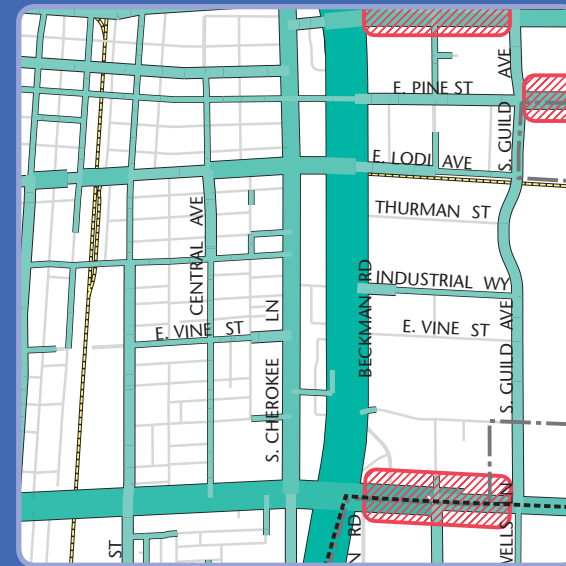
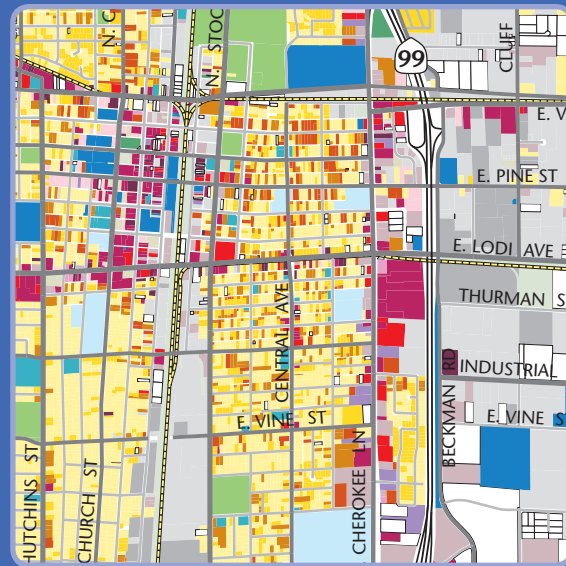
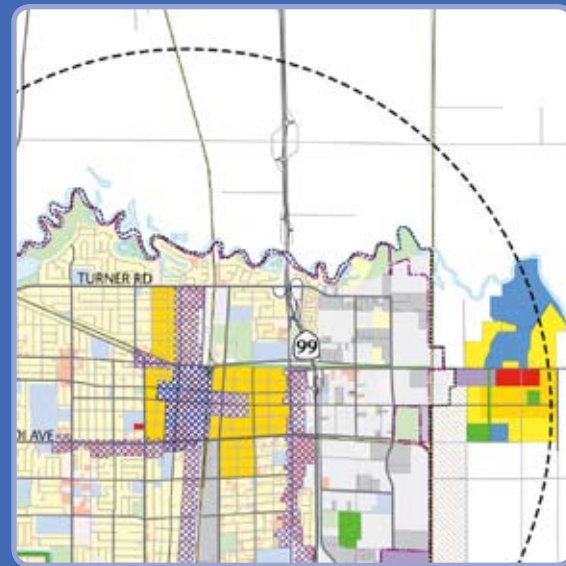


LODI GENERAL PLAN UPDATE



Sketch Plans

City of Lodi
May 2008

PREPARED BY:

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1 Introduction

PURPOSE

What will Lodi be like in the next 25 years? The General Plan Update provides an exciting opportunity to evaluate the vision and goals for the city, plan for growth and change, and define the policy framework for enhancing the city's character and quality of life.

The Sketch Plans presented here represent a key step in the update process. Ideas for growth and community enhancement are shown in the form of three possibilities. The Sketch Plans present a range of options to guide future development and intensification in Lodi, and address goals for conservation, economic development, and walkable livable neighborhoods. These alternatives build on existing conditions, opportunities and challenges assessment, and input from the community through workshops, meetings, and the citywide survey. Decision-makers have also provided input, including most recently at a special joint meeting of the City Council and Planning Commission in December 2007.

Feedback from community members on these Sketch Plans will lead to the formulation of a Preferred Plan, which will serve as the foundation of the new General Plan. The Preferred Plan will likely consist of the most desirable characteristics of the different Sketch Plans, infused with new ideas generated during public discussions.

While the Sketch Plans vary in the extent and distribution of development, they all focus on central concepts, highlighted during the visioning phase and discussions with stakeholders:

- Maintaining Lodi's compact form, and balancing new urban growth with conservation of agriculture and vineyards;
- Improving connections between neighborhoods, commercial corridors and Downtown; and
- Preserving Lodi's small-town character and enhancing quality of life.

Because of the conceptual nature of these alternatives, it is important to consider them relative to these overarching goals. More specific planning, including details on land use and development policies will ensue once consensus is reached on concepts for the Preferred Plan.

PROJECT BACKGROUND

Lodi's current General Plan was adopted in 1991. Although many of its policies are still relevant, the city has undergone substantial changes during this period. Since 1990, the population has grown by 23 percent, from 51,900 to 63,400. Despite a recent slowdown in housing demand, growth pressures continue to be felt from within and outside the city limits. In recent years, new ideas have emerged. For example, the city sees its future increasingly tied to the wine industry, with the surrounding vineyards providing economic sustenance and a distinctive character.

The new General Plan will establish a long-range vision for the city, defining Lodi's place in the region, its identity and sense of place, and neighborhoods and districts that can be enhanced and connected. Policies concerning physical growth and development management; a community separator; urban design; and growth of the wine industry and tourism, will all be addressed in the Plan. Eight chapters or elements will likely comprise the new General Plan: Land Use, Growth Management, Community Design and Livability, Circulation, Parks/Recreation, Conservation, Noise, and Safety. Sustainability policies and implementation measures will be incorporated throughout the elements of the General Plan. The Housing Element was prepared in 2004 and is not being updated as part of this effort.



The General Plan Update intends to build on Lodi's existing assets to maintain its distinctive character and ensure a high quality of life for residents and visitors.

2 Approach & Baseline Assumptions

The Sketch Plans take into account a variety of factors, including community input (visions, ideas and concerns), environmental conditions, population and growth projections, and development opportunity sites.

COMMUNITY OUTREACH RESULTS

Considerable input from community members and stakeholders has been collected through a community workshop, stakeholder interviews, community and decision-maker meetings, and the citywide survey. Many community members expressed passion for Lodi's livability and small-town character, praising its walkability, community amenities, schools, low crime and family-friendly atmosphere. Individuals also expressed value in Lodi as a visitor destination, given its wineries, history and festivals. Community members also acknowledged interest in pursuing sustainable development, maintaining the city's economic vitality, and enhancing open space and recreation opportunities. These issues will be addressed more acutely in the General Plan.

REGIONAL LOCATION & PLANNING AREA

Lodi's character is defined in part by its strong agricultural roots and economy. In recent years, the wine industry has brought increased tourism and economic vitality to the city, putting Lodi on the map as a visitor destination. Residents and stakeholders have expressed a clear interest in preserving agricultural land surrounding the city's borders and maintaining the city's compact urban form. The graphic in Figure 2-1 provides a snapshot of the city's size, shape, and street pattern in 1900, 1930, 1960, 1980, and 2000. While the pace of annexation appears to have quickened somewhat since 1980, Lodi has generally grown at a consistent pace, adding land to accommodate new growth on its southern and western edges, in particular.

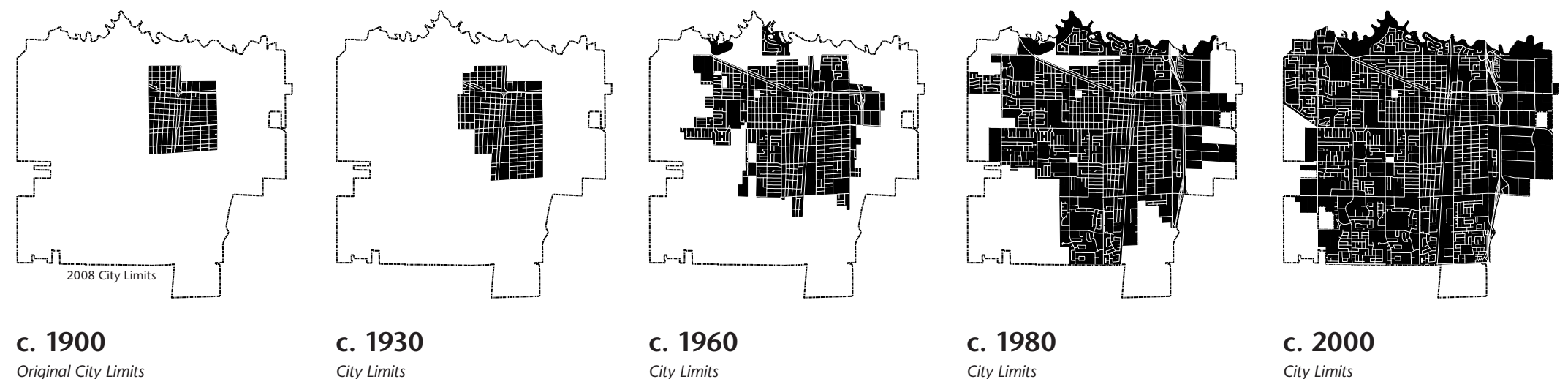
Stockton, to the south, has grown at a considerably faster rate than Lodi and continues to expand its urban land area. Figure 2-2 shows Lodi's Planning Area and its relationship to Stockton. In an effort to delineate a clear boundary between the two cities and to ensure the protection of existing agricultural land, a community separator has been discussed. This separator, or greenbelt, is an agricultural, rural or open space buffer that would limit new uses and establish rules for the alteration of existing uses (see Working Paper #4: Greenbelt Conservation Strategies).

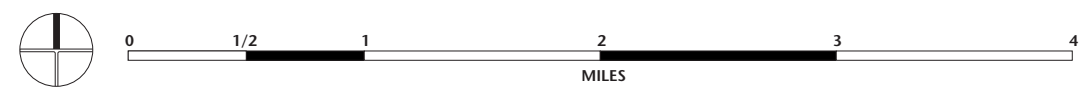
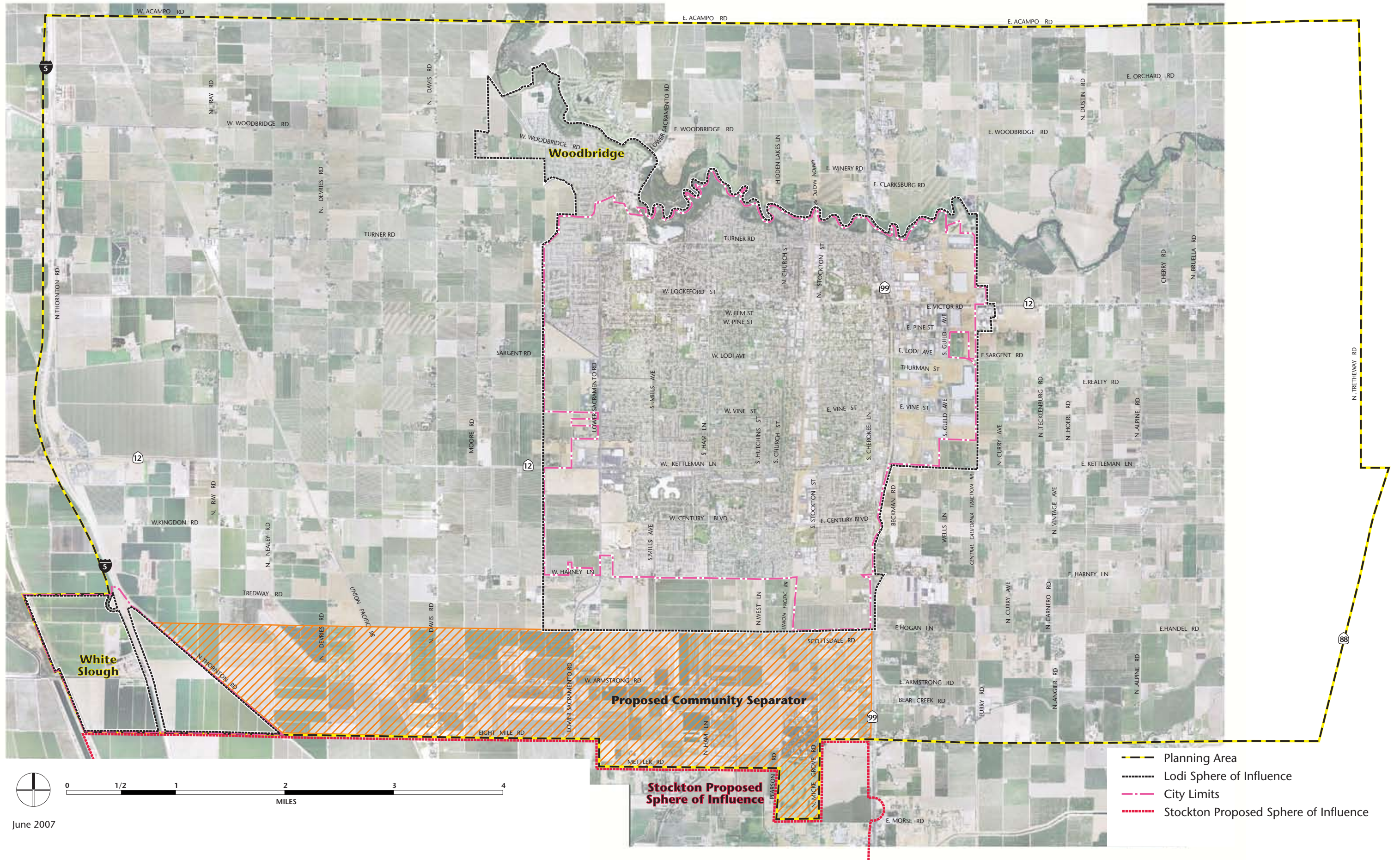
ENVIRONMENTAL CONDITIONS

Lodi and its residents have long had an interest in protecting farmland and open space. Agricultural land covers the largest portion of the Planning Area and plays an important role in the city's economic, cultural, and environmental identity. Agricultural products are not only a major local commodity, but they have also contributed to tourism, particularly in the wine industry, and the sustenance of the food processing industry, such as the General Mills factory.

The loss of open space also has hydrological implications, causing changes to the existing watershed and potentially to the groundwater recharge process. As long as levees along the Mokelumne River are not over-topped and maintain their structural integrity, flooding in the Planning Area is considered to be unlikely. Open spaces and agricultural land also contribute to the aesthetic value of the area and create a variety of foraging habitat for several important special status wildlife species, such as Swaison's Hawk.

Stakeholders in the General Plan Update raised agricultural protection as a key component of the planning process, specifically recommending a community separator along the city's southern border. This priority has been a driver in limiting the southern expansion of the city to accommodate future growth and will help to formulate appropriate conservation and development policies in the General Plan.





