
4. LAND USE

This EIR section includes a description of existing and anticipated land use characteristics in and around the Specific Plan area, the potential impacts of the project (i.e., the proposed Specific Plan and anticipated Specific Plan buildout scenario) on these characteristics, and mitigation measures warranted to address any identified significant adverse land use impacts.

4.1 SETTING

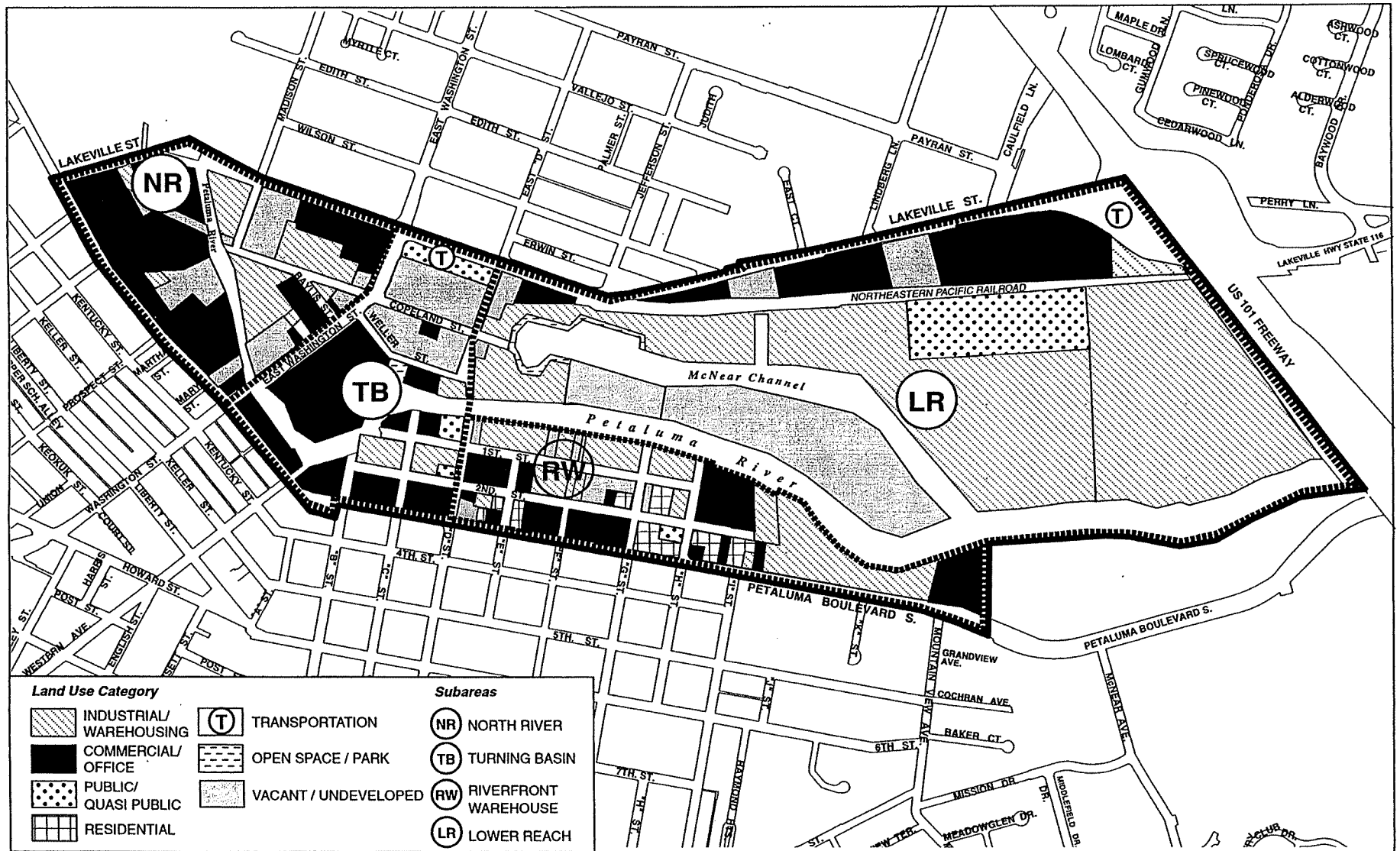
4.1.1 Regional and City Context

The City of Petaluma occupies approximately 14 square miles of incorporated land bordered by unincorporated rural and open space land in Sonoma County. Unlike typical suburban "bedroom" communities, Petaluma has historically been a community that includes a broad mix of land uses, including employment and industry, as well as housing and retail. Land use trends related to the Specific Plan area are described below. Existing land use characteristics in the proposed Specific Plan area are shown on Figure 4.1.

(a) Central Petaluma Origins. The proposed Central Petaluma Specific Plan area encompasses approximately 400 acres in the center of Petaluma. The city was originally established as an agricultural service and visitor/tourist center. The proposed Specific Plan area contains a portion of the City's existing downtown fronting on the River. This portion of the downtown comprises the City's original central business and industrial subarea. The railroad line, river and highway were essential components of the city's original agriculture-oriented industrial base and were key original determinants of the city's central area location. Long-established river-dependent industrial operations continue to be principal land uses in the Specific Plan area.

(b) Current Central Petaluma Conditions. The central area's original role as business center for the community has been diffused over the years by the development of outlying community- and neighborhood-serving shopping centers and business parks. Substantial portions of the proposed Specific Plan area are now vacant or underused.

Although many of the traditional industries located along the river still exist, in recent decades, newer business and industrial parks have also developed away from the city's historic center at locations closer to U.S. 101. These outlying business and industrial parks tend to be oriented to contemporary administrative, research and development, and light manufacturing activity. As agriculture-oriented and river-oriented business has declined, some central area industrial sites have been converted over the past two decades to retail or mixed use, such as the



Source: City of Petaluma, 2002

Figure 4.1

EXISTING LAND USES

Golden Eagle Shopping Center, Great Petaluma Mill, and Foundry Wharf developments. However, an area of generally active older warehouse uses remains along the west bank of the river, south of D Street.

There is now substantial local interest in the potential of Central Petaluma to accommodate a greater diversity of land uses and activities, as best demonstrated by the central area Specific Plan formulation effort. The February 2003 draft Central Petaluma Specific Plan places special emphasis on increasing land use diversity in the area, and identifies a number of vacant or underutilized sites within the Specific Plan area as having important reuse potential. These identified opportunity areas include lands around the Turning Basin, the blocks immediately south of the Great Petaluma Mill, and lands along the proposed Sonoma-Marín commuter rail line. The draft Specific Plan also cites current plans to use the historic Petaluma Train Depot as a Petaluma stop for the Sonoma-Marín commuter rail line as an important opportunity for the development of transit-oriented development in the central area.

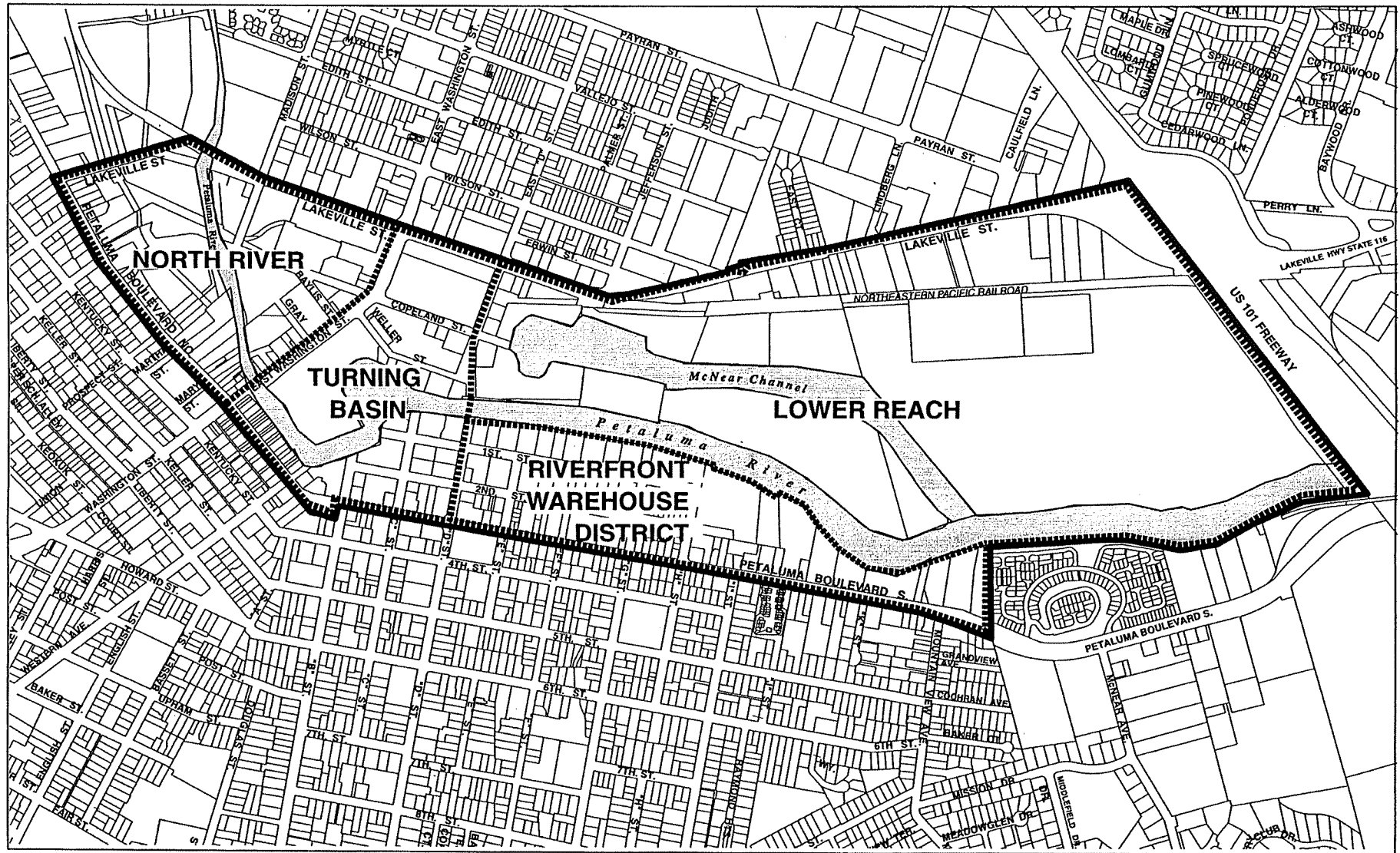
4.1.2 Existing Land Use in the Specific Plan Area

(a) Existing General Plan Designations. Existing Petaluma General Plan, 1987-2005 designations for the proposed Specific Plan Area include: *Mixed Use; Thoroughfare Commercial; Industrial; Public and Institutional; Community Commercial; and Public Park* (proposed).

(b) Existing Land Uses. The proposed approximately 400-acre Specific Plan area is currently comprised of a traditional central area combination of retail, office, service commercial, single and multi-family residential, heavy commercial, and industrial uses. Older heavy commercial and industrial uses are concentrated along the river.

In the northern portion of the Specific Plan area, parcel sizes are fairly small--i.e., are generally less than a half acre in size, except for the traditional agricultural (ag.)-industrial and ag.-commercial uses such as Dairyman's Feed, and Hunt and Behrens, and the Golden Eagle and Foundry Wharf shopping centers. The Petaluma River, McNear Channel and the Turning Basin are key central features of the Specific Plan area, creating an extensive shoreline area largely occupied by industrial uses. In the southern portion of the Specific Plan area along the more navigable sections of the river, large industrial parcels are more common. The Pomeroy Corporation property comprises approximately 38 acres and dominates the lower river reach. The undeveloped McNear Peninsula also comprises approximately 28 acres in this portion of the Specific Plan area.

As outlined in the Project Description chapter herein (see section 3.2), the proposed Specific Plan divides the planning area into four subareas: the North River subarea; the Turning Basin subarea; the Riverfront Warehouse subarea; and the Lower Reach subarea. The four subareas are mapped on Figure 3.2. Existing land use characteristics in each of the four subareas are described below.



Source: City of Petaluma, 2002

Figure 4.2



SPECIFIC PLAN SUBAREAS

(a) North River Subarea (60.5 acres). This subarea currently includes a mix of industrial, commercial and undeveloped land uses. Most of the large parcels along the riverfront in the North River subarea are comprised of existing industrial land uses, including Hunt & Behrens (grain, feed and poultry supplies), Hamilton Auto Wreckers, Gilardi Furniture, the Gibson property, Spectrum Naturals, several Weiner properties, and Dairyman's Feed & Supply. Newer, large-parcel commercial uses include the Payless/Grand Auto complex at the corner of East Washington and Lakeville. The remainder of the lots in this subarea tend to house smaller lot commercial uses, including restaurant and entertainment uses, home furnishing stores, second hand stores and automotive services along Petaluma Boulevard.

(b) Turning Basin Subarea (48.2 acres). The Turning Basin Subarea contains a mix of uses dominated by retail and warehousing. The northern portion of this subarea includes the Petaluma Train Depot site, which occupies a 7-acre block at the north edge of the Specific Plan area. This site is undeveloped other than the unused Depot building, which is currently used for the storage of locomotives associated with a local freight switching operation. The adjacent block between Copeland and Weller streets is also largely vacant, creating a sizeable undeveloped portion of the subarea. The Golden Eagle Shopping Center, a 70,000-square-foot, community-serving retail center, is situated on a 7.3-acre site along the riverfront. The shopping center was constructed in 1974 on the site of the Golden Eagle Mill. The Balshaw Bridge provides a pedestrian bridge over the river linking the Golden Eagle Shopping Center with the downtown. The remainder of the riverfront along Weller Street includes the Old River Inn Restaurant (a relocated Victorian house), a ticket booth/office for the Petaluma Queen excursion boat, and warehouse buildings.

On the south side of the Turning Basin subarea, existing land uses include retail shops in the downtown, the Petaluma River Walk, the Great Petaluma Mill retail complex, which has been adapted for retail and office uses, and predominantly service commercial businesses, including two auto sales lots in the area between B and D streets.

(c) Riverfront Warehouse Subarea (approximately 45 acres). The Riverfront Warehouse subarea encompasses approximately 45 acres (including streets) just northeast of the downtown and contains a mixture of industrial, commercial and residential uses. About half of the subarea is comprised of industrial/warehousing uses; the other half contains primarily commercial businesses. Some residential uses, including Victorian homes located along Petaluma Boulevard, are also clustered in the area around Second and H Streets. Rail and river-oriented warehouse and mill structures and highway-oriented commercial uses (motels, retail stores, restaurants, lumber yards, etc.) are also located along Petaluma Boulevard.

Foundry Wharf, located at H Street and the river, is a rehabilitated stove factory that combines old and new buildings in a mixed-use development that includes office, light industrial and retail occupants. Just south of Foundry Wharf is the Van Bebber Brothers Steel operation, another large industrial user that has been operating in this area for many years. Bar Ale Feed

4.3 IMPACTS AND MITIGATION MEASURES

4.3.1 Significance Criteria

Based on Appendix G of the CEQA Guidelines¹ and common standards of land use compatibility, the Specific Plan would be considered to have a *significant* adverse land use impact if it would:

- (a) Conflict with the any applicable land use plan, policy or regulation of an agency with jurisdiction over the project (i.e., if it would be inconsistent with any of the Petaluma General Plan policies listed in section 4.2 above) adopted for the purpose of avoiding or mitigating an environmental effect?
- (b) Disrupt or divide the physical arrangement of the community; or
- (c) Be incompatible with existing land use in the vicinity.

4.3.2 Proposed Specific Plan Land Use Provisions

(a) Proposed Land Use Goals. The proposed Specific Plan includes the following areawide goals pertaining to land use:²

1. Support existing viable uses, and provide for new uses that complement and complete the urban fabric;
2. Provide for a mix of new uses;
3. Encourage intensification appropriate to the area's central location;
4. Encourage flexibility in building form and in the nature of activities to allow for innovation and the ability to change over time; and
5. Orient activities to the Petaluma River.

(b) Proposed Specific Plan Land Use Designations, Policies and Standards. As outlined in the project description (see section 3.4 in Chapter 3 of this document), the draft Central Petaluma Specific Plan outlines a *Mixed-Use* land use designation for the majority of the project area, with two additional industrial designations and a *Park* designation in selected areas. In addition, the Specific Plan outlines new zoning controls based on the "smart code"

¹CEQA Guidelines, 2002. Appendix G, Items IX(a) and (b).

²City of Petaluma, Draft Central Petaluma Specific Plan; February 2003; pages 27-28.

model. The block-specific development standards (i.e., "smart code") correspond to the proposed zoning districts.

(c) Anticipated Specific Plan Growth Scenario. Based on the goals, policies and development standards described in (a) and (b) above, and the approximately 27 acres of vacant, and significant acreages of underdeveloped land in the Specific Plan area, the plan identifies the maximum additional development potential and a proposed maximum additional development "cap" (25 percent of the total maximum development potential) for each subarea. These growth figures are summarized in Table 2.1 (Chapter 2) and detailed in Table 3.1 (Chapter 3) herein. The maximum proposed residential development cap is 1,617 new housing units. The maximum proposed commercial/industrial development cap is just under 3 million square feet (floor area).

4.3.4 Impacts and Mitigation Measures

Impact 4-1: Potential Specific Plan Conflicts with Applicable Petaluma General Plan Policies Adopted for the Purpose of Avoiding or Mitigating an Environmental Effect. The draft Specific Plan includes policies, standards, and guidelines designed to ensure that plan-permitted development takes place in a manner consistent with adopted Petaluma General Plan 1987-2005 land use policies adopted for the purpose of avoiding or reducing an environmental effect. Nevertheless, impact analysis findings in this EIR indicate that Specific Plan-permitted development could result in significant impacts on the environment, including:

- significant adverse transportation and circulation impacts (Impacts 6-1 through 6-13);
- significant adverse impacts on cultural and historic resources (Impacts 7-1 and 7-2);
- significant visual impacts (Impacts 9-1 through 9-5);
- significant noise impacts (Impacts 10-1 and 10-2);
- significant air quality impacts (Impacts 11-1 and 11-2);
- significant water quality impacts (Impact 12-1);

(continued)

Impact 4-1 (continued):

- significant soil stability and river bank erosion impacts (Impacts 13-1 through 13-4); and
- significant biological resources (tree loss, special status plant species and jurisdictional wetland) impacts (Impacts 15-1 through 15-3).

These potential effects, if not mitigated, would be inconsistent with a number of Petaluma General Plan, 1985-2005 policies adopted for the purpose of avoiding or mitigating an environmental effect (see section 4.2 herein), and therefore would constitute a **significant adverse land use impact** [see criterion (a) under subsection 4.3.1, "Significance Criteria," above].

Mitigation 4-1: Implement all mitigations identified in sections 7 through 15 of this EIR. Implementation of these various measures will ensure that Specific Plan implementation will occur in a manner consistent with all identified Petaluma General Plan 1987-2005 policies adopted to avoid or mitigate environmental effects, thereby reducing this impact to a **less-than-significant level**, with the following exceptions:

- the anticipated Specific Plan growth scenario would result in significant unavoidable operational impacts on two (2) city intersections (*Impacts 6-7 and 6-14*) and U.S. 101 (*Impact 6-13*);
- the anticipated Specific Plan growth scenario and associated traffic increases would result in a significant unavoidable long-term regional air emissions impact (*Impact 11-2*); and
- the anticipated Specific Plan growth scenario and associated potential effects on historic resources could result in a significant unavoidable impact on historic resources (*Impact 7-2*).

Specific Plan Impacts on the Physical Arrangement of the Community. The analyses and findings herein indicate that future development activity under the proposed Specific Plan would not substantially disrupt or divide the physical arrangement of the community [see criterion (b) under subsection 4.3.1, "Significance Criteria," above]. Specific Plan-facilitated development increments listed in Table 3.1 would occur as central area infill, with no significant change in established central area or community-wide land use patterns. Encouragement of such central area infill activity would have significant beneficial land use effects in revitalizing

the City's historic central area, enhancing Petaluma's unique sense of community, and facilitating development where services and infrastructure can be most efficiently provided; promoting higher residential densities near or within an existing shopping, service, employment and public transportation center; and promoting compact, transit-accessible, pedestrian-oriented, mixed-use development patterns and land reuse. These proposed Central Area Specific Plan characteristics epitomize the principles of "smart growth," and represent *significant beneficial environmental effects*.

Mitigation: No significant adverse impact identified; no mitigation required.

Impact 4.2: Potentials for Adverse Land Use Compatibility Impacts. In addition to the kinds of beneficial land use effects cited above, some Specific Plan-facilitated land use changes could be incompatible with existing central area land uses. Given the proximity of some existing and planned residential uses to existing and planned commercial and industrial uses, project-assisted intensification could introduce significant new land use conflicts (e.g., traffic, visual, light, noise, parking, odor and other conflicts). Such project-induced effects would represent *potentially significant adverse land use compatibility impacts* (see Criteria (b) and (c) under subsection 4.3.1, "Significance Criteria," above).

Specific Plan-facilitated development consistent with current and future Petaluma General Plan and Draft Central Petaluma Specific Plan policies could be expected to introduce new housing into areas that are now predominantly commercial and industrial, including (but not limited to) the area north of East Washington Street, near the Petaluma Depot, in the Lower Reach area, and in the Riverfront Warehouse District. Introducing new housing into the land use mix in these areas is proposed in order to provide housing near downtown retail, and convenient to public transportation, including the proposed two new the proposed transit centers, as well as to add vitality and interest to these areas. However, introduction of residential uses in proximity to these existing commercial and industrial uses could also create incompatibilities related to noise, odors, views, light and glare, parking, dust, odors, truck traffic, and other nuisances.

Similarly, the program could be expected to facilitate development of such sensitive commercial activity as restaurants and commercial lodging near existing nuisance-prone general commercial or industrial uses that could create impacts related to visual, light, parking, noise, dust, odors, truck traffic, and other nuisances.

Both the adopted Petaluma General Plan and the Draft Central Petaluma Specific Plan place emphasis on retaining and protecting existing general commercial and industrial land uses in the central area. Block-specific development controls (i.e., "smart code" provisions) which are outlined in Appendix A of the Specific Plan would help address these land use compatibility concerns. Nevertheless, any complaint-related infringement of new residential

or commercial uses on the existing commercial and industrial operations could impair the continued economic viability of these existing uses.

Mitigation 4.2: During City review of individual projects within the Specific Plan area, emphasize the need to avoid significant new land use conflicts between new residential or non-residential development and existing nuisance-prone commercial and industrial uses. During these review procedures and the formulation of conditions of approval, require assurances of adequate site planning and architectural design measures, including architectural measures (noise insulation, screen walls, etc.) within mixed-use structures, adequate to avoid such significant nuisance conflicts, such as:

- (1) adequate land use separation, scale transition, and noise buffering;
- (2) creative siting of buildings to avoid conflicts;
- (3) adequate view protection;
- (4) adequate protections against light, glare, and shadow impacts;
- (5) adequate odor control;
- (6) adequate offstreet parking provisions;
- (7) adequate truck loading and routing provisions;
- (8) adequate land use incompatibility advisory and acknowledgment requirements; and/or
- (9) other common measures warranted to avoid such land use conflicts.

Implementation of these measures to the satisfaction of the City's Site Plan and Architectural Review Committee (SPARC) would be expected to reduce such potential land use compatibility impacts to a ***less-than-significant level***.

Implementation of this mitigation measure should include application of those current Draft Central Petaluma Specific Plan policies and standards, including "Smart Code" provisions, that are aimed at reducing potential conflicts between land uses. Draft Specific Plan Land Use Policy 1.1 states the intention of the plan to support the existing industrial uses and place a priority on supporting the well-established and economically viable existing industries. The introduction of new uses into this area is predicated on the understanding that the industrial operations will remain, and new uses need to be carefully considered to ensure their compatibility with the ongoing industrial activities.

Specific Plan Land Use Policy 1.3 calls for housing types that are compatible with existing industrial businesses such as live/work housing, which has precedent in existing central area industrial districts, as well as townhouses and courtyard housing. Policy 1.3 also encourages site planning and design techniques such as noise insulation, setbacks, screen walls and building orientation to minimize impacts and potential conflicts between uses. Draft Specific Plan Land Use Policy 4.3, which addresses the Riverfront Warehouse Subarea, call for new housing that is complementary to the existing scale and character of the area, and similarly states that any new uses must be compatible with ongoing industrial operations.

Draft Specific Plan Noise (Chapter 7) Objective 3 and associated policies call for ensuring that new land uses are compatible with the existing noise environment. Under these policies, new residential and nonresidential uses would be required to incorporate appropriate mitigations to achieve an acceptable noise environment. Draft Specific Plan Noise Policy 3.1 states that while the City's 45 L_{dn} standard can be met in new residential development, the outdoor noise level of 60 L_{dn} will not be achievable for new residential development in central Petaluma. Draft Specific Plan Noise Policy 3.2 states that where the potential for incompatibility exists between existing local industrial uses in the Specific Plan area and new uses which may have conflicts with noisy, 24-hour operations, developers of such new uses shall require all tenants or future owners to sign and record advisory documents clearly indicating their acceptance of the nature of the industrial operations and the potential for noise and other impacts. Proposed Specific Plan Design Guidelines for the North River and Lower Reach subareas call for landscaped buffer areas adjacent to industrial parcels to create a separation between industrial and residential uses, designed to address potential noise, visual, dust or other potential impacts.

Loss of Open Space. Specific Plan-facilitated development could result in the conversion of remaining undeveloped open land areas in the CBD to urban uses. In particular, the draft Central Petaluma Specific Plan provides for development on up to 27 acres of land within the Specific Plan area¹ that are currently vacant and/or unimproved, resulting in the loss of these remaining open land areas. However, only land within the Specific Plan area that has been designated for urban development in the Petaluma General Plan, and has existing zoning that would allow such development, would be affected. Also, this impact could eventually occur regardless of whether or not the proposed Specific Plan is implemented. In addition, the 28-acre McNear peninsula and approximately 30 acres of adjacent and nearby riverfront lands are specifically outlined for permanent dedication as parkland as part of an interconnected sequence of open spaces focused on the Petaluma River, resulting in beneficial open space

¹The General Plan Update Existing Conditions Report (City of Petaluma, 2002) cites 55.1 acres of vacant land in the Project Area. This acreage total includes the 28-acre McNear Peninsula, which would not be developed under any buildout scenario because it is designated for park use in the City's existing General Plan.

impacts. For these reasons, Specific Plan effects on open space are considered to represent a *less-than-significant* environmental impact.

Mitigation. No significant open space loss impact has been identified; no mitigation is required.

Cumulative Land Use Impacts. In addition to the Specific Plan-facilitated land use intensification that would be anticipated in the Specific Plan area through the year 2020, other central area development unrelated to the Specific Plan would continue to occur elsewhere in the City of Petaluma and surrounding unincorporated areas of Sonoma County within the City's General Plan-designated *urban limit line*.

The City recently completed a land capacity analysis (City of Petaluma, 1998) as a part of its current General Plan update program. The analysis concluded that vacant and underutilized land within the existing *urban limit line* (986 acres Citywide including the central business subarea) could accommodate the new development.¹ The following section summarizes the analysis conclusions regarding potential new development within the Petaluma urban limit line:

Residential: A total additional development potential of approximately 4,472 dwelling units is projected within the Petaluma *urban limit line* through the year 2020. Of this total, approximately 1,617 units (36 percent) would be anticipated within the proposed Specific Plan area. The remaining 2,855 units would be developed in other areas of Petaluma, primarily at the eastern and western edges of the city and within the Corona Reach area.

Commercial: There are approximately 125 acres of vacant commercial land within the *urban limit line*. Of this total, approximately 9 acres (7 percent) are within the proposed Specific Plan area. The remaining 116 acres occur within other areas of the city, primarily in the Corona Reach area and in the area around the Redwood Business Park at the north end of the city.

Industrial: There are approximately 344 acres of vacant industrial land within the *urban limit line*. Roughly 15 acres are within the Specific Plan area. A significant acreage of underutilized industrial land also exists in the proposed Specific Plan area. The remaining 329 acres of vacant industrial land occur primarily in other, southern areas (i.e., between U.S. 101 and Lakeville Highway).

¹City of Petaluma; Petaluma General Plan 2000-2020. Existing Conditions, Opportunities, and Challenges Report. Second Administrative Review. October 1, 2002. p. 4; City of Petaluma Planning Department, Urban Growth Boundary Discussion Paper, June 30, 1998; numbers from these reports have been revised/updated for purposes of this current EIR to incorporate the buildout figures for the draft Specific Plan outlined in Table 3.1 herein (Project Description, Chapter 3).

These potential cumulative land use changes outside the Specific Plan area are largely promulgated by existing General Plan policies and their environmental effects have been considered in the preparation and adoption of the 1987 General Plan and the City-certified General Plan EIR. The anticipated cumulative development increments outside the proposed Specific Plan area would be expected to be consistent with the Petaluma General Plan, and thus would not be expected to result in an overall cumulative adverse land use impact; however, they would contribute to other types of adverse cumulative, community-wide and region-wide environmental impacts--i.e., transportation, air quality, noise, visual, biological resource, public services, drainage, and water quality impacts. These cumulative effects, where significant, are identified in corresponding chapters of this EIR.

Mitigation. No significant cumulative land use impact has been identified; no mitigation is required.

5. POPULATION, HOUSING, AND EMPLOYMENT

The following chapter addresses anticipated impacts of the proposed Specific Plan on population, housing, and employment in the Specific Plan area and in greater Petaluma. Information presented in this section also provides the statistical basis for determining population, housing, and employment related impacts in subsequent chapters of this EIR (e.g., Transportation, Public Services and Utilities, etc.).

5.1 SETTING

5.1.1 Population

Table 5.1 shows existing and projected population growth within the Petaluma urban limit line, as compared with Sonoma County and the San Francisco Bay region as a whole. As shown, Petaluma's year 2000 population of 55,473 is projected to grow to 64,200 by 2020, a 16 percent increase over the 20 year period.

5.1.2 Housing

Table 5.1 and the following discussion describe ABAG estimates of existing and projected household totals for the San Francisco Bay Region, Sonoma County, and Petaluma. The terms "households" and "dwelling units," as defined by ABAG, are similar but not equivalent; a household is defined as an occupied dwelling unit. The household data in Table 5.1 are summarized below.

(1) *Bay Area.* ABAG estimates that there were approximately 2.5 million households in the Bay Area in 2000 and there will be approximately 2.9 million households by 2020, an increase of approximately 15 percent between 2000 and 2020.

(2) *Sonoma County.* There were approximately 172,400 households in Sonoma County in the year 2000. ABAG projects that there will be 214,930 households countywide by 2020, an increase of approximately 20 percent over the 20-year period.

(3) *Petaluma.* In the year 2000, there were approximately 20,386 households in Petaluma. By 2020, ABAG projects that Petaluma will have 23,360 households, representing a 13-percent increase between 2000 and 2020.

Table 5.1
 ESTIMATED POPULATION AND JOB GROWTH--BAY REGION, SONOMA COUNTY, AND
 PETALUMA 2000-2020

	<u>2000</u>	<u>2010</u>	<u>2020</u>	<u>Percent increase 2000-2020</u>
Bay Region				
Total population	6,783,760	7,513,800	8,014,100	18%
Total households	2,466,019	2,697,080	2,894,370	15%
Total jobs	3,753,670	4,225,030	4,709,960	25%
Total employed residents	3,605,675	4,065,300	4,447,100	23%
Ratio (jobs/households)	1.52	1.57	1.63	--
Ratio (jobs/employed residents)	1.04	1.04	1.06	--
Sonoma County				
Total population	458,614	527,200	571,400	25%
Total households	172,403	196,180	214,930	20%
Total jobs	205,220	245,620	289,260	40%
Total employed residents	229,307	275,700	309,700	35%
Ratio (jobs/households)	1.19	1.25	1.35	--
Ratio (jobs/employed residents)	.89	.89	.93	--
Petaluma				
Total population	55,473	61,400	64,200	16%
Total households	20,386	22,240	23,360	15%
Total jobs	23,370	28,150	33,240	42%
Total employed residents	29,033	33,300	36,100	24%
Ratio (jobs/households)	1.15	1.27	1.42	--
Ratio (jobs/employed residents)	.80	.85	.92	--

SOURCE: ABAG, Projections 2002, December 2001; Wagstaff and Associates, 2003 (jobs/households and jobs/employed residents ratios).

5.1.3 Employment

As indicated in Table 5.1, the number of jobs in Sonoma County as a whole is expected to increase by over 40 percent between 2000 and 2020. The total number of jobs in Petaluma was estimated at 23,370 in 2000, and is projected to increase to 33,240 by the year 2020, a 30 percent increase. The total number of employed residents in Petaluma was estimated at approximately 29,000 in the year 2000 and is projected to increase to 36,100 by the year 2020, a 20 percent increase.

5.1.4 Jobs/Housing Balance

Regional planning goals have increasingly emphasized the need to improve the balance between housing and jobs in subregions as a means of reducing intraregional commuting and associated traffic congestion and air quality impacts. The term "jobs/housing balance" is commonly used to describe the relationship between the number of local jobs available and the number of local employed residents. While the "jobs/housing balance" is the term most often used, the "jobs/employed resident balance" is the more precise measure of the local relationship of housing to jobs, since households, on average, contain more than one employed resident. To the degree that a balance is achieved between local jobs and housing, there is greater opportunity for local residents to work close to where they live. A "jobs/housing balance" of 1:1 (i.e., one job for every employed resident) therefore tends to reduce a community's contribution to regional traffic congestion, noise, and air pollution. Where a city's local jobs/employed resident ratio is substantially higher than the regional ratio, a higher tendency toward in-commuting is indicated; where the local ratio is substantially lower than the regional ratio, a higher tendency toward out-commuting is indicated.

It is important to note, however, that a simple numerical balance in the jobs/housing ratio does not necessarily indicate that local residents have adequate opportunity to work in their community. Other factors, such as the match between local resident employee skills and the skills required for local jobs, and the match between local job compensation levels and local housing prices, also influence a community's actual jobs/housing relationship.

As indicated in the Table 5.1, the regional ratio of jobs to employed residents was approximately 1.04 in 2000, and was projected to remain approximately the same (1.04) in 2010, increasing to 1.06 by 2020. Table 5.1 indicates that the City of Petaluma had fewer local jobs than local employed residents in the year 2000, translating to a jobs/employed resident ratio of 0.80, meaning a tendency toward out-commuting. The ratio is expected to improve over the 20 year period until 2020, with jobs/employed resident ratios of 0.85 projected for 2015 and 0.92 projected for 2020.

5.2 PERTINENT PLANS AND POLICIES

The Petaluma General Plan, 1987-2005 Housing Chapter includes a set of goals and policies adopted to achieve various socio-economic objectives with respect to the range of available housing types, special housing needs, residential quality and character, and housing rehabilitation. The General Plan *Local Economy* chapter includes goals and policies adopted to achieve socio-economic objectives with respect to local employment and incomes. The following listing of "pertinent" policies from these two General Plan chapters has been limited to those adopted for the purpose of avoiding or mitigating an environmental effect¹ (i.e., to reduce vehicular traffic):

- *Policy 1: The City should encourage the development of industrial lands primarily for economic activities that contribute to local employment and income.*
- *Policy 6: The City shall actively attempt to increase the number of persons who both live and work in Petaluma.*
- *Objective (d): Provide opportunities to create combined "living and working" environments.*
- *Policy 10: The City shall strive to make land available for effective residential/workplace (mixed use) developments.*
- *Program (19): Investigate the desirability and feasibility of mixed uses and map specific areas for these developments.*
- *Objective (g): Maintain and expand Petaluma's existing retail base.*

¹The *CEQA Guidelines* explain that an economic or social change alone is not considered a significant environmental effect, but an economic or social change or effect that can be related to a significant physical--i.e., "environmental"--change may be considered (CEQA Guidelines sections 15064(f) and 15382). In this light, the policies list in section 5.2 are limited to those that appear to have been adopted for the purposes of avoiding or mitigating an adverse environmental effect--e.g., policies advocating housing as infill and mixed use development approaches as a means of reducing vehicular traffic.

5.3 IMPACTS AND MITIGATIONS

5.3.1 Significance Criteria

Based on Appendix G of the CEQA guidelines,¹ the proposed Specific Plan (the "project") would be considered in this EIR to have a significant impact on population and housing conditions if it would:

- (a) induce substantial population growth either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure); or
- (b) displace substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere.

In addition, development facilitated by the project may be considered to have a significant adverse impact if it would create or contribute noticeably to a substantial reduction in the City's existing jobs/housing ratio.

5.3.2 "Worst Case" Projections

Year 2020 population, housing, and employment projections for the proposed Specific Plan area are presented in Table 5.2. The table indicates that an estimated 4,444 additional residents, 1,617 additional dwelling units, and 5,985 additional jobs are anticipated in the proposed Specific Plan area by the year 2020 with implementation of the project. These growth estimates are based on the "with project" residential and commercial development levels anticipated in the Specific Plan area listed in Table 3.1 herein.

¹ CEQA Guidelines, 2002. Appendix G, Items XII a-c.

5.3.3 Population and Housing Impacts

Impact 5-1: Population and Housing Growth Impacts. The proposed Specific Plan would accommodate a net additional increment of up to 1,617 residential units in the central area. The 1,617 additional units would represent an increase of roughly 50 percent in the ABAG-projected citywide 2000-2020 household and population growth increment, and an approximately 7 percent increase in the ABAG-projected year 2020 citywide population total (from the currently projected total of 23,360 households without the Specific Plan to approximately 24,977 households with the Specific Plan). The Specific Plan would therefore directly induce substantial household and population growth, which would represent a significant impact on Petaluma population and housing conditions [see criterion (a) under subsection 5.3.1, "Significance Criteria," above]. As described in Chapters 6 through 14 of this EIR, these Specific Plan-related household and population increases would result in associated ***potentially significant physical (environmental) impacts***, including significant transportation, public services and utilities, visual, noise, air quality, storm drainage, flood control, geotechnical, and hazardous materials exposure impacts.

ABAG Projections 2002, which have been formulated based in large part on adopted local General Plan land use, housing and employment policies, indicate an anticipated 2000 to 2020 household and population growth increment of 2,974 households and 8,727 people in Petaluma (increases of 15 and 16 percent, respectively). As shown in Table 5.2, the net additional central area household and population growth increments associated with the proposed Specific Plan housing intensification policies are estimated to be up to approximately 1,617 households and 4,444 people, representing a substantial (over 50 percent) increase in the projected year 2000-2020 household and population growth increments for Petaluma indicated in Table 5.1.

