussion above regarding zoning standards for mixed use development). • *Type of design standards.* (See discussion above regarding design standards for transit oriented design).

	become shorter as densities rise, and that growing percentage of trips are made by walking or transit.[17] • Most reliable estimate of average elasticity of VMT with respect to overall intensity of land development is about -.25. In other words, 10 percent increase in density, together with kinds of changes in land use, building design, and transportation infrastructure that typically occur as density increases, results in 2.5 percent decrease in VMT (Holtzclaw, 1991).[18]	• *Existence of development fees.* Development fees should increase to reflect cost of servicing new development. Local governments often subsidize substantially extension roads and public utilities to new development at urban fringe. To encourage kind of higher-intensity development accessible to non-auto modes, these subsidies should be reduced or eliminated.[34] • *Type of property tax structure.* Property taxes should change to encourage higher-intensity development. Lowering tax rate on improvements relative to land encourages investment in higher density development.[35]
	• Through examination and comparison of statistical distributions, Pivo (1995) found associations between both higher density and jobs-housing balance and less auto use.[41]	
a) Residential density	• Ten percent increase in density leads to only 0.7 % reduction in household automobile travel; even relatively large-scale shift to urban densities would have negligible impact on total travel demand (Schimek, 1996).[19] • In 1990 National Personal Transportation Survey (NPTS) data, only 22 percent of population lived at densities greater than 5,000 people per square mile. It is only at highest densities that total vehicle mileage is very much lower than average (Schimek, 1996).[19] • Simulated 50 percent decrease in zip code density would result in annual VMT reduction of only 550 miles per household. Two-thirds of effect of density on automobile use comes through mechanism of lower car ownership in high density areas (Schimek, 1996).[19] • At densities between one and seven dwelling units per acre, transit use is minimal. Density of seven dwellings per acre appears to be a threshold above which transit use increase sharply (Pushkarev and Zupan, 1977).[20] • Neighborhood density has strong negative effect on VMT and vehicle trip frequency. Also found that there are shorter trip lengths in higher density neighborhoods (Cheslow and Neels, 1980).[21] • Analysis of 1990 NPTS data indicated that density increase at lowest levels (e.g., from 2 to 4 persons/acre) had no effect on auto travel per person or household.[22] • Much less use of SOVs was found with residential densities greater than 15 persons/acre (Frank, 1994).[23] • Holtzclaw (1994) found that doubling in housing density would result in 15 percent fewer VMT. Much of this would occur as result of fewer vehicle trips.[24] • Transit and walk mode shares are positively related to population density for both work and non-work trips (Frank, 1994).[25]	Policy/Regulatory Environment: • *Type of zoning standards.* (See discussion above regarding zoning standards for mixed use development). • *Type of design standards.* (See discussion above regarding design standards for transit oriented design). • *Existence of development fees.* (See discussion above regarding development fees for general density of development). • *Type of property tax structure.* (See discussion above regarding property tax structure for general density of development).
	• Most studies show that big mobility payoff comes from going from low to moderate densities. Thus, Hong Kong style densities or even three-story garden apartments everywhere not required to achieve significant benefits. Often it is when going from about 4 to 5 dwellings to 12 to 15 dwellings per gross acre that most significant gains are made in terms of reducing travel consumption (Cervero, 1997).[37]	

	• Density is really proxy for other things. Dense places tend to have better quality transit services, lower parking provisions, and lower average household incomes. It is all these other things that accompany densities that are really shaping travel choices (Cervero, 1997).[37] • Kockelman (1997) found that doubling of population density would result in 7% decrease in auto ownership and 1.3% decrease in personal vehicle mode split.[38] • Sun et al (1997) found that VMT/household is 29% less in areas of higher population density (>6 residents/acre) than lower density areas.[39] • Sun et al (1997) found that daily trips/household is 9% less in areas of higher residential density (>5 dwelling units/acre of residential area) than lower density areas and VMT/household is 30% less.[39] • Population density not a strong causal variable for explaining variations in VKT/worker across urban area. May be that density *per se* not important, but rather where high density is achieved: i.e., it should be concentrated near high density employment centers, whether these be CBD or regional sub-centers (Miller and Ibrahim, 1998).[40] • Steiner (1994) concluded that decreased auto use is possible in higher density areas because higher density puts destinations close together, making it possible to walk, higher density areas may be perceived as safer for walking, and certain types of households may be more likely to live in high density areas. Steiner cautioned, however, that assumptions about relationship between high density and transportation choices may or may not be true, because many studies have not separated out factors such as income, household size, life cycle characteristics, etc., which also affect transportation choices.[41]	
) Employment density	• Much less use of SOVs was found with employment densities greater than 75 employees per acre (Frank, 1994).[26] • Significant negative relationship was identified between SOV mode share and employment density for work and shopping trips. Significant positive relationship was identified between transit and walk mode share for work and shopping trips (Frank, 1994).[27]	<u>Policy/Regulatory Environment:</u> • *Type of zoning standards.* See discussion above regarding zoning standards for mixed use development. • *Type of design standards.* See discussion above regarding design standards for transit oriented design. • *Existence of development fees.* See discussion above regarding development fees for general density of development. • *Type of property tax structure.* See discussion above regarding property tax structure for general density of development.
	• Kockelman (1997) found that doubling of jobs density would result in only 0.02% decrease in personal vehicle mode split.[38] • Sun et al (1997) found that daily trips/household is 9% less in areas of higher employment density (>3 employers/acre of business area) than lower density areas and VMT/household is 28% less.[39]	