June 2007

- Planning Area
- Lodi Sphere of Influence
- City Limits
- Stockton Proposed Sphere of Influence

EXISTING LAND USE PATTERN

Examining the city’s existing land use pattern is a valuable starting point for assessing opportunities for the type, location, and amount of future development. A detailed analysis of existing conditions is documented in the four working papers; a summary of the findings is described here. As shown in Figure 2-2 on the previous page, Lodi is a compact city. With an area of 12 square miles (excluding White Slough), Lodi is the densest city in San Joaquin County. Chart 2-1 describes the breakdown of land uses in the city. The distribution of current land uses is shown in Figure 2-3. Nearly half of the city is composed of residential uses, primarily low-density single-family detached housing units. Industrial, public/quasi-public, agriculture/wineries, and commercial/retail are the next most prevalent land uses. In 2007, there were approximately 420 acres of vacant land within the city limits, representing nearly 10 percent of the total share.

This range of land uses can be seen through the city’s neighborhoods and districts; these assets serve as a basis on which the city can make improvements:

- Lodi has a diverse array of neighborhoods in terms of demographic and physical characteristics. Historic residences are focused Downtown with master planned subdivisions radiating out from the core.
- Revitalization efforts over the past decade have led to a vibrant Downtown—with walkable streets, historic structures, and thriving businesses. Community members have expressed interest in leveraging regional interest in the wine industry to create attractions, such as wine-tasting in Downtown.
- Industrial uses account for much of the land area in the city as well as the employment base. These uses are clustered along rail and truck routes, between SR-99 and the eastern city limits. Although many of the industrial uses represent thriving businesses and job centers, there are many underutilized sites that provide opportunities for more intensive development including additional industrial uses.
- The city has attracted several large retailers in recent years, but is lacking the variety of retail that residents expect from a city of its size. The majority of commercial uses in Lodi are concentrated along Kettleman and

Cherokee lanes, as well as Downtown, Lodi Avenue, and Ham Lane.

- Business parks and offices, including medical centers, currently occupy only a small portion of Lodi’s land area. This speaks to the city’s job base in manufacturing as opposed to service and professional sectors (although Lodi Memorial Hospital is one of the largest employers in the city). Offices are concentrated in Downtown, the industrial zone on the east side of the city, and along Kettleman and Ham lanes.

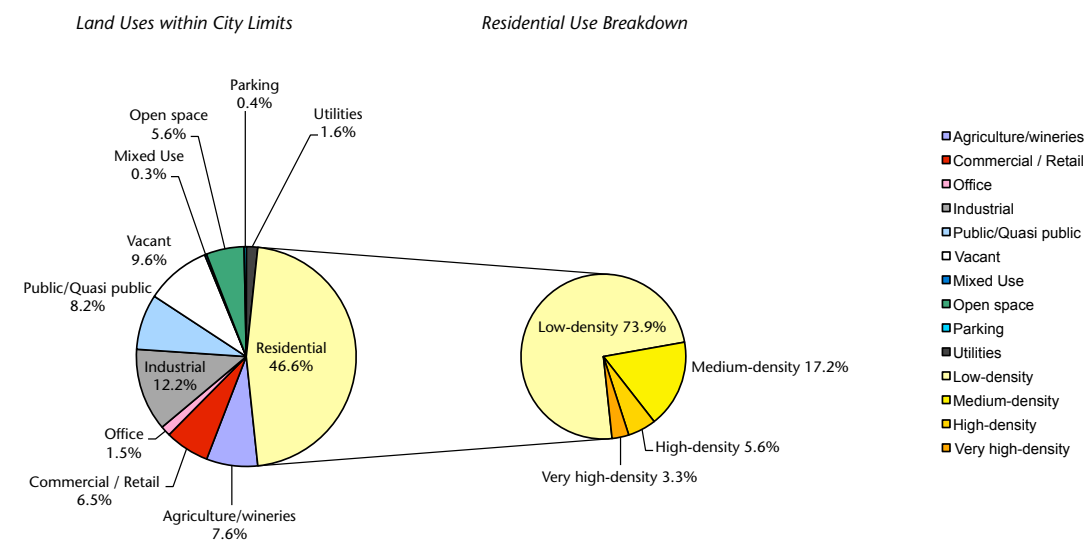
Lodi is fairly compactly built, and many of the neighborhoods are relatively new. Opportunities for infill, reuse, and intensification exist along some commercial corridors including Kettleman and Cherokee lanes, Lodi Avenue, Downtown, and the city’s industrial lands. While many of these underutilized sites occupy visible locations along arterials, the overall acreage of these sites is relatively low, ranging from 80 acres to 200 acres, depending on how aggressive reuse is pursued.

For a more comprehensive report on existing land use conditions in Lodi, please refer to *Working Paper #1: Land Use, Transportation, Environment, and Infrastructure*.



As the city has grown, it has accommodated different types and scales of development. Integrating new development into the existing fabric of the city will be a challenge addressed in the General Plan.

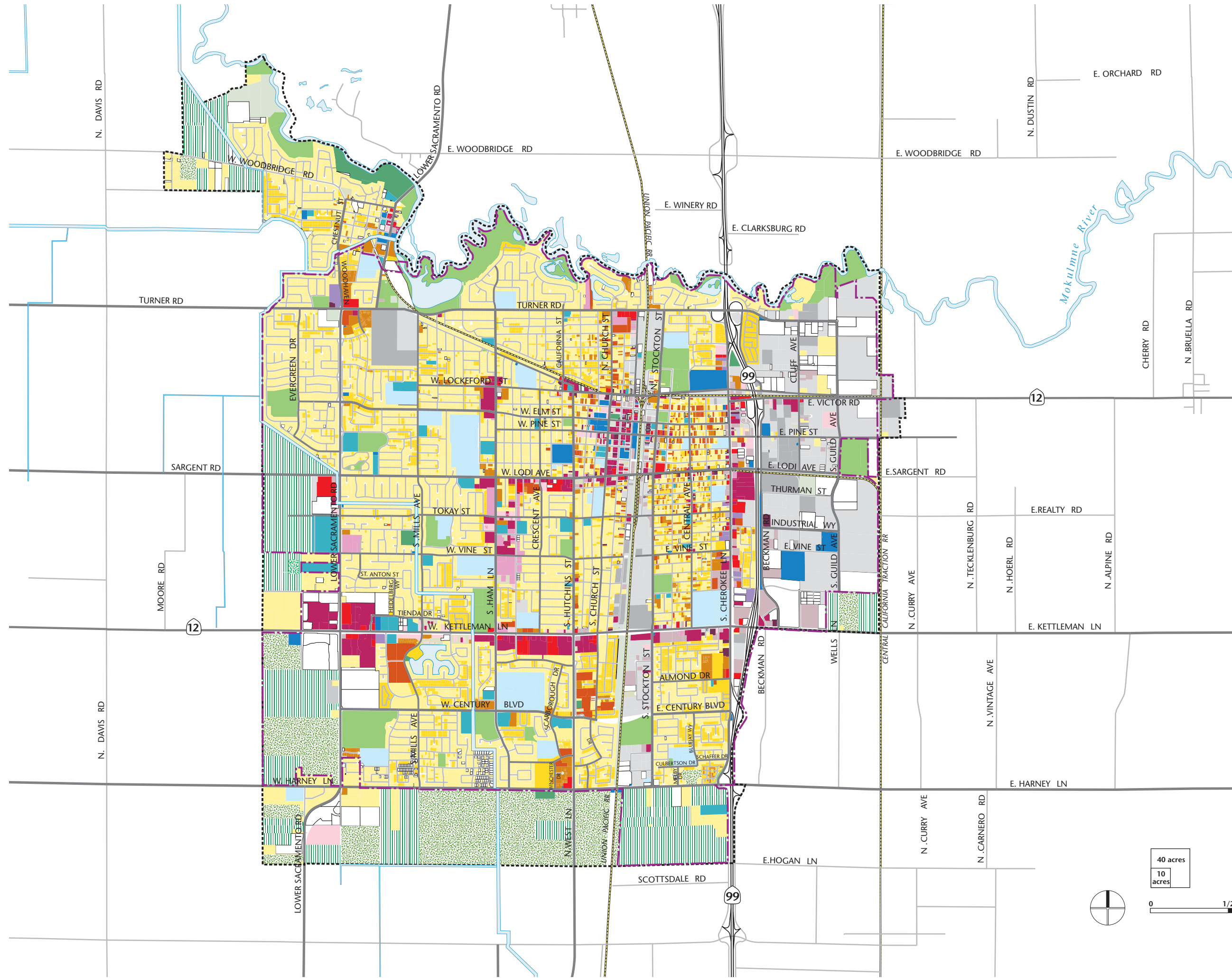
CHART 2-1: Existing Land Use



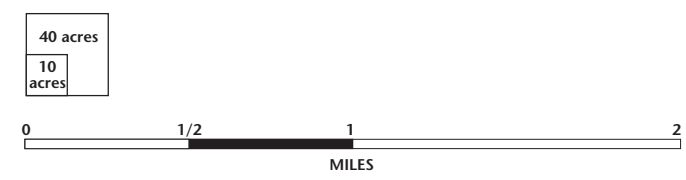
Source: Dyett & Bhatia, 2007. Excludes White Slough.

EXISTING LAND USE (June 2007)

Figure 2-3



- Low Density Residential
 - Medium Density Residential
 - High Density Residential
 - Very High Density Residential
 - Neighborhood Commercial
 - General Commercial
 - Commercial-Light Industrial
 - Office
 - Medical Office
 - Hotels, Motels
 - Mixed Use
 - Public/Civic/Institutional
 - Quasi Public
 - Schools
 - Light Industrial
 - Heavy Industrial
 - Open Space
 - Commercial Recreation
 - Parking
 - Utilities
 - Vineyards
 - Agriculture
 - Vacant
- Sphere of Influence
 City Limits



GROWTH PROJECTIONS

Anticipated population, employment and housing unit growth also affected the development of the Sketch Plans. Lodi's population and employment change over the next 20-25 years will be influenced by many factors, including regional growth, economic forces, local policies, and Lodi's attractiveness to future residents and employers. The current population of Lodi is about 63,400. This represents slow steady growth over recent years, compared with the rest of San Joaquin County, which has been growing more quickly.

Table 2-1 reports three different population and employment estimates for future growth. The San Joaquin Council of Governments (SJCOG) projects that the city will add 18,322 residents by 2030, bringing the population to 81,717. This represents a 29 percent increase during the planning period (.8 percent annually). However, if Lodi grows at the same rate relative to the county as a whole (between 2000 and 2007), its population in 2030 would be about 90,000. This projection is consistent with Lodi's recent population growth over the past seven years. Projecting the maximum rate permitted under the growth management policy (two percent per year), the population would reach nearly 100,000 by 2030. Thus, under various growth scenarios, Lodi's population in 2030 could range from 82,000 to nearly 100,000; with a likely range between 82,000 and 90,000 depending on a variety of forces.

Currently, Lodi contains about 24,300 jobs. SJCOG expects employment to grow at a higher rate than population growth, projecting a nearly 40 percent increase in employment, resulting in 33,686 jobs in 2030. Using recent employment growth in San Joaquin County as a proxy for job growth in Lodi, results in an even higher estimate: an increase of 20,582 jobs by 2030. Approved and proposed developments, such as the Reynolds Ranch Blue Shield call station and Delta College, will be major contributors to this job growth. Because Lodi currently has a jobs deficit, jobs will have to grow at a much faster rate than population to ensure a jobs/housing balance.

The Sketch Plans presented in this document endeavor to show a range of potential buildout, population and job projection levels, as described in Chapters 3 and 4.

CURRENT DEVELOPMENT ACTIVITY

To synchronize the Sketch Plans with the local real estate market, information about existing development trends were also included in the development of the scenarios. Contrary to Lodi's slow steady growth in recent years, there are some major projects on the horizon, as described in Table 2-2. The scale of these current projects—in particular the Southwest Gateway, Westside, and Reynolds Ranch Blue Shield projects—is unprecedented in the city's history. Together, these three projects will add approximately 3,320 housing units, nearly 700,000 square feet of commercial space, three schools and 65 acres of park, recreation, and drainage basins. These projects, which lie within Lodi's current city limits, will be realized through the conversion of agricultural land to urban use. The Delta College proposal for a center in Lodi would also represent a substantial project, if approved.

For more details on these proposals, please refer to *Working Paper #1: Land Use, Transportation, Environment, and Infrastructure*. These projects are also mapped on the figures in Chapter 3 of this report.



Vacant and underutilized sites in and around Downtown, along the Union Pacific Railroad tracks, and east of SR-99 offer the opportunity to redevelop land within the existing city limits.

TABLE 2-1: Population and Job Growth Scenarios

	POPULATION			JOBS		
	2030	2007-2030 CHANGE	ANNUAL GROWTH RATE	2030	2007-2030 CHANGE	ANNUAL GROWTH RATE
SJCOG Population Projection	81,717	18,322	0.8%	33,686	9,386	1.7%
Growth at same share as last seven years of county growth ¹	90,042	26,647	1.2%	44,882	20,582	2.3%
Maximum Permitted under Growth Management	99,968	36,573	2.0%	49,830	25,530	2.7%

¹ California Department of Finance County population projection in 2030=1,205,198

Source: San Joaquin Council of Governments and California Department of Finance.

TABLE 2-2: Approved and Proposed Development Projects

	RESIDENTIAL (DU)	NON-RESIDENTIAL (ACRES)
Westside	773	35
Southwest Gateway	1,363	42
Reynolds Ranch Blue Shield	1,084	95
Delta College ¹	365	120
Other Projects	556	34
Total	4,141	326

¹ The Delta College center is a proposed project that has not yet been approved.

Source: City of Lodi Planning Department, 2008.

3 Sketch Plans

OVERVIEW OF PLANS

The three Sketch Plans represent different alternatives for achieving conservation goals and accommodating projected population and employment growth. There are three basic distinctions between the three plans: (1) the overall amount of growth and balance between various uses, (2) the geographic strategy for this growth, and (3) the variation in density and intensity of growth. This section describes the basic set of land use classifications, common characteristics of the plans, and the elements unique to each scenario.

DRAFT LAND USE CLASSIFICATIONS

In the Sketch Plans, development is depicted according to a set of draft land use classifications, as shown in Table 3-1. These classifications are generalized at this stage in the process, and will be refined and further broken down in later stages.

- **Residential.** The Sketch Plans incorporate a range of densities for residential development to accommodate different housing types and income levels. The most prevalent residential use is Low-Density Residential, which describes the single-family dwelling type on a small or large lot. There is some overlap in the densities of Medium- and High-Density Residential classifications in order to allow more flexibility in housing types. The Downtown Medium-Density Residential refers only to infill development in the city's Downtown.
- **Non-Residential.** Non-residential land uses are summarized in five classifications: Commercial, Business Park/Office, Industrial, Industrial Reserve, and Public/Quasi-Public. Commercial refers to retail uses, including both neighborhood small-scale commercial and shopping centers. The Business Park/Office classification refers to both office parks and small-scale professional services. The Industrial classification accounts for heavy and light industrial uses and warehousing; the Industrial Reserve category describes land set aside for future industrial development if there is sufficient demand. Lastly, the Public/Quasi-Public classification includes schools and government facilities, such as fire and police stations. An average floor-area ratio (the net floor area of the building compared to the total site area) of .3 to .35 was assumed for non-residential development.
- **Mixed-Use.** The mixed-use classifications describe a mix of residential, office and commercial uses. The Down-

town Mixed-Use classification refers specifically to infill mixed-use development in Lodi's Downtown. The Mixed-Use Center classification describes a neighborhood center-type mix of land uses with active ground-floor uses. The basic Mixed-Use category refers to other horizontally and vertically mixed-use areas, including the major corridors, such as Cherokee Lane.

