

EXISTING CONDITIONS REPORT

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C * E * R * E * S
**GENERAL
PLAN UPDATE**

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I Introduction and Overview

I.1 Project Overview

The City of Ceres is preparing an update of its General Plan, which will establish the city's overall approach to development, transportation, environmental quality, public services, infrastructure, and parks and open spaces for the next 20 years. The General Plan, which is required by law in the state of California, identifies current and future needs, sets policy, and provides a basis for land use decision-making by policymakers such as the Planning Commission and the City Council. Ceres's current General Plan dates back to 1997 and is in need of an update as new opportunities, challenges, and approaches have emerged in recent years. The General Plan update process provides an exciting opportunity for Ceres community members to share their vision for the city's future and provide input on the city's long-term goals and development opportunities.

EXISTING CONDITIONS REPORT

This Existing Conditions Report represents the first major step in the process of updating the General Plan for the City of Ceres. This report provides spatial information on existing conditions in the city and its surrounding areas as well as an analysis of growth prospects and land demand. The Existing Conditions Report is used as a basis for:

- Facilitating community input on planning issues and visions during community workshops;
- Preparing alternative land use and transportation planning scenarios;
- Formulating policies and implementation actions for the General Plan; and
- Creating the environmental setting portion of the Environmental Impact Report for the General Plan.

The focus is on resources, trends, and critical concerns to frame decision-making for the long-term physical development of the city. Much of the information, including that on land uses, natural resources, civic and transportation infrastructure, current development projects and potential development capacity, is presented with maps. The Existing Conditions Report is organized in the following chapters.

1. **Introduction and Overview.** This chapter introduces the project and its setting.
2. **Key Findings and Planning Implications.** This chapter distills the baseline research and analysis of the Existing Conditions Report into planning considerations that should be addressed as the General Plan update process moves forward.

3. **Land Use and Urban Design.** This chapter describes the existing use of land in the General Plan Planning Area, current General Plan land use designations, zoning, and relevant plans and land use policies, as well as its urban form and identity.
4. **Environmental Constraints and Opportunities.** This chapter discusses the General Plan Planning Area's environmental resources and potential constraints to development, including biological resources; geology, soils, and seismicity; hydrology; air quality and climate change; fire hazards; hazardous materials and sites; agricultural resources; and cultural and historical resources.
5. **Public Facilities and Services.** This chapter discusses the current condition of the General Plan Planning Area's parks, recreation, and open space; public schools and facilities; and public safety services.
6. **Mobility.** This chapter provides an overview of the regulatory and policy context of the existing transportation system in Ceres and describes the general travel behavior of Ceres residents based on Census data.
7. **Utility Infrastructure.** This chapter describes Ceres's systems of potable water, sewer and wastewater treatment, and stormwater and flood control.

In addition, members of the General Plan consultant team prepared a background report, Demographic, Economic and Fiscal Conditions in the City of Ceres (Economic Report), published as a separate document.¹ The Economic Report, together with this Existing Conditions Report, comprises the baseline technical information for the General Plan update process.

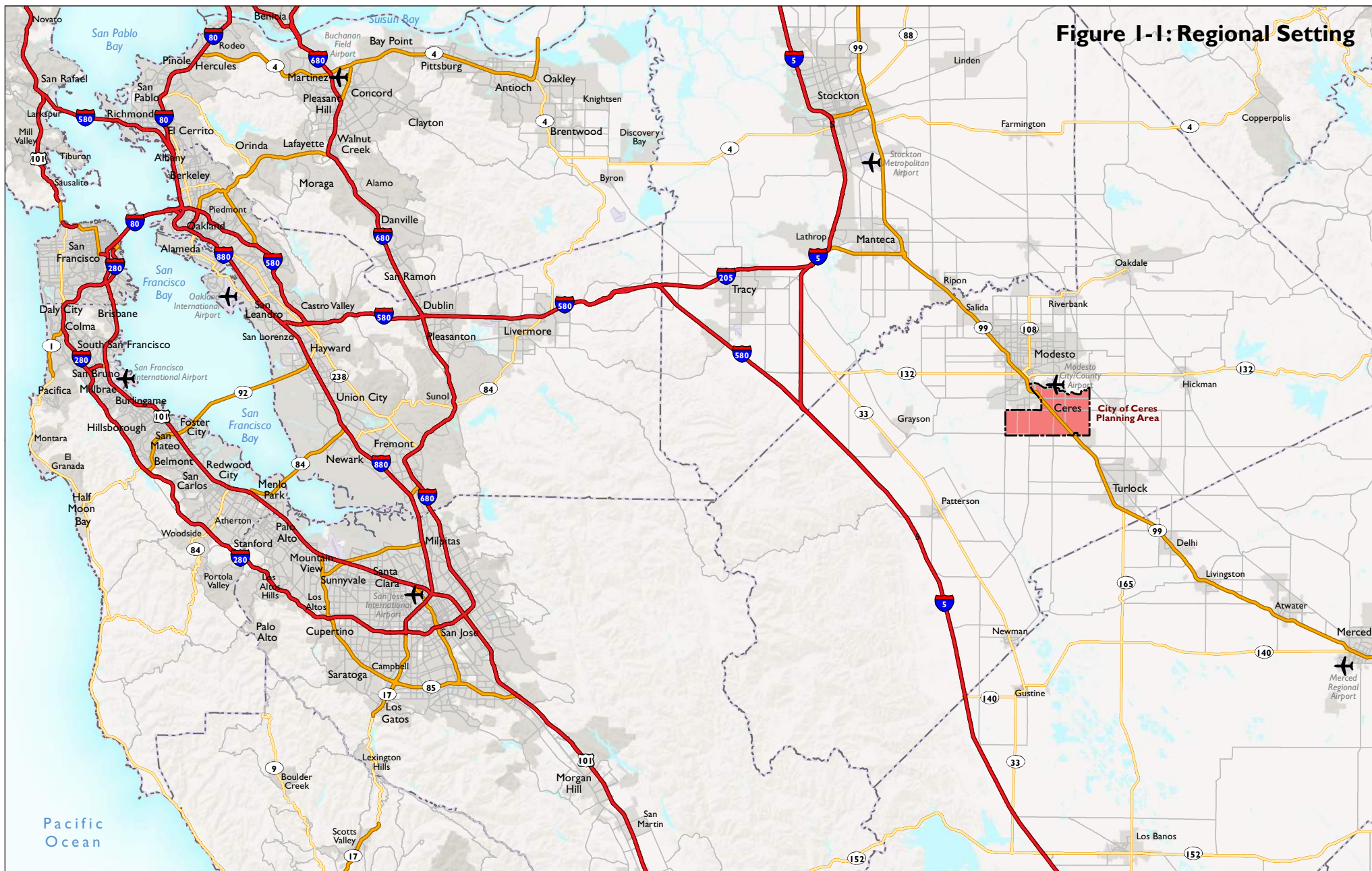
1.2 Regional Setting

The City of Ceres is located just southeast of Modesto in central Stanislaus County in the San Joaquin Valley. The city is almost 100 miles southeast of San Francisco by car, 60 miles from the nearest Bay Area Rapid Transit (BART) station in Dublin, 35 miles south of Stockton, and 10 miles north of Turlock. State Route 99 (SR-99) runs through the city of Ceres, as with many cities in the San Joaquin Valley, and connects it to other communities in the region. The regional setting is depicted in Figure 1-1.

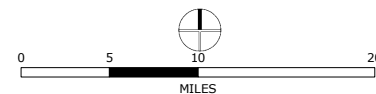
1.3 Planning Area

The General Plan Planning Area (Planning Area), shown in Figure 1-2, is defined as the land area addressed by the General Plan update. The Planning Area for the General Plan update is the same as that used for the 1997 General Plan. It encompasses 14,700 acres including the City of Ceres, its Sphere of Influence (SOI), adjacent unincorporated areas, and Mancini Park in the City of Modesto. It is bounded by the Tuolumne River on the north, Carpenter Road on the east, Grayson Road on the south, and Washington Road on the west. Although Ceres does not have jurisdiction in areas outside of its city limits, what happens in those areas bears a relation to the city's planning and must be considered in the General Plan, per California Government Code Section 65300.

¹ Economic and Planning Systems, Inc. as a subconsultant to Dyett and Bhatia. Prepared for the City of Ceres. 2016. Demographic, Economic and Fiscal Conditions in the City of Ceres.



- | | | | |
|---|-------------------|---|---------------------|
|  | Freeway |  | County Boundary |
|  | Major Highway |  | Ceres Planning Area |
|  | Minor Highway |  | Urban Areas |
|  | Major/Minor Roads |  | Water |



Data Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

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City of Ceres

Figure I-2: General Plan Planning Area



Sources: Esri, USGS, NOAA

- Highway
- Local Roads
- Ramps
- Major Roads
- Railroads
- River
- City of Ceres (5,989 acres)
- Ceres Sphere of Influence
- General Plan Planning Area (14,357 acres)



Data Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

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City of Ceres

CITY LIMITS

The city limits of Ceres encompass approximately 5,989 acres (9.3 square miles) and account for 42 percent of the Planning Area. The city includes mostly low-density residential development, in addition to commercial, office, industrial, and agricultural development and public facilities, including parks and schools. Within the boundaries of the city limits are two Stanislaus County unincorporated islands located north of Hatch Road. Additionally, north of Service Road between Central Avenue and State Route 99, there is an unincorporated area that is not completely surrounded by city limits, but which is considered an island.

SPHERE OF INFLUENCE

The Sphere of Influence (SOI) is defined as the ultimate physical boundary and service area of the city, and it encompasses both incorporated and unincorporated territory that is envisioned to be the city's ultimate service area. The Stanislaus Local Agency Formation Commission (LAFCO) reviews and approves proposed boundary changes and annexations affecting the SOI. Beyond land within city limits, the city's SOI boundary includes an additional 2,456 acres (3.8 square miles) outside of the city limits, which accounts for 17 percent of the total land in the Planning Area.

Table 1-1 summarizes the composition of the Planning Area, including the amount of land in the City of Ceres, unincorporated Stanislaus County, and the City of Modesto. Figure 1-2 shows the Planning Area, including the Ceres city limits and Ceres SOI boundaries.

Table 1-1: Planning Area Composition

<i>Boundary</i>	<i>Acres¹ within Planning Area</i>	<i>Percent of Planning Area¹</i>
City of Ceres	5,989	42.0%
Unincorporated Stanislaus County (Within Ceres SOI)	2,456	17.0%
Unincorporated Stanislaus County (Outside of Ceres SOI)	5,886	41.0%
City of Modesto	25	0.2%
Total Planning Area	14,357	100.0%

Note:

1. Numbers may not add up precisely due to rounding.

Source: LAFCO, 2015; City of Ceres, 2015; Stanislaus County, 2015.

2 Key Findings and Planning Considerations

One of the main purposes of the Existing Conditions Report is to distill planning considerations from the baseline research and analysis that should be addressed as the General Plan update process moves forward. These considerations are based on each section of this report, but they cut across different topics. To validate the findings and to provide further insight into the considerations, the findings of the technical research in this report were compared with findings from public outreach conducted thus far, including stakeholder interviews and a community workshop on issue identification and visioning.² In addition, key planning implications from the companion background reports (transportation; demographic, economic and fiscal conditions; and utility infrastructure) are integrated and discussed in conjunction where relevant.

- **According to the current General Plan’s land use designations and housing demand projections, there is more than enough land designated for residential uses within the Ceres SOI to accommodate expected growth through the planning period. Although there is sufficient capacity, Ceres could revisit preferences for housing type mix and location of growth.**

Within the Ceres city limits, there are numerous residential opportunity sites throughout the city, including a substantial area in the west of the Ceres SOI covered by the adopted West Landing Specific Plan that is entitled for development. Outside of the city limits, there is land designated residential in the southern and eastern areas of the SOI that provide additional development opportunity sites. Based on residential densities in the current General Plan and development projects already underway, there is capacity for approximately 7,100 housing units in the Ceres SOI. Although the population of Ceres is expected to grow, the city’s capacity for residential development exceeds the expected demand for between approximately 4,200 and 6,300 new units by 2035.

In addition to addressing the need to accommodate new housing units, Ceres may want to revisit the existing plans to ensure that they are designed to meet the needs of the population in the future with the right mix of housing types in the best locations. Stakeholders during the interviews and participants at the community workshop supported the findings of the Economic Report on the need for a greater diversity of housing, including “move-up” or “executive” housing on larger lots and multi-family housing. In addition, location-based factors that influence residential development, including proximity to SR-99 and existing schools, should be considered.

² Summaries of the stakeholder interviews and the community workshop are presented in the *Stakeholder Interviews Summary Report* and the *Community Workshop #1 Summary Report* respectively, which are publicly available online in the Library section of the Ceres General Plan update website:
<<http://www.ceresgeneralplanupdate.com/documents.html>>

The land use alternatives analysis, which is the next phase of the General Plan update process, will consider and evaluate various options. In addition, the City may wish to evaluate a development footprint in 2035 that accommodates a different amount of growth than StanCOG and other agencies/organizations currently project; this too can be modeled and tested.

- **Residents (through the survey, stakeholder interviews, and community workshop) have expressed a desire for more retail options and that industrial development could support economic growth. Based on a range of job projections, the amount of land currently designated for commercial and industrial use is expected to be sufficient to meet demand. However, the City could consider how the location and type of parcels could better meet demand and leverage future investments.**

Economic development and job growth are priorities for the General Plan update, particularly for their potential to improve quality of life in Ceres and contribute to the City's tax base. For example, stakeholders and workshop participants described the need for industrial development to attract employers and improve the ratio of jobs to residents. In addition, stakeholders described the need for more retail, restaurants and healthy food options.

There are many vacant and underutilized parcels already designated for commercial use in existing commercial corridors along Mitchell Road and Hatch Road, as well as large vacant parcels near the planned Mitchell Road/SR-99 interchange that provide opportunity for significant retail. Most of the vacant industrial parcels are clustered in the southwest portion of the city. According to an analysis based on job projections, the amount of land designated for commercial and industrial uses is more than sufficient to meet the expected demand for commercial and industrial development.

However, the current inventory of vacant land zoned for industrial uses consists almost exclusively of small parcels, ranging in size from one-half to two acres. In comparison, the City regularly receives inquiries for vacant industrial land ranging in size from five to 50 acres. The City could consider how to better supply this type of product for which there is demonstrated demand. In addition, the City could work to capitalize on the benefits of its proximity to SR-99 as discussed below to attract both commercial and industrial development.

- **SR-99 runs through the center of the city, providing great potential for regional accessibility and economic development while also posing urban design challenges.**

The location of SR-99 in Ceres has the potential to provide great value for residents to access jobs outside of Ceres; for companies for easy supply and distribution; and for the city to attract visitors from outside of Ceres. At the community workshop, several participants described visions for the future of Ceres based on it becoming a tourist attraction. However, stakeholders have described (and technical analysis supports) that the Ceres exits off of SR-99 have limited capacity, which restricts development, especially by industrial users. A new interchange between SR-99 and Service Road to improve highway access is being considered by the California Department of Transportation and City Council.

However, the location of SR-99, a six-lane highway, also poses a major urban design challenge. The highway limits accessibility within Ceres and disrupts citywide cohesion. The General Plan update should consider the cost of transportation improvements, the potential of greater accessibility between SR-99 and Ceres, as well as the impacts of transportation improvements on land use and community character.

- **Ceres currently lacks activity centers, but Downtown Ceres has the potential to become the heart of Ceres once again.**

According to this report's analysis of urban design (see Section 3.5) and input from stakeholder interviews, Ceres lacks activity centers. At the same time, the location, street grid, wide sidewalks, and recent public investments Downtown, including the Community Center, make it ripe for revitalization and to serve as an activity center. Stakeholders and participants at the community workshop commented on the potential for the Downtown to be greatly improved and to act as an attractive destination in the city. City leaders should consider policies and goals that will encourage development and economic vitality in this space in order to utilize existing infrastructure. There is an existing Downtown Specific Plan that outlines a vision for Downtown to "once again become the vibrant heart of the City of Ceres" and includes strategies to achieve the vision, but the funding mechanisms the Downtown Plan identifies are obsolete. The General Plan update should consider the future of Downtown and feasible strategies to implement the vision of the Downtown Specific Plan.

- **Vacant and underutilized parcels within existing neighborhoods provide opportunity to improve and better meet the needs of the community.**

In addition to the infill opportunity sites Downtown, there are infill opportunities elsewhere in the city that are desirable for economic growth and neighborhood improvement. Vacancies and underutilized properties can be eyesores that strain the economy. According to stakeholder interviews and the community workshop, there is significant demand for a greater variety of restaurant types, healthier retail food options, and other commercial uses that could help develop these infill properties. However, real estate values are relatively low, and it can be difficult to find investors interested in infill in the San Joaquin Valley. The City should consider tools it can use to foster infill, such as encouraging land assembly and providing other incentives.

- **The City lacks a clear identity that distinguishes it from Modesto and Turlock. Placemaking strategies could attract development and help build pride and investment in Ceres for residents and businesses.**

Ceres will continue to struggle to compete for development against its larger neighbors, Modesto and Turlock, unless it can position itself with a unique identity. The General Plan update should consider strategies, including improving streetscapes, fostering activity centers, and encouraging specialty retail to help distinguish Ceres. Progress on other planning issues, such as the revitalization of Downtown, could contribute to distinguishing Ceres from other Central Valley cities.

- **Ceres has a relatively compact urban footprint surrounded by Prime Farmland.**

Agriculture is important to both Ceres's heritage and current economy. Currently, agriculture and residential agriculture are the most common existing uses of land in the Planning Area, accounting for 6,268 acres and 44 percent of the land. Most of the farmland is considered Prime Farmland with soils that have among the best physical and chemical characteristics for crop production in the nation. Participants at the first community workshop on issue identification and visioning commented on achieving balanced growth that protects farmland. Specific and master plans propose development on about 695 acres of agriculture or residential agriculture within the Ceres SOI. In addition, there are about 5,095 acres of rural land outside of the SOI in Stanislaus County regulated by the County Farmland Mitigation Program. Given projected population growth and demand for housing units, Ceres could consider strategies that allow for residential growth and help protect farmland, such as infill development and compact development patterns.

- **Safety improvements for pedestrians and bicyclists could help encourage more active transportation, relieving traffic congestion and improving public health. In particular, the location of schools in residential neighborhoods throughout the city provide the potential for more students to walk and bike to school.**

Schools are located throughout the Planning Area with one in nearly every neighborhood. Therefore, residences and schools are in relatively close proximity, and walking and biking to school is a viable option based on distance to destinations. However, pedestrian mobility in Ceres can be challenging as some streets do not have pedestrian facilities. In areas where sidewalks are present, their design and continuity can be inconsistent due to development patterns or other obstructions, such as utilities or vegetation. On high-speed arterials, pedestrians are exposed to fast moving traffic. Intersections of multi-lane arterial roadways have long pedestrian crossing distances, contributing to increased pedestrian exposure to vehicles and serving as a barrier for people with mobility concerns. To provide improved levels of pedestrian access and mobility, policies should focus on filling the gaps where they exist.

Similar problems exist for bicyclists. High posted speed limits, traffic volume, and goods movement related activity may mitigate the enhanced conditions afforded by bicycle facilities. For example, a Class II bicycle lane may feel uncomfortable for many riders if placed adjacent to an arterial road with a 45 mph posted speed limit. Some roads in Ceres have large rights-of-way that could be reallocated to other roadway users such as Crows Landing Road. Policies regarding the bicycle network may focus on re-visioning the use of existing right-of-way on some streets and providing enhanced facilities, such as protected bike lanes, on new or retrofitted roadways. Opportunities to construct additional Class I bicycle paths, similar to the Hatch Road bicycle path that parallels the canal, could also be considered.

- **Ceres has environmental concerns similar to other cities in the San Joaquin Valley, including air pollution and diminishing groundwater resources.**

Regional air pollution has improved, but it still has major public health impacts in Ceres and the San Joaquin Valley as a whole, and a reduction in precipitation and increase in

temperature from climate change could exacerbate the problem. The General Plan update should consider ways to reduce air pollution and mitigate its impacts. In addition, groundwater is being extracted at a faster rate than it is being replenished, and climate change threatens to worsen the situation. The impacts of land use types and parcel sizes on water usage should be considered in the General Plan update.

- **Climate change threatens the agricultural industry as well as the quality of life in Ceres. The City should consider strategies to mitigate climate change and help industry and residents adapt to its effects.**

The effects of climate change in the San Joaquin Valley include increased temperatures, reduced precipitation, flooding, and reduced water supply. Many of the expected effects particularly impact productivity in the agricultural industry, which is integral to Ceres's economy and identity. In addition, increased temperatures and reduced water supply affect residents' quality of life. Ceres could consider policies and strategies to support agricultural industry and residents in becoming more resilient to the effects of climate change.

- **Ceres has strong public facilities and services, including a well-funded school district and a new Community Center downtown, which could be leveraged for economic development.**

The Ceres Unified School District is well-resourced with funding from the State of California, and the Police Department and the Fire Department are of high quality. These public services could be used to attract development to Ceres. For example, comments at the community workshop about the future of Ceres described it as a great place to raise families. In addition, the City adopted a Parks and Recreation Master Plan in Spring 2016 to analyze and improve the park resources and accessibility. The General Plan update should integrate and build on the recent Parks and Recreation Master Plan, in addition to findings and community engagement from the General Plan update process.

- **Biodiversity and natural hazards such as fires and floods are limited in Ceres; however, the Tuolumne River has the potential to be a greater asset for the city.**

All of the land in the Planning Area is either developed or in agricultural production, and there is limited biodiversity. However, five special-status species have been known to occur in the Planning Area, and the Tuolumne River provides critical habitat for Steelhead trout. The critical habitat provided by the river could be supported and used as an attraction for recreational trails and possible eco-tourism, yet it may also provide challenge to larger-scale development along the river. Floods and fire hazards pose relatively little risk to the Planning Area.

- **Truck traffic should be contained within designated corridors to minimize residents' exposures to pollution and reduce land use conflicts.**

Given the high volume of truck traffic on some corridors, Ceres should continue to encourage freight vehicles to stay within pre-defined corridors in order to minimize the exposure of residents to noise and diesel exhaust, and prevent conflicts with incompatible land uses. The effects of the Faith Home Road expressway will be evaluated as part of the

General Plan update process to provide information to decision makers regarding the effects of that new roadway facility, which, if implemented could reduce the dependence of truck traffic using Mitchell Road through the city.

- **Ceres should encourage the development of transit facilities, including the potential for a new Altamont Commuter Express Rail station in Downtown Ceres.**

With a potential Altamont Commuter Express Rail station in Downtown, there would be opportunities to improve feeder bus connections and consider other transit enhancements, such as improved bus shelters with lighting, separation from traffic, and real-time bus arrival information. Opportunities to improve bus headways could also be considered as the City continues to grow.

- **There is limited groundwater available from the Turlock Groundwater Subbasin, which Ceres relies on for its potable water supply. The City is working to address this issue by developing surface water supply.**

Despite the historic reliability of the City's groundwater, and successful implementation of conservation measures, increasing development will put pressure on this limited supply over time. The addition of surface water to the City's supply will increase flexibility and sustainability. The City's two new wells, which are not yet equipped, could provide a short-term increase in groundwater supply, but in the long term, they will contribute to the depletion of the groundwater supply. The City is partners with the City of Turlock in the Stanislaus Regional Water Authority (SRWA), a Joint Powers Authority (JPA) actively resolving this major issue by developing the Tuolumne River surface water supply to reduce dependence on groundwater.

The City is in the early stages of analyzing the feasibility of the acquisition of the North Ceres and Walnut Manor water systems from the City of Modesto.³ Both systems were part of the Del Este Water Company systems acquired by Modesto several years ago. The North Ceres area is the unincorporated area generally bounded on the north by the Tuolumne River, on the west by Ninth Street and on the south and east by the City.

- **The primary wastewater issue for the City is insufficient future disposal capacity.**

Under full buildout of the 1997 Ceres General Plan, the City's future projected wastewater flows will exceed the current available disposal capacity. The City is currently addressing this issue through preparation of a study that will help the City determine the best combination of effluent disposal between percolation and evaporation at the City's Wastewater Treatment Plant (WWTP), pumping to Turlock's WWTP, flow to Modesto's WWTP, and delivery of tertiary effluent to the Turlock Irrigation District (TID).

- **There is a threat of street flooding from older, inadequate storm drain systems and from the requirement to discontinue discharging runoff into the TID canals. The City is developing a Storm Drain Master Plan to address these issues.**

³ General Plan Infrastructure Kickoff Meeting Minutes between West Yost Associates and the City of Ceres. January 12, 2016.

Significant storm events (10-year events and above) have the potential to cause widespread overflows of the City's drainage system. Discharge to Turlock Irrigation District (TID) facilities is permitted, but TID can require the City to discontinue discharging stormwater runoff into the TID canals if necessary to limit the flow in the canal to the canal's capacity or for canal maintenance. There is no secondary or back-up stormwater runoff disposal option. The City will address both these issues through the preparation of a Stormwater Master Plan, targeted for completion in 2016, and through implementation of the stormwater projects identified in the master plan. If the City's future allocation of land use is updated as a result of the current General Plan update or the planned Storm Drain Master Planning effort, then the ability to serve new growth may need to be reconsidered.

3 Land Use and Urban Form

3.1 Existing Use of Land

Existing use of land refers to how land is currently being utilized; it does not refer to the General Plan land use designations or zoning districts. In other words, what is built on the ground may differ from what is allowed under current regulations. Analysis of the existing land use pattern in the Planning Area helps provide insight into both historical patterns of development and opportunities for future development. Table 3-1 shows the types of existing use of land in the Planning Area, including within the city of Ceres and County unincorporated areas, and Figure 3-1 illustrates the proportion of each type of existing use of land in the Planning Area, excluding rights-of-way. Figure 3-2 shows the overall pattern of existing use of land in the Planning Area.

The most common uses of land in the Planning Area are residential, including agricultural/rural residential uses. Approximately 41 percent of land within the city and 46 percent of land in the Planning Area is used residentially. Single family homes are the most common type of residential use in the city, and agricultural/rural homes are the most common type across the whole Planning Area. Six percent of land within the city and approximately 22 percent of land in the Planning Area is used for agriculture. Industrial uses make up nearly nine percent of land in the city, and five percent of the Planning Area. Public and community facilities make up eight percent of land in the city, and five percent of the Planning Area. About seven percent of land within the city is vacant, while less than five percent is used for commercial and mixed uses, and less than four percent is used for parks and open spaces. In addition, about 17 percent of land within the city limits is utilized for streets and other transportation rights-of-way.

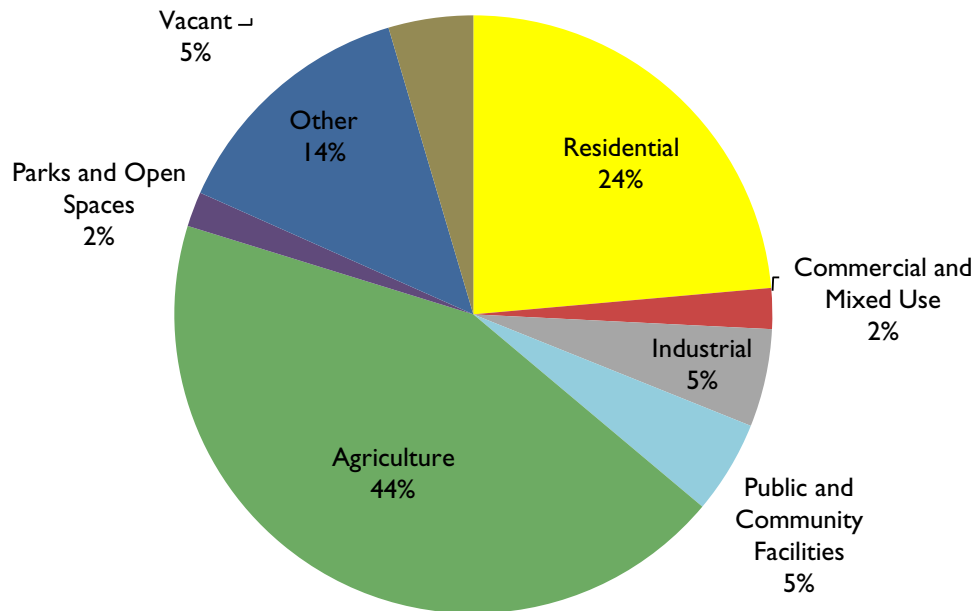
Table 3-1: Existing Use of Land in the Planning Area

<i>Existing Use of Land Category</i>	<i>City of Ceres</i>		<i>Unincorporated</i>		<i>Total Planning Area</i>	
	<i>Acres</i>	<i>Percentage</i>	<i>Acres</i>	<i>Percentage</i>	<i>Acres</i>	<i>Percentage</i>
Residential	2,438.9	40.7%	4,090.9	48.9%	6,529.9	45.5%
Ag residential/Rural Residential	210.2	3.5%	2,932.8	35.0%	3,143.1	21.9%
Single Family Residential	1,933.8	32.3%	988.8	11.8%	2,922.6	20.4%
Duplex/Two Family Residential	45.3	0.8%	38.0	0.5%	83.3	0.6%
Townhomes	13.7	0.2%	0.0	0.0%	13.7	0.1%
Multi-Family Residential	142.0	2.4%	40.3	0.5%	182.3	1.3%
Mobile Homes	79.5	1.3%	67.3	0.8%	146.8	1.0%
Mixed Use Residential	14.4	0.2%	23.7	0.3%	38.1	0.3%

Table 3-1: Existing Use of Land in the Planning Area

<i>Existing Use of Land Category</i>	<i>City of Ceres</i>		<i>Unincorporated</i>		<i>Total Planning Area</i>	
	<i>Acres</i>	<i>Percentage</i>	<i>Acres</i>	<i>Percentage</i>	<i>Acres</i>	<i>Percentage</i>
Agriculture	354.1	5.9%	2,771.6	33.1%	3,125.7	21.8%
Agriculture	354.1	5.9%	2,771.6	33.1%	3,125.7	21.8%
Industrial	528.6	8.8%	231.2	2.8%	759.7	5.3%
Light Industrial	94.9	1.6%	59.0	0.7%	153.9	1.1%
General Industrial	433.7	7.2%	172.1	2.1%	605.8	4.2%
Public and Community Facilities	495.3	8.3%	227.7	2.7%	723.0	5.0%
Religious Facilities/Institutional	86.7	1.4%	56.0	0.7%	142.7	1.0%
Educational Facility	203.2	3.4%	155.3	1.9%	358.5	2.5%
Hospital/Nursing Facility	6.5	0.1%	0.9	0.0%	7.3	0.1%
Public Facility	198.9	3.3%	15.5	0.2%	214.5	1.5%
Commercial and Mixed Use	278.1	4.6%	37.6	0.4%	315.7	2.2%
Auto Commercial	34.6	0.6%	24.3	0.3%	58.9	0.4%
Service Station	11.4	0.2%	2.2	0.0%	13.6	0.1%
General/Retail Commercial	192.8	3.2%	11.1	0.1%	203.8	1.4%
Office	39.4	0.7%	0.0	0.0%	39.4	0.3%
Vacant	441.4	7.4%	216.4	2.6%	657.7	4.6%
Vacant	441.4	7.4%	216.4	2.6%	657.7	4.6%
Parks and Open Spaces	221.8	3.7%	49.2	0.6%	271.0	1.9%
Parks/Open Space/Greenways	156.3	2.6%	33.7	0.4%	190.0	1.3%
Golf Course	65.5	1.1%	15.5	0.2%	81.0	0.6%
Other	1,230.9	20.6%	743.5	8.9%	1,974.3	13.8%
Cemetery	22.1	0.4%	0.0	0.0%	22.1	0.2%
Public Parking	0.8	0.0%	0.0	0.0%	0.8	0.0%
Utilities	204.7	3.4%	13.1	0.2%	217.7	1.5%
Transportation/ROW/ Other	1003.3	16.8%	730.4	8.7%	1,733.6	12.1%
Total	5,989	100.0%	8,368	100.0%	14,357	100.0%

Source: City of Ceres, 2015; Stanislaus County Assessor's Office, 2015.

Figure 3-1: Chart of Existing Use of Land in Planning Area

Source: City of Ceres GIS Data; Stanislaus County Assessor's Data, 2015

CURRENT LAND USE PATTERN

The city's commercial and mixed uses are found throughout the city with concentrations Downtown, along Mitchell Road, and just east of SR-99 on Hatch Road. Most of the city's industrial uses are clustered in a triangle between Morgan Road, Whitmore Avenue and SR-99 on the west side of SR-99, and along Service Road between Crows Landing Road in the west and Morgan Road in the east. Residential uses are mixed with other uses Downtown and in some neighborhoods along SR-99, and there are larger areas of exclusively single family residential uses in newer neighborhoods farther from Downtown in the north, northeast, and southwest areas of the city. Duplex, townhome, and multi-family residential uses are located in Downtown, along SR-99 on both the east and west, and along the southern part of Mitchell Road. Public facilities and parks can be found in many of the residential neighborhoods across the city. In the Planning Area, agricultural uses surround the city to the west, south, and east. There are vacant lots along the southern and western edges of the city limits and along the western side of SR-99.

3.2 Existing General Plan Land Use Designations

Figure 3-3 shows the 1997 General Plan's intended uses of land in the Planning Area through the location of land use designations, which are further described in Table 3-2.

Density and intensity standards regulate how much development is permitted on a site and are used to evaluate development during the site planning review process. Currently, the General Plan and Zoning Ordinance include density standards for residential uses based on lot size and

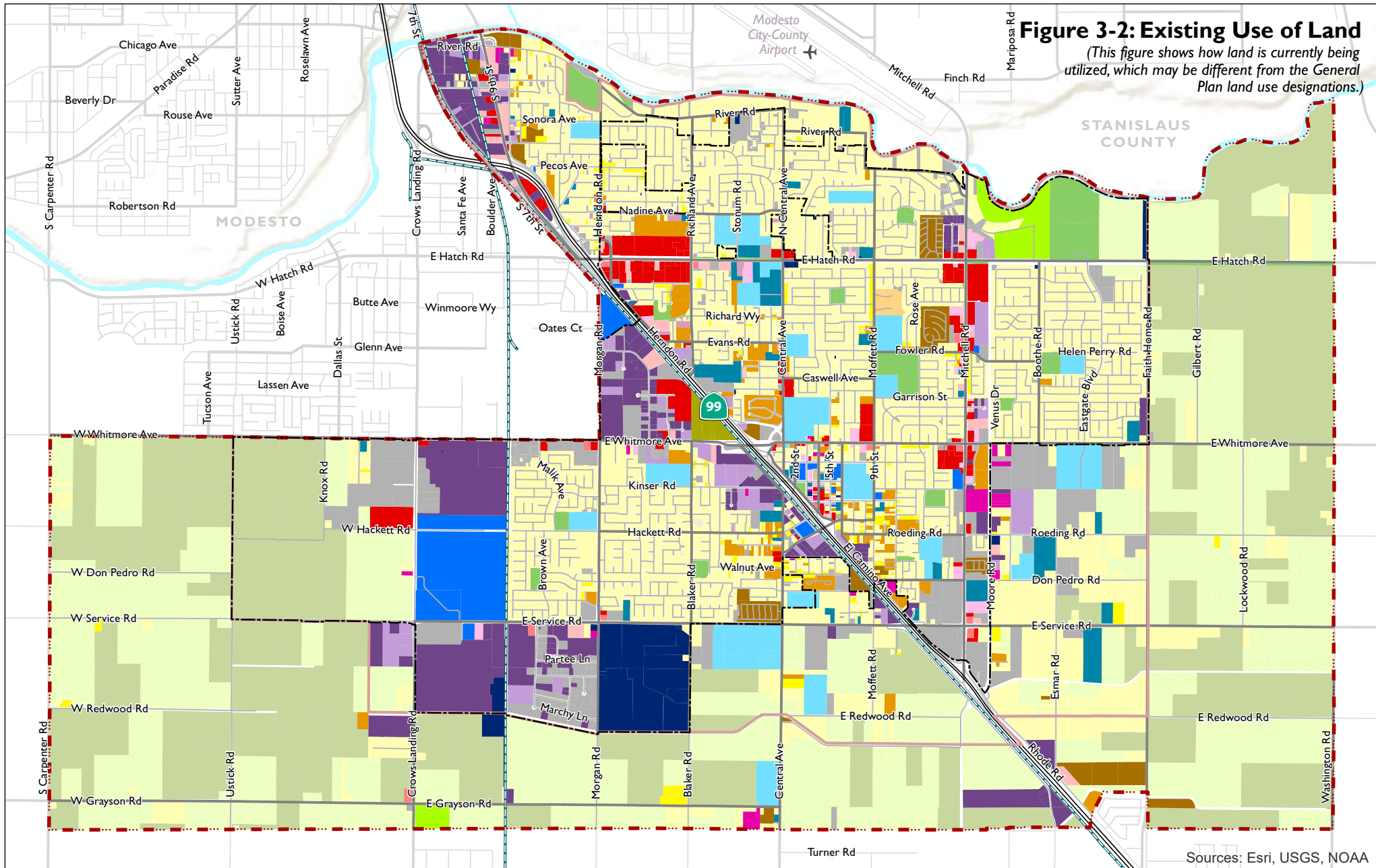
the net site area required per unit. For non-residential uses, development intensity is regulated in the General Plan by a measure known as Floor Area Ratio (FAR), which refers to the ratio between a building's total floor area and the total area of the site. For instance, a one-story building occupying a quarter of a parcel has an FAR of 0.25, while a two-story building occupying the same quarter of a parcel has an FAR of 0.5.

Low Density Residential land use designations dominate the 1997 Land Use Diagram, with some Medium Density Residential and High Density Residential land along SR-99, in the West Landing Specific Plan area and along Mitchell Road. Commercial uses line SR-99 and Mitchell Road, and industrial uses are designated on areas along the west side of SR-99 and in the southwest of the Planning Area.

As shown in Figure 3-4, the 1997 General Plan includes an urban growth area with land intended for development by the year 2015. This urban growth area is divided into two phases to facilitate strategic growth. Some of the land designated as Phase 1 of the urban growth area has been developed, such as the Eastgate Community, while other areas remain in agricultural use. All of Phase 2 has remained undeveloped. In addition, the 1997 General Plan includes areas designated as Residential Reserve and Industrial Reserve intended for planning and development after 2015.

Figure 3-2: Existing Use of Land

(This figure shows how land is currently being utilized, which may be different from the General Plan land use designations.)