c) Accessibility	• Kockelman (1997) found that doubling of accessibility would result in 31% decrease in VMT/household, 35% decrease in non-work trip VMT/household, 7.5% decrease in auto ownership, 3.6% decrease in personal vehicle mode split, and 22% increase in walk/bike mode choice.[38] • Sun et al (1997) found that daily trips/household is roughly 10% less in areas with higher accessibility (households to jobs and jobs to households) than areas with lower accessibility and VMT/household is roughly 35% less.[39] • Although accessibility is statistically significant variable (at 1% confidence level) in explaining daily trips/household and VMT/household, it's influence is dwarfed by explanatory power of socioeconomic variables (household size, income, number of vehicles) (Sun et al, 1997).[39]	Policy/Regulatory Environment: • *Type of zoning standards.* (See discussion above regarding zoning standards for mixed use development). • *Existence of development fees.* (See discussion above regarding development fees for general density of development). • *Type of property tax structure.* (See discussion above regarding property tax structure for general density of development). Travel Supply Characteristics: • *Availability of transit service; level of transit service.* Effects of higher densities in bringing opportunities closer together and diminishing trip distances will be enhanced if attractive non-auto travel alternatives are available. • *Availability of bicycle and pedestrian facilities.* Effects of higher densities in bringing opportunities closer together and diminishing trip distances will be enhanced if attractive non-auto travel alternatives are available.
3. Distribution of development		
a) Dispersion	• Empirical evidence that land use patterns strongly affect commuting patterns is weak. Results indicate that commuting distance and time not very sensitive to variations in urban structure (Genevieve and Small, 1993).[28] • Research results indicate that polycentric pattern of employment centers, along with dispersal of many jobs outside centers altogether, creates potential for shorter commutes than those required of people working in downtown Los Angeles (Genevieve and Small, 1993).[28] • Handy's literature review (1992) indicates that studies do not agree on effects of overall spatial structure, but most find that "polycentric" form results in fewer trips, shorter trips, and less total energy use than either "monocentric" or "dispersed" urban form. In addition, most conclude that dispersed form results in shorter trips than monocentric form.[29] • Gordon, Kumar, and Richardson (1989) find that "monocentricity" adds to commute cost and that polycentric or dispersed patterns reduce commute times.[30] • Centralization and compactness have significant effects on travel behavior: VKT/worker clearly increases as one moves away from CBD (about .25 km for every 1 km from CBD) (Miller and Ibrahim, 1998).[40]	Policy/Regulatory Environment: • *Type of zoning standards.* See discussion above regarding zoning standards for mixed use development. • *Existence of development fees.* See discussion above regarding development fees for general density of development. Proximity to CBD: • Neighborhood proximity to CBD has very strong negative effect on VMT; as distance from CBD increases, trip lengths increase.[36]

	• Assuming suburbanized population is fact of life, multi-regional system of high density employment activity centers appears to reduce VKT per worker (about .38 km for every 1 km decrease between worker residence and employment center) relative to what would likely occur without these sub-regional centers (Miller and Ibrahim, 1998).[40]	
b) Jobs-housing balance	• Behavioral assumption of "cost minimization" (that residential location is determined primarily by tradeoff between commuting cost and land cost) is inadequate to explain commuting, and large scale changes in urban structure designed to promote jobs-housing balance would have only small effects on commuting. Commuting is generally two to three times as large as can be accounted for by behavioral assumption of cost minimization; this is true whether commuting measured by time or distance (Genevieve and Small, 1993).[28] • Attempts to alter metropolitan-wide structure of urban land use via policy intervention are likely to have disappointing impacts on commuting patterns, even if successful in changing degree of jobs-housing balance (Genevieve and Small, 1993).[28]	Policy/Regulatory Environment: • *Type of zoning standards.* See discussion above regarding zoning standards for mixed use development. • *Existence of development fees.* See discussion above regarding development fees for general density of development.
	• Kockelman (1997) found that doubling balance (entropy) of work and non-work related land uses would result in 10% decrease in VMT/household and that doubling balance of non-work related land uses only would result in 30% decrease in non-work trip VMT/household and 23% percent increase in walk/bike mode split.[38] • Sun et al (1997) found that VMT/household is 30% less in areas having entropy index values greater than 0.5 than areas with values less than 0.5, where value of 1.0 represents equal proportions of different land uses or "perfect" balance.[39] • No strong evidence found that "self-containment" or "jobs-housing balance" is effective policy for reducing VKT/worker, over and above impacts of suburban employment centers. This argues in favor of concentrated regional employment centers rather than dispersed employment (Miller and Ibrahim, 1998).[40]	

Appendix C - Resolution

Resolution No._____

HCP ___-99, Hillsboro's "tanasbourne Town Center Plan" Comprehensive Plan Amendments.