Table 5.2
PROJECTED POPULATION, HOUSING AND EMPLOYMENT GROWTH INCREMENT IN THE
SPECIFIC PLAN AREA WITH THE PROPOSED SPECIFIC PLAN, 2003-2020

	<u>Total</u>	<u>Ave. Annual Increase, 2003-2020</u>
Estimated net additional households: ¹	1,617	95
Estimated net additional population: ²	4,444	261
Estimated net additional employees: ³	5,985	352

SOURCE: Wagstaff and Associates, 2003.

¹ Net additional households = net additional residential units from Table 3.1 herein.

² Net additional population = net additional households (1,617) x estimated population per average household; from Table 5.1, 64,200 (year 2020 population) ÷ 23,360 (year 2020 households) = 2.75; 2.75 x 1,617 = 4,444.

³ Commercial development would be composed of a mix of industrial, office, and retail uses, with the specific mix to be determined in the future. Net additional employment computation uses an average of commercial (350 s.f. per employee assumed); retail/restaurant (450 s.f. assumed per employee); and industrial (700 s.f. per employee assumed) for an average of 500 s.f. per employee. Maximum commercial development of 2,992,546 s.f./500 s.f. per employee = 5,985 new employees.

Mitigation 5-1: Implement all mitigation measures identified in Chapters 6 through 14 of this EIR. As explained in those chapters, implementation of the identified mitigation measures would reduce these impacts to *less than significant levels*, with the following exceptions:

- the growth increment could result in significant unavoidable adverse operational impacts on up to three local intersections and freeway onramps depending on the traffic scenario chosen (see Chapter 6, Impacts 6-3, 6-7 and 6-12); and a segment of U.S. 101 (Impact 6-13);
- the growth increment would result in significant unavoidable adverse long-term regional air emissions impacts; and
- the growth increment would result in significant unavoidable impacts to historic resources.

Permanent Employment Impacts. The project would encourage the development of additional commercial/retail/restaurant space, office space, and industrial space in the Specific Plan area. For purposes of "worst case" environmental impact assessment, this EIR assumes that the Specific Plan would be highly effective in stimulating such development. As indicated in Table 5.2, as many as 5,985 net additional jobs have been projected in this EIR for the Specific Plan area by the year 2020, facilitated in large part by the proposed project. This increase in the rate of central area job development would constitute a significant beneficial economic impact, and is a project goal. However, such a central area job increase could also result in significant secondary adverse impacts on traffic, public services, noise, air quality, etc., as discussed in corresponding, subsequent sections of this EIR.

Mitigation. No significant adverse permanent employment impacts have been identified; no mitigation is required.

Temporary Employment Impacts. Additional construction jobs would also be created by Specific Plan-related development over the project's approximately 20-year implementation period. The actual number of temporary jobs created by the project activities between 2003 and 2020 would depend on the construction dollars spent; a total cannot be accurately quantified at this time. Nevertheless, these project-generated employment opportunities would represent a significant, beneficial economic impact of the project. These construction jobs would also result in significant, temporary adverse noise and air quality impacts, which are discussed in corresponding, subsequent sections of this EIR.

Mitigation. No significant adverse impacts have been identified; no mitigation is required.

Jobs/Housing Balance Impacts. As shown by Table 5.2, the project-facilitated employment growth increment is projected to be substantially greater than project-facilitated housing growth; as a result, the project could be expected to contribute to a beneficial increase in the citywide jobs/housing ratio. Other factors, such as the match between local resident employee skills and the skills required for local jobs, and the match between local job compensation levels and local housing prices, also influence a community's actual jobs/housing relationship. Nevertheless, such an increase in the local jobs/housing ratio would be expected to contribute to a citywide reduction in outcommuting and thus would constitute a beneficial environmental impact.

Mitigation. No significant adverse jobs/housing balance impacts have been identified; no mitigations are required.

6. TRANSPORTATION AND CIRCULATION

This chapter describes (1) the existing and planned transportation system in the vicinity of the Central Petaluma Specific Plan area, including traffic, parking, bicycle, pedestrian, and transit provisions; (2) the anticipated impacts of Specific Plan-facilitated development on these provisions; and (3) associated mitigation needs generated by the two proposed Project scenarios.

6.1 SETTING

6.1.1 Citywide and Specific Plan Area Circulation and Access

Petaluma is located in southern Sonoma County, approximately 40 miles northwest of San Francisco. Petaluma lies within a flat plain separated by coastal hills from the Sonoma Valley to the east and Point Reyes to the west. The city occupies approximately 14 square miles of land bordered by rural Sonoma County and open-space land and is bisected by the Petaluma river. Petaluma has long supported a broad mix of uses, including industry, navigation, shipping, and trade, as well as general commercial stores and housing.

U.S. 101 forms the southern boundary of the Central Petaluma Specific Plan area and provides regional access to Petaluma. Regional motor vehicle access to the Specific Plan area is provided to and from U.S. 101 at East Washington Street, Lakeville Highway (State Route 116), D Street and Petaluma Boulevard. Petaluma's transportation system is unique in that three north-south obstacles inhibit east-west travel. The limited routes that cross U.S. 101, the river and the railroad comprise the most critical elements of the local street circulation system. The three important existing local streets that cross the river are Lakeville Street, East Washington Street, and D Street. There are no crossings of the river or the railroad south of D Street. Petaluma Boulevard South, at the southern edge of the City, crosses U.S. 101 south of D Street.

Tree-lined streets and pleasant pedestrian conditions characterize much of the area to the west of the Specific Plan area, which was laid out along radial streets that led to Downtown, with connecting streets parallel to Petaluma Boulevard and the river. However, within the Specific Plan area, many streets are not fully developed with sidewalks and the roadway "grid" pattern is discontinuous near the river and railroad tracks. Bicycle and pedestrian facilities are generally lacking within the Specific Plan area.

6.1.2 Specific Plan Area Opportunities

The Central Petaluma Specific Plan area is the largest development opportunity site within the City of Petaluma. The Specific Plan area offers some of the best opportunities for implementing "smart growth" concepts including in-fill development near downtown, high density development that will support transit, and a mix of uses that will maximize internalization of trips, promote a healthy pedestrian environment linked with the downtown and riverfront and allow for more efficient use of shared parking facilities.

The utilization of transit as a catalyst for development in Central Petaluma is specifically called out as a key goal of the Specific Plan. The Specific Plan area holds several opportunities for improving public transit services in Petaluma, including better utilization of existing transit lines that connect downtown with surrounding neighborhoods and existing commuter bus service that connects with other cities in Sonoma and Marin Counties and San Francisco. Regional transit services could also be offered along the Northwestern Pacific (NWP) Railroad. Construction of a viable transit station, such as the proposed bus transfer facility at the historic Petaluma Depot and additional transit stations proposed within the Specific Plan area at Copeland Street and Caulfield Lane would increase transit opportunities.

6.1.3 Motor Vehicle Circulation

The following subsection describes the roadway network serving the Specific Plan area.

(a) Street Classifications. Below are definitions of street classifications as provided in the Petaluma General Plan, 1987-2005:

Freeway: High speed/high-capacity transportation facility serving regional and county-wide travel. This limited access facility satisfies relatively long trips between major land use generators.

Arterial: These are either relatively high speed/ high capacity roads that provide access to regional transportation facilities and serve relatively long trips, or medium speed/medium capacity roads for intra-community travel as well as access to the rest of the county-wide arterial highway system.

Collector: A collector is a relatively low-speed/low volume street, typically two lanes, for circulation within and between neighborhoods. These roads serve relatively short trips and are meant to collect trips from local streets and distribute them to the arterial network.

Local Street: These are low speed/low volume roadways that provide direct access to abutting land uses. Driveways to individual units, on-street parking and pedestrian access are allowed.

In general, many of the existing streets within the planning area are in very poor condition, with below-standard pavement, curbs and gutters. Some streets have limited or no sidewalks. The overall street grid is incomplete and disjointed where it meets the river. The properties along

the river to the north of Washington Street, the McNear Peninsula, industrial uses along the McNear Channel, and parcels along Lakeville Street have significant access limitations imposed by the railroad and the lack of improved streets.

(b) Key Roadway Links. Existing streets and highways serving the Central Petaluma area are shown on Figure 6.1. As described above, regional roadway access to the area is provided by the U.S. 101 freeway via East Washington Street, Lakeville Street, D Street, and Petaluma Boulevard. Each of these roadway facilities is described below:

U.S. 101 is a major north-south State highway serving the west coast between Los Angeles and the Oregon border. In the Bay Area, U.S. 101 extends northward from San Francisco and the Golden Gate Bridge as a four-to-eight lane divided freeway through Marin County, reducing to four lanes with alternating freeway and highway segments through northern Marin County and Sonoma County. The widening of the U.S. 101 from four to six lanes through Petaluma is anticipated in the next five to ten years pending final approval and full funding.¹

U.S. 101 currently carries approximately 74,000 vehicles per day south of Lakeville Highway and 62,000 vehicles per day between Lakeville Highway (SR 116 East) and East Washington Street. Historical data indicates that the AM peak period (7:00 – 9:00 AM) southbound traffic flow at the Marin/Sonoma county line is currently congested due to (1) high traffic volumes, (2) the incline over the Petaluma River bridge, and (3) the transition south of the bridge from freeway to expressway, which causes frequent southbound backups that reach East Washington Street and beyond. Substandard interchange acceleration/deceleration lanes also slow traffic in some segments. In the PM peak period (4:00 – 6:00 PM), traffic flows in the northbound direction do not currently result in severe congestion within the City limits, in part as the result of the metering of traffic north of Novato where the U.S. 101 transitions from six lanes to four lanes.

East Washington Street is the major east-west arterial street serving the Specific Plan area and connecting Petaluma to Bodega Bay and the southwestern portions of Sonoma County. East Washington Street also provides one of the few roadway crossings of the Petaluma river in the central area vicinity. Within the Central Petaluma area, East Washington Street is a four-lane facility with median turn lanes at selected locations. High traffic volumes on East Washington Street occur in the PM peak hour at the U.S. 101 interchange. East Washington Street currently carries approximately 28,000 vehicles per day just east of the interchange and approximately 26,000 at the Petaluma river bridge. Pedestrian and bicycle facilities are minimal on East Washington Street, with narrow sidewalks and no bicycle lanes.

Lakeville Street is a major north-south local arterial comprised of four lanes south of D Street and two lanes north of East Washington Street. Lakeville Street also connects to the U.S. 101 freeway south of the Petaluma River. Traffic volumes on Lakeville Street are moderate, and highest near the U.S. 101 interchange, with approximately 27,000 vehicles per day. North of

¹*North Bay Business Journal*, 2001. November 24.

East Washington Street, Lakeville Street currently carries approximately 6,300 vehicles per day and approximately 8,400 vehicles per day between D Street and East Washington Street. On the east side of U.S. 101, Lakeville Street becomes a state highway (State Route 116 East), known as Lakeville Highway, connecting Petaluma with the town of Sonoma, the Carneros Valley, and southern Napa County to the east. While a short segment of Lakeville Street near the historic Petaluma Depot has European-style red-paved bicycle lanes, the bicycle facilities do not continue beyond that segment.

D Street is a two-lane local collector street that connects to rural western Marin County and the Marin coast to the west. Along with East Washington Street and Lakeville Street, D Street provides one of the few roadway crossings of the Petaluma River in the Central Petaluma Specific Plan area. D Street currently carries approximately 16,000 vehicles per day near the Petaluma River Bridge.

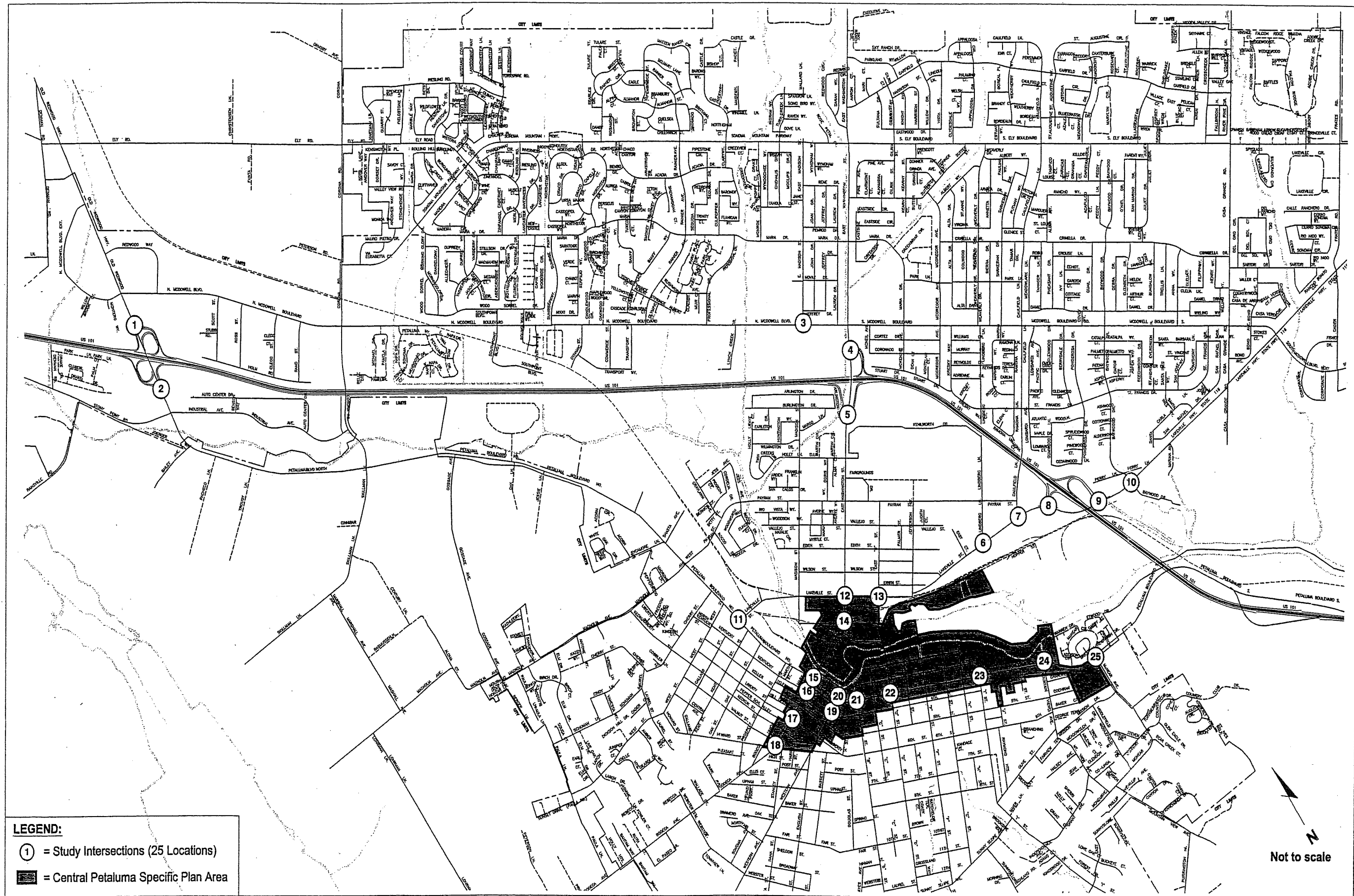
Petaluma Boulevard is the principal north-south arterial street serving the Specific Plan area and adjacent areas to the west. It is a four-lane facility with left-turn lanes at selected locations in the southern portion of the segment. Traffic volumes on Petaluma Boulevard are moderate to heavy, especially in the area north of D Street. Petaluma Boulevard currently carries approximately 19,000 vehicles per day north of East Washington Street and approximately 14,000 to the south. High volumes of pedestrians walk along and across Petaluma Boulevard within the downtown area. South of the downtown area, Petaluma Boulevard is characterized by a narrow shoulder width that forces motor vehicles to park in a manner that partially obstructs the sidewalk. At the north end of Petaluma, Petaluma Boulevard transitions into Redwood Highway as it crosses U.S. 101.

6.1.4 Study Intersections

Intersections, rather than midblock roadway segments, are almost always the critical capacity-controlling locations for urban and suburban roadway networks. The 25 study intersections listed in Table 6.3 (see p. 6-10) and shown on Figure 6.1 have been selected by the City and the EIR transportation consultants as those most likely to be affected by development in the proposed Specific Plan area and warranting study in this EIR.

a. Existing Traffic Volumes. Peak traffic in Petaluma usually occurs during the evening commute period between 4:00 and 6:00 PM. To ascertain existing roadway operational conditions, intersection operations have been evaluated using the highest one-hour volume counted during the PM peak hour at each study intersection based on traffic counts conducted in 2000. Additionally, levels of service were also determined for the AM peak hour for study intersections that include state facilities and interchanges.

b. Intersection Analysis Methodology. Level of service (LOS) is a qualitative grading system to describe traffic flow conditions. The LOS grading system considers such traffic flow factors such as speed, travel time, delay, and freedom to maneuver. Six levels of service or "grades"



LEGEND:
 ① = Study Intersections (25 Locations)
 ■ = Central Petaluma Specific Plan Area

North Arrow
 Not to scale

Figure 6.1
STUDY INTERSECTIONS
 Central Petaluma Specific Plan EIR • City of Petaluma, CA

SOURCE: Fehr & Peers
 Wagstaff and Associates • Urban and Environmental Planners

are typically used, ranging from LOS A, representing the best operating conditions, to LOS F, representing the worst operating conditions. LOS E represents "at capacity" operations. When actual volumes exceed intersection design capacity, stop-and-go conditions typically result and operations are designated as LOS F.

The Petaluma General Plan, 1987-2005 contains the following policies with regard to roadway level of service (LOS):

- On City streets where LOS C or better exists, LOS should not deteriorate below C.
- On City streets where LOS D or E exists, LOS should not deteriorate to the next level.¹

The proper level of service calculation methodology for intersections is dependent on the type of intersection control device--i.e., whether the intersection is controlled by traffic signals, stop signs, or roundabouts. The analysis methodology used in this EIR for each of these intersection types is described below.

Analysis of Signalized Intersections. The analysis in this EIR of operations at all signalized study intersections has been conducted using the methodology described in Chapter 16 of the *2000 Highway Capacity Manual (HCM)*.² This methodology determines the LOS rating based on the average "control delay" experienced at the intersection (in seconds per vehicle). "Control delay" includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration. The average delay for the various signalized study intersections was calculated using the Synchro Version 5.0 analysis software and is correlated to level of service designations (ratings) as summarized in Table 6.1.

Analysis of Unsignalized Intersections. For unsignalized (four-way, stop-controlled and side street, stop-controlled) study intersections, level of service calculations have been conducted using the methodology contained in Chapter 17 of the *2000 Highway Capacity Manual*. Similar to signalized intersections, LOS ratings are based on the "average control delay" expressed in seconds per vehicle. At two-way or side street-controlled intersections, the control delay (level of service) is calculated for each movement, not for the intersection as a whole. For approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. At four-way stop-controlled intersections, the LOS rating is based on the average control delay experienced on all approaches. Table 6.2 summarizes the relationship between delay and LOS for unsignalized intersections.

Analysis of Intersections with Roundabouts. For the analysis of intersections containing roundabouts, this study used the HCS2000 Highway Capacity Software. The Unsignalized Intersection Module used for Roundabouts is consistent with the methodologies contained in

¹Petaluma General Plan, 1987-2005, Transportation Section 10.3, p. 107.

²Transportation Research Board, 2000. *Highway Capacity Manual*.

Table 6.1
SIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

<u>Level of Service</u>	<u>Definition of Traffic Conditions</u>	<u>Average Control Delay Per Vehicle (Seconds)</u>
A	Operations with very low delay occurring with favorable progression and/or short cycle lengths.	≤ 10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	10.1 to 20.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.1 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, and high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	55.1 to 80.0
F	Operations with delays unacceptable to most drivers occurring due to over-saturation, poor progression, or very long cycle lengths.	> 80.0

SOURCE: Transportation Research Board, *Highway Capacity Manual*, 2000.

Note:
 V/C = volume-to-capacity.

Chapter 17 of the 2000 Highway Capacity Manual. The LOS ratings for a roundabout are based on volume-to-capacity ratios, which is derived from the relationship between approach capacity and circulating flow for the upper- and lower-bound values for critical gap time and follow-up time.

c. Intersection Assessment--Existing Conditions. Levels of service were measured at the 25 study intersections in the vicinity of the Central Petaluma Specific Plan area during the evening peak commute hours (4:00-6:00 PM). Table 6.3 lists each study intersection and the existing PM peak hour levels of service (see Figure 2 in Appendix 21.5 for detailed traffic volumes, turning movements and lane configurations for each of these 25 intersections).

Table 6.2
 UNSIGNALIZED INTERSECTION
 LEVEL OF SERVICE DEFINITIONS (INCLUDING ROUNDABOUTS)

<u>Level of Service</u>	<u>Definition of Traffic Conditions</u>	<u>Average Control Delay Per Vehicle (Seconds)</u>
A	Little or no delay	≤ 10.0
B	Short traffic delays	10.1 to 15.0
C	Average traffic delays	15.1 to 25.0
D	Long traffic delays	25.1 to 35.0
E	Very long traffic delays	35.1 to 50.0
F	Extreme traffic delays with intersection capacity exceeded	> 50.0

SOURCE: Transportation Research Board, *Highway Capacity Manual*, 2000.

As shown, most study intersections operate with an LOS of C or better with the exception of the eight study intersections shown in bold, which currently operate at LOS D or worse. Streets with multiple intersections currently operating at LOS D or worse include:

- East Washington Street
- Lakeville Street
- D Street
- Petaluma Boulevard

Table 6.4 displays the existing LOS for key State facilities and interchanges within the study area during the AM peak hour. (See Figure 3 in Appendix 21.5 for detailed traffic volumes, turning movements and lane configurations for each of these 12 intersections). As indicated in the table, 9 of the 12 study intersections or interchanges currently operate at LOS D or worse. Of the nine intersections or interchanges operating unacceptably, six are along the Lakeville Street (Hwy 116) corridor. The remaining three intersections operate acceptably at LOS C or better.

Table 6.3

EXISTING PM PEAK PERIOD LEVELS OF SERVICE AT STUDY INTERSECTIONS

No.	Intersection	Control	LOS ¹
1	U.S.101 NB Ramps/Redwood Hwy	Signal	C
2	U.S.101 SB Ramps/Redwood Hwy	Signal	C
3	McDowell Blvd/Madison St	Signal	B ²
4	U.S. 101 NB Ramps/East Washington St	Signal	D
5	U.S. 101 SB Ramps/East Washington St	Signal	C
6	Lakeville St/Lindberg Ln	Stop-Controlled	C ³
7	Lakeville St/Caulfield Ln	Signal	C
8	Lakeville St/U.S. 101 SB Ramps	Signal	B
9	Lakeville St/U.S. 101 NB Ramps	Signal	B
10	Lakeville Hwy (SR 116)/Baywood Dr	Signal	D
11	Petaluma Blvd/Lakeville St	Signal	F ⁴
12	East Washington St/Lakeville St	Signal	C
13	D St /Lakeville St	Signal	E
14	Copeland St/East Washington St	Stop-Controlled	F ³
15	Petaluma Blvd/East Washington St	Signal	D
16	East Washington St/Kentucky St	Signal	B
17	East Washington St/Liberty St	Stop-Controlled	F ³
18	East Washington St/Bodega Ave/Howard St	Signal	C
19	Western Ave/Kentucky St	Signal	A
20	Petaluma Ave/Western Ave	Signal	B
21	Petaluma Blvd/B St	Signal	A
22	Petaluma Blvd/D St	Signal	E
23	Petaluma Blvd/I St	Signal	B
24	Petaluma Blvd/Mountain View Ave	Signal	B
25	Petaluma Blvd/McNear Ave	Signal	A

Source: Fehr & Peers Associates, Inc., 2003.

Notes:

¹ LOS = Level of Service

² **Bold font** indicates unacceptable LOS of D or worse.

³ Indicates level of service for approach with highest delay.

⁴ *The Existing Conditions Report for Petaluma's General Plan 2025* identifies this intersection to operate at LOS B under the PM peak hour. However, the results from that analysis were derived from a more refined and sophisticated visual simulation tool, CORSIM, which provided a more accurate estimation of signal coordination.

Table 6.4
 EXISTING AM PEAK PERIOD LEVELS OF SERVICE STATE FACILITY
 INTERSECTIONS AND INTERCHANGES

No.	Intersection	LOS ¹
1	U.S.101 NB Ramps/Redwood Hwy	E
2	U.S.101 SB Ramps/Redwood Hwy	D
3	U.S. 101 NB Ramps/East Washington Street	C
4	U.S. 101 SB Ramps/East Washington Street	D ²
5	Lakeville St (SR 116)/Lindberg Ln	C ³
6	Lakeville St (SR 116)/Caulfield Ln	E
7	Lakeville St (SR 116)/U.S. 101 SB Ramps	D
8	Lakeville St (SR 116)/U.S. 101 NB Ramps	C
9	Lakeville Hwy (SR 116)/Baywood Dr	F
10	Petaluma Blvd/Lakeville St (SR 116)	D
11	East Washington St/Lakeville St (SR 116)	D
12	D St/Lakeville St (SR 116)	F

Source: Fehr & Peers, 2003.

Notes:

¹ LOS = Level of Service

² **Bold font** indicates unacceptable LOS of D or worse.

³ Indicates level of service for approach with highest delay.

⁴ *The Existing Conditions Report for Petaluma's General Plan 2025* identifies this intersection to operate at LOS B under the PM peak hour. However, the results from that analysis were derived from a more refined and sophisticated visual simulation tool, CORSIM, which provided a more accurate estimation of signal coordination.

6.1.5 U.S. 101 Segment Operations

Table 6.5 presents the PM peak hour traffic for both directions and existing LOS at four segments along the U.S. 101 corridor. As shown, the levels of service deteriorate from LOS C to LOS E as traffic volume on U.S. 101 increases from Lakeville Highway to the Redwood Highway interchanges.

6.1.6 Existing Parking Conditions

A parking study was conducted for the downtown and adjoining areas within the Central Petaluma Specific Plan area.¹ This study was conducted during December 2001 (to evaluate parking occupancy during holiday periods of peak parking demand) and included an inventory of the public parking supply (both on-street and off-street) within the parking study area. In general, the parking study found that mid-day parking occupancy rates during the holiday

¹"Petaluma Parking Survey" prepared by Wilbur Smith Associates, July 22, 2002.

Table 6.5
 EXISTING PM PEAK PERIOD LEVELS OF SERVICE U.S. 101 CORRIDOR
 SEGMENTS

PM Peak Period Segment		Volume ¹	Existing V/C	LOS
From	To			
Petaluma Blvd	Lakeville Hwy	6800	0.77	C
Lakeville Hwy	Washington St	7600	0.86	D
Washington St	Redwood Hwy	7600	0.86	D
Redwood Hwy	North to Penngrove	8300	0.94	E

Source: Caltrans Traffic Volume on California State Highways, 2001.

Note:

¹ Volumes indicate peak hour traffic for both directions.

² V/C = Volume to capacity ratio

³ LOS - Level of Service

season were generally around 70 to 80 percent, while the downtown core experienced periods of peak occupancy exceeding 90 percent (essentially full). The short-term parking supply was found to be generally fulfilling its purpose (i.e., was generally not occupied by long-term parkers such as downtown employees), indicating that parking management practices are generally effective in the core area.

6.1.7 Bicycle and Pedestrian Facilities

A key goal of the Petaluma General Plan is to reduce automobile dependence and enhance "alternative" modes of transportation, such as walking and bicycling. Pedestrian and bicycle access on arterial and collector streets is essential for pedestrians to reach activity centers and transit stops. State law permits bicycles on all roads except certain designated freeways and highways.

a. Bicycle Circulation. Given Petaluma's mild climate and flat topography, bicycling could become a fundamental component of everyday transportation in the city. The Petaluma General Plan, 1987-2005 and Bicycle Master Plan call for development of a comprehensive network of bikeways and bicycle support facilities. Bicycle facilities include bike paths, bike lanes, and bike routes, as well as bicycle support facilities such as bicycle parking. Bike paths are paved trails that are separated from the roadways. Bike lanes are lanes on roadways designated for use by bicycles by striping, pavement legends, and signs. Bike routes are roadways that are designated for bicycle use with signs. Additionally, the City currently evaluates the need for bicycle support facilities as part of the development review process.

The bikeway network has not been developed as a viable commute alternative in Petaluma or within the Specific Plan area. According to the 2000 Census, just 1.1 percent of Petaluma residents commute to work by bicycle (up from 0.9 percent in 1990). East-west connections are lacking, and the major roadways providing east-west access, such as Washington Street, do not include bicycle lanes. Just a short segment of Lakeville Street near the Petaluma Depot is striped with bicycle lanes.

b. Pedestrian Circulation. The City has established policies to encourage improvement of the pedestrian network, and Petaluma has many areas that seem especially conducive to walking for enjoyment and as a form of transportation, particularly within the Downtown area and West Side neighborhoods that include a grid of streets with a well-developed sidewalk network.

A pedestrian bridge across the Petaluma river links downtown with the Golden Eagle Shopping Center. The river is also accessible along the Turning Basin docks from the Golden Eagle Center to Cavanaugh Landing and the River House restaurant. However, the pedestrian connections between Downtown, the river, and adjacent neighborhoods within the Specific Plan area are not particularly well developed in most cases. Much of the Specific Plan area is not pedestrian friendly, particularly East Washington and Lakeville streets, which are wide streets that carry fast-moving traffic. The adjacent street grid does not fully extend to the river in many places, and is broken up by the railroad tracks on the east side.

6.1.8 Public Transit

Public transit does not play a major role in Petaluma's transportation network. Relatively low-density land use patterns and long intervals between buses have limited the ability of public transit to compete with the efficiency and convenience of the private automobile.

According to the 2000 Census, five percent of Petaluma's residents commute to work by transit, up from 4.2 percent in 1990. Bus service providers within the Specific Plan area include Petaluma Transit, Sonoma County Transit, and Golden Gate Transit. A brief description of each provider is provided below. Figure 6.2 illustrates the major transit routes serving Petaluma.

a. Petaluma Transit. Petaluma Transit provides "mini-bus" service within the City limits. Prior to 1996, the bus system was originally located at Fourth and C Streets, but due to problems with traffic congestion and limited parking, it was moved to the stop on Keller Street, between East Washington Street and Western Avenue. Buses operate on 60-minute intervals during weekdays. Petaluma Transit provides three fixed-routes that connect Washington Square, Petaluma Plaza, the library, and the downtown. Petaluma Transit focuses service along the Washington Street corridor, bounded by the downtown on the west end and Petaluma Plaza/Washington Square shopping centers on the east end.

b. Sonoma County Transit. Sonoma County Transit provides connections to Santa Rosa, Sonoma, Rohnert Park and other destinations within Sonoma County. Sonoma County Transit provides three routes (Routes 40, 44, and 48) within Petaluma. Route 40 connects Petaluma and Sonoma using D Street, Lakeville Highway, and Frates Road. Bus intervals are generally every 90 minutes on weekdays only. Both Routes 44 and 48 provide bus service between Petaluma and Santa Rosa. Route 44 provides service along Washington Street and McDowell Boulevard and Route 48 provides service along Petaluma Boulevard and Old Redwood Highway. Bus intervals vary from 50 minutes to two hours, depending on the time of day. These routes operate on weekdays, with limited hours on weekends.

c. Golden Gate Transit. Golden Gate Transit provides southbound service to Marin County and San Francisco during the morning peak hours and northbound service during the evening peak hours. Golden Gate Transit operates primarily as a commuter service along the U.S. Highway 101 corridor. During peak hours of operation, typical intervals between buses are five to 10 minutes. Little or no service is provided outside of the peak hours in the peak direction. The two main routes are:

- Route 76, which provides service from Rohnert Park and the East Side of Petaluma to San Francisco via Ely Road, Sonoma Mountain Parkway and McDowell Boulevard.
- Route 74, which provides service from Santa Rosa and Petaluma to San Francisco via Petaluma Boulevard and the Downtown bus depot.

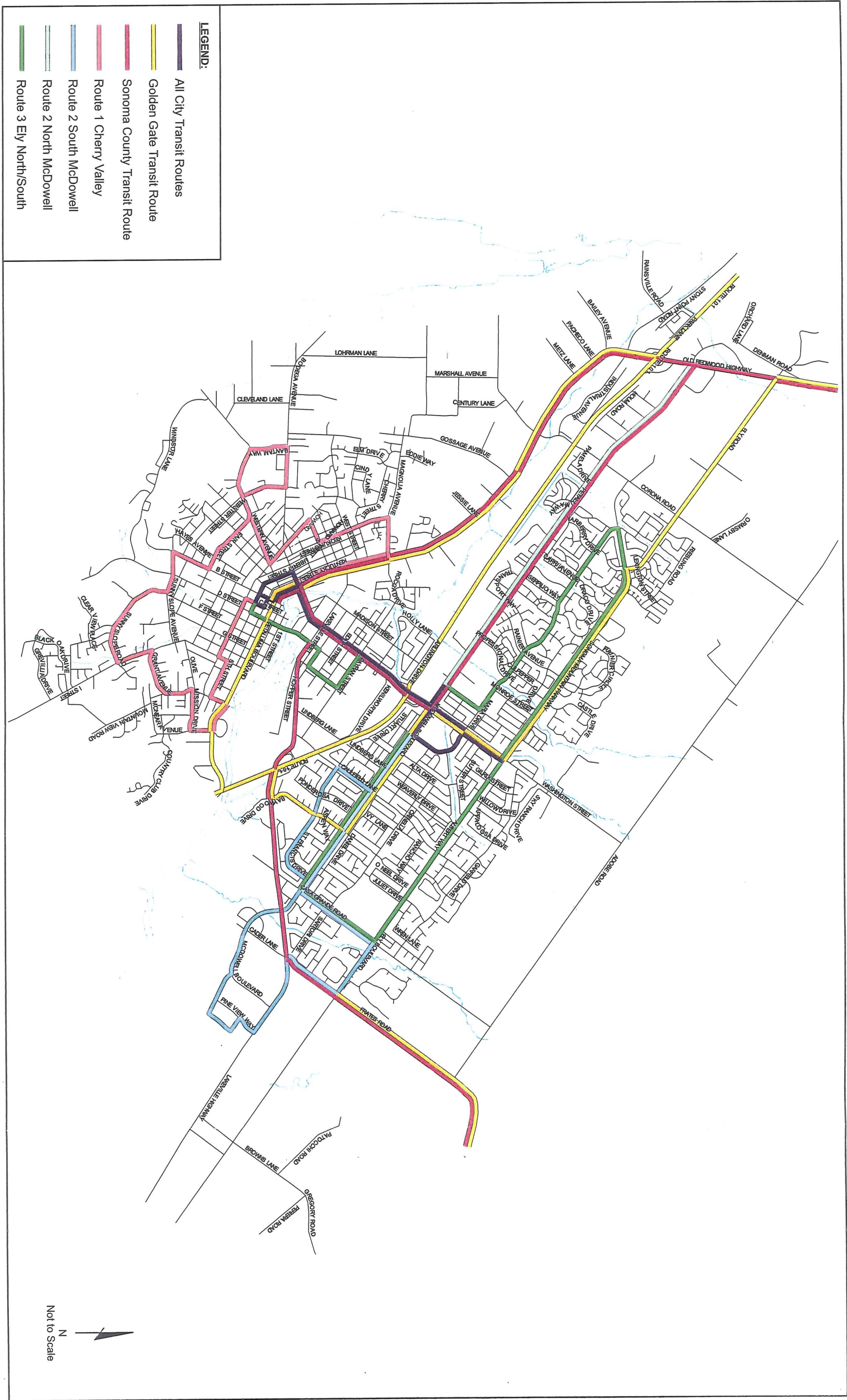
6.2 PERTINENT PLANS AND POLICIES

City and regional plans and policies in place that affect transportation in Petaluma and are relevant to consideration of the environmental impacts of the proposed project are described below.

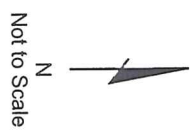
6.2.1 Petaluma General Plan, 1987-2005

The Petaluma General Plan Transportation Element (adopted in 1987) contains objectives and policies aimed at improving circulation for motor vehicles, transit, pedestrians and bicycles within the City. A key goal of the General Plan is to “*reduce dependence on the automobile by integrating, to the extent feasible, alternative transportation modes as a fundamental component of the City’s transportation system*”.