Sources: Esri, USGS, NOAA

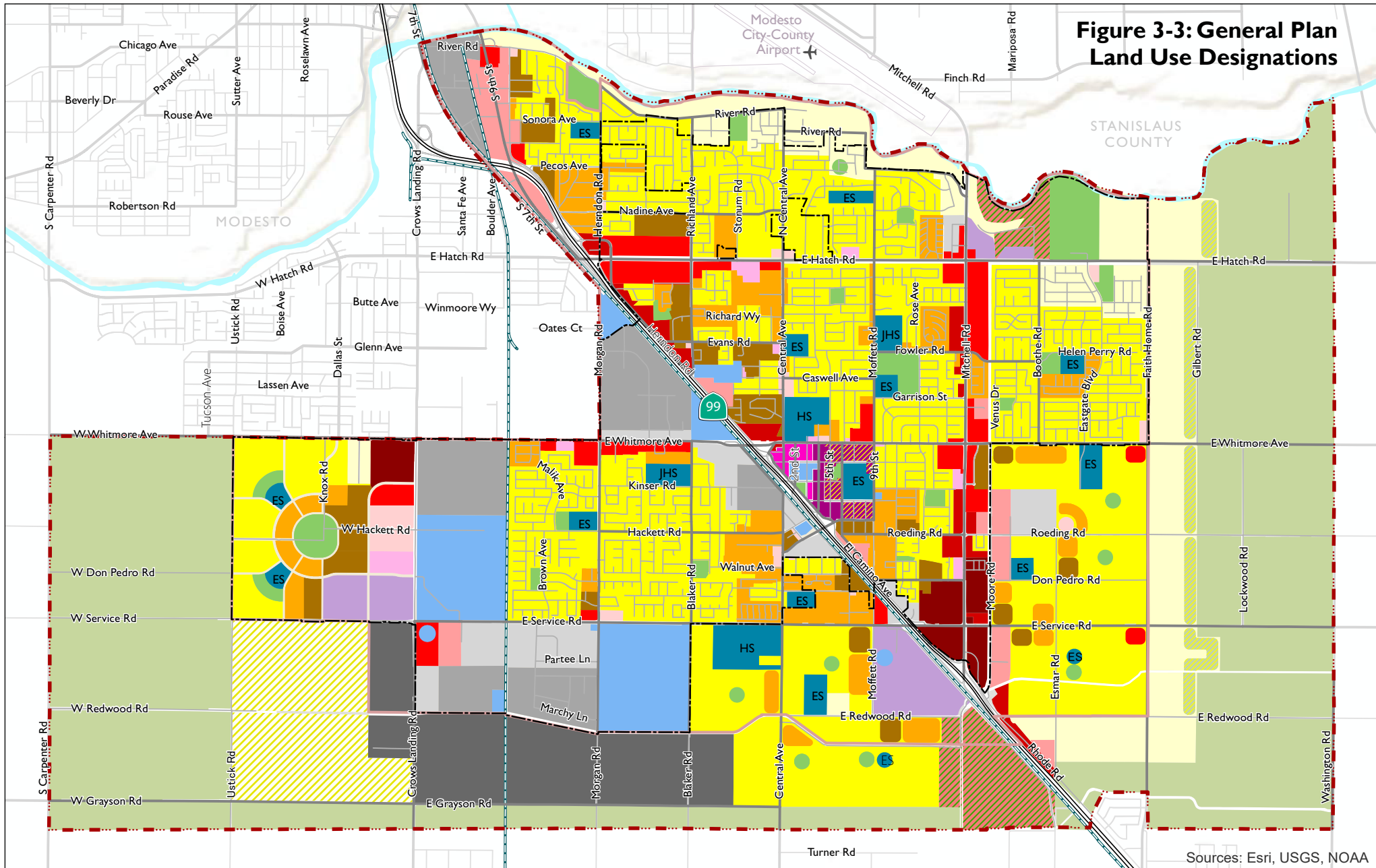
- | | | | |
|----------------------------------|---------------------------|------------------------------------|----------------------------|
| Agriculture | Mobile Homes | Light Industrial | Parks/Open Space/Greenways |
| Ag Residential/Rural Residential | Mixed Use Residential | General Industrial | Golf Course |
| Single Family Residential | Auto Commercial | Public Facility | Cemetery |
| Duplex/Two Family Residential | Service Station | Religious Facilities/Institutional | Public Parking |
| Townhomes | General/Retail Commercial | Educational Facility | Utilities |
| Multi Family Residential | Office | Hospital/Nursing Facility | Vacant |

- City of Ceres
- Sphere of Influence
- Planning Area

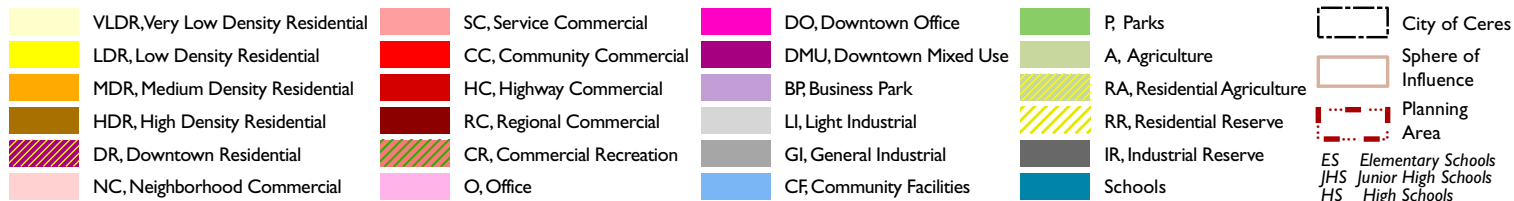
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Data Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

GENERAL PLAN UPDATE
City of Ceres

**Figure 3-3: General Plan
Land Use Designations**



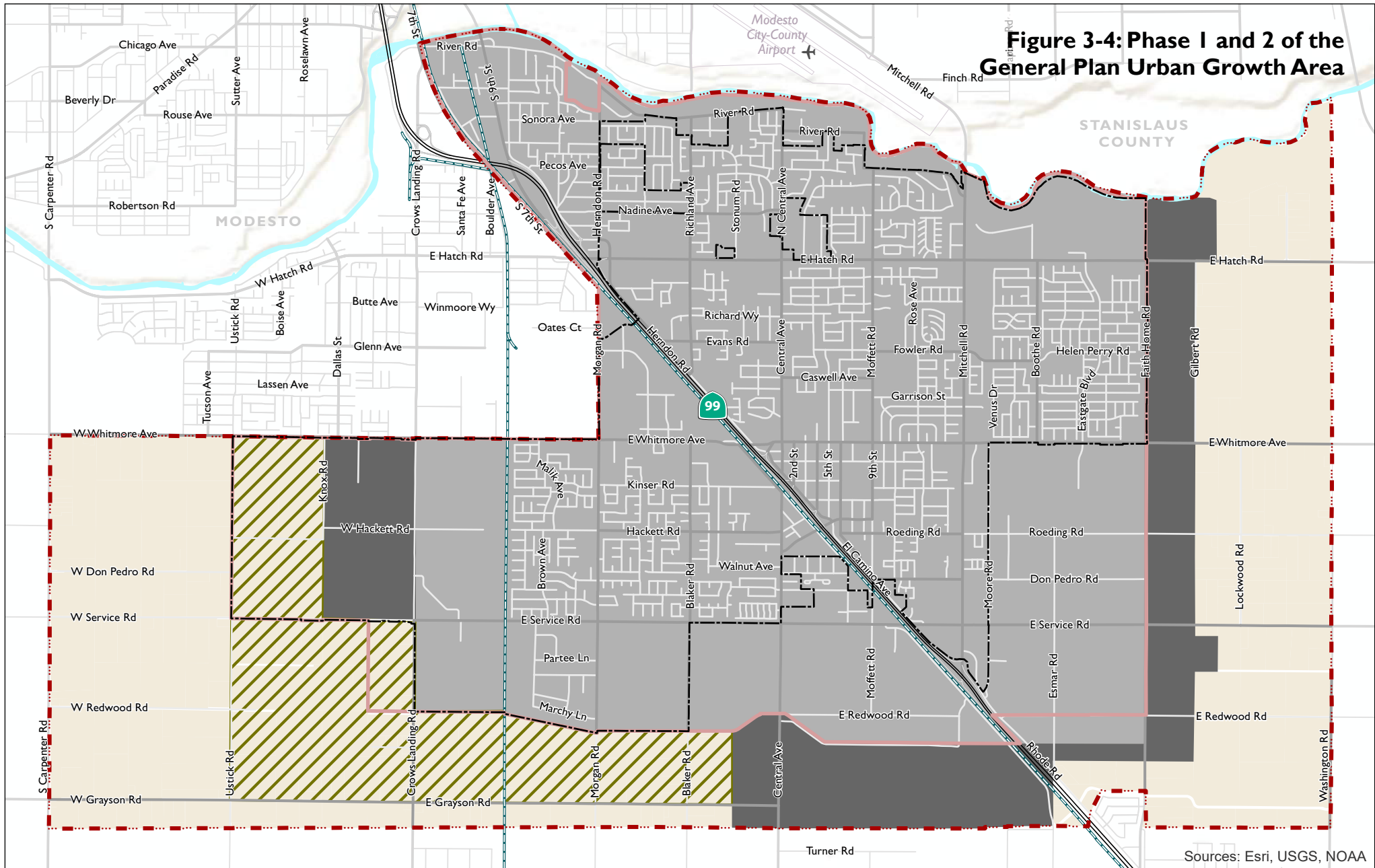
Sources: Esri, USGS, NOAA



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Data Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

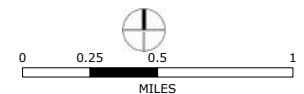
GENERAL PLAN UPDATE
City of Ceres

Figure 3-4: Phase I and 2 of the General Plan Urban Growth Area



Sources: Esri, USGS, NOAA

- | | | |
|---------------|-------------|------------------------------|
| — Highway | — Railroads | ▨ Reserve Area |
| — Ramps | — River | ▭ City of Ceres |
| — Major Roads | ■ Phase I | ▭ Ceres Sphere of Influence |
| — Local Roads | ■ Phase 2 | ▭ General Plan Planning Area |



Data Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

GENERAL PLAN UPDATE
City of Ceres

Table 3-2: 1997 Ceres General Plan Land Use Designations

<i>Land Use Designation</i>	<i>Uses and Development Types</i>	<i>Typical Lot Size</i>	<i>Density and Intensity</i>
Residential			
Residential Agriculture	Single family residential including mobile home and manufacture Agricultural	2 - 5 acres	0.2 - 0.5 du/acre
Very Low Density	Single family residential	8,000 square feet - 1 acre	Up to 4.5 du/acre
Low Density	Single family residential	5,000 - 7,000 square feet	Up to 7.0 du/acre
Medium Density	Detached single family including mobile homes and patio homes Attached single family including townhouses and zero lot line homes Multiple family residential including condominiums, duplexes, triplexes, and apartments	Detached single family: 3,000 - 5,000 square feet No specific lot size for attached single family and multiple family residential	7.0 - 12.0 du/acre
High Density	Attached single family including townhouses and zero lot line homes Multiple family residential including condominiums, duplexes, triplexes, and apartments	Unspecified	12.0 – 25.0 du/acre
Commercial			
Office	Medical, professional, administrative, general office, and limited commercial service Low, Medium, and High Density Residential development is permitted at densities of 5 to 25 du/gross acre	Unspecified	Up to 1.0 FAR / 5.0 -25.0 du/acre
Neighborhood Commercial	Neighborhood retail and services uses such as supermarkets, pharmacies, and drycleaners Office uses and business services if consistent with overall character of neighborhood	Unspecified	Up to 0.5 FAR / 12.0 – 25.0 du/acre
Community Commercial	Full range of retail and service uses including retail store, motor vehicle sales, and hotels	Unspecified	Up to 0.5 FAR
Highway Commercial	Uses designed to serve motorists traveling along SR-99 or uses that depend on high visibility from the highway	Unspecified	Up to 0.5 FAR
Service Commercial	Heavy and wholesale commercial uses including repair facilities, distributing uses, and storage-oriented uses	Unspecified	Up to 0.5 FAR
Downtown Commercial/Residential	Full range of retail and service uses including apparel stores, hotels, and entertainment uses serving both a community-wide market and daytime downtown employment population Office uses including banks, financial, and medical Existing residential neighborhoods in downtown Single and multi-family residential Mixed high density residential and commercial development is encouraged	Unspecified	Up to 3.0 FAR / 5.0 – 25.0 du/gross acre

Table 3-2: 1997 Ceres General Plan Land Use Designations

<i>Land Use Designation</i>	<i>Uses and Development Types</i>	<i>Typical Lot Size</i>	<i>Density and Intensity</i>
Regional Commercial	Region serving commercial uses including large-scale shopping centers and factory outlets Other commercial uses including apparel stores, home furnishings, and real estate offices Residential uses on second floors will be permitted by discretionary approval	Unspecified	0.5 FAR (and up to 5.0 FAR if select cases)
Industrial			
Business Park	Uses include limited industrial, office centers, research, medical, and warehousing in low intensity, landscaped settings	Unspecified	Up to 0.3 FAR
Light Industrial	Light industrial and heavy commercial uses including light manufacturing, and contractor yards	Unspecified	Up to 0.5
Other			
Commercial Recreation	Publicly and privately operated recreational uses including golf courses, amusement parks, and sports complexes. Supporting uses permitted by discretionary approval	Unspecified	Up to 0.2 FAR
Community Facilities	City's major public and private facilities including fire stations, although designation of "Community Facilities" of any future site that has not been acquired shall not be construed to limit existing or future uses	Unspecified	Unspecified
Schools	Existing and proposed public schools, although designation of "Schools" of any future site that has not been acquired shall not be construed to limit existing or future uses	Unspecified	Unspecified
Parks	Existing and proposed parks although designation of "Parks" of any future site that has not been acquired shall not be construed to limit existing or future uses	Unspecified	Unspecified
Residential Reserve	To be considered for development with residential uses beyond the time frame of the 1997 General Plan	Unspecified	Unspecified
Industrial Reserve	To be considered for development with industrial uses beyond the time frame of the 1997 General Plan	Unspecified	Unspecified
Adjacent Urban	Acknowledges the land use policies of the adjacent jurisdictions	Unspecified	Unspecified
Agriculture	Agriculture and agriculturally-related uses Land outside of the City of Ceres with "Agriculture" designation is intended to express Ceres' preference that these areas remain in agricultural use and production	Minimum of 10 acres	Unspecified

Note:

1. Density and Intensity is given in units of Dwelling Unit / Acre for residential uses and Floor to Area Ratio for commercial uses

Source: 1997 Ceres General Plan.

3.3 Existing Zoning

In general, zoning is used to achieve the goals of the General Plan and to encourage compatible uses of proximate sites or parcels. Ceres's zoning ordinance is a regulatory tool of the City, so it only applies within the city limits rather than to the entire Planning Area. Outside of city limits, land is subject to Stanislaus County zoning. Zoning ordinances consist of a zoning map defining the location of districts and a code detailing requirements for each district.

Ceres's Zoning Ordinance provides separate zoning districts for the following types of uses: Industrial, Commercial, Mixed use, Residential, Agricultural, Community Facilities, and Planned Community. Figure 3-5 shows the existing zoning of the Planning Area including the districts within the city limits according to the Ceres Zoning Map adopted in 2013 and the Stanislaus County zoning districts for unincorporated land.

PLANNED COMMUNITY

The Planned Community (P-C) zone district, which covers about 2,500 acres in Ceres including the area constituting the West Landing Specific Plan in the west of the city, requires that all land in the zone be held under a single ownership or under unified control and that applications for a Planning Community zone be accompanied by a master plan. In all Planned Community zones, the percentage of each type of house permitted is limited in order to promote a mixture of housing types. Some of the land that is zoned as Planned Community is currently occupied by agricultural uses and has yet to be developed, particularly in the western areas of the city covered by the West Landing Specific Plan adopted in 2011.

RESIDENTIAL

Residential uses include Residential Agriculture (R-A), Single family (R-1) and Multi-Family districts of Two-Family (R-2), Medium Density (R-3), and High Density (R-4). The majority of residential land in Ceres is zoned Single Family Residential. Higher density areas are primarily located in Downtown and in older neighborhoods near SR-99.

COMMERCIAL

Commercial zones of various types including Community Commercial (CC, C-2) and Highway Commercial (HH, H-1) line both sides of Mitchell Road with a large cluster of regional commercial lots near the intersection of Mitchell Road and SR-99 that have not yet been developed. In addition, commercial zones such as Administrative Professional (A-P) and Neighborhood Commercial (C-1) are interspersed throughout the city, including at the intersection of Hatch Road and SR-99, as well as along the east side of SR-99.

INDUSTRIAL

Light Industrial (M-1) and General Industrial (M-2) zones line the western side of SR-99. Although there are large areas of land designated for industrial uses in the General Plan Land Use map, they are zoned as Planned Community (PC).

MIXED USE

Mixed Use 1 (MX-1) and 2 (MX-2) are used and defined in the Mitchell Road Specific Plan. Mixed Use 1 is intended to promote zones of mixed uses including low, medium, and high density residential, retail and service commercial as well as business park uses. There is an area along the eastern side of Mitchell Road southwest of the Eastgate Community zoned for Mixed Use 1 that is currently a mix of vacant lots and low-density service commercial uses. Mixed Use 2 is meant to promote a mix of Low, Medium and High Density Residential, Recreational, and Business Park. The only area zoned as Mixed Use 2 is located in the northeast corner of the city along the Tuolumne River and is currently undeveloped.

COMMUNITY FACILITIES AND PARKS

Community Facility zones, in which public buildings including schools are located, are mostly centrally located, with the exception of a large area zoned Community Facility in the south of the city, occupied by the wastewater treatment facility. Park zones are located throughout the city in most residential areas.

STANISLAUS COUNTY

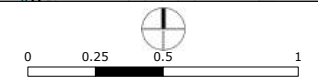
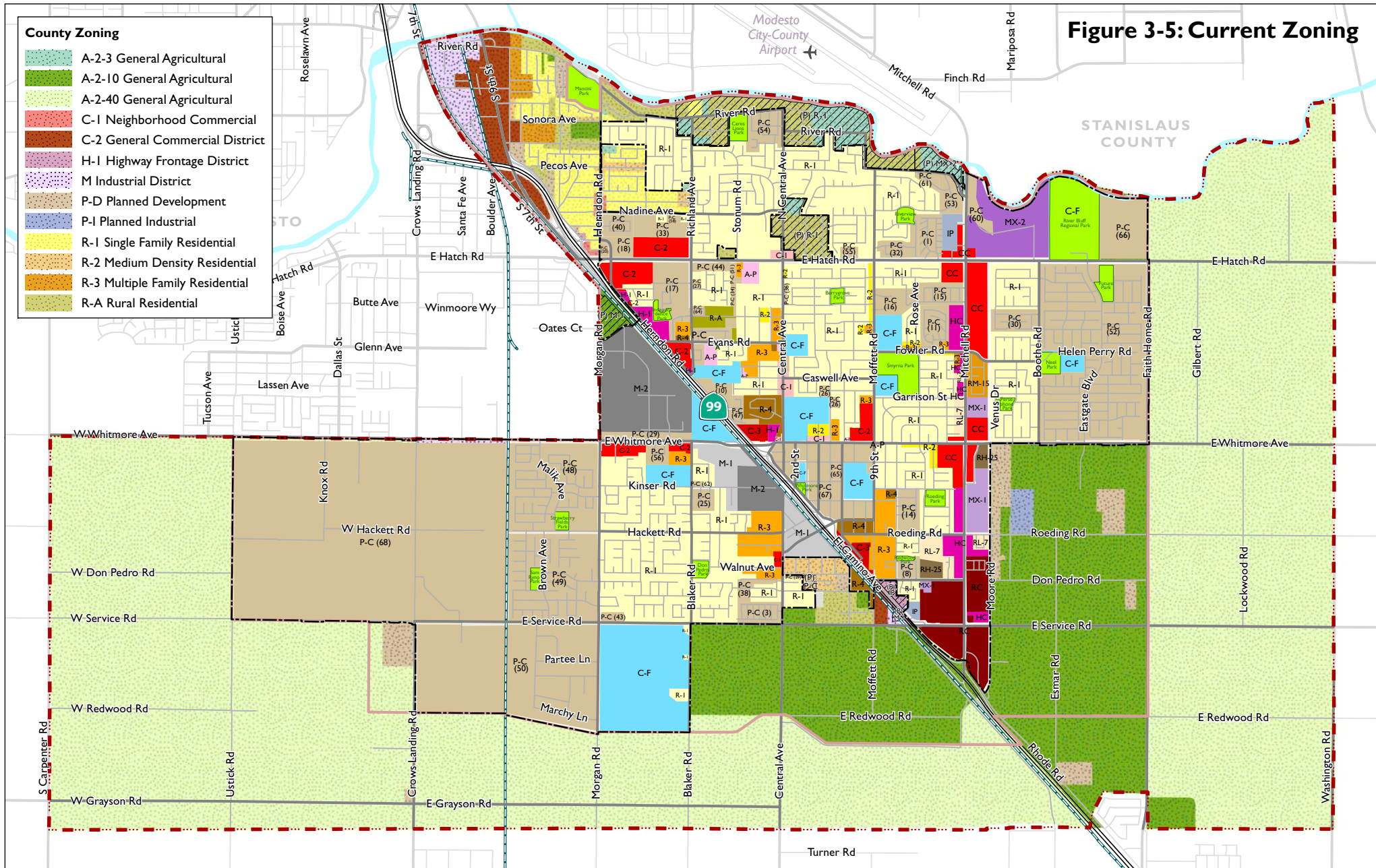
Outside of the city limits, the County has zoned most of the unincorporated land in the Planning Area as agricultural. Within the Ceres SOI, the land is zoned by the county as A-2-10, which is a General Agricultural District that does not require permits for single family dwellings on parcels less than 20 acres. Outside of the Ceres SOI, the land is zoned A-2-40, which is a General Agricultural District that requires a staff-approved permit for single family dwellings on parcels less than 20 acres. In the north of the Planning Area, there are a mix of County zones including Single Family Residential adjacent to the Ceres city limits, Multiple Family Residential and General Commercial further from the city limits, and Industrial along the border of the Planning Area.

3.4 Related Plans, Guidelines, and Projects

Specific Plans implement General Plan policies in focused geographic areas. Master Plans are used to plan the land use, circulation, housing, infrastructure, public facilities, and public services of annexed land as required by the City of Ceres Annexation Policy. The City of Ceres has adopted four Specific and Master Plans since the 1997 General Plan. One of these plans, the Eastgate Master Plan, has been almost entirely built-out. In addition, the WRSP is currently being prepared. Two Master Plans, the Copper Trails Master Plan and the Maple Glen Master Plan, were drafted but never adopted. The location and spatial coverage of the three adopted, yet not fully developed, Specific Plans and the Draft WRSP is shown in Figure 3-6. The Stanislaus County General Plan, which affects portions of the Planning Area outside Ceres city limits, is also discussed in this section.

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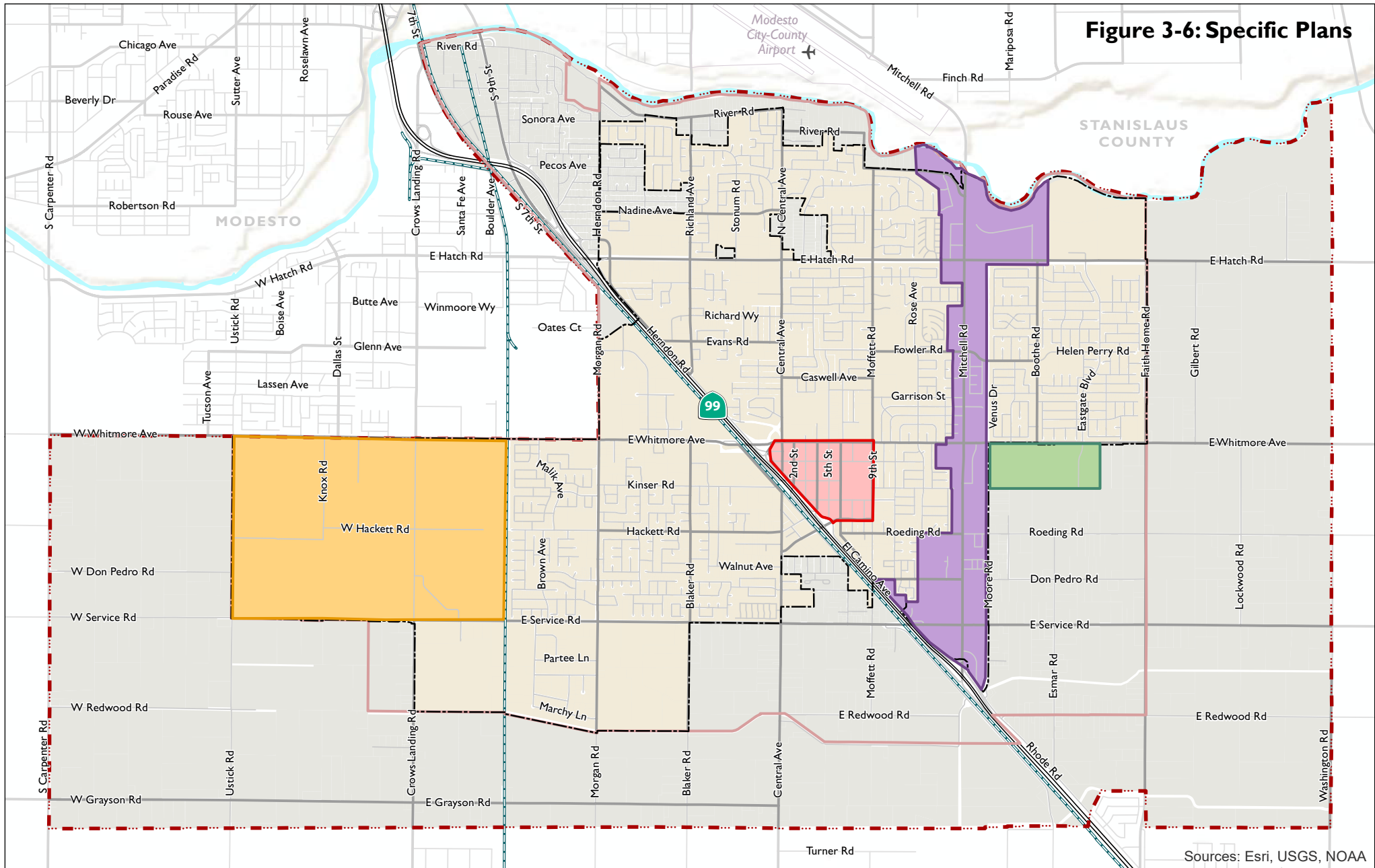
Figure 3-5: Current Zoning



Data Source:
City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

GENERAL PLAN UPDATE
City of Ceres

Figure 3-6: Specific Plans



Sources: Esri, USGS, NOAA

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|-------------|--|--|
| — Highway | Specific Plans | Whitmore Ranch Specific Plan |
| — Ramps | Downtown Specific Plan | City of Ceres |
| — Railroads | Mitchell Road Corridor Specific Plan | Ceres Sphere of Influence |
| — River | West Landing Specific Plan | General Plan Planning Area |

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Data Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

GENERAL PLAN UPDATE
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CERES DOWNTOWN SPECIFIC PLAN

Adopted in 2011, the Ceres Downtown Specific Plan covers 121 acres and builds on existing investments made Downtown, including the development of a Community Center in 2009, a fire station in 2003, and the Turlock Irrigation District offices in 2009. In addition, the Downtown Plan is inspired by the existing retail businesses, historical resources, residential neighborhoods, and parks in the area. The Plan outlines the following vision for Downtown:

“Downtown will once again become the vibrant heart of the City of Ceres, as this area was during Ceres’ beginning...Downtown will be the go-to location for local residents wishing to take in a movie, entertain visitors, host an event or socialize with their neighbors.”

Policies and strategies to achieve this vision include attracting new development Downtown; enhancing the unique character of each of the north/south streets; improving the streetscapes and multi-modal transportation infrastructure and providing connections between new and existing green spaces. The city’s Redevelopment Agency was expected to provide public funding to implement the Downtown Specific Plan; however, all redevelopment agencies were dissolved by State legislation in 2012.⁴ Thus, the implementation of the Specific Plan has been limited as of March 2016, although funds have been allocated for roadway improvements to a portion of Fourth Street with an anticipated completion date of fall 2017.

COPPER TRAILS NEIGHBORHOOD MASTER PLAN

The Copper Trails Neighborhood Master Plan has not been adopted and the area has not been annexed, but the Plan may be reinitiated in the future. The Neighborhood Master Plan covers 175 acres along the southern edge of the city in the Phase 1 Urban Growth Area including the existing Central Valley High School. It includes a variety of existing General Plan land use designations, including residential, public facilities, and parks. It is used for the review and approval process of developments and plans proposed for the Copper Trails Neighborhood. Development has not yet occurred in the Master Plan area.

EASTGATE PLANNED COMMUNITY MASTER PLAN

The Master Plan for the Eastgate Community was adopted in 2000 and revised in 2004 based on the City’s acquisition of adjacent parkland. The Plan included annexation of 377 acres in the Ceres’s Phase 1 Urban Growth Area, and the area is almost completely developed. The Eastgate Master Plan intended to create a “unique and innovative community design” around an existing elementary school, which is similar to the vision of the Copper Trails Neighborhood Master Plan. Almost all of the Eastgate Master Plan Area has been built out with the residential development for which it was planned; however, the Plan includes a small amount of medium density housing adjacent to the school which has been built as low-density housing and a small area of neighborhood commercial, which has not yet been developed.

⁴ The California State Legislature approved the dissolution of Redevelopment Agencies as part of the 2011 Budget Act. Redevelopment Agencies were officially dissolved as of February 1, 2012.

MAPLE GLEN MASTER PLAN

The Maple Glen Master Plan covers 195 acres, but the Plan has not been adopted and the area has not been annexed into the City of Ceres. The Maple Glen Master Plan area is directly east of the Copper Trails Neighborhood, bounded by Service Road, Central Avenue, Moffett Road, and the TID Lateral #2 Canal. The Maple Glen Master Plan Area encompasses an existing elementary school, agricultural land, and very low-density housing and proposes mostly Low Density Residential development with average densities of 6.0 units per acre, and some Very Low, Medium and High Density Residential totaling about 960 housing units. An eight-acre Neighborhood Commercial parcel is proposed in the northeast corner of the project site, and a neighborhood park, trails, and bicycle paths are also included. The Plan includes Design Guidelines for each proposed type of development with recommended building articulation, lighting, and street tree species. The area has not yet been developed.

MITCHELL ROAD CORRIDOR SPECIFIC PLAN

The Mitchell Road Corridor Specific Plan covers approximately 450 acres along two and a half miles of Mitchell Road. The Plan is intended to guide development to produce an urban corridor that integrates industrial, commercial and residential uses. The Plan emphasizes large-scale commercial development in the southern portion near SR-99; a mix of local-serving uses in the central portion; and a mix of recreational, residential, and other uses in the area north of Hatch Road near the Tuolumne River. Accompanying the Plan are design guidelines that cover site planning, architecture, circulation, open space, and other aspects of physical planning and design.

WEST LANDING SPECIFIC PLAN

The West Landing Specific Plan encompasses about 960 acres of land. Although the land was annexed in 2012, most of the West Landing Specific Plan area has not yet been developed, with the exception of the Stanislaus County-related buildings, including the Public Safety Center, County Sheriff/Detention Center (Jail), Community Services Agency, Animal Shelter, and Agricultural Center. The vision for West Landing includes two elementary schools, a mixed-use and compact development pattern, and a diversity of housing choices. The West Landing Specific Plan would permit the development of up to about 1,992 single family homes; 1,667 multi-family homes; 171 acres of new commercial, office, and business park uses; 47 acres of parks; and 16 acres for two elementary schools.

WHITMORE RANCH SPECIFIC PLAN (WRSP)

Development of the Draft WRSP was initiated in 2016. The Plan covers approximately 100 acres located south of Whitmore Avenue and east of Moore Road. Sixty acres of the Draft WRSP is planned for future residential development, and approximately 40 acres includes two developed school sites: La Rosa Elementary School and Ceres Chavez Junior High School.

MITCHELL RANCH CENTER REUSE STRATEGIC PLAN

Wal-Mart intends to close their store at the intersection of Mitchell Road and Hatch Road and open a new store further south on Mitchell Road near a planned interchange between Mitchell Road, Service Road and SR-99. In preparation for that change, the Mitchell Ranch Center Reuse Strategic Plan was adopted in 2011 to plan for the sale or re-tenanting and maintenance of the

building currently occupied by Wal-Mart at Mitchell Road and Hatch Road. The Plan aims to achieve the following objectives: “Sell or re-tenant the Ceres Wal-Mart Store #1983 within eighteen months of the time that the store is relocated, and maintain the store and site in good condition during the time that it remains vacant.”⁵

SMALL LOT DESIGN GUIDELINES

The Ceres Small Lot Design Guidelines were adopted in 2007 to provide a clear set of design policies and expedite the planning review process. Small-lot housing is often more affordable than larger-lot development and can encourage walkable neighborhoods with improved accessibility and community character. The Design Guidelines apply to single family detached residential development on lots of 4,999 square feet or less, which can only occur in Planned Community Zones.

STANISLAUS COUNTY GENERAL PLAN AND AIRPORT LAND USE COMPATIBILITY PLAN

Stanislaus County’s General Plan was adopted in 1994, and the County is currently updating its General Plan. In addition, the County is currently updating its Airport Land Use Compatibility Plan to promote compatibility between three airports in Stanislaus County: the Modesto City-County Airport, the Oakdale Municipal Airport, and the former Crows Landing Air Facility, and the surrounding land uses around each. The Airport Land Use Compatibility Plan updates will also affect the County General Plan and the City’s General Plan as both documents must be consistent with the updated Airport Land Use Compatibility Plan. The County General Plan update will include new strategies and improve consistency with recent legislation and policy, but the County Land Use Map designations are not anticipated to change. Generally, the County’s General Plan aims to address the large population growth in the area and the related development. There are broad goals for each of the General Plan elements, such as “Ensure compatibility between land uses” and “Provide a system of streets and roads throughout the County which meets land use needs.”

3.5 Urban Design

This section provides information on the physical form of current development in the city. Urban design is the physical embodiment of community character, and it plays a significant role in neighborhood and city identity. It influences people’s experiences of places and their experiences in those places. Community design and urban form are examined on a range of scales, from the citywide down to the street.

CITY FORM

Evolution of City Form

Figure 3-7 illustrates Ceres’s historical growth. As of 1916, Ceres was composed of what is now known as Downtown. Over the next four decades until the early 1950s, Ceres experienced very limited growth, while in comparison, much of Modesto’s southeastern neighborhoods were being

⁵ Wal-Mart Store #1983 Ceres, *California Reuse Strategic Plan*. September 12, 2011.

built. However, in the second half of the 20th century Ceres greatly expanded. From the 1950s to the 1980s, the Ceres city limits stretched up to the Tuolumne River and east to Mitchell Road. This growth occurred almost entirely on the east side of SR-99. Over the next 30 years, the land area of the city roughly doubled with the annexation of the Eastgate Community and large areas of land west of SR-99, including the West Landing Specific Plan area. Unlike the city's mid-century growth, the expansion of city limits between 1987 and 2016 was concentrated in areas west of SR-99, rather than east of SR-99.

Current City Form

Ceres has a relatively compact form that helps relieve development pressures on farmland and creates opportunities for walkable neighborhoods not present in most contemporary small towns and even larger cities in California. The existing form of Downtown Ceres, with its traditional street grid pattern, sidewalks, and park space, provides potential for it to serve as the heart of the city. As the city grew on the west side of the highway in recent decades, SR-99 and the Union Pacific railroad tracks now run through the middle of the city. The location of the highway and railroad provides Ceres with good access and visibility from the highway, but it diminishes internal accessibility between neighborhoods within Ceres.

Due to a gridded pattern of main thoroughfares, the city is generally composed of large square areas of development a square mile or 640 acres in size that are lined by transportation arterials running north/south or east/west, such as Hatch Road, Mitchell Road, Central Avenue, Service Road, Morgan Road and Whitmore Avenue. These areas are further divided into quadrants of about 40 acres, some of which are examined in the neighborhood form analysis below.

Within these blocks, the development is relatively compact. For example, in 2014, there were more residents per square mile in Ceres than in Sacramento or Modesto. This kind of built environment can lend itself to greater accessibility, more opportunities to walk and bicycle, and neighborly character. In addition, more walkable neighborhoods, like those in Ceres, are increasingly attractive to young professionals as well as aging Baby Boomers. Table 3-3 compares the population, area, and population per square mile of various cities in 2014.

Table 3-3: Comparison of Population Per Square Mile in Ceres and Other California Cities

<i>City</i>	<i>Population</i>	<i>Area (square miles)</i>	<i>Population / Square Mile</i>
Bakersfield	358,700	149	2,444
Ceres	46,570	9	4,993
Modesto	205,984	45	4,620
Sacramento	476,075	98	4,862
Turlock	69,875	17	4,128

Source: 2010-2014 American Community Survey 5-Year Estimates

Neighborhood Form

At the neighborhood scale, the structure, dimension, and character of the built environment can create a “sense of place” that defines the neighborhood for the resident. The neighborhood form

analysis gives the City an opportunity to assess its neighborhood patterns and to determine the types of urban form it may wish to encourage as it continues to grow and evolve. In addition, Ceres prides itself on its “small-town character.” As the population grows, creating neighborhoods with familiar urban forms and shared commercial centers and services can help maintain the “small-town character.” Figure 3-8 identifies four areas in Ceres that represent different phases and forms of development over the area’s history. The areas used in this analysis each cover a 50-acre square unit, so that areas of equal size are compared. Figure 3-9 illustrates particular components of the neighborhood form of these areas.

The components of analysis in Figure 3-9 and their implications are explained below.

- **Block Pattern.** The dimensions and shapes of blocks are defined by street patterns. Different block patterns affect accessibility and neighborhood character. Suburban development patterns with large blocks of different shapes and sizes, curving streets and cul-de-sacs discourage through-traffic and can help create privacy, but they also reduce connectedness and opportunities for interaction with the larger neighborhood and city. For the same reasons, this development pattern discourages through traffic, and limits accessibility for local traffic, pedestrians, and bicyclists. For example, in neighborhoods with large blocks and cul-de-sacs, one location in the neighborhood may be relatively near another point in the neighborhood, but the distance needed to travel between the points is much longer than in a neighborhood with a more fine-grained development pattern. Pedestrian and bicycle paths between cul-de-sacs can allow for pedestrian or bicycle through-traffic, which can help maintain limited through-traffic while still allowing for local mobility and connectivity by walking and biking.
- **Through Streets.** Through streets provide accessibility by traversing the length of a neighborhood, and/or connecting to more than one collector or arterial. The number of through streets within a residential area indicates the relative ease with which one can travel to and from the neighborhood and to other parts of the city.
- **Intersections.** The number of intersections is a good indication of a neighborhood’s internal level of accessibility. A higher number of intersections translates into greater options for travel within the neighborhood. Additionally, intersections provide opportunities for interactions among residents, which may contribute to a stronger sense of place and livability.
- **Entries to Neighborhood.** Similar to through streets, entries to neighborhoods indicate the connectivity between the neighborhood and the larger city. A greater number of entries suggests the neighborhood has a more permeable border allowing for greater integration between residents of different areas. A smaller number of entries may indicate greater privacy within the neighborhood.

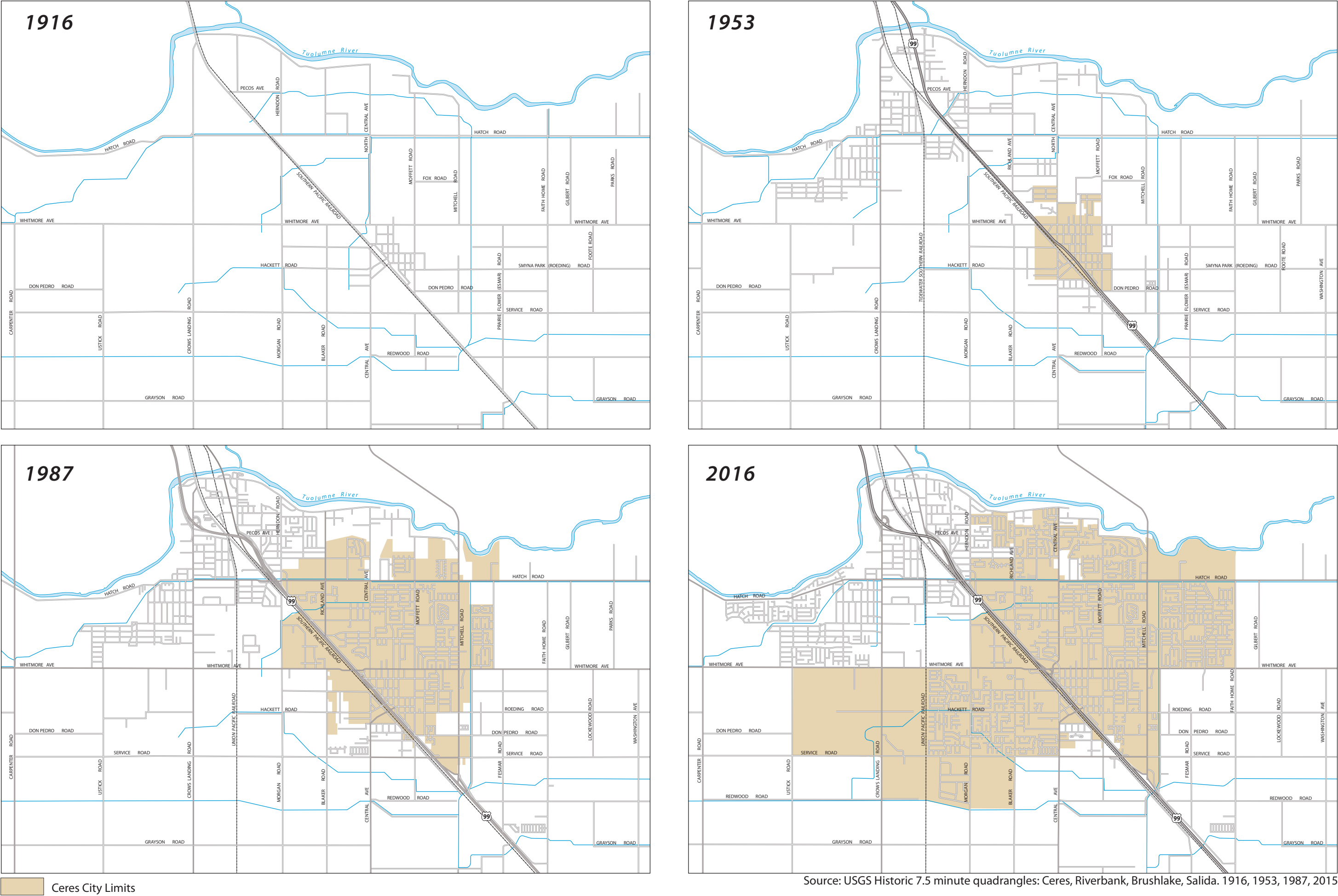
The five areas in the neighborhood form analysis represent the range of residential development types in Ceres, from the historical central area to various stages of post-war and twentieth-century suburbanization. Below is a short description and form analysis of each area.

- **Downtown (Developed prior to 1953).** This area, representing the earliest urban development in Ceres, has a traditional street grid pattern with small, rectangular blocks. In exception, there is one relatively large block mostly occupied by Argus High School

and other Ceres Unified School District buildings. The blocks are 260 feet by 480 feet, although many are bisected by north/south alleyways 20 feet in width, resulting in two smaller blocks of 120 feet by 480 feet. These alleyways have the potential to further increase accessibility and add to the neighborhood character. Almost all of the streets extend through the area, resulting in a high number of intersections and entries. Three of the main intersections have landscaped roundabouts that help define the neighborhood. The City is planning to make improvements along Fourth Street in Downtown. These improvements may replace some of the landscaped roundabouts prior to the adoption of the General Plan. However, SR-99 runs along the west side of Downtown, and due to the expansion of Ceres west of SR-99 in recent decades, Downtown is separated from many neighborhoods and industrial centers by the highway. Downtown includes a mix of older and new civic buildings including the Ceres Community Center; pedestrian-oriented commercial uses along 4th Street and 3rd Street; single family homes; and the Ceres-Whitmore Park.