- **Open Space.** Open space is distinguished by two land use categories. The Parks/Open Space classification describes parks, including sports facilities, neighborhood parks, playgrounds, trails, as well as open spaces and drainage basins. The Separator classification describes the greenbelt along the southern edge of the city, delineating an open space boundary between urban development in Lodi and the border of Stockton, just to the south.

TABLE 3-1: Land Use Classifications for Sketch Plans

	LAND USE	DESCRIPTION
RESIDENTIAL	Rural Residential	Single-family dwelling on large lots of 5+ acres.
	Low-Density Residential	Detached single-family dwellings (2-8 dwelling units/acre).
	Medium-Density Residential	Attached or detached single-family, duplexes, triplexes, fourplexes, and townhouses (8-20 dwelling units/acre).
	Downtown Medium-Density Residential	Attached or detached single-family, duplexes, triplexes, fourplexes, and townhouses (8-20 dwelling units/acre), developed as infill adjacent to Downtown.
	High-Density Residential	Townhouses and stacked multi-family housing (15-35 dwelling units/acre).
NON-RESIDENTIAL	Commercial	Retail uses, including citywide shopping centers with off-street parking and neighborhood shopping with clusters of street-front stores; also includes hotels.
	Business Park/Office	Clusters of office activities that generate high employment yield per acre and smaller-scale professional, medical and other support services.
	Industrial	Mix of manufacturing, production, warehousing, general service, storage and distribution activities.
	Industrial Reserve	Uses from Industrial classification; land held in reserve for potential future expansion.
	Public/Quasi-Public	Government facilities, public and private schools, libraries, and colleges.
MIXED-USE	Mixed-Use	Variety of low-, medium-, and high-density residential, office and general commercial uses.
	Downtown Mixed-Use	Variety of medium- and high-density residential, office and commercial uses, developed as infill Downtown.
	Mixed-Use Center	New mixed-use neighborhood centers; variety of medium- and high-density residential, office and neighborhood commercial uses.
OPEN SPACE	Parks/Open Space	Parks, recreation complexes, trails, and drainage basins.
	Separator	Greenbelt of open space separating Lodi urban development from the City of Stockton's Planning Area.

COMMON CHARACTERISTICS

The three Sketch Plans share several characteristics.

- 1. Compact Urban Form.** All alternatives maintain Lodi's compact urban form, while suggesting growth possibilities in different geographic directions.
- 2. Mokelumne River as the City's Northern Edge.** Lodi's decision-makers have expressed a desire to see the river remain as the city's northern edge. The southern bank of the river (in the city) is occupied by residential uses and streets do not reach the river. Therefore, connectivity across the river to knit the urban fabric would be challenging if growth were to extend northward.
- 3. Employment-Focused Development in the Southeast.** The area east of SR-99 toward the south is shown as a growth area under each alternative. This area has excellent regional access, and is adjacent to existing urbanized areas. While the dominant future uses here will be non-residential, residential use is explored in one of the plans.
- 4. Preservation of Existing Neighborhoods.** Land uses in a majority of the Planning Area remain the same in all of the scenarios. Lodi residents are proud of their existing vibrant communities, and virtually all existing established neighborhood will not see a land use or intensity change.
- 5. Downtown and Corridor Mixed-Use Overlay.** Each of the plans shows a Mixed-Use overlay Downtown and along Cherokee Lane. This delineation describes continued investment in these areas and enhancement through the development of vacant and underutilized parcels.
- 6. Community Separator Along Southern Boundary.** In order to preserve agriculture and maintain a clear distinction between Lodi and Stockton, each scenario shows a community separator along the south edge of Lodi, from I-5 to just east of SR-99, with some variations in the separator's south extent.
- 7. Street Connectivity and Urban Design.** A theme that emerged from community dialogue in the early stages of the planning process is the desire to see greater connections, mixing of uses, and diversity of building types in new neighborhoods. These features are incorporated to varying degrees in the plans. Although not shown on the maps on the following pages, one of the major fea-

tures of the land use plan is improved street connectivity, particularly in terms of access to Downtown, neighborhood, major employment, and attraction centers. Connectivity will be discussed fully in the General Plan.

- 8. Enhanced Bicycle and Pedestrian Connections.** Each of the plans assumes improvements to pedestrian and bicycle pathways. Lodi already has an expansive bicycle network and good pedestrian facilities, including sidewalks, signals, landscaping and street furniture—particularly Downtown.
- 9. Recreation Path along Irrigation Canal Right-of-Way.** The Woodbridge Irrigation District (WID) Canal runs through the city, passing through residential neighborhoods. A public recreation trail is envisioned in each of these scenarios, creating an amenity for walking, jogging and biking.



The three Sketch Plans share several common characteristics—the essential goals and visions discussed during the planning process. These include the preservation of existing neighborhoods and improved connectivity between residential neighborhoods and employment, shopping, and activity centers.

SKETCH PLAN A

Sketch Plan A fills in growth up to the existing Sphere of Influence (SOI) boundary and contains only a few growth areas outside the SOI. Figure 3-1 shows the land use pattern for this alternative. Existing development is shown in faded colors; approved “pipeline” development is depicted with red hatching; and the new development potential, unique to Sketch Plan A, is shown in bold colors.

The bulk of new growth would be contained in the half-mile wide band between Harney and Hogan lanes, along the southern edge of the city. Two modest growth areas outside of the SOI are also proposed. The first is in the southeast (south of Kettleman Lane and east of SR-99), for Business Park/Office use, with commercial nodes around the Kettleman and Harney lane interchanges. The second is to the west, consisting of primarily residential uses. Limited development is proposed through infill on vacant and underutilized sites in Downtown and along Cherokee Lane. The Delta College proposal is not included in this scenario.

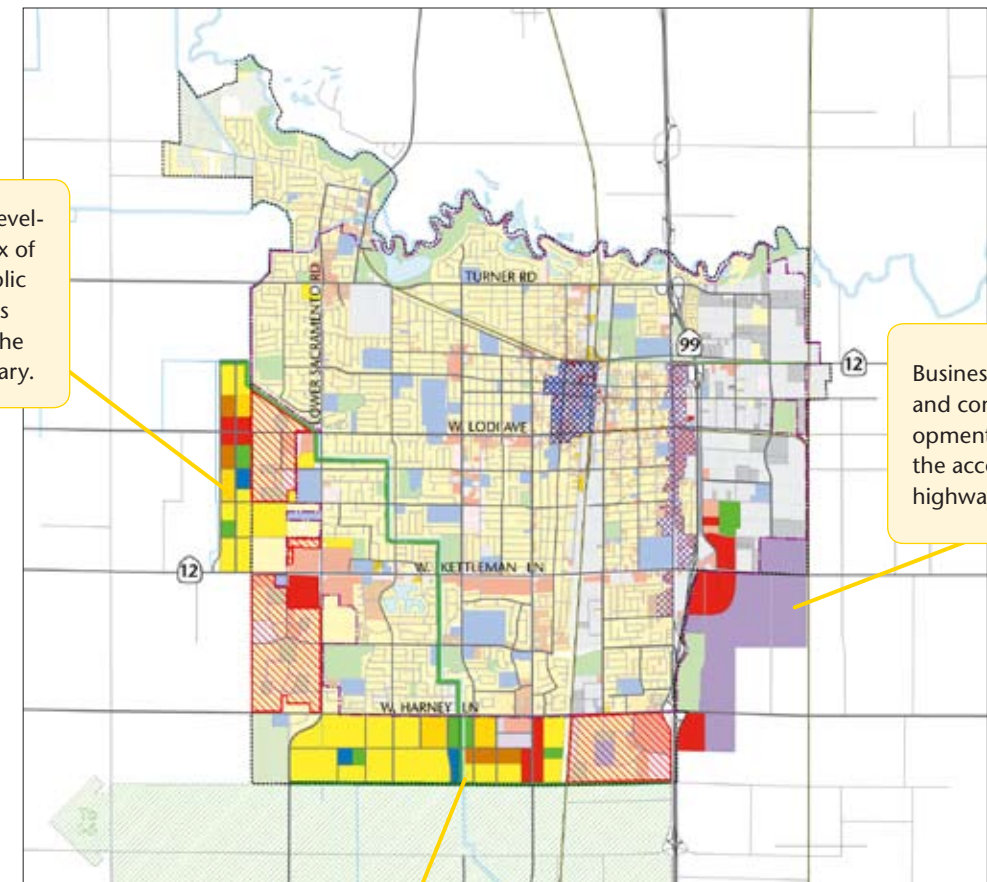
Because much of the growth would be contained within the existing SOI, Sketch Plan A represents the low-growth scenario. Residential and non-residential development potential are reported in Table 3-2. This plan proposes approximately 4,400 new housing units; more than half of these units are proposed as Low-Density Residential, the remaining divided between Medium- and High-Density units. In addition to non-residential development (commercial, office and industrial space), hotel rooms, parks/drainage basins, and public facilities (including schools) are proposed to accommodate the city’s current and future population. The population increase resulting from this land use plan is estimated at 11,500, over and above population levels from existing and approved projects.

Sketch Plan A would result in approximately 17,500 new jobs in Lodi. This job growth represents a 1.25 ratio of jobs to employed residents (includes existing and potential jobs/residents). This suggests that for every four jobs filled by Lodi residents, one job would need to be filled by a worker coming from another jurisdiction.

**TABLE 3-2: Sketch Plan A
New Development Potential**

LAND USE	NEW DEVELOPMENT
Residential (Units)	4,400
Rural Residential	0
Low Density	2,500
Medium Density	1,000
High Density	900
Non-Residential	
General Commercial (SF)	1,283,000
Neighborhood Commercial (SF)	73,000
Business Park/Office (SF)	4,097,000
Industrial (SF)	1,527,000
Industrial Reserve (SF)	0
Hotel (Rooms)	320
Park/Drainage Basin (Acres)	82
Public/Schools (Acres)	32

Source: Dyett & Bhatia, 2008.



Some residential development, with a mix of housing types, public services and retail is proposed west of the current SOI boundary.

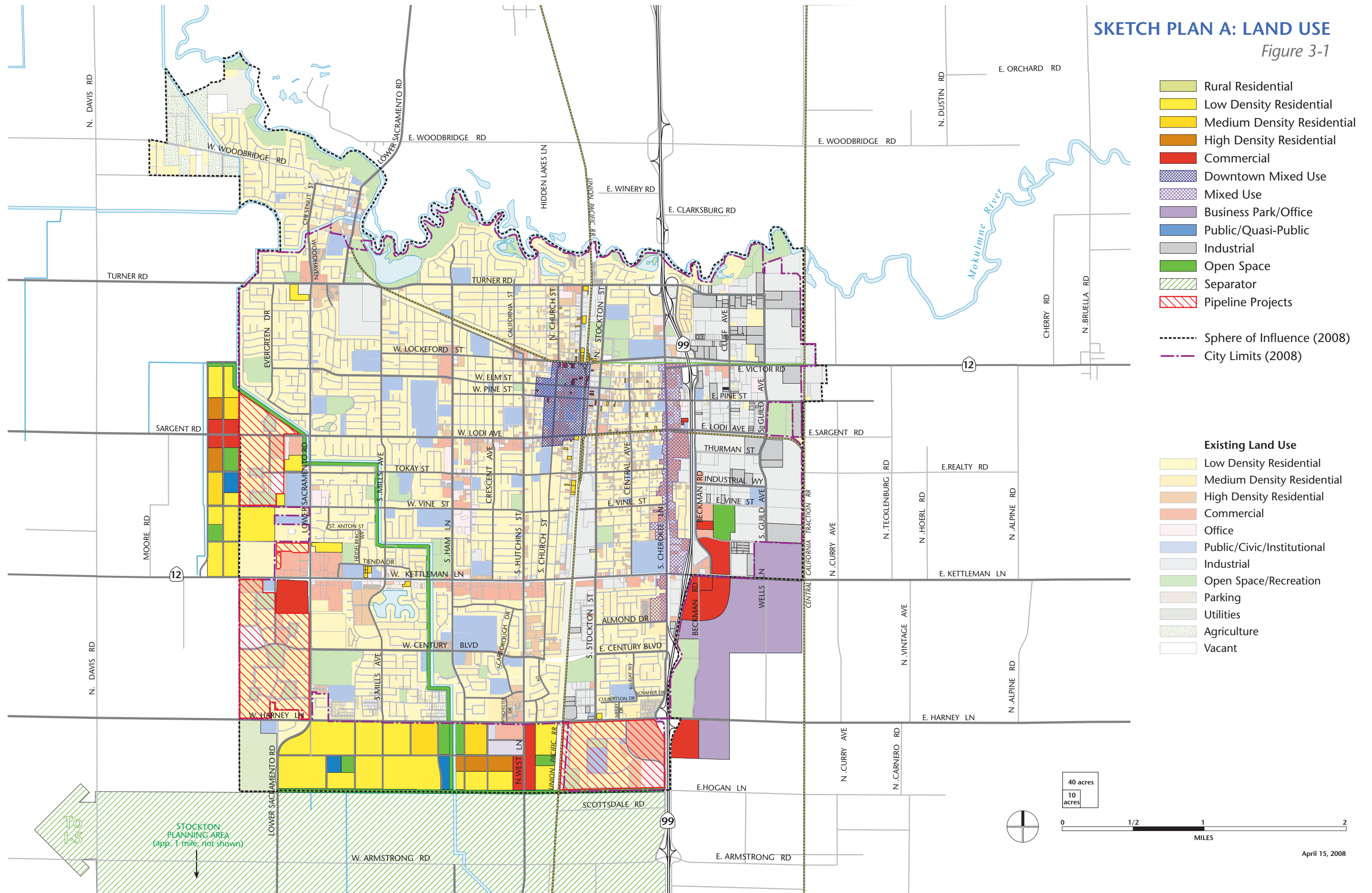
Business park/office and commercial development capitalizes on the accessibility of the highway interchanges.

New development is concentrated along the southern edge of the city, between Harney and Hogan lanes.

Sketch Plan A Illustrative

SKETCH PLAN A: LAND USE

Figure 3-1



- Rural Residential
- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial
- Downtown Mixed Use
- Mixed Use
- Business Park/Office
- Public/Quasi-Public
- Industrial
- Open Space
- Separator
- Pipeline Projects

- Sphere of Influence (2008)
- City Limits (2008)

- Existing Land Use**
- Low Density Residential
 - Medium Density Residential
 - High Density Residential
 - Commercial
 - Office
 - Public/Civic/Institutional
 - Industrial
 - Open Space/Recreation
 - Parking
 - Utilities
 - Agriculture
 - Vacant

SKETCH PLAN B

In Sketch Plan B, new development is concentrated on the west side of the city, beyond the existing SOI. Figure 3-2 shows the land use pattern for this scenario. Existing development is shown in faded colors; approved “pipeline” development is depicted with red hatching; and the new development potential, unique to Sketch Plan B, is shown in bold colors.