A key emphasis of the 1987 General Plan was improving east-west connections across the Petaluma river and U.S. 101. Specific recommendations include widening of Corona Road and improvements to Washington Street. The General Plan also includes recommendations for two new East-West connections that have not yet been implemented: (1) the proposed “Rainier Overcrossing and Interchange” north of the Central Petaluma Specific Plan area which would cross the Petaluma River and connect Petaluma Boulevard and U.S. 101; and (2) the

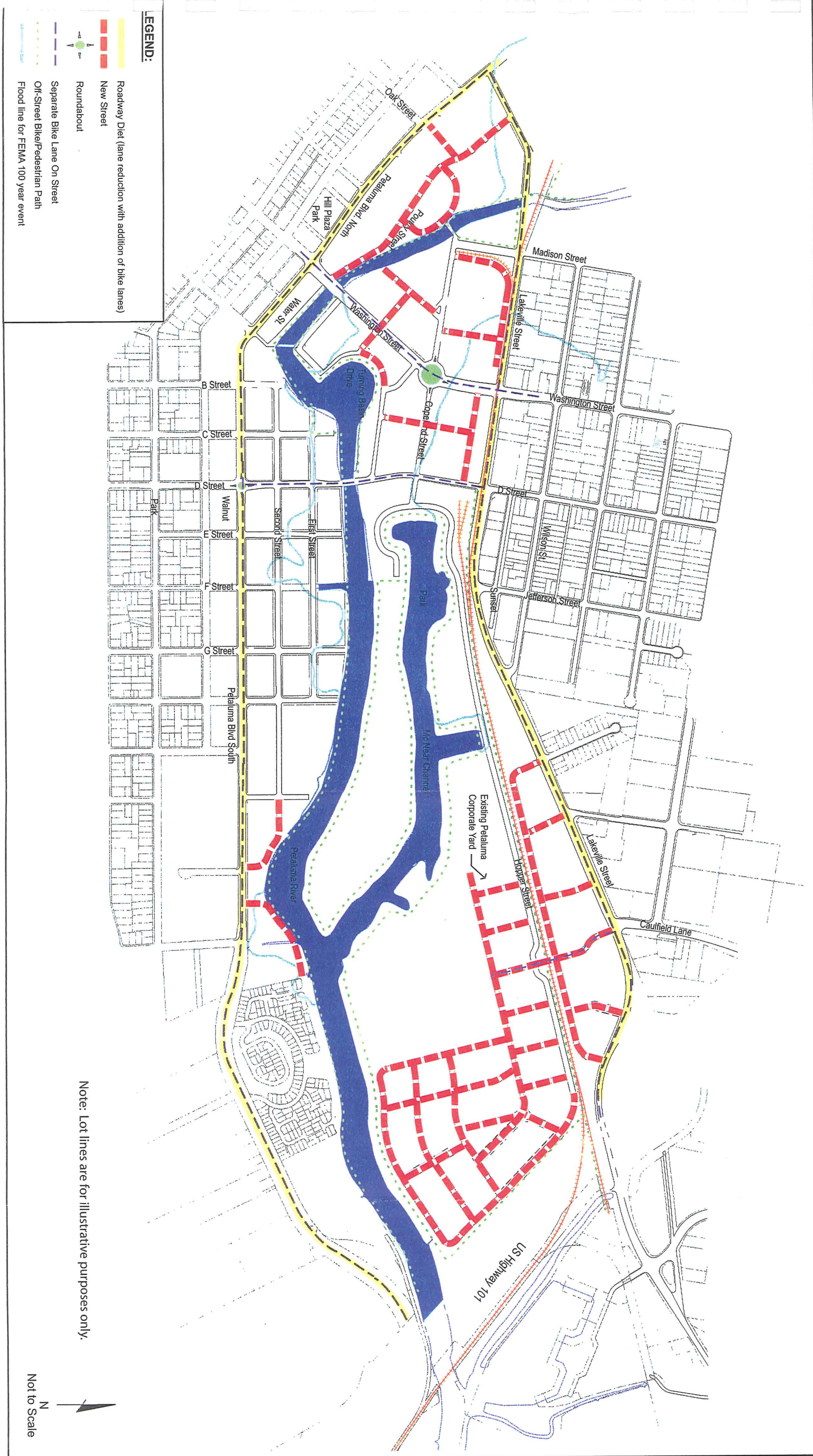


- LEGEND:**
- All City Transit Routes
 - Golden Gate Transit Route
 - Sonoma County Transit Route
 - Route 1 Cherry Valley
 - Route 2 South McDowell
 - Route 2 North McDowell
 - Route 3 Ely North/South



SOURCE: Fehr & Peers

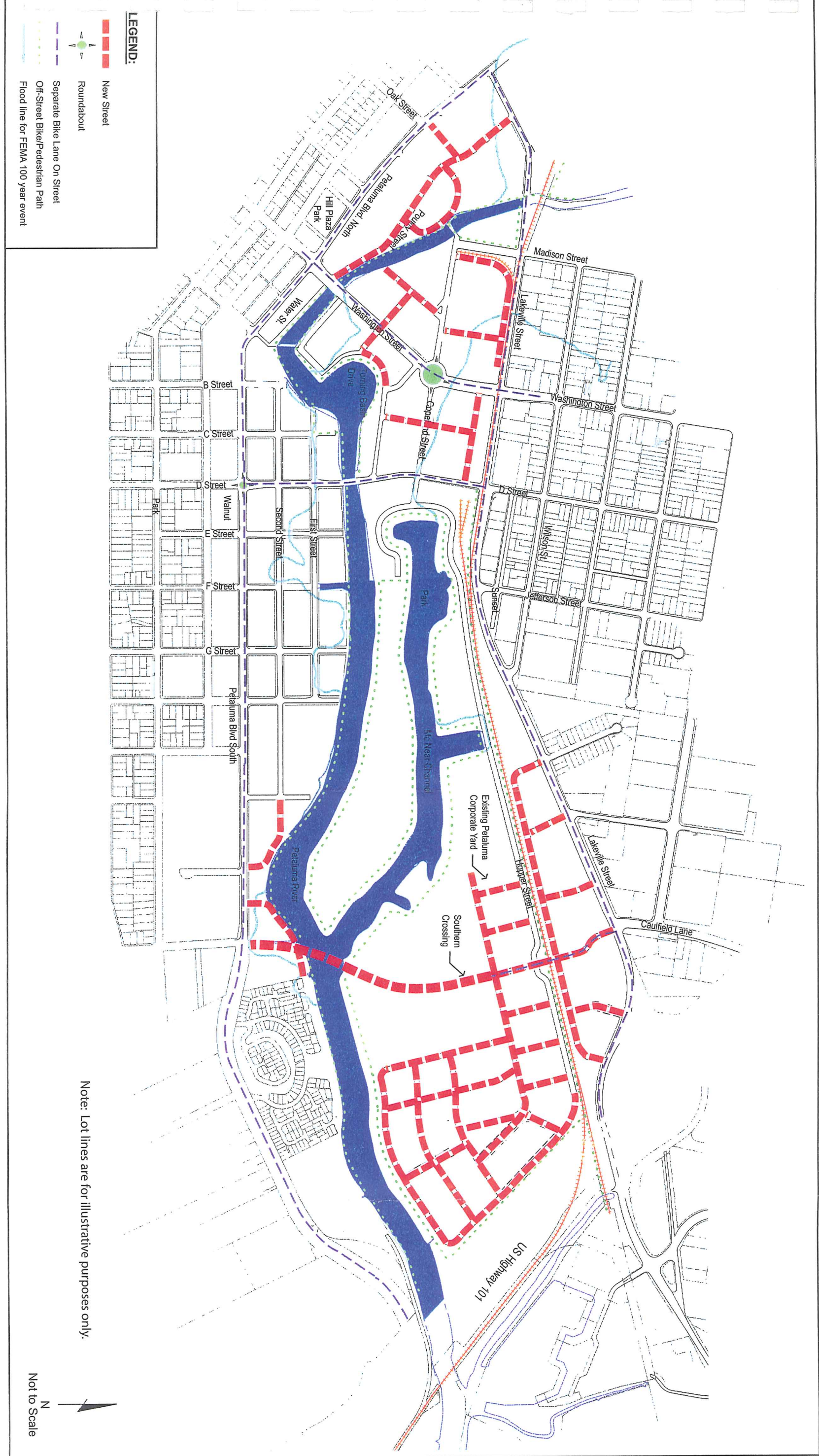
Figure 6.2
EXISTING TRANSIT ROUTES



SOURCE: Thoroughfare Map, Central Petaluma Smart Code

Figure 6.3

**PROPOSED ROADWAY IMPROVEMENTS--
CUMULATIVE WITH PROJECT (SCENARIO 1)**



SOURCE: Thoroughfare Map, Central Petaluma Smart Code

Figure 6.4

**PROPOSED ROADWAY IMPROVEMENTS--
CUMULATIVE WITH PROJECT (SCENARIO 2)**

proposed "Southern Crossing" of the Petaluma River, within the Specific Plan area, that would connect Petaluma Boulevard with the Lakeville Highway at Caulfield Lane. It should be noted that neither of the proposed roadway crossings is funded at this time. The City is currently updating the General Plan and it has not yet been decided whether the two recommended crossings will be retained for future consideration. The transportation analysis conducted for the Specific Plan assumes construction of the Rainier Overcrossing and considered future scenarios with and without the Southern Crossing.

6.2.2 Other Plans and Proposals

As noted in the Specific Plan, there are a number of plans and proposals to improve access and circulation to the plan area, both regionally and locally. These include regional improvements to U.S. 101 (widening from four to six lanes) and State Route 116 (Lakeville Highway), improvements to the City's arterial road system, implementation of bicycle improvements envisioned by the City of Petaluma's *Bicycle Master Plan*, and improvements to pedestrian circulation.

Additionally, conceptual plans for rail transit along the NWP Railroad, as recommended by the General Plan, have included preliminary studies indicating that the system would carry 20,000-25,000 passengers daily if implemented between Cloverdale and San Rafael. The proposed rail system would include a station stop at the Petaluma Depot and possibly a second station, at Caulfield Lane, as recommended by the Specific Plan. Implementation of the proposed rail system would require approval of funding by voters in Marin and Sonoma counties.

The City's River Access and Enhancement Plan provides for extending the pedestrian network into the area. A pedestrian trail is planned along the river in the northern portion of the area. Through the downtown and Depot area, bicycles and pedestrians would use the Copeland Street alignment to link to McNear Peninsula, and pedestrian trail would be established along the riverfront. A trail bridge over the Petaluma River is proposed to the north of the Washington Street Bridge. An optional crossing is identified over the McNear Channel to McNear Peninsula, south of D Street.

6.3 IMPACTS AND MITIGATION MEASURES

This section describes future transportation conditions in Petaluma for three traffic scenarios and identifies impacts and mitigation measures for each scenario.

Cumulative No Project Scenario identifies the expected transportation conditions under cumulative conditions. Cumulative conditions represent conditions with assumed development of all undeveloped parcels in Petaluma consistent with the existing General Plan designations. In addition, it incorporates development assumptions from pipeline projects. Cumulative conditions represent at least 20 years of growth so would be representative of at least 2020 conditions. Under the Cumulative No Project scenario, some land use and transportation changes envisioned by the Specific Plan are assumed to occur. In this case, the land use

designations envisioned by the 1987 Petaluma General Plan would be retained and the following transportation improvements would be developed:

- Widening Corona Road to five lanes (four through lanes and a left-turn lane/median) from Petaluma Boulevard to North McDowell Boulevard.
- Widening Washington Street between North McDowell Boulevard the U.S. 101 interchange ramps to accommodate special channelization for turn lanes necessitated by the increasingly heavy turn volumes at the intersections;
- Building a four-lane divided arterial along Rainier Avenue from North McDowell Boulevard to Petaluma Boulevard North with an overcrossing and interchange with U.S. 101; and
- Providing a southern crossing of the Petaluma River to connect Petaluma Boulevard South, from below the U.S. 101 bridge over the Petaluma River, to Lakeville Street near Caulfield Lane.

Cumulative Plus Project Scenario 1 assumes none of the General Plan transportation improvements listed above would occur, including the southern crossing. Land use and transportation changes envisioned by the Specific Plan would be adopted, including the following assumptions:

- “Road Diets” (i.e., lane reduction from four to two lanes with the addition of bike lanes) would be carried out on Lakeville Street and Petaluma Boulevard to calm traffic and enhance travel conditions for pedestrians and bicyclists; and
- New local streets and roadway improvements, including extension of the City’s street grid on both the north and south side of the Petaluma River, would be made.

These improvements are diagrammatically illustrated in Figure 6.3.

Cumulative Plus Project Scenario 2 assumes the same land use changes envisioned by the Specific Plan as outlined for Scenario 1, above, with the following changes:

- the southern crossing would be built; and
- the “Road Diets” (on Lakeville Street and Petaluma Blvd.) would not occur.

These improvements are diagrammatically illustrated in Figure 6.4.

6.3.1 Significance Criteria

(a) Motor Vehicle Impact Criteria. Based on the *CEQA Guidelines*, the project would be considered to create a significant impact on motor vehicle traffic or parking conditions if it would:¹

- (1) Cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections);
- (2) Substantially increase hazards due to a design feature (i.e., sharp curves or dangerous intersections) or incompatible uses;
- (3) Result in inadequate emergency access;
- (4) Result in inadequate parking capacity; or
- (5) Conflict with adopted policies, plans, or programs supporting alternative transportation.

Based on existing CEQA and Petaluma standards, traffic impacts at intersections are identified in this EIR chapter as significant if the addition of project traffic would cause:

- Operations (LOS) at a signalized intersection to deteriorate from an acceptable level (LOS C or better) under existing conditions to an unacceptable level (LOS D, E or F);
- For an intersection that is operating at an unacceptable level under existing conditions, that LOS deteriorates to the next lowest level.
- For signalized intersections currently operating at LOS F, an impact shall be considered significant if the project would add trips to the intersection;
- For an unsignalized intersection average delay at an unsignalized intersection already operating at an unacceptable level (LOS E or F) to increase by five or more seconds and the traffic volumes at the intersection would satisfy the Caltrans Peak-Hour Volume warrant for traffic signal installation.

Based on common CEQA practice, traffic impacts on the study freeway segments are identified in this EIR as significant if the addition of project traffic would:

- (6) Cause the volume on the freeway segment to exceed its capacity; or

¹CEQA Guidelines, Appendix G, item XV(a) and (d) through (g).

- (7) Increase the amount of traffic on a freeway segment already exceeding its capacity by more than one percent of the freeway segment's design capacity.

(b) Pedestrian and Bicycle Impact Criteria. A pedestrian or bicycle impact is considered to be significant in this EIR analysis if the project would:

- (8) Result in unsafe pedestrian and/or bicycle traffic flow patterns;
- (9) Exacerbate a current unsafe pedestrian and/or bicycle condition in the project area;
- (10) Restrict or compromises pedestrian and/or bicycle flows within the area; or
- (11) Not provide secure and safe bicycle parking in adequate proportion to anticipated demand for bicycle parking.

(c) Transit Impact Criteria. A transit impact is considered to be significant in this EIR analysis if the project would:

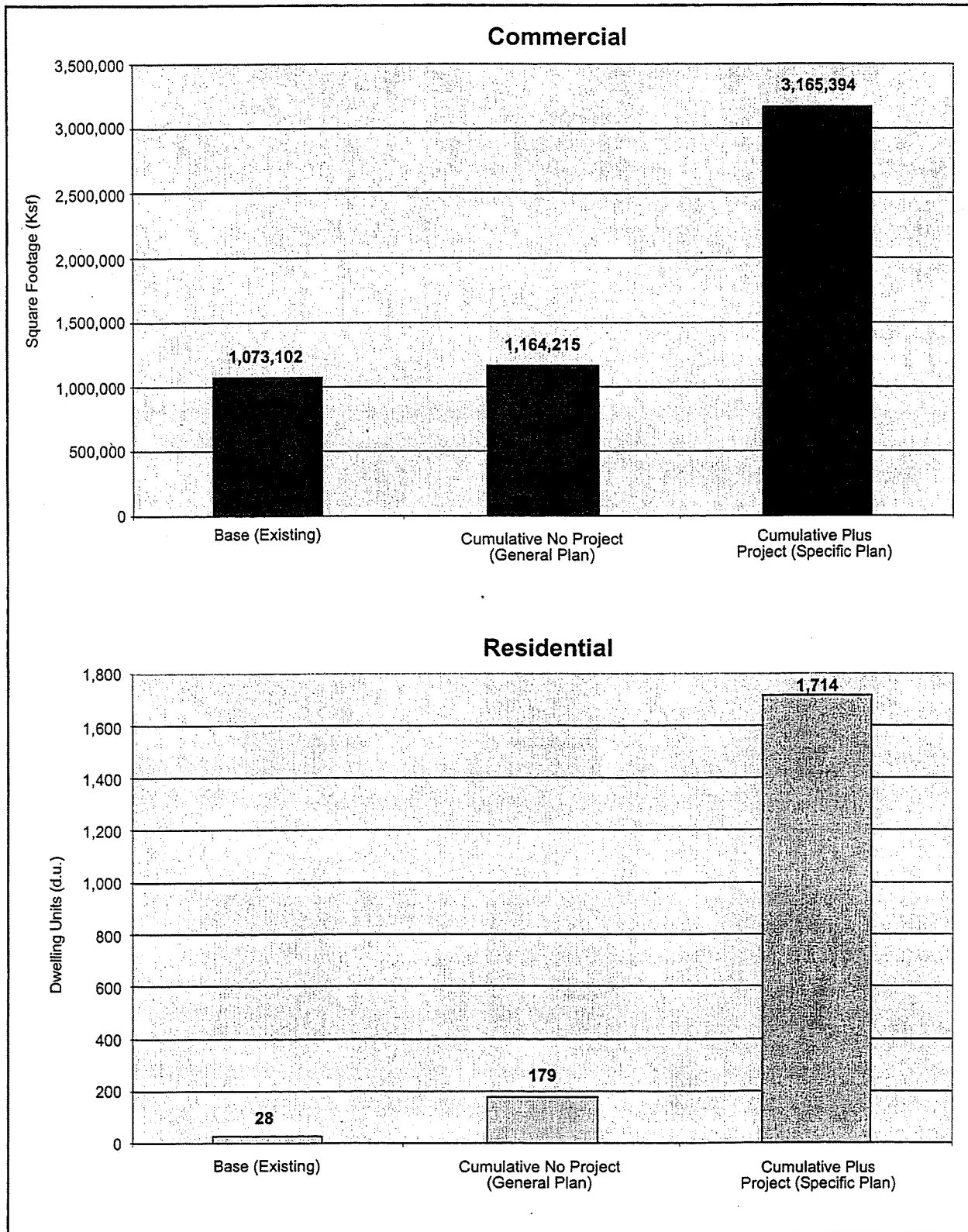
- (12) Result in a significant unanticipated increase in transit patronage; or
- (13) Be inaccessible to transit riders (accessibility is defined as within one-quarter mile of a transit stop).

6.3.2 Motor Vehicle Traffic Impacts and Mitigations

This section describes the increase in motor vehicle traffic (measured in trips) that is expected to be generated by the cumulative No Project and two with-Project scenarios and the corresponding impact on motor vehicle circulation that would result, as measured by projecting the level of service (LOS) at each study intersection or freeway segment for the No Project and Project scenarios through utilization of the City of Petaluma's TransCAD transportation model.

(a) Trip Generation. Figure 6.5 provides a comparison between the level of residential and commercial development for Existing Conditions (Base), Cumulative No Project Conditions (General Plan land uses), and Cumulative Plus Project (Central Petaluma Specific Plan land uses). As shown, development in accordance with the proposed Specific Plan would represent a substantial increase in the amount of commercial space (in thousands of square feet) and housing units within the Specific Plan area.

Cumulative No Project Scenario. Cumulative development of General Plan land uses is expected to generate approximately 85,000 net new Daily trips and approximately 7,200 net new PM peak hour trips.



SOURCE: Fehr & Peers

Figure 6.5

LAND USE COMPARISON

Cumulative Plus Project Scenario 1 & Scenario 2. The residential land use component of the proposed Specific Plan includes approximately 1,617 housing units. The commercial component of the proposed Specific Plan includes approximately 2,993,000 square feet of commercial space. In total, the proposed Specific Plan is therefore expected to generate approximately 115,000 net new daily trips and approximately 11,120 net new PM peak-hour trips. Since these figures do not include internalization of trips resulting from complimentary, dense land uses, and other trip reductions, the TransCAD model traffic projections are comparable to the estimates derived using ITE trip rates.

(b) Projected Trip Distribution and Trip Assignment. In TransCAD, the trip assignment process determines the route that each vehicle-trip follows to travel from origin to destination. The model selects these routes in a manner that is sensitive to congestion and the desire to minimize overall travel time. TransCAD uses an iterative, capacity-restrained assignment and equilibrium volume adjustments. This technique finds a travel path for each trip that minimizes the travel time, with recognition of the congestion caused by other trips.

(c) Intersection Assessment – Future Conditions. The TransCAD model yields daily and PM peak hour traffic forecasts for local roadways. Based on these data, intersection turning movements were derived through a factoring process that uses existing turning movement volumes, projected approach and turning movement volumes and balances intersection approach and departure volumes. AM peak hour forecasts were derived by applying the current ratio of AM to PM peak hour traffic volumes to the projected PM peak hour roadway volumes.

Table 6.6 compares the PM peak hour existing levels of service for each study intersection to the resulting levels of service under Cumulative No Project and Cumulative Plus Project conditions. (Detailed traffic volumes, turning movements and lane configurations for the Cumulative No Project and the two With-Project scenarios are shown in Figures 8, 9, and 10 in Appendix 21.5.) As shown in Table 6.6, the eight study intersections currently operating at LOS D or worse will continue to operate unacceptably under Cumulative No Project conditions. However, at three intersections that currently operate at LOS E or F (Petaluma Boulevard/Lakeville Street, D Street/Lakeville Street, and Petaluma Boulevard/D Street), transportation improvements envisioned by the 1987 General Plan would improve traffic operations to LOS D under Cumulative No Project conditions during the PM peak hour. These improvements, which include the construction of the Southern Crossing (Caulfield Extension), Rainier Interchange, and the widening of U.S. 101 from four to six lanes, are expected to alleviate the congestion that currently exists at these study intersections. As indicated in Table 6.6, three additional study that are expected to operate unacceptably under Cumulative Plus Project conditions are indicated in bold: U.S. 101 NB ramps/Redwood Highway, Lakeville Street/Lindberg Lane, and Lakeville Street/U.S. 101 Southbound ramps.

Table 6.6 indicates that, under Cumulative Plus Project Scenario 1, the eight study intersections currently operating at LOS D or worse would continue to operate unacceptably. However, at one intersection that currently operates at LOS E (Petaluma Boulevard/D Street),

Table 6.6
 PM PEAK PERIOD INTERSECTION LEVELS OF SERVICE (LOS) --CUMULATIVE NO
 PROJECT AND PLUS PROJECT

No.	Intersection	Existing Conditions	Levels of Service (LOS)		
			No Project (General Plan)	Cumulative Plus Project (Scenario 1)	Cumulative Plus-Project (Scenario 2)
1	U.S.101 NB Ramps/Redwood Hwy	C	D ¹	E	E
2	U.S.101 SB Ramps/Redwood Hwy	C	C	D	D
3	McDowell Blvd/Madison St	B	C	C	C
4	U.S. 101 NB Ramps/East	D	C	D	C
5	U.S. 101 SB Ramps/East	C	C	E	D
6	Lakeville St/Lindberg Ln ¹	C	D	C	C
7	Lakeville St/Caulfield Ln	C	D	F	E
8	Lakeville St/U.S. 101 SB Ramps	B	D	C	D
9	Lakeville St/U.S. 101 NB Ramps	B	C	C	C
10	Lakeville Hwy (SR 116)/Baywood Dr	D	F	F	F
11	Petaluma Blvd/Lakeville St	F	D	F	D
12	East Washington St/Lakeville St	C	C	D	D
13	D St/Lakeville St	E	D	F	F
14	Copeland St/East Washington St	F ²	F	F	F
15	Petaluma Blvd/East Washington St	D	D	E	D
16	East Washington St/Kentucky St	B	B	B	B
17	East Washington St/Liberty St ¹	F	F	F	F
18	East Washington St/Bodega Ave/ Howard St	C	C	C	C
19	Western Ave/Kentucky St	A	A	B	A
20	Petaluma Ave/Western Ave	B	B	B	B
21	Petaluma Blvd/B St	A	A	A	A
22	Petaluma Blvd/D St	E	D	D	E
23	Petaluma Blvd/I St	B	B	F	B
24	Petaluma Blvd/Mountain View Ave	B	B	B	B
25	Petaluma Blvd/McNear Ave	A	A	B	A

Source: Fehr & Peers, 2003.

Notes:

¹ Bold font indicates LOS D or worse.

² For unsignalized intersections, level of service reported is for approach with highest delay.

operations would improve to LOS D. Six additional intersections would operate at LOS D or worse under Cumulative Plus Project Scenario 1.

For Cumulative Plus Project Scenario 2, Table 6.6 indicates that the eight study intersections currently operating at LOS D or worse would continue to operate unacceptably, with the exception of the following intersections: U.S. 101 northbound ramps/East Washington Street, which would operate at LOS C. In addition, the Petaluma Boulevard/Lakeville Street and Lakeville Street/Lindberg Lane intersection would improve from LOS F to LOS D operations. Six additional intersections would operate at LOS D or worse under Cumulative Plus Project Scenario 2.

Table 6.7 compares the existing and cumulative levels of service for key State facilities and interchanges within the study area during the AM peak hour. (Detailed traffic volumes, turning movements and lane configurations for the Cumulative No Project and the two With-Project scenarios are shown in Figures 11, 12 and 13 in Appendix 21.5.) As shown, 3 of the 12 study intersections that currently operate at LOS C will maintain current operations under Cumulative No Project and Cumulative Plus Project conditions: East Washington Street/U.S. 101 Northbound ramps, Redwood Highway/U.S. 101 Southbound ramps, Lakeville St./Lindberg Lane and Lakeville St./U.S. 101 Northbound ramps. Likewise, other study intersections currently operating unacceptably at LOS D or worse will continue to operate unacceptably under the Cumulative No Project and Cumulative Plus Project scenarios.

(d) Freeway Segments – Future Conditions. Table 6.8 presents the peak hour traffic for both directions and resulting levels of service at five segments along the U.S. 101 corridor under Cumulative No Project and Cumulative Plus Project conditions. This analysis assumes that U.S. 101 would be widened from four to six lanes (with an HOV lane) and the Rainier Avenue Interchange would be in-place. As shown, the level of service on each segment of U.S. 101 would improve one-level higher from its current level under Cumulative No Project conditions during the peak hour. However, the construction of the Rainier Avenue Interchange would potentially increase the volume on the segment of U.S. 101 between the Washington Street and Redwood Highway Interchanges (within the study area), therefore resulting in traffic operations to deteriorate from LOS D to E. With the addition of project traffic, the levels of service on all segments of U.S. 101 are expected to deteriorate one service level under Cumulative Plus Project (both scenarios) conditions. In addition, project traffic would substantially increase the volume along the segment of U.S. 101 between the Washington Street and Rainier Avenue Interchanges, causing the volume on this particular segment to exceed its capacity and resulting in LOS F. In general, the proposed project is expected to generate a substantial amount of project trips which would increase local and regional traffic, particularly within the Central Petaluma Specific Plan area. However, these forecasts are conservative since they do not take into account the potential benefits of the proposed regional transit system and underestimates the potential for internalization of trips due to the mix of land uses within the Specific Plan area.

(e) Motor Vehicle Traffic and Parking -- Impacts and Mitigations. The following impacts to traffic have been identified:

Table 6.7
 AM PEAK PERIOD STATE FACILITIES INTERSECTIONS AND INTERCHANGES
 LEVELS OF SERVICE (LOS) -- CUMULATIVE NO PROJECT AND PLUS PROJECT

No.	Intersection	Existing Conditions	Levels of Service (LOS)		
			Cumulative No Project (General Plan)	Cumulative Plus Project (Scenario 1)	Cumulative Plus Project (Scenario 2)
1	U.S.101 NB Ramps/Redwood Hwy	E	E	E	E
2	U.S.101 SB Ramps/Redwood Hwy	D	D	D	D
4	U.S. 101 NB Ramps/East Washington St	C	C	C	C
5	U.S. 101 SB Ramps/East Washington St	D	D	D	D
6	Lakeville St/Lindberg Ln. ¹	C	C	C	C
7	Lakeville St/Caulfield Ln. ¹	E	E	E	E
8	Lakeville St/U.S. 101 SB Ramps	D	D	D	D
9	Lakeville St/U.S. 101 NB Ramps	C	C	C	C
10	Lakeville Hwy (SR 116)/Baywood Dr	F	F	F	F
11	Petaluma Blvd/Lakeville St	D	D	D	D
12	East Washington St/Lakeville St	D	D	D	D
13	D St/Lakeville St	F	F	F	F

Source: Fehr & Peers, 2003.

Notes:

¹ For unsignalized intersections, LOS reported is for approach with the highest delay.

BOLD FONT indicates LOS D or higher.

Table 6.8
 PM PEAK PERIOD U.S. 101 CORRIDOR SEGMENTS LOS --CUMULATIVE NO PROJECT AND PLUS PROJECT

PM Peak Period		Cumulative No Project				Cumulative Plus Project (Scenario 1)				Cumulative Plus Project (Scenario 2)			
Segment		Volume	V/C	LOS	Volume	V/C	LOS	Volume	V/C	LOS	Volume	V/C	LOS
From	To	NB	SB		NB	SB		NB	SB		NB	SB	
Petaluma Blvd	Lakeville Hwy	3840	3900	0.70	B	4230	4480	0.79	C	3940	4170	0.74	C
Lakeville Hwy	Washington St	4240	4570	0.80	C	4580	4720	0.85	D	4480	4740	0.84	D
Washington St	Rainier Ave	5490	5270	0.98	E	5800	5400	1.02	F	5850	5410	1.02	F
Rainier Ave	Redwood Hwy	5490	5220	0.97	E	5860	5360	1.02	F	5880	536	1.02	F
Redwood Hwy	To Penngrove	4950	4750	0.88	D	5240	4990	0.93	E	5240	499	0.9	E

Source: Fehr & Peers, 2003.

Impact 6-1: Cumulative Plus Project Impact on the US 101 Northbound Ramps/Redwood Highway Intersection. Under Cumulative No Project conditions, the intersection is expected to deteriorate from LOS C to LOS D during the PM peak hour. Under Cumulative Plus Project conditions (both scenarios), the intersection is expected to operate at LOS E during the PM peak hour. The addition of project traffic is expected to increase the average delay at the intersection by 25.1 seconds under Project Scenario 1 and 20.1 seconds under Project Scenario 2. This effect would represent a ***potentially significant impact***. (See criterion (1) under subsection 6.31, "Significance Criteria," above.)

Mitigation 6-1. Mitigation shall include reassigning the northbound off-ramp right-turn movement (which is currently stop-controlled) to a "free" northbound right-turn lane (i.e., a right turn lane that would not be controlled by the traffic signal) and associated receiving lane. The level of service analysis conducted for this EIR indicates that this improvement would provide acceptable operations (LOS B) during the PM peak hour under the Cumulative No Project and the Cumulative Plus Project scenarios. Implementation of this measure would reduce this potential impact to a ***less-than-significant level***.

Impact 6-2: Cumulative Plus Project Impact on the US 101 Southbound Ramps/Redwood Highway Intersection. Under Cumulative No project conditions, the intersection is expected to maintain its current level of service (LOS C) during the PM peak hour. Under Cumulative Plus Project conditions (both scenarios), the intersection is expected to deteriorate from LOS C to LOS D during the PM peak hour. The addition of project traffic is expected to increase the average delay at the intersection by 4.0 seconds under Project Scenario 1 and 3.5 seconds under Project Scenario 2. This effect would represent a ***potentially significant impact***. (See criterion (1) under subsection 6.3.1, "Significance Criteria," above).

Mitigation 6-2. Mitigation for this impact shall include reassigning the southbound off-ramp right-turn movement (which is currently stop-controlled) to a "free" southbound right-turn lane (i.e., a right turn lane that would not be controlled by the traffic signal) and associated receiving lane. The level of service analysis conducted for this EIR indicates that this improvement would provide acceptable operations (LOS C) during the PM peak hour under the Cumulative Plus Project scenarios. Implementation of this measure would reduce this potential impact to a ***less-than-significant level***.

Impact 6-3: Cumulative Plus Project Impact on the US 101 Southbound Ramps/East Washington Street Intersection. Under Cumulative No Project conditions, the intersection is expected to maintain its current level of service (LOS C) during the PM peak hour. The intersection is expected to deteriorate from LOS C to LOS E under Project Scenario 1 and LOS D under Project Scenario 2 during the PM peak hour. The addition of project traffic is expected to increase the average delay at the intersection by 29.5 seconds under Project Scenario 1 and 13.8 seconds under Project Scenario 2. This effect would represent a ***potentially significant impact***. (See criterion (1) under subsection 6.31, "Significance Criteria," above.)

Mitigation 6-3. Mitigation for this impact shall include providing dual right-turn lanes at the southbound ramp. The level of service analysis conducted for this EIR indicates that this improvement would not provide acceptable operations, but would improve operations to LOS D during the PM peak hour under Project Scenario 1. Therefore, this would constitute a ***significant unavoidable impact*** for Scenario 1. However, this improvement would provide acceptable operations (LOS C) during the PM peak hour under Project Scenario 2. Implementation of this measure would reduce this potential impact to a ***less-than-significant level***.

Impact 6-4: Cumulative Plus Project Impact on the Lakeville Street/Caulfield Lane Intersection. Under Cumulative No Project conditions, the intersection is expected to deteriorate from LOS C to LOS D during the PM peak hour. Under Cumulative Plus Project conditions, the intersection is expected to operate at LOS F under Project Scenario 1 and LOS E under Project Scenario 2 during the PM peak hour. The addition of project traffic is expected to increase the average delay at the intersection by 43.9 seconds under Scenario 1 and 11.9 seconds under Project Scenario 2. This effect would represent a ***potentially significant impact***. (See criterion (1) under subsection 6.31, "Significance Criteria," above.)

Mitigation 6-4. Mitigation for this impact shall include providing dual right-turn lanes for the westbound approach on Caulfield Lane. The level of service analysis conducted for this EIR indicates that this improvement would provide acceptable operations (LOS C) during the PM peak hour under the Cumulative No Project and Cumulative Plus Project scenarios. Implementation of this measure would reduce this potential impact to a ***less-than-significant level***.

Impact 6-5: Cumulative Plus Project Impact on the Lakeville Street/Baywood Drive Intersection. Under Cumulative No Project conditions, the intersection is expected to deteriorate from LOS D to LOS F during the PM peak hour. Under Cumulative Plus Project conditions (both scenarios), the intersection is expected to operate at LOS F during the PM peak hour. Since the addition of project traffic is expected to increase the average delay by more than five seconds at the intersection under the Cumulative Plus Project scenarios, this effect would represent a ***potentially significant impact***. (See criterion (1) under subsection 6.31, "Significance Criteria," above.)

Mitigation 6-5. Mitigation for this impact shall include providing dual right-turn lanes and dual left-turn lanes on the westbound and eastbound approaches on Baywood Drive, respectively. The level of service analysis conducted for this EIR indicates that these improvements would not provide acceptable operations (LOS C), but would improve operations to LOS E during the PM peak hour under all Cumulative scenarios. In addition, providing an exclusive right-turn lane for the northbound approach on Lakeville Drive would improve operations to LOS D under all Cumulative scenarios. Since these measures would improve projected conditions under the No Project scenario, implementation of this measure would reduce this potential impact to a ***less-than-significant level***.

Impact 6-6: Cumulative Plus Project Impact on the Lakeville Street/East Washington Street Intersection. Under Cumulative No Project conditions, the intersection is expected to maintain current operations (LOS C) during the PM peak hour. Under Cumulative Plus Project conditions (both scenarios), the intersection is expected to deteriorate from LOS C to LOS D during the PM peak hour. The addition of project traffic is expected to increase the average delay by 11.4 seconds under Project Scenario 1 and 27.1 seconds under Project Scenario 2. This effect would represent a ***potentially significant impact***. (See criterion (1) under subsection 6.31, "Significance Criteria," above.)

Mitigation 6-6. Mitigation for this impact shall include providing an exclusive right-turn lane for the eastbound approach on E. Washington Street. The level of service analysis conducted for this EIR indicates that this improvement would provide acceptable operations (LOS C) under the Cumulative Plus Project scenarios. Implementation of this measure would reduce this potential impact to a ***less-than-significant level***.

Impact 6-7: Cumulative Plus Project Impact on the Lakeville Street/D Street Intersection. Under Cumulative No Project conditions, the intersection is expected to improve current operations from LOS E to LOS D during the PM peak hour. Under Cumulative Plus Project conditions (both scenarios), the intersection is expected to operate unacceptably (LOS F) during the PM peak hour. Since the addition of project traffic would substantially increase the average delay at the intersection under the Cumulative Plus Project scenarios, this effect would represent a ***potentially significant impact***. (See criterion (1) under subsection 6.31, "Significance Criteria," above.)

Mitigation 6-7. Mitigation for this impact shall include providing an exclusive right-turn lane for the westbound approach on D Street. The level of service analysis conducted for this EIR indicates that this improvement would not provide acceptable operations (LOS C), but would improve operations from LOS F to LOS E under the Cumulative Plus Project scenarios. Since this mitigation measure would not improve traffic operations to an acceptable LOS C, this impact would be considered ***significant and unavoidable***.

Impact 6-8: Cumulative Plus Project Impact on the Copeland Street/East Washington Street Intersection. Under Cumulative No Project conditions, the intersection would continue to operate unacceptably (LOS F) during the PM peak hour. Under Cumulative Plus Project (both scenarios), the intersection is expected to operate unacceptably (LOS F) during the PM peak hour. Since the addition of project traffic would increase the average delay by more than five seconds at the intersection under the Cumulative Plus Project scenarios, this effect would represent a ***potentially significant impact***. (See criterion (1) under subsection 6.31, "Significance Criteria," above.)

Mitigation 6-8. Mitigation for this impact shall include the installation of a traffic signal and proper timing coordination with its adjacent signalized intersections. The traffic volume at the intersection satisfies the Caltrans Peak-Hour Warrant for a traffic signal installation. An additional improvement includes providing an exclusive "free" right-turn movement and receiving lane for the northbound approach on Copeland Street. The level of service analysis conducted for this EIR indicates that these improvements would provide acceptable operations (LOS A) under the Cumulative No Project and the Cumulative Plus Project scenarios. Implementation of this measure would reduce this potential impact to a ***less-than-significant level***.

Impact 6-9: Cumulative Plus Project Impact on the Petaluma Boulevard Street/East Washington Street Intersection. Under Cumulative No Project conditions, the intersection would continue to operate unacceptably (LOS D) during the PM peak hour. Under Cumulative Plus Project conditions, the intersection is expected to operate at LOS E under Project Scenario 1 and LOS D under Project Scenario 2. The addition of project traffic would increase the average delay by 16.9 seconds at the intersection under the Project Scenario 1. This effect would represent a ***potentially significant impact***. (See criterion (1) under subsection 6.31, "Significance Criteria," above.)

Mitigation 6-9. Mitigation for this impact shall include providing exclusive right-turn lanes for the east and westbound approaches on East Washington Street. The level of service analysis conducted for this EIR indicates that these improvements would not provide acceptable operations (LOS C), but would improve operations from LOS E to LOS D under Project Scenario 1. Although traffic conditions would remain at an unacceptable LOS D, the same as under Cumulative No Project conditions, the addition of project traffic under neither of the two project scenarios would increase intersection delays by more than 5 seconds. Therefore, implementation of this measure would reduce this potential impact to a ***less-than-significant level***.

Impact 6-10: Cumulative Plus Project Impact on the Liberty Street/East Washington Street Intersection. Under Cumulative No Project conditions, the intersection would continue to operate unacceptably (LOS F) during the PM peak hour. Under Cumulative Plus Project (both scenarios), the intersection is expected to operate unacceptably (LOS F) during the PM peak hour. Since the addition of project traffic would increase the average delay at the intersection by more than five seconds under the Cumulative Plus Project scenarios, this effect would represent a ***potentially significant impact***. (See criterion (1) under subsection 6.3.1, "Significance Criteria," above.)

Mitigation 6-10. Mitigation for this impact shall include the installation of a traffic signal and proper timing coordination with its adjacent signalized intersections. The traffic volume at the intersection satisfies the Caltrans Peak-Hour Volume Warrant for a traffic signal installation. An additional improvement includes providing an exclusive right-turn lane for the northbound approach on Liberty Street. The level of service analysis conducted for this EIR indicates that these improvements would provide acceptable operations (LOS C) under the Cumulative No Project and the Cumulative Plus Project scenarios. Implementation of this measure would reduce this potential impact to a ***less-than-significant level***.