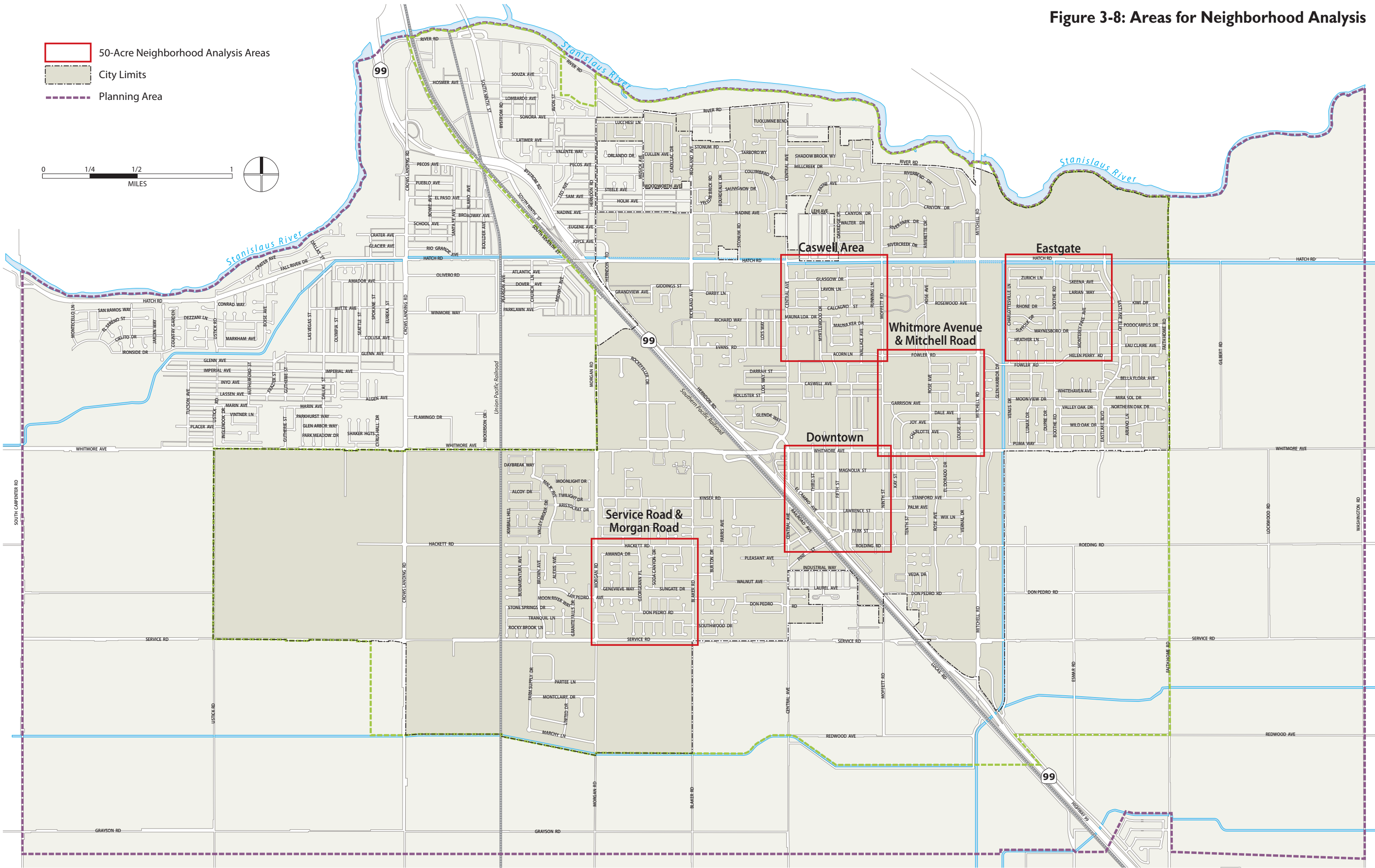
- **Whitmore Avenue and Mitchell Road (Developed between 1953-1969).** Residential development on the north side of Whitmore Avenue near its intersection with Mitchell Road illustrates a blending of the traditional urban grid with a curvilinear street pattern more typical of the post-war period. Streets in the southern half of the area are designed in an orderly, almost symmetrical pattern. Compared to Downtown, the number of through streets, intersections and entries to the neighborhood is limited. The majority of the area is residential with single-story bungalow houses, except for the northwest quadrant of the area, which includes Smyrna Park and Carroll Fowler Elementary School.
- **Caswell Area (Developed between 1969-1987).** The area south of Hatch Road between Central Avenue and Moffett Road also has irregular block sizes and several cul-de-sacs. It is mostly composed of single family residential homes, with Berrygrove Park in the center of the area and Caswell Elementary School in the southwest corner.
- **Service Road and Morgan Road (Developed since 1987).** The area west of SR-99 is similar to the Eastgate Planned Community but has an even greater number of cul-de-sacs with more than 20 in total. It is also composed of single family residential development, and the homes are larger than those built before 1987. There is a church and a few commercial uses in the southwest corner of the area.
- **Eastgate Community (Developed since 2001).** The Eastgate Planned Community is similar to the other more recently built areas in both form and use. Just outside the study area is an Elementary School, and there are commercial uses along Mitchell Road. Although the newer neighborhoods have a greater number of intersections, 11 of the streets end in cul-de-sacs. However, there are cul-de-sacs in the Eastgate community that are “open” to pedestrians and bicyclists. These paths connect the neighborhood to the bike trail along the canal on the northern side, and they contribute to internal connectivity by providing linkages inaccessible to cars between different streets.

Figure 3-7: Historic Growth of Ceres, 1916-2016



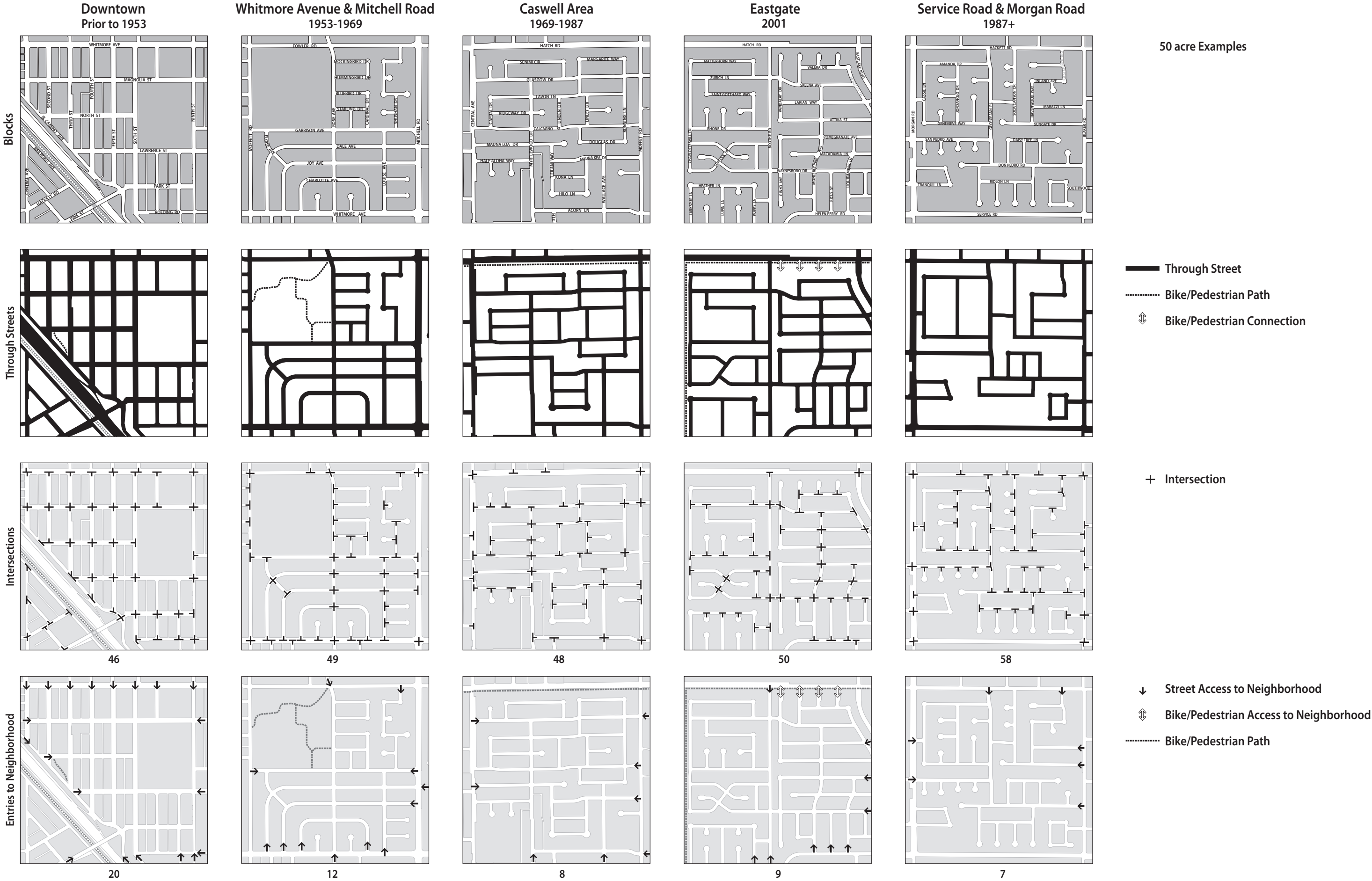
Source: USGS Historic 7.5 minute quadrangles: Ceres, Riverbank, Brushlake, Salida. 1916, 1953, 1987, 2015.

Figure 3-8: Areas for Neighborhood Analysis



Source: City of Ceres, 2015; Dyett & Bhatia 2016.

Figure 3-9: Neighborhood Form Analysis



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Streetscape and Public Realm

Streetscape refers to the elements of a street—including the road, public faces of adjacent buildings, sidewalk, and street furniture—that combine to form the street’s character. Ceres hosts a range of streetscape types that influence the experience and utility of different areas of the city. How these streets are improved and structured provides the framework for development patterns, character, and accessibility throughout the city. Photos of each are presented on below.

- **Wide commercial corridors**, such as Mitchell Road, are arterials with primarily commercial frontage as well as some low-density residential development. With two travel lanes in each direction and nearly continuous turning lanes with no median landscaping, these streets emphasize visibility for and accessibility to single-story commercial buildings for automobiles. The wide rights-of-way—the Mitchell Road right-of-way near its intersection with Whitmore Avenue is about 110 feet—seem even wider as many commercial buildings are set far back from the street and have deep parking lots between the street and the buildings. Sidewalks line the corridor, but a limited number of street trees, frequent and busy driveways and entrances, and the wide rights-of-way with multiple lanes create an unwelcoming environment for pedestrians and bicyclists.
- **Core Area/Downtown Streets**, such as Magnolia, 2nd, 3rd, and 4th Streets form the easy-to-navigate grid of the historical downtown. These streets have one travel lane in each direction and parallel or diagonal parking. Sidewalks are lined with street trees, one- and two-story commercial buildings with active storefronts, and older residential buildings with small front yards. Landscaped traffic circles at several intersections help slow automobile traffic and add character to the streetscape. The City anticipates that Fourth Street in Downtown will undergo a significant redesign in an effort to revitalize the area. This effort will likely be completed prior to the adoption of the General Plan.
- **Cross-Town Arterials**, such as Moffett Road, Morgan Road, Blaker Road and Central Avenue, form the primary north/south arterials, and East Hatch Road, East Whitmore Avenue, and Service Road provide east/west arterials. The characters of these streets change as they move through the city and pass through different land uses. In Ceres, these arterials mainly pass through single family residential neighborhoods with small yards that face the arterial or side streets. In addition, schools are often located on these arterials along with some commercial space. Like the commercial corridors, these civic and commercial uses are often separated from the sidewalk and road by landscaping and/or parking lots. Thus, while most arterials have continuous sidewalks and some have intermittent bike lanes, the pedestrian experience is dominated by automobile traffic rather than engagement with commercial storefronts, civic facilities, or residences.
- **Neighborhood streets** vary in their character based upon the age and design of the residential development, although they generally are narrower and encourage slow traffic. The oldest neighborhoods, such as Downtown, have street parking, few or no garages facing the street, shallow setbacks, and mature street trees creating a welcoming public realm and pedestrian-friendly environment. In addition, in Downtown Ceres and some surrounding neighborhoods, there are small alleys running through the middle of the blocks. These have the potential to provide rear access and further connectivity, especially for pedestrians. Subdivisions built more recently feature somewhat wider streets, and more garages and driveways with curb cuts. “Loops and lollipops,” or cul-de-sacs and

non-connecting streets, are common in newer developments. These discourage through-traffic and slow down traffic, but also limit pedestrian accessibility and therefore discourage walking and biking.

Context, Activity Centers, and Natural Systems

In addition to the citywide and neighborhood form and streetscapes, other features of Ceres help define the city.

Context and Entrances

Ceres is adjacent to Modesto on the north and surrounded by agricultural land to the east, south, and west. The border between Ceres and Modesto is largely defined by the Tuolumne River; however, there are parts of the City of Modesto south of the river (Mancini Park), and there are areas within Ceres city limits that have a Modesto mailing address (north of Hatch Road). These overlapping borders add confusion to the city identity in those neighborhoods.

Although there is some very-low density housing in the southeast corner of the city, the eastern, southern, and western borders are well defined with residential neighborhoods or community facilities adjacent to agricultural uses, respecting the city's natural and agricultural heritage. According to the West Landing Specific Plan, forthcoming development along the western boundaries is expected to convert some of this land to urban or non-agricultural uses, but is designed to continue the pattern of a defined development edge.

Like many other San Joaquin Valley cities, SR-99 bisects the city. Therefore, all of Ceres has great proximity to SR-99, and visitors are introduced to Ceres while on the freeway. However, because the city is predominantly low-rise with very few landmarks or other signature structures, one does not get a "sense of arrival" in the city while traveling on SR-99. The City also partly attributes this issue of not having a "sense of arrival" to the lack of fully functional and modern interchanges on SR-99 in the Ceres area.

The City has identified opportunities to enhance a few entrance points to Ceres to distinguish it from other communities. Those possible locations are on Hatch Road at SR-99, Mitchell Road at the Tuolumne River, and the planned Mitchell Road/SR-99 interchange.

Streetscapes



*Cross-Town Arterial
(Moffett Road)*



*Wide Commercial Corridor
(Mitchell Road)*



*Downtown
(Fourth Street)*



*Neighborhood Street
(Chandra Court)*

Source: Google Maps Streetview

Activity Centers and Nodes

Nodes of activity, which include civic, educational, and employment centers, can be key components of a city's identity. Thus, improvements to the physical character and quality, as well as access, visibility, and intensification of these areas are often considered in the update of a General Plan. While Ceres has numerous centers of activity, the city lacks a clear community focus point—a role commonly played by a strong Downtown. The various centers and nodes that currently attract significant activity include:

- Ceres Community Center
- Ceres High School
- Central Valley High School
- G3 Enterprises and surrounding job centers, including the Public Safety Center, County Sheriff/Detention Center (Jail), Community Services Agency, Animal Shelter, and Agriculture Center
- Hatch Road Shopping Center
- Walmart Shopping Center
- Whitmore Plaza Shopping Center
- Central Valley Market Place

These are common destinations central to the economic and social life of Ceres. Photos of each are presented below.

Activity Centers and Nodes



Central Valley High School



Ceres High School



Ceres Community Center



G3 Enterprises & Surrounding Job Center



Hatch Road Shopping Center



Central Valley Marketplace Shopping Center

Source: Google Maps Streetview

Natural Systems

Ceres is located on flat land, thus the topography and natural forms of Ceres have limited effect on its urban form. The Tuolumne River helps define the northern boundary between Ceres and Modesto, but otherwise does not have a strong role in the structure or design of the city.

3.6 Development Potential

As described in the Economic Report, Ceres is expected to continue to grow over the next 20 years. Although Ceres is expected to attract both new residents and new jobs, the rate of population growth is expected to decrease and the rate of employment growth is expected to increase compared to historical levels. One of the purposes of the General Plan update is to determine where new housing and employment growth will be accommodated within the geography of the city. This analysis has two sides: demand and supply. Estimates of demand for new developable land are driven by demographic and economic projections for Ceres and the region as a whole, as presented in the accompanying Economic Report. The supply side is determined first by looking at current and proposed development in the “pipeline” and then identifying sites within the Planning Area that may be appropriate for new development, referred to as development opportunity sites. Based on the vision and goals set forth by the community, growth at these opportunity sites can be encouraged or not.

DEVELOPMENT CONTEXT

The recession had a strong impact on the housing market in Stanislaus County. From 2011 to 2014, more than 20 percent of homeowners owed more on their house than their house was worth, and in the first quarter of 2015, between 15 and 20 percent of homeowners in the County owed more on their mortgage than the mortgage was worth.

In addition to market dynamics, there are policies that contribute to the development context in Ceres. For example, in 2015, the Stanislaus LAFCO amended its 2012 Agricultural Preservation Policy, which is intended to:

- “Guide development away from agricultural lands where possible and encourage efficient development of existing vacant lands and infill properties within an agency’s boundaries prior to conversion of additional lands;
- “Fully consider the impacts a proposal will have on existing agricultural lands;
- “Minimize the conversion of agricultural land to other uses; and
- “Promote preservation of agricultural lands for continued agricultural uses while balancing the need for planned, orderly development and the efficient provision of services.”

According to the policy, a city that applies to expand its SOI or annex land must create a plan for agricultural preservation that includes an analysis of impacts to agricultural resources and an inventory of vacant land that could be developed for similar uses. The plan must include one or more strategies to minimize the loss of agricultural land. The strategies can include removal of agricultural land from the City’s existing Sphere of Influence; adoption of a policy or condition requiring agricultural mitigation at a ratio of at least 1:1; or a voter-approved urban growth boundary designed to limit the extent to which urban development can occur during a specified time period. LAFCO reviews the plan in its determination of whether to approve or deny applications for SOI expansions and annexations.

In addition, there is potential for an Altamont Corridor Express (ACE) Train station in Downtown Ceres. The ACE train would help connect Ceres to destinations north including the Altamont/Livermore Valley and the Bay Area Rapid Transit (BART), as well as destinations to the south, including Merced and the California High Speed Rail line. In addition, the siting of the station Downtown could attract further investment and development. To leverage this potential for development from the siting of the station, there is discussion among community leaders about the potential to relocate Whitmore Park two blocks east of its current location, to allow for public and private investment and development on the existing park site. Well-designed development on this site could provide a kind of community center as well as commercial activity to attract further investment Downtown.

CURRENT DEVELOPMENT PROJECTS

There are 12 residential projects and three commercial and mixed use projects in Ceres's development pipeline, as shown in the Table 3-4. The projects are in different development stages as of mid-2016, ranging from predevelopment proposals to under construction. There are about 75 acres at various stages in the pipeline—49.9 acres of residential totaling 275 units and 21.9 acres⁶ of commercial and mixed-use. As seen in Figure 3-10, the projects are located throughout the city, with a cluster of development west of Morgan Road in the southern portion of the city.

In addition, there is a proposal for a 26-acre shopping center to be developed at the intersection of Mitchell Road and Service Road that is under litigation. The Mitchell Ranch Shopping Center proposal includes a 185,668-square foot Walmart Supercenter and ten other retail shops totaling 114,162 square feet. The City is working with the California Department of Transportation (Caltrans) on improving the Mitchell Road/SR-99 interchange. The City has been planning improvements to this interchange since 1997 and proposed an innovative design called the "Diverging Diamond" that provides better access from the west side of SR-99 for consideration by Caltrans. These improvements will increase traffic capacity to serve commercial and industrial development in the southern portion of the Planning Area.

⁶ The 11.4-acre parcel at Mitchell Road and Rohde Road (Map ID #13) is identified as both an opportunity site and a current development project, as of July 2016. For the purpose of the analysis of capacity and demand for residential, commercial, and industrial development below, the parcel is counted as an opportunity site only.

Table 3-4: Ceres Development Pipeline Projects as of July 2016

<i>Map ID</i>	<i>Projects</i>	<i>Type</i>	<i>Units</i>	<i>Acres</i>	<i>Status</i>
1	Davante Villas	Single Family	32	13.3	Under Construction
2	Tuscany Village	Multi -family	40	3.3	Vesting Tentative Subdivision Map
3	Westpointe #4	Single Family	81	10.7	Under Construction
4	San Pedro North	Single Family	11	1.1	Under Construction
5	San Pedro North #2	Single Family	13	1.1	Vesting Tentative Subdivision Map
6	Anderson Estates	Single Family	7	2.5	Vesting Tentative Subdivision Map
7	Mummert	Single Family	7	1.7	Vesting Tentative Subdivision Map
8	3613 Morgan Road	Duplex	2	0.3	Vesting Tentative Subdivision Map
9	On Point Design Group	Single Family	4	0.7	Vesting Tentative Subdivision Map
10	San Juan Ranch	Single Family	24	4.9	Under environmental review
11	Cambridge Estates Phase II	Single Family	38	7.4	Vesting Tentative Subdivision Map
12	Green River Estates	Single Family	16	2.9	Under Construction
13	Mitchell Road and Rohde Road ¹	Commercial and Mixed Use		11.4	Predevelopment Proposal
14	3505 Mitchell Road	Commercial and Mixed Use		0.8	Proposal for Specific Plan Site Plan
15	3106 Mitchell Road	Commercial and Mixed Use		9.7	Proposal for Subdivision
Total			275	75.0	

Note:

1. The 11.4-acre parcel at Mitchell Road and Rohde Road is identified as both an opportunity site and a current development project, as of July 2016. For the purpose of the analysis of capacity and demand for residential, commercial, and industrial development below, the parcel is counted as an opportunity site only.

Source: City of Ceres, 2016.

POTENTIAL OPPORTUNITY SITES

Opportunity sites are sites that have the potential to accommodate new development or redevelopment within the planning horizon. All sites listed in the Housing Element's vacant site inventory were identified as opportunity sites. In addition, underutilized, vacant, and rural parcels greater than 8,000 square feet were identified as opportunity sites. Opportunity sites outside of the Ceres SOI are not considered in the analysis of capacity and demand for residential, commercial, and industrial development below. However, the land use alternatives analysis completed in the next stage of the General Plan update process *may* consider development opportunity sites outside the SOI.

Methods of Identifying Opportunity Sites

Potential opportunity sites were identified by mapping sites identified in the Housing Element inventory, as well as vacant, underutilized, and rural land using data from the County Assessor

and information from City staff. Only parcels greater than 8,000 square feet were included in the list of opportunity sites in this report.

All parcels identified “vacant” by the County Assessor, most of which are cleared and not currently being used, are considered opportunity sites. In addition, the County Assessor’s data was used to preliminarily identify underutilized land by identifying parcels with a low assessed value ratio, or AV ratio. AV ratio is defined here as the ratio of the value of existing permanent improvements (i.e. buildings) to the value of the land. A parcel is considered to be underutilized where this ratio is less than one. A ratio of less than 0.5 indicates even greater potential. In other words, where the value of the land is worth substantially more than the value of the structure on it, a site may be a candidate for redevelopment.

A significant portion of land in the Planning Area is currently used for agriculture or agricultural residential uses; the term “rural” is used in this report to refer to land currently utilized for agriculture and agricultural residential use. Some of this land is covered by the West Landing Specific Plan, and other areas are designated for residential development under the existing General Plan. Although rural land is identified in the opportunity site analysis, only land inside of the Ceres SOI is included in the analysis of capacity and demand for residential, commercial, and industrial development below.

In addition, sites identified in the 2015 Housing Element inventory were included in the list of opportunity sites in this report. The 2015 Housing Element Inventory includes vacant or underutilized sites zoned for residential uses or nonresidential uses that allow for residential development. Figure 3-11 illustrates the location of parcels that are potential opportunity sites in Ceres.

City staff reviewed all of the identified opportunity sites and removed parcels that have already been developed or that are either storm drain basins or well sites.

It is important to note that sites identified in this analysis as potential opportunity sites are just that—potential opportunities. Individual property owners will make actual development decisions on these sites. It is possible that some or all of these sites will not experience any changes; it is also possible that sites not identified in this analysis will undergo redevelopment. This analysis is merely a tool intended to identify and quantify areas in Ceres where future development, if any, is most likely to occur. No specific development proposals are included or contemplated as part of this General Plan update.

Total Potential Opportunity Sites

Tables 3-5 and 3-6 summarize the types and acreage of opportunity sites in the Planning Area. Table 3-5 shows the opportunity sites within the Ceres SOI. There are 563.6 acres of vacant land, 121.0 acres of underutilized land, 1,124.4 acres of rural land, and 189.6 acres of additional sites identified in the Housing Element within the Ceres SOI.

Table 3-5: Potential Opportunity Sites Within SOI

City of Ceres			Unincorporated (Within SOI)		Total Within SOI	
Opportunity Sites	Acres	Percent ¹	Acres	Percent ¹	Acres	Percent ¹
Vacant	388.3	5%	175.3	2%	563.6	8%
Underutilized	70.2	1%	50.8	1%	121.0	2%
Ag-Rural Residential/ Agriculture	564.4	8%	560.0	8%	1,124.4	16%
Additional Sites from Housing Element	189.6	3%	0.0	0%	189.6	3%
Total	1,212.5	17%	786.1	11%	1,998.6	28%

Notes:

1. The percentage is based on the total amount of land in the Planning Area.

Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015

Outside of the Ceres SOI, there are 7.6 acres of vacant, 30.6 acres of underutilized land, and 5,164.1 acres of rural land, as shown in Table 3-6. Although Ceres may annex and develop this land in the future, land outside of the Ceres SOI is not considered in this initial analysis of capacity and demand for residential, commercial, and industrial development below.

Table 3-6: Potential Opportunity Sites Within Total Planning Area

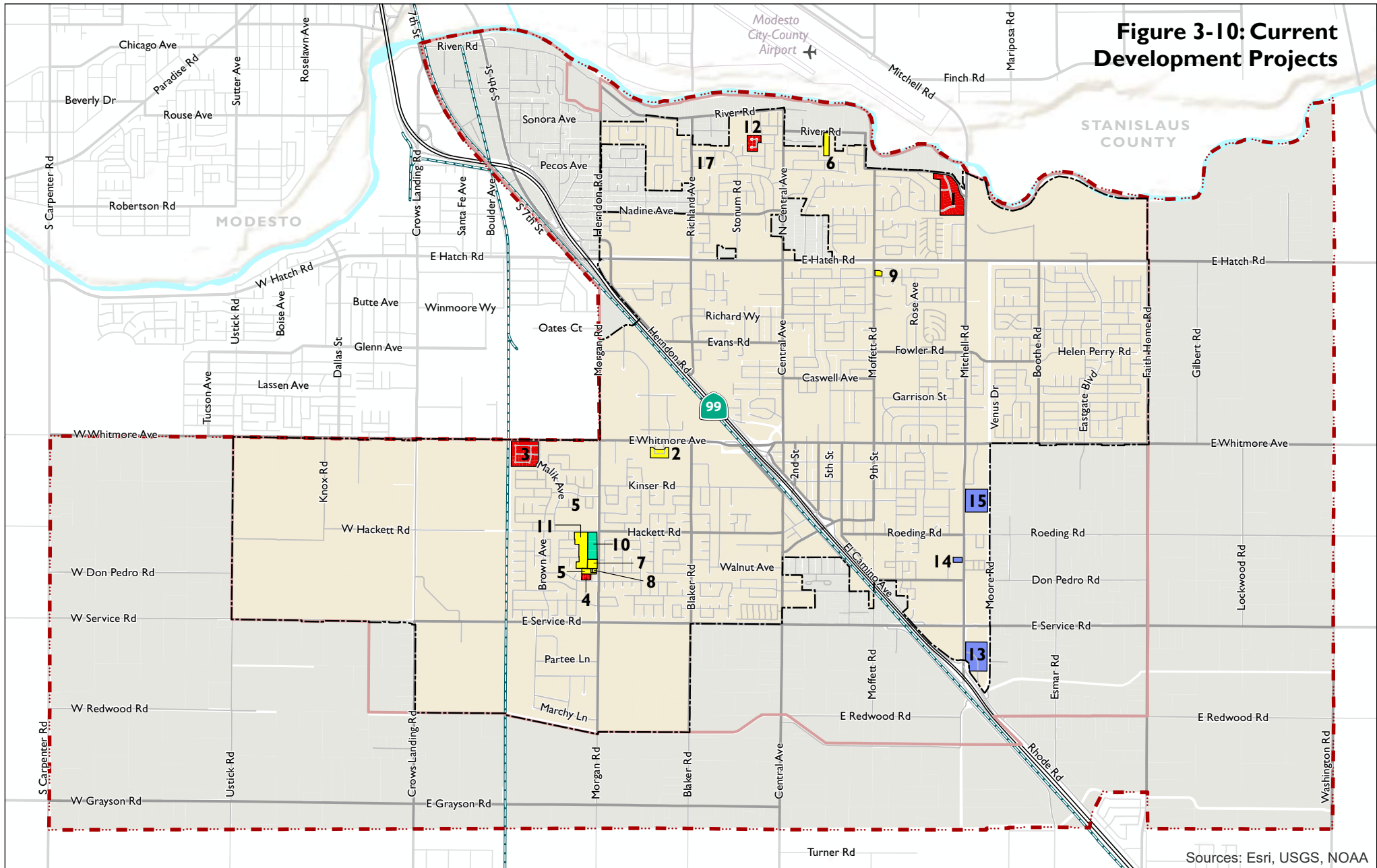
Total Within SOI			Unincorporated (Outside SOI)		Total Planning Area	
Opportunity Sites	Acres	Percent ¹	Acres	Percent	Acres	Percent
Vacant	563.6	8%	7.6	0%	571.2	8%
Underutilized	121.0	2%	30.6	0%	151.6	2%
Ag-Rural Residential/ Agriculture	1,124.4	16%	5,164.1	72%	6,288.5	87%
Additional Sites from Housing Element	189.6	3%	0.0	0%	189.6	3%
Total	1,998.6	28%	5,202.3	72%	7,200.8	100%

Notes:

1. The percentage is based on the total amount of land in the Planning Area.

Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015

Figure 3-10: Current Development Projects



Sources: Esri, USGS, NOAA

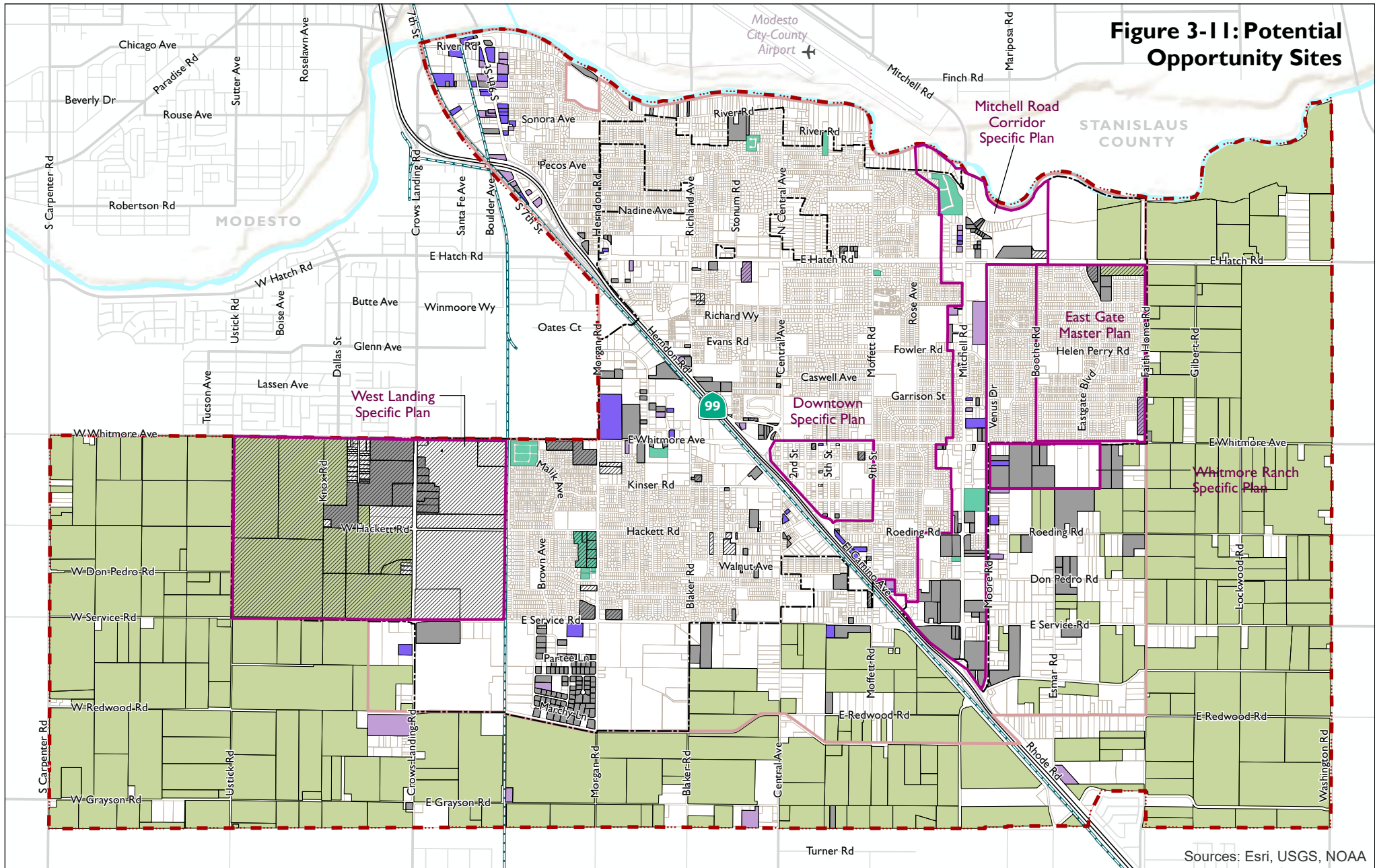
- | | | |
|---------------|---|--|
| — Highway | Development Status | — River |
| — Ramps | Under Construction | City of Ceres |
| — Major Roads | Vesting Tentative Subdivision Map | Ceres Sphere of Influence |
| — Local Roads | Under Environmental Review | General Plan Planning Area |
| — Railroads | Proposal/Under Review | |

0 0.25 0.5 1
MILES

Data Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

GENERAL PLAN UPDATE
City of Ceres

Figure 3-11: Potential Opportunity Sites



Sources: Esri, USGS, NOAA

- Highway
 - Ramps
 - Railroads
 - River
- Opportunity Sites**
- Vacant Properties
 - Underutilized Properties
 - AV Ratio Less than 0.5
 - AV Ratio Between 0.5 and 0.99

- Rural or Ag Residential/Agriculture
- Current Development Projects (Approved/Under Review/Under Construction)
- Vacant Site Inventory* (From Housing Element)

*City of Ceres 2014-2023 Housing Element, January 2016

- Non Opportunity Sites
- Specific & Master Plan Boundary
- City of Ceres
- Ceres Sphere of Influence
- General Plan Planning Area

0 0.25 0.5 1
MILES

Data Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

GENERAL PLAN UPDATE
City of Ceres

Location and Current General Plan Designation of Potential Opportunity Sites

Table 3-7 shows the breakdown of opportunity sites within master and specific plan areas. There are 960.4 acres of opportunity sites covered by a specific plan, accounting for almost half of all opportunity sites in the Ceres SOI.

Table 3-7: Potential Opportunity Sites Within Master and Specific Plan Areas

<i>Opportunity Sites</i>	<i>Acres in the City of Ceres</i>	<i>Unincorporated Acres (Within SOI)</i>	<i>Acres in Planning Area</i>
Downtown Specific Plan	2.3	0.0	2.3
Mitchell Road Corridor Specific Plan	131.9	3.6	135.5
West Landing Specific Plan ¹	774.5 ¹	0.0	774.5
Whitmore Ranch Specific Plan	0.0	48.0	48.0
Total	908.8	51.6	960.4

Note:

1. The 2015 Housing Element Vacant Site Inventory identified all of the land covered by the West Landing Specific Plan, as shown in Figure 3-11. For this analysis, the block of land surrounded by Hackett Road, the Union and Pacific Railroad tracks, East Service Road, and Crows Landing Road, is not identified as an opportunity site as much of it has been developed into public facilities.

Source: Dyett & Bhatia, 2016.

Figure 3-12 maps the current General Plan land use designations of each opportunity site. Table 3-8 quantifies the amount of land identified as opportunity sites within each type of land use designation. The opportunity sites are designated for a variety of land uses. Within the city limits and the SOI, Low Density Residential is the most common land use designation of opportunity sites. Other common designations are General Industrial, Business Park and Medium Density Residential.

The locations and types of potential opportunity sites in the Planning Area are summarized below.

Within City Limits

- **The Downtown Specific Plan** contains a few small potential opportunity sites ranging from 0.2 to 1.1 acres scattered throughout the Specific Plan area.
- **The West Landing Specific Plan⁷** was approved and annexed in 2012. Other than several Stanislaus County buildings and the G3 Enterprises campus in the eastern portion of the area, most of the land is still rural or vacant—the West Landing Specific Plan contains more opportunity sites than any other plan. According to the Specific Plan, this area will ultimately support a mix of uses including residential of varying densities, regional and community commercial, industrial, and business park. The Specific Plan anticipates up to

⁷ The 2015 Housing Element Vacant Site Inventory identified all of the land covered by the West Landing Specific Plan, as shown in Figure 3-11. For this analysis, the block of land surrounded by Hackett Road, the Union and Pacific Railroad tracks, East Service Road, and Crows Landing Road, is not identified as an opportunity site as much of it has been developed into County public facilities.

3,659 housing units at the maximum density and 171 acres of office, commercial, and business park development.

- **The Mitchell Road Corridor Specific Plan** was adopted in 1995 and also contains a significant number of opportunity sites, all of which are designated for commercial use by the current General Plan. In particular, there is a concentration of relatively large, vacant parcels in the southern end of the corridor near the freeway that could support significant retail, as envisioned in the current General Plan. There is a proposal for a 26-acre shopping center, known as Mitchell Ranch, at this site that is currently under litigation. The litigation is expected to be resolved in late 2016.
- **Other areas within city limits that are not part of a specific or master plan include:**
 - Significant clusters of vacant land designated for industrial uses. These occur mostly in two places: in the triangular area bounded by SR-99, East Whitmore Avenue, and Morgan Road and in the area southwest of Service Road and Morgan Road. This area south of Service Road is composed of many relatively small parcels, which could limit the utility of the site for large users.
 - Pockets of vacant and underutilized land across the freeway from Downtown, amidst both industrial and residential uses.
 - Scattered sites currently designated commercial on the Hatch Road and Whitmore Avenue corridors, some of which are relatively large in size.

Table 3-8: Potential Opportunity Sites by General Plan Designation

	<i>City of Ceres</i>	<i>Unincorporated (Within SOI)</i>	<i>Unincorporated (Outside of SOI)</i>	<i>Total Within Planning Area</i>
<i>GP Designation</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>	<i>Acres</i>
Residential Agriculture	0.0	0.0	108.7	108.7
Very Low Density Residential	80.2	6.1	451.6	537.8
Low Density Residential	200.9	432.1	228.6	861.8
Medium Density Residential	70.8	54.5	3.4	128.7
High Density Residential	68.4	33.6	0.0	102.0
Downtown Residential	1.1	0.0	0.0	1.1
Residential Reserve	0.0	0.0	497.5	497.5
<i>Residential Subtotal</i>	<i>421.3</i>	<i>526.3</i>	<i>1,289.8</i>	<i>2,237.4</i>
Neighborhood Commercial	44.6	2.9	0.0	47.5
Service Commercial	22.2	40.3	0.0	62.5
Community Commercial	65.3	11.9	0.0	77.2
Highway Commercial	34.1	1.7	0.0	35.9
Regional Commercial	103.8	0.0	0.0	103.8
Commercial Recreation	2.5	29.4	115.1	146.9
Office	27.7	0.0	0.0	27.7
Downtown Mixed Use	1.2	0.0	0.0	1.2
Business Park	85.3	68.1	0.0	153.4
<i>Commercial Subtotal</i>	<i>386.8</i>	<i>154.2</i>	<i>115.1</i>	<i>656.1</i>
Light Industrial	26.4	43.0	0.0	69.4
General Industrial	216.7	10.7	0.0	227.3
Industrial Reserve	0.0	35.0	468.5	503.5
<i>Industrial Subtotal</i>	<i>243.0</i>	<i>88.7</i>	<i>468.5</i>	<i>800.2</i>
Community Facilities	28.8	4.3	0.0	33.0
Parks	65.3	12.3	7.3	84.9
Schools	16.0	0.0	3.1	19.1
Agriculture	0.0	0.0	3,318.4	3,318.4
Right of Way	51.3	0.0	0.0	0.0
<i>Other Subtotal</i>	<i>161.3</i>	<i>16.6</i>	<i>3,328.9</i>	<i>3,506.8</i>
Total	1,212.5	785.8	5,202.3	7,200.6

Source: Dyett & Bhatia, 2016.

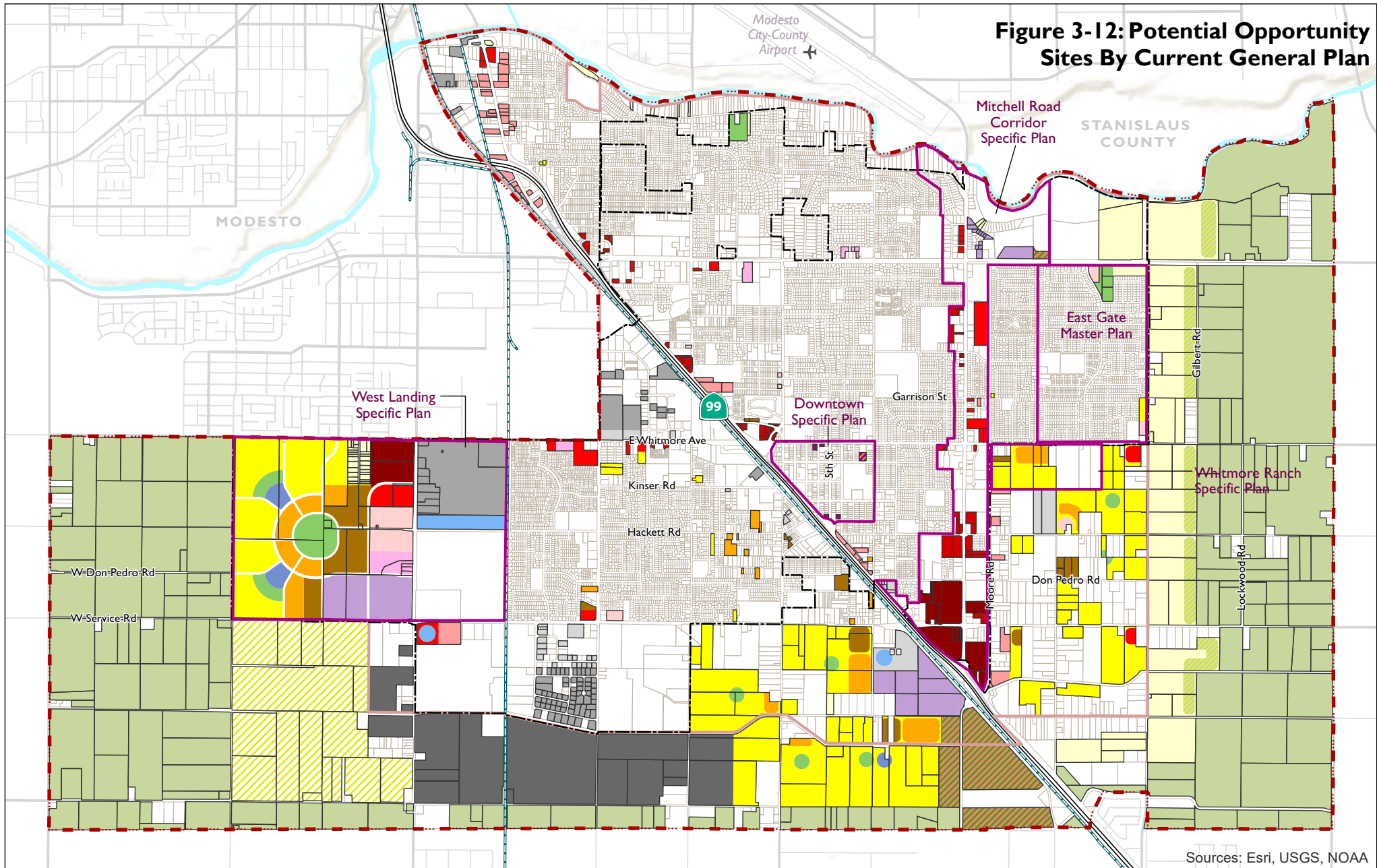
Outside City Limits but within SOI:

- **The area south of Service Road covered by the draft Maple Glen and Copper Trails Master Plans** currently contain the Central Valley High School and the Joel J. Hidahl Elementary School, which are both surrounded by farmland. The two plans anticipate residential growth in the area, but the plans have not been adopted and the land has not been annexed into the City. Before any development can take place in these areas, the City must adopt the Master Plans and Environmental Impact Reports, and the Stanislaus LAFCO must approve the annexation.
- **The area southwest of Mitchell Road interchange**, currently designated business park, has significant commercial development opportunity due to its large parcel sizes and highway frontage. Interchange improvements must be approved by Caltrans, but construction is anticipated to start in 2020.
- **The 9th street corridor** at the very northern portion of the Planning Area is an underutilized auto-oriented corridor with several underutilized parcels designated Service Commercial. Most of this area is developed and under the jurisdiction of Stanislaus County.
- **The area immediately south of the Eastgate Master Plan area** between East Whitmore Avenue, East Redwood Road, and Moore Road includes a significant amount of opportunity sites. The Draft WRSP was initiated in early 2016 for a 100-acre portion of this area. The current General Plan designates the land for residential uses of varying densities including High Density, but the sites are currently occupied by very low density rural residential “ranchettes” that may be difficult to assemble.