An expanded community separator between Lodi and Stockton is achieved by designating a portion of land north of Hogan Lane for Rural Residential use. New neighborhoods on the west side of the city would contain a diverse range of amenities and uses, including neighborhood services, parks and schools. These neighborhoods would be focused around walkable centers containing retail, office, and higher density residential uses. A network of streets connects residential areas to these centers and to the existing street grid where feasible. Commercial and business uses will be located in the southeast, but in a smaller area than in Sketch Plan A. A small commercial node on Highway 12, adjacent to the proposed Delta College, is also shown.

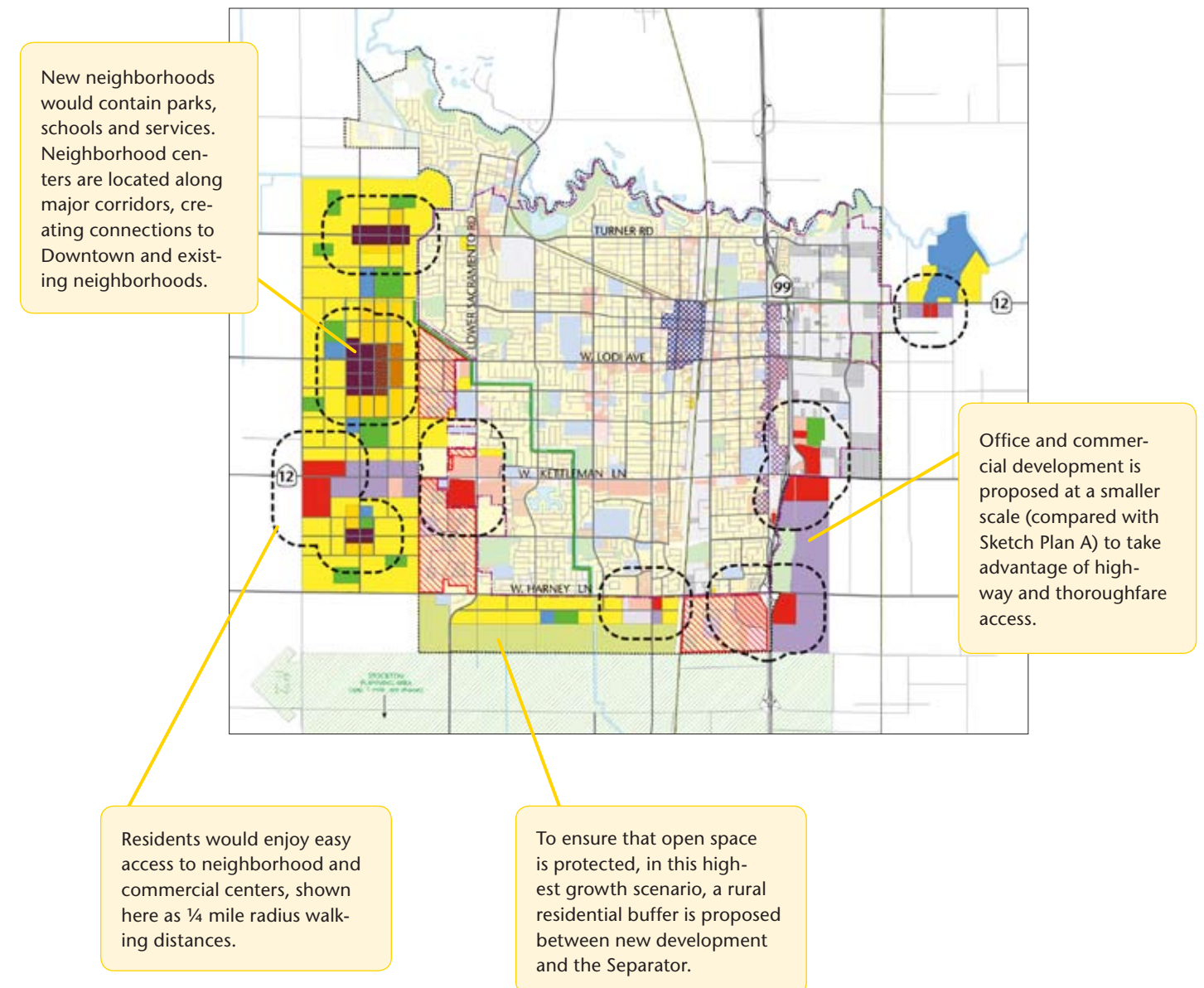
This Sketch Plan would result in the highest buildout of the three scenarios. Residential and non-residential development potential are reported in Table 3-3. This plan proposes over 11,500 new housing units—more than twice as many as are proposed for Sketch Plan A. Non-residential development and public services, including parks, drainage basins and schools are proposed at levels that will accommodate these additional workers and residents.

Since a large share of the land use growth is attributable to residential development, job growth increases more slowly than population growth, in this scenario. Still, approximately 21,800 new jobs are proposed under Sketch Plan B. This increase represents a 1.01 ratio of jobs to employed residents, the most balanced ratio of all of the Sketch Plans (includes existing and potential jobs/residents).

**TABLE 3-3: Sketch Plan B
New Development Potential**

LAND USE	NEW DEVELOPMENT
Residential (Units)	11,575
Rural Residential	75
Low Density	8,200
Medium Density	2,500
High Density	800
Non-Residential	
General Commercial (SF)	1,571,000
Neighborhood Commercial (SF)	310,000
Business Park/Office (SF)	4,897,000
Industrial (SF)	1,952,000
Industrial Reserve (SF)	0
Hotel (Rooms)	424
Park/Drainage Basin (Acres)	231
Public/Schools (Acres)	58

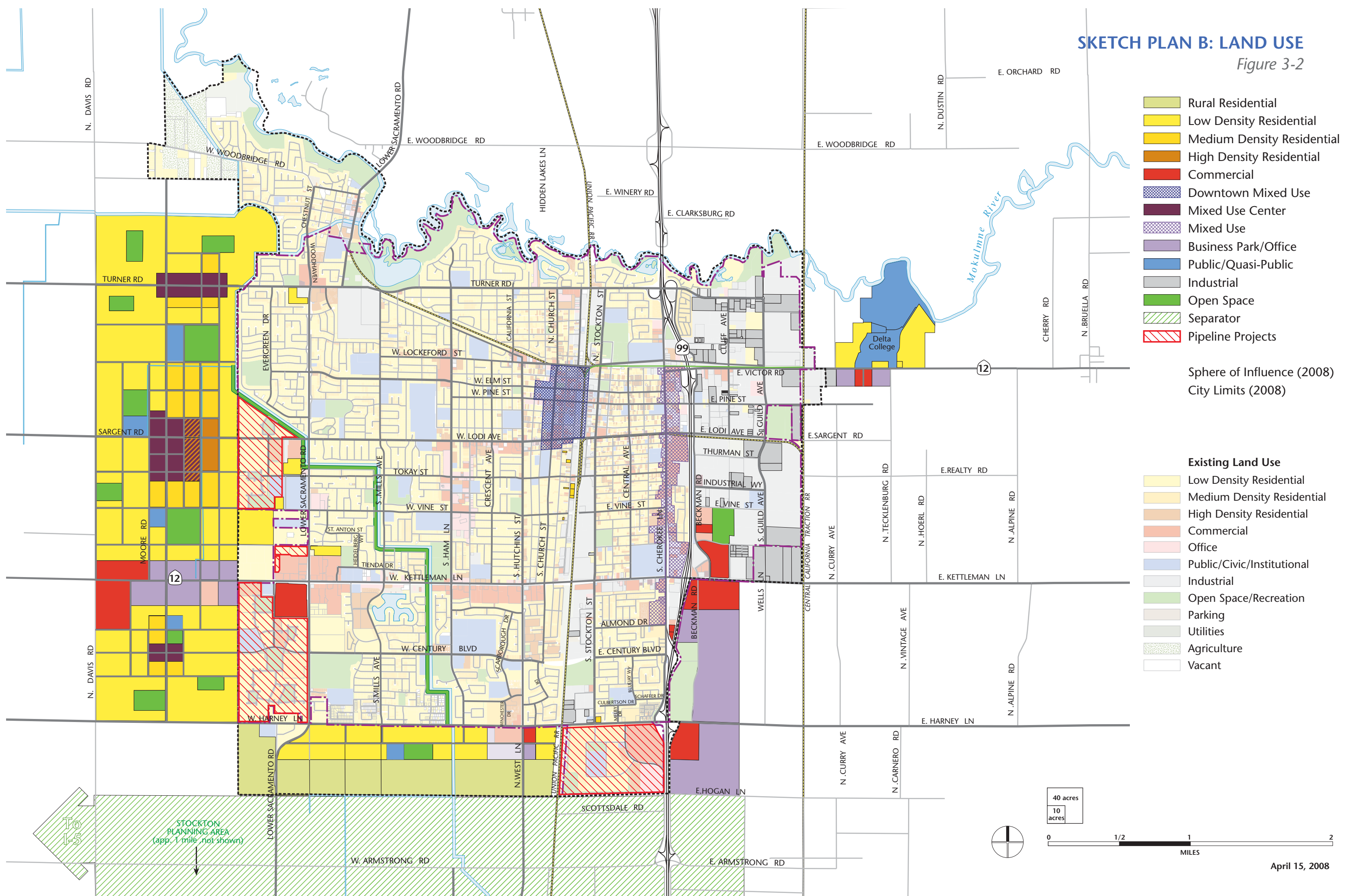
Source: Dyett & Bhatia, 2008.



Sketch Plan B Illustrative

SKETCH PLAN B: LAND USE

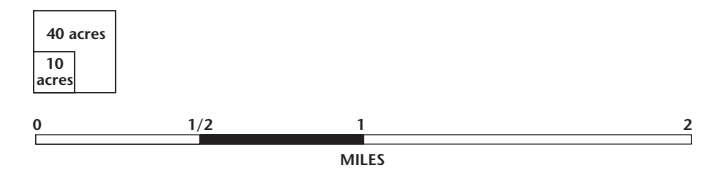
Figure 3-2



- Rural Residential
- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial
- Downtown Mixed Use
- Mixed Use Center
- Mixed Use
- Business Park/Office
- Public/Quasi-Public
- Industrial
- Open Space
- Separator
- Pipeline Projects

Sphere of Influence (2008)
City Limits (2008)

- Existing Land Use**
- Low Density Residential
 - Medium Density Residential
 - High Density Residential
 - Commercial
 - Office
 - Public/Civic/Institutional
 - Industrial
 - Open Space/Recreation
 - Parking
 - Utilities
 - Agriculture
 - Vacant



SKETCH PLAN C

In this scenario, almost all of the development will be contained within a 2.5-mile radius from Downtown, helping to maintain a compact form while ensuring connectedness and Downtown centrality. Figure 3-3 shows the land use pattern for this scenario. Existing development is shown in faded colors; approved “pipeline” development is depicted with red hatching; and the new development potential, unique to Sketch Plan C, is shown in bold colors.

Sketch Plan C shows a new residential neighborhood adjacent to the proposed Delta College. This scenario depicts an Industrial Reserve corridor along the eastern edge of the city to allow for additional industrial development should demand warrant it. Additional development (including residential) in the southeast corner of the city, south of Harney Lane, and along western edge of the city is also proposed. This Sketch Plan also emphasizes infill and revitalization in the Downtown core and along the major corridors (Cherokee and Kettleman lanes, Sacramento and School streets, and Lodi Avenue). The eastern neighborhoods and Main Street will also experience renewal, with additional development in strategic locations.

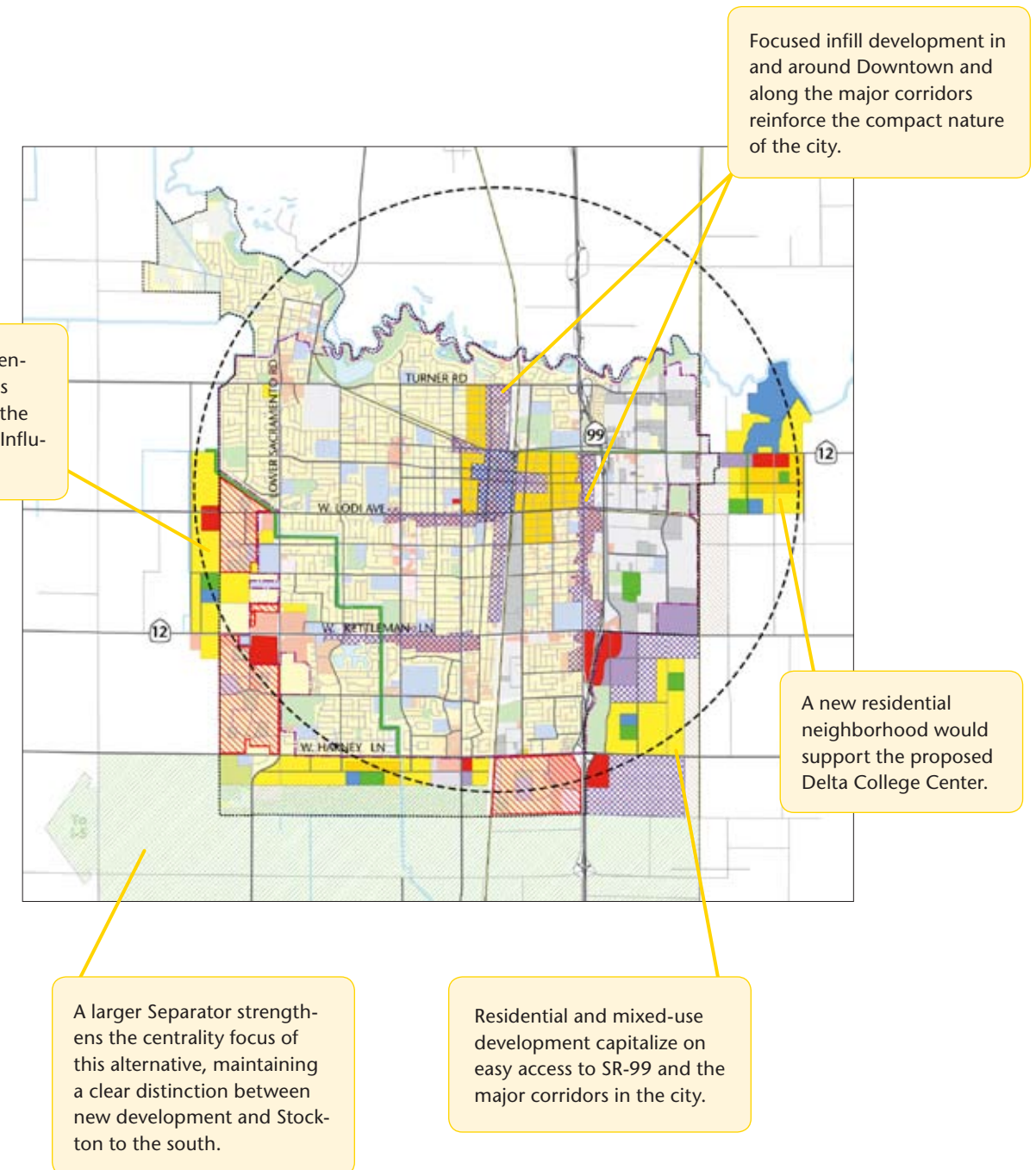
Sketch Plan C demonstrates a mid-range buildout scenario. Residential and non-residential development potential are reported in Table 3-4. Approximately 6,200 new housing units are proposed, over half as Low-Density Residential and the remaining as Medium- and High-Density. Non-residential development and public services, including parks, drainage basins and schools are proposed at levels that will accommodate these additional workers and residents.