Impact 6-11: Cumulative Plus Project Impact on the Petaluma Boulevard/D Street Intersection. Under Cumulative No Project conditions, the intersection is expected to improve from LOS E to LOS D during the PM peak hour. Under Cumulative Plus Project conditions, the intersection is expected to operate at LOS E under Project Scenario 2 during the PM peak hour. The addition of project traffic would increase the average delay at the intersection by 14.6 seconds under Project Scenario 2. This effect would represent a ***potentially significant impact***. (See criterion (1) under subsection 6.31, "Significance Criteria," above.)

Mitigation 6-11. Mitigation for this impact shall include providing an exclusive right-turn lane for the southbound approach on Petaluma Boulevard. The level of service analysis conducted for this EIR indicates that this improvement would not provide acceptable operations (LOS C), but would improve operations from LOS E to LOS D under Project Scenario 2. Although traffic conditions would remain at an unacceptable LOS D, the same as under Cumulative No Project conditions, the addition of project traffic under either of the two project scenarios would not increase intersection delays by more than 5 seconds. Therefore, implementation of this measure would reduce this potential impact to a ***less-than-significant level***.

Impact 6-12: Cumulative Plus Project Impact on the Petaluma Boulevard/I Street Intersection. Under Cumulative No Project conditions, the intersection is expected to operate acceptably at LOS B during the PM peak hour. Under Cumulative Plus Project conditions, the intersection is expected to deteriorate from LOS B to LOS F under Project Scenario 1 during the PM peak hour. The addition of project traffic would increase the average delay at the intersection by 102.5 seconds under Project Scenario 1. Under Scenario 2, the intersection is expected to maintain acceptable operations (LOS B). This effect would represent a ***potentially significant impact*** (see criterion (1) under subsection 6.3.1, "Significance Criteria," above). Under Project Scenario 2, the intersection is expected to maintain acceptable operations (LOS B), which would not represent a significant impact.

Mitigation 6-12. Mitigation for this Scenario 1-related impact shall include removal of the exclusive left-turn lane for the northbound approach on Petaluma Boulevard and signal re-timing to allow all movements at this intersection to be permitted. The level of service analysis conducted for this EIR indicates that this improvement would improve operations from LOS F to LOS A under Project Scenario 1. Therefore, implementation of this measure would reduce this potential impact to a ***less-than-significant level***.

Impact 6-13: Cumulative Plus Project Impact on U.S. 101. Under Cumulative No Project conditions, U.S. 101 is expected to operate unacceptably (LOS E) on the segment of U.S. 101 between Washington Street and Redwood Highway during the PM peak hour. Under Cumulative Plus Project conditions, the same segment is expected to deteriorate from LOS E to LOS F under both Project Scenarios during the PM peak hour. Since the addition of project traffic would reach the volume capacity on the freeway system under both Project Scenarios, this effect would represent a ***potentially significant impact*** (see criterion (1) under subsection 6.3.1, "Significance Criteria," above).

Mitigation 6-13. Mitigations for this impact would be prohibitively expensive (i.e., widening the freeway to eight lanes) or would require conversion of HOV lanes to mixed use travel in order to create additional vehicle capacity. Therefore, this impact would be ***significant and unavoidable***.

Impact 6-14: Cumulative Plus Project (Scenario 1) Roundabout Impact. Under the Cumulative Plus Project Scenario 1, a roundabout is proposed at the Copeland Street/East Washington Street and Petaluma Boulevard/D Street intersections. The level of service analysis conducted for this EIR indicates that a roundabout at either location would provide unacceptable operations (LOS F) under Scenario 1. This effect would potentially represent a ***significant impact***.

The HCS2000 software used in this study is limited in that it analyzes roundabouts with only single-lane approaches. A more sophisticated roundabout module would be required to analyze various lane configurations and alignments (i.e., a multi-lane roundabout) at these intersections.

Mitigation 6-14. Mitigation shall be determined through analysis of various lane configurations and alignments at the Copeland Street/East Washington Street and Petaluma Boulevard/D Street intersections. Because the effectiveness of future mitigations has not been determined, the effect of roundabouts at these intersections would represent a ***significant, unavoidable impact***.

Parking Impacts. The Specific Plan also contains key a key objective (Objective 4) that states, "parking should be provided in sufficient amounts to serve new development." The Specific Plan includes detailed parking requirement by land use to ensure that the level of commercial and residential development envisioned by the Specific Plan can be accommodated without resulting in inadequate parking supply. Residential development will be required to provide only one parking space per unit and all non-residential development

will have a universal parking requirement of one space per 300 square feet of gross floor area. The Smart Code also provides for particular uses to be subject to additional review for the purpose of determining whether proposed parking will be adequate to accommodate that use.¹

Specific Plan policies also promote the provision of centralized parking garages, the establishment of procedures for financing structured parking facilities and the promotion of mixed land uses that can take advantage of shared parking facilities. While it is likely that greater demand for parking will result from increased development envisioned by the Specific Plan, and that this will lead to increased occupancy of on-street parking facilities in the Plan area, the provision of off-street parking facilities as recommended by the Specific Plan and required by the City of Petaluma Development Review Process will ensure that the overall supply of parking is adequate to meet demand.

Implementation of the parking requirements identified in the Specific Plan process should ensure that an adequate supply of parking is provided.

Mitigation. No significant parking impacts have been identified; no mitigation is necessary.

6.3.3 Bicycle and Pedestrian Circulation Impacts and Mitigations

The Central Petaluma Specific Plan contains key recommendations for implementing the General Plan's goal of reducing automobile dependence in Petaluma. Objective 3 of the Specific Plan is to "improve pedestrian and bicycle circulation." The Specific Plan proposes new connections for pedestrians and bicyclists along the river and along the railroad right-of-way within the plan area. The Central Petaluma Specific Plan includes specific recommendations for improving sidewalks, extending the street grid, implementing "Road Diets" (see subsection 6.2.2 above), and installing street trees and other amenities that would enhance the bicycle and pedestrian environment.

(a) Bicycle Impacts. Improvements to benefit bicyclists are envisioned by the Central Petaluma Specific Plan under both Cumulative Plus Project Scenarios (Scenario 1 and Scenario 2). Additionally, the Specific Plan recommends that bicycle parking be required for new development as called for by the City's *Bicycle Master Plan*.

Under the Cumulative No Project Scenario, the existing Petaluma General Plan would provide policies aimed at promoting scenario modes of transportation, including bicycling, and providing enhanced bicycle support facilities, including bikeways (bicycle paths, lanes and routes) and bicycle parking facilities. Implementation of the existing General Plan and *Bicycle Master Plan* (under the No Cumulative Project Scenario) would be expected to improve conditions for cyclists.

¹Mike Moore, City of Petaluma Community Development Director; February 24, 2003.

Under the Project Scenarios, the Central Petaluma Specific Plan would provide recommendations for construction of a bicycle/pedestrian pathway along the Petaluma River. The project Scenario 1 would also include the installation of bicycle lanes on portions of Petaluma Boulevard and Lakeville Highway as part of "road diets" intended to reduce travel speeds and enhance the comfort and ease of bicycling and walking as forms of transportation. Project Scenario 2 would not include bicycle lanes on those streets as envisioned under Scenario 1, since Scenario 2 would retain existing lane configurations.

Implementation of the Central Petaluma Specific Plan would generally be expected to improve conditions for bicyclists and would not be expected to result in unsafe bicycle conditions, compromise bicycle flows or result in inadequate bicycle parking.

(b) Mitigation. No significant bicycle impacts are identified; no mitigation is required.

(c) Pedestrian Impacts. The Specific Plan continues specific recommendations for improving sidewalks, extending the street grid, providing a pathway along the Petaluma River, orienting land uses toward the river and adjacent streets, and installing street trees and other amenities that would enhance the pedestrian environment. Implementation of the Specific Plan would provide for a more comprehensive pedestrian network that would be well-connecting to existing and future land uses.

Implementation of the Central Petaluma Specific Plan would be expected to improve conditions for pedestrians within the plan area and would not be expected to result in unsafe pedestrian flow patterns or restrict pedestrian flows in the Plan area.

(d) Mitigation. No significant pedestrian impacts are identified; no mitigation is required.

6.3.4 Transit Impacts and Mitigations

(a) Transit Impacts. A key goal of the Central Petaluma Specific Plan is to "*reinforce the role of Central Petaluma as a center for transit and non-vehicular modes of travel.*" Petaluma's existing transit providers focus their service on Central Petaluma, as nearly all of the City's transit lines pass through the plan area. Another key goal of the Specific Plan is to promote higher-density residential and commercial development in the Central Petaluma area to take advantage of the proximity to existing transit service in the area, and to proposed regional transit service along the NWP Railroad corridor between Cloverdale and San Rafael that would include a station at the historic Petaluma Depot and possibly a second station at Caulfield Lane. Encouraging future development to occur in the City's core is one mechanism to discourage future growth from occurring at the City's periphery in areas that are not as well served by transit or conducive to the provision of viable transit service.

Transit system objectives and policies contained within the Specific Plan include:

- Objective 1: Improve and promote transit service.

- *Policy 1.1:* Establish the Petaluma Train Depot as the city's transit hub, accommodating rail transit as well as regional and local bus service.
- *Policy 1.2:* Focus transit functions at the Petaluma Depot.
- *Policy 1.3:* Provide a transit station in the vicinity of Caulfield Lane.
- *Policy 1.4:* Pursue an additional at-grade railroad crossing at Caulfield Lane.
- *Policy 1.5:* Activate the P&SR railroad right-of-way as a heritage trolley route.
- *Policy 1.6:* Develop the potential of the river for local and regional transit.

Implementation of these policies and objectives would lead to improved transit service that would be developed in the tandem with the land use and circulation changes envisioned by the Specific Plan. Since the Central Petaluma Specific Plan area is currently accessible to existing transit service within one-quarter mile, and since any future transit improvements or increase in transit patronage generated by the project would be anticipated as a key goal of the project, no unanticipated increases in transit patronage would result.

(b) Mitigation. No significant impacts to transit are identified; no mitigation is required.

7. CULTURAL AND HISTORIC RESOURCES

Possible impacts of the proposed Specific Plan on local prehistoric and historic cultural resources, and any warranted mitigation measures, are described in this EIR chapter. Information in this chapter was obtained from the Northwest Information Center (NWIC) of the California Historic Resources Information System at Sonoma State University, and a 2001 *historic resources survey* report prepared by Carey & Co. Architecture, historic preservation architects, to provide the historic resources information necessary to prepare the Specific Plan and this Specific Plan EIR.¹

7.1 SETTING

7.1.1 Prehistoric and Archaeological Resources

An archival literature review was conducted in October 2001 by the Northwest Information Center (NWIC), located at Sonoma State University, to compile information about recorded historic and prehistoric site locations inside the proposed Central Petaluma planning area.² This literature review provided the basis for the following discussion of prehistoric resources in the area.

The Specific Plan area has been the site of very few archaeological field studies. In 1989, a survey of a 3.5 acre central area parcel was completed, with negative findings. In 1992, a different parcel of less than an acre was also surveyed with negative findings. In 1991, an archaeologist conducted a program of hand augering of selected parcels that extended into the current Specific Plan area; no archaeological materials were discovered.

The level of past development activity that has occurred in the Specific Plan area and the condition of the ground in undeveloped portions of the area make it virtually impossible to visually identify the potential presence of subsurface cultural resources; they are either covered up or have been substantially altered. The Specific Plan area does, however, appear to have a high potential for the discovery of archaeological materials, and in particular, prehistoric materials, based upon anecdotal evidence and the discovery of two possible

¹Carey & Co. Architecture, Inc., Petaluma Specific Plan Draft Historic Resource Evaluation; October, 2001.

²Haydu, Damon Mark; Northwest Information Center of the California Historic Resources Information System, written communication with Carey & Co. Architecture. October 22, 2001.

prehistoric archaeological resources reported inside the Specific Plan area. One possible prehistoric site (C-1200) was reported by William Roop at the southern edge of the Specific Plan area, at 606 Petaluma Boulevard between H and I Streets, as a "possible shell midden with lithics". This location has not been verified, and no formal archaeological site survey form has been prepared for the site.

The October 2001 report from the NWIC states that the Specific Plan area contains no recorded Native American cultural resources. Previously, in 1988, the NWIC reported on the findings of its research related to a proposed dredging plan for the Petaluma River near the western edge of the Specific Plan area. The study focus was the immediate bank areas of the river, which led the NWIC to comment on the presence of site Son-399/H, a combined historical site with a large prehistoric component of dark midden containing shellfish fragments. However, by the time the NWIC staff visited the site in 1988, the location as described by King in 1966 had undergone massive alteration, leading to the alteration or obliteration of large portions of the prehistoric site.

Nevertheless, even though no Native American cultural resources have been verified within the Specific Plan area, the area is located near historic marsh margins, including alluvial benches associated with the Petaluma River. The River is a prime location for potential Native American archaeological sites in this portion of Sonoma County. Several native American archaeological sites have been recorded both up-river and downriver of the immediate project vicinity. Given the environmental setting and the archaeologically sensitive nature of the general area, there is a high potential for Native American sites in the Specific Plan area.¹

7.1.2 Historic Resources

The 2001 Carey & Co. *historic resources survey* report indicates that the Specific Plan area contains numerous locally valuable historic and architectural resources, including examples of agricultural, industrial, municipal and residential building types. The Carey & Co. survey identified 66 potentially significant historic properties within the proposed Specific Plan area boundary, including three already locally designated as City Historic Landmarks. There is also one area, the "Petaluma Historic Commercial District", listed in the National Register of Historic Places. In addition, the historic resources evaluation identified 20 properties that appear to merit a local interest status, and one additional area that has the potential to be a locally designated historic district.

Historic resources identified by the Carey & Co. *historic resources survey* report within each Specific Plan subarea are outlined below.

(a) North River Subarea. The *historic resources survey* report identified 22 potentially significant historic resources in the North River subarea, including six industrial/agricultural

¹Haydu.

structures, seven commercial buildings and nine properties within the Petaluma Historic Commercial District (which is listed in the National Register of Historic Places). Two of the most prominent historic resources in the North River subarea are the Hunt and Behren's, Inc., grain, feed and poultry supply warehouse and the Dairymen's Feed and Supply Coop complex.

(b) Turning Basin Subarea. The *historic resources survey* report identified 30 potentially significant historic resources in the Turning Basin subarea, including 17 industrial properties and 13 properties within the Petaluma Historic Commercial District (which is listed in the National Register of Historic Places). Prominent historic resources identified in this subarea include the San Francisco and Northern Pacific Railroad, Petaluma and Santa Rosa Railroad, and the Petaluma Depot.

(c) Riverfront Warehouse Subarea. The *historic resources survey* report identified 16 potentially significant historic resources in the Riverfront Warehouse subarea, including 12 industrial/agricultural resources and four residential resources. Prominent historic resources identified in this subarea include the A.W. Horwege Saddle Tree Factory building, the Centennial Planning Mill & Box Factory building, the Petaluma Fruit Canning Company building, the Sonoma Preserve Company building, the Corliss Gas Engine Company (became the Kresky company) building, and the Petaluma Box Factory and Foundry building.

(d) Lower Reach Subarea. The Lower Reach subarea contains three potentially significant historic resources, including the San Francisco and Northern Pacific Railroad, the City of Petaluma Sewer Plant, and the Jerico Dredging operation.

7.2 PERTINENT PLANS AND POLICIES

The following policies set forth in the *Community Character* chapter of the Petaluma General Plan, 1987-2005 are pertinent to consideration of Specific Plan effects on cultural and historic resources:

- *Objective (j): Preserve Petaluma's architectural heritage.*
- *Objective (k): Retain the unique qualities and architectural flavor of downtown and of West Side residential areas.*
- *Objective (l): Prevent the destruction of landmark buildings.*
- *Policy 16.1: The City encourages the restoration and re-use of historic buildings.*
- *Policy 17: All development and redevelopment shall add to, not detract from, existing significant, City-identified architectural landmarks, buildings, and areas.*

- *Policy 19: Require SPARC review of those infill construction projects in residential and commercial areas where compatibility with surrounding buildings and neighborhoods may be at issue.*
- *Objective (p): Promote greater sensitivity toward Petaluma's archaeological heritage.*
- *Policy 29: The City shall take all possible precautions to insure that no action by the City results in the loss of the irreplaceable archaeological record present in the City's jurisdiction.*

The following policies set forth in the *Local Economy* chapter of the Petaluma General Plan, 1987-2005 are also pertinent to consideration of Specific Plan effects on cultural and historic resources:

- *Objective (i): Reinforce the unique character of downtown.*
- *Policy 16: Future Central Business District (CBD) development shall respect and be compatible with the existing scale and historic and architectural character of downtown.*
- *Policy 19: The City shall encourage owners of downtown buildings to improve building exteriors consistent with the historic and visual character of the downtown.*

7.3 IMPACTS AND MITIGATION MEASURES

7.3.1 Significance Criteria

Based on the *CEQA Guidelines*,¹ the project and project-facilitated future development activities would be considered to have a *significant* cultural and/or historic resources impact if they would:

- (a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5;
- (b) Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5;
- (c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature;
- (d) Eliminate important examples of the major periods of California history or prehistory; or

¹*CEQA Guidelines*, 2002. Section 15065(a); Appendix G, Item V a-d.

- (e) Disturb any human remains, including those interred outside of formal cemeteries?

7.3.2 Impacts and Mitigation Measures

Impact 7-1: Disturbance of Archaeological Resources. New central area development and redevelopment permitted and encouraged by the Specific Plan could disturb existing unrecorded sensitive archaeological resources in the Specific Plan area. This possibility represents a ***potentially significant impact*** (see criteria (b), (d) and (e) under subsection 7.3.1, "Significance Criteria," above).

The Specific Plan area possesses a high potential for containing buried or obscured prehistoric cultural resources, particularly in the vicinity of the river. Due to the broad nature of the proposed Specific Plan and associated future central area development activities, and the lack of archaeological field data on the area, it is difficult to forecast the specific effects of future project-facilitated development on archaeological resources. However, as noted in subsection 7.1.1 above, because of the riverfront location, there is a high probability of encountering additional archaeological sites in the Specific Plan area during project-facilitated construction activities. These construction activities (e.g., grading, excavation) could disturb or destroy such archaeological resources (e.g., subsurface lithic materials, trash scatters, historic articles, etc.).

Mitigation 7-1: During the City's normal project-specific environmental review (Initial Study) process for all future, discretionary, public improvement and private development projects in the Specific Plan area, the City shall determine the possible presence of, and the potential impacts of the action on, archaeological resources. The individual project sponsor should be required to contact the Northwest Information Center (NWIC) of the California Historical Resources Information System (CHRIS) to determine whether the particular project is located in a sensitive area. Future development projects that the CHRIS determines may be located in a sensitive area--i.e., on or adjoining an identified archaeological site--shall proceed only after the project sponsor contracts with a qualified archaeologist to conduct a determination in regard to cultural values remaining on the site and warranted mitigation measures.

In general, to make an adequate determination, the archaeologist should conduct a preliminary field inspection to: (1) assess the amount of visible ground-surface, (2) identify locations of visible ground-surface, (3) determine the nature and extent of previous impacts, and (4) assess the nature and extent of potential impacts. Such field inspection may demonstrate the need for some form of additional subsurface testing (e.g., excavation by auger, shovel, or backhoe unit). Alternatively, onsite monitoring of subsurface activities (i.e., during grading or trenching) may be needed.

(continued)

Mitigation 7-1 (continued):

If a significant archaeological resource is identified through this field inspection process, the City and project proponent shall seek to void damaging effects to the resource. Preservation in place to maintain the relationship between the artifact(s) and the archaeological context is the preferred manner of mitigating impacts to an archaeological site. Preservation may be accomplished by:

- Planning construction to avoid the archaeological site;
- Incorporating the site within a park, greenspace, or other open space element;
- Covering the site with a layer of chemically stable soil; or
- Deeding the site into a permanent conservation easement.

When in-place mitigation is determined by the City to be infeasible, a *data recovery plan*, which makes provisions for adequate recovery of the scientifically consequential information about the site, shall be prepared and adopted prior to any additional excavation being undertaken. Such studies must be submitted to the California Historical Resources Regional Information Center (i.e., the NWIC at Sonoma State University). If Native American artifacts are indicated, the studies must also be submitted to the Native American Heritage Commission. Identified cultural resources should be recorded on form DPR 422 (archaeological sites). Mitigation measures recommended by these two groups and required by the City shall be undertaken, if necessary, prior to resumption of construction activities.

A *data recovery plan* and data recovery shall not be required if the City determines that testing or studies already completed have adequately recovered the necessary data, provided that the data have already been documented in another EIR and are available for review at the California Historical Resource Regional Information Center [*CEQA Guidelines* section 15126.4(b)].

In the event that subsurface cultural resources are otherwise encountered during approved ground-disturbing activities for a Specific Plan area construction activity, work in the immediate vicinity shall be stopped and a qualified archaeologist retained to evaluate the finds following the procedures described above.

If human remains are found, special rules set forth in State Health and Safety Code section 7050.5 and *CEQA Guidelines* section 15126.4(b) shall apply.

Implementation of this measure would reduce this impact to a ***less-than-significant level***.

Impact 7-2: Destruction/Degradation of Historic Resources. The Specific Plan (Historic Preservation chapter) contains policies for recognizing historic resources, expanding the Petaluma Historic Commercial District, creating two local historic districts, and conducting additional historical research. Nevertheless, future development projects that are otherwise consistent with the proposed Specific Plan may cause substantial adverse changes in either (a) the significance of one or more of the 66 potentially significant historic resources identified in the City-commissioned Carey & Co. *historic resources survey*, or (b) the significance of the designated Petaluma Historic Commercial District or local historic districts created under the Specific Plan. Substantial adverse changes that may occur include physical demolition, destruction, relocation, or alteration of one or more resources, such that the resource and/or the historic district in which it is located is "materially impaired." The significance of an historic resource is considered to be "materially impaired" when a project demolishes or materially alters the physical characteristics that justify the determination of its significance [CEQA Guidelines section 15064.5(b)]. Such an adverse change to a CEQA-defined historic resource would constitute a **significant impact** (see criteria (a), (b) and (d) under subsection 7.3.1, "Significance Criteria," above).

(a) Specific Plan Provisions for Historic Resources. As noted in the "Setting" section above, a *historic resources survey* was conducted by Carey & Co. Architecture in 2001 to provide the necessary information for preparation of the proposed Specific Plan and this Specific Plan EIR. The Carey & Co. *historic resources survey* has applied rules set forth in the California Environmental Quality Act (CEQA) for determining potentially significant resources. The *historic resource survey* report identifies 66 potentially significant historic properties in the Specific Plan area (see subsection 7.1.2, "Historic Resources," above). Many of these potentially significant properties have not been previously designated or recognized. In addition, the *historic resources survey* report recommends extension of the existing Petaluma Historic Commercial District and designation to encompass a local historic area in the Riverfront Warehouse subarea that contains a collection of buildings that are not necessarily individually significant, but form an environment which is distinguished by its continuity, setting, urban design features, and integrity.

The proposed Specific Plan provides for this district expansion, along with creation of two local historic districts and recognition of individual historic resources (see subsection 3.6.7, "Historic Preservation," in section 3, Project Description, of this EIR). In addition, the Specific Plan proposes nominating four properties in the Riverfront Warehouse subarea, as well as the Sewer Plant and Jerico Dredging properties in the Lower Reach subarea, for local historic landmark designation. Nevertheless, it is possible that a future development project that is otherwise consistent with the Specific Plan would involve building demolition or other substantial changes that would "materially impair" the historic resource or an historic district within the Specific Plan area.

(b) Scope of Historic Resources Analysis. The *CEQA Guidelines* specify that a project-related substantial adverse change in the significance of an identified historical resource represents a significant effect requiring preparation of an EIR. This EIR has been formulated to meet this requirement. This EIR has been prepared to:

- meet the historic resources related environmental documentation requirement for the Specific Plan itself, and for use in approving future site-specific projects within the Specific Plan area involving the construction of housing or neighborhood commercial facilities, as provided for under section 15181 of the *CEQA Guidelines*;
- meet the historic resources related environmental documentation requirement for residential projects undertaken pursuant to and in conformity to this Specific Plan, as provided for under CEQA section 15182; and
- avoid or reduce the need for additional environmental review for other future projects within the Specific Plan area undertaken pursuant to and in conformity with the proposed Specific Plan, except as necessary to examine whether there are project-specific significant effects on a historic resource peculiar to the individual future project or its site which are deemed through the CEQA-required Initial Study review process to be inadequately addressed in this Specific Plan EIR (*CEQA Guidelines* section 15183).

This EIR is intended to streamline the review of such projects and reduce the need to prepare repetitive environmental studies (*CEQA Guidelines* section 15183).

In determining if there is a significant impact on one or more historic resources, the *CEQA Guidelines* essentially call for a two-part test: (1) is the resource "historically significant," and (2) would the project cause a "substantial adverse change" in the significance of the resource. Under section 15064.5(a) of the *CEQA Guidelines*, a historic resource shall be presumed to be historically or culturally significant if it is a resource that is included in a local register of historic resources, or identified as significant in a historical resources survey meeting the requirements of section 5024.1(g) of the State Public Resources Code (PRC), or listed in, or deemed to be eligible for, listing in the California Register of Historic Resources or the National Register of Historic Places. The Carey & Co. *historic resources survey* was designed and completed to meet the requirements of PRC section 5024.1(g). Therefore, under *CEQA Guidelines* section 15064.5, the 66 "potentially significant" historic properties identified in the survey shall be presumed to be historically or culturally significant unless the preponderance of evidence demonstrates that they are not historically or

culturally significant.¹ The potential for “substantial adverse change” due to individual development projects proposed under the Specific Plan would be evaluated on a case-by-case basis in accordance with *CEQA Guidelines* section 15064.5(b).

Mitigation 7-2: Generally, for any future discretionary action within the Specific Plan area that the City determines through the CEQA-required Initial Study review process may cause a “substantial adverse change” in one or more of the 66 potentially significant historic resources identified in the Carey & Co. *historic resources survey*, the City and applicant shall incorporate measures that would seek to improve the affected historic resource in accordance with either of the following publications:

- Secretary of Interior's *Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings*; or
- Secretary of Interior's *Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*.

Successful incorporation of these measures would reduce the impact to a **less-than-significant level** [*CEQA Guidelines* section 15126.4(b)]. This mitigation shall be made enforceable by its incorporation into the Specific Plan as a City-adopted policy and requirement to be implemented through subsequent permits, conditions, agreements or other measures, pursuant to *CEQA Guidelines* section 15064.5(b)(3-5).

For any future discretionary action that would result in the demolition of an HRS-identified historic resource or otherwise cause the significance of the resource to be “materially impaired,” the City may determine through the Initial Study process for that action that this mitigation may not be adequate under CEQA, i.e., may not reduce the effects of the demolition to a less-than-significant level. The potential for building demolition and resulting effects on historic resources and/or historic districts would therefore represent a **significant, unavoidable impact**.

¹Bass, et al., *CEQA Deskbook*, 1999 (Second Edition), Solano Press Books, November 2000; page 104.

8. PUBLIC SERVICES AND UTILITIES

Most of the Specific Plan area has served as Petaluma's industrial core since the City's inception in the 1850's. Initially, the river, which bisects the Specific Plan area, provided most of the infrastructure for the fast-growing 19th Century economy, serving as storm drain and sewer for the entire community. Utilities became systemized and segregated as public health demands grew and new forms of power became available to the general public; however, the utility systems serving the area have not been modernized to meet current market needs or to account for natural obsolescence. Consequently, utility systems currently serving the area, including water supply and delivery, sewage collection and transmission, and storm drainage, will require significant upgrading as the proposed Specific Plan area redevelops. This EIR chapter describes the setting, project impacts, and necessary mitigation measures pertaining to public facilities and services, including water and sewer service, as well as police protection, fire protection, emergency medical service, schools, parks and recreation and solid waste and recycling. The setting, project impacts, and necessary mitigation measures pertaining to storm drainage and flood control are described in chapter 12 herein (Storm Drainage, Flood Control and Water Quality).

8.1 PERTINENT PLANS AND POLICIES

The Petaluma General Plan, 1987-2005 includes the following goals, objectives and policies, divided into the Elements listed below, which are relevant to consideration of the public services and utilities implications of the proposed Specific Plan.

8.1.1 Land Use and Growth Management

- *Policy 11: The City shall fully utilize its powers of utility extension and annexation to support its policy of maintaining an open space frame and to manage the rate, location and type of growth.*
- *Policy 28: The City shall support residential development only in those areas where adequate City facilities are available or will be provided with development.*
- *Policy 29: The City shall maintain development fees at a sufficient level to finance infrastructure costs.*

8.1.2 The River

- *Objective (a): Insure public access to the Petaluma River along the full length of the river in Petaluma, where feasible.*
- *Objective (b): Encourage the location of water oriented, recreational opportunities, such as the marina and canoe rental facilities, in sections of the river that are not sensitive wildlife habitats.*
- *Policy 2: The City shall enhance the Petaluma River and its banks as a scenic resource consistent with water-oriented recreation.*
- *Program (4): Develop public parks adjacent to the Petaluma River.*

8.1.3 Open Space, Conservation, and Energy

- *Policy 27: The City shall promote water conservation through development standards, building requirements, landscape design guidelines, and other applicable citywide policies and programs.*
- *Program (33): Continue to participate in the water conservation program and plan of the Sonoma County Water Agency.*
- *Objective (u): Maximize opportunities to recycle solid waste.*
- *Objective (v): Recover energy and materials from solid waste.*
- *Policy 28: The City shall manage solid waste in order to maximize reclamation and reuse of resources contained in the solid waste stream.*
- *Program (34): Expand the curbside recycling program.*
- *Program (38.1): Require retail centers and multi-family residential developments to provide on-site drop-off areas for recycling. Coordinate with the City's refuse disposal contractor or other recycling services to insure regular pickup.*

8.1.4 Parks, Recreation, Schools & Child Care

- *Goal 1: Provide for all citizens a variety of enjoyable leisure, recreation, and cultural opportunities that are accessible, affordable, safe, physically attractive, and uncrowded.*
- *Goal 2: Effectively use public facilities to serve the greatest number of Petalumans.*
- *Goal 3: Promote improved park location and design.*

- *Objective (a): Bring the amount of Petaluma park land into compliance with the City's adopted minimum standards (community park land at 3 acres per 1,000 population, and neighborhood park land at 2 acres per 1,000 population).*
- *Objective (b): Provide a balance of recreation opportunities, including facilities, to serve the varied interests of the population.*
- *Objective (c): Designate adequate park sites for the future growth of the City.*
- *Policy 1: The City shall require all new residential development to dedicate land or pay a park fee for public parks.*
- *Policy 2: The City shall acquire new public parks at a rate consistent with new residential development.*
- *Policy 3: The City shall acquire community parks consistent with growth of the City's population.*
- *Policy 4: The City should provide park facilities within one-half mile or less for residents living within the residential areas of Petaluma, without intrusion of major physical barriers.*
- *Policy 10: The City encourages the Sonoma County Water Agency, school districts, the Pacific Gas and Electric Company, and other public agencies and utilities to provide appropriate recreation uses on their respective properties and rights-of-way.*
- *Policy 12: Residential developments adjacent to parks or open spaces should be encouraged to provide direct access to, and common open space contiguous to, such areas.*
- *Policy 14: The City shall promote private open space and recreation facilities in large-scale residential developments in order to meet a portion of the open space and recreation needs that will be generated by the development.*

8.1.5 Community Health and Safety

- *Policy 10: The City shall continue to require fees, standards, and other measures to mitigate downstream impacts associated with new development.*
- *Objective (i): Maintain safety services at an approved level.*
- *Policy 19: The City shall continue to assure a four-minute response time for emergency vehicles unless other fire suppression measures approved by the fire chief have been instituted.*

- *Objective (p): Carry out capital improvement projects that will enhance the efficiency of the supply system and insure adequate supplies for the future.*
- *Policy 31: The City shall determine the demand for water for the expected population within the Petaluma water service area, and shall consider the impacts of a peak drought or peak fire-fighting demand and determine how it would operate during a drought.*
- *Objective (s): Protect areas that are critical to the maintenance of water quality, including critical groundwater recharge areas.*
- *Policy 35: The City shall preserve adequate vegetative cover and prevent development which increases erosion and sedimentation potential along streams or in unstable soil areas.*
- *Policy 36: The City shall seek to preserve public and private watershed lands as permanent open space.*
- *Program (29.1): Work with the County to reduce ag-related contamination of groundwater and streams flowing into the Petaluma River.*

8.2 WATER

8.2.1 Setting

The City of Petaluma operates a municipal water distribution system within the City and in various contiguous peripheral areas. The principal source of Petaluma's water (90 percent) is the Sonoma County Water Agency (SCWA) regional supply system, which delivers water to the City and other users via the SCWA regional aqueduct. The primary source of water for the SCWA aqueduct is the Russian River. Water is taken from the river and chlorinated before being transferred into the aqueduct. The City obtains the remaining 10 percent of its water supply (including its entire emergency supply) from wells and recycled water. The City has a number of active wells on emergency standby and a small surface water treatment plant to supplement the SCWA aqueduct supply.

The City's water system served a population of approximately 55,270 in the year 2000. The City's average annual water demand is projected to increase from 9.9 mgd in 2000 to 13.0 mgd in 2020.¹ The Specific Plan area lies at the floor of the Petaluma Valley where water pressure can be optimized, depending on the delivery system. With an elevation range of

¹Dyett & Bhatia, Petaluma General Plan 2000-2020. Existing Conditions, Opportunities, and Challenges Report, Second Administrative Review Draft. October 1, 2002; p. 9-5.

approximately seven to 32 feet, the entire Specific Plan area falls within Petaluma Water Service Zone I (0 to 60 feet) for service and fire flow water.

Current demands on the SCWA exceed their water rights. SCWA has applied for an additional diversion and well. The EIR for the SCWA Water Supply and Transmission System Project (WSTSP) was certified in 1998 (and upheld in court in 2000), thus upholding the established demand for the water to be provided to the SCWA service area and allocated among the signatories, including the City of Petaluma.¹

The 33-inch SCWA aqueduct runs underneath Petaluma Boulevard and consists of old cast iron and steel. Meeting peak water demands can exceed the SCWA aqueduct's intended capacity. The City's major water distribution facilities consist of six active SCWA turnouts and one standby turnout at Washington Street. The Washington Street turnout (12-inch diameter) provides the primary Zone I connection crossing the river and U.S. 101 and serves as the only northeast-southwest connector in town. Reservoir tanks at Oak Hill and Washington Street provide six million gallons of storage capacity to Zone I, providing excellent water pressure to the proposed Specific Plan area.

The Washington Street main line feeds a series of distribution lines within the Specific Plan area ranging in size from 6 to 8 inches and consisting of cast iron, ductile iron, welded steel, asbestos concrete (AC), and polyvinyl chloride (PVC) pipe. Many of the distribution pipes in the Specific Plan area are the oldest in town, some dating from the 19th century, and were installed incrementally without the benefit of a master plan. The City has experienced main breaks with cast iron pipe in the older sections of the City.² Additionally, there are only a few loop connections among pipes vital to the provision of adequate fire flow in the Specific Plan area.

This combination of aging pipes of inadequate size and outdated materials and the lack of loop connections combine to make the water service system within the Specific Plan area inadequate for existing and new development, for both normal service and fire protection purposes.

8.2.2 Significance Criteria

The project may be considered in this EIR to have a *potentially significant impact* on water service if it or its growth-inducing effects would:³

¹Dyett & Bhatia, p. 9-15.

²Dyett & Bhatia, p. 9-20.

³CEQA Guidelines, Appendix G, Items VIII (b) and XVI (b) and (d).

- (a) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted); and/or
- (b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects;
- (c) Result in the need for new or expanded water supply entitlements to serve the Specific Plan area because existing water supplies available to serve the area from existing entitlements and resources are not sufficient.

8.2.3 Impacts and Mitigation Measures

Additional development facilitated by or otherwise associated with implementation of the proposed Central Petaluma Specific Plan and associated increases in commercial activity, employment, and residential population (see housing, population and employment increase figures in section 5.3 herein), would result in corresponding increases in the demand for water supply. The City as water purveyor is prepared to provide the additional domestic water necessary for anticipated additional development in the Specific Plan area, including anticipated project-facilitated commercial growth and population increases, with their existing entitlements and distribution systems.

As noted in subsection 8.2.1 above, potential delays or barriers to completing the Water Supply and Transmission System Project (WSTSP) facilities have been greatly minimized by the certification of the WSTSP Project EIR in 1998, and the Sonoma County Superior Court's December 2000 decision upholding the validity of the EIR. This court decision upholds the established demand for the water to be provided to the SCWA service area and allocated among the signatories, including the City of Petaluma. The window during which the adequacy of the EIR could be further challenged has elapsed.¹ Therefore, it is anticipated that the City of Petaluma will be able to provide SCWA water supply necessary to serve future development in the Specific Plan area.

Specific projects within the Specific Plan area will be required to include assessments of available water supply to serve the individual project. In accordance with recent California case law (*County of Amador v. El Dorado Water Agency* and *United Water Conservation District v. County of Los Angeles*), no building permit for a site-specific development proposal

¹Dyett & Bhatia, p. 9-15.

in the Specific Plan area, including any project-facilitated development, can be issued until an adequate existing and future source and supply of water can be demonstrated by the water provider serving the development site.¹

If the water district serving a potential development site concludes that its supplies are insufficient, the district must submit to the City of Petaluma Planning Commission its plans for additional water supplies, including the following:

- Estimated total costs, and methods of financing the costs, associated with acquiring additional water supplies;
- A list of all federal, state, and local permits, approvals, or other entitlements necessary to acquire or develop the additional water supplies;
- Estimated time frames for acquiring the additional water supplies; and
- An overall water conservation program, including a plan for utilizing recycled water and a program for allocating water during a water emergency.

The Planning Commission will then determine whether projected water supplies will be sufficient to satisfy the demands of future individual, Specific Plan-facilitated site-specific development proposals, in addition to existing and other anticipated (planned) future uses within the affected water service area. If the Planning Commission determines that projected water supplies will not be sufficient, proposed developments will not be approved.

Based on these considerations, anticipated project-facilitated growth within the Specific Plan area would be considered to have a **less-than-significant impact** related to water supply service (see criteria (b) through (d) under subsection 8.2.2, "Significance Criteria," above).

Mitigation. No significant impacts have been identified; no mitigation is required.