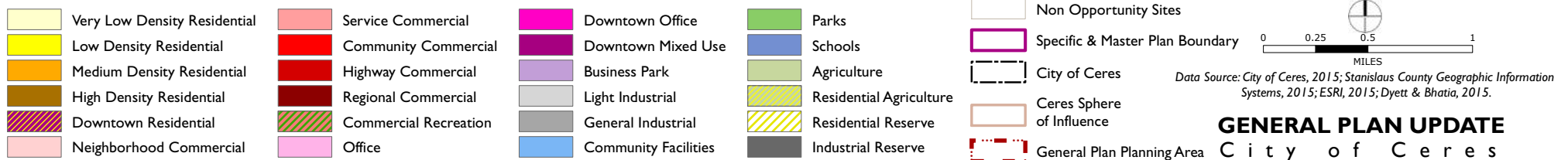
Outside of SOI but within Planning Area:

- **The southern portion of Planning Area** includes many large parcels of rural land designated Industrial Reserve, Low Density Residential, and Commercial Recreation that may present opportunities for annexation and development in the future.

Figure 3-12: Potential Opportunity Sites By Current General Plan



Sources: Esri, USGS, NOAA



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Analysis of Capacity and Demand for Residential, Commercial, and Industrial Development

A comparison of projected population and job growth with capacity for potential residential, commercial, and industrial development, based on current development projects and opportunity sites, provides insight into the balance of supply and demand for certain types of land uses. For this analysis, only opportunity sites within the current Ceres SOI are considered for potential development. See Appendix A for a detailed explanation of the analysis.

Residential

According to the Economic Report, the population of Ceres is expected to grow by 28 percent between 2015 and 2035. To house this growing population, the number of housing units in Ceres is expected to increase from 13,764 in 2015⁸ to between 17,971 and 20,086⁹ in 2035, totaling an increase of between 4,207 and 6,322 units.

The current capacity for potential residential development to meet this expected demand is based on (1) residential and mixed use opportunity sites as designated by the current General Plan and (2) current development projects. The General Plan defines a range of densities for each type of residential and mixed use land use. Based on the average residential density of the opportunity sites, there is capacity for 6,817 more housing units. In addition to the opportunity sites, there are 275 units currently in development. Considering the potential development of residential opportunity sites and current development projects, there is capacity for 7,092 new housing units in the Ceres SOI, as summarized in Table 3-9.

Table 3-9: Capacity for Residential Development Based on Current General Plan

	<i>On Opportunity Sites</i>	<i>In Current Development Projects</i>	<i>Total</i>
Housing Units	6,817	275	7,092

Source: Dyett and Bhatia, City of Ceres, 2016.

Table 3-10 compares the expected demand for housing units in 2035 with current capacity for potential residential development within the current Ceres SOI. Based on this analysis, the residential land capacity exceeds expected demand. If the current development projects and all of the opportunity sites were built according to current land use designations, there would be a surplus of between approximately 770 and 2,885 housing units. Details of these calculations are provided in Appendix A.

In addition to the land needed for the actual housing units, land is also needed for schools, parks and other services to support residential growth. For example, the current General Plan aims for four acres of parkland per 1,000 residents. The population of Ceres is expected to grow by approximately 13,260,¹⁰ residents between 2015 and 2035. Therefore, based on the existing

⁸ California Department of Finance. Table 2: E-5 City/County Population and Housing Estimates. 2015.

⁹ See Appendix A for further explanation and sources.

¹⁰ Economic and Planning Systems, Inc. as a subconsultant to Dyett & Bhatia. Prepared for the City of Ceres. 2016. Demographic, Economic and Fiscal Conditions in the City of Ceres.

General Plan's standard of four acres of parkland per 1,000 residents, by 2035 more than 53 additional acres of parkland would be needed to support the new residential neighborhoods. Based on this analysis, there is an expected surplus of land designated for residential development within the Ceres SOI.

Table 3-10: Expected Housing Demand and Potential Residential Development within the Ceres SOI

	<i>Projected Demand by 2035</i>	<i>Current Capacity</i>	<i>Difference</i>
Housing Units	4,207 – 6,322	7,092	770-2,885

Source: Dyett and Bhatia, 2016; StanCOG 2040 Demographic Forecast, 2016.

In addition to this analysis of capacity and demand for residential development within the Ceres SOI, the capacity and demand for residential development within the current city limits and the Draft WRSP area were analyzed. Figure 1-2 shows the location of the Ceres SOI and the city limits. The Ceres SOI includes 8,445 acres, and the sum of the current city limits and the Draft WRSP area includes approximately 6,089 acres. Within the current city limits, there is capacity for 4,098 units on opportunity sites, and 275 projects are currently in the development process. In total, there is capacity for 4,373 units within the current city limits. In addition, there is capacity for approximately 352 units on land covered by the Draft WRSP, based on current General Plan land use designations. Based on the range of projected demand, the opportunity sites and current development projects within the current city limits, and the opportunity sites covered by the Draft WRSP, there may be a surplus of 518 units or a deficit of 1,598 units in 2035. Therefore, there may not be sufficient residential capacity to meet the expected demand within the current city limits and the Draft WRSP area, as shown in Table 3-11.

Strategies to increase the capacity for potential residential development may include developing in a more compact pattern to allow for more units on the same amount of land; changing land use designations to increase the amount of land designated residential and decrease the amount of land designated non-residential; and/or expanding the city limits. As explained above, SOI expansions as well as annexations to a city are regulated by Stanislaus County LAFCO's Agricultural Preservation Policy, which requires jurisdictions applying for expansion to adopt a strategy to minimize the loss of agricultural land. The strategies that LAFCO encourages include agricultural mitigation strategies at a ratio of one-to-one and voter-approved urban growth boundaries.

Table 3-11: Expected Housing Demand and Potential Residential Development within Ceres City Limits and the Whitmore Ranch Specific Plan Area

	<i>Projected Demand by 2035</i>	<i>Current Capacity within City Limits</i>	<i>Current Capacity within Land Covered by Draft WRSP</i>	<i>Capacity within City Limits and Land Covered by Draft WRSP</i>	<i>Difference</i>
Housing Units	4,207 – 6,322	4,373	352	4,724	(1,598) - 518

Source: 2010-2014 American Community Survey 5-Year Estimates; Dyett and Bhatia, 2016; StanCOG 2040 Demographic Forecast, 2016.

However, this comparison of capacity and demand is limited. It is based on population projections, which may be inaccurate. The portion of county residents living in Ceres as well as the ratio of residents per housing units were assumed to stay the same between 2015 and 2035, however these may change. In addition, this analysis only accounts for the total number of housing units, rather than the variety of housing types that is likely needed to meet different residents' preferences. The location and type of housing units may need further consideration. For example, the Economic Report notes the lack of higher-priced housing options as well as multifamily rental products. Ceres might consider designating more residential land for High Density Residential and Very Low Density Residential to diversify the mix of housing types.

Commercial and Industrial

As of 2015, there were approximately 8,666 jobs in Ceres.¹¹ To better understand the land use implications of employment in Ceres, the different types of current jobs in Ceres are categorized into commercial and industrial jobs. According to this categorization, approximately 52.5 percent of jobs in Ceres are commercial, and 20.8 percent are industrial. Jobs in local and State government, including the Ceres Unified School District, account for 26.7 percent of the employment in Ceres. These jobs correspond with land use categories other than Commercial and Industrial, including Schools and Community Facilities. As mentioned in the discussion above about demand and capacity for residential development, demand for these land use types are also important to consider as well, since more land will be needed for schools, community facilities, and other public services as the population of Ceres grows.

To determine demand for commercial and industrial land, the job projections from the Economic Report are used in this analysis.¹² Based on these projections, the expected number of jobs in Ceres in 2035 ranges from 11,369 to 15,687. For this analysis, it was assumed that the current distribution of types of jobs will continue, meaning that if 12 percent of current jobs are in construction, then 12 percent of jobs in 2035 will be in construction. Based on this assumption, between 2015 and 2035, the number of commercial jobs in Ceres is expected to increase by between 1,420 and 1,931 jobs, and the number of industrial jobs is expected to increase by between 561 and 763 jobs.

Both current and assumed ratios of square feet of building (SF) per worker were used to convert expected job growth to expected demand for commercial and industrial land. The existing ratio for commercial jobs in Ceres, 507 square feet per worker, is similar to the ratio in peer cities. For this analysis, the current ratio was rounded to 500 square feet per worker. The existing ratio for industrial jobs in Ceres is very high, with almost 4,000 square feet per worker. This ratio is higher than the ratio in most peer cities and suggests that the existing industrial development in Ceres is largely made of warehouses or other uses associated with few jobs. Therefore, a lower ratio of 1,200 square feet per worker that is more consistent with industrial uses in peer cities was used for this analysis.

The floor to area ratios (FAR) of the opportunity sites were used to convert the number of built square feet per worker to the number of acres of commercial and industrial land needed for

¹¹ California Employment Development Department 20120-2022 Industry Employment Projections, 2015.

¹² The 2010 Stanislaus Council of Governments' demographic forecast is not used in this analysis.

development. The current General Plan designates a maximum FAR for each commercial and industrial opportunity site. Based on this, an average FAR for potential commercial development and industrial development respectively were calculated.

Finally, a 15 percent vacancy rate was assumed to allow for fluidity and choice in the real estate market, and to apply some “cushion.” As shown in Table 3-12, based on the projected increase in jobs, the assumed square feet of building needed to serve each job and the designated FAR of commercial and industrial development, there is an expected demand for between 40.9 and 55.7 acres of commercial land and between 29.4 acres and 40.0 of industrial land by 2035 in Ceres.

Table 3-12: Approximate Demand for Commercial and Industrial Land (2015 to 2035)

	<i>Expected New Jobs</i>	<i>Assumed Square Feet/Worker</i>	<i>FAR in current General Plan</i>	<i>Vacancy</i>	<i>Expected Demand (Acres)</i>
Commercial	1,420 - 1,931	500	0.5	15%	40.9 – 55.7
Industrial	561 - 763	1,200	0.6	15%	29.4 - 40.0
Total	2,703 - 3,675				70.4 – 95.7

Source: Stanislaus County Geographic Information Systems, 2015; Dyett & Bhatia, 2016; Economic and Planning Systems, Inc., 2016; StanCOG 2040 Demographic Forecast, 2016.

Similar to the residential development analysis, the current supply of commercial and industrial land in Ceres is based on current development projects and the current General Plan land use designations of opportunity sites. There are approximately 10.5 acres currently being developed for commercial and mixed-use purposes. In addition, there are approximately 541.0 acres of opportunity sites designated commercial and 331.8 designated industrial. Combined, there is capacity for approximately 551.5 acres for potential commercial/mixed use development and 331.8 acres of industrial development within the Ceres SOI.

Based on job projections, the current General Plan designates more land for commercial and industrial use than is likely needed, as shown in Table 3-13. Based on an assumed ratio of square feet per worker and the current FAR designations, there is demand for between 40.9 and 55.7 acres of commercial development and 29.4 and 40.0 acres of industrial development. Currently, there is an estimated capacity of approximately 551.5 acres of commercial land and 331.8 acres of industrial land within the Ceres SOI.

Table 3-13: Expected Demand for Commercial and Industrial Land and Acres of Potential Development

	<i>Expected Demand (Acres)</i>	<i>Current Capacity (Acres)</i>	<i>Difference (Acres)</i>
Commercial	40.9 – 55.7	551.5	495.8 – 510.6
Industrial	29.4 – 40.0	331.8	291.7 – 302.3
Total	70.4 – 95.7	883.3	787.6 – 812.9

Source: Dyett and Bhatia, 2016.

However, like the residential analysis, this analysis is limited. It relies on market- and historical trend-based job projections prepared at the county/regional level and likely does not capture all of the potential demand that an individual jurisdiction like Ceres may experience. The planned improvements to the Mitchell Road/SR-99 interchange will increase the accessibility of land in the southeastern portion of the Planning Area to SR-99. This has the potential to attract regional commercial development. In addition, the interchange improvements will increase accessibility and capacity for industrial users, which may attract major industrial development.

In addition, according to City staff, inquiries from developers for large industrial sites of 20 to 100 acres are common, demonstrating unmet demand for land. This is another example of how the purely capacity-based analysis presented above has limitations, as it is not sensitive to the specific requirements of certain land use types. As discussed in the Economic Report, compared to other jurisdictions in the region, Ceres appears well-positioned to attract industrial uses, especially if it can provide a range of suitable sites. Addressing the “mismatch” between demonstrated demand and appropriate size and type of development sites for commercial and industrial uses is a high priority for the City in this update to its General Plan.

It is often advisable for cities to have a greater “reserve” of available non-residential land for future development to account for changes in the market, and to meet certain needs such as parcels that are entitled and “shovel-ready”. Even if the City were to take a conservative approach of allowing for more than twice as much commercial and industrial land than projected job growth immediately warrants (roughly 40 to 55 acres of commercial and 30 to 40 acres of industrial), the available supply is still more than adequate to support the projected job growth in these industries.

In light of these findings, Ceres has the flexibility to reconsider commercial and industrial land use designations. The General Plan update process can examine the most viable and beneficial locations of commercial and industrial development and focus growth in those locations. Similarly, the analysis can ensure that land is available in a range of parcel sizes to meet the needs of various industry clusters. In addition, the City may consider land use alternatives that plan for more or less growth in these various categories (population and jobs) than what is specified in the current StanCOG projections.

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4 Environmental Constraints and Opportunities

4.1 Biological Resources

Ceres is a developed area that is surrounded by cultivated agricultural land; therefore, it is not an ideal habitat for many species. Nonetheless, certain special-status species have been known to occur in the Planning Area. Special-status species are those plants and animals that, because of their acknowledged rarity or vulnerability to various causes of habitat loss or population decline, are recognized in some fashion by federal, State, or other agencies as deserving special consideration. The California Natural Diversity Database (CNDDB) lists five such species that have been known to occur within and around the Planning Area, some of which are listed as Threatened by the U.S. Fish and Wildlife Service (USFWS) and/or the California Department of Fish and Wildlife (CDFW), as summarized in Table 4-1.

There have been sightings of Swainson's hawk (*Buteo swainsoni*) along the Tuolumne River in the northeast of the Planning Area. Swainson's hawk has been listed as threatened by the State of California and has been identified as a Bird of Conservation Concern by the USFWS. Steelhead trout (*Oncorhynchus mykiss*), which occur in the Tuolumne River bordering the Planning Area, are listed as Threatened in the Central Valley Distinct Population Segment by USFWS and CDFW. The valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) is federally listed as Threatened and has been found near to or within the Planning Area. The Moestan Blister Beetle (*Lytta moestan*) (distinct from the Molestan Blister Beetle which is found in large grassland areas of the San Joaquin Valley) and Obscure Bumble Bee (*Bombus caliginosus*), which have been sighted in the general vicinity of the Planning Area, are being tracked by CNDDB and are currently not listed as threatened.

In addition, the Planning Area hosts critical habitat, defined by the Endangered Species Act as specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. The entire stretch of the Tuolumne River that borders the Planning Area is designated by USFWS as critical habitat for the Steelhead trout.

There may be occurrences of additional species within this area that have not yet been surveyed and/or mapped. Lack of information in the CNDDB about a species or an area does not imply that the species does not occur or that there is a lack of diversity in that area.

Table 4-1: Special Status Species

<i>Common Name (Scientific Name)</i>	<i>Federal Listing</i>	<i>State Listing</i>
Moestan Blister Beetle (<i>Lyttamoestan</i>)	None	None
Obscure Bumble Bee (<i>Bombus caliginosus</i>)	None	None
Swainson's Hawk (<i>Buteo swainsoni</i>)	None	Threatened
Steelhead Trout (<i>Oncorhynchus mykiss</i>)	Threatened	Threatened
Valley Elderberry Longhorn Beetle (<i>Desmocerus californicus dimorphus</i>)	Threatened	Threatened

Source: California Natural Diversity Database (CNDDB), 2015; U.S. Fish & Wildlife Service, 2015.

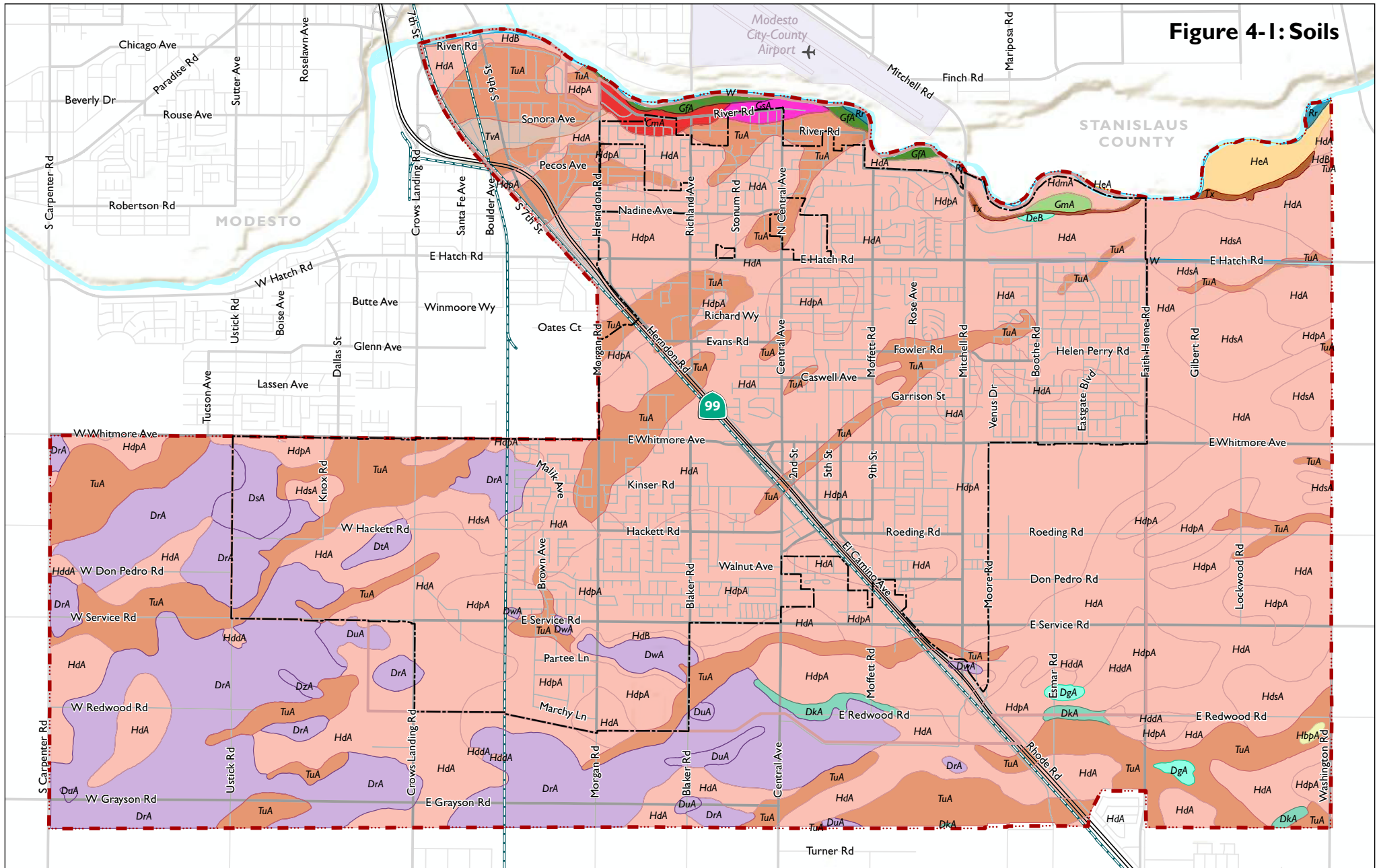
4.2 Soils and Seismicity

Soil properties can have a significant bearing on land planning and development. The type of soil in an area will affect liquefaction susceptibility, shrink-swell potential, as well as the potential for landslides. Liquefaction is the rapid transformation of saturated, loose, fine-grained sediment (such as silt and sand) into a fluid state as a result of severe vibratory motion. Expansive soils have shrink-swell capacity meaning they may swell when wetted and shrink when dried. The higher the clay content of a soil, the higher its shrink-swell potential.

As shown in Figure 4-1, the most common soil types in the Planning Area are Hanford Sandy Loam, a soil type common in the San Joaquin Valley that is well-drained and found on relatively flat floodplains and alluvial fans; and Tujunga Loamy Sand, a very well-drained soil type. The risk of liquefaction and expansive soils is very low since the soils are well-drained and have low clay content. Ceres lies within the San Joaquin Valley and is relatively flat; thus, it has virtually no potential for landslides.

Seismic activity in the Planning Area is considered minimal, as there are no known active earthquake faults in the Planning Area as shown in Figure 4-2. However, there are active faults in the broader region that can subject Ceres land and structures to ground shaking. The nearest active fault line that has been active in the last 200 years is about 40 miles along the Greenville fault near Livermore. The nearest potentially active fault line is about 11 miles northwest of Ceres.

Figure 4-1: Soils

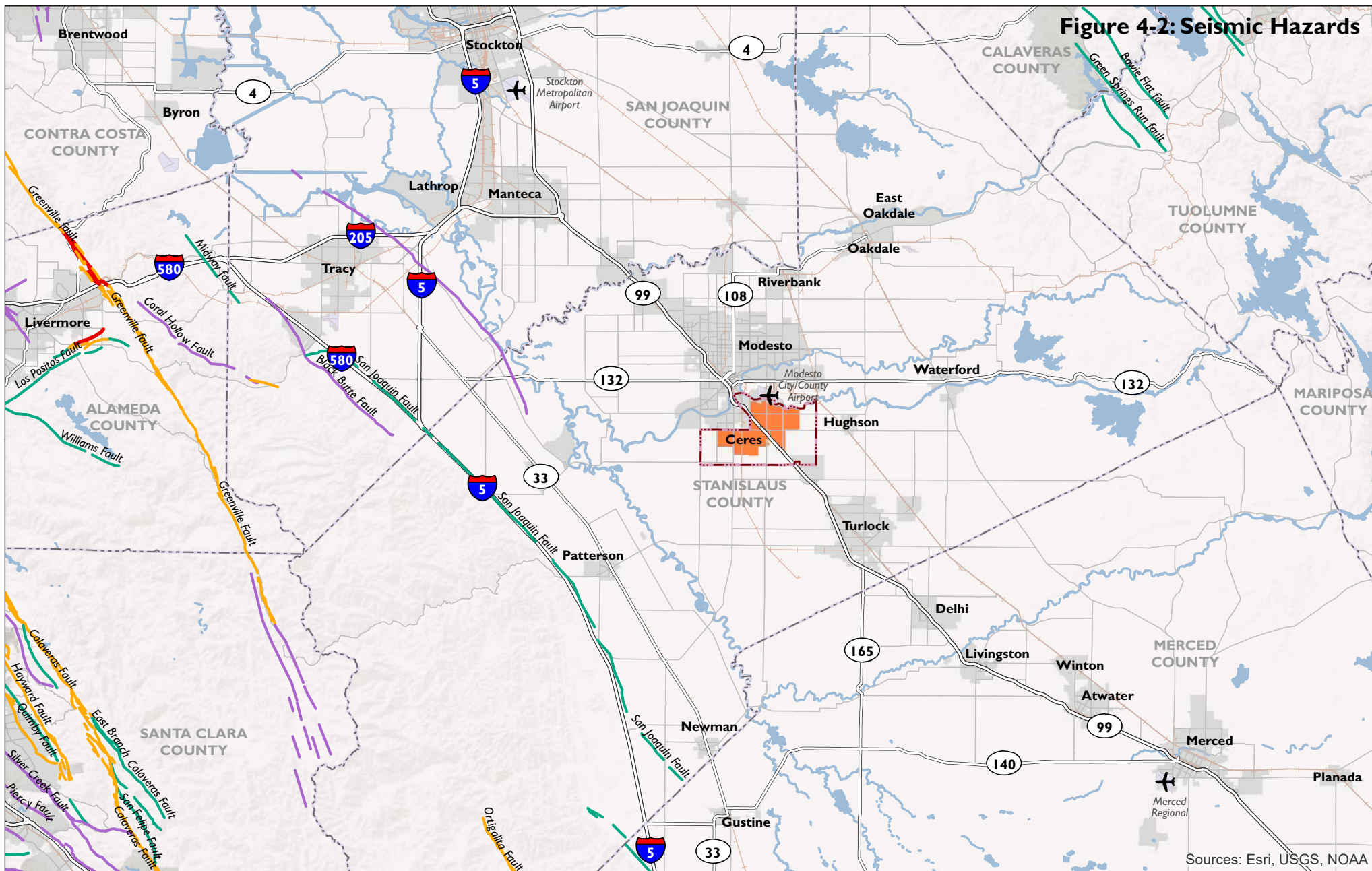


- | | | | | |
|-----------------------------|--|---|-------------------------------|----------------------------|
| Columbia Silt Loam (CmA) | Dinuba Fine Sandy Loam (DmA) | Hanford Fine Sandy Loam (HbA, HbpA) | Terrace Escarpments (Tx) | River |
| Delhi Loamy Sand (DeB, DgA) | Grangeville Fine Sandy Loam (GfA) | Hanford Sandy Loam (HdA, HdB, HdsA, HdMA, HdpA, HddA) | Tujunga Loamy Sand (TuA, TuB) | City of Ceres |
| Dello Loamy Sand (DkA) | Grangeville Very Fine Sandy Loam (GmA) | Hanford Very Fine Sandy Loam (HeA) | Tujunga Sand (TvA) | Ceres Sphere of Influence |
| Dinuba Sandy Loam (DrA) | Greenfield Sandy Loam (GsA) | Riverwash (Rr) | Water (W) | General Plan Planning Area |

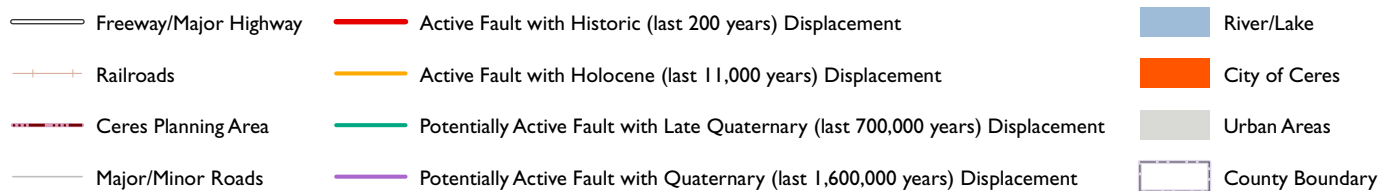
0 0.25 0.5 1
MILES

Data Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, USDA Soils Data, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

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Sources: Esri, USGS, NOAA



Data Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; U.S. Geological Survey, 2010; ESRI, 2015; Dyett & Bhatia, 2015.

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4.3 Hydrology

The San Joaquin River Basin covers 15,800 square miles including all Sacramento-San Joaquin River Delta watersheds south of the Sacramento River. The Planning Area drains into four different subbasins that are all part of the San Joaquin River Basin. The majority of the Planning Area is in the watershed of Turlock Lake, which is managed by the Turlock Irrigation District. Figure 4-3 shows the four watersheds of the Planning Area.

As shown in Figure 4-4, the Planning Area is in the San Joaquin Valley groundwater subbasin 5-22.03, the Turlock Subbasin. The Turlock Subbasin is bounded by the Tuolumne River on the north, the Merced River on the south, and the San Joaquin River on the west. The Subbasin stores approximately 50 million acre-feet of groundwater, and is relatively isolated from other subbasins. In addition to Ceres, four agricultural water districts and nine communities withdraw water from the Turlock Subbasin. As of 2012, the Subbasin has not been identified as being in overdraft. Between 1992 and 2012, groundwater levels were in balance with about the same amount of outflow as inflow.¹³ The majority of groundwater recharge in the Subbasin results from excess irrigation.¹⁴

The Federal Emergency Management Agency (FEMA) flood map identifies flooding hazards of various intensities, including 100-year and 500-year flood zones. The 500-year flood zone indicates those areas that have a 0.2 percent chance and the 100-year flood zone indicates those areas having a 1.0 percent chance of flooding in a given year. As shown in Figure 4-5, there are small portions of the Planning Area within 100- and 500-year flood zones of the Tuolumne River. In the Planning Area, both types of flood zones line the Tuolumne River along the northern border of Ceres. Within the City of Ceres, small areas of residential development along River Road are in the 500-year flood zone, and larger areas in Modesto where SR-99 crosses the river are in the 100- year and 500-year flood zone.

4.4 Air Quality and Climate Change

AIR QUALITY

The San Joaquin Valley suffers from some of the worst air quality in the United States. The topography of the Valley funnels marine air in from the San Joaquin River Delta but prevents air movement through and out of the air basin, thus making the region highly susceptible to pollutant accumulation. Air pollution in the region is generated from local emissions from motor vehicles including truck traffic, family operations, industrial activities, wood burning and windblown dust. In addition, seven to 27 percent of the pollution is generated outside of the Valley, including in the Bay Area and Los Angeles.¹⁵

¹³ City of Ceres Municipal Service Review and Sphere of Influence Plan. 2012.

¹⁴ West Yost Associates. June 2011. City of Ceres Water Master Plan.

¹⁵ San Joaquin Valley Air Pollution Control District. *Frequently Asked Questions*.
https://www.valleyair.org/General_info/Frequently_Asked_Questions.htm#How

Existing air quality conditions in Ceres can be characterized in terms of the ambient air quality standards that the federal and State governments have established for various pollutants. If monitored pollutant concentrations meet State or federal standards over a designated period of time, the area is classified as being in attainment for that pollutant. If monitored pollutant concentrations violate the standards, the area is considered a nonattainment area for that pollutant. Some of the air pollutants of greatest concern are ozone (a main ingredient of smog) and fine particulate matter (linked to heart and lung disease). Smog is formed by both nitrogen oxides (NO_x) and volatile organic compounds (VOCs) in the presence of sunlight. In addition, high levels of fine particulate matter (PM 2.5) reduce visibility and are a concern for public health.

About 40 percent of NO_x emissions in the Valley are from heavy-duty diesel trucks and another 14 percent from on-road mobile vehicles.¹⁶ Farming operations including confined animal facilities and on-road motor vehicles account for 44 percent of VOCs in the Valley combined. Table 4-2 shows the federal and State attainment status of the San Joaquin Valley. Road dust, agriculture waste burning and forest management, and farming operations account for about 57 percent of the PM 2.5 emissions in the Valley. Coarse particulate matter (PM 10) is generated from industry and road dust.

Table 4-2: San Joaquin Valley Air Quality Attainment Status

<i>Pollutant</i>	<i>Federal Standards Classification</i>	<i>State Standards Classification</i>
Ozone - One Hour	No federal standard	Nonattainment/Severe
Ozone - Eight Hour	Nonattainment / extreme	Nonattainment
PM 10	Attainment	Nonattainment
PM 2.5	Nonattainment	Nonattainment

Source: San Joaquin Valley Air Pollution Control District. "Ambient Air Quality Standards & Valley Attainment Status."
<http://www.valleyair.org/aqinfo/attainment.htm>

The Valley has reduced emissions at the same rate or better than other areas in California.¹⁷ It is the first and only region in the United States to go from "Extreme" classification to attaining the standard. However, the residents of the region are still at high risk of health impacts from the air pollution. The Modesto-Merced Metropolitan Area, which includes Ceres, is ranked #8 for high ozone days, #4 for 24-hour particle pollution, and #4 for annual particle pollution out of 220 Metropolitan Areas throughout the nation.¹⁸

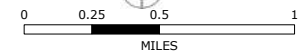
¹⁶ San Joaquin Air Pollution Control District. *Sources of Smog-Forming Emissions San Joaquin Valley*, 2013. http://valleyair.org/General_info/aboutdist.htm

¹⁷ San Joaquin Air Pollution Control District. *Sources of Smog-Forming Emissions San Joaquin Valley*, 2013. http://valleyair.org/General_info/aboutdist.htm

¹⁸ American Lung Association. *State of the Air 2015*. <http://www.stateoftheair.org/2015/msas/modesto-merced-ca.html#ozone>



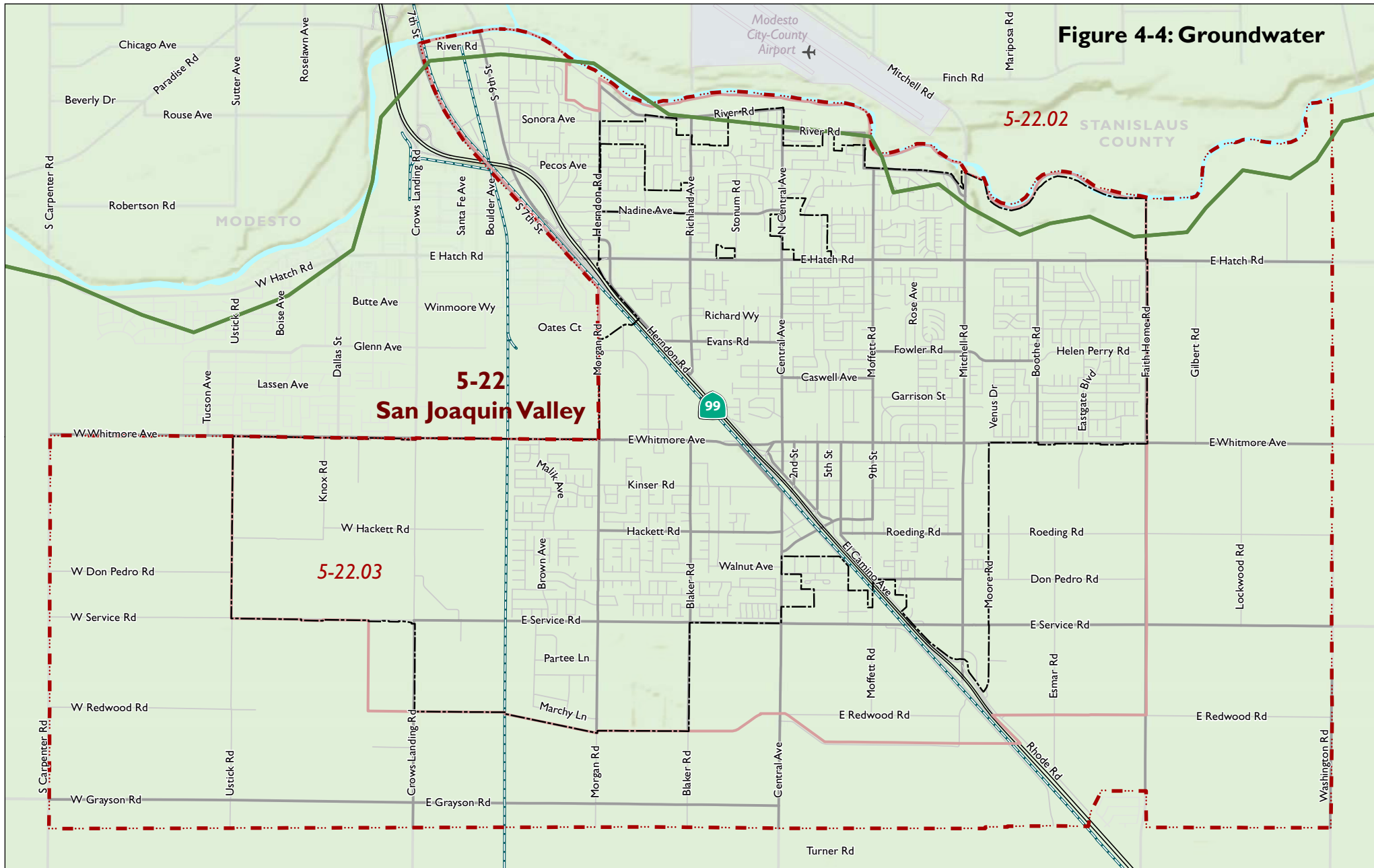
- ## Watersheds
-  Lake Ramona-San Joaquin River



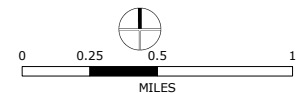
Data Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

GENERAL PLAN UPDATE
City of Ceres

Figure 4-4: Groundwater



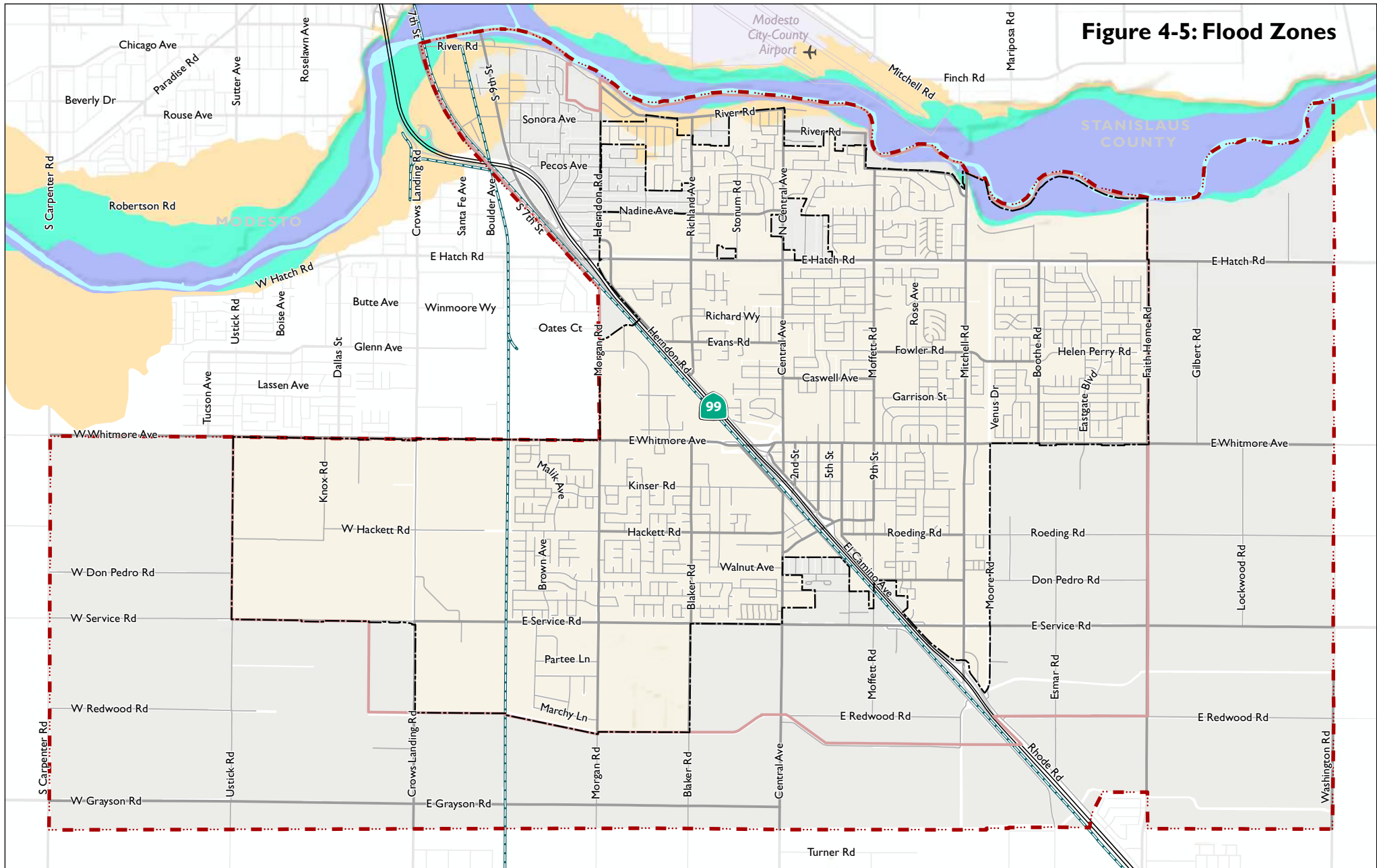
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|---------------|--------------------------------|-----------------------------|
| — Highway | 5-22 Basin number | — River |
| — Ramps | 5-22.01 Subbasin number | --- City of Ceres |
| — Major Roads | Groundwater Basin/Subbasin | — Ceres Sphere of Influence |
| — Local Roads | General Plan Planning Area | |
| — Railroads | | |



Data Source: Department of Water Resources, CWP 2013; City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

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Figure 4-5: Flood Zones



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|---------------|---|------------------------------|
| — Highway | Flood Hazard Areas | — River |
| — Ramps | — Floodway | — City of Ceres |
| — Major Roads | — 100 Year Floodzone
(1% Annual Chance Flood Hazard) | — Ceres Sphere of Influence |
| — Local Roads | — 500 Year Floodzone
(0.2% Annual Chance Flood Hazard) | — General Plan Planning Area |
| — Railroads | | |

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Data Source: FEMA Flood, 2015; City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

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CLIMATE CHANGE

Climate change refers to a change in global and regional weather patterns, particularly the change apparent from the mid-to-late 20th century to present day. This change is largely attributed to an increase in the amount of greenhouse gases, such as carbon dioxide, that trap heat in the Earth's atmosphere. Greenhouse gases result from activities associated with industrial manufacturing, vehicle emissions, and the use of electricity generated from fossil fuels. In California, about 40 percent of greenhouse gas emissions come from the transportation sector.

The California Governor's Office of Planning and Research 2015 Draft General Plan Guidelines focus on how general plans can both help reduce greenhouse gas emissions and strengthen resiliency to climate change impacts. For example, the proximity between housing and job centers and the design of transportation networks determines the distance needed to travel between destinations and the transportation mode choices available. These factors directly influence the amount of greenhouse gas emissions from the transportation sector. As part of the General Plan update process and preparation of the accompanying Environmental Impact Report, a baseline greenhouse gas emissions inventory of the Planning Area will be prepared.

The effects of climate change in the Central Valley where Ceres is located include temperature increases, reduced precipitation, flooding, and reduced water supply. Many of the expected effects, such as reduced water supplies; fewer winter chill hours; shifts in pollinator life cycles and distributions; and the spread of invasive species¹⁹ particularly impact productivity in the agricultural industry, which is integral to Ceres's economy and identity.