Job growth would increase about the same amount under this scenario, with nearly 16,000 potential new jobs. This would result in a 1.17 ratio of jobs to employed residents (includes existing and potential jobs/residents). This suggests that the city would need to import workers from outside of Lodi.

**TABLE 3-4: Sketch Plan C
New Development Potential**

LAND USE	NEW DEVELOPMENT
Residential (Units)	6,200
Rural Residential	0
Low Density	3,800
Medium Density	1,600
High Density	800
Non-Residential	
General Commercial (SF)	1,153,000
Neighborhood Commercial (SF)	194,000
Business Park/Office (SF)	3,294,000
Industrial (SF)	2,317,000
Industrial Reserve (SF)	1,082,000
Hotel (Rooms)	320
Park/Drainage Basin (Acres)	93
Public/Schools (Acres)	37

Source: Dyett & Bhatia, 2008.



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4 Comparison of Plans

POPULATION & LAND USE

The Sketch Plans were designed to model a range of growth scenarios. The following charts and tables compare population, employment and land use growth across the three Sketch Plans. The land use plan in Sketch Plan A results in the lowest growth scenario, while Sketch Plan B results in the highest. Sketch Plan C depicts the middle ground. Note that growth projected from the pipeline development is lower for Sketch Plan A; this is because the Delta College project is not included in this scenario.

TABLE 4-1: Residential Growth Comparison

DWELLING UNITS	SKETCH PLAN A	SKETCH PLAN B	SKETCH PLAN C
Rural Residential	0	75	0
Low-Density	2,500	8,200	3,800
Medium-Density	1,000	2,500	1,600
High-Density	900	800	800
Subtotal Sketch Plan Units	4,400	11,575	6,200
Pipeline Units	3,776	4,141	4,141
Existing Units (2007)	23,253	23,253	23,253
Total Potential Dwelling Units (2030)	31,429	38,969	33,594

Source: Dyett & Bhatia, 2008, City of Lodi Planning Department, California Department of Finance, 2007.

TABLE 4-2: Non-Residential Growth Comparison

	SKETCH PLAN A	SKETCH PLAN B	SKETCH PLAN C
General Commercial (SF)	1,283,000	1,571,000	1,153,000
Neighborhood Commercial (SF)	73,000	310,000	194,000
Business Park/Office (SF)	4,097,000	4,897,000	3,294,000
Industrial (SF)	1,527,000	1,952,000	2,317,000
Industrial Reserve (SF)	0	0	1,082,000
Hotel (Rooms)	320	424	320
Park/Open Space (Acres)	82	231	93
Public/Schools (Acres)	32	58	37

Source: Dyett & Bhatia, 2008.

CHART 4-1: Population Growth Comparison

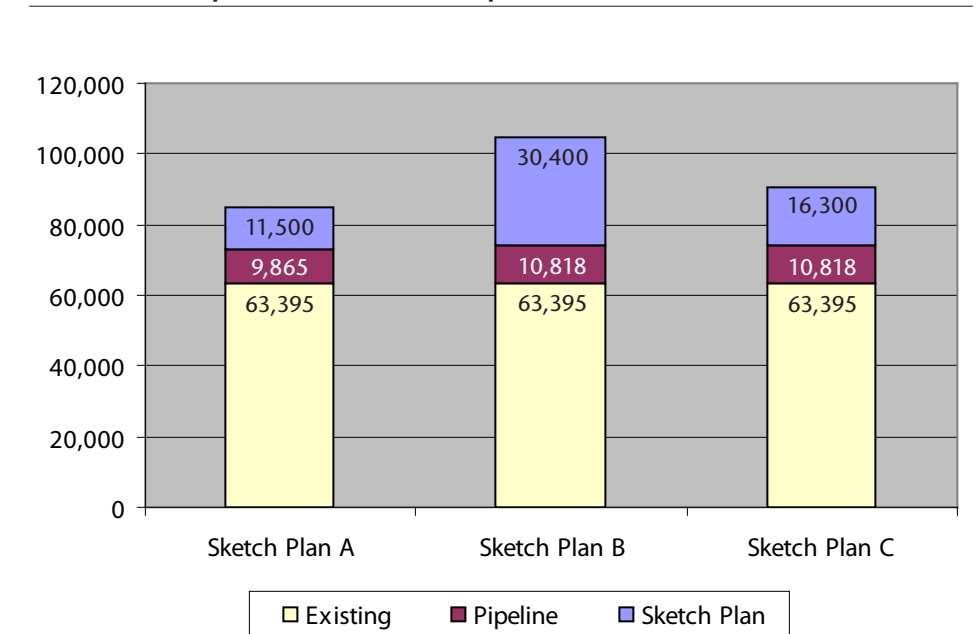
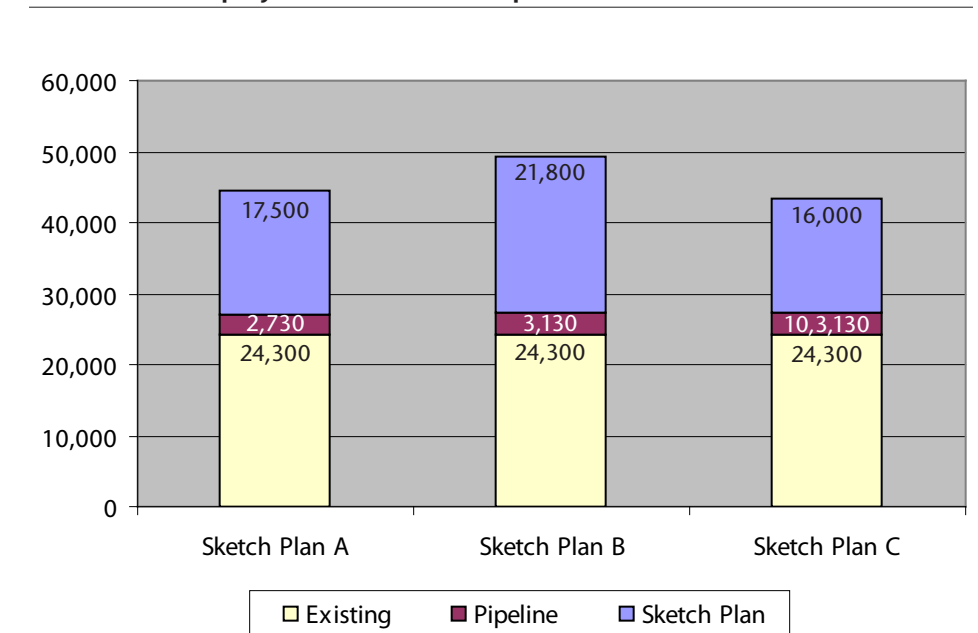


CHART 4-2: Employment Growth Comparison



TRAFFIC IMPACTS

These three land use alternatives were converted into the format necessary for incorporation into the City of Lodi’s recently updated travel demand model. A model run was conducted for each alternative. The purpose of this process was to briefly evaluate and describe the overall traffic effects of each land use alternative, and to provide this information to local decision-makers and the public as they consider the benefits and disadvantages of each alternative. A much more detailed evaluation of transportation impacts will be conducted when a preferred alternative for the General Plan is identified. That evaluation will form the basis for the transportation chapter of the General Plan EIR.

Evaluation Metrics

The evaluation of the three sketch plans focused on the overall effects of each plan on local and regional traffic volumes and on metrics of vehicular travel throughout the City of Lodi. The analysis takes into account planned road improvements to add capacity—specifically on Harney Lane, Kettleman Lane, and Lodi Avenue. Table 4-3 compares the following potential outcomes of each Sketch Plan:

- **Vehicle Trips:** The total number of vehicle trips generated by each alternative on a typical weekday.
- **Vehicle Miles Traveled:** The total distance traveled by vehicles in the Lodi planning area on a typical weekday.
- **Vehicle Hours Traveled:** The total amount of time spent in vehicle travel in the Lodi Planning Area on a typical weekday.

Figures 4-1 through 4-3 present maps of each of the three Sketch Plans with the following information:

- **Daily Roadway Volumes:** The projected amount of traffic on each road in the Lodi Planning Area on a typical weekday. (Each street on the map is color-coded to represent a traffic volume range as described in the legend.)
- **Areas of Potential Congestion:** The maps of daily roadway volumes contain highlights around those streets where traffic congestion may occur if additional capacity improvements are not implemented to the existing city streets. (Improvements to a portion of Turner Road are assumed in Sketch Plan B.) This congestion measure is based on a calculation of volume-to-capacity ratios for each street segment.

Evaluation Results

These results indicate the following general conclusions:

SKETCH PLAN A

With a modest amount of new growth, and the future development areas distributed relatively evenly to the east, south and west of the city, this alternative results in the lowest levels of vehicular traffic of the three sketch plans studied. The development areas south of Harney Lane lead to higher traffic volumes along West Lane. The commercial and business park development to the east of SR-99, along Kettleman Lane, also leads to higher traffic volumes in that area.

Areas of potential traffic congestion may occur along Harney Lane, Kettleman Lane east of SR-99, Lower Sacramento Road between Kettleman Lane and Harney Lane, and Victor Road east of SR-99. Given the limited geographic expansion of the urbanized area, this Sketch Plan would likely require modest expansions of public transit services to the east and west, with more substantial increases in routes needed to serve the area south of Harney Lane.

SKETCH PLAN B

This alternative includes the largest amount of new growth of the three sketch plans studied. In addition, most of the new residential development is located on the west side of town, while new employment opportunities are largely located east of SR-99. As a result, the number of vehicle trips and miles and hours of travel are highest in this alternative. Traffic volumes on east-west streets are also higher since those streets connect new residents with commercial and employment opportunities. As part of the new west-side development areas, it is assumed that a number of new streets and street expansions will be constructed to serve new development. Examples of streets with higher volumes in this alternative include Turner Road, Lodi Avenue/Sargent Road, and Harney Lane.

Areas of potential congestion occur along Lower Sacramento Road, as well as along Harney Lane, and Victor Road, east of SR-99. The higher traffic volumes on these streets may also affect the efficiency of public transit services routed along those streets. Substantial expansions of transit service would be required on the west side of town.

SKETCH PLAN C

This alternative represents a middle ground, with less growth than Sketch Plan B but more than Sketch Plan A. Growth is focused Downtown, along existing commercial corridors, and at the proposed Delta College center. Results show slightly more vehicle trips, and miles and hours of travel than in Sketch Plan A. Higher traffic volumes are projected around Delta College, as well as around the mixed-use area east of SR-99 between Kettleman Lane and Harney Lane.

The areas of potential traffic congestion are similar to Sketch Plan A, with the addition of more traffic around the Delta College center and its neighboring development area south of Victor Road. This Sketch Plan reflects a more compact development area than the other two. This means that origins and destinations would be somewhat closer together and could be easier to serve by public transit, walking or bicycling.

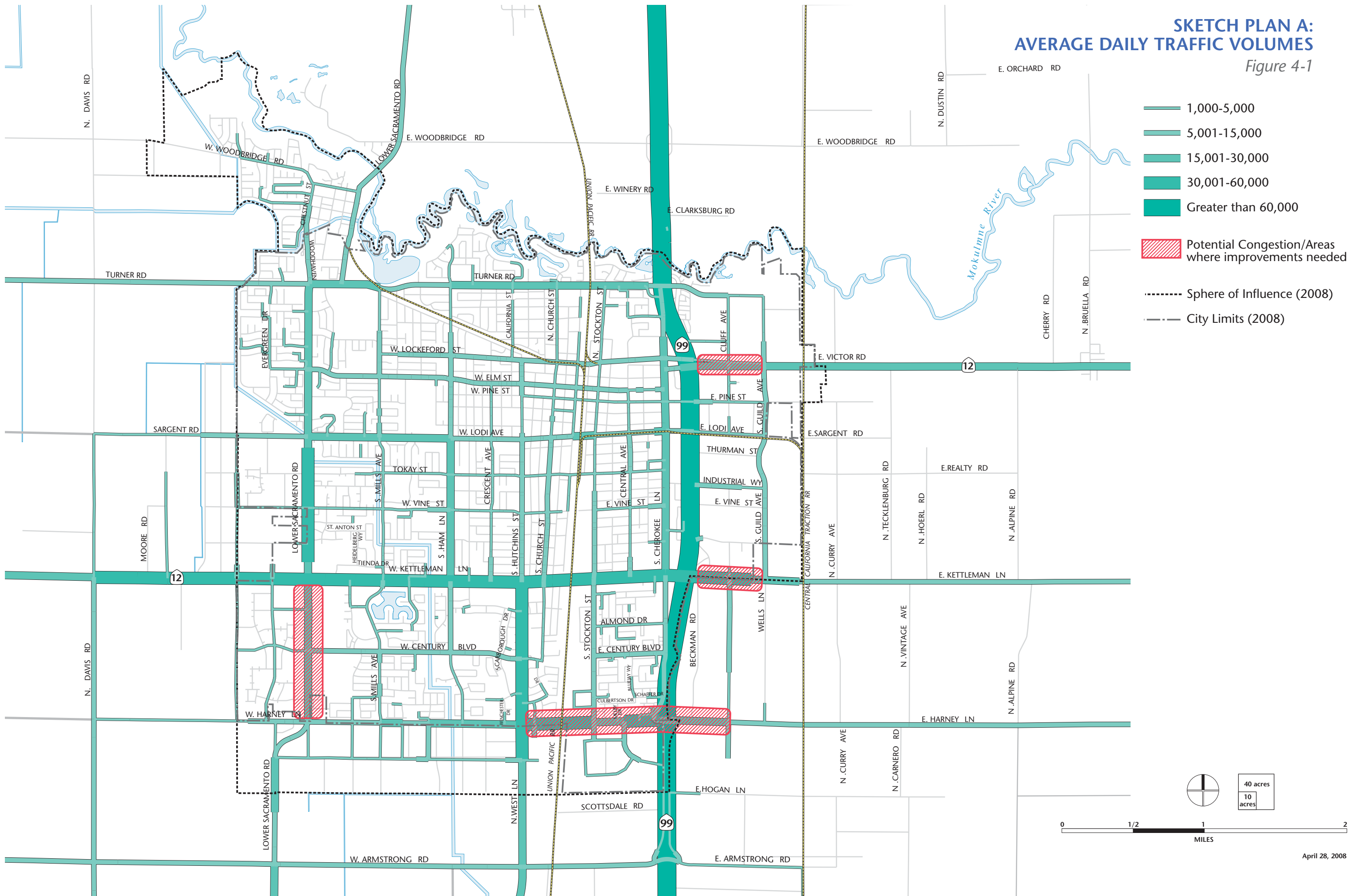
TABLE 4-3: Comparison of Traffic Metrics on a Typical Weekday

	SKETCH PLAN A	SKETCH PLAN B	SKETCH PLAN C
Total Vehicle Trips	654,500	721,600	669,600
Total Vehicle Miles Traveled	3,086,400	3,376,000	3,120,400
Total Vehicle Hours Traveled	82,400	95,000	83,300

Source: Fehr & Peers, 2008.