Anticipated Water Delivery System Impacts. The City's principal water supply is delivered via the Sonoma County Water Agency (SCWA) regional aqueduct. The 33-inch segment of the SCWA aqueduct that runs underneath Petaluma Boulevard consists of old cast iron and steel. Meeting peak water demands can currently exceed the intended capacity of the aqueduct. In addition, many of the distribution pipes in the Specific Plan area are the oldest in town, and there are only a few connections among Specific Plan area pipes vital to the provision of adequate fire flow. Aging pipes of inadequate size and outdated materials, plus

¹Bass, et al., CEQA Deskbook: 1999 (Second Edition), Solano Press Books; p. 106.

the lack of loop connections, combine to make the existing water delivery system within the Specific Plan area inadequate for existing and new development, for both normal and service and fire protection purposes.

Draft Specific Plan Chapter 8, Water Objective 1 calls for construction of an adequate water system to provide service and fire-flow capacity for new development. This work entails the replacement and upgrading of mains and subordinate lines in a looped system. Based on adopted City and SCWA requirements, the central area water distribution system improvements identified in the current Draft Central Petaluma Specific Plan will be designed and constructed to comply with the requirements of the City and the SCWA for normal service and fire flow purposes. Draft Specific Plan Chapter 8, Water Policy 1.2 recommends the apportionment of system improvement costs among project sponsors, property owners and the City. Such improvements are expected to occur within existing City-owned rights-of-way. Construction period traffic interruption, noise, and air emissions (dust) effects typically associated with such infrastructure construction would be mitigated through normal City construction period mitigation procedures. No unusual, significant adverse environmental impact would be anticipated with this construction activity. In addition, Draft Specific Plan Chapter 8, Water Policies 1.4 and 1.5 mandate water conservation for new and existing development, respectively, through the installation of low-flow fixtures and drought-tolerant landscaping. Implementation of these Specific Plan policies would ensure that water distribution impacts related to buildout of the Specific Plan remain at a ***less-than-significant level***.

Mitigation. No significant additional water supply and distribution impacts beyond those already acknowledged and addressed in the draft Specific Plan have been identified; no mitigation is required.

8.3 SEWER

8.3.1 Setting

(a) Existing Sewer Facilities and Service. The City also operates a municipal sewer system that provides sanitary sewer service to a population of over 55,000 people (i.e., the area within the City's sphere of influence). The sanitary sewer service area is hydrologically and geographically separated into five basins. The five-basin system consists of a network of small diameter collector sewers, medium diameter trunk sewers, large diameter interceptors, and seven lift stations. Two main interceptors (48 and 33 inches in diameter) deliver collected wastewater to the Petaluma Wastewater Treatment Plant (WWTP), which is currently located within the Specific Plan area (Lower Reach Subarea). Trunk sewers ranging from 6 to 48

inches in diameter are estimated to total 100 miles in length. Collector sewers ranging from four to eight inches in diameter comprise another 120 miles.¹

The Specific Plan area is served by a 48-inch trunk sewer which is expected to reach capacity by the year 2010, as will a large number of collectors and trunk sewers elsewhere throughout the City system. Existing insufficient capacities in the City's sewer system result in deficient flow velocities and resultant solids deposition during dry weather, low flow periods. As population increases, the remaining development areas will require new sewer collection systems which connect to the existing trunk sewers.²

Before 1938, the City had a combined storm drain and sewer system. When Petaluma constructed a separate system for wastewater treatment, remnants of the storm drain system were incorporated for transporting sewage. Due to their poor condition, these storm drains have allowed significant stormwater infiltration and inflow (I/I), causing sewer surcharging, manhole overflows, and direct wastewater discharges into the river during peak wet weather storm and high groundwater conditions.

Since 1965, the City has systematically tracked the existing condition of, and need for improvement to, the citywide sewer system. Excessive I/I can adversely affect sewage collection and treatment facilities. Over the past 30 years, the City has made improvements to remedy the worst of these conditions, such as plugging overflow pipes to the river. However, serious infiltration and inflow (I/I) problems persist because of the degraded conditions of many pipelines. A 1985 capacity study led to a series of incremental improvement projects and the recommendation that the existing Petaluma WWTP be replaced.

Planned New WWTP. Since completion of the 1985 capacity study, the City has undertaken a process of designing and evaluating a new WWTP to be constructed on land adjacent to the existing treatment ponds located south of the city between Lakeville Highway and the Petaluma River, outside the Specific Plan area. The new WWTP will be designed to accept an average dry weather flow of 6.7 million gallons a day (mgd) and a peak wet weather flow of 35 mgd. These WWTP flow capacities will be sufficient to meet currently-projected year 2020 General Plan buildout.

8.3.2 Significance Criteria

The proposed Specific Plan would be considered in this EIR to have a *potentially significant impact* on sewer service if it would:³

¹Dyett & Bhatia, p. 9-24.

²Dyett & Bhatia, p. 9-47.

³CEQA Guidelines, 2002; Appendix G, Items XVI (a), (b) and (e).

- (a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board;
- (b) Require or result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects; and/or
- (c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

8.3.3 Impacts and Mitigation Measures

Wastewater Treatment Impacts. Intensified development associated with implementation of the proposed Specific Plan (see population, housing, and employment increase figures in section 5.3 herein) would increase the demand for sewage treatment. The City has determined that the existing treatment plant currently cannot accommodate all peak wet-weather wastewater flows generated by existing development, and must be replaced to increase capacity and to improve the quality of wastewater discharge. The City is currently planning to build a new wastewater treatment facility; construction is anticipated to begin in late 2003, with the facility becoming operational in 2007.¹ This new facility will have adequate capacity to accommodate all anticipated General Plan and Specific Plan buildout within the Specific Plan area. The new facility will require full compliance with CEQA before final approval and construction commencement.

Mitigation. No significant wastewater treatment impacts have been identified; no mitigation is required.

Wastewater Collection System Impacts. The existing wastewater collection system serving the CBD may not be adequate to serve anticipated new development and intensification in the Specific Plan area under the proposed Specific Plan. As outlined in subsection 8.3.1, the existing central area wastewater collection system includes old and deteriorating lines. These conditions have resulted in excessive infiltration and inflow (I/I). Without a systemic response to these conditions, sewer upgrades must account for excessive capacity when upgrades are made to pipes, pump stations, and treatment facilities.

The central area sewage collection system improvements identified in the Draft Central Petaluma Specific Plan will need to be implemented. Specifically, draft Specific Plan Chapter 8, Sewer Objective 1 calls for construction of an adequate sewer system to accommodate

¹Ban, Mike, City of Petaluma Water Resources Department. December 20, 2002. Personal communication with Vanessa Bulkacz of Wagstaff and Associates.

existing and new development. Draft Specific Plan Chapter 8, Sewer Policy 1.1 calls for "replacement of the existing lines with 6-inch to 12-inch lines depending on location and project load, upgrades to the C Street pump station, and pond influent pump station improvements to provide adequate capacity for service demand for existing and new development," consistent with the Proposed Sewer System Plan. Draft Specific Plan Chapter 8, Sewer Policy 1.2 recommends the apportionment of system improvement costs among project sponsors, property owners and the City.

Also, draft Specific Plan Chapter 8, Sewer Policy 1.5 recommends that new development projects incorporate low-flow water fixtures and other water-conserving features that will reduce water loads on the sewer system. Such improvements are expected to occur within existing City-owned rights-of-way. Construction period traffic interruption, noise and air emissions (dust) effects typically associated with such infrastructure construction would be mitigated through normal City construction period mitigation procedures. No unusual, significant adverse environmental impact would be anticipated with this construction activity. Implementation of these Specific Plan policies would ensure that wastewater collection system impacts remain at a *less-than-significant level*.

Mitigation. No significant wastewater collection system-related significant environmental impacts have been identified; no mitigation is required.

8.4 POLICE SERVICES

8.4.1 Setting

All development within the Petaluma City limits is served by the Petaluma Police Department (PPD), which operates from the main police station at 969 Petaluma Boulevard North and an additional substation located in a storefront at 363 South McDowell Boulevard. Anticipated future buildout between the current City limit line and the City's Urban Growth Boundary will likely require new police facilities.¹

The City is divided into four police beat areas which are defined by the four quadrants created by Washington Street (which runs east/west) and the Petaluma River (which runs north/south). The Specific Plan area is therefore partially within each of the City's four beats. Twenty-four-hour patrol service is provided within each of the City's four beats.

The PPD includes 78 sworn police officers (including Sergeants, Lieutenants, Captains and the Chief), providing a service ratio of 1.4 sworn officers per 1,000 residents, which is higher than the nationally accepted standard service ratio of 1.25 officers per 1,000 residents. The PPD applies a recommended emergency response time of three minutes. The PPD is also working

¹Dyett & Bhatia, p. 13-1.

on new software solutions to keep the department current and functioning at a high level of service.¹

8.4.2 Significance Criteria

The project may be considered in this EIR to have a *potentially significant impact* on police services if it would:²

- (a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for police services (the Police Department's current staff-to-population ratio is 1.4 sworn officers per 1,000 population.); or
- (b) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

8.4.3 Impacts and Mitigation Measures

Project-Related Increase in Police Service Demands. Anticipated cumulative development in the Specific Plan area, including development facilitated by the proposed Specific Plan (see Table 3.1 in chapter 3 herein), would increase the demand for emergency and non-emergency police services. The Petaluma Police Department may require additional staffing or equipment to meet these additional demands. If the Police Department's current staff-to-population ratio of 1.4 sworn officers per 1,000 residents is to be maintained, the anticipated buildout "cap" of 1,617 additional residential units, and associated approximately 4,444 new residents in the Specific Plan area (see Table 5.2 in chapter 5 herein) would require approximately 6 additional sworn officers, plus associated support personnel, training, equipment and facilities, by the year 2020. Under current circumstances, the cost of such anticipated cumulative increases in the need for police services would be paid for primarily out of the City's General Fund.

These increased staffing, training, equipment and facilities needs do not represent a significant "environmental" impact under the CEQA-Guidelines-based significance criteria listed in section 8.4.2, above. There is no current evidence that the anticipated increase in staffing and equipment needs would result in a significant adverse physical impact directly associated with the provision of new or physically altered governmental facilities. Until specific police department facilities expansion plans are identified in terms of size, staffing, equipment and location, assessment of environmental impacts associated with construction of such new or physically altered facilities would be highly speculative.

¹Ibid.

²CEQA Guidelines, 2002; Appendix G, Item IX (b), XIII (a) and VII (g).

The Police Department should continue to monitor the rate of additional police calls per year associated with the central area and the adequacy of response times. As warranted by the monitoring data, the City should provide additional officers and facilities (funded through the City's general fund). The City should also require Police Department review and approval of final project plans within the Specific Plan Area.

Mitigation. No significant environmental impact has been identified; no mitigation is required for CEQA purposes.

8.5 FIRE PROTECTION AND EMERGENCY MEDICAL SERVICES

8.5.1 Setting

The City of Petaluma Fire Department (PFD) provides fire protection, fire suppression and emergency medical services to the Specific Plan area. The PFD responds to structural and wildfires, emergency medical service calls, and hazardous/toxic spills in the City. The PFD also has the responsibility to prepare the City for natural disasters, and serves as the main contact and conduit for Emergency Management Information.

The PFD currently has approximately 48 uniformed firefighters¹ at three stations, with 15 full-time fire fighters on duty at any one time to respond to emergency situations, based on national standards for staffing requirements. The current ratio of firefighters to population is approximately 0.86 firefighters per 1,000 people.² The Headquarters fire station, located at 198 D Street, is located near the southern boundary of the Specific Plan area. The Headquarters station is currently staffed by seven fire fighters and is equipped with two engines, one brush-fire truck and three ambulances.³

The PFD recently initiated its first Automatic Aid Agreement with the Rancho Adobe Fire Protection District (RAFPD) and other volunteer fire departments located in Sonoma County Service Area #40. The RAFPD has three fire stations, one of which is located in Petaluma.

¹Albertson, Chris, Petaluma Fire Department, Fire Chief. January 9, 2003. Written communication with Vanessa Bulkacz of Wagstaff and Associates.

²Ibid.

³Petaluma, City of. 2002. Petaluma General Plan 2000-2020. Existing Conditions, Opportunities, and Challenges Report. Second Administrative Review. October 1. p. 13-2.

The Automatic Aid agreement provides immediate backup for structure fires within the City of Petaluma, and obligates the PFD to respond to specific emergency needs outside the City limit.¹

The currently-adopted Petaluma General Plan, 1987-2005 mandates a four-minute response time for initial emergency fire vehicle response for 90 percent of calls and seven minutes for backup, unless other fire suppression measures have been instituted.² There are portions of Petaluma at the City's edge that are not currently meeting this response time requirement; the proposed Specific Plan area is not within any of these outlying areas.

The Insurance Services Office (ISO) is a private organization which collects information on California communities' public fire protection services and rates each fire department, based on personnel, facilities, response times, fire flow capacities, and the general character of development in the area. The rating system is on a scale of 1 to 10, with Class 1 being the best fire protection and Class 10 less than the minimum recognized protection. The City's ISO rating is 3, placing Petaluma in the top 20 percent of the over 1,500 communities in California rated by ISO. The City's ISO rating is not expected to be affected by buildout of the Urban Growth Boundary under current General Plan policies.³

The PFD has prepared a five year *Fire/Life Safety Plan*, which also sets response time requirements for emergency medical services (EMS). The Plan sets the following EMS response time goals: 90 percent of urban responses within 8 minutes, 90 percent of semi-rural responses within 15 minutes, and 90 percent of rural responses within 30 minutes. Two of the PFD's three ambulances are kept staffed 24 hours a day.⁴

8.5.2 Significance Criteria

Based on the CEQA Guidelines, the proposed Specific Plan would be considered in this EIR to have a *potentially significant impact* on fire protection or emergency medical services if it or its growth-inducing effects would:⁵

- (a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or

¹Ibid, p. 13-3.

²Ibid.

³Dyett & Bhatia, p. 13-4.

⁴Dyett & Bhatia, p. 13-7.

⁵CEQA Guidelines, Appendix G, Item XIII (a), VII (g) and XV (e).

other performance objectives for fire protection (the Fire Department's current response time goal is four minutes for fire and eight minutes for emergency medical calls, and the Fire Department's current staff-to-population ratio is approximately 0.86 firefighters per 1,000 people);

- (b) Result in possible interference with an emergency response plan or emergency evacuation plan; and/or
- (c) Result in inadequate emergency access.

8.5.3 Impacts and Mitigation Measures

Impacts on Fire Protection/Emergency Medical Services. Anticipated cumulative commercial, industrial and residential development in the Project Area and vicinity, including development facilitated by the proposed project, would produce substantial increases in future service calls for fire suppression and emergency medical services provided by the Petaluma Fire Department (PFD). The Petaluma Fire Chief estimates that based on projected increases in residential and commercial uses, the proposed project would require a minimum of three new firefighter positions by the year 2020 to maintain adequate service levels, plus associated support personnel, training, equipment and facilities.¹ If the PFD is not provided with additional staff, training, equipment and facilities sufficient to meet these added service demands, the result would be a reduction in citywide fire protection and emergency medical service levels, including a possible increase in response times.

These increased staffing and equipment needs do not represent a significant "environmental" impact under the CEQA-Guidelines-based significance criteria listed in section 8.5.2, above. There is no current evidence that the project would "result in a significant adverse physical impact associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services." Until specific fire department facilities expansion plans are identified in terms of size, staffing, equipment and location, assessment of environmental impacts associated with construction of such new or physically altered facilities would be highly speculative.

The PFD should continue to monitor the rate of additional fire or emergency medical service calls per year associated with the central area and the adequacy of response times. As warranted by the monitoring data, the City should provide additional fire fighters and facilities (funded through the City's general fund). The City will also require Fire Department review and approval of final project plans within the Specific Plan area.

¹Albertson, Chris, Petaluma Fire Department, Fire Chief; written communication with Vanessa Bulkacz of Wagstaff and Associates; January 9, 2003.

Mitigation. No significant environmental impact has been identified; no mitigation is required for CEQA purposes.

8.6 SCHOOLS

8.6.1 Setting

(1) Schools Serving the Project Area. The City of Petaluma is served by eight school districts, the largest of which is the Petaluma Unified School District. All the City's secondary schools are in the Petaluma Unified School District. Six of the remaining seven school districts are located in rural areas of the city and house only one or two elementary schools each.¹

The Specific Plan area is within the boundaries of the Petaluma Unified School District (PUSD), which provides educational services for grades K-6 through its elementary schools, and for grades 7-12 through its secondary (junior high and senior high) schools. Elementary school students from the Specific Plan area attend McKinley Elementary School on Ellis Street, McNear Elementary School on Sunnyslope Avenue, and Valley Vista Elementary on North Webster Street. Junior high school students from the Specific Plan area attend Petaluma Junior High School (grades 7-8) located on Banjam Way. High school students attend Petaluma High School (grades 9-12), located at 10th and English Street.

In the school year 2000-2001, only two of Petaluma's elementary schools and no secondary schools were over capacity. Overall enrollment in Petaluma schools (including all eight school districts) totals 94 percent of capacity.²

The Santa Rosa Junior College (SRJC) operates a 40-acre satellite community college campus in Petaluma. The SRJC Petaluma campus had 6,000 students enrolled from 2000-2001, and planned to increase enrollment to its capacity of 6,500 in 2001-2002. The University of Northern California maintains a much smaller Petaluma campus with an enrollment capacity of 100 students. Enrollment of these two schools was expected to reach capacity by 2002. The SRJC is planning a facility expansion for the Petaluma Center that would nearly double its existing capacity to 12,500 students.³

The PUSD and SRJC obtain funding from several different sources to continue providing adequate school services as the City grows. There is currently a state-authorized school impact fee levied by the PUSD on new commercial and residential development within the

¹Dyett & Bhatia, p. 8-9.

²Dyett & Bhatia, p. 8-8.

³Dyett & Bhatia, p. 8-14.

district, currently set at \$2.05/square foot for residential units and \$0.33/square foot for commercial and industrial space. The fees collected through this system are not considered adequate.¹ Alternate funding sources come from state and district bond issues, Mello-Roos Community Facilities District "Special Taxes", general fund money, redevelopment funds, and state grants.

8.6.2 Significance Criteria

Plan-facilitated growth may be considered in this EIR to have a *potentially significant impact* on school service if it would:²

- (a) Result in substantial adverse physical impacts associated with the need for or provision of new or physically altered school facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable performance objectives.

8.6.3 Impacts and Mitigation Measures

The level of new residential development permitted in the Specific Plan area under the proposed Specific Plan (up to 1,617 additional residential units by the year 2020) would result in increased school enrollments. The actual effect on the school district will depend on future enrollment and capacity conditions. As noted in the Petaluma General Plan 2000-2020: Existing Conditions, Opportunities, and Challenges Report (Second Administrative Review Draft, October 2002), with its current enrollment capacity cushion, Petaluma may not need any new primary and secondary school facilities in the immediate future. However, this cushion is not very large, and growth should be monitored and plans made to accommodate school needs as they arise.³ Future developers within the Specific Plan area will also be required to pay the state-authorized school impact fees to the extent approved by the PUSD. If state-authorized school impact fees and any other mitigation fees do not totally cover the costs of any necessary school facility improvements, voluntary development agreements should also be considered; future applicants for specific projects within the Specific Plan area could voluntarily enter into a development agreement with the PUSD and/or SRJCD to fund improvements. These measures would be expected to enable the district to fund school improvements necessary to accommodate students from project-facilitated development.

Mitigation. No significant school services related environmental impacts have been identified; no mitigation is required.

¹Dyett & Bhatia, p. 8-16.

²CEQA Guidelines, 2002; Appendix G, Item XIII (a).

³Dyett & Bhatia, p. 8-15.

8.7 PARKS AND RECREATION

8.7.1 Setting

(a) Local Park and Recreation Facilities. Public parks and recreation services are provided in Petaluma in the form of neighborhood parks, community parks, pocket parks, and school sites. Community park sites, which provide playfields and picnic areas for use by all City residents, total 109 acres citywide. Neighborhood parks, which provide grassy areas and tot lots, total 75 acres citywide. Pocket parks, which generally include very small tot lots, total 2 acres citywide. Petaluma is also set apart from the neighboring communities of Novato and Rohnert Park by a buffer of open space that totals approximately 163 acres.¹

The Jack Cavanaugh Community Center and Park is the only existing public recreation facility within the proposed Specific Plan area, although there is some designated open space along the edge of the Turning Basin, as well as a significant acreage of designated future park and open space on the McNear Peninsula.

Existing parks adjacent to the Specific Plan area include: Walnut Park, a 1.5-acre central area neighborhood park at D Street and South Petaluma Boulevard immediately south of the Specific Plan area; McNear Landing, a 1.3 acre park along the southern bank of the Petaluma River at the southern boundary of the site; and Hill Plaza Park, a downtown park on South Petaluma Boulevard at Martha Street immediately west of the Specific Plan area. In addition, some designated open space exists along the Petaluma River immediately north and east of the Specific Plan area.

Parks and recreation facilities within 1/2 mile of the Specific Plan area include: Oak Hill Park, a 5-acre neighborhood park on Park Avenue northwest of the Specific Plan area; Wickersham Park, a 2.2-acre neighborhood park between G and H Streets and 4th and 5th Streets south of the Specific Plan area; the 3.5 acre Kenilworth Park at the corner of Payran Street and E. Washington Street (adjacent to the County Fairgrounds); and Miwok Park, a 1.6-acre park east of the Specific Plan area, north of Highway 116.

Petaluma's current parks-to-population ratio is 3.4 acres of parkland per 1,000 residents.² As outlined above, park facilities in west Petaluma are numerous, fairly evenly distributed, and provide visual variety to the urban environment. Nevertheless, total park provisions on the west side of the City are below the current City General Plan specified parkland per capita objective of 3.0 acres of community parks per 1,000 residents and 2.0 acres of neighborhood

¹Dyett & Bhatia, p. 10-1.

²Dyett & Bhatia, p. 10-2.

parks per 1,000 residents, for a total of 5.0 acres per resident. The current Petaluma General Plan, 1987-2005 and the proposed Specific Plan identify several potential park sites that would increase neighborhood or community park acreage in west Petaluma.

8.7.2 Significance Criteria

The project may be considered in this EIR to have a *potentially significant impact* on park and recreation services if it would:¹

- (a) Result in substantial adverse physical impacts associated with the need for or provision of new or physically altered parks and recreation facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives; or
- (b) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated; or
- (c) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

8.7.3 Impacts and Mitigation Measures

Increase in Demand for Park and Recreation Services. Specific Plan-facilitated development and intensification in the Specific Plan area would increase the demand for central area park and recreation services. As discussed in section 5.3 (Population, Housing, and Employment impacts), it is estimated that project-facilitated development would generate a population increase of approximately 4,444 people. Based on the City of Petaluma park acreage standards, this residential growth would generate a demand for approximately 13.3 acres of community parkland (4,444 people x 3.0 acres/1,000 population) and approximately 8.9 acres of neighborhood parkland (4,444 people x 2.0 acres/1,000 population) for a total of 22.2 acres of additional parkland. Additional project-facilitated employment growth, estimated at 5,985 jobs by the year 2020, may also generate some additional demand for park and recreation services in the Specific Plan area. Existing central area and west side facilities do not have sufficient capacity to accommodate this additional demand.

In response, the Specific Plan calls for development of approximately 25 acres of parkland on the McNear Peninsula.² Sponsors of Specific Plan-facilitated projects within the Specific Plan area would also be required to comply with the City's standard parkland dedication or in-lieu

¹CEQA Guidelines, 2002. Appendix G, Item IX (b) and XIII (a).

²City of Petaluma, Draft Central Petaluma Specific Plan, 2002, p. 62.

park impact fee requirements. These measures would ensure that Specific Plan impacts related to parks and recreation remain at a ***less-than-significant level***.

Mitigation. No additional mitigation is required.

8.8 SOLID WASTE AND RECYCLING

8.8.1 Setting

The City depends on the Sonoma County Solid Waste Management System for solid waste transfer and disposal. A private company, Empire Waste Management, a division of Waste Management International, contracts with the City for the collection of residential and commercial solid waste and recyclables.

The City is served by the Central Landfill, located within the Central Disposal site, owned by Sonoma County. The Central Landfill is a Class III landfill permitted to accept up to 2,500 tons per day (tpd) of non-hazardous municipal solid waste. In 1999, an average of 1,300 tpd were accepted.¹ However, the landfill is nearing capacity. An expansion of the Central Landfill, called the East Canyon expansion area, was recently opened and will provide capacity until 2015.

In the year 2000, Sonoma County completed the "Solid Waste Management Alternatives Analysis Report" to assess options to address the impending 2015 closure of the Central Landfill. The preferred alternative from this report recommends expansion of existing landfill as much as feasible. The west side of the Central Landfill is currently under evaluation for potential expansion.²

The Integrated Waste Management Act required local governments to prepare and implement plans to achieve 50 percent waste reduction by the year 2000. Sonoma County and local municipalities achieved 40 percent diversion rate, and expect to meet the 50 percent waste reduction goal by 2005.³

¹Dyett & Bhatia, p. 12-50.

²Donna Caldwell, Waste Management Specialist, Sonoma County Public Works Department Refuse Division, personal communication with Vanessa Bulkacz of Wagstaff and Associates; December 20, 2002.

³Dyett & Bhatia, p. 12-50.

8.8.2 Significance Criteria

The project would be considered in this EIR to have a potentially significant impact on solid waste service if it or its development inducing effects would:¹

- (a) Require or result in the construction of new solid waste disposal facilities, or expansion of existing facilities, the construction of which could cause significant environmental effects;
- (b) Be served by a landfill with insufficient permitted capacity to accommodate the project's waste disposal needs; or
- (c) Breach published national, state or local standards relating to solid waste or litter control.

8.8.3 Impacts and Mitigation Measures

Solid Waste Service Impacts. Additional development in the proposed Specific Plan area would increase demand for solid waste collection and disposal services. The City's standard capital impact fee is expected to be adequate to cover the cost of any necessary additional solid waste disposal services. Landfill capacity is expected to be available through 2015, as noted in subsection 8.8.1 above, and the City is pursuing additional landfill expansion options with or without the proposed Specific Plan, which would be subject to their own CEQA compliance obligations. The Specific Plan impact on solid waste services would therefore be considered ***less-than-significant*** (see Criteria (a) through (c) above).

Mitigation. No significant impacts have been identified; no mitigation is required.

¹CEQA Guidelines, Appendix G, item XVI (b), (f) and (g).

9. VISUAL FACTORS

This section describes the existing visual environment within the proposed Specific Plan boundary, identifies the potential impacts of anticipated project activities and associated growth and intensification on these conditions, and recommends mitigation measures to address identified significant adverse visual impacts.

9.1 SETTING

9.1.1 General Visual Character of the Specific Plan Area

The Specific Plan area is distinguished by a rich and complex visual character. The area contains a mixture of commercial, industrial and residential lands, including a significant component of undeveloped and vacant land. The topography is generally level throughout the area. The visual centerpiece of the Specific Plan area is the Petaluma River, which bisects the area. The central area river segment has been altered over the years to accommodate navigational uses. One such alteration and visually distinctive feature is the Turning Basin, a widened area of the river in the center of the Specific Plan area which was developed to facilitate the turning of vessels and now marks the terminus of the navigable extent of the river.

With the exception of the river, the proposed Specific Plan area is largely urbanized, with few natural features remaining. The description of the Specific Plan area visual setting which follows was derived from the draft Central Petaluma Specific Plan and is divided into the same four planning subareas: the North River, Turning Basin, Riverfront Warehouse, and Lower Reach (see Figure 3.2 in Chapter 3, Project Description). Similar to the draft Specific Plan, the Specific Plan area visual setting is described in terms of the following categories:

(a) Built Environment. This visual setting category considers such urban features as the pattern of development, the organization of streets, and the massing and scale of buildings.

(b) Streetscape Conditions. This category considers the visual characteristics of street corridors, including the width of the street, accommodations for pedestrians and bicyclists, street landscaping, and the orientation of buildings facing the street.

(c) Significant Views and Visual Landmarks. The views and landmarks category considers important view corridors and visually distinctive features visible from public places (i.e., from public roads, parks, and public buildings). Visual landmarks are buildings or natural features

that are prominent and add visual and/or architectural interest to an area. Buildings described in this chapter as visual landmarks are not necessarily directly related to historic designations, which are discussed in section 7 of this EIR (Cultural and Historic Resources).

(d) Sensitive Receptors. Sensitive receptors are land uses within or adjacent to the Specific Plan area that are particularly sensitive to changes in their visual setting; specifically residences, residential neighborhoods, and parks.

9.1.2 North River Subarea

(a) Built Environment. The largest and most visually distinctive land uses in this area are comprised of the Hunt & Behren's complex (approximately 4.5 acres) and Dairyman's Feed complex (approx. 3.7 acres), both located on the Petaluma River shoreline. Both of these older agricultural-based uses include large industrial buildings on large lots. The Dairyman's Feed complex includes some of the tallest structures in Petaluma. Additional commercial/industrial uses in the North River subarea include the Spectrum Foods and Sunset Line and Twine operation, which are comprised of large, low-rise warehouse-type buildings along Lakeville Street.

East of the river, there are also several large-lot industrial and auto-oriented commercial uses, including Hamilton Auto wreckers adjacent to the river and the Payless/Grand Auto shopping center at D Street and Lakeville Street. These uses feature low-rise buildings with large setbacks and streetfront parking.

Petaluma Boulevard North is primarily dedicated to retail uses, many of which provide automotive services. Retail uses in the immediate vicinity of the Petaluma Boulevard North and Washington Street intersection are in turn-of-the century buildings, and provide a transitional link between the historic downtown on the south side of Washington Street and the more automotive service-oriented uses further north along Petaluma Boulevard North.

(b) Streetscape Conditions. Lakeville Street and Petaluma Boulevard North are the major roadways in the North River subarea. Petaluma Boulevard North is a four-lane arterial that carries a high volume of traffic. Lakeville Street is also a major four-lane auto-oriented thoroughfare and an important gateway corridor into Petaluma from the U.S. 101 freeway. There are also several large surface parking lots in this subarea.

(c) Views and Visual Landmarks. The Hunt & Behren's and Dairyman's Feed complexes are two visually distinctive built features that strongly convey the City's agricultural heritage and tradition, and are still in active use. These buildings are among the tallest structures in Petaluma, and provide an important sense of visual orientation. Other important structures in the North River subarea include the commercial/industrial building that house Spectrum Foods and Sunset Line and Twine on Lakeville Street. There is a focal view towards Sonoma Mountain up Washington Street on the edge of this subarea.

(d) Sensitive Receptors. There are no "sensitive receptors" within the North River subarea. However, the Hill Plaza Park is located immediately west of Petaluma Boulevard North at the western edge of the North River subarea.

9.1.3 Turning Basin Subarea

(a) Built Environment. The Turning Basin subarea lies at the heart of the Specific Plan area as well as the City as a whole and is developed primarily with industrial, service commercial and retail uses. The Turning Basin subarea also contains areas of vacant or underutilized properties. The area's most distinctive visual feature is the Petaluma River Turning Basin. There are several docks constructed within the Turning Basin for recreational vessels, and moored fishing boats and other marine craft are present. The Turning Basin is surrounded by the Old River Inn Restaurant (occupying a restored Victorian residence), warehouse buildings, Balshaw Bridge, and the Petaluma River Walk.

There is a significant difference in the Turning Basin subarea between the west and east sides of the river. On the west, development is organized within a finely scaled historic street grid that wraps around a bend in the river. Petaluma's historic downtown, containing a grouping of predominantly two- and three-story retail buildings originally constructed in the mid- to late-1800s, is situated along this bank of the river. Many buildings in this area are scaled and developed with a pedestrian orientation, with buildings opening directly onto sidewalks and featuring visually interesting vintage brick, wood, and stucco facades. Along Petaluma Boulevard near Washington Street, there is a visually distinctive grouping of predominantly masonry buildings that date from the mid-1800s.

The Great Petaluma Mill, originally an industrial building that has been adapted for retail use. Water Street, located behind the commercial buildings adjacent to the river, is a unique vestige of a rail spur that linked the main line to industrial properties south of D Street. Between B and D streets, however, the visual character of development changes considerably, giving way to larger warehouse and service commercial structures. A PG&E substation located along the river at D Street contains large above-ground power towers.

On the east side of the river, the built environment is less visually cohesive and contains substantial portions of underutilized land. The Golden Eagle Shopping Center, an auto-oriented retail center, is located on the east bank of the Turning Basin. The shopping center contains four buildings oriented to an unlandscaped parking lot. Along Weller Street, adjacent to the Golden Eagle center, are the Old River House (Farrell House), a large Victorian house that was relocated from elsewhere and adapted as a restaurant, and metal clad warehouse structures. The Golden Eagle Shopping Center and vacant lots between Weller and Lakeville streets detract from the visual coherency quality of this area. The currently vacant Petaluma train depot is a visually and historically interesting feature, but is located on an otherwise undeveloped parcel which comprises a full 7-acre city block at Copeland and East D Street. The property is traversed by several track lines.

Visual deficiencies which contribute to blighted conditions in this subarea include: (1) a collection of badly deteriorated warehouse buildings, small wood frame commercial buildings, and corrugated metal commercial buildings; (2) certain streets with deteriorated pavement, subsided and breaking curbs, gutters, and sidewalks; and (3) abandoned railroad ties, storage tanks, trash and debris.

(b) Streetscape Conditions. The Turning Basin subarea is bounded by four of Petaluma's major streets: East Washington, Petaluma Boulevard North, Lakeville Street, and D Street. East Washington Street is a wide auto-dominated street that carries large volumes of traffic. The visual character of the street segment within the Turning Basin subarea is diminished by the width of the pavement area, a lack of landscaping and amenities, and the presence of strip commercial uses with large parking areas.

Petaluma Boulevard North is a four-lane arterial that also carries a high volume of traffic, but is more attractive due to the retail building orientation to much of the street frontage. Petaluma Boulevard between East Washington and Western is a pedestrian-scaled four-lane street which is made attractive by the adjoining historic buildings which form a well-defined street wall. Landscaping is generally sparse on this segment, with the exception of a planted median between Western and B streets. South of B Street, the boulevard loses its pedestrian-oriented character due to the diffused mixture of land uses, along with parking areas adjacent to the street, faster moving traffic, and a lack of landscaping and amenities.

D Street also carries large volumes of traffic, and lacks amenities for pedestrians or bicyclists.

(c) Significant Views and Visual Landmarks. The Turning Basin subarea includes visually interesting short-range views of the Petaluma River and the Turning Basin from its Water Street edge. Views of the Sonoma Mountains are also visible from some points along Water Street. Due to the lack of buildings in the area between Weller and Lakeville streets, there are views to the Sonoma Mountains and the West Marin hills from Weller and Copeland streets. Views from the Petaluma River to Burdell Mountain are available along D Street and Western Avenue.

There are also several important visual landmarks in the Turning Basin subarea, including the Petaluma Depot, the Great Petaluma Mill, the Old River House adjacent to the Turning Basin, commercial buildings along Petaluma Boulevard, and the above-ground PG&E powerline towers at D Street and the river. In addition, the tracks and wooden trestle structure on Water Street comprise an important visual feature that recalls the history of Petaluma. A recent engineering analysis of the wood trestle has determined that it is structurally unsound and may have to be removed.

(d) Sensitive Receptors. While there are no sensitive receptors located within the Turning Basin subarea, residential neighborhoods adjoin the area on its east and west sides. The Petaluma Depot, although not currently open to the public, is anticipated to become a passenger intermodal station and more active subarea vantage point. Walnut Park, a

neighborhood park, is on the opposite side of Petaluma Boulevard South, and adjoining residences west of the subarea are located on a promontory that overlooks the area. The Petaluma River is also considered a future sensitive receptor; public uses are anticipated to increase along its length.

9.1.5 Riverfront Warehouse Subarea

(a) **Built Environment.** The Riverfront Warehouse subarea is located on the west side of the river, from D Street to McNear Hill. Currently, about 50 percent of this subarea is in light industrial or warehouse retail use. In the area between D Street and Foundry Wharf, the historic street grid provides the basic organizing structure for an unusually high mixture of industrial, commercial and residential land uses. The Riverfront Warehouse subarea is widely recognized as an area where the mix of gabled warehouse structures and residential bungalows, placed within the city's nineteenth-century street grid, has created a unique and valued visual environment within the city.

The portion of the Riverfront Warehouse subarea between D and H streets is one of the more visually distinctive districts in the city, if not the entire region. Buildings are organized within the traditional West Petaluma street grid. The repetition of gabled metal clad warehouse structures along the riverfront, and prior to the recent (October 2000) fire, the conveyors that ran across First Street at the Bar Ale buildings, created a highly memorable, visually interesting environment. The row of warehouses between First Street and the river provides a particularly strong visual statement. In the area around H Street, there is a visually interesting mix of small-scale residential bungalows and the mixed-use Foundry Wharf complex.

South of Foundry Wharf, the Riverfront Warehouse subarea contains a mixture of larger industrial and strip commercial businesses. Most buildings here are low-rise, typically one story with large storage yards. The exception to this pattern is the massive Van Bebber Bros. steel company building adjacent to Foundry Wharf.

Visual deficiencies in the Riverfront Warehouse subarea include some aging and deteriorating warehouse and mill structures, other dilapidated buildings, deteriorated residential exteriors, unpaved streets and deteriorated pavement surfaces, rotting pilings, the deteriorated 1st Street Bridge, and trash and debris accumulations.

(b) **Streetscape Conditions.** Streetscape conditions within the Riverfront Warehouse subarea are varied. Some streets lack sidewalks and landscaping. In general, paving is in poor condition. The area around Second and G streets has street trees that provide a positive contribution to the area's visual image.

(c) **Significant Views and Visual Landmarks.** The Riverfront Warehouse subarea includes visually interesting views of the river and McNear Island as well as distant views to the Sonoma Mountains from First Street at Thompson Creek, and from the ends of G and H streets.

(d) Sensitive Receptors. Single-family residential uses are mostly clustered on three blocks at the southern end of the Riverfront Warehouse subarea. Sensitive receptors include residences within and adjacent to this portion of the subarea, including the McNear Hill residential neighborhood. Also, although much of McNear Island is currently privately owned, it is designated as a future city park. Most of the Riverfront Warehouse subarea will be visible from this park.

9.1.6 Lower Reach Subarea

(a) Built Environment. The Lower Reach subarea is comprised of service commercial uses, large-lot industrial uses and the largely undeveloped McNear Peninsula. The City's wastewater treatment plant is also located on the McNear Peninsula.