Mitigation

The State of California has set goals for greenhouse gas emissions reductions based on the International Panel on Climate Change's analysis of what is needed to avert "catastrophic" global climate change. According to the Global Warming Solutions Act (AB 32, 2006), the State aims to reduce emissions to 1990 levels by 2020, which it is expected to achieve.²⁰ In addition, California Executive Order S-3-05 establishes the goal of reducing emissions 80 percent below 1990 levels by 2050, which will require a much faster rate of emissions reduction than the rate needed to reach the 2020 target.^{21,22} To help reach these goals, the State adopted the Sustainable Communities and Climate Protection Act (SB 375, 2008), which requires each major region of the state to adopt a Sustainable Communities Strategy (SCS) as part of their Regional Transportation Plan (RTP). The SCS integrates land use, transportation, and housing planning to improve proximity and connectivity of jobs and housing to reduce greenhouse gas emissions from passenger vehicles and to meet State-mandated regional greenhouse gas emissions reduction targets. The Stanislaus

¹⁹ California Legislature Senate Committee on Environmental Quality. *Central Valley Regional Adaptation Efforts to Climate Change Impacts*. Informational Hearing of the Senate Environmental Quality Committee. September 22, 2015.

²⁰ California Air Resources Board. *First Update to the Climate Change Scoping Plan: Building on the Framework pursuant to AB 32*. 2014.

²¹ California Executive Order S-3-05, 2005.

²² Governor's Office of Planning and Research. *2015 Draft General Plan Guidelines*.
<https://www.opr.ca.gov/docs/DRAFT_General_Plan_Guidelines_for_public_comment_2015.pdf>

County Council of Governments adopted a RTP/SCS in 2014 per SB 375. Full implementation of the RTP/SCS will require Ceres and other municipalities in the county to adopt land use and transportation policies that reduce dependence on car travel and increase accessibility and mobility through low-carbon transportation modes such as public transit, walking, and biking. For example, land use policies that encourage compact, mixed-use, infill development with appropriate parking management allow for residents to shop, get to work, or reach other destinations without travelling long distances by car.

Land use policies also impact water use as residents of larger lots often use more water per capita and require more infrastructure to supply the water. Along with adopting more sustainable land use and transportation policies, municipalities can take other actions to mitigate climate change. Cities can encourage energy efficiency in buildings and the generation of renewable energy; reduce and manage waste efficiently to reduce emissions from the transport of goods and decomposition of organic materials in landfills; encourage local and sustainable food options that are more energy efficient to produce and transport; and conserve water which is energy-intensive to transport and heat.

Adaptation

In addition to mitigating climate change by reducing greenhouse gas emissions, municipalities can help prepare for and adapt to the effects of climate change. For example, cities can incorporate the current effects and threats of climate change into emergency management planning. However, cities can do much more to protect their economy and quality of life than just plan for extreme events. For example, cities can encourage efficient water management and farmland and rangeland conservation to support the agricultural industry as its productivity is impacted from climate change. In addition, cities can plant trees to reduce heat island effect whereby pavement, other urban materials, and human activities concentrate the sun's heat; create resilient transportation systems with redundant, multi-modal routes in case of failures; and manage urban water use efficiently to create a system resilient to low water supply.

4.5 Fire Hazards

Wildland fires have the potential to threaten life and property in Ceres, but the threat is low due to the lack of forest, brush, or grasslands that provide fuel for wildland fires in and around Ceres. However, as noted in the 1997 General Plan, vacant lots and fallow agricultural areas with weeds can be fire hazards.

4.6 Hazardous Materials and Sites

Sites where hazardous chemical compounds have been released into the environment can pose health threats. Historic or current activities, most often associated with industrial or commercial uses (including gas stations, car washes, etc.), may result in the release, leak, or disposal of toxic substances on or below the ground surface, where they can then contaminate soil and ground water. Furthermore, disturbance of the ground through grading or excavation can result in

exposure of these chemicals to the public. Improper handling of contaminated sites may result in further exposure via airborne dust, surface water runoff, or vapors.

Hazardous sites designated by both the State Water Resources Control Board (SWRCB) and the California Department of Toxic Substances Control (DTSC) are shown on Figure 4-6. In general, sites with contamination are largely clustered around major roadways including Whitmore Avenue, Central Avenue, and Roeding Road. This contamination may be the result of underground storage tank releases, spills, accidental releases, or other activities involving the use of hazardous materials. The sites of several schools in the Planning Area are under investigation for potential contamination. For example, the State investigated Lucas Elementary School for lead and pesticide contamination and excavated the contaminated soil in 2013. Most of the hazardous sites are closed and have been remediated. For example, as of 2006 the only Leaking Underground Storage Tank (LUST) cleanup site that is currently open is the Eagle Gas on El Camino Avenue due to potential drinking water supply contamination from diesel and gasoline.²³

4.7 Farmland

Agriculture and agricultural processing is fundamental to the history, identity, and economy of Ceres. Early in Ceres's history during the mid-nineteenth century, Ceres's economy was based on non-irrigated wheat farming. Later in the nineteenth century, the formation of the Modesto and Turlock Irrigation Districts and the construction of irrigation canals allowed for a wider variety of crops. Agriculture also continues to be integral to the culture and economy of Stanislaus County and the region. California is the country's largest agricultural producer and exporter, and the majority of California's agricultural products come from the San Joaquin Valley.

The California Department of Conservation's Farmland Mapping and Monitoring Program (FMMP) classifies farmland into the following categories based on soil type and current land use: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, and Grazing Land. All categories exclude publicly owned land for which there is an adopted policy preventing agricultural use. The FMMP designations are informational only and do not constitute any regulatory policy.

Table 4-3 lists the acres by farmland type, and Figure 4-7 shows the location of farmland types in the Planning Area. Outside of the city limits but within the Planning Area, most of the land is undeveloped and categorized as Prime Farmland with pockets of Farmland of Statewide Importance. Within the city limits, the vast majority of land is urbanized, although the area covered by the West Landing Specific Plan in western Ceres is Prime and Unique farmland.

The FMMP designations are described below:

- **Prime Farmland** is land that has the best combination of physical and chemical characteristics for crop production. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when managed (including water

²³ State Water Resources Control Board, 2015.

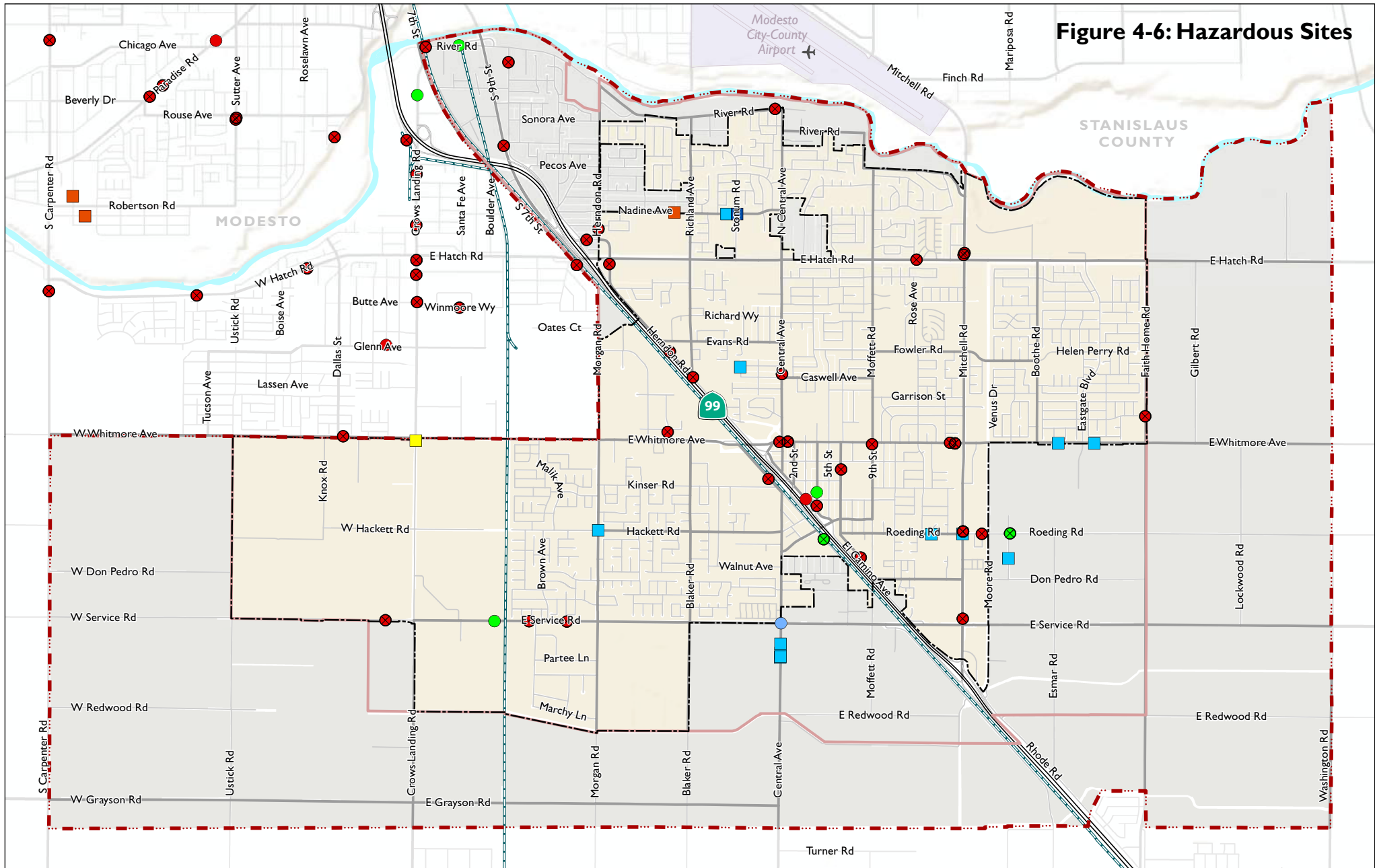
<http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0609900404>

management) according to current farming methods. Prime Farmland must have been used for the production of crops within the last three years.

- **Farmland of Statewide Importance** is land other than Prime Farmland that has a good combination of physical and chemical characteristics for crop production. Similar to Prime Farmland, Farmland of Statewide Importance must have been used for crop production within the last three years.
- **Unique Farmland** is that which does not meet the criteria for Prime Farmland or Farmland of Statewide Importance, but which is currently used for the production of specific high economic value crops (as listed in the last three years by the California Department of Food and Agriculture). It has the special combination of location, soil quality, growing season, and moisture supply to produce sustained high quality or high yields of a specific crop (e.g., oranges, olives, avocados, rice, grapes, and cut flowers) when treated and managed according to current farming practices.
- **Farmland of Local Importance** is either currently producing crops or has the capability to do so. It is land other than Prime Farmland, Farmland of Statewide Importance, or Unique Farmland, but it may be important to the local economy due to its productivity.
- **Grazing Land** is that on which the existing vegetation, whether grown naturally or through management, is suitable for livestock grazing.

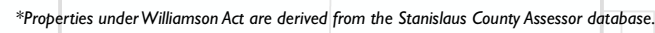
To help protect farmland from development, California passed the Land Conservation Act (commonly known as the Williamson Act) in 1965, which provides property tax relief to owners of farm and open space land. If property owners agree to a ten-year contract to not develop their agricultural or open space land, the tax on the property will be assessed only upon the value of the farming and open space uses instead of the full market value of the land. In the Planning Area, there are 2,963 acres under Williamson Act contracts. The locations of these properties are shown in Figure 4-7. Most exist outside of the Ceres SOI, although seven properties within the SOI are currently under Williamson Act contracts according to the Stanislaus County Assessor database.

Figure 4-6: Hazardous Sites



- | | | | |
|---------------|--------------------------------|-------------------------------|------------------------------|
| — Highway | Hazardous Sites (SWRCB) | Hazardous Sites (DTSC) | — River |
| — Ramps | ● LUST Cleanup Site | ■ Corrective Action | — City of Ceres |
| — Major Roads | ● Cleanup Program Site | ■ School Cleanup | — Ceres Sphere of Influence |
| — Local Roads | ● School Investigation | ■ School Investigation | — General Plan Planning Area |
| — Railroads | ⊗ Closed Sites | ■ State Response | |

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- Data Source: Farmland Mapping and Monitoring Program, Department of Conservation, 2014; City of Ceres, 2015; Stanislaus County GIS, 2015; Dyett & Bhatia, 2015.*

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Table 4-3: Farmland Types and Acreages

<i>Farmland Type</i>	<i>Planning Area</i>		<i>Incorporated</i>		<i>Unincorporated</i>	
	<i>Acres</i>	<i>Percent</i>	<i>Acres</i>	<i>Percent</i>	<i>Acres</i>	<i>Percent</i>
Prime Farmland	6,462.6	45.0%	618.6	10.3%	5,844.0	69.8%
Farmland of Statewide Importance	88.1	0.6%	0.6	0.0%	87.5	1.0%
Unique Farmland	122.3	0.9%	76.7	1.3%	45.6	0.5%
Grazing Land	117.7	0.8%	39.4	0.7%	78.3	0.9%
Confined Animal Agriculture	89.4	0.6%	0.2	0.0%	89.2	1.1%
Non Agricultural and Natural Vegetation	136.9	1.0%	39.6	0.7%	97.3	1.2%
Semi-Agricultural/Rural	99.3	0.7%	0.0	0.0%	99.3	1.2%
Vacant or Disturbed Land	271.9	1.9%	203.8	3.4%	68.1	0.8%
Rural Residential Land	473.0	3.3%	16.3	0.3%	456.8	5.5%
Urban/Built Up Land	6,495.9	45.2%	4,994.2	83.4%	1,501.8	17.9%
Total	14,357.2	100%	5,989.3	100%	8,367.9	100%

Source: City of Ceres, 2015; Stanislaus County, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

4.8 Cultural and Historical Resources

Cultural resources include sites, buildings, structures or objects that may have archaeological, historical, cultural, or scientific significance. The Central California Information Center (CCIC) at California State University at Stanislaus is part of the California Historic Resources Information System (CHRIS), which maintains a variety of documents and materials relating to historical resources. According to a comprehensive inventory search conducted in 2015 by the CCIC, the Planning Area contains important cultural and historical resources as shown in Figure 4-8, including:

- The Daniel Whitmore Home (built in 1870), which is listed on the National Register and located within the City of Ceres;
- A prehistoric (Native American) burial ground at a confidential location along the Tuolumne River; and
- The Seventh Street Bridge over the Tuolumne River, commonly known as the “Lion Bridge” at the northern edge of the Planning Area, which is formally determined as eligible for the National Register of Historic Places by the State Historic Preservation Office (SHPO).

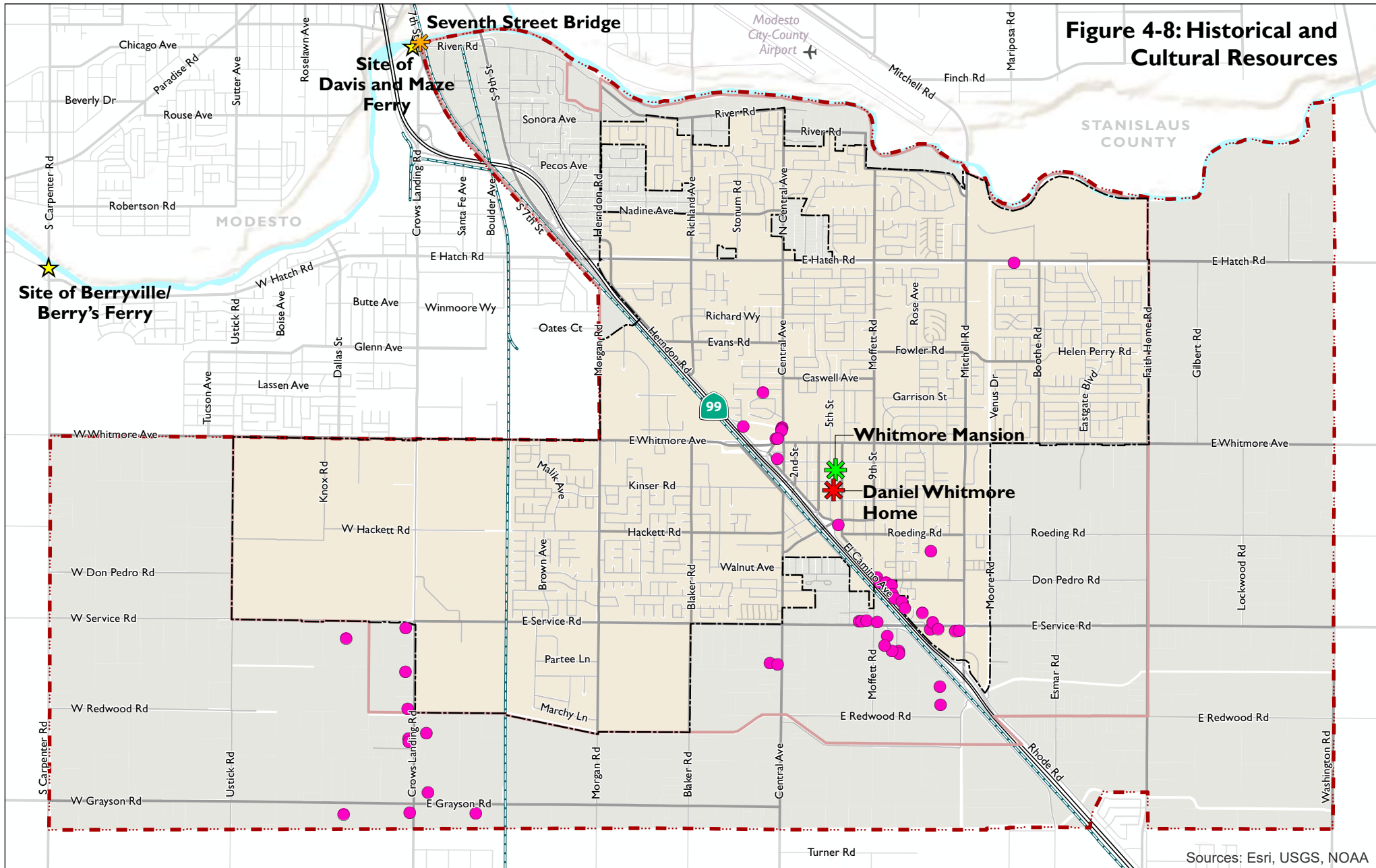
Additional areas that potentially have unrecorded historic archaeological resources include:

- The site of Berryville/Berry's Ferry (where Carpenter Road intersects the river) and
- The site of Davis and Maze Ferry (roughly at 7th Street Bridge/river/Crows Landing Road).

There are also more than 40 sites in the Planning Area that were evaluated by federal programs, such as the Department of Housing and Urban Development, and deemed ineligible for the National Register of Historic Places.

There is no formal local register of historic resources; however, the Whitmore Mansion is a local site of historical significance. The Whitmore Mansion was built in 1903 by the son of the founder of Ceres, Daniel Whitmore.

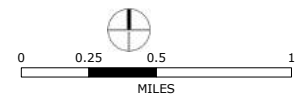
Figure 4-8: Historical and Cultural Resources



Sources: Esri, USGS, NOAA

- Highway
- Ramps
- Major Roads
- Local Roads
- Railroads
- National Register of Historic Places (NRHP)
- Formally determined eligible for NRHP by the SPHO
- Site of Local Historical Significance
- Might be sensitive for unrecorded historic archaeological resources
- Evaluated by federal program, Not considered eligible for the NRHP

- River
- City of Ceres
- Ceres Sphere of Influence
- General Plan Planning Area



Data Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

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5 Public Facilities and Services

5.1 Parks and Recreation

Ceres' existing and planned parks and recreation facilities are shown in Figure 5-1 and listed in Table 5-1. The City of Ceres maintains 13 parks covering more than 150 acres in the Planning Area, including River Bluff Regional Park totaling more than 75 acres, Smyrna Park, and several smaller neighborhood parks. Neighborhood parks are usually five to 10 acres and designed to provide open space and basic recreational facilities for residents who live in the vicinity of the park. Community parks cover larger areas and provide space for organized sports and major facilities for the entire community, such as swimming pools and ball fields. Two mid-sized parks and one smaller park are planned for development, totaling about 22.5 acres of new parkland. The City recently adopted a Parks and Recreation Master Plan, which proposes improvements to existing parks and several new parks, in less developed areas such as western and southern Ceres. There are long term plans to develop River Bluff Regional Park along the Tuolumne River with passive recreation opportunities. In addition, the City has a Community Center with programmed activities and rental space.

Figure 5-1 also shows the mile and half-mile service radii of the existing parks and the five minute and ten minute walksheds. An existing park is less than a ten-minute walk from most residential neighborhoods. Once developed, Ceres Lions Park in the northern edge of the city and Eastgate Park located within the Eastgate Master Plan area will help increase park accessibility in two of the few residential areas that do not have a park within a ten-minute walk. The 1997 General Plan set the goal of 4 acres of parkland per 1,000 residents. As of 2016, considering gated private parks and City-owned as-yet undeveloped parkland, the City provides about 4.2 acres of parks per 1,000 residents.²⁴

All of the developed park facilities are cleaned on a daily basis by two full-time facilities employees. To meet the City's preferred level of service, the City expects it would need to hire five additional employees to create a preventative maintenance program and to end a lawn mowing contract with a private provider to cut costs. The City has two contracts with non-profit organizations to assist with field and facility maintenance. In addition, the City of Ceres currently has a Joint Facility Use Agreement with the Ceres Unified School District (CUSD)—the City utilizes the gyms, pools, and classrooms at school sites while schools are not in session, and CUSD utilizes the Ceres Community Center.

²⁴ 2016 Parks and Recreation Master Plan.

Table 5-1: Existing Parks & Recreation Facilities in the Planning Area

<i>Park Name</i>	<i>Park Type</i>	<i>Acres</i>
Berrygrove Park	Neighborhood	3.7
Don Pedro Park	Neighborhood	5.0
Independence Park	Neighborhood	4.3
Neel Park	Neighborhood	8.2
Persephone Park	Neighborhood	3.1
Redwood Park	Neighborhood	1.0
Riverview Park	Neighborhood	5.6
Roeding Heights Park	Neighborhood	6.1
Sam Ryno Park	Neighborhood	5.2
Strawberry Fields Park	Neighborhood	4.6
Whitmore Park	Neighborhood	1.5
Smyrna Park	Community	27.9
River Bluff Regional Park	Regional	76.0
<i>Subtotal</i>		<i>152.1</i>
Ceres Lions Park	Planned Neighborhood	10.0
Eastgate Park	Planned Neighborhood	10.0
Whitmore Mansion Park	Planned Neighborhood	2.6
<i>Subtotal</i>		<i>22.6</i>
Total		174.7

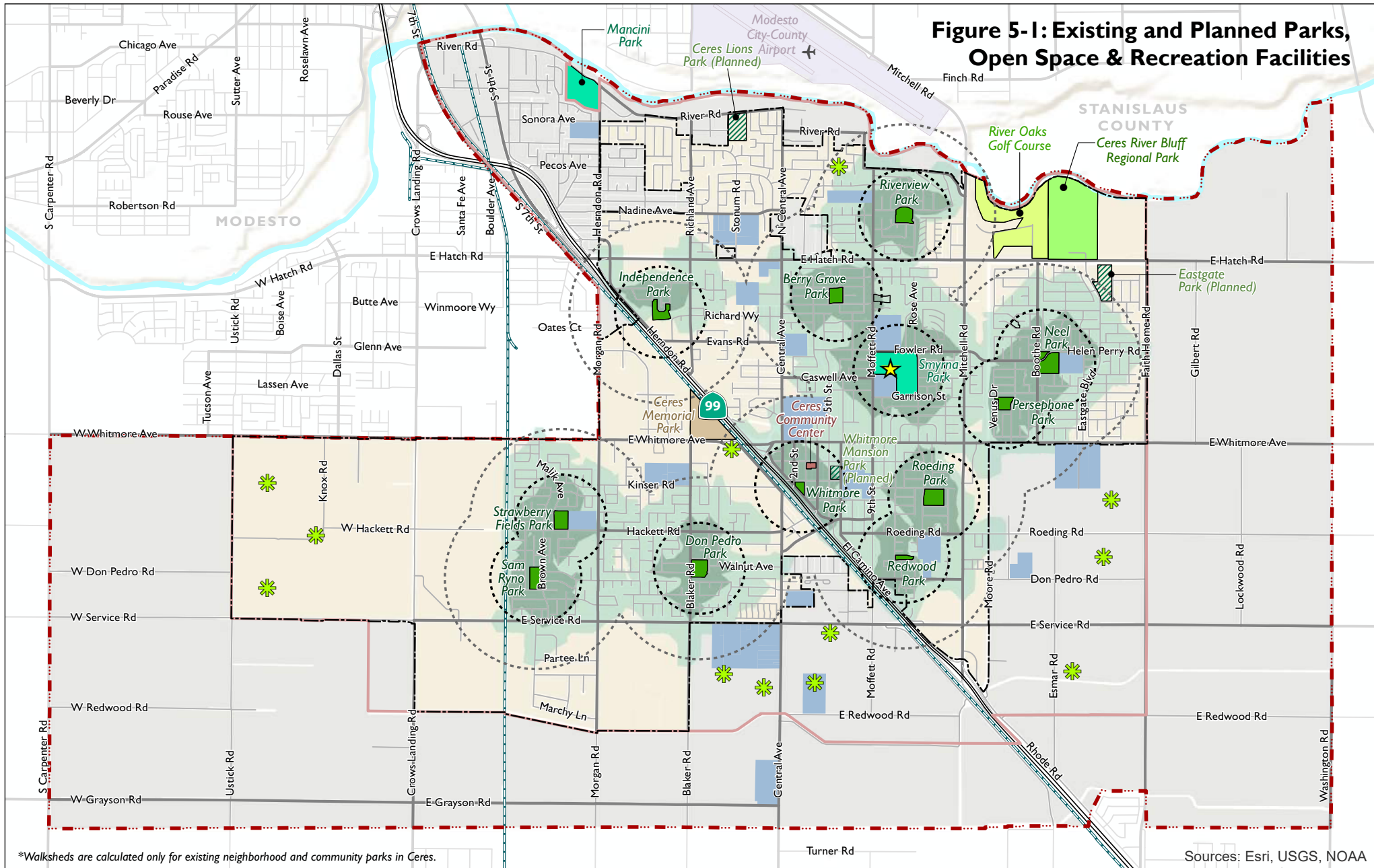
Source: The City of Ceres Parks and Recreation Master Plan, March 2016























5.2 Public Schools and Community Facilities

SCHOOLS

The Ceres Unified School District (CUSD) provides educational services for students of all grades in elementary, junior, and high school in Ceres. As shown in Figure 5-2, schools are located throughout the Planning Area in almost every residential neighborhood. Twenty-two of the District's 23 schools are within the Planning Area; Westport Elementary School is south of the Planning Area boundary. Seven of the schools within the Planning area are located within unincorporated Stanislaus County, and sixteen are located within city limits, including 13 elementary schools, three junior high schools, one high school, one alternative school, one adult school, and three charter/private schools. Enrollment for the 2014-2015 school year for the entire CUSD was 6,951 elementary; 1,846 junior high; and 4,346 high school and adult school; and 576 charter school students, as shown in Table 5-2.

Figure 5-1: Existing and Planned Parks, Open Space & Recreation Facilities



- | | | | | | | | | | |
|--|-------------|---|---------------------------|---|-----------------------------------|--|--|---|----------------------------|
|  | Highway |  | Neighborhood Park |  | Parks Quarter Mile Service Radius |  | Golf Course |  | River |
|  | Ramps |  | Community Park |  | Parks Half Mile Service Radius |  | Cemetery |  | City of Ceres |
|  | Major Roads |  | Regional Park | Parks Walkshed* | |  | Community Center |  | Ceres Sphere of Influence |
|  | Local Roads |  | Undeveloped/Planned Parks |  | 5 Minute Walking Distance |  | Schools |  | General Plan Planning Area |
|  | Skate Park | | |  | 10 Minute Walking Distance |  | Proposed Parks (2016 Parks and Recreation Master Plan) | | |

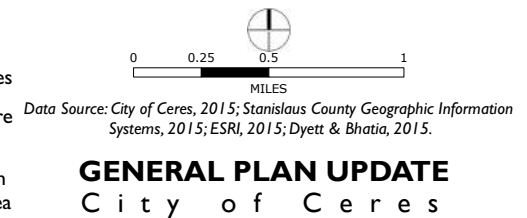
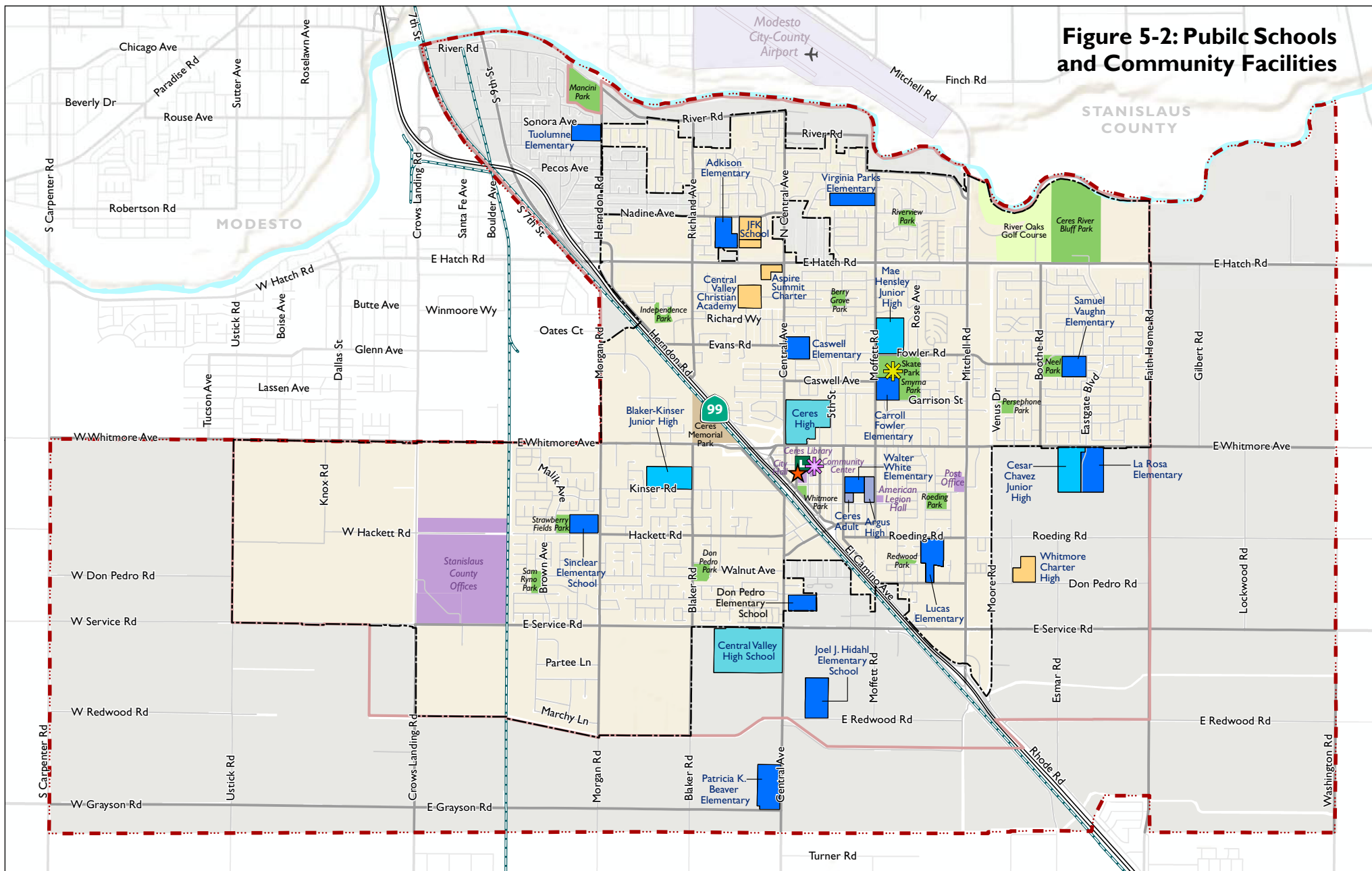


Figure 5-2: Public Schools and Community Facilities



- | | | | | |
|---|--|---|--|---|
| — Highway | ■ Elementary School | ★ City Hall | ■ Parks | ■ River |
| — Ramps | ■ Junior High School | ■ Library | ■ Golf Course | City of Ceres |
| — Major Roads | ■ High School | ✳ Community Center | ■ Cemetery | ■ Ceres Sphere of Influence |
| — Local Roads | ■ Alternative School | ✳ Skate Park | ■ Public Facilities | General Plan Planning Area |
| — Railroads | ■ Charter Schools/Private Schools | | | |

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Data Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

Table 5-2: Public and Charter School Enrollment and Capacity in Ceres

<i>School Name</i>	<i># of Students Enrolled from Outside of District's Boundaries</i>	<i>Total Enrollment, 2014-2015</i>	<i>Enrollment Capacity</i>	<i>Remaining Capacity</i>
Elementary Schools	372	6,951	9,805	3,344
Adkinson Elementary	83	644	655	11
Caswell Elementary	21	540	705	165
Don Pedro Elementary	14	573	735	162
Carroll Fowler Elementary	30	666	725	59
Joel J. Hidahl Elementary	28	499	805	306
La Rosa Elementary	27	600	830	230
Lucas Elementary - Dual Language	24	285	800	515
Patricia K. Beaver Elementary	24	131	800	669
Virginia Parks Elementary	25	683	775	92
Sinclear Elementary	21	633	865	232
Sam Vaughn Elementary	19	580	785	205
Westport Elementary	22	440	585	145
Walter White Elementary	34	677	740	63
Junior High Schools	94	1,846	2,495	649
Blaker-Kinser Junior High	33	649	810	161
Mae Hensley Junior High	43	638	925	287
Cesar Chavez Junior High	18	559	760	201
High Schools and Adult	253	4,346	5,080	734
Central Valley High	101	1,581	1,760	179
Ceres High	188	1,519	1,635	116
Argus/Endeavor High	34	423	475	52
Ceres Adult	0	823	1,210	387
Charter Schools	217	576	700	124
Whitmore Charter School of Technology	178	423	535	112
Whitmore Charter High	35	138	150	12
Whitmore Charter School of Personalized Learning	4	15	15	0
Total	842	13,719	18,570	3,712

Source: Ceres Unified School District, 2015.

The capacity of schools is uneven throughout the District—some schools are near capacity while others are considerably under-capacity. Elementary schools in the north and central areas of the city, such as Adkinson Elementary, Carroll Fowler, and Walter White Elementary, are close to capacity, whereas schools in the southern area of the city such as Joel J. Hidahl Elementary, Lucas Elementary, and Patricia K. Beaver Elementary are below capacity. Ceres Unified School District uses the “Cohort Survival Model” for projecting enrollment, which is based on the prior year’s cohort. According to the CUSD, existing facilities and personnel are not adequate to maintain a sufficient level of service for the projected student enrollment in the Planning Area, because growth in eastern Ceres has put pressure on the capacity of schools.

CUSD is very well funded, partly due to successfully winning competitive funding from the State. Due to the strength of the schools, more than 800 students from outside of the District’s attendance boundary are enrolled in the CUSD schools, as shown in Table 5-2. The majority of the student body comes from low- or very-low income households, with 87 percent of students receiving free or reduced meals. The District does have plans to rehabilitate school buildings within the Planning Area. The music building at Ceres High School is being replaced with six classrooms for an additional capacity of 150 students, and other modernization projects are in the early planning stages. Otherwise, there are no plans for a new facility—according to CUSD, any new school construction or expansion will take place as a result of new residential development.

COMMUNITY FACILITIES

Community facilities in Ceres include the City administrative offices, a community center, historic sites, and library. The Ceres Community Center, located at 2701, 4th Street, is a new landmark in Downtown Ceres built in 2009. The Community Center is 26,500 square feet with assembly space, a teen activity room, arts and crafts center, computer learning center, senior activity room, and kitchen, and hosts special events, classes for all ages, and more. The Daniel Whitmore Home is a historical landmark on the National Register of Historical Places in Downtown Ceres and was built by the founder of Ceres in 1870. The Whitmore Mansion was built in 1903 by the City founder’s son. The City recently bought the Mansion in 2012 and partners with a non-profit group that is responsible for the operations, including renting the Mansion and grounds for special events. The Ceres Public Library is located adjacent to the Community Center in Downtown and is a branch of the Stanislaus County Library.

5.3 Public Safety Services

POLICE SERVICE

Police services in the Planning Area are provided by the Ceres Police Department and the Stanislaus County Sheriff’s Department. The Police Department is headquartered at 2727 3rd Street in Downtown near the Ceres Community Center and Ceres Fire Department. There are no substations. The Police Department provides a full range of police services with 51 sworn officers in fiscal year (FY) 2015/16, in addition to non-sworn personnel as shown in Table 5-3. According to the current General Plan, about 80 percent of the City’s General Fund expenditures are dedicated to public safety. Ceres voters passed Measure H, a half-cent local sales tax for public safety, in 2007. When Measure H is factored in, more than 80 percent of the General Fund is spent on public safety.

**Table 5-3: Ceres Police Department Staffing
(BWD 8K 2015/16 Budget)**

<i>Division</i>	<i>Number of Employees/Volunteers</i>
Administration (Chief, Captain, 3 Lt)	5
Sergeants	9
Patrol Officers	24
Detectives	8
Traffic	2
School Resource Officers	3
Total Sworn Officers	51
Volunteers in Public Safety	15
Communications (Dispatch)	8
Chaplains	3
Records	3
Community Service Officers	1.5
Code Enforcement	1
Total Non-Sworn Staff	31.5

Source: Ceres Police Department, 2015.

According to the Ceres Housing Element, the Police Department's current service ratio is 1.08 officers per 1,000 residents, and the goal is 1.5 officers per 1,000 residents. Based on Ceres's current population, the police department would have to increase by about 20 officers to meet the service ratio goal. Given a constrained budget, there is discussion within the Police Department about whether the Department should focus investment in increasing the number of officers or in updating its technology to improve the efficiency of the existing staff. Either way, according to the Police Department, existing facilities and staffing are adequate to maintain a sufficient level of service for future population growth in Ceres. The average response time in 2015 for priority one (highest priority) calls is about five minutes.²⁵

The Stanislaus County Sheriff's Department provides general-service law enforcement to unincorporated areas of Stanislaus County, outside of the Ceres city limits. This includes areas within Ceres's SOI that are unincorporated, including county islands.

FIRE SERVICE

The City of Ceres Fire Department provides fire protection and emergency medical services as well as hazardous materials mitigation, technical rescue fire investigations, and public education. It services 15 square miles, including 55,000 residents in the city of Ceres; 1,200 residents in the Ceres Fire Protection District which includes county land to the south of the city; and 4,000 residents in the Industrial Fire Protection District in northern Ceres.

²⁵ Ceres 2015 Housing Element.

The department does not have service ratio standards (i.e. number of responders per 1,000 residents) but does aim for the National Fire Protection Association's (NFPA) National Response Time Standard of responding within nine minutes of the dispatch notification at least 90 percent of the time. During 2015, the average response time for fire and emergency calls in the Planning Area was less than five minutes, well below the target response time. The Insurance Service Organization (ISO) assesses fire departments across the country to provide consistent information to insurance companies. ISO ratings range from one to ten, with one being the best and ten being no protection at all. The ISO rating of fire services in Ceres are shown in Table 5-4.

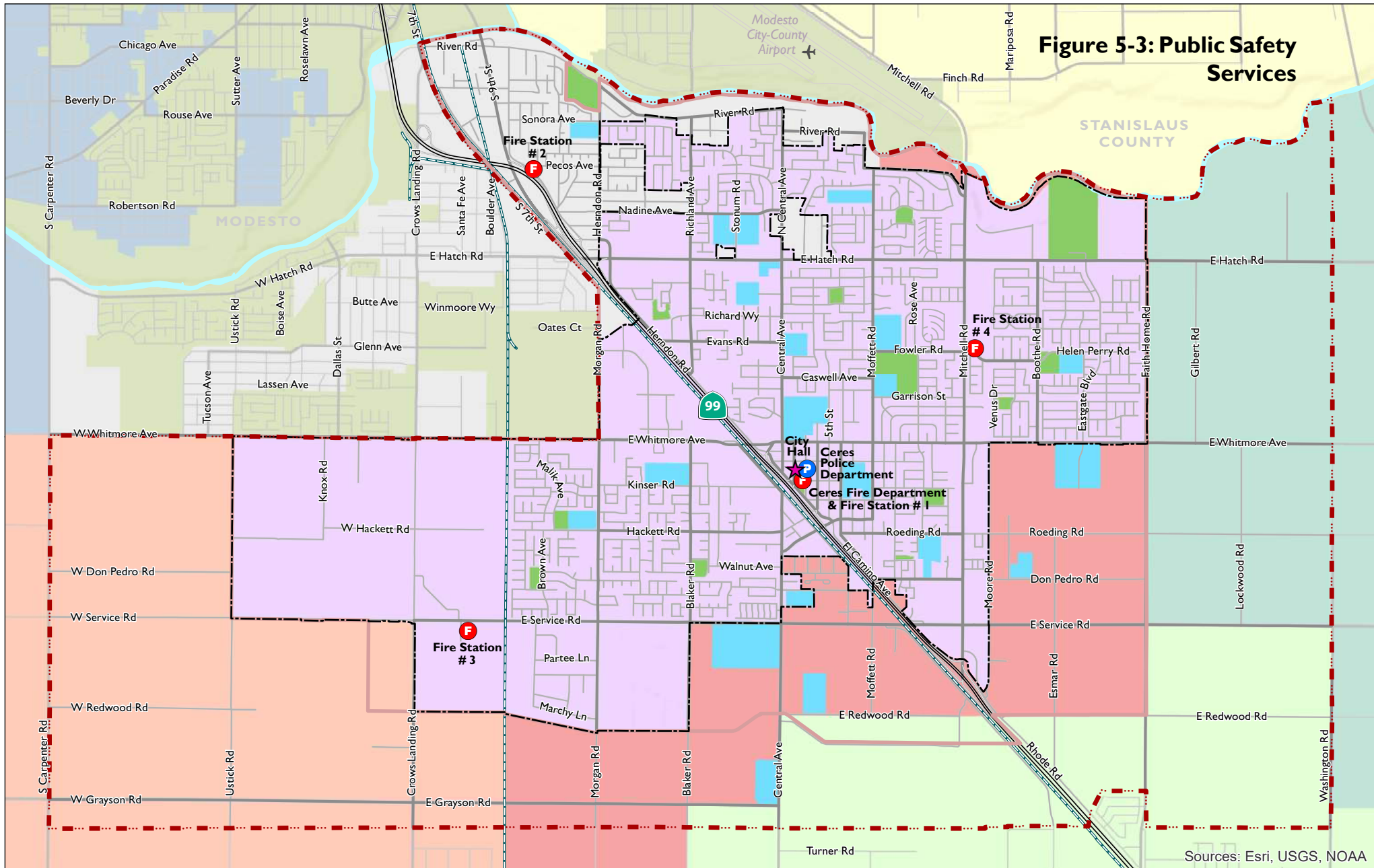
Table 5-4: ISO Ratings of Fire Safety Service Providers

<i>Entity</i>	<i>ISO Rating</i>
City of Ceres Fire Department	3
Ceres Fire Protection District	3
Industrial Fire Protection District	9

Source: City of Ceres Fire Department, 2016.