SKETCH PLAN A: AVERAGE DAILY TRAFFIC VOLUMES

Figure 4-1



FISCAL IMPACTS

Purpose & Overview

This section compares the fiscal impacts of the future development proposed in the three Sketch Plans. Fiscal analysis is an examination of the revenues, costs, and fiscal balance associated with public agency activities. It can be useful for anticipating whether development permitted by a plan or proposed in a new project will pay its own way, generate surplus revenues that can be used by the city to improve services, or generate deficits that will require the city to reduce services or find offsetting sources of funds. This section presents an abbreviated version of the complete fiscal analysis. Please see *Fiscal Impacts of Three Sketch Plans* for further details.

This fiscal analysis has the following key characteristics:

- Focus on one public agency; in this case, the City of Lodi.
- Focus on operating costs and revenues; exclusion of capital costs.
- Focus on the General Fund.
- Focus on direct costs and revenues.
- Focus on the impacts of land use change.

The analysis addresses two key questions:

- What are the impacts of the levels of new development proposed in the three sketch plans on the City's operating budget?
- What are the implications of the expected future budget conditions for City decision-makers?

Existing Conditions

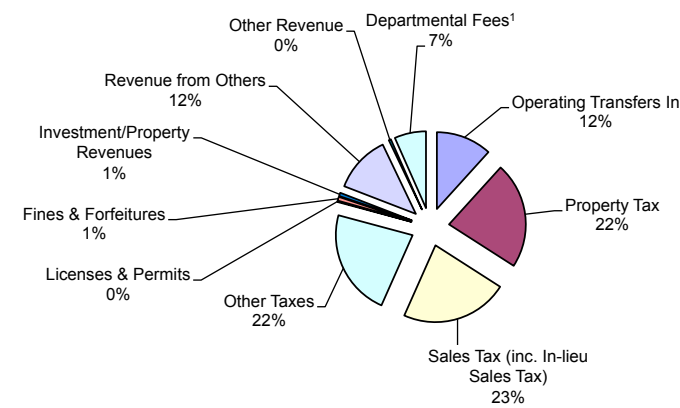
The city's General Fund is its primary "collection bucket" for ongoing and recurring revenues that are not earmarked by law for specific purposes. It is the primary source of funds to cover ongoing and recurring costs of operations and maintenance.

REVENUES

In the year beginning July 1, 2007 and ending June 30, 2008, the General Fund had budgeted revenues of about \$44.9 million (including transfers in from other funds). The distribution of expected revenues, by source, is summarized in Table 4-4. Mid-year adjustments to the budget reduced the level of expected revenues to \$42.5 million. The adjustments are also shown in Table 4-4 and illustrated in Chart 4-3.

Together, sales tax and property tax contribute nearly half of the General Fund revenue in Lodi (23 percent and 22 percent, respectively). Other taxes, including the Public Safety Tax, Transient Occupancy Tax, Real Property Transfer Tax, Business License Tax, and most franchise fees, combine to make up nearly 23 percent of the City's total revenue.

CHART 4-3: General Fund Revenue Sources, 2007-2008



¹ Includes fees for Public Safety, Parks & Recreation, Public Works, Community Center, and Administration.

Note: Does not exclude revenues offset by costs.

Source: City of Lodi, 2007-08 Budget.

TABLE 4-4: Budgeted General Fund Revenues, 2007-08

SOURCE	ADOPTED BUDGET	ASSUMED IN MODEL
General Fund Revenues		
Property Tax	\$10,097,136	\$10,097,136
Sales Tax	7,575,000	7,575,000
In-lieu Sales Tax	2,634,000	2,634,000
Other Taxes ¹	11,329,271	10,173,890 ²
Licenses & Permits	76,200	76,200
Fines & Forfeitures	365,000	365,000
Investment/Property Earnings	323,080	318,940 ³
Revenue from Others	5,641,095	5,433,595 ³
Departmental Fees ⁴	3,000,141	3,000,141
Other Revenue	217,861	232,175 ³
Subtotal General Fund Revenues	\$41,258,784	\$39,906,007
Plus Transfers In	4,046,837	5,295,536 ²
Less offsetting revenues ⁵	–	(2,658,267)
Total Revenues	\$44,873,225	\$42,543,346

¹ Includes Public Safety – Prop. 172, Transient Occupancy Tax, Real Property Transfer Tax, Business License Tax, and most franchise fees.

² In the fiscal model, revenues from In-lieu Sewer Franchise Fees and In-lieu Water Franchise Fees have been included in the Operating Transfers In, per the mid-year adjustment.

³ Per the mid-year adjustment, refinements were made to several revenue items as reported in the adopted FY 2007-08 budget. The treatment of each revenue item is detailed in Appendix D of the full fiscal report.

⁴ Includes revenue items in the following categories: Public Safety Fees, Parks & Recreation Fees, Hutchins Street Square Fees, Public Works Fees, and Administrative Fees.

⁵ "Offsetting revenues" refers to revenue items that are considered to balance certain costs in a given department. In the fiscal model, offsetting revenues were deducted from the relevant department's costs in the base year (FY 2007-08). See Appendix D of the full fiscal report for details.

Source: City of Lodi, FY 2007-08 Budget. Model modifications based on interviews with City staff.

COSTS

In the 2007-08 fiscal year, Lodi budgeted expenditures of about \$46.8 million (after transfers out to other funds). With adjustments for offsetting revenues from the General Fund budget and allocations to capital facilities maintenance, expected costs are reduced to \$44.0 million. The distribution of costs, by general use category, is summarized in Table 4-5 and illustrated in Chart 4-4.

NET BALANCE

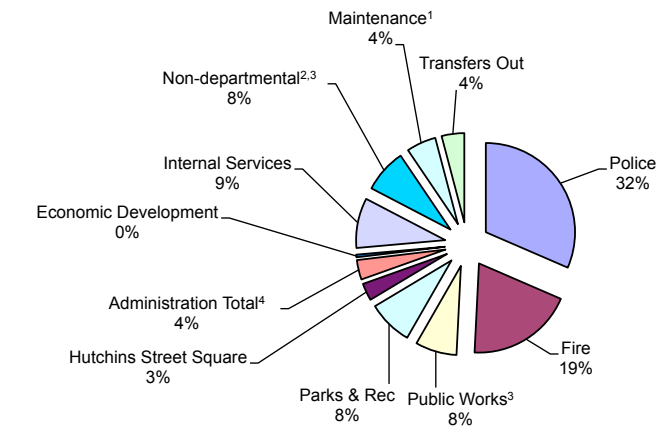
Based on Tables 4-4 and 4-5, the fiscal model anticipates revenues of about \$42.5 million in the 2007-08 fiscal year and expenditures of about \$44.0 million. The resulting fiscal balance would be a deficit of about \$1.4 million. To adjust for the negative net balance, the City must draw the difference from the reserve fund.

TABLE 4-5: Budgeted General Fund Costs, 2007-08

USE	ADOPTED BUDGET	ASSUMED IN MODEL
General Fund		
Police	\$14,692,716	\$14,692,716
Fire	9,000,340	9,000,340
Public Works (General Fund costs only)	3,500,297	3,500,297
Parks & Recreation	3,791,698	3,791,698
Hutchins Street Square	1,462,957	1,462,957
Administration	1,610,736	1,658,736 ¹
Economic Development	223,220	223,220
Internal Services	4,225,247	4,225,247
Non-departmental (General Fund costs only)	6,366,018	3,682,271 ¹
Maintanance	-	2,500,000 ²
Subtotal General Fund Costs	\$44,873,229 ³	\$44,737,482
Plus Transfer Out to Community Dev't Special Revenue Fund	334,139	334,139
Plus Transfer Out to Library Fund	1,578,580	1,578,580
Less offsetting revenues	-	(2,658,267)
Total Costs Assumed in Fiscal Model	\$46,785,948	\$43,991,934

¹ Per the mid-year adjustment, refinements were made to several expenditure items as reported in the adopted FY 2007-08 budget.
² This cost item has been added to General Fund obligations by City staff to account for the ongoing cost of facilities maintenance. It is not explicitly included in the 2007-08 Adopted Budget.
³ Detail and totals may not agree due to independent rounding.
 Source: City of Lodi, FY 2007-08 Budget. Model modifications based on interviews with City staff.

CHART 4-4: General Fund Costs, 2007-08



¹ This cost item has been added to the General Fund obligations by City staff to account for the ongoing cost of facilities maintenance. This cost is not explicitly included in the 2007-08 Adopted Budget.
² Several refinements were made to these cost items. See Appendix D in full report for details.
³ Includes costs incurred to the General Fund only.
⁴ Includes transfers to the Community Development Special Revenue Fund and the Library Fund.

Note: Does not exclude costs offset by revenues.
 Source: City of Lodi, 2007-08 Budget.

Impacts of Development on the General Fund

The development levels permitted by the three sketch plans yield different fiscal results over the long term. Table 4-6 reports projected revenues and costs, the net balance between revenues and costs, and the balance remaining in the city’s reserve fund, for two “indicator” years: 2019-20, about halfway through the period covered by the General Plan, and 2029-30, the “horizon” year for the plan.

SKETCH PLAN A

Following an initial period during which costs would exceed revenues, Sketch Plan A would yield positive fiscal results over the long term. Under this plan, Lodi would have a negative annual net balance until 2013-14, at which point revenues would begin to outpace costs at a gradually increasing rate. In about 2013-14, the annual net balance would become positive; after that year, it would increase gradually, thanks to the continuing small annual surplus of revenues over costs.

The balance in the reserve fund provides an indication about the magnitude of cumulative net revenues or costs: it provides an indication about the city’s longer-term fiscal health. With Sketch Plan A, the reserve balance would grow over time following an initial period of decline, from under \$5 million in 2007-08 to nearly \$37 million in 2029-30.

Costs would slightly outpace revenues during the first few years of the plan, until around 2013-14, at which point revenues begin to exceed costs at a gradually increasing rate. The budget shortfall that would persist for the first few years of the plan would yield to a surplus beginning at that time. The positive fiscal results that begin six years into the plan are a result of increased revenues generated by development on the south and west sides of the city, as well as all future (non-pipeline) development permitted by the sketch plan.

SKETCH PLAN B

The revenues, costs, and net balance associated with Sketch Plan B follow a similar trajectory as those of Sketch Plan A, yet increase at a markedly higher rate. Sketch Plan B would yield a net balance of about \$5.5 million by 2019-20, about mid-way through the planning period. By 2029-30, Sketch Plan B would yield an annual net balance of approximately \$20.0 million and a cumulative reserve fund of \$118 million. The higher annual net balance and cumulative reserve fund in Sketch Plan B, compared to Sketch Plan A, are a result of increased revenues generated from about

7,600 additional housing units and 1.8 million square feet of non-residential building space.

As in Sketch Plan A, the development levels permitted in Sketch Plan B would yield a negative net balance, and a resulting theoretical negative reserve balance, during the early years of the plan. The additional development permitted by Sketch Plan B would, however, generate positive fiscal results a year earlier than the level of development permitted by Sketch Plan A. The development levels permitted by Sketch Plan B are expected to result in \$77.2 million in total General Fund revenues (compared to \$61.6 million in Sketch Plan A), and \$65.3 million in total costs (compared to \$57.1 million in Sketch Plan A).

While increased development would generate additional service costs to the City, the anticipated revenues associated with new development – notably in the form of property tax, franchise fees, and the Community Facilities District fees – would outpace expected costs. The expected growth of property tax revenues under each sketch plan is particularly revealing: the development levels proposed in Sketch Plan B anticipate \$17.8 million in property tax revenue by 2029-30, compared to \$12.4 million in Sketch Plan A.

SKETCH PLAN C

Just as Sketch Plan C offers a “mid-range” development option when compared to Sketch Plans A and B, the fiscal results of this plan alternative fall between those of Sketch Plans A and B. Sketch Plan C yields positive fiscal results following an initial period of budget shortfall: by 2012-13, revenues would outpace costs and, in time, escalating revenues would lead to an increasing annual net balance and growing reserves. By 2029-30, the reserve balance would reach nearly \$60 million.

Sketch Plan C proposes about 2,200 more housing units and 500,000 additional square feet of non-residential building space when compared with Sketch Plan A. This additional development would create more advantageous fiscal results for the city, thanks to higher revenues from property tax and the revenues from the Community Facilities District fees. Over the long term, Sketch Plan C is less fiscally advantageous than Sketch Plan B, which proposes an additional 5,400 housing units and 1.3 million square feet of building space.

COMPARISON

Table 4-6 and Charts 4-5 and 4-6 summarize the fiscal impacts of the three sketch plans over time. The fiscal results of each Sketch Plan are also compared to a case in which no new development occurs over the life of the plan (“Existing Development Only”).

These findings highlight the effects of future development in Lodi. All three sketch plans result in an initial negative annual net balance, followed by a sharp increase during the pipeline years (roughly, 2010-11 through 2015-16). Following a brief dip in the projected net balance around year 2015-16, as the level of development activity is reduced, revenues begin to pick up again around 2016-17 and continue to grow through 2029-30. In each Sketch Plan, the projected reserves would increase over time, following an initial period of decline.

Sketch Plan B would yield the most advantageous fiscal results for Lodi by 2029-30. The cumulative reserves would increase most rapidly with the development levels projected in this alternative, due in large part to increased revenues generated from property taxes, franchise fees, and the Community Facilities District fees. For example, Sketch Plan B would generate approximately \$8.8 million in 2029-30 in Community Facilities District fees, compared to \$5.5 million in Sketch Plan C and \$4.2 million in Sketch Plan A. Sketch Plan C, the mid-range development scenario, would be the next best growth option for Lodi’s fiscal condition.

In all three sketch plans, the fiscal results are markedly better than the “Existing Development Only” case over the long term. A sustained negative annual net balance and a declining reserve balance are expected should no new development occur in Lodi over the life of the plan.

TABLE 4-6: Comparing the Fiscal Impacts of Three Sketch Plans (\$000s)

	EXISTING DEVELOPMENT ONLY	BUILDOUT OF SKETCH PLAN ALTERNATIVES		
		SKETCH PLAN A	SKETCH PLAN B	SKETCH PLAN C
Fiscal Year 2019-20				
Revenues	\$42,169	\$56,600	\$64,664	\$59,053
Costs	48,388	\$54,837	\$59,144	\$56,222
Net Balance	(\$6,220)	\$1,763	\$5,520	\$2,832
Reserve Fund Balance ¹	(\$53,387)	\$4,592	\$26,600	\$11,348
Fiscal Year 2029-30				
Revenues	\$42,170	\$61,599	\$77,259	\$65,867
Costs	48,361	\$57,127	\$65,295	\$59,487
Net Balance	(\$6,191)	\$4,472	\$11,964	\$6,380
Reserve Fund Balance ¹	(\$116,520)	\$36,689	\$118,317	\$59,109

¹ Includes annual interest earned on reserves.