On the north side of the river in the Lower Reach area, three large industrial businesses along the river, Jerico Products, Pomeroy Corporation and Shamrock Materials, use large land areas for storage with few structures. Many of their operations are conducted outside. Shamrock Materials also supports a batch plant, with high conveyors that are visible for a long distance. These conveyors are the only tall structures in the Lower Reach subarea. The remaining structures in this subarea are low-rise.

Along the Lakeville Street corridor, auto-oriented uses predominate. Many of these uses are service commercial, including storage facilities, automotive services and repair, as well as general retail.

(b) Streetscape Conditions. Lakeville Street is the primary street in the Lower Reach subarea. Lakeville Street is a major two-lane auto-oriented thoroughfare that also provides an important gateway corridor into Petaluma from the U.S. 101 freeway.

(c) Significant Views and Visual Landmarks. The Lower Reach subarea includes visually interesting short-range views of the river and warehouse buildings along First Street. In addition, there are views of Sonoma Mountain from vantage points within the subarea. The high conveyors on the Shamrock Materials property are visible from many places in Petaluma.

(d) Sensitive Receptors. There are no sensitive receptors within the Lower Reach subarea at this time. However, once the McNear Peninsula is developed with the planned park, it will become an important vantage point. In addition, residential uses on McNear Hill located immediately south of the area, on the south bank of the Petaluma River, will have views of development in the Lower Reach subarea.

9.2 PERTINENT PLANS AND POLICIES

Adopted Petaluma General Plan goals, objectives and policies pertinent to consideration of the visual effects of Specific Plan facilitated growth and intensification are set forth in the *Community Character* chapter and include the following:

- *Goal 1. Strengthen Petaluma's unique identity.*
- *Goal 2. Preserve and strengthen the quality of life in Petaluma.*
- *Goal 3. Preserve and enhance views of dominant features.*
- *Objective (a): Maintain and enhance Petaluma's physical diversity, unique image, and small town atmosphere.*
- *Objective (b): Preserve the rural backdrop and maintain views of important natural features including the Sonoma Mountains, Petaluma River, and western hills.*
- *Policy 2: Within the context that growth will occur, every effort shall be made to preserve and enhance the view of surrounding lands, hills, and ridges.*
- *Policy 3: Low-profile, horizontal development shall be encouraged. Locations and criteria to allow for taller buildings will be studied.*
- *Policy 4: The City shall strive to locate new buildings, that would otherwise block vistas, outside of view corridors.*
- *Policy 6: Well-designed developments that will be harmonious with their setting and/or enhance the city's image shall be encouraged.*
- *Program (2): Through the development review process, site (or prohibit) buildings so that views and designated view corridors are not blocked.*
- *Objective (d): Enhance the function, safety, and appearance of Petaluma's streets and highways.*
- *Objective (e): Define and enhance the entryways into the city.*
- *Objective (f): Improve the appearance of new and existing major streets.*
- *Policy 8: The City will make every effort to beautify its streets and build them at a scale comfortable to pedestrians.*

- *Policy 10: The City shall encourage public and private landscaping along or in all major streets.*
- *Objective (i): Upgrade the quality of public, residential, commercial, and industrial development throughout the city.*
- *Objective (j): Preserve Petaluma's architectural heritage.*
- *Objective (k): Retain the unique qualities and architectural flavor of downtown and of West Side residential areas.*
- *Objective (l): Prevent the destruction of landmark buildings.*
- *Objective (m): Preserve heritage and landmark trees.*
- *Objective (n): Prevent blight.*
- *Policy 16.1: The City encourages the restoration and re-use of historic buildings.*
- *Policy 17: All development and redevelopment shall add to, not detract from, existing significant, City-identified architectural landmarks, buildings, and areas.*
- *Policy 18: The City shall make every effort to preserve landmark trees and major groves.*
- *Objective (o): Preserve meaningful amounts of usable urban open space in and between developments.*

The following policies set forth in the *Local Economy* chapter of the Petaluma General Plan, 1987-2005 are also pertinent to consideration of potential Specific Plan effects on visual factors:

- *Objective (i): Reinforce the unique character of downtown.*
- *Policy 16: Future Central Business District (CBD) development shall respect and be compatible with the existing scale and historic and architectural character of downtown.*
- *Policy 19: The City shall encourage owners of downtown buildings to improve building exteriors consistent with the historic and visual character of the downtown.*

9.3 IMPACTS AND MITIGATION MEASURES

9.3.1 Significance Criteria

As defined by Appendix G of the *CEQA Guidelines*,¹ a project may be deemed in this EIR to have a significant environmental effect on visual quality if it or related urban growth and intensification will:

- (a) Have a substantial adverse effect on a scenic vista;
- (b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- (c) Substantially degrade the existing visual character or quality of the site and its surroundings; or
- (d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

9.3.2 Impacts and Mitigation Measures

- (a) Turning Basin and North Reach Subareas:

Impact 9-1: Water Street Area Visual Impacts (Turning Basin and North River Subareas). In the Turning Basin and North River subareas, Specific Plan-facilitated development and intensification consistent with proposed draft Specific Plan land use policies could adversely affect the valued visual character of water along the west side of the river. This possible effect represents a ***potentially significant impact*** (see criteria (a), (c) and (d) under subsection 9.3.1, "Significance Criteria," above).

Under proposed draft Central Petaluma Specific Plan land use policies, Specific Plan-facilitated new development and intensification is encouraged along the street adjacent to the Petaluma River. Such development would alter streetscape conditions in this area, would be visible from "sensitive receptors," i.e., from adjoining neighborhoods to the west, and could alter short-range views of the river and adjacent visually interesting industrial facilities.

¹ *CEQA Guidelines*, 2002. Appendix G, Item I (a) - (d).

Mitigation 9-1: Specific Plan-facilitated development along Water Street shall be subject to stringent design review by the City's Site Plan and Architectural Review Committee (SPARC), based on: (1) the current SPARC Design Guidelines, and (2) an amendment to the current SPARC Design Guidelines to incorporate the following additional development criteria specifically identified in the new Petaluma "Smart Code" zoning ordinance outlined in Appendix A of the draft Central Petaluma Specific Plan: Smart Code zoning map (Section 2.10), Smart Code Building Standards Table (Section 4.10), Building Placement (Section 4.30), Frontage Types (Section 4.40), Civic Spaces (Section 4.50) and Landscape Standards (Section 4.60), as well as the Architectural Character narrative in the Community Design Chapter (Chapter 4 of the Specific Plan).

In addition, future new buildings on this waterfront should be set back from the riverfront and incorporate design approaches consistent with the City's adopted River Access and Enhancement Plan and the recommended design approach for Area 2 in Chapter 4 of the Specific Plan. Designs should incorporate elements such as bay windows and porches that relate to the river and encourage a more positive relationship between indoor and public outdoor spaces.

Adoption and effective implementation of these design standards and guidelines would mitigate this impact to a ***less-than-significant level***.

Impact 9-2: East Washington Street Corridor Visual Impacts (North River and Turning Basin Subareas). In the North River and Turning Basin subareas, development and intensification consistent with proposed draft Specific Plan land use policies could adversely affect the valued visual aspects of the East Washington Street corridor. This possible effect represents a ***potentially significant impact*** (see criteria (a), (c) and (d) under subsection 9.3.1, "Significance Criteria," above).

Proposed draft Central Petaluma Specific Plan land use policies would permit intensification to be concentrated along East Washington Street. Such development could substantially alter streetscape conditions along this important community entrance corridor.

Mitigation 9-2: Implement *Mitigation 9-1*, adding the approach outlined for Area 3 in Chapter 4 of the current Draft Central Petaluma Specific Plan to the current SPARC Design Guidelines. Adoption and effective implementation of this design standard would mitigate this impact to a ***less-than-significant level***.

Impact 9-3: Turning Basin Subarea Visual Impacts. In the Turning Basin subarea, Specific Plan-facilitated development and intensification consistent with proposed draft Specific Plan land use policies could adversely affect the valued visual character of the area around the Petaluma River Turning Basin. This possible effect represents a **potentially significant impact** (see criteria (a), (b), (c), and (d) under subsection 9.3.1, "Significance Criteria," above).

In the Turning Basin subarea, Specific Plan-facilitated development could result in buildings and structures that are larger in height, mass and scale than existing and adjoining development. These changes in visual character would be most evident on the east side of the Petaluma River, but also on the west side of the river between B and D streets, where new development on vacant and underutilized parcels could result in new buildings ranging from two to four stories in height, replacing undeveloped lots and one-story structures. Such new development would be visible from sensitive receptors in the area, but due to the level topography, would not block significant views from Walnut Park or adjoining neighborhoods to the east and west of the Turning Basin. New Specific Plan-facilitated development would also alter streetscape conditions along all streets in the area.

Mitigation 9-3: Implement *Mitigation 9-1*, adding the design approach outlined for Area 5 in Chapter 4 of the *Community Design* element of the proposed draft Central Petaluma Specific Plan to the current SPARC Design Guidelines. Adoption and effective implementation of these design standards would mitigate this impact to a **less-than-significant level**.

(b) Riverfront Warehouse Subarea:

Impact 9-4: Riverfront Warehouse Subarea Visual Impacts. In the Riverfront Warehouse District, development and intensification consistent with the land use policies of the adopted and anticipated Petaluma General Plan and the Draft Central Petaluma Specific Plan could adversely affect the valued visual character of the Riverfront Warehouse District, including possible replacement of existing visually distinctive warehouse structures, introduction of incompatible new building scales and parking facilities and possible disruption of valued existing views to the river and surrounding landscape. This possible effect represents a **potentially significant impact** (see criteria (a), (b), (c) and (d) under subsection 9.3.1, "Significance Criteria," above).

As noted in subsection 9.1.5 above, the Riverfront Warehouse subarea possesses a combination of buildings and streetscape conditions that creates a valuable unique visual resource. New development consistent with the proposed Specific Plan land use policies

could result in removal of the existing warehouses in the Riverfront Warehouse subarea and their replacement with contemporary structures. While no specific development proposals have been made for the reuse or rehabilitation of the warehouse structures, their removal would be considered a significant visual impact. New development would also be visible from identified sensitive receptors (e.g., residences within the subarea), and could result in incompatibilities in building scale between new commercial and industrial buildings and existing single-story residential development.

Mitigation 9-4: Further visual impact assessment should be undertaken upon submission of specific development proposals for the Riverfront Warehouse District. In addition to the project design documents and materials currently required for the City's SPARC review process, visual simulations and/or shadow analysis shall be required where significant new buildings or changes in land uses are proposed within this subarea.

Also, implement *Mitigation 9-1*, adding the recommended design approach specifically identified for Area 11 in Chapter 4 of the Draft Central Petaluma Specific Plan to the current SPARC Design Guidelines in order to specifically address the need to protect and enhance the unique visual character of this subarea and foster a visually coherent district of buildings, streets and open spaces in the subarea.

In addition, the SPARC Design Guidelines should be amended to incorporate the following Specific Plan-identified urban design objectives:

- First Street should be improved as a landscaped corridor, with limited curb cuts in order to create a continuity of street tree landscaping and streetscape elements. Perpendicular or diagonal parking should be encouraged on one side of the street, until such time that the rail tracks are in active use.
- Surface parking lots should be landscaped to achieve a 50 percent canopy coverage of paved areas at maturity.
- Surface parking lots should be limited in size along the river side of First Street.
- Building forms and landscape styles should recall the diverse and eclectic character of this subarea. This would result in a variety of different building materials, from wood frame buildings of a fine Victorian scale and detail to bold forms and sheet metal warehouses along the riverfront. While the richness of local building traditions should be reflected, innovations in building technologies and design are encouraged to achieve greater efficiency and foster creativity.

(continued)

Mitigation 9-4 (continued):

- Along the river, structures should emulate forms reminiscent of the existing river warehouses. Large-volume buildings should be encouraged with repeating roof patterns and a tight-knit pattern along the river edge. Front yard setbacks should be discouraged, except to accommodate continuous landscaping along the street and a continuous walkway along the river.

Adoption and effective implementation of these design standards and guidelines will reduce this impact to a ***less-than-significant level***.

(c) Lower Reach Subarea:

Impact 9-5: Lower Reach Subarea Visual Impacts. In the Lower Reach subarea, Specific Plan-facilitated development and intensification could adversely affect the visual environment of existing and proposed park uses on the McNear Peninsula. This possible effect represents a ***potentially significant impact*** (see criteria (a), (d) and (e) under subsection 9.3.1, "Significance Criteria," above).

Under the proposed Specific Plan land use policies, new development and intensification would be encouraged in the Lower Reach subarea adjacent to the Petaluma River. Such development could alter short-range views of the river and would be visible from "sensitive receptors;" specifically from existing and proposed park uses on the McNear Peninsula.

Mitigation 9-5: Specific Plan-facilitated development along the McNear Channel in the Lower Reach subarea shall be subject to stringent design review by the City's Site Plan and Architectural Review Commission (SPARC), based on: (1) the current SPARC Design Guidelines, and (2) an amendment to the current SPARC Design Guidelines to incorporate the following additional guidelines specifically identified in the *Community Design* element of the proposed draft Central Petaluma Specific Plan:

- *Draft Specific Plan Community Design Policy 4.1:* Provide for a major band of waterfront open space (in the Lower Reach subarea).
- *Draft Specific Plan Community Design Policy 4.2:* Establish a continuous circuit of open space.
- *Draft Specific Plan Community Design Policy 4.3:* Establish a linear open space corridor adjacent to the rail tracks.

Adoption and effective implementation of these design standards would mitigate this impact to a ***less-than-significant level***.

10. NOISE

This EIR chapter describes the existing noise environment in the Specific Plan area, anticipated changes in that noise environment as a result of the Specific Plan-facilitated development, and related significant adverse noise impacts and mitigation needs.

10.1 SETTING

10.1.1 Fundamentals of Acoustics

(a) Definitions of Noise. Noise is defined as unwanted sound. The effects of noise can range from interference with sleep, concentration, and communication, to physiological stress, and at higher noise levels, hearing loss.

Sound levels are usually measured and expressed in decibels (dB), with 0 dB corresponding roughly to the threshold of hearing. The term "decibels" and other related technical terms are defined in Table 10.1.

(b) Human Sensitivity to Noise. The method commonly used to quantify environmental noise involves measurement of all frequencies of sound, with an adjustment to reflect the fact that human hearing is less sensitive to low and high frequencies than to midrange frequencies. This measurement adjustment is called "A" weighting. A noise level so measured is called an A-weighted sound level (dBA).¹ Examples of typical A-weighted noise levels in the environment and industry are provided in Table 10.2.

Environmental noise fluctuates in intensity over time. Therefore, time-averaged noise level computations are typically used to quantify noise levels and determine impacts. The two average noise level descriptors most commonly used are L_{dn} and CNEL. L_{dn} , the day/night average noise level, is the 24-hour average, with a 10 dBA penalty added for nighttime noise (10:00 PM to 7:00 AM) to account for the greater human sensitivity to noise during this period. CNEL, the community equivalent noise level, is similar to L_{dn} , but adds a five dBA penalty to evening noise (7:00 PM to 10:00 PM).

¹In practice, the level of a sound source is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighting curve.

Table 10.1
DEFINITIONS OF ACOUSTICAL TERMS

<u>Term</u>	<u>Definitions</u>
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted.
L_{01} , L_{10} , L_{50} , L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 PM to 10:00 PM and after addition of 10 decibels to sound levels in the night between 10:00 PM and 7:00 AM.
Day/Night Noise Level, L_{dn}	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 PM and 7:00 AM.
L_{max} , L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Single-Event Noise Exposure Level (SEL)	The sound exposure level of a single noise event (such as an aircraft flyover or a train passby) measured over the time interval between the initial and final times for which the sound level of the single event exceeds the background noise level.

SOURCE: Illingworth & Rodkin, Inc.

Table 10.2
TYPICAL SOUND LEVELS MEASURED IN THE ENVIRONMENT AND INDUSTRY

<u>At a Given Distance from Noise Source</u>	<u>A-Weighted Sound Level in Decibels</u>	<u>Noise Environments</u>	<u>Subjective Impression</u>
	140		
Civil Defense Siren (100')	130		
Jet Takeoff (200')	120		Pain Threshold
	110	Rock Music Concert	
Pile Driver (50')	100		Very Loud
Ambulance Siren (100')			
	90	Boiler Room	
Freight Cars (50')		Printing Press Plant	
Pneumatic Drill (50')	80	In Kitchen With Garbage Disposal Running	
Freeway (100')			
	70		Moderately Loud
Vacuum Cleaner (10')	60	Data Processing Center	
		Department Store	
Light Traffic (100')	50	Private Business Office	
Large Transformer (200')			
	40		Quiet
Soft Whisper (5')	30	Quiet Bedroom	
	20	Recording Studio	
	10		Threshold of Hearing
	0		

SOURCE: Illingworth & Rodkin, Inc.

One way of anticipating a person's subjective reaction to a new noise is to compare the new noise with the existing noise environment to which the person has become adapted, i.e., the so-called "ambient" noise level. With regard to increases in A-weighted noise levels, knowledge of the following relationships will be helpful in understanding this EIR chapter:

- Except in carefully controlled laboratory experiments, a change of one dBA cannot be perceived.
- Outside of the laboratory, a three dBA change is considered a just-perceivable difference.
- A change in noise level of at least five dBA is required before any noticeable change in community response would be expected.
- A 10 dBA increase is subjectively heard as approximately a doubling in loudness, and would almost certainly cause an adverse change in community response.

10.1.2 Sleep and Speech Interference

The thresholds for speech interference indoors are about 45 dBA if the noise is steady and above 55 dBA if the noise is fluctuating. Outdoors the thresholds are about 15 dBA higher. Steady noise of sufficient intensity (above 35 dBA) and fluctuating noise levels above about 45 dBA have been shown to affect sleep. Interior residential standards for multi-family dwellings are set by the State of California at 45 dBA L_{dn} . Typically, the highest steady traffic noise level during the daytime is about equal to the L_{dn} , and nighttime levels are 10 dBA lower. The standard is designed for sleep and speech protection and most jurisdictions apply the same criterion for all residential uses.

Typical structural attenuation is 12-17 dBA with open windows. With closed windows in good condition, the noise attenuation factor is around 20 dBA for an older structure and 25 dBA for a newer dwelling. Sleep and speech interference is therefore possible when exterior noise levels are about 57-62 dBA L_{dn} with open windows and 65-70 dBA L_{dn} if the windows are closed. Levels of 55-60 dBA are common along collector streets and secondary arterials, while 65-70 dBA is a typical value for a primary/major arterial. Levels of 75-80 dBA are normal noise levels at the first row of development outside a freeway right-of-way. In order to achieve an acceptable interior noise environment, bedrooms facing secondary roadways need to be able to have their windows closed, those facing major roadways and freeways typically need special glass windows.

10.1.3 Existing Noise Environment

The major noise sources in the Specific Plan area and vicinity include vehicular traffic, industrial activities, and occasional trains. The major noise-generating (high traffic) local streets include East Washington Street, Lakeville Street, East D Street and Petaluma

Boulevard. Freight trains intermittently and occasionally generate high noise levels along the California Northern (Northwestern Pacific) Rail Line, which parallels Lakeville Street through the Specific Plan area.

Noise conditions were studied as part of the Specific Plan formulation effort. Existing traffic noise was monitored along east Washington Street and D Street in May 1997. Noise levels were monitored over a 24-hour period along the south side of East Washington Street about 100 feet from the centerline of the road just east of Weller Street. The measured L_{dn} was 68 dBA. The calculated distances to the 70, 65 and 60 L_{dn} noise contours are about 65 feet, 200 feet and 430 feet, respectively.

Noise levels were also monitored along Lakeville Street between East D Street and Jefferson Street at a point about 40 feet from the centerline of the roadway. The measured L_{dn} was about 73 dBA. After adjusting for the difference in distance between this measurement and the measurement along East Washington Street, the roadway traffic noise levels are essentially the same. The distances to the noise contours would, therefore, be about the same.

In addition, traffic noise was measured along Petaluma Boulevard South (25 feet from curb) at K Street in August 1996. The measured L_{dn} was 68 dBA.

10.2 PERTINENT PLANS AND POLICIES

10.2.1 City of Petaluma

(a) General Plan Guidelines. Current adopted Petaluma General Plan Land Use/Noise Compatibility standards are shown in Table 10.3. Noise and land use planning policies and guidelines are set forth in Chapter 11, "Community Health and Safety" of the current General Plan, as outlined below.

- *Policy 25: Strictly enforce noise standards.*
- *Policy 26. The overlapping noise levels for acceptability in Figure 11-1 shall be interpreted to require application of the quieter standard unless it can be shown that the circumstances of the project allow for a less conservative interpretation based on the specific type of use, the benefits of the project and ability to mitigate the noise impacts.*
- *Policy 27: Require sound buffers (particularly landscaped buffers), open space, or other mitigation measures between residential areas and areas producing higher noise levels such as freeways, commercial sites, and industrial developments to achieve the sound level reduction necessary to produce noise compatible land uses.*

Table 10.3

PETALUMA GENERAL PLAN 1987-2005, LAND USE/NOISE COMPATIBILITY STANDARDS

Petaluma General Plan

LAND USE CATEGORY	COMMUNITY NOISE Ldn or CNEL, dB						INTERPRETATION	
	55	60	65	70	75	80		
							NORMALLY ACCEPTABLE	
Residential - Single Family Duplex, Mobile Home								Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
Residential - Multi-Family								
Transient Lodging - Motel, Hotel								New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
School, Library, Church, Hospital, Nursing Home								
Auditorium, Concert Hall, Amphitheatre								
Sports Arena, Outdoor Spectator Sports								
Playground, Neighborhood Park								
Golf Course, Stable, Water Recreation, Cemetery								New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
Office Building, Business, Commercial & Professional								
Industrial, Manufacturing, Utilities, Agriculture								New construction or development should generally not be undertaken.

Noise Source Characteristics

The land use-noise compatibility recommendations should be viewed in relation to the specific source of the noise. For example, aircraft or railroad noise is normally made up of higher single noise events than auto traffic, but occurs less frequently. Therefore, different sources yielding the same composite noise exposure do not necessarily create the same noise environment.

Suitable Interior Environments

One objective of locating both single and multi-family residential units relative to a known noise source is to maintain a suitable interior noise environment no greater than 45 dB CNEL or L_{dn}. This requirement, coupled with the measured or calculated noise reduction performance of the type of structure under consideration, should govern the minimum acceptable distance to a noise source.

Source: State of California, Office of Noise Control, 1975.

In furtherance of these policies, *Program (23)* of the current General Plan establishes a series of directives detailing requirements for acoustical studies and noise mitigation treatments.

(b) Existing Noise Regulations. In furtherance of the adopted Petaluma General Plan noise policies and programs, noise regulations are set forth in section 22-301 of the City of Petaluma Municipal Code. Section 22-301.3, "Noise Regulations Generally," prohibits construction before the hours of 7:00 AM or after 10:00 PM daily (except Saturday, Sunday and state, federal or local holidays when the prohibited time shall be before 9:00 AM and after 10:00 PM). Section 22-301.3B further sets forth maximum exterior noise exposure levels. The ordinance generally establishes a maximum hourly average noise level (L_{eq}) of 60 dBA, measured within public or private open/outdoor spaces.

10.2.2 State Building Code

The State Building Code (Title 24, Part 2) sets forth noise insulation standards applicable to new multi-family housing, hotels, motels, and other attached housing in California. The noise insulation standards establish a maximum allowable interior noise level of 45 dBA L_{dn} attributable to exterior noise sources such as vehicular traffic, railroad trains, etc. The State Building Code provisions apply where the exterior L_{dn} is 60 dBA or greater.

10.3 IMPACTS AND MITIGATION MEASURES

10.3.1 Significance Criteria

(a) CEQA Criteria. According to the *CEQA Guidelines* Appendix G,¹ a project will normally have a significant effect on the environment if it would result in:

- (1) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- (2) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
- (3) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; or
- (4) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

¹ *CEQA Guidelines*, 2002; Appendix G, Item XI (a) through (d).

For purposes of this EIR, and based on the "human sensitivity to noise" information described in subsection 10.1.(b) herein, a "substantial" increase in noise levels would occur if the project activities or project-related development and traffic increases resulted in an increase of 3 dBA or greater at noise-sensitive land uses where background noise levels already exceed 60 dBA Ldn, or 5 dBA where background noise levels are below 60 dBA Ldn.

(b) City Land Use Compatibility Standards. The *CEQA Guidelines* state that a significant impact would result if people were exposed to noise levels in excess of standards established in the local general plan or noise ordinance (see item (1) in subsection (a) above). Therefore, exposure of future land uses to noise levels that exceed the city-designated "normally acceptable" limits identified in Table 10.3 for those uses would constitute a *significant adverse noise impact*.

(c) Construction Noise Criteria. The impact of construction noise levels is determined somewhat differently because they are temporary. Significant noise impacts would result from construction if related noise levels are sufficiently high to interfere with speech, sleep, or normal residential activities. When the hourly average construction noise level during the day exceeds 60 dBA L_{eq} in an outdoor construction activity area near a residence, the construction noise will begin to interfere with speech communication and would therefore be considered a *significant short-term noise impact*. Construction activity at night that would generate an hourly average noise level exceeding 55 dBA L_{eq} outside a residence would cause noise levels inside to exceed 35 dBA, even with closed windows. An interior noise level in excess of 35 dBA would begin to interfere with sleep and would therefore be considered a *significant short-term noise impact*.

10.3.2 Compatibility of Anticipated Project-Facilitated Development with the Onsite Noise Environment

Impact 10-1: Exposure of Future Attached Residential Uses to Environmental Noise. Buildout under the proposed Specific Plan land use policies may result in exposure of existing and/or new Specific Plan area residents to environmental, roadway and railroad noise levels considered greater than "conditionally acceptable" or "normally acceptable" under existing City standards, a condition that would be considered a *potentially significant impact* (see subsection 10.3.1, "Significance Criteria" above).

The proposed Specific Plan designates the Specific Plan area for a variety of residential, commercial, industrial, recreation, and public/quasi-public uses. The existing and projected noise environment in the Specific Plan area is generally compatible with these uses. Industrial and commercial land uses would generally be compatible with the existing and projected noise environment.

However, noise levels along the major central area roadways and, intermittently, near the railroad are likely to exceed those considered normally acceptable for residential development, creating a potentially significant impact.

As outlined in the traffic section (see Chapter 6 of this EIR), buildout of the proposed Specific Plan would result in some increases in traffic along the various primary roadways through and adjacent to the proposed Specific Plan area, with the degree of traffic increase depending on which traffic improvement scenario chosen. This increase in traffic could result in a cumulative increase in ambient noise levels that would exceed City and state levels of acceptability.

Mitigation 10-1: Require all Specific Plan-facilitated attached residential projects proposed for locations adjacent to major central area roadways (i.e., Petaluma Boulevard, Lakeville Street, East Washington Street, and D Street) or along the NWP railroad corridor to prepare an acoustical assessment by a qualified acoustical consultant, and require implementation of recommended measures necessary to comply with City of Petaluma and state noise standards. Any attached residential developments would be subject to the requirements set forth in Title 24, Part II of the State Building Code. The State Building Code requires that the design for the multi-family building must include the noise control treatments necessary to reduce environmental noise to an L_{dn} of 45 dBA or less inside habitable rooms within these projects. The acoustical report, including warranted noise abatement specifications, shall be submitted along with the Building Plans during the Building Permit process. Noise control treatments that would normally be sufficient given the identified levels of Specific Plan area noise exposures include sound-rated windows and doors, and forced-air mechanical ventilation (or air conditioning) so windows may be kept closed at the discretion of the building occupants. Implementation of these measures would reduce the potential for impacts to new attached residential development due to noise and land use incompatibilities to a ***less-than-significant level***.

Impact 10-2: Specific Plan-Facilitated Construction Noise. Construction activities can generate considerable noise levels. Central Area construction activities facilitated by the Specific Plan could include site grading and preparation, building demolition, building modification and rehabilitation, construction of new buildings, installation of utilities, the paving of roadways, and construction of parking structures. The noise effects of these future construction activities would depend upon the amount of activity, the type of construction equipment used, and the noise control measures utilized. Typical maximum noise levels at busy construction sites range from 80 to 90 dBA at a distance of 50 feet from the source. These noise levels drop-off at a rate of about 6 dBA per doubling of distance between the source and receiver. Residential and other noise-sensitive uses located adjacent to project-facilitated construction activities could therefore be exposed to noise levels that would interfere with normal activities. This would constitute a potentially **significant impact** (see subsection 10.3.1, "Significance Criteria," above).

Mitigation 10-2. Require proponents of discretionary private developments (including building demolition, grading, building modification and rehabilitation, new building construction and other construction activities) and public construction projects in the Specific Plan area to implement the following mitigation measures during the construction period:

- (1) *Construction Scheduling.* Limit noise-generating construction activities to daytime, weekday hours (7:00 AM to 6:00 PM), and 9:00 AM to 5:00 PM on weekends and holidays.
- (2) *Construction Equipment Mufflers and Maintenance.* Properly muffle and maintain all construction equipment powered by internal combustion engines.
- (3) *Idling Prohibitions.* Prohibit unnecessary idling of internal combustion engines.
- (4) *Equipment Locations and Shielding.* Locate all stationary noise-generating construction equipment, such as air compressors, as far as practical from existing nearby noise sensitive receptors. Typically this would be near the center of the site and behind existing buildings wherever possible so that the buildings can act as noise barriers to shield such equipment.
- (5) *Quiet Equipment Selection.* Select quiet construction equipment, particularly air compressors, whenever possible. (Fit motorized equipment with proper mufflers in good working order.)

(continued)

Mitigation 10-2 (continued):

- (6) *Noise Disturbance Coordinator.* Designate a project construction supervisor as "Noise Disturbance Coordinator" who would be responsible for responding to any local complaints about construction noise. The Disturbance Coordinator would determine the cause of the noise complaint (e.g., starting too early, bad muffler) and institute reasonable measures to correct the problem. Conspicuously post a telephone number for the Disturbance Coordinator at the construction site and submit the name and telephone number of the Disturbance Coordinator to the City of Petaluma building division and police department.
- (7) *Notification.* Notify nearby residents (within 300 feet) in writing of the demolition and construction schedule.

Implementation of these measures will reduce this impact to a ***less than significant level.***

11. AIR QUALITY

This EIR chapter describes the impacts of the proposed Specific Plan on local and regional air quality. The section was prepared using methodologies and assumptions recommended within the air quality impact assessment guidelines of the Bay Area Air Quality Management District.¹ In keeping with these guidelines, the section describes existing air quality, short-term construction-related impacts, direct and indirect long-term emissions associated with the project, the impacts of these emissions on both the local and regional scale, and mitigation measures warranted to reduce or eliminate any identified significant impacts.

11.1 SETTING

11.1.1 Air Pollution Climatology

Petaluma lies within a relatively flat inland valley, the Petaluma Valley, located in southern Sonoma County. The climate of Petaluma Valley is influenced by marine flows from the Estero lowlands located to the west. The prevailing wind direction is northwesterly, especially in the spring and summer. The marine influence on Petaluma's climate is most pronounced in spring and summer, when daily sea breezes temper daytime temperatures and sometimes bring nighttime stratus clouds to the area.

The air pollution potential of the Petaluma Valley is generally low due to good ventilation and relatively low population density. However, there are two scenarios that can produce elevated pollution levels: stagnant conditions in the morning hours created when a weak ocean breeze meets a weak bay breeze; and an eastern or southeastern wind pattern in the afternoon brings in pollution from the Carquinez Strait region and the Central Valley (BAAQMD, 1996).

11.1.2 Air Pollutants and Ambient Standards

Both the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) have established ambient air quality standards for common pollutants. Individuals vary as to their sensitivity to air pollutants, so the national and state standards have been set at levels that protect groups that are more sensitive (e.g., asthmatics).

National ambient air quality standards (NAAQS) were established by the federal Clean Air Act of 1970 (amended in 1977 and 1990) for six "criteria" pollutants. These criteria pollutants include carbon monoxide (CO), ozone (O₃), nitrogen dioxide (NO₂), particulates (since changed

¹Bay Area Air Quality Management District, CEQA Air Quality Guidelines, April 1996.

to inhalable and fine particulate matter--PM₁₀ and PM_{2.5}), sulfur dioxide (SO₂), and lead (Pb). These are considered the most prevalent air pollutants that are known to be hazardous to human health. A summary description of these six criteria pollutants and their potential health effects is presented in Table 11.1.

The U.S. EPA has recently adopted new national air quality standards for ground-level ozone and for fine particulate matter. The existing 1-hour ozone standard of 0.12 PPM will be phased out and replaced by an 8-hour standard of 0.08 PPM. New national standards for fine particulate matter (diameter 2.5 microns or less) have also been established for 24-hour and annual averaging periods. Implementation of the new ozone and PM_{2.5} standards was originally scheduled to occur by the year 2000, but was delayed by litigation. Since then, these new standards were determined to be valid and enforceable by the U.S. Supreme Court in a decision issued in February 2001. Full implementation of these standards will not occur until the U.S. EPA has issued court-approved guidance.

California established ambient air quality standards as early as 1969 through the Mulford-Carroll Act. The California Clean Air Act of 1988 (amended in 1992) requires attainment of the California ambient air quality standards (CAAQS). In many cases, these standards are more stringent than the national ambient air quality standards.

The federal and California state ambient air quality standards are summarized in Table 11.2 for important pollutants. The federal and state ambient standards were developed independently with differing purposes and methods, although both processes attempted to avoid health-related effects. As a result, the federal and state standards differ in some cases. In general, the California state standards are more stringent. This is particularly true for ozone and particulate matter, 10 micron (PM₁₀).

11.1.3 Current Air Quality

The Bay Area Air Quality Management District (BAAQMD) monitors air quality at several locations within the San Francisco Bay Air Basin; however, none are located in Petaluma. The monitoring sites closest to the project site are located in Santa Rosa to the north and San Rafael to the south. Table 11.3 summarizes recorded exceedances of State and Federal standards at these two sites for the period 1991-2001.

Air quality in this portion of the San Francisco Bay Air Basin is relatively good. All federal ambient air quality standards are met at the Santa Rosa and Rafael monitoring sites. The more stringent state standards for PM₁₀ and ozone are occasionally exceeded.

Table 11.1
MAJOR CRITERIA AIR POLLUTANTS AND HEALTH EFFECTS SUMMARY

<u>Pollutant</u>	<u>Characteristics</u>	<u>Health Effects</u>	<u>Major Sources</u>
Ozone (O ₃)	A highly reactive photochemical pollutant created by the action of sunshine on ozone precursors (primarily reactive organic gases and oxides of nitrogen). Often called photochemical smog.	<ul style="list-style-type: none"> ▪ Eye Irritation ▪ Respiratory function impairment. 	The major sources of ozone precursors are combustion sources such as factories and automobiles, and evaporation of solvents and fuels.
Carbon Monoxide (CO)	Carbon monoxide is an odorless, colorless gas that is highly toxic. It is formed by the incomplete combustion of fuels.	<ul style="list-style-type: none"> ▪ Impairment of oxygen transport in the bloodstream. ▪ Aggravation of cardiovascular disease. ▪ Fatigue, headache, confusion, dizziness. ▪ Can be fatal in the case of very high concentrations. 	Automobile exhaust, combustion of fuels, combustion of wood in woodstoves and fireplaces.
Nitrogen Dioxide (NO ₂)	Reddish-brown gas that discolors the air, formed during combustion.	<ul style="list-style-type: none"> ▪ Increased risk of acute and chronic respiratory disease. 	Automobile and diesel truck exhaust, industrial processes, fossil-fueled power plants.
Sulfur Dioxide (SO ₂)	Sulfur dioxide is a colorless gas with a pungent, irritating odor.	<ul style="list-style-type: none"> ▪ Aggravation of chronic obstruction lung disease. ▪ Increased risk of acute and chronic respiratory disease. 	Diesel vehicle exhaust, oil-powered power plants, industrial processes.
Particulate Matter (PM ₁₀ and PM _{2.5})	Solid and liquid particles of dust, soot, aerosols and other matter which are small enough to remain suspended in the air for a long period of time.	<ul style="list-style-type: none"> ▪ Aggravation of chronic disease and heart/lung disease symptoms. 	Combustion, automobiles, field burning, factories and unpaved roads. Also a result of photochemical processes.
Lead (Pb)	Component of particulate matter. Levels have dropped 98 percent in last 30 years due to elimination of lead from gasoline.	<ul style="list-style-type: none"> • Learning disabilities • Brain and kidney damage • Children particularly susceptible 	Leaded gasoline (no longer allowed), smelters, resource recovery.

SOURCE: Wagstaff and Associates, Donald Ballanti, 2003.

Table 11.2
FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS

<u>Pollutant</u>	<u>Averaging Time</u>	<u>Federal Primary Standard¹</u>	<u>State Standard²</u>
Ozone (O ₃)	1-Hour	0.12 PPM	0.09 PPM
	8-Hour	0.08 PPM	--
Carbon Monoxide (CO)	8-Hour	9.0 PPM	9.0 PPM
	1-Hour	35.0 PPM	20.0 PPM
Nitrogen Dioxide (NO ₂)	Annual Average	0.05 PPM	---
	1-Hour	---	0.25 PPM
Sulfur Dioxide (SO ₂)	Annual Average	0.03 PPM	---
	24-Hour	0.14 PPM	0.05 PPM
	1-Hour	---	0.25 PPM
Particulates (PM ₁₀)	Annual Average	50 ug/m3	20 ug/m3
	24-Hour	150 ug/m3	50 ug/m3
Particulates (PM _{2.5})	Annual Average	15 ug/m3	12 ug/m3
	24-Hour	65 ug/m3	--
Lead (Pb)	3 month	1.5 ub/m3	--
	30 day	--	1.5 ug/m3

SOURCE: Draft EIR for the Central Petaluma Specific Plan, Donald Ballanti, 2003.

ppm = Parts Per Million, ug/m3 = Micrograms Per Cubic Meter

¹ National standards other than for ozone and those based on annual averages or annual arithmetic means are not to be exceeded more than once a year.

² California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, and PM-10 are values that are not to be exceeded. The standards for lead are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour or 24-hour average, then some measurements may be excluded. In particular, measurements are excluded that ARB determines would occur less than once per year on the average.