The Department has a staff of 38.5, including one secretary (half time), one chief, three battalion chiefs, 13 captains, 12 engineers, and nine firefighters. Six of the firefighter positions are funded by a grant that expires in March 2018, and one of the captain positions is paid for by the County as part of the Regional Fire Investigations Unit. There are four fire stations distributed throughout the city, as shown in Figure 5-3, each with at least one fire engine. Fire Station #4 is equipped with a ladder truck. To maintain a sufficient level of service for future population growth after development of the West Landing Specific Plan, there is a new fire station planned in the area. In addition, the Fire Chief anticipates the need for two more fire stations to adequately provide fire protection services. In terms of street design and requirements for new development, the Department requires a 50-foot inside turning radius.

Figure 5-3: Public Safety Services



Sources: Esri, USGS, NOAA

- Highway
- Ramps
- Major Roads
- Local Roads
- Railroads



- Fire Station (F in a red circle)
- City Hall (Star symbol)
- Parks (Green square)
- Schools (Blue square)

Fire Districts

- City of Ceres Fire Department (Purple square)
- Ceres Fire Protection District (Red square)
- Hughson Fire Protection District (Teal square)
- Keyes Fire Protection District (Light Green square)

- Burbank/Paradise Fire protection District (Blue square)
- Industrial Fire Protection District (Gray square)
- Modesto Fire Department (Green square)
- Westport Fire Protection District (Orange square)
- Stanislaus Consolidated Fire Protection District (Yellow square)

- River (Blue line)

- City of Ceres (Dashed line)
- Ceres SOI (Red dashed line)
- General Plan Planning Area (Red dashed line)

0 0.25 0.5 1
MILES
Data Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

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6 Mobility

6.1 Regulatory Context

Transportation through and within Ceres is provided by a network of facilities that are stratified by travel mode, function and capacity. Multiple agencies oversee the planning, development, operation, and funding of these facilities. Nationally, the US Department of Transportation (USDOT) ensures the safety and efficiency of the nation's interstate freeway system, airports, rail lines, and ports. The California Department of Transportation (Caltrans) manages more than 45,000 miles of highway and freeway lanes as well as other transportation facilities across the state. At the regional level, the Stanislaus Council of Governments (StanCOG) is responsible for developing and updating a variety of transportation plans and for allocating the federal and state funds to implement them. Ceres Area Transit (CAT), Ceres Dial-A-Ride (CDAR), Modesto Area Express (MAX), and Stanislaus Regional Transit (StaRT) provide public transportation services to the city.

The Federal Railroad Administration regulates freight railroads for the federal government by creating and enforcing national rail safety regulations. At the state level, the California Public Utilities Commission (CPUC) has jurisdiction over state-level safety regulations for common carriers (including trucks and rail) and at-grade railroad crossings.

At the local level, the Ceres Department of Public Works and Engineering Services are responsible for the maintenance and design of citywide transportation systems, including roadways, bicycle, pedestrian and transit facilities. The Planning Division is responsible for citywide zoning and land use planning services.

The existing City of Ceres General Plan, approved in 1997, establishes the majority of transportation policies in the city. The Transportation Element of the General Plan established policies to maintain relatively easy vehicular mobility (low levels of congestion) within the city that is characteristic of its semi-rural atmosphere. While the existing plan is generally supportive of road widening to accommodate vehicle traffic generated by new development, it also encourages non-vehicular transportation modes and discourages new road construction in order to improve air quality.

6.2 Travel Behavior in Ceres

An analysis of American Community Survey (ACS) data available from the US Census Bureau provides information related to the travel trends and behavior amongst workers 16 years of age and older in Ceres.

According to the ACS 2014 5-Year estimates, 78 percent of commuters drive alone in Ceres, compared to 80 percent in Stanislaus County, 73 percent in California and 76 percent in the United States (Table 6-1). Comparatively, 15 percent of workers in Ceres carpooled, which is higher than the county average. Transit, walking, and biking are all approximately one percent or less of commute trips. Three percent of workers work from home, which is consistent with local and regional rates.

Table 6-1: Commuter Mode Share in Ceres and Surrounding Areas

	<i>Drove Alone</i>	<i>Carpooled</i>	<i>Transit</i>	<i>Walk</i>	<i>Bike</i>	<i>Other</i>	<i>Work from Home</i>
Ceres	78%	15%	1%	1%	>1%	2%	3%
Modesto	81%	10%	2%	1%	1%	1%	3%
Turlock	91%	11%	1%	2%	1%	1%	4%
Stanislaus County	80%	12%	1%	2%	>1%	1%	4%
California	73%	11%	5%	3%	>1%	1%	5%

Source: American Community Survey 2014 5-Year Estimates

Census data also indicates that commute departure times are typical of other communities in Stanislaus County, with almost half of all commuters departing for work between 6:00 and 9:00 AM. Within that time, there are slightly more workers who depart between 6:00 and 6:30 AM than other nearby communities. The average travel time to work is approximately 27 minutes, which is consistent with other communities in Stanislaus County.

Vehicle ownership rates in Ceres are slightly higher than in surrounding communities, as shown in Table 6-2. Approximately 45 percent of workers age 16 and over have access to three or more vehicles; the percentage was 35 percent in Modesto, 37 percent in Turlock, 39 percent in Stanislaus County and 36 percent in California.

Table 6-2: Vehicle Ownership in Ceres and Surrounding Areas

	<i>No Vehicle Available</i>	<i>1 Vehicle Available</i>	<i>2 Vehicles Available</i>	<i>3 Vehicles Available</i>
Ceres	2%	17%	37%	45%
Modesto	2%	21%	42%	35%
Turlock	3%	18%	41%	37%
Stanislaus County	2%	18%	40%	39%
California	4%	20%	40%	36%

Source: American Community Survey 2014 5-Year Estimates

A majority of Ceres residents commute outside of City limits for work, with only 19 percent of Ceres residents living and working within city limits. As shown in Table 6-3 below, the percentage is 43 percent in Turlock, 54 in Modesto, and 34 in Stanislaus County as a whole.

Table 6-3: Residents who Work in Ceres

	<i>Work in City of Residence</i>
Ceres	19%
Modesto	54%
Turlock	43%
Stanislaus County	34%
California	35%

Source: American Community Survey 2014 5-Year Estimates

6.3 Existing Transportation Network

This section summarizes the existing transportation system in Ceres. In addition to motorized vehicle facilities, this section discusses pedestrian facilities, bicycle network and public transportation services.

LOCAL TRANSPORTATION NETWORK

A roadway's functional classification generally defines the types of design features including the level of access provided to individual parcels, the types of users and access restrictions, and intended traffic volumes the road. The existing Ceres General Plan has designated six categories of roadway classification: freeways, expressways, arterials, primary collectors, secondary collectors, and local streets. Figure 6-1 presents the city's current General Plan circulation diagram for existing roadway facilities within the Planning Area. In comparison, Figure 6-2 identifies the current functions of roadways within the city limits. The following section discusses general design characteristics associated with each classification based on descriptions provided in the current General Plan.

The existing General Plan descriptions are primarily related to motor vehicle movements and do not provide explicit guidance for bicycle, pedestrian, or transit facilities. Thus, this section uses observations to supplement the classification descriptions with details about sidewalks, bicycle lanes, and transit stops, when available. Overall, the presence of bicycle lanes and sidewalks appear to be contingent on recent development and land use; for example, roads serving agriculture uses typically have no sidewalks, and sidewalks are discontinuous in areas with sporadic recent development.

Roadway Classifications

The following describes each of the six classifications.

Freeways

Freeways are grade-separated and access-controlled roads designed to carry large vehicular traffic volumes over long distances at a high rate of speed. Connections to other roads only occur at grade-separated interchanges, consisting of ramps and overpasses or underpasses. Center dividers separate opposing lanes of travel. Pedestrian, bicycle and parking facilities are not provided on freeways.

California State Route 99 (SR 99) is a north-south freeway that connects Ceres to Modesto and Turlock. It is the only grade-separated and access-controlled freeway within Ceres city limits. Beyond Stanislaus County, SR 99 spans almost the entire California Central Valley, providing access to many urban centers, and is a vital artery for intra-valley travel. It is also an important regional goods movement route. Based on Caltrans data from 2014, SR 99 has an average daily traffic volume of 97,000 vehicles at the Whitmore Avenue interchange.

Expressways

Expressways are limited access, moderate- to high-speed facilities that typically have four to six lanes and generally only intersect with primary collectors, arterials, and expressways. The right-of-way for expressways ranges from 100 to 158 feet. Expressways may access freeways at high volume interchanges. Limited direct access to industrial, commercial, and high-density residential are only allowed when approved through site plan review.

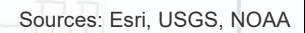
Expressways typically do not provide direct land use access, and they may or may not include sidewalks depending on the presence of recent development. If bicycle facilities are provided, it is usually a parallel Class I facility (discussed later in further detail). Parking is prohibited on expressway facilities. Designated expressways in Ceres include:

- Hatch Road from Faith Home Road to Carpenter Road;
- Service Road from Faith Home Road to Carpenter Road; and
- Faith Home Road from Garner/Claus Road to State Route 99.

Although these roadways are designated expressway facilities, they typically have not been upgraded to expressway standards.

Arterials

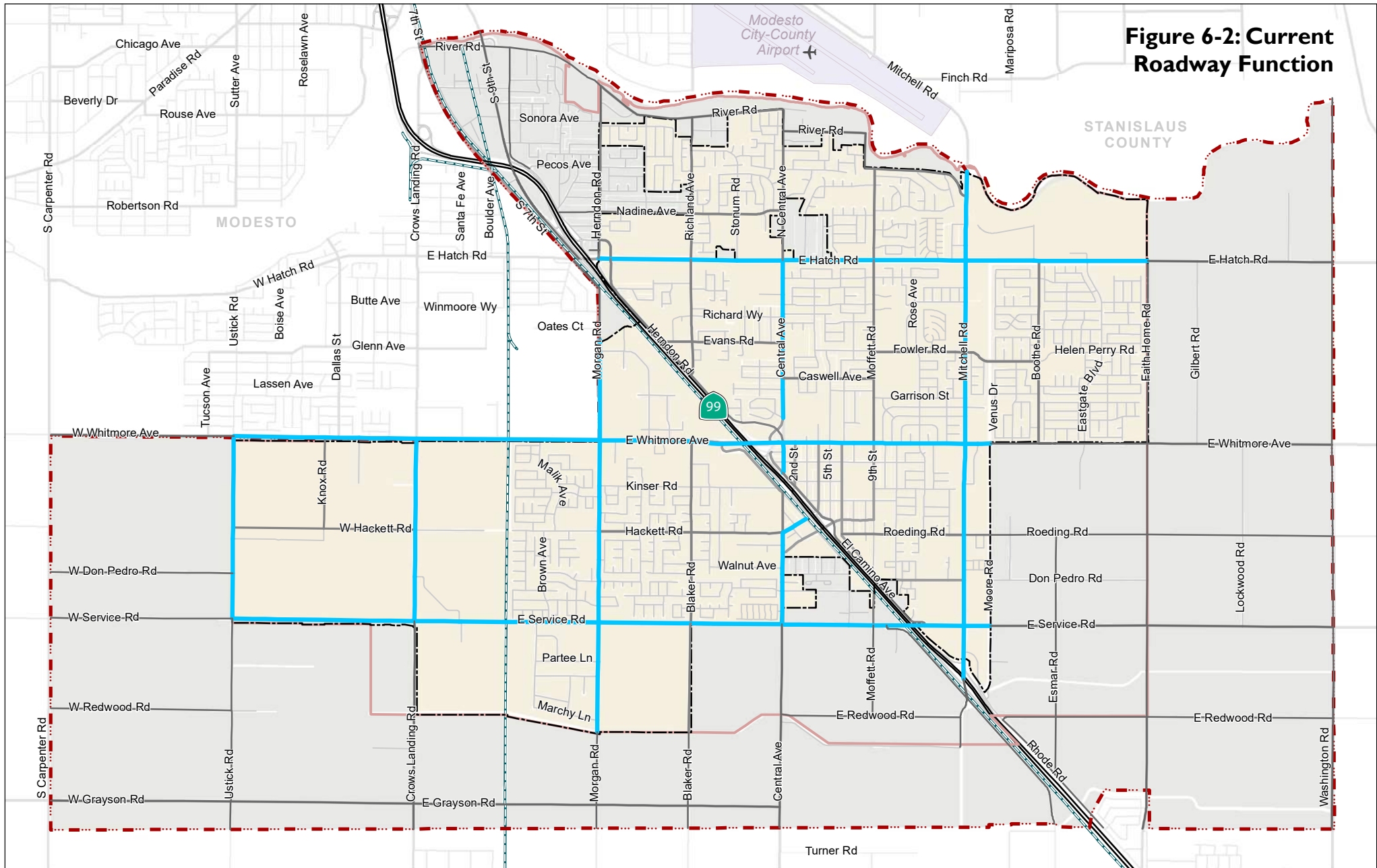
Arterial roadways are intended to accommodate high volumes of traffic within a four- to six-lane cross-section, plus left-turn pockets, and sometimes right-turn pockets. The right-of-way for these streets ranges from 90 to 120 feet. These roads typically provide access to collector streets into residential subdivisions, and can also provide direct access to commercial areas. They may or may not include sidewalks depending on recent development, and surrounding land use. Class II bicycle facilities may be present along arterials. Parking may be permitted on some arterial roadways.

STANISLAUS
COUNTY

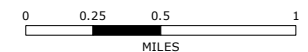
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- A horizontal number line is shown with tick marks at 0, 0.25, 0.5, and 1. The segment between 0.25 and 0.5 is shaded black.

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C i t y o f C e r e s

Figure 6-2: Current Roadway Function



- | | | |
|---------------------|-----------------|------------------------------|
| — Highway | — Other Roads | ■ Ceres Sphere of Influence |
| --- Expressway | — Railroads | ■ General Plan Planning Area |
| — Arterial | — River | |
| — Primary Collector | ■ City of Ceres | |



Data Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

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Arterials designated in the existing General Plan area include (some extents may include some segments within the unincorporated county but within the General Plan Planning Area)²⁶:

- Whitmore Avenue from Carpenter Road to Washington Road;
- Grayson Road from SR-99 & Mitchell Road to Carpenter Road;
- Ustick Road from W. Whitmore Avenue to Grayson Road;
- Crows Landing Road from W. Whitmore Avenue to Grayson Road;
- South 9th Street from River Road to SR 99;
- Morgan Road from SR-99 to Grayson Road;
- Central Avenue from Hatch Road to Whitmore Avenue;
- Central Avenue from Pine Street to Grayson Road;
- Pine Street from El Camino Avenue to Central Avenue; and
- Mitchell Road from Yosemite to SR-99;
- Service Road east of Faith Home Road.

Primary Collector Streets

Primary collector streets generally collect traffic from other collector and minor streets, and provide connections to arterial streets. They typically provide one vehicular travel lane in each direction within a right-of-way of 50-60 feet. Primary collector streets also provide direct linkages to neighborhood shopping areas. Primary collector streets are designated throughout the Planning Area, generally creating a ½ to ¼ mile grid pattern. Depending on the presence of recent development, most collector streets have pedestrian facilities, but typically do not have designated bicycle facilities. Parking may be permitted on some primary collector streets.

Secondary Collector Streets

Secondary collector streets are intended to carry moderate volumes of traffic from local streets to primary collectors and arterials. They typically provide one vehicular travel lane in each direction within a right-of-way of 50-60 feet. Secondary collector streets are not delineated on the Circulation Diagram; instead, they are located through the development and subdivision process. Depending on the presence of recent development, most collector streets have pedestrian facilities, but typically do not have designated bicycle facilities. Parking is typically permitted on secondary collector streets.

Local Streets

Local Streets are intended as low capacity streets serving low and medium density residential uses, though local streets may be present in commercial and industrial areas as well. Local streets generally provide one travel lane per direction within a right-of-way of 46-60 feet, although narrower rights-of-way may be permitted in certain circumstances. The minimum right-of-way for local streets in areas designated for commercial and industrial uses is 60 feet. Direct access to

²⁶ It should be noted that the original General Plan Circulation Diagram from which Figure 6-1 is based designated Hatch Road as an expressway west of SR-99. However, this was omitted in Figure 6-1 because it lies outside of the General Plan Update planning area. Additionally, in Figure 6-1, South Carpenter Road and Washington Road are designated as arterials based on observed characteristics, although they do not appear in the original General Plan Circulation Diagram.

local streets is permitted consistent with adopted improvement standards. Local streets are not delineated on the Circulation Diagram; instead, they are located through the development and subdivision approval process. Most local streets have designated pedestrian facilities and bicyclists typically share the travel lane with vehicles. Parking is typically permitted on local streets.

EXISTING ROADWAY AND INTERSECTION VOLUMES

As part of the General Plan update, Fehr & Peers retained a traffic count firm to conduct daily and peak period traffic counts at the locations shown on Figure 6-3. Daily traffic counts, including speed information and vehicle classification data, were collected over a 48-hour period on clear days in February and March 2016 with area schools in normal session, with the average volume over the two days of data collection presented in Table 6-4.

Morning and evening peak period (7:00 to 9:00 AM and 4:00 to 6:00 PM) intersection turning movement counts were conducted at 20 intersections, including separate counts of passenger vehicles, heavy vehicles, pedestrians and bicyclists. For the study intersections, the single hour with the highest traffic volumes during the count periods was identified. The peak hour volumes are presented on Figure 6-4 along with the existing lane configuration and traffic control. Existing peak hour bicycle and pedestrian activity is shown on Figure 6-5.

Table 6-4: Roadway Segment Analysis

Roadway	Average Weekday			
	Average Daily Traffic ¹	Level of Service	Percent Truck ²	85th Percentile Speed (mph) ³
1. 7th Street north of River Road	16,300	D	0.1%	35
2. 9th Street north of River Road	19,500	A	2.7%	49
3. Mitchell Road at Tuolumne River	42,700	B	0.2%	
4. Carpenter Road at Tuolumne River	20,100	D	1.0%	47
5. Crows Landing Road south of 7th Street	12,700	B	0.2%	43
6. West Hatch Road east of South Carpenter Road	10,500	A	0.5%	46
7. West Hatch Road west of Crows Landing Road	18,800	F	0.6%	45
8. East Hatch Road east of Central Avenue	30,900	D	2.6%	51
9. East Hatch Road west of Faith Home Road	11,000	A	1.3%	57
10. Herndon Road south of East Hatch Road	6,800	A	0.2%	34
11. Central Avenue south of East Hatch Road	7,900	A	0.1%	38
12. Moffett Road south of East Hatch Road	5,900	A	0.1%	33
13. Faith Home Road south of East Hatch Road	3,600	A	1.5%	57
14. Crows Landing Road north of West Whitmore Avenue	24,600	B	2.3%	42
15. Morgan Road north of East Whitmore Avenue	5,900	A	1.3%	41
16a. Central Ave north of E Whitmore Ave	8,500	A	0.1%	34
16b. Herndon Road north of E Whitmore Ave	3,600	A	1.5%	47
17. Moffett Road north of East Whitmore Avenue	7,000	A	2.0%	44

Table 6-4: Roadway Segment Analysis

Roadway	Average Weekday			
	Average Daily Traffic ¹	Level of Service	Percent Truck ²	85th Percentile Speed (mph) ³
18. West Whitmore Avenue east of South Carpenter Road	6,000	A	1.4%	45
19. East Whitmore Road west of Morgan Road	14,500	C	1.1%	45
20. East Whitmore Road east of Blaker Road	24,500	B	1.2%	45
21. East Whitmore Road west of Central Avenue	26,600	C	1.4%	52
22. East Whitmore Road west of Faith Home Road	6,900	A	0.1%	37
23. Faith Home Road south of East Whitmore Avenue	4,100	A	0.5%	29
24. Hackett Road west of Morgan Road	2,400	A	1.6%	37
25. Pine Street west of El Camino Avenue (at SR 99 Ramps)	9,300	A	3.0%	47
26. West Service Road east of South Carpenter Road	1,800	A	3.8%	48
27. East Service Road west of Morgan Road	7,000	A	1.7%	45
28. East Service Road east of Central Avenue	11,900	B	0.5%	50
29. East Service Road west of Faith Home Road	4,100	A	11.4%	59
30. Ustick Road south of West Service Road	300	A	2.0%	42
31. Crows Landing Road south of West Service Road	4,900	A	3.1%	54
32. Morgan Road south of East Service Road	2,900	A	2.4%	45
33. Central Avenue south of East Service Road	5,600	A	1.5%	49
34. Mitchell Road south of East Service Road	29,600	C	4.7%	62
35. Faith Home Road south of East Service Road	4,100	A	1.4%	52
36. West Grayson Road east of South Carpenter Road	3,300	A	7.2%	44
37. South Carpenter Road south of West Grayson Road	5,300	A	2.1%	48
38. Crows Landing Road south of East Grayson Road	7,700	A	0.8%	56
39. Morgan Road south of East Grayson Road	1,300	A	4.9%	58
40. Blaker Road south of East Grayson Road	400	A	0.1%	29
41. Central Avenue south of East Grayson Road	3,500	A	0.2%	25

Notes:

1. Average daily two-way traffic measured over two days (except as noted).
2. Average based on two days of data collection
3. 85 percent of the recorded speeds are lower or equal to the 85th percentile speed. 15 percent of the recorded speeds are above this speed.

Source: Fehr & Peers, 2016

Traffic Operations and Level of Service

The operations of roadway facilities can be described with the term “level of service” (LOS). LOS is a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels of service are defined ranging from LOS A (i.e., free flow conditions) to LOS F (over capacity conditions). LOS E corresponds to operations “at capacity.” When volumes exceed capacity, stop-and-go conditions result and operations are designated as LOS F. Different methods are used to assess intersections and roadway segments, as further described in Appendix B. The City of Ceres has established LOS D as the roadway standard for major roadways, and LOS C for secondary and local roadways.

As part of the General Plan update process, the City has the opportunity to explore policies that relate to other quantitative and qualitative measures of the transportation system. For instance, goals and policies that relate to vehicle miles of travel can be considered in combination with or in lieu of the traditional level of service standard. A separate document that provides information related to the various transportation metrics that could be considered as part of the General Plan describes these options.

Daily Roadway Segment Operation

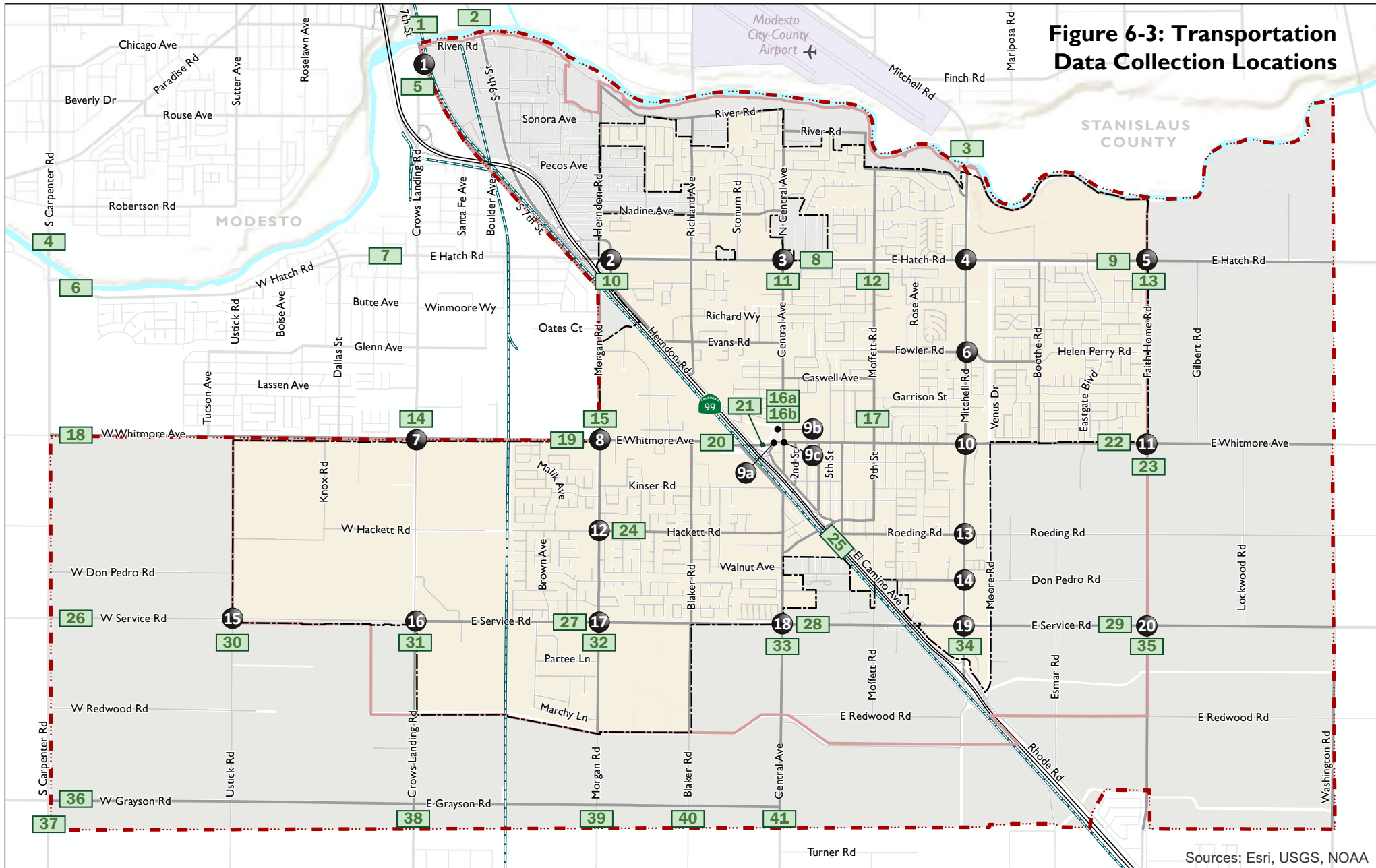
Levels of service were assessed for each of the roadway segments presented on Figure 6-3 based on the existing functional classification, existing number of lanes, and the capacities presented in Table B-1 of the appendix. On a daily basis, most roadways through Ceres operate within the established level of service standards. West Hatch Road, west of Crows Landing Road within the City of Modesto, operates at Level of Service F, indicative of congested conditions.

Existing Intersection Level of Service

Existing operations were evaluated using the methods described in Appendix B for the weekday AM and PM peak hours at the study intersections, as summarized in Table 6-5. The analysis is based on volumes, lane configurations, and traffic control presented on Figure 6-4. Observed peak hour factors²⁷ were used at all intersections. Pedestrian and bicycle activity was also factored into the analysis. As shown, all intersections currently operate within the level of service standards set by the City of Ceres, except for the Mitchell Road at Service Road intersection.

²⁷ The peak hour factor is the relationship between the peak 15-minute flow rate and the full hourly volume: $PHF = \text{Hourly volume} / (4 \times (\text{volume during the peak 15 minutes of flow}))$. The analysis level of served is based on peak rates of flow occurring within the peak hour because substantial short term fluctuations typically occurring during an hour.

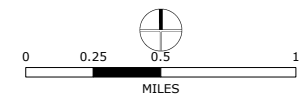
Figure 6-3: Transportation Data Collection Locations



Sources: Esri, USGS, NOAA

- Highway
- Local Roads
- Ramps
- Major Roads
- Railroads
- River
- City of Ceres
- Ceres Sphere of Influence
- General Plan Planning Area

- # Peak Period Intersection Count Location
- # Daily Roadway Segment Count Location



Data Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

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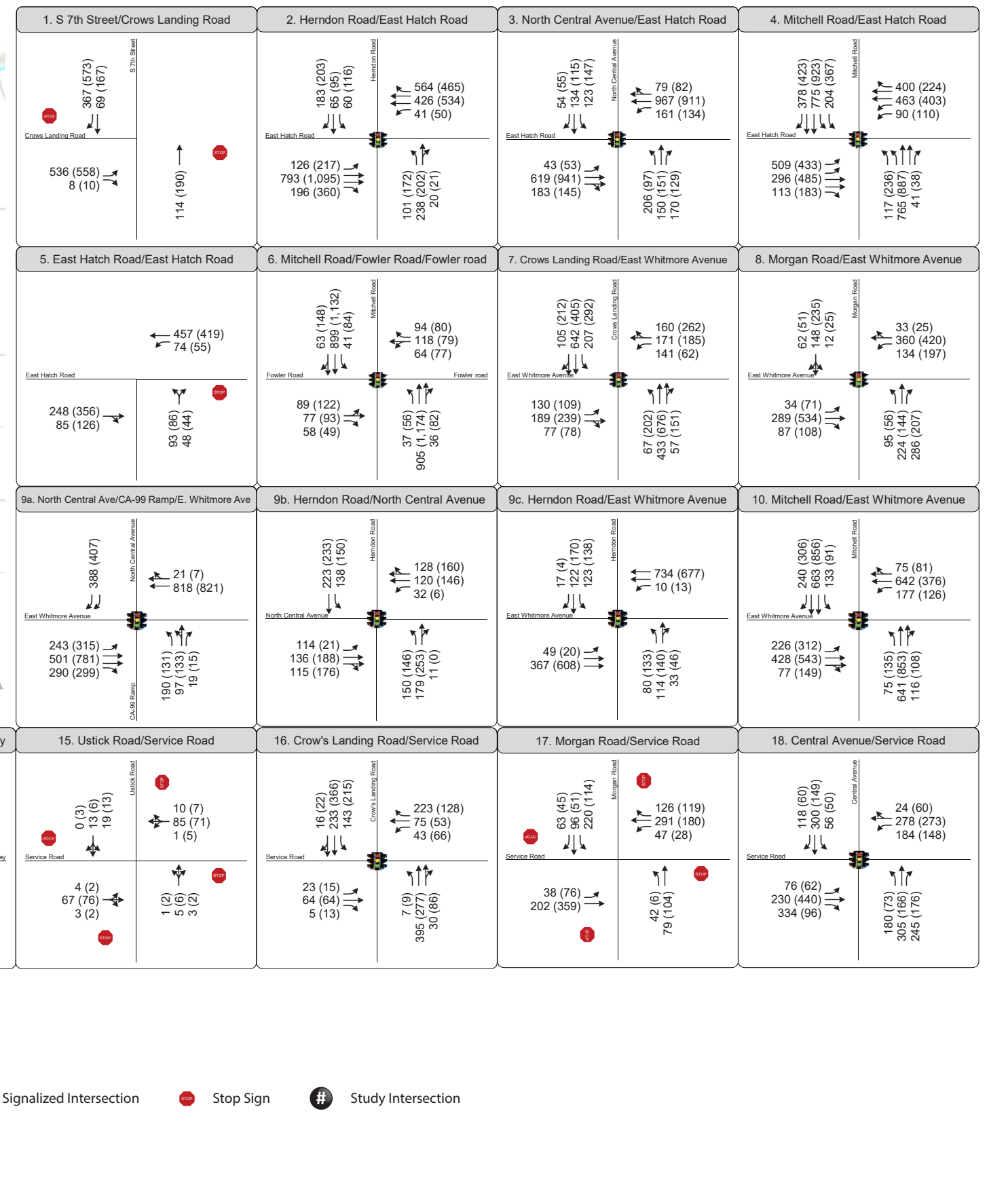


Figure 6-4
Existing Peak Hour
Intersection Volumes, Lane Configurations and Traffic Control

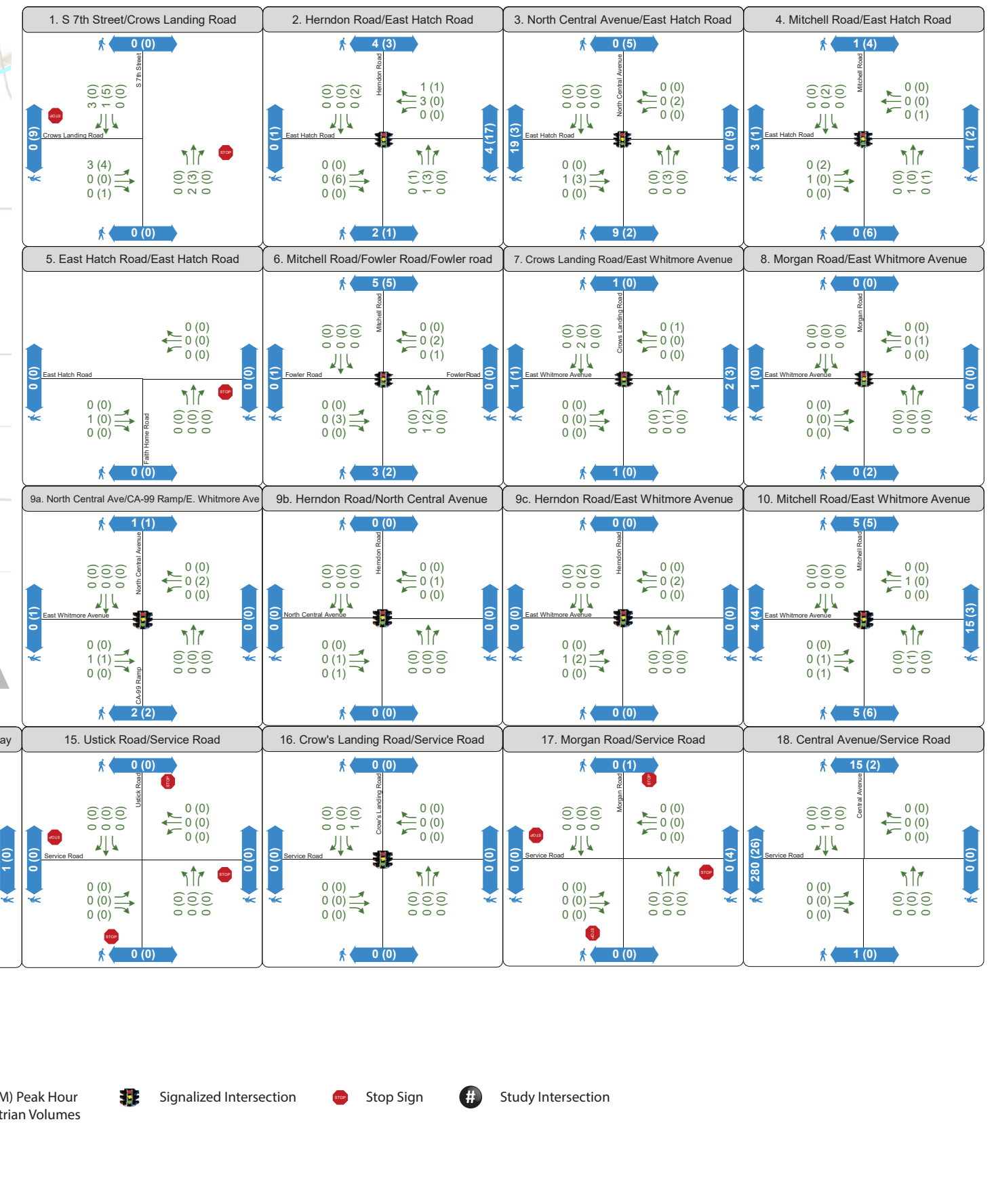


Figure 6-5
Existing Peak Hour
Bicycle and Pedestrian Volumes

Table 6-5: Existing Intersection Level of Service

<i>Intersection</i>		<i>Control¹</i>	<i>Peak Hour²</i>	<i>Delay (sec)³</i>	<i>LOS</i>
1	Crows Landing Road at 7th Street	SSSC	AM	4 (16)	A (C)
			PM	7 (20)	A (C)
2	Herndon Road at Hatch Road	Signal	AM	32	C
			PM	38	D
3	North Central Avenue at Hatch Road	Signal	AM	33	C
			PM	29	C
4	Mitchell Road at Hatch Road	Signal	AM	49	D
			PM	42	D
5	Faith Home Road at Hatch Road	SSSC	AM	5 (30)	A (D)
			PM	5 (36)	A (E)
6	Mitchell Road at Fowler Road	Signal	AM	23	C
			PM	27	C
7	Crows Landing Road at West Whitmore Avenue	Signal	AM	26	C
			PM	46	D
8	Morgan Road at East Whitmore Avenue	Signal	AM	15	B
			PM	20	B
9a ^d	Central Avenue at East Whitmore Avenue	Signal	AM	29	C
			PM	31	C
9b	Herndon Road at North Central Avenue	Signal	AM	42	D
			PM	17	B
9c	Herndon Road at East Whitmore Avenue	Signal	AM	31	C
			PM	19	B
10	Mitchell Road at East Whitmore Avenue	Signal	AM	53	D
			PM	46	D
11	Faith Home Road at East Whitmore Avenue	AWSC	AM	15	B
			PM	17	C
12	Morgan Road at Hackett Road	Signal	AM	7	A
			PM	9	A
13	Mitchell Road at Roeding Road	Signal	AM	12	B
			PM	11	B
14	Mitchell Road at Don Pedro Road	Signal	AM	7	A
			PM	5	A
15	Ustick Road at West Service Road	SSSC	AM	8 (8)	A (A)
			PM	8 (8)	A (A)
16	Crows Landing Road at West Service Road	Signal	AM	22	C
			PM	16	B

Table 6-5: Existing Intersection Level of Service

<i>Intersection</i>		<i>Control¹</i>	<i>Peak Hour²</i>	<i>Delay (sec)³</i>	<i>LOS</i>
17	Morgan Road at East Service Road	AWSC	AM	24	C
			PM	17	C
18	Central Avenue at East Service Road	Signal	AM	38	D
			PM	19	B
19	Mitchell Road at East Service Road	Signal	AM	49	D
			PM	59	E
20	Faith Home Road at East Service Road	AWSC	AM	10	A
			PM	11	B

Notes:

1. AWSC = all way stop control, SSSC = side street stop control, Signal = signalized
2. AM = weekday morning peak hour, PM = weekday evening peak hour, SAT = Saturday afternoon Peak Hour
3. LOS = Level of Service. LOS calculations conducted using the Synchro level of service analysis software package, which applies the method described in the 2010 Highway Capacity Manual. For side-street stop-controlled intersections, delays for worst approach and average intersection delay are shown: intersection average (worst approach).
4. HCM 2000 Methodology used; HCM 2010 is not able to calculate levels of service for some phasing types.

Source: Fehr & Peers, 2016.

6.4 Public Transportation

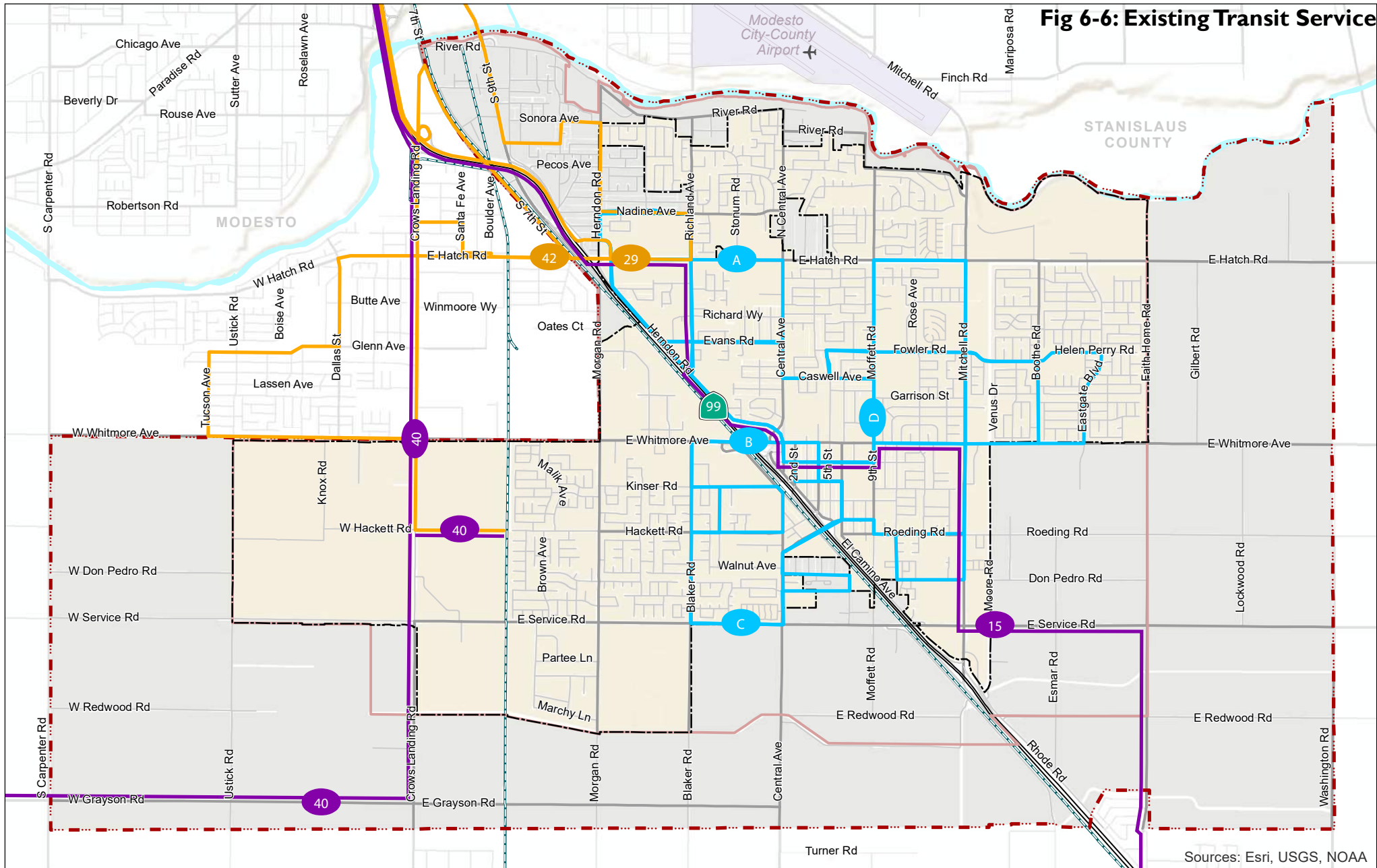
Three bus transit operators provide public transportation services in Ceres. Ceres Area Transit (CAT) and Ceres Dial-A-Ride (CDAR) provides most of the local intra-city service, while Modesto Area Express (MAX) and Stanislaus County Regional Transit (StaRT) provide connections to regional destinations in Stanislaus County. Table 6-6 summarizes the existing transit service in Ceres, and Figure 6-6 presents the extent of transit service in Ceres. New routes were being proposed at the time this document was prepared. The routes shown on Figure 6-6 were as of July 2016 and may have changed.