Source: Mundie & Associates, 2008.

Summary of Findings

The analysis summarized in this report supports the following conclusions:

- The development levels permitted by all three of the proposed sketch plans are, in the long run, fiscally advantageous to the City of Lodi. The City's plans for short- and long-term development will help it achieve and sustain fiscal balance over the term of the plan.
- In all three sketch plans, the City would likely experience a budget shortfall, in which City costs exceed revenues, in the early years of the plan. This shortfall would yield a negative annual net balance, resulting in a theoretical negative reserve fund balance. The new pipeline and future (non-pipeline) development that is expected to begin in 2010-11 would generate additional City revenues and an eventual budget surplus, which would be deposited into the reserve fund.
- The City's fiscal health would benefit from ongoing residential and non-residential development. New development contributes higher property tax revenues to the General Fund that, even though constrained by Proposition 13 (Article XIII A of the California Constitution), nevertheless provide increases in funding that are critical to the ongoing provision of public services. New development also contributes greater sales tax revenues.
- All else being equal, more residential and non-residential development yields better fiscal results in the long run. While the development levels permitted in all three Sketch Plans would yield a positive and increasing annual net balance (the difference between City revenues and costs) and a growing reserve balance beginning around year 2012-13, Sketch Plan B, the "high-growth" scenario, would offer the best fiscal results over the long term.
- Property taxes, franchise fees, and the newly defined Community Facilities District fees are expected to account for most of the "real" (constant dollar) growth in revenues.
 - Property tax revenues would increase by 43 percent over the life of Sketch Plan B, 27 percent in Sketch Plan C, and 19 percent in Sketch Plan A. As noted above, property taxes are regulated by Proposition 13. Nevertheless, reassessments that occur as properties are sold add up, over time; if housing

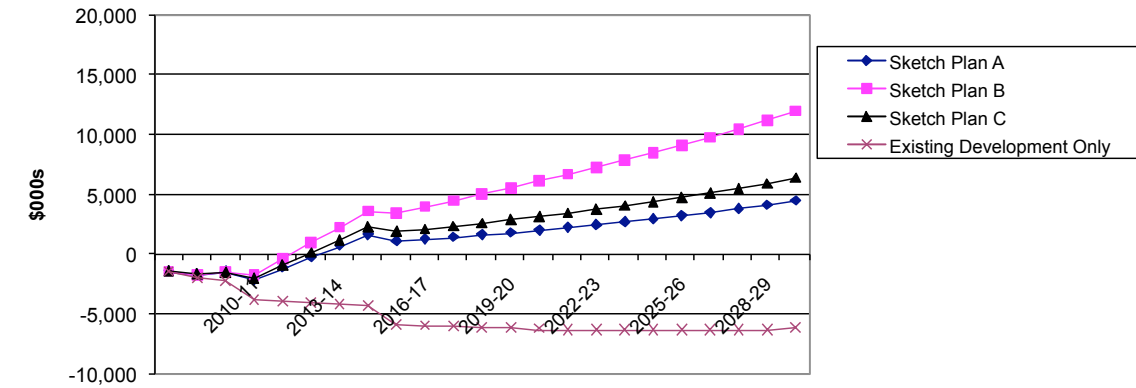
price increases exceed general inflation by only a small amount (as is expected over the long run), residential property tax revenues outpace inflation as well.

- Franchise fees would increase as a result of relatively high inflation in utility prices. (These fees are based on a percent of utility bill payments.)
- Community Facilities District fees, which will be collected on most new residential development, would create a new revenue source. By 2029-30, these revenues would increase the total General Fund revenue by 14 percent in Sketch Plan B, 10 percent in Sketch Plan C, and 8 percent in Sketch Plan A.

The fiscal analysis assumes that current levels of service would be maintained throughout the life of the plan. Any enhancements to current services, or additions of significant new services, would increase City operating costs beyond the amounts projected in this analysis.

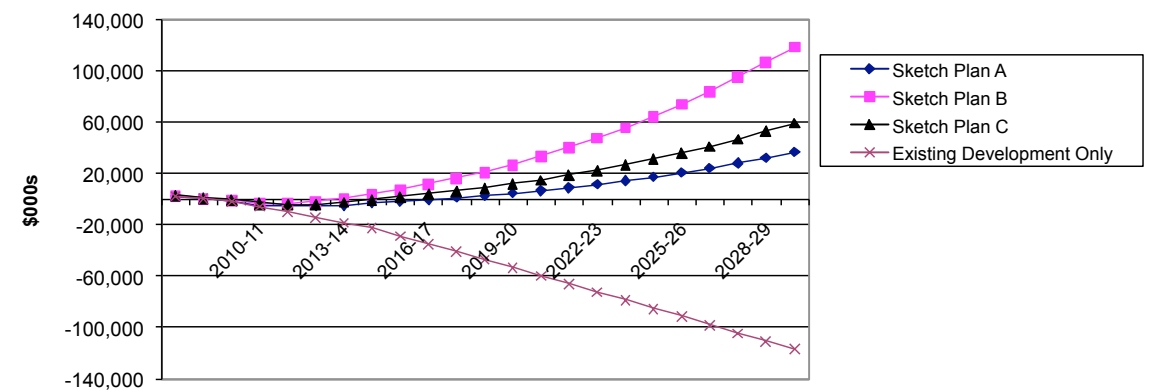
General Fund surpluses that materialize over the life of the plan may be used to improve existing city services, provide new services, invest in new capital facilities (or enhance maintenance of existing facilities), or fund programs directed toward achieving the goals and implementing the policies and programs of the new General Plan. Examples may include improving the maintenance of parks and public landscaping, providing a greater array of recreation programs, cultural programs, and social services, and expanding economic development efforts (including business recruitment and retention, technical assistance to businesses, and job training).

CHART 4-5: Sketch Plans Projected Annual Net Balance



Source: Mundie & Associates, 2008.

CHART 4-6: Sketch Plans Projected General Fund Reserves¹



¹ Reserves include annual interest earned on reserves.

Source: Mundie & Associates, 2008.

INFRASTRUCTURE IMPACTS

This section evaluates the potable water, recycled water, wastewater, and stormwater infrastructure that would be required for each of the Sketch Plans. A summary of the the significant relative differences between the three alternatives is then presented at the end of the section. Each of the Sketch Plan analyses also includes the infrastructure needs for the associated “pipeline” growth (approved and proposed projects). Therefore, this analysis reflects infrastructure impacts over and above the demands from existing development and residents.

Sketch Plan A

POTABLE WATER

Sketch Plan A results in a buildout water demand of about 22,900 ac-ft per year. The city’s existing and future water supplies provide about 21,000 ac-ft per year in normal years and about 18,000 ac-ft per year in dry years. To support this buildout population, in normal years, the city will need to acquire additional water supplies of about 1,900 acre-feet per year. This additional water could be provided by additional surface water supplies and/or by increased use of groundwater.

Sketch Plan A includes growth around the west, south, and east sides of the existing city. It also includes some development of currently vacant lots within the existing city, mostly along or near Sacramento Street. Water would most likely be served to these growth areas from the city’s future surface water treatment plant (SWTP), which will be located in the northwest corner of the city. To convey the treated surface water, a water transmission main would be constructed from the new SWTP through the new growth areas along the west, south, and east sides of the city. This transmission main would be connected to the existing water distribution system at several locations around the city. Additionally, storage tanks would be required along the new main. Because the growth on the eastern side of the city is so far from the new SWTP, it may be more efficient to serve water to this area, with new wells located in the area than with surface water delivered through a large transmission main to this area. The size of the main, the locations and sizes of the storage tanks, and the question of water supply for the growth on the east side of the city should be determined by preparing a water system model and a water master plan based on this land use alternative.

Much of the land west of the city and some of the land south of the city is within the Woodbridge Irrigation District (WID) boundary and receives WID irrigation water. If this land was developed, the irrigation water previously used on that land would not be needed. The city and WID have an agreement that allows the city an option to purchase three acre-feet of water for each acre of WID service area land that is annexed into the city.

RECYCLED WATER

Recycled water is wastewater that is treated at a wastewater treatment plant and then typically used for non-potable purposes. There are several regulations that govern the use of recycled water, with one of the main goals of the regulations being to prevent human consumption of the recycled water. Recycled water can be used for irrigation of parks, landscape areas, and crops that are not to be consumed by humans. Recycled water is distributed through a system of pipes that are separate from the potable water pipelines. For the City of Lodi, the recycled water would most likely be treated at the city’s White Slough Water Pollution Control Facility (WSWPCF) and then pumped/piped back to the city (a distance of about 4.5 miles). This pipeline would likely be located adjacent to the existing sewer outfall from the southwest corner of the city to the WSWPCF.

The recycled water supply system would include the construction of a pump station at the WSWPCF, a pipeline from the WSWPCF to the city and a series of distribution pipelines to serve the parks and landscape areas within the proposed new growth areas of the city or within the existing city limits.

An alternative approach for providing recycled water would be the use of a scalping plant. A scalping plant is a small wastewater treatment plant that is sized to treat a wastewater flow rate equal to the non-potable water demand flow rate. If a scalping plant were used for Lodi, it would be constructed near the city (versus at the WSWPCF), and it would eliminate the need to construct the pump station at the WSWPCF and the pipeline back to the city. The recycled water distribution system within the city and new growth areas would still be needed.

The use of recycled water reduces the demands on potable water, which allows a limited potable water supply to serve a larger population. However, because the construction of a new recycled water pump station, piping from the

WSWPCF to the city, and a recycled water distribution system are very expensive, there has to be sufficient demand for recycled water for its use to be cost effective (versus simply using more potable water). The cost effectiveness of the use of recycled water should be quantitatively evaluated in the future water master plan for the city.

WASTEWATER

Several trunk sewers within the existing city are already flowing at or over capacity. In particular, the Beckman Road, Sacramento Street and Hutchins Street sewers are currently flowing at or above capacity. If these trunk sewers had available capacity, they would convey the flow from the infill development along and near Sacramento Street and the industrial infill development east of SR-99. A sanitary sewer model and master plan should be developed/revised to determine if this infill can be served by the existing sewers or if a new sewer is required.

A new trunk sewer would be required to serve the proposed development south of Kettleman Lane and on the east side of the city. This trunk sewer would flow south and then turn west south of Harney Lane. About half of the Sketch Plan A growth area south of Harney Lane and west of the Union Pacific Railroad is already planned for sewer service through the Harney Lane sewer lift station. The rest of this area would be served through the new sewer south of Harney Lane.

To serve the new development in Sketch Plan A, west of the existing city, a new trunk sewer would be constructed that flows from the north to the south, and connects to the existing outfall at the southwest corner of the city at least 3,000 feet downstream of Lower Sacramento Road (where the slope and resulting capacity of the existing outfall increase).

The existing outfall from the city to the WSWPCF is currently being slip lined with a PVC liner to resolve significant corrosion and damage problems. When this slip lining is completed, the outfall pipe will have an inside diameter of 41.5 inches (down from its original diameter of 48 inches). Its capacity will be reduced to about 19.0 to 23.4 mgd flowing full (for Manning’s $n = 0.011$) and from about 17.3 to 21.3 mgd flowing three-fourths full ($d/D = 0.75$). For Sketch Plan A, the PHWWF is roughly estimated to be 16.4 mgd. This flow rate can be conveyed in the slip lined outfall pipeline.

The WSWPCF is currently being expanded to provide an ADWF capacity of 8.5 mgd. For Sketch Plan A, the ADWF is roughly estimated to be 8.6 mgd. This flow rate can not be treated at the expanded treatment plant. Thus, for Sketch Plan A, improvements at the WSWPCF would be needed at about 95 percent of full buildout of the Plan.

STORMWATER

The ground within the study area generally slopes from the northeast downward to the southwest. However, runoff from most of the areas just south of the Mokelumne River are drained or pumped into the River. Areas farther south are drained to the south and are pumped into the WID canal. The city and WID have a Storm Drainage Discharge Agreement that identifies the ultimate tributary area that could be pumped into the WID Canal and limits the pumping rate into the WID canal to 160 cfs. The city has two pump stations that currently lift water into this canal. The discharge at each pump station is limited to 60 cfs by the Storm Drainage Discharge Agreement with WID.

Stormwater drainage for the infill areas along or near Sacramento Street will be provided by the existing stormwater facilities. The small increase in peak runoff rates from this infill development should not have a significant change in the total runoff from the existing city areas. The industrial infill east of SR-99 and north of Kettleman Lane is within the city’s existing Watershed C and the runoff from this area is pumped to the Mokelumne River by the Cluff Avenue Storm Drain Pump Station. Thus, for Sketch Plan A, stormwater drainage for the infill areas could be adequately provided by city’s existing stormwater facilities.

All of the remaining growth areas in Sketch Plan A are within the city’s ultimate tributary area for discharge to the WID canal. Stormwater from these areas would be drained to the south and then pumped into the WID canal. This new pump station would have a capacity of no more than 60 cfs (limited by the Storm Drainage Discharge Agreement with WID). However, since there are two existing pump stations, each limited to 60 cfs, and the total discharge must be limited to 160 cfs, the new pump station could be limited to about 40 cfs. The capacity for the new pump station would be dependent on how the existing stations and detention basins are managed. These systems should be evaluated through preparation of a storm drainage master plan.

Sketch Plan B

The potable water, recycled water, wastewater, and storm-water infrastructure that would be required for Sketch Plan B, including the associated “pipeline” growth, are discussed below.

POTABLE WATER

Sketch Plan B results in a buildout water demand of about 28,600 ac-ft per year. The city’s existing and future water supplies provide about 21,000 ac-ft per year in normal years and about 18,000 ac-ft per year in dry years. To support this buildout population, in normal years, the City would need to acquire additional water supplies of about 7,600 acre-feet per year. This additional water could be provided by additional surface water supplies or by increased use of groundwater.

Sketch Plan B includes growth around the west, south, and east sides of the existing city. It also includes some development of a few vacant lots within the existing city, mostly along or near Sacramento Street. Similar to Sketch Plan A, water would most likely be served to these growth areas from the city’s future SWTP, which will be located in the northwest corner of the existing city. To convey the treated surface water, a water transmission main would be constructed from the new SWTP through the new growth areas along the west, south, and east sides of the city. Along the west side of the city, this transmission main would be larger than in Sketch Plan A. This main would be connected to the existing water distribution system at several locations around the city. Additionally, storage tanks would be required along the new water main. The size of the transmission main and the locations and sizes of the storage tanks would need to be determined by preparing a water system model and a water master plan based on this land use plan.

The proposed Delta College and the development just south of Delta College could be served water through the extension of the future surface water transmission main to the college area. However, it may be more cost effective to provide water supply to this area through construction of new wells within the college area. These options should also be evaluated by preparing a water system model and a water master plan.