Table 11.3
SUMMARY OF AIR QUALITY DATA FOR SANTA ROSA AND SAN RAFAEL

<u>Pollutant</u>	<u>Standard</u>	<u>Monitoring Site</u>	<u>Days Exceeding Ambient Standards in:</u>		
			<u>1999</u>	<u>2000</u>	<u>2001</u>
Ozone (O ₃)	Fed. 1-Hour	Santa Rosa	0	0	0
		San Rafael	0	0	0
Ozone (O ₃)	Fed. 8-Hour	Santa Rosa	0	0	0
		San Rafael	0	0	0
Ozone (O ₃)	State 1-Hour	Santa Rosa	1	0	0
		San Rafael	2	0	0
Carbon Monoxide (CO)	State/Fed. 8-Hour	Santa Rosa	0	0	0
		San Rafael	0	0	0
Particulate Matter (PM ₁₀)	Fed. 24-Hour	Santa Rosa	0	0	0
		San Rafael	0	0	0
Particulate Matter (PM ₁₀)	State 24-Hour	Santa Rosa	1	0	2
		San Rafael	2	0	2
Lead (Pb)	Fed. 3 Month	Santa Rosa	0	0	0
		San Rafael ¹	0	--	--
Lead (Pb)	State 30 Day	Santa Rosa	0	0	0
		San Rafael	0	--	--

SOURCE: California Air Resources Board, Aerometric Data Analysis and Management (ADAM), 2003.

Notes:

¹- Lead levels were no longer reported at the San Rafael monitoring site after 1999.

11.1.4 Existing Pollutant Sources and Sensitive Receptors in the Project Area

The largest existing sources of pollutants within the proposed Specific Plan area are vehicles on the local roadway network. In addition, houses and businesses within the area contribute air pollutants through combustion of fuels for space heating and water heating.

"Sensitive receptors" are defined as facilities where sensitive population groups (children, the elderly, the acutely ill and the chronically ill) are likely to be located. These land uses include schools, playgrounds, child care centers, retirement homes, convalescent homes, hospitals and medical clinics. There are numerous such "receptors" in the Specific Plan project vicinity that could potentially be affected by air pollution.

11.2 PERTINENT PLANS AND POLICIES

11.2.1 Regional Air Quality Plans

National ambient air quality standards (NAAQS) were established by the federal Clean Air Act of 1970 (amended 1977 and 1990) for the six criteria pollutants described in subsection 11.1.2 and Table 11.1, above. The California Clean Air Act of 1988 (amended in 1992) requires attainment of the California ambient air quality standards (CAAQS), which are often more stringent than federal standards. Federal and state standards are summarized in Table 11.2 in subsection 11.1.2, above.

The federal Clean Air Act and the California Clean Air Act require that the State Air Resources Board, based on air quality monitoring data, designate portions of the state where the federal or state ambient air quality standards are not met as "nonattainment areas". Because of the differences between the national and state standards, the designation of nonattainment areas is different under the federal and state legislation.

11.2.2 Attainment Status

The Bay Area had until recently attained all federal standards. In June of 1998 the U.S. EPA reclassified the Bay Area from "maintenance area" to nonattainment for ozone based on violations of the federal standards at several locations in the air basin. This reversed the air basin's reclassification to "maintenance area" for ozone in 1995. Reclassification requires an update to the region's federal air quality plan.

11.2.3 Petaluma General Plan, 1987-2005

The following Petaluma General Plan, 1987-2005 provisions are applicable to consideration of potential Specific Plan-related impacts on air quality.

- *Goal 2. Strive to reduce the impacts of pollutants on the well-being of Petalumans.*
- *Objective (n): Maintain or improve Petaluma's air quality.*
- *Program (25) Implement measures to improve traffic flow, minimizing the stop and go traffic that intensifies hydrocarbon and carbon-monoxide pollution.*

11.3 IMPACTS AND MITIGATION MEASURES

11.3.1 Significance Criteria

Based on the *CEQA Guidelines*,¹ the proposed Specific Plan and/or its anticipated growth effects would be considered to have a significant impact if they result in any of the following:

- (a) Conflict with or obstruct implementation of the applicable air quality plan.
- (b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- (c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
- (d) Expose sensitive receptors to substantial pollutant concentrations.
- (e) Create objectionable odors affecting a substantial number of people.

11.3.2 Short-Term Construction Period Air Quality Impacts

Impact 11-1: Construction-Related Air Quality Impacts. Construction activities permitted and/or facilitated by the proposed Specific Plan would generate construction period exhaust emissions and fugitive dust that could noticeably affect local air quality. This would represent a ***potentially significant impact*** (see criteria (c), (d) and (e) under section 11.3.1 above, Significance Criteria).

Construction activities associated with Specific Plan-facilitated public and private development in the Specific Plan area would include grading, building demolition, building renovation or modification, new building construction, and paving. Such construction would generate pollutants intermittently. Generally, the most substantial air pollutant emissions would be dust generated from site grading or building demolition. Wind erosion and

¹ *CEQA Guidelines*, 2002. Appendix G, items III (a) through (e).

disturbance to exposed ground areas would also be sources of dust emissions. If uncontrolled, these emissions could lead to both health and nuisance impacts. PM_{10} is a component of dust. Without any dust control measures, visible dust clouds extending beyond the construction or demolition site could occur. Although temporary, this would be considered an *significant adverse impact* to local air quality.

Mitigation 11.1: For all discretionary grading, demolition, or construction activity in the Specific Plan area, require implementation of the following dust control measures by construction contractors, where applicable, during all construction phases:

- Water all active construction areas at least twice daily.
- Pave, apply water three times daily, or apply (nontoxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites.
- Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites.
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.
- Hydroseed or apply (nontoxic) soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more).
- Enclose, cover, water twice daily or apply (nontoxic) soil binders to exposed stockpiles (dirt, sand, etc.).
- Limit traffic speeds on unpaved roads to 15 mph.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- Replant vegetation in disturbed areas as quickly as possible.

Implementation of these measures would reduce the impact of the project to a ***less-than-significant level***.

11.3.3 Long-Term Local Air Quality Effects

Changes in Local Carbon Monoxide Levels. Modeling results indicate that future local carbon monoxide levels in the Specific Plan area under the "with project" year 2020 growth scenario would be well within state and federal air quality standards. This impact would therefore be considered *less than significant*.

At the local level, the pollutant of greatest concern is carbon monoxide. Concentrations of carbon monoxide are greatest near intersections and roadways with congested traffic. Such carbon monoxide emissions can be a problem in wintertime when stagnant meteorological conditions occur (i.e., very little vertical or horizontal mixing of air in the lower atmosphere).

Future "with project" local carbon monoxide levels were modeled using a screening form of the CALINE-4 computer model developed by the BAAQMD. Carbon monoxide levels were modeled at the eleven busiest intersections affected by growth and intensification in the Specific Plan area. The intersections modeled were those with the highest total volumes in the Specific Plan area. Modeled inputs included "with project" worst-case traffic levels and meteorological conditions for wintertime when the greatest potential for elevated carbon monoxide levels occur. Carbon monoxide levels were modeled near the roadway edge (e.g., outside edge of sidewalk). Modeled levels were added to background levels.

The results of the modeling for the eleven intersections are shown in Table 11.4 assuming buildout of the Specific Plan area by the year 2020. The concentrations in Table 11.4 are to be compared to the state and federal ambient air quality standards: predicted 1-hour concentrations are to be compared to the state standard of 20 PPM and the federal standard of 35 PPM; predicted 8-hour concentrations are to be compared to the state and federal standard of 9 PPM.

The modeling results indicate that existing and future carbon monoxide levels under the year 2020 "with project" scenario would be below the state and federal air quality standards. Specific Plan facilitated intensification would have a mixed impact on carbon monoxide concentrations. Some intersections would experience higher concentrations while others would remain the same, and one would have lower 1-hour concentrations. The maximum predicted increase would be 0.2 PPM. Predicted future levels of carbon monoxide at the selected "hot spot" intersections would meet both the 1-hour and 8-hour state/ federal ambient air quality standards under both the "No Project" and "With Project" scenarios. Since carbon monoxide levels associated with the "with project" year 2020 development scenario would not exceed state or federal air quality standards, the Specific Plan's impact on local air quality is considered less-than-significant.

Mitigation. No significant impacts have been identified; no mitigation is required.

11.3.4 Long-Term Regional Air Quality Effects

Impact 11-2: Long-Term Regional Emissions Increases. Future traffic increases under the "with Specific Plan" scenario would generate regional emissions increases which would exceed the applicable thresholds of significance for reactive organic gases (ROG), nitrous oxide (NO₂) and particulate (PM₁₀). This effect is considered to be a **significant project and cumulative impact** (see criteria (a) through (d) under subsection 11.3.1 above, Significance Criteria).

(a) Beneficial Impacts on Regional Air Quality. Specific Plan-facilitated growth in the Specific Plan area under the proposed Specific Plan land use policies would have several characteristics that would tend to reduce automobile usage. By facilitating development of a more intensive mixture of central area land uses in close proximity, the Specific Plan would promote residential development near shopping, services, entertainment, jobs and public transportation, and would encourage pedestrian and bicycle modes of travel.

(b) Adverse Impacts on Regional Air Quality. The Specific Plan is expected to induce an increased rate and amount of residential and commercial/industrial growth within the Specific Plan area. Resultant additional vehicle trips to and from the Specific Plan area would result in air pollutant emissions increases affecting the entire San Francisco Bay air basin.

Regional emissions of ozone precursors (Reactive Organic Gases, ROG, and Nitrogen Oxides, NO₂) and PM₁₀ associated with projected increases in vehicle use have been calculated using the URBEMIS 2001 (Version 6.2.2) computer program.¹ This computer program is distributed for this purpose by the California Air Resources Board. The model is designed to evaluate total regional air pollutant emissions under different land use scenarios. The model-projected daily emissions increases associated with project-facilitated development are identified in Table 11.5.

Guidelines for the evaluation of project impacts issued by the Bay Area Air Quality Management District consider emission increases of ozone precursors and other regional pollutants to be significant if they exceed 80 pounds per day. As illustrated in Table 11.5, projected increases in vehicle trips associated with the year 2020 "with project" development scenario are expected to generate increases in reactive organic gases, oxides of nitrogen, and particulate matter which would exceed the thresholds of significance used by the BAAQMD.

¹URBEMIS 2001 input included an ambient temperatures of 85°F, 30 MPH average trip speed, a future build-out year of 2020. Default values were used for all other parameters.

Table 11.4
**PREDICTED WORST CASE CARBON MONOXIDE (CO) CONCENTRATIONS NEAR
 SELECTED INTERSECTIONS, IN PPM --YEAR 2020¹ "WITH PROJECT" SCENARIO**

<u>Intersection</u>	<u>No Project (2020)</u>		<u>Project (2020)</u>	
	<u>1-Hour</u>	<u>8-Hour</u>	<u>1-Hour</u>	<u>8-Hour</u>
McDowell/East Madison	4.6	3.0	4.6	3.1
Lakeville/Baywood	5.0	3.3	5.1	3.4
E. Washington/Lakeville	4.5	3.0	4.7	3.1
Petaluma/D Street	4.2	2.8	4.3	2.8
Petaluma/E. Washington	4.4	2.9	4.5	3.0
D Street/Lakeville	4.5	3.0	4.4	3.0
Lakeville/U.S. 101 SB Ramps	4.6	3.1	4.8	3.2
Lakeville/ U.S. 101 NB Ramps	5.0	3.4	5.1	3.4
Old Redwood/ U.S. 101 NB Ramps	4.6	3.1	4.7	3.1
E. Washington/ U.S. 101 NB Ramps	4.6	3.1	4.8	3.2
E. Washington/U.S. 101 SB Ramps	4.6	3.1	4.9	3.3
Most Stringent Standard	20.0	9.0	20.0	9.0

SOURCE: Draft EIR for the Central Petaluma Specific Plan, Donald Ballanti, 2003.

Notes: 1- The BAAQMD screening model used for this analysis provides emission factors only through the year 2015. Year 2020 traffic volumes were analyzed assuming year 2015 emission factors. Because of the gradual decline in emission rates anticipated over time, using year 2015 emission factors represents a "worst case" assumption for the year 2020.

Table 11.5
OTHER PREDICTED REGIONAL EMISSIONS, IN POUNDS PER DAY--
YEAR 2020 "WITH PROJECT" SCENARIO

	<u>Reactive Organic Gases</u>	<u>Nitrogen Oxides</u>	<u>PM₁₀</u>
New Project Emissions	528.7	356.9	425.8
BAAQMD Significance Threshold	80.0	80.0	80.0

SOURCE: Draft EIR for the Central Petaluma Specific Plan, 1999; Donald Ballanti, 2003.

Mitigation 11-2: Apply the following emissions control strategies where applicable to Specific Plan-facilitated discretionary residential and commercial/industrial development activities within the Specific Plan area in order to reduce overall traffic generation:

- Where practical, future development proposals shall include physical improvements, such as sidewalk improvements, landscaping and the installation of bus shelters and bicycle parking, that would act as incentives for pedestrian, bicycle and transit modes of travel.
- New or modified roadways should include bicycle lanes where reasonable and feasible.
- Where practical, employment-intensive development proposals (office, retail, manufacturing) shall include measures to encourage use of public transit, ridesharing, van pooling, use of bicycles, and walking as well as to minimize single passenger motor vehicle use.
- Office land uses would generate the majority of total project trips and home-to-work commute trips that are most amenable to Transportation Systems Management (TSM) strategies. As a condition of approval, all office development projects within the Specific Plan area of 10,000 square feet (approximately 25 employees) or greater shall implement a Transportation Systems Management (TSM) program, including vehicle use reduction strategies such as the following:
 - Secure and weather-protected bicycle parking for employees,
 - Preferential parking for carpool/vanpool vehicles,
 - Parking cash-out program for employees (nondriving employees receive transportation allowance equivalent to the value of subsidized parking), and/or
 - Shower and locker provisions for employees bicycling or walking to work.
- Adopt policies and programs that will implement "smart-growth" strategies of the Smart Growth Strategy/Regional Livability Footprint Project being developed by the Association of Bay Area Governments and other regional agencies.

Implementation of these measures would assist in reducing the project-related and cumulative impacts on long-term regional ROG, NO₂ and PM₁₀ emissions levels, but may not reduce this impact to a less than significant level. Since no other feasible measures are available, the project and cumulative effects on ROG, NO₂ and PM₁₀ emissions levels would represent a **significant unavoidable impact**.

12. STORM DRAINAGE, FLOOD CONTROL, AND WATER QUALITY

This chapter describes (1) existing storm drainage, flooding and water quality characteristics within the proposed Specific Plan area, (2) the potential impacts of anticipated Specific Plan-facilitated development activities on these conditions, and (3) any measures necessary to mitigate identified significant impacts.¹

12.1 SETTING

12.1.1 Petaluma River

The Specific Plan area straddles the banks of the Petaluma River. The river divides the Specific Plan area into eastern and western portions. The Petaluma River has been integral to the historic development of the downtown area, providing access for transportation, shipment of goods, water supply and aesthetic beauty. The river has been and continues to be the natural focal point of the central area.

12.1.2 Petaluma River Watershed

The Specific Plan area is located in the lower reaches of the Petaluma watershed. The watershed extends into portions of Sonoma and Marin counties and drains in a southerly direction, discharging into San Pablo Bay via a series of tributaries that converge into the Petaluma River. The total drainage area of the watershed above San Pablo Bay is approximately 146 square miles. The portion of the watershed above central Petaluma is approximately 46 square miles.

The river basin is composed of moderately well-drained fine sandy loams to clay soils on the lowland terraces with loams and clay loams predominant in the upland areas. Lowland areas and reclaimed tidal flats are composed of poorly drained clays and clay loams. The upland areas along the existing creeks are highly erodible when disturbed, as is evidenced by many deeply-incised channels throughout the upland portion of the basin. The material eroded from these incised channels contributes suspended load and bedload sediment to the streamflow. The sediment is ultimately deposited in the lower (tidal) reaches of the river and must be dredged periodically to maintain navigation in the lower river.

¹The discussions and findings in this chapter are derived from the Flood Control, Drainage and Water quality section of the December 1999 Administrative Draft EIR prepared by ROMA Design Group and Vincent Smith, Planning Consultant, for the previous (1999) draft Central Petaluma Specific Plan.

12.1.3 Local River Conditions

Within the Specific Plan area, the Petaluma River is restricted to a well-defined and confined channel. Urban development extends to the river's edge over most of its length. Within this reach, the river averages 200 feet wide with a slope of approximately 2.3 feet per mile. The depth of the channel, from the top of bank to channel bottom, ranges from 18 to 20 feet. The stream banks are steep and poorly vegetated. Isolated pockets of bank erosion are visible throughout the reach. The channel flow capacity in this reach is very close to the 100-year event with much of the flooding, when it occurs, being caused by the inability to drain local runoff during the high flow events.

The capacity of the river through the central Petaluma area is markedly different from the reach immediately upstream. From the Lakeville Bridge to the confluence with Lynch Creek, the Petaluma River is only capable of passing a 5- to 10-year flood event. The U.S. Army Corps of Engineers is presently completing a flood control project for this reach, referred to as the Payran Project.

12.1.4 Tidal Influence

Within the Specific Plan area, the Petaluma River is also affected by the tidal fluctuations of San Francisco Bay. The river experiences diurnal tidal fluctuations with two high tides and two low tides each day. The National Oceanic and Atmospheric Administration (NOAA) maintains records for tide gages throughout the Bay Area. The closest tide gage to the Specific Plan area is located at the upper drawbridge of the NWPRR bridge adjacent to the US 101 bridge, downstream of the area.

The effects of the tidal fluctuations on the River gradually diminish upstream. The Army Corps of Engineers (Corps) reports that tidal effects continue upstream of the confluence with Lynch Creek (Corps, 1995). Although there is no flooding in the central Petaluma area due directly to tidal fluctuations, high tides can restrict drainage and exacerbate flooding from storm flows.

12.1.5 Sedimentation

A significant amount of sediment is deposited within the lower reaches of the Petaluma River. The source of this sediment is a combination of erosion in the watershed draining to the river, degradation (erosion) of the river itself, and sediment carried upstream with the diurnal tidal inflow.

Sediment carried into the stream from the watershed is due to both historic and current land use practices, which include construction activities, cattle grazing, agricultural runoff, and ongoing channel incision and erosion. Many of the tributaries discharging to the Petaluma River, and the river itself, are also experiencing erosion of the stream banks and channel bottom. These are the main two sources of sediment generated within the basin.

The diurnal tidal cycle also contributes sediment to the lower portions of the river. The incoming tide conveys suspended sediment that settles out within the channel. According to the Corps, tidal inflow is the primary source of sediment deposited in the lower reaches of the river (Corps, 1995). About once every four years, the Corps performs maintenance dredging from the mouth of the river to the Washington Street Bridge (i.e., the Turning Basin). The dredging is conducted to maintain a navigable channel up to the first bridge that is a barrier to river traffic.

12.1.6 Hydrology and Flooding

(a) Regional Precipitation. The average annual precipitation over the basin is approximately 26 inches per year. The average annual precipitation varies from 50 inches at the higher elevations to 20 inches at the mouth of the river.

(b) Stream Flow. The Petaluma River, the only significant water body in the Specific Plan area vicinity, flows from north to south through the center of the area. Both the north and south sections of the Specific Plan area drain to the river through an old network of storm drains that is maintained by the city.

The Corps used a hydrologic model to develop an initial estimate of the 100-year peak flow for the Payran Flood Control Project, based on Corps developed peak discharge projections for a variety of storm frequency events under the projected year 2040 basin buildout scenario. The Corps discharge projection represents the most recent and detailed hydrologic analysis, has been adopted by the City for planning purposes, and has been used in this EIR for determining "base case" 100-year flood elevations through the Specific Plan area.

(c) Local Flooding and Flood Control. Recent damaging floods in Petaluma have occurred in 1982, 1986, 1997 and 1998. Although the 1982 flood resulted in the largest amount of damage, the February 1998 flood had the highest monthly precipitation amount on record. Historically, flooding in central Petaluma has not been as extensive as in upstream reaches of the community, although most of the damage from the 1986 flood was in the downtown area. Flooding in central Petaluma is primarily limited to areas along the banks of the river, with shallow flooding occurring further away from the river due to the inability for local runoff to drain into the channel when the river stage is high. The most critical area prone to flooding on the Petaluma River is upstream of the proposed Specific Plan area in the Payran Reach from Jess Avenue to Lakeville Street.

(d) Local Flood Protection. The City of Petaluma maintains an Automated Local Evaluation in Real Time (ALERT) flood warning system for the Petaluma River through and above central Petaluma. This system consists of eight precipitation gages and five river stage gages. In addition, Article 16 of the City of Petaluma's zoning code establishes land use regulations and guidelines for property situated within designated floodways and floodplains. These regulations and guidelines rely on the Federal Emergency Management Agency's (FEMA) Flood Insurance Study (FIS) to define and delineate floodway and floodplain areas subject to

regulation. FEMA conducted a Flood Insurance Study (FIS) for Sonoma County in 1989, which included the Petaluma River and its tributaries. Although the existing FEMA FIS has not yet been revised to account for the updated Corps estimate of the 100-year peak discharge, such a revision is expected in the future.

12.1.7 Specific Plan Area Drainage

(a) Specific Plan Area Hydrology. Because of its proximity to the river, much of the Specific Plan area lies within the "base case" 100-year floodplain. The Specific Plan area contains an antiquated, disjointed and sporadic series of storm drains, mostly dating back to the early part of the century. Because of the limited capacity of the existing storm drain system, many properties within the Specific Plan area currently rely on street surfaces and sheet flow over adjacent lots for drainage. This drainage pattern often results in large areas of ponding and flooded streets during storms. The Specific Plan area does not benefit from an interconnected trunk line storm drainage system. Specific elements of the Specific Plan area storm drainage system are described under subsections (b), (c) and (d) below.

(b) Eastern Storm Drainage Features. On the east side of the river, the main Specific Plan area drainage features include:

East D Street/Lindberg Area. The Wilson/Lakeville/Lindberg area drainage system collects flows from the East D Street neighborhood and Lindberg industrial area in a 72-inch pipe that leads to a pump station and discharges into McNear Channel.

Rail Depot Area. Two 21-inch pipes convey drainage from Jefferson Street and Lakeville Street around the rail depot to an outfall at McNear Channel.

Golden Eagle Area. A 30-inch pipe collects most of the site drainage from the Golden Eagle Shopping Center and its East Washington Street frontage and discharges into the Turning Basin.

North of Washington Street. A 12-inch pipe drains Lakeville Street from East Washington Street to the river, where it discharges.

(c) Western Storm Drainage Features. On the west side of the river, the main Specific Plan area drainage features include:

Downtown Area. A 60-inch pipe drains the Western Avenue community and downtown area, discharging into the river near the Balshaw Bridge.

B Street Area. A 42-inch pipe collects drainage from the B Street neighborhood, with an outfall into the river underneath the railroad trestle at the Turning Basin.

C Street Area. A 24-inch pipe drains the C Street neighborhood east of Sixth Street and the commercial area between Fourth Street and the river, and discharges into the river immediately south of the Turning Basin.

F Street/RWD Area. A 24-inch pipe drains F Street (including the Thompson Creek watershed, which enters a 72-inch pipe at Seventh Street and connects to the 24-inch pipe midblock between Petaluma Boulevard South and Second Street) and part of the warehouse subarea, and discharges into an earthen ditch that flows into the river.

H Street/RWD Area. A 30-inch pipe collects drainage from the H Street neighborhood and part of the Riverfront Warehouse subarea with an outfall to the river.

(d) Other Specific Plan Area Storm Drainage Features. In addition to these main lines, shorter pipes ranging in size from 12 to 20 inches in diameter convey storm flows from a limited number of properties and streets to the river. Properties in the Specific Plan area that adjoin the river often provide for sheet flows to the river or have privately installed and maintained drainage pipes discharging directly into the river.

12.1.8 Existing Water Quality

(a) General Water Quality Issues. There is little water quality data available for the Petaluma River in the vicinity of central Petaluma. The major water quality concerns in downstream sections of the river are turbidity, algae blooms, odor problems and eutrophication (Corps, 1995). These problems are primarily attributed to the low flow through the river in the summer months. The sediment concentration and eutrophication problems have led to low dissolved oxygen (DO) and subsequent fish kills in the past. The California Regional Water Quality Control Board's Basin Plan (Basin Plan) outlines water quality criteria of 5 mg/l for warm water habitat and 7 mg/l for cold water habitat. Oxygen levels as low as 4 mg/l have been monitored in the river.

The City of Petaluma operates a wastewater treatment plant in the Lower Reach subarea. During summer months when the streamflow is low, tidal action can carry treatment plant discharge upstream into central Petaluma. To prevent this, river discharges from the plant are prohibited from May 1 through October 20 unless adequate flushing flow exists in the river.

In addition, the river drainage basin includes agriculture and cattle grazing as designated land uses. Storm water runoff from these areas may contain elevated levels of pesticides, herbicides, fertilizers, and animal wastes. Elevated coliform levels have been detected in the river. It is assumed that these elevated levels are from agricultural wastes.

(b) Existing Water Quality Impacts on Wildlife Habitat. Because of the contaminated inflows entering the river as described above, river water quality is considered to be marginal to poor for the river's fisheries habitat (Corps, 1995). The water quality problems that affect fish and wildlife can be broken down into the following four main components (Corps, 1995):

- (1) **Sediment:** Sediment is being continuously deposited in the lower reaches of the river. The sediment increases turbidity, covers potential spawning habitat, and carries with it organic matter which adversely affects water quality.
- (2) **Petroleum Products:** Tarballs and large oil droplets have been noted in the river, indicating the presence of petroleum products.
- (3) **Algae Blooms:** Low flow in the summer months, combined with higher ambient air temperature, cause the water temperature to increase. The higher water temperatures combined with the increased nutrient loading from agricultural runoff, result in algal blooms in the spring and summer. These blooms have been noted to fill up the entire channel blocking fish passage. Algae growth and subsequent decomposition during eventual die-off of the bloom also results in adverse water quality impacts (including decreases in dissolved oxygen). All of these factors increase the stress on the fisheries population.
- (4) **Urban Trash:** A substantial quantity of urban trash has been deposited within the river.

12.2 PERTINENT PLANS AND POLICIES

12.2.1 Petaluma General Plan

The current Petaluma General Plan, 1987-2005 Community Health and Safety Element (Chapter 11) includes the following goals, objectives and policies relevant to consideration of the drainage, flooding and water quality impacts of the proposed Specific Plan:

- *Goal 1: Strive to protect the community from injury, loss of life, and property damage resulting from natural catastrophes and any hazardous conditions.*
- *Goal 2: Strive to reduce the impact of pollutants on the well-being of Petalumans.*
- *Goal 4: Maintain and improve, where possible, the water quality of Petaluma.*
- *Objective (b): Avoid land uses that threaten public safety and/or that may result in property damage.*
- *Policy 3: Land uses in areas prone to natural hazards shall only be allowed with appropriate mitigation.*
- *Objective (d): Protect the community from risk of flood damage.*
- *Objective (e): Continue to preclude new developments from compounding or impacting the potential for flooding in developed areas.*

- *Policy 7: The City shall regulate land uses in flood-prone areas and should allow development in those areas only with appropriate mitigation.*
- *Policy 10: The City shall continue to require fees, standards, and other measures to mitigate downstream impacts associated with new development.*
- *Policy 10.1: The City shall periodically review and adjust flood mitigation fees for new construction.*

12.2.2 State and Regional Water Quality Control Regulations

The two agencies currently charged with regulating water quality in the Petaluma River are the California Department of Water Resources (DWR), and the San Francisco Bay Regional Water Quality Control Board (RWQCB). The RWQCB has the responsibility to protect and enhance the surface and ground waters within their jurisdiction. To do that they have developed a water quality control plan for San Francisco Bay Region referred to as the Basin Plan (California Regional Water Quality Control Board, 1995). The June 1995 plan, as amended in April 1997, covers San Francisco Bay and all tributary inflow to the bay. The Basin Plan is the master policy document that describes the program of water quality protection for the Bay and its tributaries.

12.3 IMPACTS AND MITIGATION MEASURES

12.3.1 Significance Criteria

Based on *CEQA Guidelines*,¹ implementation of the proposed Specific Plan would be considered in this EIR to have a *significant drainage, water quality, or flooding impact* if it or related project-facilitated development activities would:

- (a) Violate any water quality standards or waste discharge requirements;
- (b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level;
- (c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site;

¹*CEQA Guidelines*, 2002; Appendix G, Item VIII.

- (d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate of amount of surface runoff in a manner which would result in flooding on- or off-site;
- (e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff;
- (f) Otherwise substantially degrade water quality;
- (g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map;
- (h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
- (i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam; and/or
- (j) Expose people or structures to inundation by seiche, tsunami, or mudflow.

12.3.2 Impacts and Mitigation Measures

Local Storm Drainage System Impacts. Specific Plan-facilitated development in the Specific Plan area would be limited to areas that are already substantially developed; therefore, additional impervious surface and related storm water runoff due to project-facilitated development would be minimal. In addition, the Specific Plan area has no significant storm drainage system storage or retention capacity. Local storm drainage system improvements may be required for specific future Specific Plan-permitted developments, particularly developments involving existing vacant or underutilized land. City of Petaluma General Plan policies, codes, and ordinances already require adequate storm drainage improvements for all new development, subject to review and approval by the City. This potential impact is therefore considered to be *less-than-significant*.

Mitigation. No significant storm drainage impact has been identified; no mitigation required.

Increased Peak Period River Discharges and Stream Flows. Increases in the rate and volume of stormwater discharges into the Petaluma River due to project-facilitated development and associated increases in impervious surfaces could add to cumulative peak flows in the Petaluma River and its tributaries during the flood season. However, as explained above, such increases in flows are expected to be minimal because of the relatively moderate levels of new development on previously unpaved or undeveloped land. In addition, for similar reasons, development facilitated by the project would not be expected to alter stream drainage patterns or interfere with surface water flows. Therefore, Specific Plan-related effects on

stream drainage patterns would represent

eration in drainage patterns has been

development within identified flood hazard
damage from Petaluma River flooding.
development on low-lying parcels within the
study is considered in the formulation of
mitigation policies. In anticipation of an updated
map associated with an update of FEMA Flood
Insurance Rate Maps, the expected extent and depth of the
flood damage considered by the City in formulating the
mitigation policies increases the depth of flow in the
study area to significantly affect the configuration
of the Lakeville Street Bridge.

The exposure would be avoided by required
mitigation Plan policies, proposed more detailed
mitigation measures, to a **less-than-significant**

no mitigation is necessary.

Urban Runoff Pollutants. As a result
of development in the proposed Specific
Plan, grading activities during construction,
paved surfaces, increased vehicular use,
and fertilizer use (landscaping) could
affect Petaluma River receiving waters.
potentially significant impact (see
Section 12.3.1 above).

development within the proposed Specific Plan
study. In particular, grading activities
cause erosion and associated sedimentation
in storm drains that collect on new paved surfaces
which impair runoff water quality and water
quality in Petaluma River. Increased uses of herbicides,
pesticides, and other pollutants associated with
development and related

landscaping activities could also add to this contamination of receiving waters. New project-facilitated commercial operations could contaminate surface and groundwater if potential pollutants are spilled or disposed of improperly.

Mitigation 12-1: Require the applicant for each future Specific Plan-facilitated discretionary development to comply where applicable with all state, regional and City water quality provisions and where required under adopted San Francisco Bay Regional Water Quality Control Board (RWQCB) regulations: (a) file with the RWQCB a *Notice of Intent* to comply with the Statewide General Permit for Construction Activities, (b) prepare and implement a project-specific Stormwater Pollution Prevention Plan (including an erosion control plan) if grading is involved, (c) implement a monitoring, inspection, and documentation program to assure the effectiveness of control measures, (d) obtain or comply with existing General Stormwater Discharge Permit(s) for Industrial Activities, where applicable, and (e) comply with the NPDES Phase II Non-Point Discharge program. Implementation of these requirements would reduce this impact to a ***less-than-significant level***.

Compliance with City and RWQCB provisions typically includes the following:

(i) *NPDES General Permit for Stormwater Discharge Associated with Construction Activity.* At the time of development of each subsequent project-facilitated private development or public improvement involving the grading of more than five acres, the applicant shall file a *Notice of Intent* with the RWQCB. All stormwater discharges must be mitigated in compliance with the City's NPDES permit.

(ii) *Stormwater Pollution Prevention Plan.* The applicant shall prepare and implement a *Stormwater Pollution Prevention Plan* (SWPPP) for review and approval prior to issuance of a grading permit. The NPDES General Permit and the permit-required SWPPP shall address both erosion and non-point source pollution impacts (e.g., improper handling or accidental spill of toxic materials) from project construction.

The SWPPP, at a minimum, shall follow all City ordinances and conform with the California *Storm Water Best Management Practices Handbook*, and shall include, but not be limited to, the following criteria:

- Immediately revegetate or otherwise protect all disturbed areas from both wind and water erosion upon the completion of grading activities.
- To the extent possible, schedule major site development work involving earth moving and excavation for the dry season (April 15 to October 15). If grading is to be conducted in winter, implement an approved erosion control plan prior to October 15th. Capture and deposit all runoff prior to discharge into Specific Plan area drainages.

- Incorporate measures as necessary to protect Specific Plan area drainages from sedimentation.
- Use water bars, temporary swales and culverts, mulch and jute netting, hydroseeding, silt fences and sediment traps where necessary to prevent surface water from eroding graded areas and to retain sediment.
- Water soils susceptible to wind erosion frequently during construction.

13. GEOLOGY, SOILS, AND SEISMICITY

This EIR chapter describes existing geologic, soils and seismicity (earthquake hazard) conditions in the proposed Specific Plan area, identifies potential Specific Plan-related impacts, and recommends mitigation measures warranted to address potentially significant effects.

13.1 SETTING

13.1.1 Local Geology

The City of Petaluma is located at the foot of the California Coast Range, a geologic region characterized by northwest-trending ridges and valleys that generally parallel the major geologic structures, such as the San Andreas fault system. The City is underlain by rocks of the Franciscan Assemblage. The Franciscan Assemblage is composed of consolidated and tectonically deformed sedimentary, volcanic, and metamorphic rocks (Jurassic to Cretaceous age, 190 to 65 million years ago). Large bodies of serpentinite are closely associated with the Franciscan rocks. The Sonoma Volcanic Group, formed of lava flows and volcanic ash from volcanic eruptions during the Pliocene age (5.3 to 1.6 million years ago), was deposited on the Franciscan group. Later, during the Quaternary Era (1.6 million years ago to the present), climatic changes caused significant fluctuations in sea level, which caused landslides, created tidal marshes, and allowed deposition of younger bay sediments (bay mud), and extensive deposits of alluvium.

13.1.2 Local Seismicity

The Bay Area is a seismically active region with faults characterized by right-lateral, strike-slip movements (movement is predominantly horizontal). Identified "active" faults in the region are shown on Figure 13.1. As shown, the major active faults in the site vicinity are the San Andreas (15½ miles southeast) and the Rodgers Creek faults (4¼ miles northeast) (see Figure 13.1). Other faults in the vicinity include the Tolay fault, which has been mapped to be one-third to two miles northeast of the proposed Specific Plan area; however, the most recent fault studies indicate this is not a recently active fault (Hart, 1982). Another fault in the vicinity, the Burdell Mountain fault, which is 2¾ miles south of the proposed Specific Plan area, is also not considered to be an active fault (Jennings, 1994).

Identified earthquake probabilities in the Bay Region are shown on Figure 13.2. The probability of one or more large earthquakes (magnitude 7 or greater) in the San Francisco Bay region within the next 30 years has been assessed at about 70 percent by the U.S.

Geological Survey.¹ This regional probability estimate has been derived from the individual probability estimates for the three most substantive "active" earthquake faults in the region: San Andreas, Hayward, and Rogers Creek.

13.1.3 Soil Conditions

Soil deposits within the Specific Plan area consist of fill, bay mud, and alluvium. Groundwater is expected to be relatively shallow, within 20 feet of the ground surface.

Fill was placed in the City's central area to reclaim land in the former river channels and to raise grades in low-lying areas of the Specific Plan area. Such local fill is likely to be of varying quality and density. Some fill may be expansive, subject to volume changes and associated shrink-swell action with changes in moisture content. Such soil conditions can lead to damage to structures, utilities and pavements. Some fill may also be poorly compacted, possibly providing insufficient strength to support heavy building loads. Where such fill conditions are not improved, existing fill may be inadequate for foundation support.

Many portions of the Specific Plan area nearest the river are also underlain by Bay mud. Bay mud is weak and compressible, and not suitable for foundation support. Where it is blanketed by existing fill, it is likely that some of this Bay mud is currently consolidating under the fill load. New fill and/or building loads atop Bay mud areas can be expected to cause additional settlement. Differential loads and/or differential Bay mud thickness can be expected to cause differential settlement. Such conditions can result in differential building settlement and damage to utilities and pavement.