CERES AREA TRANSIT (CAT)

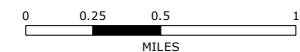
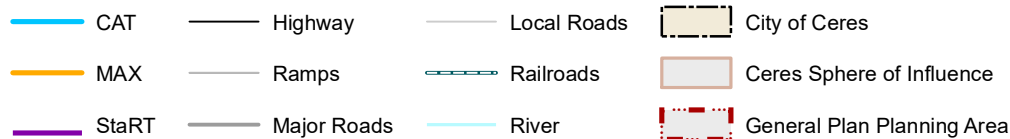
Local fixed-route service in Ceres is provided by Ceres Area Transit (CAT). Planning and administration services for CAT are fulfilled by the City of Ceres Engineering Division. CAT runs service on four lines with 60 minute or longer headways. The service can be characterized as providing wide coverage to many city services such as schools and parks, but with low ridership and frequency. In the Fiscal Year 2014-2015, CAT had approximately 40,000 riders.

Ceres Dial-A-Ride (CDAR) is a general public, curb-to-curb demand responsive public transit service operated by CAT. Service is provided to residents and visitors of the City of Ceres and the immediate surrounding unincorporated area. Service is provided 7-days a week. Reservations must be made at least 90-minutes in advance or up to 14 days in advance. Seniors and disabled passengers receive a reduced fare.

Fig 6-6: Existing Transit Service



Sources: Esri, USGS, NOAA



Data Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

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MODESTO AREA EXPRESS (MAX)

Modesto Area Express (MAX) primarily serves the adjacent City of Modesto. However, two routes provide a connection between Modesto and Ceres. Routes 42 and 29 connect the cities on thirty-minute headways Monday-Saturday and every hour on Sundays. In 2015, Route 29 had about 200,000 boardings for the year. Route 42 had about 200,000 boardings.

STANISLAUS REGIONAL TRANSIT (START)

Stanislaus County provides public transit service known as the “Stanislaus Regional Transit (StaRT)”, which operates long-distance commuter busses that serve multiple cities across the county. These services typically have long headways and few trips per day. Many routes utilize SR-99 for express services. Route 15, Route 40 and the Modesto/Turlock demand-response shuttle serve Ceres. Route 15 runs between Modesto and Turlock with stops in Ceres, and runs every hour Monday through Saturday. There are 11 trips in both directions on weekdays and eight trips on Saturdays. Route 40 runs between Modesto and Patterson utilizing Crows Landing Road, Grayson Road, and California State Route 33 (SR 33). There are nine trips per day from Monday to Saturday, approximately every two hours. In Fiscal Year 2014-2015, there were approximately 61,000 boardings on Route 15, 4,800 on the Modesto/Turlock Shuttle, and 41,000 on Route 40.

Table 6-6: Summary of Transit Services in Ceres, CA

<i>Operator</i>	<i>Service Type</i>	<i>Characteristics</i>
Ceres Area Transit (CAT)	Four lines: A, B, C, D	A, B, D: Mon-Fri
	Paratransit dial-a-ride	C: Sat & Sun Only
	Trips within Ceres.	Headways: 60 min. or longer
Modesto Area Express (MAX)	Route 29, Route 42	Every day, limited schedule on Sundays.
	Trips between Ceres and Modesto, including transfer connection to Amtrak station. .	30 min. headways during the week & Sat., 1 hr. on Sun.
Stanislaus Regional Transit (StaRT)	Route 15, Route 40	Long-distance trips with only 8-11 bus runs per day.
	Paratransit dial-a-ride	60 min. headways.
	Trips from Ceres to places in Stanislaus County.	

Sources: Ceres Area Transit, Modesto Area Express, and Stanislaus Regional Transit; 2016

Passenger Rail

Passenger rail service is not directly provided in Ceres. The closest Amtrak station is located on the eastern edge of the City of Modesto on Held Drive, north of Briggsmore Avenue and west of Santa Fe Avenue, approximately eight miles from Downtown Ceres. A bus transit connection is provided via MAX route 42.

6.5 Existing Bicycle Facilities

The California Department of Transportation's (Caltrans) *Highway Design Manual* (HDM) (Chapter 1000: Bikeway Planning and Design) and California Assembly Bill 1193 codify four distinct classifications of bikeways. Bikeways offer various levels of separation from traffic based on traffic volume and speed, among other factors. The City of Ceres General Plan Transportation Element also provides for three bikeway classifications; Class IV bikeways, which were recently added to the HDM, are described below.

The City of Ceres does not have a Bicycle Master Plan, so the existing General Plan Transportation Element oversees bicycle planning. Figure 6-7 shows existing and planned bicycle routes in Ceres, according to the existing General Plan. Bikeway classifications and existing facilities of each type in Ceres are described below.

Class I Bikeway (Bike Path) paths provide a separate right-of-way and are designated for the exclusive use of people riding bicycles and walking with minimal cross-flow vehicle traffic. In Ceres, this type of bicycle facility is primarily along canals. Class I Bikeways can also offer opportunities not provided by the road system by serving as both recreational areas and/or desirable commuter routes.

Provides a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flow minimized.



Class I Bikeway Diagram

Turlock Irrigation Districts (TID) Lateral #1 along Hatch Road is an east-west Class I off-street facility that spans approximately three miles parallel to Hatch Road from Herndon Road to Boothe Road. This path is separated from Hatch Road by a sixty-foot open canal parallel to the road east of Central Avenue. There is a second Class I bike path along the TID Ceres Main Canal between Hatch Road and Roeding Road.

Class II Bike Lanes provide designated street space for bicyclists, typically adjacent to the outer vehicle travel lanes. Bike lanes include special lane markings, pavement legends, and signage. Bike lanes may be enhanced with painted buffers between vehicle lanes and/or parking, and green paint at conflict zones (such as driveways or intersections).



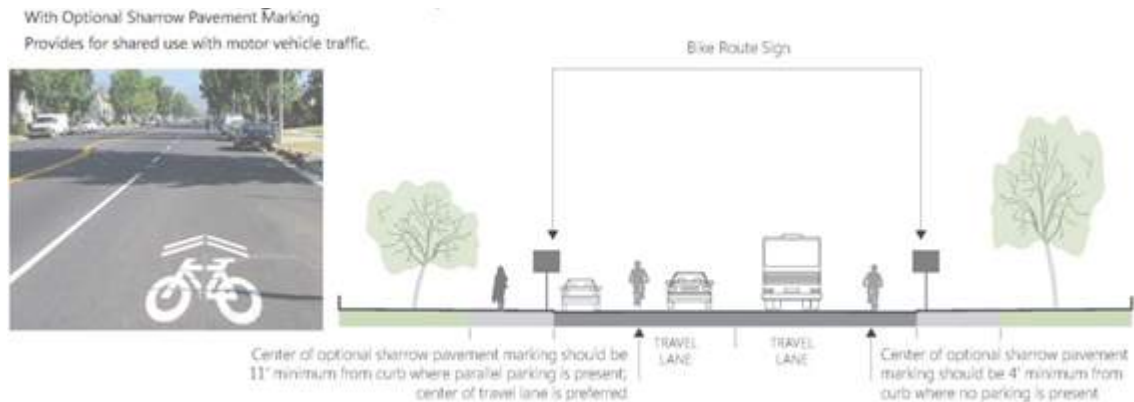
Class II Bikeway Diagram

East Whitmore Avenue provides Class 2 bicycle lanes between Morgan Road and east of Mitchell Road. The bicycle lane is approximately five feet wide. East Whitmore Avenue is a major street with two vehicle travel lanes in each direction and a direct connection to CA-99. As shown on Table 6-4, it carries a high volume of traffic with an 85th percentile travel speed of 45 miles per hour on some segments, which may create a stressful environment for people riding bicycles and encourage sidewalk riding despite the presence of a bicycle facility.

Boothe Road has Class 2 bicycle lanes that spans north-south for approximately one mile between East Whitmore Avenue and East Hatch Road. Parking is prohibited on the east side of the street. On the west side of the street, it is separated and distinct from the parking lane by a striped line. The bicycle lane is approximately five feet wide. This facility provides access to the Samuel Vaughn School, Neel Park, and the surrounding neighborhood. Despite the neighborhood setting, bike lanes, one travel lane per direction, and a posted speed limit of 35 mph, the characteristics of Boothe Road may contribute to a moderate level of bicyclist stress.

Central Avenue has 0.3 miles of a Class 2 bicycle lane on the west side of the street. The lane is approximately five feet wide and proceeds from East Hatch Road to Academy Place, across from the Central Valley Christian Academy.

Class III Bike Routes provide enhanced mixed-traffic conditions for bicyclists through signage, striping, and/or traffic calming treatments, and to provide continuity to a bikeway network. Bike routes are typically designated along gaps between bike trails or bike lanes, or along low-volume, low-speed streets. Bicycle boulevards provide further enhancements to bike routes to encourage slow speeds and discourage non-local vehicle traffic via traffic diverters, chicanes, traffic circles, and/or speed tables. Bicycle boulevards can also feature special wayfinding signage to nearby destinations or other bikeways.

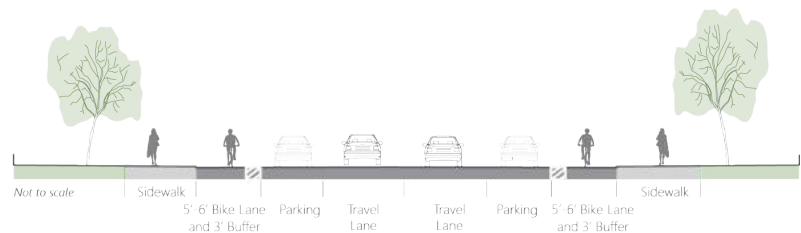


Class III Bikeway Diagram

Although the General Plan identifies planned Class III facilities, additional signing and striping (such as shared-use arrows) may be necessary to demarcate facilities.

Class IV Bikeway (Separated Bikeway) Separated Bikeways, also referred to as cycle tracks or protected bikeways, are bikeways for the exclusive use of bicycles which are physically separated from vehicle traffic. Separated Bikeways were recently adopted by Caltrans in 2015. Types of separation may include, but are not limited to, grade separation, flexible posts, physical barriers, or on-street parking.

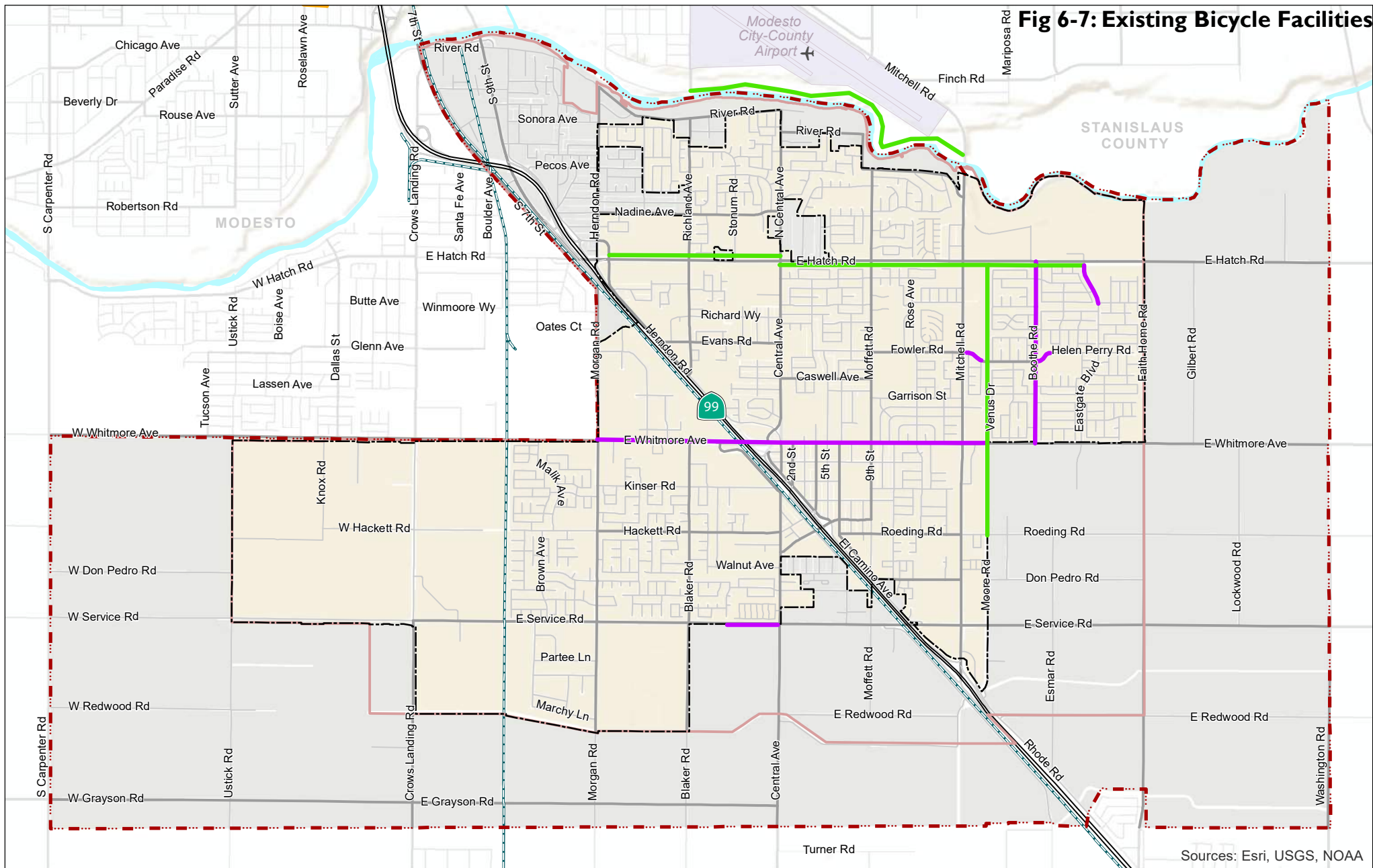
Provides a physically separated bicycle lane for increased comfort and protection of bicyclists. Can be physically separated by a barrier, such as planters or on-street parking, or grade separation from the roadway.









Class IV Bikeway Diagram

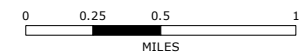
There are no designated Class IV facilities in Ceres.

Fig 6-7: Existing Bicycle Facilities



Sources: Esri, USGS, NOAA

- Class 1 Path
 Highway
 Local Roads
  City of Ceres
- Class 2 Lanes
 Ramps
 Railroads
  Ceres Sphere of Influence
-  Class 3 Route
  Major Roads
  River
  General Plan Planning Area



Data Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

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6.6 Pedestrian Network

Pedestrian facilities, such as sidewalks and crosswalks, in Ceres are in varying degrees of comprehensiveness. Improved pedestrian facilities typically correspond to recent development, while roads adjacent to agricultural uses or undeveloped lots typically do not provide pedestrian facilities, which is common in urbanizing communities.

Existing pedestrian facilities may have barriers in the form of signposts, utility poles, or overgrown vegetation in the pedestrian realm. Such barriers can also provide challenges for access requirements for those with disabilities, as mandated in Americans with Disabilities Act (ADA). As parcels are developed and required to install sidewalks, there can also be gaps in the sidewalk system when adjacent parcels remain vacant.

6.7 Goods Movement

California State Route 99 (CA-99) and major freight rail corridors pass through Ceres. Because the size and operational needs of freight vehicles are incompatible with many land uses, the City of Ceres provides for a network of truck routes designed to balance the needs of the regional economy with the comfort of residents.

The existing City of Ceres General Plan designates the following roads as truck routes, while Figure 6-8 shows these routes overlaid on the Ceres street network:

- Service Road from Crows Landing Road to Mitchell Road
- Don Pedro Avenue, between El Camino Avenue and Mitchell Road
- Pine Street, between Central Avenue and Railroad Avenue
- Whitmore Avenue, between Crows Landing Road and Boothe Road
- Hatch Road, between Herndon Road and Boothe Road
- Morgan Road, between Service Road and the railroad right of way
- Central Avenue, between Service Road and Railroad Avenue; and between El Camino Avenue and Hatch Road
- Mitchell Road, between Service Road and Hatch Road
- El Camino Avenue/Herndon Road, between Service Road and Hatch Road
- Railroad Avenue, between Whitmore Avenue and Industrial Way
- Kinser Road, between Blaker Road and Railroad Avenue
- Blaker Road, between Whitmore Avenue and Kinser Road

Union Pacific Railroad operates two rail lines through the City of Ceres. One generally parallels SR 99, and grade separated crossing are provided at major roadways, including Hatch Road, Whitmore Avenue, and Service Road. The second line has a north-south orientation and is

located equidistant between Crows Landing Road and Morgan Road. At grade crossings are provided of the local street network. Freight trains operate along these corridors.

6.8 Planned Improvements & Specific Plans

Other planning studies have the potential to influence General Plan Transportation policies and plans. Key findings from relevant studies are discussed below.

THE MITCHELL RANCH CENTER PROJECT

The Mitchell Ranch Center project is located at the northwest corner of the intersection of Mitchell Road and Service Road, consisting of five parcels totaling 26.3 acres. The approved uses include a Super Walmart as well as other supporting commercial uses, including junior anchor stores, small-scale retail stores, fast food and other uses.

The Environmental Impact Report prepared for the project identified a number of transportation improvements that would need to be constructed to support full buildout of the project, including improvements to the State Route 99 at Service Road/Mitchell Road interchange, as discussed below.

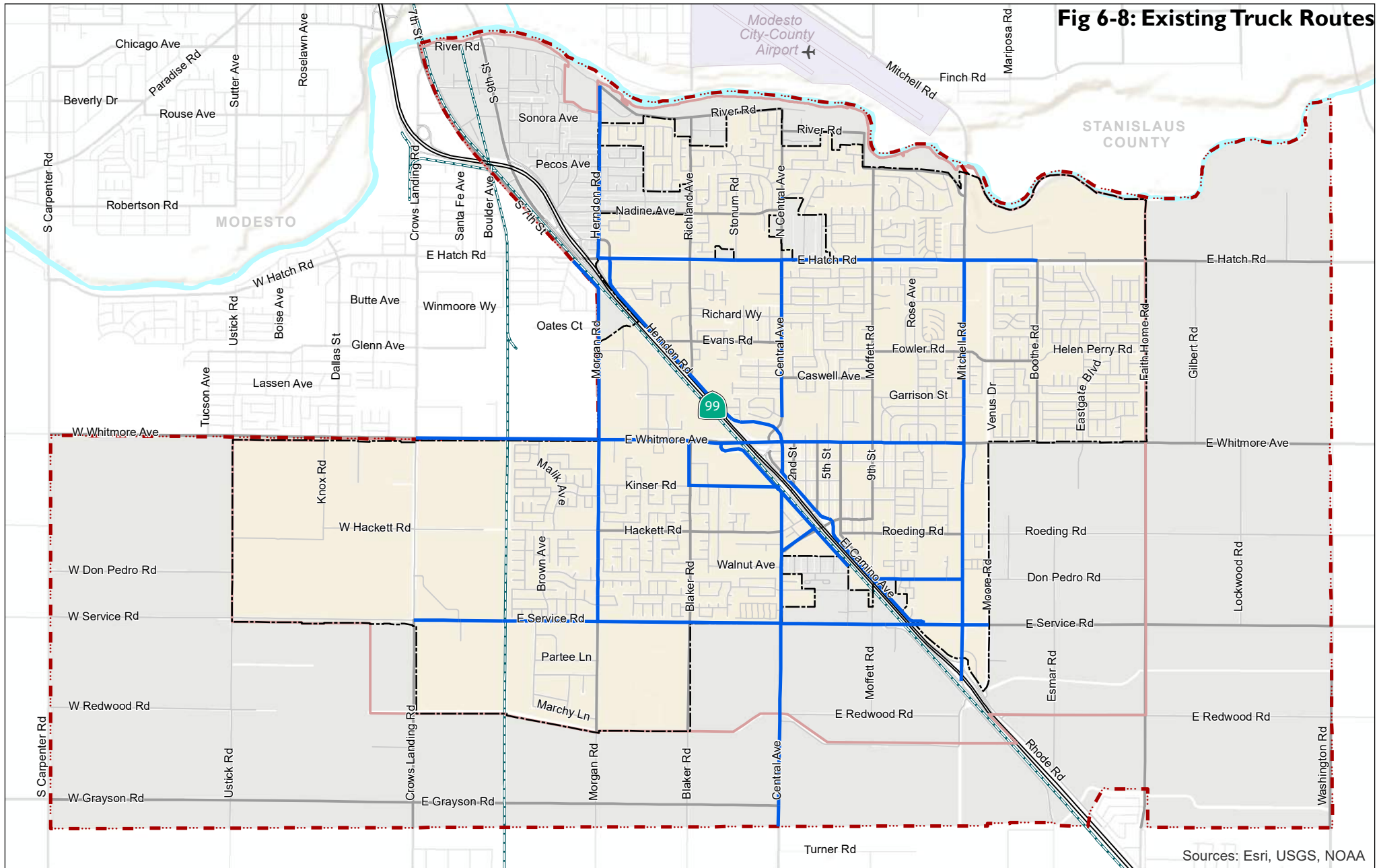
DOWNTOWN SPECIFIC PLAN

The Downtown Specific plan was adopted in 2011 to guide the development of Downtown Ceres. The plan built upon City investments, including a new community center on Fourth Street, which also houses the City Council chambers and the Parks and Recreation department. A number of transportation system improvements were identified in the plan, including on-street bicycle facilities, enhanced pedestrian crossings and sidewalks, State Route 99 ramp improvements, and parking modifications. As the General Plan update process progresses, there may be opportunities to refine the Downtown Specific Plan policies, especially as related to vehicle levels of service.

WEST LANDING SPECIFIC PLAN

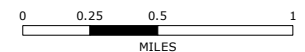
The West Landing Specific Plan area is comprised of approximately 960 acres bound by Ustick Road to the west, Whitmore Avenue to the north, Union Pacific Railroad tracks to the east and Service Road to the south. A mixture of land uses is proposed, including residential, commercial, office, business park, industrial, and community facilities, including schools and parks. A maximum of 3,659 dwelling units and up to two million square feet of non-residential uses are permitted under the plan. Development in this area will be subject to policies developed as part of the West Landing Specific Plan and mitigation measures identified as part of the Environmental Impact Report process.

Fig 6-8: Existing Truck Routes



Sources: Esri, USGS, NOAA

- | | | |
|--|---|--|
| — Existing Truck Route | — Local Roads | City of Ceres |
| — Highway | - - - Railroads | Ceres Sphere of Influence |
| - - - Ramps | — River | General Plan Planning Area |
| — Major Roads | | |



Data Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

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STATE ROUTE 99 AT SERVICE ROAD/MITCHELL ROAD

Reconstruction of the Service Road/Mitchell Road interchange at SR 99 (EA 1A690) is in the Caltrans Project Approval and Environmental Document (PA&ED) phase of the project development process, which is expected to be completed in 2017. Once the project has obtained final approvals, it will move to the detailed design phase in preparation for construction, which is expected to commence around 2020. A diverging diamond interchange is currently being contemplated.

STANCOG REGIONAL EXPRESSWAY STUDY 2010 /STANCOG REGIONAL TRANSPORTATION PLAN

The 2010 StanCOG regional expressway study identified a number of planned expressway facilities within Stanislaus County, including some within the City of Ceres. These planned expressways are generally reflected on the City's circulation map, including East Service Road, West Hatch Road, and Faith Home Road. Stanislaus County is currently evaluating the construction of the Faith Home Expressway connection between Hatch Road and Finch Road, over the Tuolumne River. This segment is planned a four lane expressway facility. The StanCOG Regional Transportation Plan (RTP) also identifies construction of the Faith Home Road expressway from Keyes Road in the south to State Route 132 in the north, with construction expected to start in in 2024. This improvement is partially funded by the Public Facility Finance Plan – Regional Transportation Impact Fee Program (PFF-RTIP).

A number of other transportation network improvements are identified as Tier 1 improvements in the StanCOG Regional Transportation Plan (RTP), as summarized in the StanCOG RTP Appendix K, including the installation of traffic signals at a number of intersections, roadway widenings at select locations, and complete streets improvements along the Hatch Road and Service Road corridors.

ALTAMONT COMMUTER EXPRESS

An extension of the Altamont Commuter Express (ACE) system is planned from Manteca to Merced. ACE commuter rail currently provides four westbound morning trains and four eastbound morning trains from Stockton to San Jose with other Central Valley stops in Lathrop and Tracy. The San Joaquin Regional Rail Commission (SJRRRC) which oversees the operations of capital projects for ACE service is evaluating extending ACE service to Downtown Merced, with potential stations in downtown Modesto, Ceres and Turlock. The General Plan update will consider potential station locations in Downtown Ceres.

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7 Utility Infrastructure

7.1 Potable Water

Ceres supplies water to nearly all the residential, municipal, and industrial water users within the city limits (with the exception of the northwest portion of the city, where water is provided to around 1,200 people in the North Ceres and Walnut Manor areas by the City of Modesto). In addition, Ceres provides water to a few customers outside city limits including schools, a few businesses and residences, and the Monterey Park Tract. City water is derived exclusively from the Turlock Groundwater Subbasin at an average rate of six million gallons per day (mgd), through a series of 13 active wells, operated by the City. Several of these wells have water quality concerns, and are equipped with wellhead treatment systems to ensure drinking water standards are met. The city's potable water system is shown on Figure 7-1.

GROUNDWATER FACILITIES

The city's current potable water supply is exclusively groundwater from the Turlock Groundwater Subbasin of the San Joaquin Valley Groundwater Basin. There are 19 municipal supply wells, with 13 of these active (see Figure 7-1). These active wells are capable of producing approximately 10,903 gallons per minute (gpm) of pumped groundwater. This is equivalent to 15.7 million gallons per day (mgd). However, on a practical basis, this capacity must be reduced to account for wells that are out of service at any given time due to maintenance or other operational issues. For planning purposes, the City's firm groundwater pumping capacity is about 9,405 gpm or 13.6 mgd.²⁸ Firm pumping capacity is defined as the available capacity if the largest-producing well is out of service.²⁹

The city has constructed two new wells, but they are not yet equipped, meaning that the pumps, piping, and treatment systems have not been constructed. When equipped, these wells will increase the City's firm groundwater supply by nearly 2.7 mgd.

NON-POTABLE WATER FACILITIES

The city currently uses potable water from its domestic water system for irrigation at Smyrna and Roeding Parks. However, it is planned to expand the use of non-potable water at Smyrna Park in the summer of 2018.

²⁸ West Yost, 2011. 2010 Urban Water Management Plan. June, 2011. West Yost Associates.

²⁹ Well 21, Roeding Heights

DISTRIBUTION SYSTEM FACILITIES

The city has approximately 140 miles of water system pipelines. There are two ground-level water storage tanks (reservoirs) with a combined storage capacity of 3.8 million gallons (MG) that currently serve the city. The reservoirs have an associated booster pump station to pump water from the reservoirs into the distribution system. During periods of high demand, water is pumped from the tanks into the distribution system to supplement well supplies. The tanks have a pressure regulating altitude valve. This allows refilling of the tanks during low demand times without lowering the system pressure to unacceptable levels.

Photographs of the water system infrastructure at Wells 32 and 38 are provided below.



Well 32 includes arsenic and magnesium treatment. The two tanks (next photograph) are not part of the Well 32 treatment system.



Two treated water storage reservoirs (2.3 MG and 1.5 MG) are located at Blaker and Service Roads (near Well 32)



Well 38 has a capacity of 1,500 gpm. City staff performs routine water quality monitoring of the water quality and maintenance of the water system.



Well 38 also has a chlorine disinfection system.

DEMANDS AND SUPPLIES

In 2016, the City of Ceres, developed an Urban Water Management Plan Update (UWMP).³⁰ This UWMP documented the past, current, and projected future water demands and supplies through 2035, as shown in Table 7-1.

Table 7-1: City of Ceres Past, Current and Projected Water Supplies, Demand, and Surpluses, MG/year

	Average 2001-2005	Average 2006-2010	Average 2011-2015	Projected 2020	Projected 2025	Projected 2030	Projected 2035
Groundwater Supplies ¹	3,266.04	3,321.72	2,490.06	1,825	1,825	1,825	1,825
Surface Water Supplies ²	0	0	0	1,680	2,416	3,148	4,181
Subtotal	3,266.04	3,321.72	2,490.06	3,505	4,241	4,973	6,006
Demands ³	3,266.04	3,321.72	2,490.06	3,505	4,241	4,973	6,006
Surplus	0	0	0	0	0	0	0

Notes:

1. Assumes projected groundwater usage based on historical 10-year average computed by West Yost, 2011.
2. Based on current Regional Surface Water Supply Project (RSWSP) agreement (SRWA, 2011).

³⁰ City of Ceres, 2016. 2015 Urban Water Management Plan. June, 2016. City of Ceres.

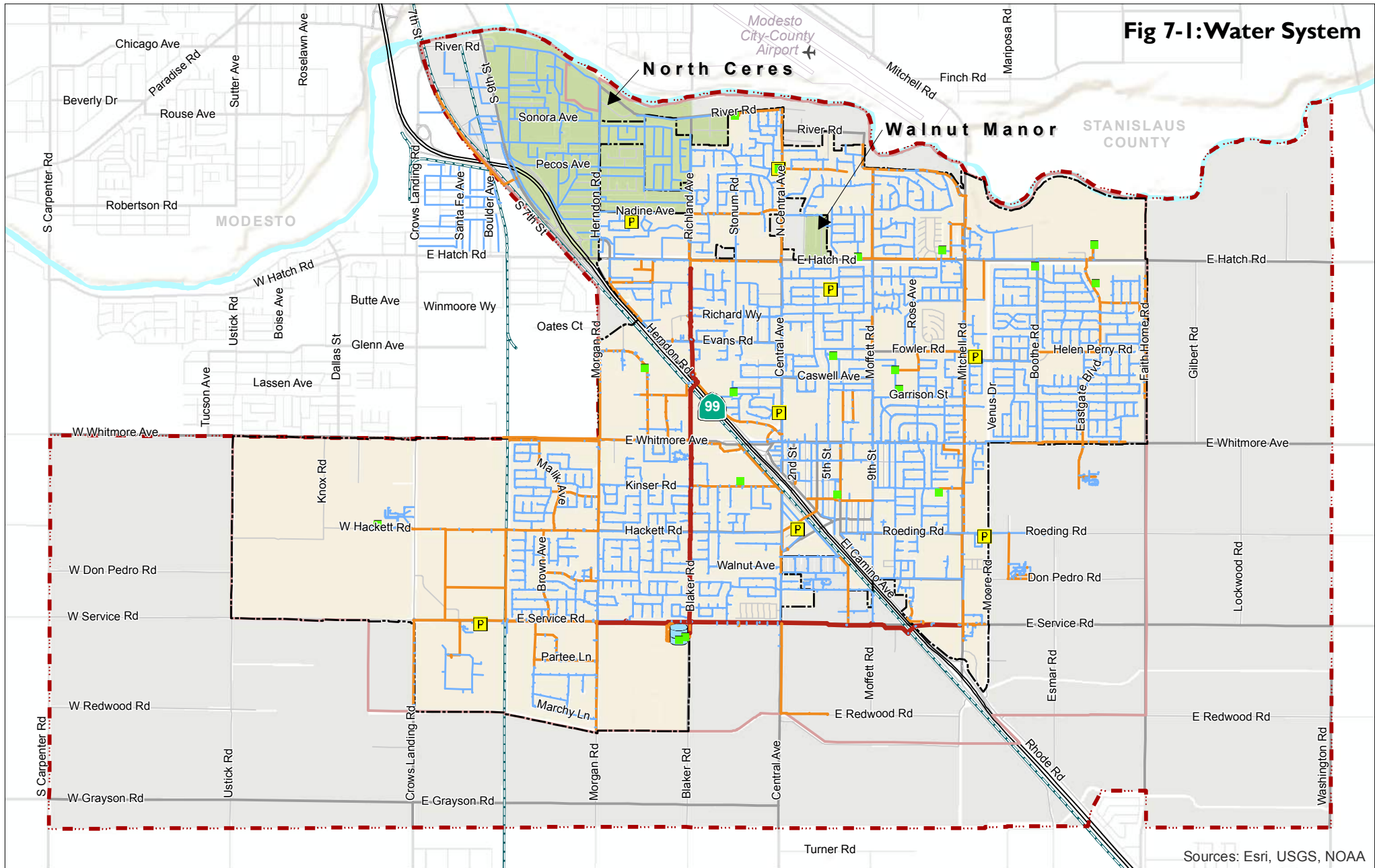
From 2001 through 2015, Ceres has met all of its water customer's demands by pumping groundwater from the active wells. When more water was needed (demanded), the city pumped (supplied) more water. When less water was needed (demanded), the city pumped (supplied) less water. Consequently, the historical water demands and supplies have exactly matched each other (see Table 7-1). For example, during the period of 2011 through 2015, the demand and supplies decreased significantly in comparison to the previous years, because the City implemented water conservation measures.

The UWMP was based on population estimates from the State of California Department of Finance, which indicates that the population of the city was over 46,989 people in 2015, with the majority of these people served by city water. The population relying on the city's supply was projected to increase to over 96,000 people by 2035, according to the Draft EIR for the City of Ceres Water and Sewer System Master Plans.³¹ which was based on the 1997 General Plan. If the City's growth projections and/or allocation of land use are updated as a result of the current General Plan update, then the ability to serve new growth may need to be reconsidered.

³¹ Stantec, 2013. City of Ceres Sewer System Master Plan. July, 2013.

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Fig 7-1: Water System



Sources: Esri, USGS, NOAA

Existing City Water Facilities

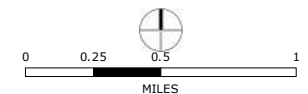
- P Booster Pump
- Well
- Tank

Existing City Water Mains

- < 10-inch Diameter
- 10 - 12-inch Diameter
- > 12-inch Diameter

Areas Under Consideration for Aquisition

- City of Ceres
- Ceres Sphere of Influence
- General Plan Planning Area



Data Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

GENERAL PLAN UPDATE
City of Ceres

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In addition to the city population growth, there will be growth in the County of Stanislaus (County). The County population relies on the same aquifer as the city, and County population growth has been projected to be even greater than the city's. While recent anti-sprawl initiatives may change these forecasts in the future, increasing population will cause an increase in the demand placed upon the groundwater aquifer. In addition, the State's Sustainable Groundwater Management Act may affect the City's ability to increase groundwater pumping in the future.

The ability of the aquifer to meet all the water demands is uncertain for several reasons.

- The current sustainable yield from the basin is unknown. Due to recent drought conditions, groundwater levels in the subbasin under the City have dropped 15-20 feet in the past two years, according to data provided by the City.
- Contamination in the groundwater, including arsenic, uranium, nitrate and trichloropropane, coupled with increasingly stringent regulatory requirements, lead to concern over the reliability of the groundwater supply. It is estimated that 70 percent of the City's water supply may exceed the trichloropropane Maximum Contaminant Level (MCL). This will require either treating the well water with activated carbon or abandoning the well.

For these reasons, the groundwater supplies shown in Table 7-1 for 2020 through 2035 are limited to 3,212 MG/yr (or 8.8 mgd). By 2020, the city's demands are projected to exceed the available groundwater supply. Consequently, Ceres is developing a surface water supply in cooperation with other regional water suppliers.

The Stanislaus Regional Water Authority's Regional Surface Water Supply Project³² will include numerous improvements within the cities of Turlock and Ceres to pump water from the Tuolumne River, treat it to drinking water standards, and then deliver it to the service areas of each community. The Turlock Irrigation District (TID) has an existing water right on the Tuolumne River and, in 2005 and 2006, the cities of Ceres, Hughson, Modesto, and Turlock entered into an agreement with TID for water supply over several phases. [Note, Hughson and Modesto have backed out of the Project and now only Turlock and Ceres are included.] The Regional Surface Water Project is progressing as summarized below:

- Phase I includes preliminary design, water rights review, environmental review, and land purchase. This phase is expected to be complete in 2018.
- Phase II includes final design, permitting, right-of-way acquisitions, legal review, preparatory financial work and construction services. This phase is expected to be complete in 2020.
- Phase III includes final financing work and obtaining construction bids. This phase is ongoing.
- Phase IV includes the construction and start-up of the surface water supply. This phase is expected to be complete in 2020.

³² SRWA, 2011. Cities of Ceres, Modesto, and Turlock Regional Surface Water Supply Project White Paper. Stanislaus Regional Water Authority. January 21, 2011.

However, the RSWSP is progressing more rapidly than originally planned. The TID Infiltration Gallery Project, which diverts water out of the Tuolumne River, is already constructed. TID plans to provide the City with 10 mgd of surface water supply, starting in 2020. At buildout, the City will receive up to 20 mgd from the RSWSP.

This surface water supply is also shown in Table 7-1. With the surface water supply, the City can meet all of its projected water demands through the year 2035.

The City will have to provide TID with non-potable replacement water supply during years of curtailment for the agricultural customers, however. The City intends to provide the replacement non-potable supply from the City's effluent discharged to Turlock, where it would be further treated and then provided to TID, as well as from raw groundwater.

7.2 Sewer System

In 2013, Stantec and O'Dell Engineering, on behalf of the City, prepared the City's Sewer Service Master Plan (SSMP). The SSMP describes the sewer system flows and capacities, as well as recommending prioritized improvements to the City's systems. Key findings of the capacity analysis component are summarized below.

The Ceres Sewer Service Area consists of approximately 4,100 acres of land, with some 13,800 sewer connections. The sewer system is shown in Figure 7-2. The City owns 14 sewer lift stations and 132 miles of sewer pipeline, ranging from six to 54 inches in diameter. The Ceres Sewer Service Area includes two disconnected sewer systems:

- The North Ceres Sewer Service Area (NCSSA, see Figure 7-2), representing approximately a quarter of all the services, includes the northwest corner of the City, flows generally to the northwest and into the City of Modesto's sewer system, and is ultimately treated at the City of Modesto's WWTP. The flow to the City of Modesto is about 0.7 mgd average dry weather flow (ADWF). The ADWF is the flow in the summer months, and is usually lower than the flow in the winter months, because in the winter some rain and some groundwater unintentionally enters the sewer system.
- The remainder of the Ceres Sewer Service Area generally flows south and ultimately to the Ceres WWTP. The flow to the City's WWTP is about 2.7 mgd (ADWF).

In addition to these sewer systems, approximately 280 developed parcels between Herndon Road and Mitchell Road are within the city, but currently are not provided sewer service by the City. Wastewater treatment and disposal for these parcels is currently provided by on-site septic tank and leach field systems. The City also provides sewer service to some areas outside the city limits.

About 80 percent of the sewer system is small diameter pipe (eight inches in diameter or smaller). The City's Sewer System Master Plan (SSMP) of 2013 identified a number of capacity issues within the system and prioritized these for improvement. Based on hydraulic modeling of the 10-year, six-hour design storm prepared by Stantec, Inc. as part of the SSMP effort, predicted surcharging (pressure flow conditions) and overflows are located in the following areas.

- Upstream of Barbour Lift Station on Mitchell Road
- Upstream of Barbour Lift Station on East Whitmore Avenue
- North of East Whitmore Avenue on Hidden Oak Lane and Boothe Road
- West of Mitchell Road on Don Pedro Road
- South of Don Pedro Road on Moffett Road
- South of Kinser Road on Blaker Road
- South of East Hatch Road on Moffett Road
- Upstream of Westpointe Lift Station on East Hackett Road
- Upstream of Central/Evans Lift Station on Central Avenue, Forrest Road, and Acorn Lane
- Downstream of Central/Evans Lift Station on Evans Road
- Between Central/Evans Lift Station and Pine Street Lift Station on Central Avenue
- Upstream of Pine Street Lift Station in the Ceres Downtown Sewer Area
- Downstream of Pine Street Lift Station on Pine Street and Central Avenue

The City has constructed improvements to address several of these problem areas, including the Barbour Pump Station and new trunk sewers in East Service Road and Mitchell Road. Also, the city's Existing Facilities 10-year Capital Improvement Plan (Table ES-12 of the SSMP) provides the plan and schedule for addressing the remaining problems. The cost for the required improvements was estimated at about \$15.4 million in 2010 dollars according to the 2013 SSMP (about \$17.8 million in 2016 dollars). Funding for these improvements comes from sewer rates.

7.3 Wastewater Treatment

The City's WWTP receives wastewater from residential, commercial, institutional, and industrial users. The majority of the wastewater generated in the City of Ceres' Sewer Service Area is received at the City's WWTP. The WWTP location is shown on Figure 7-2 and includes the following major processes/facilities:

- **Headworks.** The screening facilities remove the larger trash and grit from the raw wastewater. The wastewater enters the headworks in sewers that are buried underground, so the wastewater is pumped into pipes that flow to the treatment ponds. Wastewater leaving the headworks area is called primary effluent.
- **Aerated Treatment Ponds.** These ponds allow finer sediment to settle out of the primary effluent and treat the dissolved and suspended organic material. The treatment occurs as bacteria and other micro-organisms consume the organic waste. The ponds are aerated to mix more oxygen into the water so that a higher concentration of the bacteria and micro-organisms can live in the treatment ponds. Some of the bacteria and micro-organisms settle out of the wastewater before it leaves the treatment ponds. The flow leaving the

aerated ponds is called secondary effluent. Most of the secondary effluent goes to the filters, but about one mgd of flow is pumped and piped to the City of Turlock WWTP.

- **Filters.** The filters remove the bacteria and micro-organisms and any other solids from the secondary effluent. Flow from the filters goes to the Chlorine Contact Basin.
- **Percolation Ponds.** These ponds cover an area of 190 acres and provide the ultimate disposal of the fully treated effluent. The effluent flows into these ponds and either percolates into the shallow groundwater or evaporates. One of the City's wastewater concerns is that the ability to percolate the effluent may be curtailed in the future if it is shown to cause a water quality impact to the shallow groundwater.

Past and Current Wastewater Flow and Effluent Disposal

From 1999 to 2008, as Ceres grew, the Average Dry Weather Flow (ADWF) to the City's WWTP increased from about 2.5 mgd to about 3.1 mgd.³³ From 2010 to 2015, ADWF flow to the City's WWTP decreased to about 2.4 mgd due to the economic recession and due to water conservation measures implemented by the City in response to the drought.³⁴

The peak design storm flow is another measure of wastewater flow that represents the maximum flow in any hour during the year. This measure of flow is often called the Peak Hour Flow (PHF). This peak design storm flow includes the peak hourly ADWF and Infiltration and Inflow (I&I). I&I is rainwater and groundwater that unintentionally enters the sewer system during storm events. The PHF is important because the sewer pipes and the WWTP have to be designed to convey the PHF. The PHF to the Ceres WWTP in 2007 was about 7.0 mgd, or about 2.3 times higher than the ADWF.