RESOLUTION INITIATING AMENDMENTS TO THE HILLSBORO COMPREHENSIVE PLAN ORDINANCE NO. 2793, AS AMENDED, TO ADOPT THE **"TANASBOURNE TOWN CENTER PLAN"** AS A NEW "COMMUNITY PLAN" WITHIN THE COMPREHENSIVE PLAN.

WHEREAS, Section 1(II)(B) of the City of Hillsboro Comprehensive Plan establishes and defines a City "community plan" as a plan which establishes and coordinates policies and development guidelines for the development of land uses and development activities within a specific area of the City, and grants comprehensive plan status and function to the community plan relative to the specific geographic area to which it applies; and

WHEREAS, Section 1(V) of the Comprehensive Plan enables the Hillsboro Planning Commission to initiate amendments to the Plan which adopt community plans; and

WHERAS, the City has prepared a proposed *Tanasbourne Town Center Plan* covering approximately 509 acres of land situated in northeast Hillsboro which is contained in the *Tanasbourne Town Center Plan* document attached hereto as Exhibit "A". This Plan was prepared with technical and citizens input and advice in accordance with a plan preparation public involvement program approved by the Hillsboro Citizen Involvement Advisory Committee. That Program featured several project open houses, property owners (stakeholers) meetings and work sessions, project area design charrettes, special neighborhood meetings and regular meetings of the Tanasbourne Village Town Center Planning Advisory Committee (VPAC) comprised of professionals representing the State, Tri-Met, Washington County and City agencies; and

WHEREAS, the *Tanasbourne Town Center Plan* addresses and implements the adopted Metro Region 2040 Growth Concept "Town Center" designation of the Tanasbourne community; and

WHEREAS, the *Tanasbourne Town Center Plan*, if adopted, would contribute substantially toward the City's mandatory accommodation of its allocation of 14,812 new households (including 9,758 new units within designated Region 2040 mixed-use areas such as "town center") by the year 2017 by accounting for approximately 5,500 of these new housing units; and

WHERAS, the *Tanasbourne Town Center Plan*, if adopted, would contribute substantially toward the City's mandatory accommodation of its allocation of 58,247 new jobs (including 20,338 new jobs within its mixed-use areas) by the year 2017 by accounting for approximately 8,900 of these new jobs; and

WHEREAS, City formulation and approval of the *Tanasbourne Town Center Plan* would address and complete Work Task No. 8 of the City's approved Periodic Review Work Program (DLCD Order No. 00665) which requires the City to formulate and adopt a Region 2040 town center plan for the Tanasbourne area:

NOW, THEREFORE, BE IT RESOLVED by the City of Hillsboro Planning Commission, that the Commission by and through this Resolution hereby initiates the amendments to the Hillsboro Comprehensive Plan text and maps described in this Resolution as follows:

Section 1. Hillsboro Comprehensive Plan Ordinance No. 2793, as amended, is hereby further amended to add to the Comprehensive Plan a new Section 18, entitled *"City of Hillsboro, Tanasbourne Town Center Community Plan"*, and comprised of the entire Hillsboro Tanasbourne Town Center Plan document attached hereto as Exhibit "A" including, especially, the following *Tanasbourne Town Center Plan* operative policy elements:

1. Overall Town Center Guiding Principles,
2. Tanasbourne Town Center plan: General Land Use Plan Map (Exhibit 4),
3. Tanasbourne Town Center Plan: Mixed-Use Pedestrian Corridor Area Map (Exhibit 5),
4. Tanasbourne Town Center Plan: Town Center Core Area Concept Map (Exhibit 6),
5. Town Center Development/Urban Design Strategies,
6. Cornell-Walker Superblock Neighborhood Elements,
7. Tanasbourne Town Center Plan: Future Street Configuration (Exhibit 7),
8. Tanasbourne Town Center Plan: Cornell-Wlaker Superblock General Land Use Plan Map (exhibit 8),
9. Tanasbourne Town Center Plan: Recommended Street and Pedestrian Circulation Pattern Map (Exhibit 10),

that set forth recommended *Tanasbourne Town Center Plan* land use policies, implementation measures, land use plan maps, and specfic transportation system improvements to guide future development within the Tansabourne Town Center Plan Area.

BE IT FINALLY RESOLVED that the Planning Commission hereby schedules these amendments for public hearing before the Commission on _____ , 1999.

Introduced and passed this _____ day of _____, 1999.

_____
President

Attest: _____
Secretary