Sketch Plan B has the largest area of proposed growth that is within the WID boundary. Thus, this alternative results in the largest increase in surface water supply from WID.

RECYCLED WATER

Sketch Plan B has a much larger area (than Sketch Plan A and C) of parks/drainage basins, office and business parks, and industrial areas that could use recycled water. This larger area increases the probability that use of recycled water would be cost effective (versus simply using potable water). Also, most of the development area for Sketch Plan B is along the west and south sides of the city, which are closer to the probable location of the recycled water main from the WSWPCF. This means that a smaller recycled water distribution system would be required to utilize the recycled water.

WASTEWATER

This Sketch Plan includes infill development of only a few lots along Sacramento Street. It is likely that the sewer flows from these few lots could be conveyed with the city’s existing sewer systems without significantly changing the total flows in the sewers. Consequently for Sketch Plan B, a new sewer serving the Sacramento Street area would probably not be needed.

Wastewater service for the proposed Delta College and the development just south of Delta College would require construction of a trunk sewer from the college flowing south along the east side of the existing city. The Delta College trunk sewer would be sized to also serve the industrial infill development east of SR-99. This sewer could potentially be connected to the existing Beckman Road - Century Boulevard sewers, or could continue south into the new growth area.

A new trunk sewer would be required to serve the proposed development south of Kettleman Lane and to possibly accept the flow from the Delta College sewer. This trunk sewer would flow south and then turn west south of Harney Lane, where it would collect flows from the Sketch Plan B and pipeline growth areas. About half of the Sketch Plan B growth area south of Harney Lane and west of the Union Pacific Railroad is already planned for sewer service through the Harney Lane sewer lift station. The rest of this area (rural residential) would be served through the new sewer south of Harney Lane. At the southwest corner of the city, the new sewer would connect to the existing trunk sewer outfall from the city to the WSWPCF at least 3,000 feet downstream of Lower Sacramento Road. This connection point is critical to avoid discharging more flow into the

segment of the slip lined outfall with the flattest slope and the smallest capacity.

To serve the growth west of the existing city, a new trunk sewer would be constructed that flows from the north to the south, and connects to the existing outfall at the southwest corner of the city at least 3,000 feet downstream of Lower Sacramento Road.

For Sketch Plan B, the PHWWF is roughly estimated to be 21 mgd. This flow rate cannot be conveyed in the slip lined outfall pipeline if the line is required to flow no more than three-fourths full. If the sewer is allowed to flow completely full, then the slip lined outfall would have adequate capacity if the new trunk sewers are connected more than 3,000 feet downstream of Lower Sacramento Road (where the pipe slope and capacity increase). Most of the growth for Sketch Plan B is located west of this point, thus this requirement would not represent a significant constraint for this alternative.

The WSWPCF is currently being expanded to provide an ADWF capacity of 8.5 mgd. For Sketch Plan B, the ADWF is roughly estimated to be 10.7 mgd. This flow rate cannot be treated at the expanded treatment plant. Thus, another major expansion of the plant would be needed at about 50 percent buildout of Sketch Plan B.

STORMWATER

Similar to Sketch Plan A, stormwater drainage for the infill areas along or near Sacramento Street would be provided by the existing stormwater facilities. The small increase in peak runoff rates from this infill development should not have a significant change in the total runoff from the existing city areas. The industrial infill east of SR-99 and north of Kettleman Lane is within the city’s existing Watershed C and the runoff from this area is pumped to the Mokelumne River by the Cluff Avenue Storm Drain Pump Station. Thus, for Sketch Plan B, stormwater drainage for the infill areas could be provided by the city’s existing stormwater facilities.

The proposed Delta College would likely be provided drainage through an on-site storm drain system and an on-site retention basin. The growth area just south of Delta College would likely require on-site detention basin and a force main pipeline that ties into the Cluff Avenue Storm Drain Pump Station outfall pipeline to the Mokelumne River. By using this existing outfall pipeline, construction of a new outfall to the river would be avoided.

Similar to Sketch Plan A, for Sketch Plan B, all of the remaining growth areas are within the city’s ultimate tributary area for discharge to the WID canal at a rate of 40 to 60 cfs. However, for land use Sketch Plan B, the peak and total runoff from the growth areas would be much larger than for Sketch Plan A, and consequently the required detention basins would also need to be much larger.

Sketch Plan C

The potable water, recycled water, wastewater, and storm-water infrastructure that would be required for Sketch Plan C, including the associated “pipeline” growth, are discussed below.

POTABLE WATER

Sketch Plan C results in a buildout water demand of about 24,600 ac-ft per year. The city’s existing and future water supplies provide about 21,000 ac-ft per year in normal years and about 18,000 ac-ft per year in dry years. To support this buildout population, in normal years, the city would need to acquire additional water supplies of about 3,600 acre-feet per year. This additional water could be provided by additional surface water supplies or by increased use of groundwater.

Sketch Plan C includes growth around the west, south, and east sides of the existing city. It also includes some development of a few vacant lots within the existing city and some redevelopment within the existing city area, mostly along or near Sacramento Street and in the northeast corner of the city. As for Sketch Plan A, water would most likely be served to these growth areas from the city’s future SWTP, which will be located in the northwest corner of the city. To convey the treated surface water, a water transmission main would be constructed from the new SWTP through the new growth areas along the west, south, and east sides of the city. This transmission main would be connected to the existing water distribution system at several locations around the city. Additionally, storage tanks would be required along the new water main. The size of the transmission main and the locations and sizes of the storage tanks would need to be determined by preparing a water system model and a water master plan based on this land use plan.

The proposed Delta College and the development south of Delta College could be served water through the extension of the future surface water transmission main to the college area. However, it may be more cost effective to provide

water supply to this area through construction of new wells within this area. These options should also be evaluated by preparing a water system model and a water master plan.

Sketch Plan C has the smallest area of proposed growth that is within the WID boundary. Thus, this alternative results in the smallest increase in surface water supply from WID.

RECYCLED WATER

Sketch Plan C has a smaller area of parks/open space, office and business parks, and industrial areas on the west and south sides of the existing city that could use recycled water. On the east side of the existing city, there are some areas that could be served recycled water, but because these areas are far from the southwest corner of the city, a greater length of recycled water pipelines would be needed to serve these areas. Because of the smaller area for potential use of recycled water and their location, use of recycled water is less likely to be cost effective for Sketch Plan C than for Sketch Plans A and B.

WASTEWATER

This Sketch Plan includes mixed-use infill development along Sacramento Street and in the northeast corner of the city. If this development/redevelopment results in significant increases in wastewater flows, the existing sewer systems may not provide adequate capacity. This issue would have to be evaluated when the specific land uses for the development and redevelopment are known.

Wastewater service for the proposed Delta College and the development south of Delta College would require construction of a trunk sewer from the college flowing south along the east side of the existing city. The Delta College trunk sewer would be sized to also serve the industrial infill development west of SR-99. The existing Beckman Road/Century Boulevard sewer could provide sewer service for the Delta College or an approximately equivalent area of other initial development.

A new trunk sewer would be required to serve the proposed development south of Kettleman Lane and to accept/convey the flow from the Delta College sewer. This trunk sewer would flow south and then turn west south of Harney Lane, where it would collect flows from the Sketch Plan C “pipeline” and proposed growth areas. Most of the Sketch Plan C growth area south of Harney Lane and west of the Union Pacific Railroad is already planned for sewer service

through the Harney Lane sewer lift station. At the southwest corner of the city, the new sewer would connect to the existing trunk sewer outfall from the city to the WSWPCF.

To serve the “pipeline” and proposed growth west of the existing city limits, a new trunk sewer would be constructed that flows from the north to the south, and connects to the existing outfall at the southwest corner of the city at least 3,000 feet downstream of Lower Sacramento Road. This sewer would be smaller than for Sketch Plan A or B.

For land use Sketch Plan C, the PHWWF is roughly estimated to be 18 mgd. This flow rate can be conveyed in the slip lined outfall pipeline (flowing three-fourths full) if the new trunk sewers are connected more than 3,000 feet downstream of Lower Sacramento Road (where the pipe slope increases).

The WSWPCF is currently being expanded to provide an ADWF capacity of 8.5 mgd. For Sketch Plan C, the ADWF is roughly estimated to be 9.2 mgd. This flow rate can not be treated at the expanded treatment plant. Thus, another major expansion of the plant would be needed at about 75 percent buildout of Sketch Plan C.

STORMWATER

Stormwater drainage for the infill and redevelopment areas along or near Sacramento Street, and in the northeast corner of the city would be provided by the existing stormwater facilities. The adequacy of these existing facilities to convey, store, and discharge the potential increased runoff should be evaluated through preparation of a stormwater master plan.

The industrial infill east of SR-99 and north of Kettleman Lane is within the city’s existing Watershed C and the runoff from this area is pumped to the Mokelumne River by the Cluff Avenue Storm Drain Pump Station. Thus, for land use Sketch Plan C, stormwater drainage for the industrial infill areas east of SR-99 should be adequately provided by city’s existing stormwater facilities.

The proposed Delta College would likely be provided drainage through an on-site storm drain system and an on-site retention basin. The growth area just south of Delta College would likely require an on-site detention basin (or basins) and a force main pipeline that ties into the Cluff Avenue Storm Drain Pump Station outfall pipeline to the Moke-

lumne River. By using this existing outfall pipeline, construction of a new outfall to the river would be avoided.

For land use Sketch Plan C, all of the remaining growth areas are within the city’s ultimate tributary area for discharge to the WID canal at a rate of 40 to 60 cfs. To achieve this discharge limits, flow from these areas will have to be detained in one or more regional detention basins and then pumped into the WID canal.

Comparison

Provided in Table 4-7 and discussed below is a summary comparison of the infrastructure required to serve each Sketch Plan, including associated “pipeline” growth.

Each of the Sketch Plans will result in the need for the city to secure additional water supplies. These supplies could be either surface water or groundwater. Sketch Plan B results in the greatest increase in water demand. Sketch Plan B also includes the largest area of growth within the WID boundary, which will result in the greatest increase in surface water from WID for treatment by the future SWTP and use throughout the city.

The sizes of the required water mains and number/sizes of required storage tanks will vary proportionally to the growth areas of the alternatives. However, for water infrastructure, there is usually an “economy of scale” which means that the cost per acre of growth decreases as the area of growth increases. This means that Sketch Plan B would likely be the most cost efficient for water infrastructure.

Sketch Plan B has the greatest potential for use of recycled water to be cost efficient since it has the greatest growth along the west and south sides of the city, which are closest to the likely location of a future recycled water line from the WSWPCF. Sketch Plan B also has the largest area of land uses that could potentially use recycled water.

Sketch Plan B has the smallest amount of infill and redevelopment in areas that are served by existing sewers that are currently flowing at or over capacity. Sketch Plan B would probably not require a new sewer for the infill portion of the Plan. Sketch Plan A also has only a small amount of infill and redevelopment, and could also potentially be served by the existing sewers. The adequacy of the existing sewers should be evaluated in a new/revised sewer master plan.

The slip lined sewer outfall from the city to the WSWPCF appears to have adequate capacity for all three alternatives. However, for Sketch Plan B, the outfall would need to be allowed to flow more than three-fourths full and the new trunk sewers would need to be connected to this line near the western edge of the growth area. This does not represent a significant drawback for Sketch Plan B because this location would be the likely connection point even if the upstream outfall did not have capacity limitations.

All three alternatives will require an expansion of the WSWPCF. However, Sketch Plan B will require a larger expansion earlier than the other alternatives.

For Sketch Plans A and B, the existing storm drain facilities should be adequate to serve the infill areas. For Sketch Plan C, the adequacy of the existing stormwater facilities should be evaluated by preparing a storm drainage master plan.

For all of the Sketch Plans, the growth areas are within the area that can be drained to The WID canal. However, for Sketch Plans B and C, the Delta College would use a retention basin for disposal of storm runoff and the development area just south of the college should be pumped to the Mokelumne River using the existing Cluff Avenue Storm Drain Pump Station outfall pipeline. This reduces the area and runoff volume that must be drained toward, detained, and pumped into the WID canal. Because Sketch Plan B has the largest area that would drain to the WID canal, it would also require the largest stormwater detention basin. The basin could be developed as a joint use facility that could provide water quality treatment, wetlands/riparian habitat, or park/open space areas.

This qualitative evaluation and comparison of infrastructure requirements for the Sketch Plans is based on a simple visual evaluation of the alternatives and a general understanding of typical infrastructure requirements. If this comparison (or a particular aspect of this analysis) is critical to the selection of one land use alternative over another, it is recommended that this qualitative evaluation be refined and verified through a technical engineering analysis of the issues. It is also recommended that water, wastewater, and stormwater master plans be prepared to further evaluate the infrastructure requirements for the Preferred Plan.

**TABLE4-7: Infrastructure Summary and Sketch Plans Comparison
(including associated “Pipeline” Growth)**

ITEM OR ISSUE	SKETCH PLAN A	SKETCH PLAN B	SKETCH PLAN C
Total annual water demand	“Total demand = 22,900 ac-ft Additional required water supply = 1,900 ac-ft”	“Total demand = 28,600 ac-ft Additional required water supply = 7,600 ac-ft”	“Total demand = 24,600 ac-ft Additional required water supply = 3,600 ac-ft”
Ratio of WID surface water made available to the city vs. increased water demands	Moderate	Highest	Lowest
Sizes of water mains and volume of required storage	Proportional to growth.	Proportional to Growth. Delta College area may require groundwater wells.	Proportional to growth. Delta College area may require groundwater wells.
Feasibility of using recycled water	Moderate: Because growth occurs on west, south, and east sides of City.	Highest: Because most growth occurs on west and south sides of existing City.	Lowest: Because most of the growth occurs on the east side of the existing City.
Adequacy of existing sewer collection system for infill/redevelopment	Probably adequate, but should be evaluated in Sewer Master Plan	Probably adequate	Should be evaluated in Sewer Master Plan
Adequacy of slip lined sewer outfall from City to WSWPCF	Fully adequate	Adequate if outfall pipe allowed to flow more than three fourths full and new trunk sewers connected more than 3,000 feet downstream of Lower Sacramento Road.	Adequate if new trunk sewers connected more than 3,000 feet downstream of Lower Sacramento Road.
Adequacy of White Slough Water Pollution Control Facility (with current expansion, capacity is 8.5 mgd ADWF)	“Estimated buildout flow is 8.6 mgd ADWF. Expansion of WSWPCF required at 95 percent of Alternative A buildout.”	“Estimated buildout flow is 10.7 mgd ADWF. Expansion of WSWPCF required at 50 percent of Alternative B buildout.”	“Estimated buildout flow is 9.2 mgd ADWF. Expansion of WSWPCF required at 75 percent of Alternative C buildout.”
Adequacy of existing storm drain facilities for infill/redevelopment	Should be adequate	Should be adequate	Should be evaluated in a Stormwater Master Plan
All General Plan and “Pipeline” areas within the WID discharge area.	Yes	Yes	Yes
Size of detention basin for discharge to WID Canal	Medium	Largest	Smallest

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