The estimated current on-site disposal capacity is limited to about 2.8 mgd ADWF. However, the current discharge permit for the WWTP limits on-site disposal to 2.5 mgd (ADWF). To obtain the 2.8 mgd disposal capacity, the City would have to obtain a revised discharge permit. These limits do not count the flow pumped to the City of Turlock WWTP.

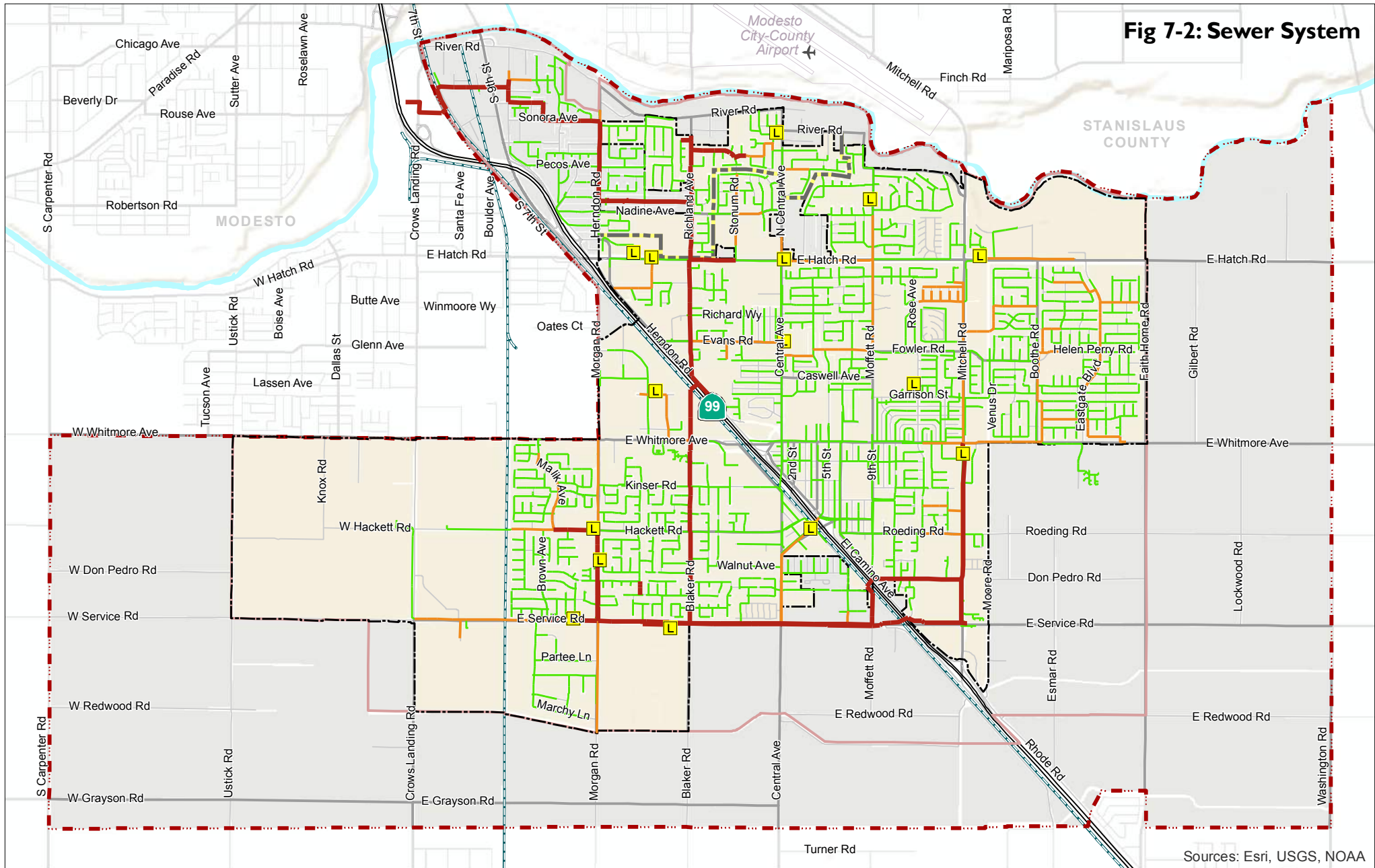
The current agreement with the City of Turlock limits Ceres's export of wastewater to the Turlock WWTP to 2.0 mgd. The 2012 Sewer System Master Plan proposed an eventual expansion to 6.0 mgd, but agreements and facility upgrades will be required to achieve this.

Between the City's WWTP disposal system and the flow to Turlock's WWTP, the combined total ADWF capacity for the City is 4.5 mgd (for the current discharge permit limit) to 4.8 mgd (with a revised permit).

³³ AECOM, 2013. Final Environmental Impact Report City of Ceres Water and Sewer System Master Plans. March, 2013.

³⁴ Ceres, 2016. Data supplied to West Yost Associates by City staff January, 2016.

Fig 7-2: Sewer System



Sources: Esri, USGS, NOAA

Existing City Sewer Facilities

Lift Station

Existing City Sewer Mains

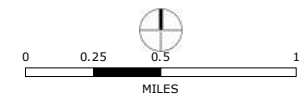
< 10-inch Diameter
 10 to 12-inch Diameter
 > 12-inch Diameter

North Sewer Boundary Line

City of Ceres

Ceres Sphere of Influence

General Plan Planning Area



Data Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

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 City of Ceres

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Additionally, there was about 0.7 mgd ADWF from the NCSSA that flowed to the City of Modesto's WWTP in 2007. The PHF from the NCSSA to the Modesto WWTP in 2007 was estimated to be about 2.8 mgd, or about four times higher than the ADWF. The 2012 Sewer System Master Plan has proposed an increase in the export to Modesto WWTP from 0.7 mgd to 5.5 mgd, but agreements and facility upgrades would be required to achieve this.

Future Wastewater Flow and Effluent Disposal

The SSMP projects that the city's urban area will grow approximately three-fold over current development levels, at full buildout of the 1997 Ceres General Plan. The three land use categories projected to contribute most significantly to this expansion are listed below.

1. Residential – increasing by approximately 3,150 acres (150 percent)
2. Industrial – increasing by approximately 1,480 acres (585 percent)
3. Commercial – increasing by approximately 440 acres (128 percent)

Future development is planned to take place in the three phases, outlined briefly below.

- Phase I: Infill within the existing sewer service area.
- Phase II: Future growth within the City's adopted Sphere of Influence (including Primary and Secondary), according General Plan land use designations.
- Phase III: Future growth out to the boundary of the 1997 Ceres General Plan Planning Area.

Under full buildout of the 1997 Ceres General Plan, the projected ADWF to the City's WWTP is 10.2 mgd. The buildout PHF to the City's WWTP is predicted to be 25.3 mgd. If the City's growth projections and/or allocation of land use are updated as a result of the current General Plan update, then the ability to serve new growth may need to be reconsidered.

Under the current agreement with the City of Modesto, the City of Modesto will continue to provide wastewater treatment and disposal service to NCSSA through buildout, and the estimated buildout ADWF to City of Modesto from the NCSSA is 1.3 mgd ADWF. The predicted buildout PHF to City of Modesto is 4.3 mgd. New development within NCSSA is generally considered infill by the City of Modesto and payment of the Modesto Sewer Capacity Fees is required for new service. Development outside the Ceres City limits would require approval from the Stanislaus Local Agency Formation Commission (LAFCO).

The city's future projected wastewater flows exceed the current available disposal capacity. As part of its Wastewater Collection System Master Plan, the City is assessing future disposal options for wastewater. The master plan evaluated three alternatives for wastewater disposal: increased export to the City of Turlock, increased export to the City of Modesto, and tertiary treatment and re-use.³⁵ Also, as discussed in the potable water section above, the City has to provide a non-potable replacement water supply to TID for the potable water supply received from TID. Thus, Ceres is evaluating the feasibility and infrastructure requirements needed to provide tertiary treated

³⁵ West Yost, 2011. 2010 Urban Water Management Plan. June, 2011. West Yost Associates.

effluent to TID. Tertiary treated effluent is very highly treated effluent that allows for use for irrigation on agricultural lands. This evaluation will help the City determine the best combination of effluent disposal between percolation and evaporation at the City's WWTP, pumping to Turlock's WWTP, flow to Modesto's WWTP, and delivery of tertiary effluent to TID.

Most of the sewer system is located underground, nevertheless, photographs of the Barbour Sewer Pump Station and of the WWTP are provided below.



The Barbour Sanitary Sewer Lift Station was constructed in 2015, has one primary pump with a capacity of 3.85 mgd, one back-up pump with a capacity of 3.85 mgd, and is almost entirely below ground (with the exception of the control panel).



The WWTP aerated ponds treat the organic wastes from the wastewater. These ponds are lined with concrete to prevent the untreated wastewater from reaching the groundwater.



The fully treated and disinfected wastewater is called effluent. The effluent disposal ponds allow both evaporation and percolation of the effluent.

7.4 Stormwater and Flood Control

The mean annual precipitation for the City of Ceres is 11.5 inches per year. Regionally, the mean annual precipitation varies from 10 inches to 18 inches at both the western and eastern Stanislaus County limits.³⁶ There are basically only two distinct seasons in the region; summer and winter. In the San Joaquin Valley, summers are long, hot, and dry, with very little precipitation. Winters are short and mild, with relatively light rainfall. If they occur, flood-producing rainstorms usually happen between November and April. The city is within the Tuolumne River watershed. The

³⁶ U.S. Department of the Interior, Geological Survey, Open-File Report, Mean Annual Precipitation in the California Region, S.E. Rantz, 1969.

Tuolumne River originates high in the Sierra Nevada Mountains³⁷ east of the city and flows into the San Joaquin River west of the city.

The city's storm drain system is shown in Figure 7-3. This storm drain system includes over 1,541 drain inlets, over 80 miles of storm drain pipe, 40 retention/detention ponds, 40 pump stations, 25 French drains, and 80 rock (dry) wells. There is not a single city-wide storm drainage system, but rather several individual smaller storm drainage systems. Stormwater runoff is disposed of by percolation, by discharge to four TID canals at a total of 25 locations, and by discharge, in four locations, to the Tuolumne River.

The majority of stormwater runoff flows into detention basins, with only a limited number of neighborhoods discharging directly to a TID canal or to the river. Discharge directly to TID canals begins quickly after the start of a storm event. Discharge to the TID canals from detention basins occurs only after the basins have filled.

Discharge to TID facilities is permitted under the 1996 Master Storm Drain Agreement between TID and the City. Based on this agreement, TID can require the City to discontinue discharging stormwater runoff into the TID canals if necessary to limit the flow in the canal to the canal's capacity or for canal maintenance. There is no secondary or back-up stormwater runoff disposal option. In past storm events, the requirement to stop the stormwater discharge has led to flooding within the City. Typically, the most vulnerable areas to flooding include all the numbered streets and from Whitmore to Fowler and Mitchell to Moffett.

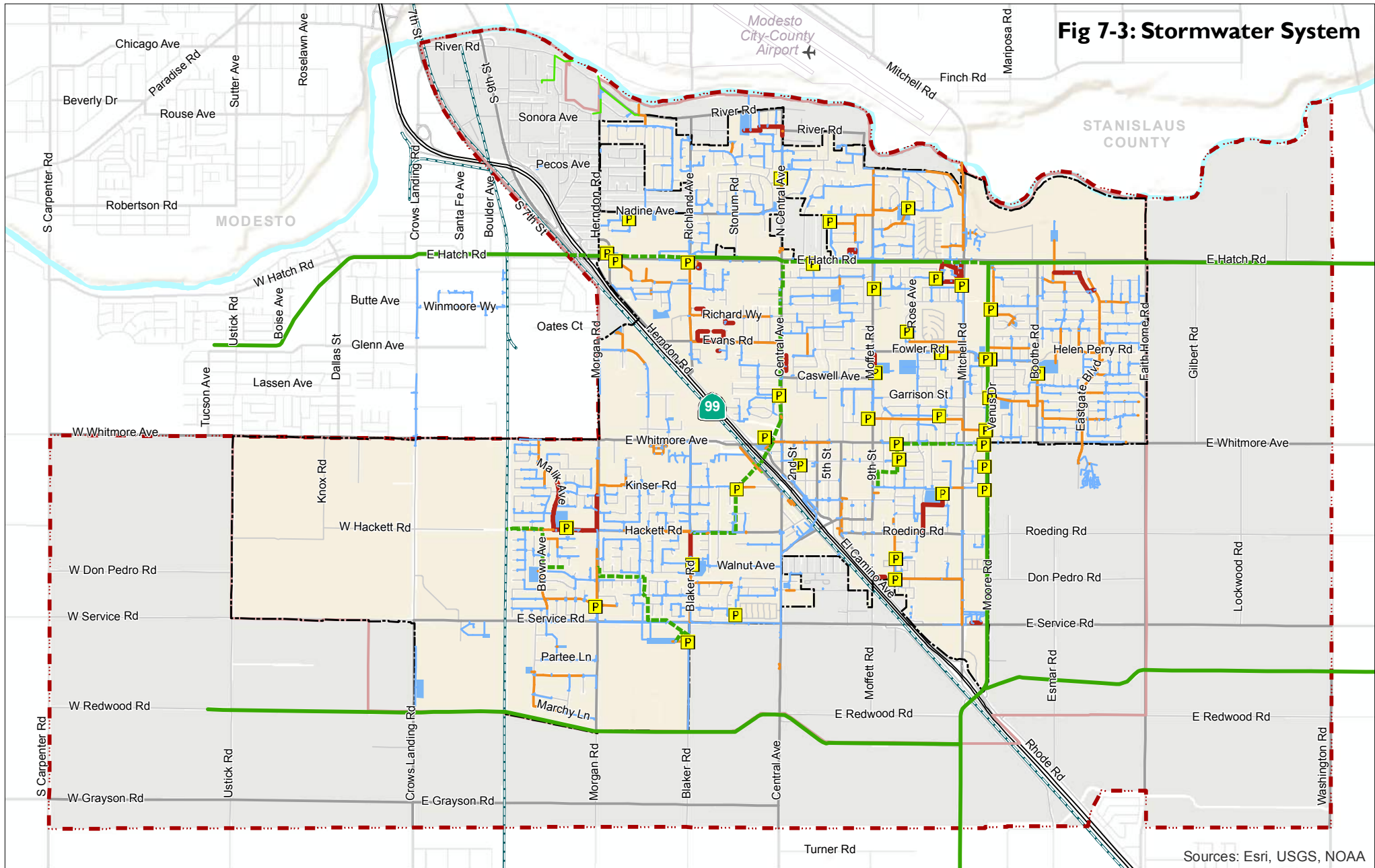
The city's stormwater system design is based on a 50-year, 24-hour storm, in accordance with Stanislaus County's Storm Drain Design Manual and City improvement standards. Nevertheless, significant storm events (10-year events and above) have the potential to cause widespread overflows of the City's drainage system. Some older areas of the city, in particular, may have flooding problems in storms that exceed half-inch per hour of rainfall. Street flooding due to storm-clogged storm drain inlets is generally cleared within a half day.

During the 170-year storm event of 1997, the flooding from the city's stormwater system flowed into the sanitary sewer system, causing very high level of I&I that resulted high flow problems at the Ceres WWTP.

In recent years, new development projects have been required to use on-site percolation systems to dispose of the stormwater runoff.

³⁷ FEMA, 2008. Flood Insurance Study Stanislaus County, California and Incorporated Areas. Federal Emergency Management Agency. September 26, 2008.

Fig 7-3: Stormwater System



Sources: Esri, USGS, NOAA

Existing City Storm Facilities

- P Storm Water Pump Station
- Storm Water Basin

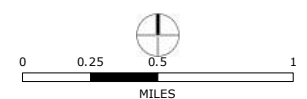
Existing City Storm Drains

- < 24-inch Diameter
- 24 - 36-inch Diameter
- > 36-inch Diameter

Other Existing Storm Conveyance System

- County Owned Storm Drain
- Turlock Irrigation District Irrigation Canal
- Turlock Irrigation District Pipeline

- City of Ceres
- Ceres Sphere of Influence
- General Plan Planning Area



Data Source: City of Ceres, 2015; Stanislaus County Geographic Information Systems, 2015; ESRI, 2015; Dyett & Bhatia, 2015.

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FLOODPLAIN MAPPING

Flood hazards in Ceres were last studied by FEMA in September 2008 as part of the Countywide mapping of Stanislaus County. The most significant mapped flood hazard is the Tuolumne River, which flows from east to west, along the north edge of the city. The city is not within any established dam inundation zones. Due to the well-defined channel of the Tuolumne River near Ceres, the FEMA 100-year and 500-year floodplains are mostly contained within the river channel. However, a very small portion of the northern city limits near River Road between Richland and Central is within the FEMA100-year floodplain.

During large storm events, overflow of the city's storm drain system also presents a hazard of localized flooding. Local drainage system flooding was not evaluated or mapped by FEMA.

URBAN LEVEL OF FLOOD PROTECTION REQUIREMENTS

The *Urban Level of Flood Protection Criteria* were developed in response to requirements from the Central Valley Flood Protection Act of 2008, to implement a 200-year flood protection criteria in urban areas (areas with populations over 10,000 people). The California Department of Water Resources (DWR) developed the Urban Level of Flood Protection criteria as a systematic approach to enhance flood protection for all cities and counties in the Sacramento-San Joaquin Valley. DWR has not provided 200-year floodplain mapping for the city. However, the approximate 200-year inundation area can be inferred from an interpolation between the 100-year and 500-year floodplains delineated by FEMA, and elevation difference between the two profiles can be determined from Flood Insurance Study cross sections. Within the City limits, there is one location, north of River Road, and west of Center Street, where it is possible that the flood depth could be greater than three feet for some structures within the 500-year floodplain. The difference in elevation between the 100- and 500-year floodplains at this location is approximately six feet. To confirm that the City will comply with the Central Valley Flood Protection Act by 2025, the City should develop 200-year inundation mapping to ascertain whether any properties would be affected.

Photographs of the River Bluff Detention Basin and Don Pedro Stormwater Retention Basin are provided below. Additionally, there are retention basins within the city, several of which include dual uses; one example is Neel Park, which is next to Sam Vaughn Elementary School in the Eastgate Neighborhood.



The River Bluff Detention Basin receives stormwater from the northern portion of the City. This large basin is very deep, which allows the stormwater to flow by gravity into the basin, thereby preventing the need for a stormwater pump station.



The River Bluff Detention Basin releases the stormwater to a series of constructed ponds prior to flowing to the Tuolumne River. The ponds include wetland and riparian habitat. Pedestrian trails around the ponds provide community access and wildlife viewing opportunities.



The Don Pedro Stormwater Retention Basin (at Blaker Road and Walnut Avenue) provides both stormwater detention and Open Space for the community.

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Appendix A: Analysis of Capacity and Demand for Residential, Commercial and Industrial Development

This Appendix details the analysis performed to estimate the current capacity for residential, commercial and industrial development within the Ceres SOI and to compare the capacity with the projected demand for each type of development.

RESIDENTIAL

Demand

A range of population and housing unit projections were used to estimate the demand for housing in Ceres between 2015 and 2035. For the purposes of this analysis, in 2015 there were 46,989³⁸ residents and 13,764³⁹ housing units in Ceres. The population projections used in this analysis are from StanCOG⁴⁰, Stanislaus County Department of Transportation⁴¹ (County DOT), and California Department of Finance⁴² (DOF); and the housing unit projection is from StanCOG. As shown in Table A-1, according to StanCOG, Ceres accounted for approximately nine percent of the County's population in 2015. This portion was used to estimate the Ceres population in 2035 based on the County DOT and DOF county-level population projections. Similarly, according to StanCOG, there were approximately 3.4 Ceres residents per housing unit in 2015. This ratio was used to estimate the number of housing units in 2035 based on the County DOT and DOF data.

³⁸ Economic and Planning Systems, Inc. as a subconsultant to Dyett and Bhatia. Prepared for the City of Ceres. 2016. Demographic, Economic and Fiscal Conditions in the City of Ceres.

³⁹ California Department of Finance. Table 2: E-5 City/County Population and Housing Estimates. 2015.

⁴⁰ Eberhardt School of Business Center for Business and Policy Research. Stanislaus County Forecast Summary. 2016.

⁴¹ Stanislaus County Economic Forecast. 2015.

⁴² California Department of Finance Demographic Research Unit. Report P-1 State and County Population Projections 2010-2060. 2014.

Table A-1: Projected Population and Housing Units (2035)

	Source	2015		2035	
		Ceres	County	Ceres	County
Population	StanCOG	48,029	540,794	61,290	674,019
	County DOT	49,520	557,587	67,671	761,958
	DOF	46,989	538,689	60,543	681,703
Housing Units	StanCOG	14,256	184,013	18,493	232,246
	County DOT	14,699		20,086	
	DOF	13,764		17,971	

Sources: California Department of Finance, 2015; Stanislaus County Economic Forecast; Stanislaus County Forecast Summary, 2016.

According to these estimates, the expected number of housing units will increase to between 17,971 and 20,086 in 2035. Therefore, there is an expected demand for between 4,207 and 6,322 more housing units in Ceres by 2035, as shown in Table A-2.

Table A-2: Projected Residential Demand (2035)

	2015	2035	Projected Demand
Housing Units	13,764	17,971 - 20,086	4,207 – 6,322

Source: California Department of Finance; StanCOG 2040 Demographic Projections, 2016.

In comparison, the Regional Housing Needs Assessment (RHNA) allocation for Ceres from 2014 to 2023 is 2,571 units, as shown in Table A-3. According to the Housing Element, 52 units were produced between January 2014 and January 2015, so the remaining allocation to be met as of 2015 is 2,519. The RHNA allocation is equivalent to a yearly need of approximately 315 housing units, and the StanCOG forecast is equivalent to a yearly need of approximately 236 units.

Table A-3: RHNA Allocation of Housing Units by Household Income-Level for City of Ceres (2014-2023)

	Extremely Low	Very Low	Low	Moderate	Above Moderate	Total
Housing Units (2014-2023)	311	311	399	446	1,104	2,571
Units Produced (2014-2015)	0	0	0	52	0	52
Net Allocation to be Met (2015-2023)	311	311	399	394	1,104	2,519

Source: City of Ceres 2014-2023 Housing Element, January 2016.

Current Capacity

For this analysis, the residential development capacity is based on current development projects and the current General Plan land use designation of the opportunity sites identified in Table 3-8 and Figure 3-12. The current General Plan specifies a range of densities for each residential and mixed use land use designation. The average density of housing or dwelling units per acre (du/ac) for each opportunity site by land use designation is given in Table A-4. These average densities were used to calculate the potential number of housing units on each opportunity site.

Table A-4: Residential Density Assumptions

<i>Land Use Type</i>	<i>Average Density (du/ac)</i>
Residential Agriculture	0.35
Very Low Density Residential	2.25
Low Density Residential	3.5
Medium Density Residential	9.5
High Density Residential	18.5
Downtown Residential	15
Residential Reserve	6.8 ¹
Neighborhood Commercial ²	18.5
Office ²	15
Downtown Mixed Use ²	15

Notes:

1. The average density of Residential Reserve is unspecified in the General Plan. The average density of Residential Agriculture, Very Low Density, Low Density, Medium Density, and High Density Residential was used as the assumed density for Residential Reserve.
2. These commercial and mixed-use classifications in the current General Plan allow for residential uses.

Source: City of Ceres, 2010; Dyett & Bhatia, 2016.

Based on the average residential density of the opportunity sites as currently designated by the General Plan, there is capacity for 6,817 more housing units within the SOI, including 5,504 units in areas with a residential land use designation and 1,313 units in areas with a mixed use designation. Table A-5 shows the number of potential housing units by each land use designation. According to the current General Plan, approximately 33 percent of new housing units would be Low Density and about 28 percent would be High Density.

Table A-5: Capacity for New Housing Units on Opportunity Sites

	<i>City of Ceres (Housing Units)</i>	<i>Unincorporated Within SOI (Housing Units)</i>	<i>Total (Housing Units)</i>	<i>Portion of Total</i>
Residential Agriculture	0	0	0	0.0%
Very Low Density Residential	180	14	194	2.8%
Low Density Residential	703	1,512	2,215	32.5%
Medium Density Residential	673	517	1,190	17.5%
High Density Residential	1,266	622	1,888	27.3%
Downtown Residential	16	0	16	0.2%
Residential Reserve	0	0	0	0.0%
Neighborhood Commercial	826	53	879	12.9%
Office	416	0	416	6.1%
Downtown Mixed Use	18	0	18	0.3%
Total	4,098	2,719	6,817	100.0%

Source: City of Ceres, 2010; Dyett & Bhatia, 2016.

In addition to the opportunity sites, there are 275 units currently in development, as shown in Table 3-4. Considering these current development projects and the potential development of residential opportunity sites, there is capacity for 7,092 new housing units in the Ceres SOI, as summarized in Table A-6.

Table A-6: Capacity for Residential Development Based on Current General Plan

	<i>Opportunity Sites</i>	<i>Current Development Projects</i>	<i>Total</i>
Housing Units	6,817	275	7,092

Source: Dyett and Bhatia, 2016.

According to the Housing Element, within the Ceres SOI, there is capacity for 7,808 units. This is based on the build-out of vacant sites at a specific density for each the General Plan land use designations, similar to the analysis above. However, there are two main differences between the methods of analysis in the Housing Element and the methods used above. Firstly, the Housing Element only identifies sites within the Ceres city limits. Figure 3-11 shows the parcels identified in the Housing Element's Vacant Site Inventory. Secondly, the densities for each residential land use designation are different. This analysis used the average units per acre allowed for in the existing General Plan. Densities in the Housing Element are based on City staff determinations and the maximum density allowed under the current General Plan and zoning ordinance.

Comparison of Demand and Capacity

Table A-7 compares the expected demand for housing units in 2035 with current capacity for potential residential development within the current Ceres SOI. Based on this analysis, the

capacity exceeds the expected demand. If the current development projects and all of the opportunity sites were built according to current land use designations, there would be a surplus of approximately between 770 and 2,855 housing units.

Table A-7: Expected Housing Demand and Potential Residential Development within the Ceres SOI

	<i>Projected Demand by 2035</i>	<i>Current Capacity</i>	<i>Difference</i>
Housing Units	4,207 – 6,322	7,092	770 – 2,885

Source: 2010-2014 American Community Survey 5-Year Estimates; Dyett and Bhatia, 2016; StanCOG 2040 Demographic Forecast, 2016.

According to the Housing Element, which uses a horizon year of 2023 instead of 2035, Ceres's capacity for residential development exceeds demand. The RHNA allocation for the City of Ceres is 2,571, the city's capacity is 7,808, and therefore the city has surplus capacity for 5,938 units.

Comparison of Demand and Capacity within City Limits and Specific Plans

In addition to the analysis of capacity and demand for residential development within the Ceres SOI, the demand and capacity for housing units within current city limits and anticipated specific plans were also analyzed. Within the current city limits, there is capacity for 4,098 units on opportunity sites, and 275 units are currently in the development process. In total, there is capacity for 4,373 units within the current city limits. In addition, there are residential opportunity sites on land covered by the Draft WRSP. Table A-8 shows the residential capacity in the area covered by the Draft WRSP, according to current General Plan land use designations.

Table A-8: Potential Residential Development in Land Covered by Draft WRSP

<i>Current Land Use Designation</i>	<i>Acres</i>	<i>Average Density (du/ac)</i>	<i>Units</i>
Low Density Residential	20.3	3.5	71
Medium Density Residential	25.9	9.5	246
High Density Residential	1.9	18.5	35
Total	48.0		352

Source: Dyett and Bhatia, 2016.

The comparison of expected demand with opportunity sites and current development projects within the current city limits, as well as the opportunity sites covered by the Draft WRSP, is shown in Table A-9. Depending on the data source, within current city limits and the anticipated WRSP area, there is between approximately a 518 surplus of units and a 1,598 deficit of units. Therefore, there may not be sufficient residential capacity to meet the expected demand.

However, this analysis is limited. It is based on population projections that may be inaccurate, and it assumes that the current ratio of residents per housing units as well as the Ceres's portion of the county population will remain the same in the future. In addition, it only accounts for the total number of housing units, rather than different types of housing units.

Table A-9: Expected Housing Demand and Potential Residential Development within Ceres City Limits and the Whitmore Ranch Specific Plan Area

	<i>Projected Demand by 2035</i>	<i>Current Capacity within City Limits</i>	<i>Current Capacity within Land Covered by Draft WRSP</i>	<i>Capacity within City Limits and Land Covered by Draft WRSP</i>	<i>Difference</i>
Housing Units	4,207 – 6,322	4,373	352	4,724	(1,598) - 518

Source: 2010-2014 American Community Survey 5-Year Estimates; Dyett and Bhatia, 2016; StanCOG 2040 Demographic Forecast, 2016.

COMMERCIAL AND INDUSTRIAL

Demand

As discussed in the Economic Report, the estimates of employment in Ceres in 2015 range from 8,666⁴³ to 12,012. To better understand the land use implications of employment in Ceres, the types of jobs were categorized into commercial and industrial jobs, as shown in Table A-10. The data for Table A-10 is provided in the Economic Report. According to this categorization, approximately 52.5 percent of jobs in Ceres are commercial, and 20.8 percent are industrial.

⁴³ Only the most recent StanCOG 2040 Projections from 2016 are used in this analysis.

Table A-10: Types of Jobs in Ceres (2015)

<i>Industry</i>	<i>Number of Jobs (2015)</i>	<i>Share of Total</i>
Accommodation and Food Services	943	
Arts, Entertainment, and Recreation	68	
Construction	1,019	
Educational Services	26	
Finance and Insurance	110	
Health Care and Social Assistance	463	
Management of Companies and Enterprises	106	
Professional, Scientific, and Technical Services	196	
Real Estate and Rental and Leasing	104	
Retail Trade	1,367	
<i>Commercial Subtotal</i>	<i>4,402</i>	<i>52.5%</i>
Administrative and Support and Waste Management and Remediation	287	
Manufacturing	585	
Transportation and Warehousing	430	
Wholesale Trade	438	
<i>Industrial Subtotal</i>	<i>1,740</i>	<i>20.8%</i>
Local Government	2,188	
State Government	49	
<i>Public Subtotal</i>	<i>2,237</i>	<i>26.7%</i>
Other	148	
Not elsewhere classified	16	
<i>Other Subtotal</i>	<i>164</i>	<i>2.0%</i>
Total	8,543	

Note: Data on the number of jobs in Agriculture, Forestry, Fishing and Hunting as well as Mining, Quarrying, and Oil and Gas Extraction is unavailable.

Source: 2015 Q2 California Employment Development Department.

The Economic Report provides employment projections from five different sources, including the Employment Development Department, Caltrans, Woods & Poole, and StanCOG. The 2010 and 2016 StanCOG projections are given in the Economic Report, but only the most recent StanCOG projections from 2016 are used in this analysis. According to these data sources, the projected number of jobs in Ceres in 2035 ranges from 11,369 to 15,687. For this analysis, it was assumed that the current balance of types of jobs will continue, meaning that if 12 percent of current jobs are in construction, then 12 percent of jobs in 2035 will be in construction. Based on this assumption, between 2015 and 2035, the number of jobs in Ceres is expected increase by somewhere between 2,703 and 3,675 jobs, including between 1,420 and 1,931 commercial jobs and 561 and 763 industrial jobs, as shown in Table A-11.

Table A-11: Expected Job Growth by Job Type (2035)

	<i>Portion of Total Jobs</i>	<i>Number of Jobs in 2015</i>	<i>Expected Number of Jobs in 2035</i>	<i>Expected Increase in Number of Jobs</i>
Commercial	52.5%	4,553 - 6,311	5,973 - 8,241	1,420 - 1,931
Industrial	20.8%	1,800 - 2,494	2,361 - 3,258	561 - 763
Total		8,666 - 12,012	11,369 - 15,687	2,703 - 3,675

Source: Dyett and Bhatia, 2016; Economic and Planning Systems, Inc., 2016.

Both current and assumed ratios of square feet of building (SF) per worker were used to convert expected job growth to expected demand for commercial and industrial land. Table A-12 shows the existing amount of built square feet for existing commercial and industrial land uses in Ceres. The existing ratio for commercial jobs in Ceres, 507 square feet per worker, is similar to the ratio in peer cities. For this analysis, the ratio was rounded to 500 square feet per worker for easy use. The existing ratio for industrial jobs in Ceres is very high, with almost 4,000 square feet per worker. This ratio is higher than the ratio in peer cities and suggests that the existing industrial development in Ceres is largely made of warehouses or other uses associated with few jobs. Therefore, a lower ratio of 1,200 square feet per worker that is more consistent with industrial uses in peer cities is used for this analysis.

Table A-12: Square Feet Per Worker

<i>Existing Use of Land</i>	<i>Square Feet</i>	<i>Jobs</i>	<i>Actual SF/worker</i>	<i>Assumed SF/worker</i>
Auto Commercial	262,527			
Hospital/Nursing Facility	2,340			
General/Retail Commercial	1,645,531			
Office	270,693			
Service Station	49,780			
Commercial Total	2,230,871	5,626	507	500
General Industrial	5,664,953			
Light Industrial	1,280,081			
Industrial Total	6,945,034	2,224	3,991	1,200

Source: City of Ceres, 2010; Dyett & Bhatia, 2016.

The floor area ratios (FAR) of the opportunity sites were used to convert the number of built square feet per worker to the number of acres of commercial and industrial land needed for development. The current General Plan designates a maximum FAR for each commercial and industrial opportunity site, as given in Table A-13. Only opportunity sites within the SOI, including land within the Ceres city limits and County unincorporated areas, are used in this analysis. The expected FAR of potential commercial and industrial development respectively was calculated based on the FAR of each land use designation and the relative amount of opportunity sites of each type of use designation. In other words, a weighted average FAR for potential commercial development and industrial development respectively were calculated. Therefore, although the FAR of Downtown Mixed Use is 3.0, the average FAR of potential commercial

development is 0.4, because a relatively small amount of opportunity sites are designated Downtown Mixed Use.

Table A-13: FAR According to Current General Plan

<i>Current General Plan Land Use Designation</i>	<i>Acres of Opportunity Sites within SOI</i>	<i>Maximum FAR according to Current General Plan</i>
Neighborhood Commercial	47.5	0.5
Service Commercial	62.5	0.5
Community Commercial	77.2	0.5
Highway Commercial	35.9	0.5
Regional Commercial	103.8	0.5
Commercial Recreation	31.8	0.2
Office	27.7	1.0
Downtown Mixed Use	1.2	3.0
Business Park	153.4	0.2
Commercial Weighted Average		0.5
General Industrial	227.3	0.65
Industrial Reserve	35.0	0.5
Light Industrial	69.4	0.5
Industrial Average		0.6

Source: City of Ceres, 2010; Dyett & Bhatia, 2016.

The expected demand for commercial and industrial land is calculated based on the projected increase in jobs, the assumed square feet of building needed to serve each job, and the designated FAR of commercial and industrial development. In addition, a 15 percent vacancy rate was assumed to allow for fluidity and choice in the real estate market. As shown in Table A-14, there is an expected demand for approximately 40.9 – 55.7 acres of commercial land and 29.4 – 40.0 acres of industrial demand by 2035 in Ceres.

This analysis is based on job projections and does not capture all of the potential demand. Other influences on potential demand include the planned improvements to the Mitchell Road/SR-99 interchange as well as the relative competitiveness of Ceres within the context of the region.

Table A-14: Expected Demand for Commercial and Industrial Land

	<i>Expected New Jobs</i>	<i>Assumed Square Foot/Worker</i>	<i>FAR acc. to current General Plan</i>	<i>Vacancy</i>	<i>Expected Demand (Acres)</i>
Commercial	1,420 – 1,931	500	0.5	15%	40.9– 55.7
Industrial	561 – 763	1,200	0.6	15%	29.4 – 40.0
Total	2,703 – 3,675				70.4– 95.7

Source: City of Ceres, 2010; Dyett & Bhatia, 2016; Economic and Planning Systems, Inc., 2016.

Current Capacity

Similar to the residential development analysis, the current supply of commercial and industrial land in Ceres is based on current development projects and the current General Plan land use designations of opportunity sites within the Ceres SOI. There are approximately 10.5 acres currently being developed for commercial and mixed-use within the Ceres city limits, as shown in Table 3-4. In addition, there are approximately 541.0 acres of opportunity sites designated commercial and 331.8 designated industrial, projected within the current General Plan. Based on both the current development projects and opportunity sites designated for commercial and industrial uses, there are approximately 551.5 acres for potential commercial development and 331.8 acres of industrial development, as shown in Table A-15.

Table A-15: Capacity for Commercial and Industrial Development Based on Current General Plan

	<i>Current Development Projects¹ (Acres)</i>	<i>Opportunity Sites within SOI (Acres)</i>	<i>Total Current Capacity (Acres)</i>
Commercial	10.5	541.0 ²	551.5
Industrial	0.0	331.8	331.8
Total	10.5	872.8	883.3

Notes:

1. See Table 3-8. The 11.4-acre parcel at Mitchell Road and Rohde Road is identified as both an opportunity site and a current development project, as of July 2016. For the purpose of the quantitative analysis of supply and demand below, the parcel is counted as an opportunity site only.
2. See Table 3-6. Parcels outside of the Ceres SOI are not considered opportunity sites in this analysis.

Source: City of Ceres, 2010; Dyett and Bhatia, 2016.

Comparison of Demand and Capacity

Based on the StanCOG projections for 2035, there is an expected growth of between 1,420 and 1,931 new commercial jobs and 561-763 new industrial jobs. Based on an assumed ratio of square feet per worker and the current FAR designation, there is demand for between 40.9 and 55.7 acres of commercial development and between 29.4 and 40.00 acres of industrial development. Based on current development projects and opportunity sites within the Ceres SOI designated for commercial and industrial uses, there is capacity for 551.5 acres of commercial development and 331.8 acres of industrial development. Therefore, according to this analysis, the current General Plan designates more than enough land for commercial and industrial use than is likely needed to support job growth, as shown in Table A-16.

Table A-16: Expected Demand for Commercial and Industrial Land and Acres of Potential Development

	<i>Expected Demand (Acres)</i>	<i>Current Capacity (Acres)</i>	<i>Difference</i>
Commercial	40.9 – 55.7	551.5	495.8 – 510.6
Industrial	29.4 – 40.0	331.8	291.7 – 302.3
Total	70.4 – 95.7	883.3	787.6 – 812.9

Source: Dyett and Bhatia, 2016.

Appendix B: Level of Service Analysis Methods

The operations of roadway facilities are described with the term “level of service” (LOS). LOS is a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels of service are defined ranging from LOS A (i.e., free-flow operating conditions) to LOS F (over capacity operating conditions). LOS E corresponds to operations “at capacity.” When volumes exceed capacity, stop-and-go conditions result and operations are designated as LOS F. The City of Ceres strives to maintain LOS D or better for operations of Major roadways – expressways, arterials, and primary collectors. Secondary collectors and local roadways have a LOS standard of C.

The following describes the analysis procedures for roadway segments and intersections.

Roadway Segments

The analysis of daily roadway segment operation is used to determine the overall usage of the transportation network and to assess if the appropriate right-of-way is provided to generally accommodate daily travel demands. Note that the roadway segment analysis is based on traffic counts taken at a single location or link, which is intended to be representative of the entire segment. A link connects two intersections; a segment is a series of links. The segments used in this analysis were developed based on where a series of links had common physical and traffic conditions. Different capacity thresholds used in level of service (LOS) analysis are developed for different facility types, as shown in Table 6-5 and were calculated based on the methodology contained in the Highway Capacity Manual (HCM) (Transportation Research Board 2010). The HCM methodology is the prevailing measurement standard used throughout the United States.

Table B-1: City of Ceres General Plan Per-Lane Roadway Segment Capacities

<i>Type of Roadway Segment</i>	<i>Hourly Capacity (vplph¹)</i>	<i>Daily Capacity (vplpd²)</i>
Freeway Mainline	2,000	25,000
Expressway	1,250	15,630
Principal Arterial (6 lanes)	850	10,625
Minor Arterial (4 lanes)	750	9,380
Minor Arterial (2 lane facility with center left-turn lane)	800	10,000
Major Collector (4 lane facility)	700	8,750
Major Collector (2 lane facility with center left-turn lane)	750	9,380
Downtown Collector	700	8,750
Minor Collector and Local (2 lane facility)	500	6,250
Rural Road	900	11,250
Note:		
1. Vehicles per lane per hour.		

Signalized Intersections

At signalized intersections, the Highway Capacity Manual (HCM) method calculates control delay at an intersection based on average control vehicular delay, using the method described in Chapter 18 of the 2010 HCM. Inputs to the analysis include traffic volumes, lane geometry, signal phasing and timing, pedestrian crossing times, and peak hour factors. Control delay is defined as the delay directly associated with the traffic control device (i.e., a stop sign or a traffic signal) and specifically includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. These delay estimates are considered indicators of driver discomfort and frustration, fuel consumption and lost travel time. The relationship between average control delay and LOS for signalized intersections is summarized in Table B-2.

Table B-2: Existing Intersection Level of Service

<i>Level of Service</i>	<i>Description</i>	<i>Delay in Seconds</i>
A	Progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	< 10.0
B	Progression is good, cycle lengths are short, or both. More vehicles stop than with LOS A, causing higher levels of average delay.	> 10.0 to 20.0
C	Higher congestion may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, though many still pass through the intersection without stopping.	> 20.0 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume to capacity (V/C) ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	> 35.0 to 55.0
E	This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	> 55.0 to 80.0
F	This level is considered unacceptable with oversaturation, which is when arrival flow rates exceed the capacity of the intersection. This level may also occur at high V/C ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be contributing factors to such delay levels.	> 80.0

Source: Highway Capacity Manual (Transportation Research Board, 2010).

Unsignalized Intersections

Operations of the unsignalized intersections were evaluated using the method contained in Chapters 19 and 20 of the 2010 HCM. The LOS rating is based on the weighted average control delay expressed in seconds per vehicle, as shown in Table B-3. At two-way or side-street stop-controlled intersections, LOS is calculated for each controlled movement, the left-turn movement from the major street, as well as for the intersection as a whole. For approaches composed of a single lane, the delay is computed as the average of all movements in that lane. For all-way stop controlled locations, LOS is computed for the intersection as a whole.

Table B-3: Level of Service Delay per Vehicle

<i>Level of Service</i>	<i>Description</i>	<i>Average Control Per Vehicle (Seconds)</i>
A	Little or no delays	< 10.0
B	Short traffic delays	> 10.0 to 15.0
C	Average traffic delays	> 15.0 to 25.0
D	Long traffic delays	> 25.0 to 35.0
E	Very long traffic delays	> 35.0 to 50.0
F	Extreme traffic delays with intersection capacity exceeded	> 50.0

Source: Highway Capacity Manual (Transportation Research Board, 2010).

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