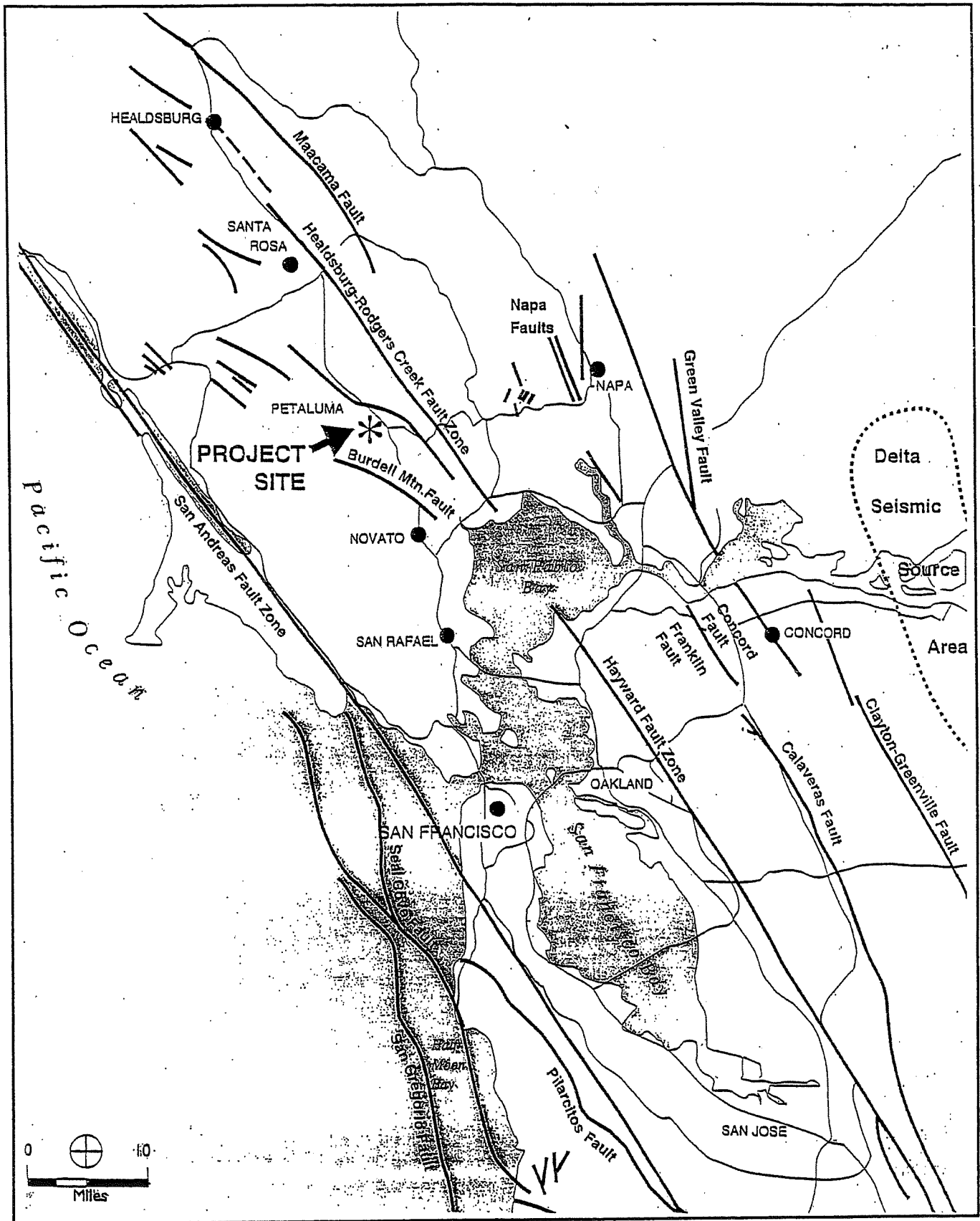
The alluvium (river soil deposits) in the Specific Plan area is generally unconsolidated, consisting of mixtures of sand, gravel, silt and clay. Such soil is likely to be loose to medium dense near the ground surface, with increasing density with depth. Foundations may gain good support where such soil is of sufficient density.

13.1.4 Geologic Hazards

The principal existing geologic hazards affecting the Specific Plan area are earthquake-induced riverbank landsliding, riverbank erosion, ground shaking, and liquefaction.

(a) Earthquake-Induced Landsliding. Specific Plan area gradients are predominantly less than 15 percent. There are no landslides mapped within the area.

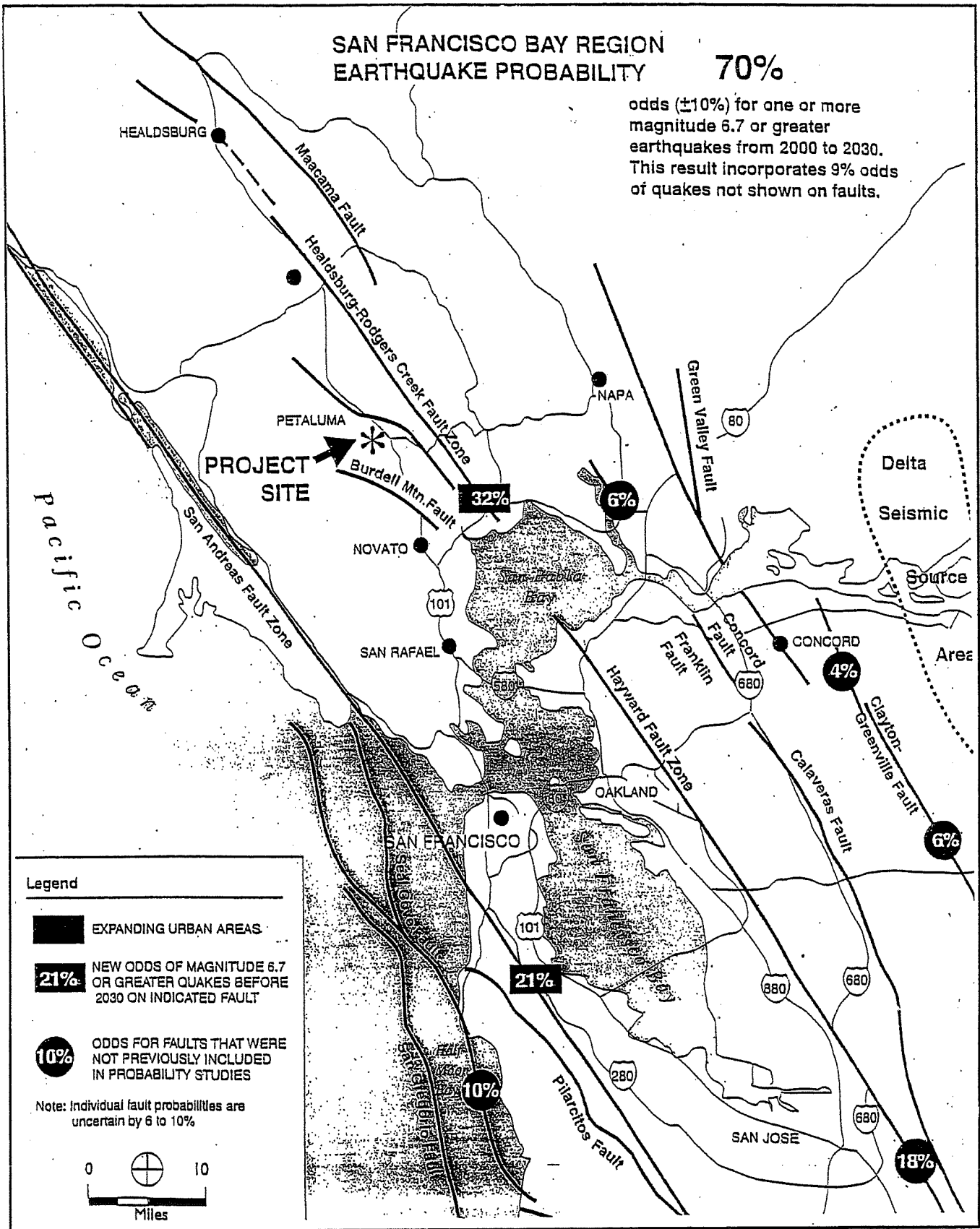
¹U.S. Geological Survey, 1999. *Probabilities of Large Earthquakes in the San Francisco Bay Region, California.*



SOURCE: John B. Dykstra & Associates

Figure 13.1

REGIONAL FAULTS



SOURCE: John B. Dykstra & Associates

Figure 13.2

REGIONAL EARTHQUAKE PROBABILITY

The potential for earthquake-induced landsliding exists on more steeply sloping ground, especially along the riverbanks. Such river bank landsliding or "lurching" could affect the performance of buildings and other improvements sited near the top of the riverbank.

(b) Riverbank Erosion. The Petaluma River is an active river. Where the riverbanks are not protected by properly designed and installed rip-rap and/or slope protection, erosion can occur, which can have an adverse effect on adjacent riverfront development.

(c) Earthquake-Induced Groundshaking. The Specific Plan area will experience ground shaking similar to other areas of the seismically active San Francisco Bay region. The intensity of earthquake ground motion in the area will depend upon the characteristics of the generating fault, distance to the earthquake epicenter, magnitude and duration of the earthquake, and specific subsurface conditions. Based on the Specific Plan area's proximity to active faults and on underlying subsurface conditions, the Specific Plan area would be expected to experience strong to violent ground shaking from a large earthquake (moment magnitude 7.0 or greater) on any "active" regional faults.

Certain types of soils conditions can contribute greatly to seismic shaking and earthquake damage. Most of the area southwest of the Petaluma River in the Turning Basin and North River subareas is identified on California Division of Mines and Geology Maps¹ as "Semi-Consolidated and Consolidated Rocks" and described as:

Semi-Consolidated and Consolidated Rocks. Shaking hazard to structures, and liquefaction potential are generally minimal. However, there could be local deposits of slopewash, colluvium, and alluvium which are subject to collapse during significant seismic shaking...

The remainder of the Turning Basin subarea, and all of the Riverfront Warehouse subarea and Lower Reach subarea, are generally described as either "Younger Bay Mud" or "Unconsolidated Alluvium and Terrace Deposits." These soils conditions are described as follows:

Younger Bay Mud. This is among the most unstable deposits in the County, and liquefaction should be expected where clay-free granular materials (e.g., clean sand deposits) are present.

Unconsolidated Alluvium and Terrace Deposits. Shaking hazard to structures is related to thickness of alluvium. Liquefaction potential varies according to the distribution of clay-free granular materials and ground water shallower than 50 ft. Ground water in this zone is generally shallower than 20 ft.

¹California Division of Mines and Geology, 1980. *Relative Hazard from Tsunami and Seismic Shaking in Southern Sonoma County.*

Land and buildings in such areas are likely to be subject to much greater shaking during an earthquake. There is also the possibility of ground liquefaction and associated physical damage.

A more recent report on the potential for ground shaking was published in 1999 by the Association of Bay Area Governments (ABAG). Based upon an assumption of a 7.2 magnitude earthquake on the Rogers Creek-North Hayward Earthquake Fault, the report predicted that shaking in most of the Specific Plan area vicinity would be very strong to violent. In a few small areas, shaking was predicted to be light.

(d) Earthquake-Induced Liquefaction. Liquefaction is a phenomenon in which saturated (submerged), cohesionless soil can be subject to a temporary loss of strength because of the buildup of excess pore water pressure, especially during cyclic loading such as those induced by earthquakes. Soils most susceptible to liquefaction are loose, clean, saturated, uniformly graded, fine-grained sand. Specific Plan area Bay mud deposits and unconsolidated alluvium could be liquefiable where nonclay deposits exist and the groundwater is sufficiently shallow.

13.1.5 Structural Hazards

(a) Unreinforced Masonry Buildings. A key factor contributing to earthquake hazard is the presence of potentially hazardous buildings, such as unreinforced masonry buildings. Such buildings are typically constructed of brick, hollow tile, or concrete block, and often lack the structural strength to resist a moderate to strong earthquake. Poorly constructed older brick buildings with soft, eroded mortar are particularly vulnerable to earthquake damage. Non-retrofitted unreinforced masonry buildings are especially vulnerable and may be unsafe during a moderate to strong earthquake. Unreinforced masonry buildings (both retrofitted and non-retrofitted) are particularly prevalent in the Turning Basin subarea. Many of these buildings contribute greatly to Petaluma's historic and architectural character and are worthy of seismic retrofitting and preservation.

The cost of retrofitting such buildings can be substantial. Older wood frame buildings without adequate, properly bolted foundations or with other structural weaknesses may also be unsafe in an earthquake.

The State of California now requires the identification of unreinforced masonry buildings. Counties, cities, and towns are also required to take steps to ensure the reinforcement of such buildings to a condition that provides a reasonable level of safety during a seismic event. The City of Petaluma has been aggressively pursuing such a program which has resulted in the retrofitting of a large number of buildings. Most of Petaluma's unreinforced masonry buildings are concentrated in the Turning Basin and North River subareas. There are only two or three unreinforced masonry buildings in the Lower Reach and Riverfront Warehouse subareas.

(b) Buildings Adjacent to Unreinforced Masonry Buildings. In previous earthquakes (Loma Prieta and Northridge, for example) there were also a number of buildings on adjoining

properties damaged by the failure of inadequately reinforced masonry walls located. These failures often involved falling bricks or, in extreme cases, the partial or complete collapse of walls. Damage from these failures ranged from minor to very serious.

(c) Other Potentially Hazardous Buildings. Recent earthquakes in California have demonstrated the fact that other building types can also be unsafe and hazardous. Such buildings often include aging wood frame structures with inadequate foundation connections, older poured concrete buildings without adequate reinforcing, badly connected concrete tilt-up buildings, poorly engineered concrete parking structures, and any informally constructed or poorly engineered building.

All structures built prior to the adoption of the 1955 edition of the Uniform Building Code (UBC) are of particular concern. Negative conditions often found in such buildings include inadequate foundations, a lack of adequate foundation connections, weak cripple walls, poor design, or substandard construction. Older buildings also often suffer from dryrot or termite damage.

13.2 PERTINENT PLANS AND POLICIES

The following adopted Petaluma General Plan (1987-2005) Community Health & Safety Element goals, objectives, and policies are pertinent to consideration of the potential geotechnical impacts of Specific Plan-facilitated development:

- *Goal 1: Strive to protect the community from injury, loss of life, and property damage resulting from natural catastrophes and any hazardous conditions.*
- *Objective (b): Avoid land uses that threaten public safety and/or that may result in property damage.*
- *Policy 3: Land uses in areas prone to natural hazards shall only be allowed with appropriate mitigation.*
- *Policy 11: Establish acceptable levels of risk/life safety standards and bring buildings up to the same standard.*
- *Policy 13: The City shall avoid placement of critical facilities and high-occupancy structures in areas prone to ground failure during an earthquake.*
- *Objective (h): Minimize injury and property damage resulting from landslides and mass movements.*
- *Policy 14: The City shall continue to require soil and geologic investigations in areas prone to slope instability--or to mass movements associated with seismic activity--prior to*

development. Both on-site and off-site hazardous impacts should be considered by the City in its development review process.

- *Policy 15: Soil analysis and erosion mitigation shall be required prior to issuance of use permits for all development proposed on sites prone to erosion.*
- *Policy 16: Development--including any land alteration, grading for roads, and structural development--shall not be permitted in areas of slope instability or other geologic concerns until mitigating measures are taken to limit potential damage to levels of acceptable risk.*

13.3 IMPACTS AND MITIGATION MEASURES

13.3.1 Significance Criteria

According to *CEQA Guidelines*,¹ implementation of the proposed Specific Plan may have a significant adverse geotechnical impact if it would:

- (a) Expose people or structures to potential substantial adverse effects, including risk of loss, injury, or death involving:
 - (i) Rupture of a known earthquake fault;
 - (ii) Strong seismic ground shaking;
 - (iii) Seismic-related ground failure, including liquefaction; or
 - (iv) Landslides;
- (b) Result in substantial soil erosion or the loss of topsoil;
- (c) Be located on an unstable soil or geologic unit, or potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse; or
- (d) Be located on expansive soil, creating substantial risks to life or property.

¹CEQA Guidelines, 2002. Appendix G, Item VI and Item IX (b).

13.3.2 Impacts and Mitigation Measures

Seismic Shaking Hazards. Damage from surface rupture of faults is unlikely in the Specific Plan area. Most of the development allowed by the proposed plan would be situated on alluvial soils subject to significant levels of seismically induced ground shaking. In areas underlain by Bay mud, unconsolidated fill and/or soils with a high water table, ground shaking may cause liquefaction, which may damage or destroy structures and infrastructure (roads, pipelines, etc.). All Specific Plan-facilitated new development within the Specific Plan area would be designed and constructed in accordance with the Uniform Building Code to avoid or minimize potential damage from seismic shaking on the site. The structural design of new project-facilitated building construction proposed within the Specific Plan area between now and the year 2020 would be expected to incorporate all required conventional engineering measures considered necessary to reduce related seismic shaking impact potentials, including the risk of severe damage, injury, or loss of life in an earthquake. These measures would be expected to reduce project-related seismic safety impacts to ***less-than-significant levels***.

Mitigation. No significant impact has been identified; no mitigation is identified.

Impact 13-1: Ground Settlement Impacts. New settlement may occur if additional fill and/or buildings loads are added to areas with fill over Bay mud. This possible Specific Plan-facilitated effect represents a ***potentially significant impact*** (see criterion (c) under subsection 13.3.1, "Significance Criteria," above).

Settlement occurs when the compressible Bay mud consolidates under the weight of fill and/or structures. Where fill is currently present in the Specific Plan area, the ground may be settling as the Bay mud consolidates under the load of the existing fill.

Mitigation 13-1: Require and review geologic reports prior to decisions on any Specific Plan-related discretionary development or improvements in the Specific Plan area which may subject persons or property to significant ground settlement and/or earthquake-induced ground failure risk. The geologic report shall describe potential hazards and identify engineering specifications necessary to reduce all ground failure risks to an acceptable level. Where appropriate, require a geotechnical engineer or engineering geologist's certification that ground failure risks have been reduced to an acceptable level. Implementation of this measure would reduce the impact to a ***less-than-significant level***.

Impact 13-2: Earthquake-Induced Ground Failure Impacts. Liquefaction of loose, saturated, cohesionless soil caused by ground shaking could cause settlement and loss of strength, and lateral spreading could occur near the river or the channel, resulting in damage to project related improvements. This is a **potentially significant impact** (see criterion (c) under subsection 13.3.1, "Significance Criteria," above).

Mitigation 13-2: Implement *Mitigation 13-1*. Implementation of this measure would reduce the impact to a **less-than-significant level**.

Impact 13-3: Riverbank Erosion. Erosion of the riverbanks could occur where the slopes are not protected by properly designed and installed rip-rap and/or slope protection, resulting in possible damage to Specific Plan-facilitated improvements. This possibility represents a **potentially significant impact** (see criteria (a) and (b) under subsection 13.3.1, "Significance Criteria," above).

Mitigation 13-3: Implement *Mitigation 13-1*. Implementation of this measure would reduce the impact to a **less-than-significant level**.

Impact 13-4: Expansive Soil Impacts. The existing fill may be expansive. Expansive soils shrink and swell with change in moisture content. This phenomenon could cause settlement and/or heaving that may crack floor slabs, sidewalks and lightly loaded structures. This is a **potentially significant impact** (see criterion (d) under subsection 13.3.1, "Significance Criteria," above).

Mitigation 13-4: Require and review geologic reports prior to decisions on any Specific Plan-facilitated discretionary development or improvements in the Specific Plan area that may subject property to significant shrink-swell (expansive soil) induced damage. The geotechnical report shall describe the potential for expansive soil hazards and identify the engineering specifications necessary to reduce expansive soil impacts to an acceptable level; where appropriate, require geotechnical engineer or engineering geologist's certification that expansive soil risks have been adequately reduced to an acceptable level. The identified engineering measures could include: removal of the material, lime treatment of the expansive soil, expansive soil, capping the expansive soil with nonexpansive, thickened and/or post tensioned floor slabs, and deepened foundations that gain support before the expansive soil or cut off the movement of moisture below buildings. Implementation of this measure would reduce the impact to a ***less-than-significant level***.

14. HAZARDOUS MATERIALS

This EIR chapter describes known and potential hazardous materials conditions in the Specific Plan area, related potentially significant adverse public health impacts anticipated as a result of Specific Plan-facilitated activities, and associated mitigation needs. The identification herein of hazardous materials conditions within and near the Specific Plan area is based on the *Phase I Hazardous Materials Assessment for the Central Petaluma Specific Plan Area*¹ completed for the City by Treadwell & Rollo in June 1998 in support of the Specific Plan formulation effort, and/or contacts by the Specific Plan consultant with City staff and other relevant regulatory agencies. This section is not intended to provide site-specific evaluations of contamination and remediation efforts within the Specific Plan area, but rather to identify the types of potential impacts that can be anticipated with implementation of the proposed Specific Plan at a level of detail appropriate for this program-level EIR.

14.1 SETTING

14.1.1 General Concerns

For purposes of this EIR, "hazardous materials" are defined as substances with certain chemical and physical properties that could pose a substantial present or future hazard to human health or the environment if improperly handled, stored, disposed, or otherwise managed. If improperly handled, hazardous materials can result in public health hazards through human contact with contaminated building components, soils or groundwater; or through airborne releases of vapors, fumes or dust. There is also the potential for accidental or unauthorized releases of hazardous materials (spills, etc.) that could pose a public health concern.

Construction workers typically have the greatest risk of exposure to contaminated building materials, soil or groundwater. Modification to or demolition of older buildings can expose workers to hazardous building materials. Accidents or spills during transport of hazardous materials or wastes can also expose the general public and the environment to these substances. If the existence of hazardous building materials or soil or groundwater contamination at a site remains undetected, workers and the public may be at risk of exposure if precautions are not taken during site development.

¹Treadwell & Rollo, June 4, 1998. *Phase I Hazardous Materials Assessment, Central Petaluma Specific Plan*,

14.1.2 Hazardous Materials in the Specific Plan area Vicinity

(a) Activities Involving Hazardous Materials Storage, Handling or Transport. Hazardous materials or waste have been and are commonly used in certain central area commercial, industrial and agricultural processing operations, and in a more limited extent, in residential areas. The aforementioned Phase I Hazardous Materials Assessment was prepared starting with a Specific Plan area land use history overview which was completed by reviewing: (a) historic Sanborn Fire Insurance Maps of Petaluma (1885, 1899, 1906, 1923, 1949, and 1965), and (b) historical aerial photographs (1953, 1957, 1965, 1972, 1982, and 1983) of the area. In addition, public records obtained from government regulatory databases¹ provided pertinent information on potentially hazardous materials sites within and within a one-mile radius of the Specific Plan area boundary.

The main potential sources of hazardous materials and waste identified in the Specific Plan area vicinity included:

- Underground storage tanks (USTs),
- Above ground storage tanks (ASTs),
- Hazardous wastes storage and handling activities, and
- Non-point sources of pollutants (urban runoff) to stormwater and the San Francisco Bay.

The *Central Area Specific Plan Phase I Site Assessment* indicated that 43 suspected and/or documented sources of petroleum hydrocarbon and/or hazardous materials contamination existed within the Specific Plan area in June of 1998. The majority of the listed locations, about 32 of the 43 suspected/documentated sources, were identified as having registered and/or leaking underground storage tank (USTs) possibly containing hazardous materials. The remainder of the locations, approximately five, were identified as having a known release of hazardous materials from sources other than leaking USTs--i.e., suspected metal, solvent, and/or coal gas waste contamination. Of the 43 sites identified, 27 were identified from regulatory agency databases, and the remainder were identified by reviewing the Sanborn Maps and aerial photographs.

(b) Asbestos and PCB Potentials. Older commercial, industrial and residential buildings within the Specific Plan area could contain asbestos and polychlorinated biphenyls (PCBs).

¹A record search of databases from the following state and federal agencies was conducted: California Department of Toxic Substance Control ("Cal-Sites Database" and Hazardous Waste Information System), California Environmental Protection Agency (CAL-EPA), State Water Resources Control Board (Leaking Underground Storage Tank Information System, and Hazardous Substance Container Database, and Waste Discharge System database) and U.S. EPA database.

The adverse health effects associated with asbestos exposure have been extensively studied. Studies have demonstrated that inhalation of asbestos fibers may lead to increased risk of developing respiratory or abdominal cancers. There is no known safe level of exposure. The presence of asbestos in a building does not necessarily mean that the building poses a health hazard. In many cases, the asbestos within buildings is inaccessible or sealed within another material, and thus unable to cause a health hazard. However, asbestos fibers can be released during building renovation or demolition, unless proper precautions are taken.

The removal, handling, transport and disposal of asbestos is heavily regulated at the federal, state and local levels. These regulations are designed to minimize any exposure of onsite employees (e.g., construction workers) and the general public to asbestos. The US EPA provides asbestos standards. The federal Occupational Safety and Health Administration (OSHA) and its state counterpart, CalOSHA, regulate various aspects of asbestos removal, handling and disposal, to ensure worker safety. Transport and disposal of asbestos-containing material is also regulated.

PCBs are another potentially hazardous class of compounds commonly found in the electrical transformers in older commercial buildings. While manufacture of PCBs has been banned since 1977, some older pieces of equipment may still contain PCBs.

14.2 PERTINENT PLANS, POLICIES AND REGULATIONS

14.2.1 Petaluma General Plan (1987-2005)

The following goals and objectives from the City's adopted Petaluma General Plan Community Health and Safety Element are pertinent to consideration of the health and safety implications of the proposed Specific Plan:

- *Goal 1: Strive to protect the community from injury, loss of life, and property damage resulting from natural catastrophes and any hazardous conditions.*
- *Goal 2: Strive to reduce the impact of pollutants on the well-being of Petalumans.*
- *Objective (b): Avoid land uses that threaten public safety and/or that may result in property damage.*
- *Objective (l): Protect the community's health, safety, welfare, natural resources, and property through regulation of authorized (and elimination of unauthorized) use, storage, transport, and disposal of hazardous materials, with specific focus on problem prevention.*

14.2.2 Federal, State and Local Regulations

The use, production and disposal of hazardous materials and waste are regulated extensively by federal, state, and local regulations formulated to protect the public health and the environment. These regulations have been developed primarily for worker health and safety for application in industrial and manufacturing environments where waste production as a byproduct of manufacturing occurs.

(a) Federal Regulations. The U.S. Environmental Protection Agency (EPA) is the lead agency responsible for enforcing federal regulations that affect public health and the environment. The EPA designates much of its regulatory authority to the individual states. The California Department of Toxic Substance Control (DTSC) within California EPA enforces hazardous material laws and regulations in California in conjunction with the federal EPA.

(b) State Regulations. The California Code of Regulations (CCR) sets forth California's hazardous materials control laws. In general, a material is considered by the state to be a hazardous material if it poses a threat to human health or the environment. Under California law, approximately 800 substances are listed as potentially hazardous depending upon their property or combination of properties.¹ A state-regulated hazardous waste can be present in a liquid, semi-solid, solid, or gaseous form. California law requires that the source or generator of a potentially hazardous material must determine if said material is in fact hazardous² and stipulates the criteria and analytical methods for such a determination.³

(c) Local Regulations. Local regulations at the county and city level include adopted standards for the use, storage and handling of hazardous materials. As described in section 14.2.1 above, the *Community Health and Safety Element* of the Petaluma General Plan incorporates public health and safety considerations into the community of Petaluma's long-term planning. Additionally, the City currently has a *Hazardous Materials Response Plan*, which is adopted by reference in the Petaluma General Plan. The goals of the *Response Plan* are to contain and identify hazardous materials spills and to implement evacuation programs as needed.

The Sonoma County Department of Public Health has also prepared a *Hazardous Waste Management Plan*, which was adopted by the Petaluma City Council in October 1989. The City applies the County's *Hazardous Waste Management Plan* when determining how to handle materials and waste that pose a threat to human health or the environment by being ignitable, corrosive, reactive, or toxic.

¹CCR, Section 66680.

²CCR, Section 66471.

³CCR, Section 66680 and 66693 et seq.

14.3 IMPACTS AND MITIGATION MEASURES

14.3.1 Significance Criteria

Based on Appendix G of the *CEQA Guidelines*,¹ the proposed Specific Plan and associated development would be considered to have a potentially significant impact if they would have one or more of the following effects:

- (a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- (b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- (c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- (d) Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and as a result, would it create a significant hazard to the public or the environment.
- (e) There is a known potential for a toxic release to the environment that would bring the site under the jurisdiction of CERCLA (the Federal Comprehensive Environmental Response Compensation Liability Act of 1980), other environmental regulatory agencies such as the California Environmental Protection Agency (CAL-EPA), which covers all hazardous waste activity in California, or the State Regional Water Quality Control Board (SRWQCB), which oversees all water quality matters.

14.3.2 Impacts and Mitigation Measures

Project-Facilitated Exposure to Existing Hazardous Materials Contamination. The type and magnitude of the suspected site contamination identified in the *Specific Plan Phase I Assessment* would not prohibit new development, but may warrant certain remedial measures, commensurate with the type of development proposed for a potentially contaminated parcel or site within the Specific Plan area, in order to adequately protect human health and the environment. Project-facilitated construction has the potential for exposing construction workers and future site occupants to spills, leaks and other discharges of existing hazardous materials or wastes (e.g., from historical underground fuel tanks, oil storage operations, etc.). Therefore, all project-facilitated public improvement and private development projects would be required to comply with all applicable existing state- and city-mandated site assessment,

¹*CEQA Guidelines*, 2002; Appendix G, Item VII(a) to (d).

remediation, removal and disposal requirements for soil, surface water, and/or groundwater contamination. In particular, applicants in the Specific Plan area will be required to comply with the applicable requirements of the City, Sonoma County Department of Environmental Health, Regional Water Quality Control Board (RWQCB), and California Department of Toxic Substances Control (DTSC). Compliance with these established requirements would be expected to reduce the potentially significant health and safety impacts associated with project-related hazardous materials exposure to a ***less-than-significant level***.

Typically, implementation of these measures would involve the following steps.

(a) *Soil Contamination*. In order to mitigate potential health hazards related to construction personnel or future occupant exposure to soil contamination, developers would complete the following steps for each site proposed for disturbance as part of a project-facilitated construction activity in the Specific Plan area:

- Step 1. Investigate the site to determine whether it has a record of hazardous material discharge into soils, and if so, characterize the site according to the nature and extent of soil contamination that is present before development activities proceed at that site.
- Step 2. Based on the proposed activities associated with the future project proposed, determine the need for further investigation and/or remediation of the soils conditions on the contaminated site. For example, if the area is slated for commercial land use, such as a retail center, the majority of the site will be paved and there will be little or no contact with contaminated soil. Industrial clean-up levels would likely be applicable. If the slated development activity could involve human contact with soils, such as may be the case with residential use, then Step 3 should be completed. If no human contact is anticipated, then no further mitigation is necessary.
- Step 3. If it is determined that extensive soil contact would accompany the intended use of the site, undertake a Phase II investigation, involving soil sampling at a minimum, at the expense of the property owner or responsible party. Should further investigation reveal high levels of hazardous materials in the site soils, mitigate health and safety risks according to City of Petaluma, Sonoma County Department of Environmental Health, and Regional Water Quality Control Board (RWQCB) regulations. This would include site-specific health and safety plans prepared prior to undertaking any building or utility construction. Also, if buildings are situated over soils that are significantly contaminated, undertake measures to either remove the chemicals or prevent contaminants from entering and collecting within the building. If remediation of contaminated soil is infeasible, a deed restriction would be necessary to limit site use and eliminate unacceptable risks to health or the environment.

(b) *Surface or Groundwater Contamination.* In order to reduce potential health hazards due to construction personnel or future occupant exposure to surface water or groundwater contamination, developers would complete the following steps for each site proposed for disturbance as part of a project-facilitated construction activity in the Specific Plan area:

- Step 1. Investigate the site to determine whether it has a record of hazardous material discharge into surface or groundwater, and if so, characterize the site according to the nature and extent of contamination that is present before development activities proceed at that site.
- Step 2. Install drainage improvements in order to prevent transport and spreading of hazardous materials that may spill or accumulate on industrial sites.
- Step 3. If investigations indicate evidence of chemical/environmental hazards in site surface water and/or groundwater, then mitigation measures acceptable to the RWQCB would be required to remediate the site prior to development activity.
- Step 4. Inform construction personnel of the proximity to recognized contaminated sites and advise them of health and safety procedures to prevent exposure to hazardous chemicals in surface water/ground water.

Mitigation. No significant additional adverse impacts have been identified; no additional mitigation is required.

Potential Asbestos and PCB Exposure. Removal or disturbance of asbestos-containing material (ACM) during Specific Plan-facilitated alteration, renovation or demolition of existing structures within the Specific Plan area have the potential for exposing construction workers and the general public to friable asbestos and/or PCBs. Therefore, as a condition of project-facilitated alteration, renovation or demolition permit approval for buildings within the Specific Plan area, the City would routinely require the project applicant to coordinate with the Bay Area Air Quality Management District (BAAQMD) to determine if asbestos is present.

Ensuring proper identification and removal of ACMs and/or PCBs requires each project applicant to complete the following steps.

- Step 1. Thoroughly survey the project site and existing structures for the presence of asbestos-containing material. The survey shall be performed by a person who is properly certified by OSHA and has taken and passed an EPA-approved building inspector course.
- Step 2. If building elements containing any amount of asbestos are present, prepare a written *Asbestos Abatement Plan* describing activities and procedures for removal,

handling and disposal of these building elements using the most appropriate procedures, work practices and engineering controls.

Step 3. Provide the asbestos survey findings, the written *Asbestos Abatement Plan* (if necessary), and notification of intent to demolish to the City of Petaluma and Sonoma County Department of Environmental Health at least ten days prior to commencement of demolition.

Step 4. Remove any onsite transformers prior to demolition of non-residential buildings.

Implementation of these required measures would be expected to reduce the potentially significant health and safety impacts associated with asbestos removal and PCBs to a ***less-than-significant level***.

Mitigation. No significant adverse impacts have been identified; no additional mitigation is required.

Existing and Future Hazardous Materials Use. Hazardous substances may be stored, generated, and/or used in association with existing or project-facilitated new commercial, industrial or other uses within the Specific Plan area. Future Specific Plan area occupants may be exposed to accidental spillage or leakage of hazardous materials stored in onsite commercial and industrial areas. Industrial chemicals, fuels, paints, solvents, and oil products are among the hazardous materials that may be stored and used.

All hazardous materials are required to be stored and handled according to manufacturer's directions and local, state, and federal regulations. Some of these regulations may include posting of signs, fire department notification, and specialized containment facilities.

The City routinely requires all project-facilitated new commercial, industrial and other uses to follow applicable regulations and guidelines regarding the storage and handling of hazardous waste within the Specific Plan area. For commercial and industrial facilities processing large amounts of hazardous materials, the City routinely requires adequate safety buffering between the area where hazardous materials are stored or handled and any residential uses in the vicinity. These normal measures would be expected to reduce the potentially significant health and safety impacts associated with project-related potential exposure to stored hazardous materials to a ***less-than-significant level***.

Mitigation. No significant additional adverse impact has been identified; no additional mitigation is required.

15. BIOLOGICAL RESOURCES

The following chapter describes existing vegetation and wildlife characteristics in the Specific Plan Area, including possible rare and endangered species, the potential impacts of the plan on these conditions, and measures warranted to mitigate significant adverse impacts.

The findings in this section are derived from the biological resource study completed for the Central Petaluma Specific Plan formulation effort.¹ The Specific Plan biological resources study identified the biological resources occurring in the Specific Plan Area based on literature review, interpretation of existing mapping, and field reconnaissance. Prior to conducting the field reconnaissance, available literature and resource mapping were reviewed to provide information on general resources in the area, location of known wetlands resources, and the distribution of special-status species and sensitive natural communities which have been recorded in the vicinity. Literature and mapping reviewed included environmental documentation for specific projects in the project vicinity, the California Native Plant Society (CNPS) *Inventory of Rare and Endangered Vascular Plants* (CNPS, 1994), mapping prepared as part of the National Wetland Inventory (U.S. Fish and Wildlife Service, 1985), and a record search conducted by the California Natural Diversity Data Base (CNDDDB). The record search by the CNDDDB provided information on the known distribution of sensitive natural communities and special-status species for the two U.S. Geologic Survey (USGS) 7.5' quadrangles encompassing the Specific Plan Area. The National Wetland Inventory (NWI) provided a general mapping of wetland resources for each of the two USGS quadrangles.

15.1 SETTING

15.1.1 Regulatory Framework

In addition to the environmental protection provided by the California Environmental Quality Act (CEQA), other state and federal regulations have been enacted and agencies authorized to provide for the protection and management of sensitive biological resources. State and federal agencies have a lead role in the protection of biological resources under their permit authority set forth in various state and federal statutes and regulations. At the state level, the California Department of Fish and Game (CDFG) is responsible for administration of the State Endangered Species Act, and for protection of streams, waterbodies, and riparian corridors through the Streambed Alteration Agreement process under §1601-1606 of the California Fish and Game Code. Certification from the California Regional Water Quality Control Board is also required when a proposed activity may result in discharge into navigable waters, pursuant to

¹Vincent Smith and ROMA; Administrative Draft Central Area Specific Plan EIR, December 1999.

§401 of the Clean Water Act and EPA 404(b)(1) Guidelines. At the federal level, the U.S. Fish and Wildlife Service (USFWS) is responsible for implementation of the federal Endangered Species Act and the Migratory Bird Treaty Act, while the U.S. Army Corps of Engineers (Corps) has primary responsibility for protecting wetlands under §404 of the Clean Water Act.

15.1.2 Special-Status Species and Sensitive Natural Communities

Special-status species¹ are plants and animals that are legally protected under the state and/or federal Endangered Species Acts² or other regulations, as well as other species that are considered rare enough by the scientific community and trustee agencies to warrant special consideration, particularly with regard to protection of isolated populations, nesting or denning locations, communal roosts, and other essential habitat. Species with legal protection under the Endangered Species Acts often represent major constraints to development, particularly when they are wide ranging or highly sensitive to habitat disturbance and where proposed development would result in a "take"³ of these species.

¹Special-status species include: Officially designated (rare, threatened, or endangered) and candidate species for listing by the CDFG; officially designated (threatened or endangered) and candidate species for listing by the USFWS; species considered to be rare or endangered under the conditions of Section 15380 of the CEQA Guidelines, such as those identified on lists 1A, 1B, and 2 in the *Inventory of Rare and Endangered Vascular Plants of California*; and possibly other species which are considered sensitive or of special concern due to limited distribution or lack of adequate information to permit listing or rejection for state or federal status, such as those included on lists 3 and 4 in the CNPS *Inventory* or identified as animal "Species of Special Concern" by the CDFG. Species of Special Concern have no legal protective status under the state Endangered Species Act but are of concern to the CDFG because of severe decline in breeding populations in California.

²The federal Endangered Species Act (FESA) of 1973 declares that all federal departments and agencies shall utilize their authority to conserve endangered and threatened plant and animal taxa. The California Endangered Species Act (CESA) of 1984 parallels the policies of FESA and pertains to native California taxa.

³"Take" as defined by the FESA means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect" a threatened or endangered species. "Harm" is further defined by the USFWS to include the killing or harming of wildlife due to significant obstruction of essential behavior patterns (i.e., breeding, feeding, or sheltering) through significant habitat modification or degradation. Two sections of FESA (section 10(a) and section 7) contain provisions which allow or permit "incidental take." The applicant must provide the USFWS with an acceptable conservation plan and publish notification for a permit in the Federal Register. The CDFG also considers the loss of State listed species habitat as "take", although this policy lacks statutory authority and case law support under the CESA. Under the CESA, "take" can be permitted under Section 2081 of the Fish and Game Code. The applicant must enter into a habitat management agreement with the CDFG, which defines the permitted activities and provides adequate mitigation.

The primary information source on the distribution of special-status species in California is the CNDDDB inventory, which is maintained by the Natural Heritage Division of the CDFG. An inventory recording of the presence of a population of species of concern in a particular region is an indication that an additional population may occur at another location within the region, if habitat conditions are suitable. The absence of a recorded occurrence in a particular location does not necessarily mean that special-status species are absent. Detailed field surveys are generally required to provide a conclusive determination on presence or absence of sensitive resources from a particular location.

15.1.3 Wetlands

Although definitions vary to some degree, wetlands are generally considered to be areas that are periodically or permanently inundated by surface or ground water, and support vegetation adapted to life in saturated soil. Wetlands are recognized as important features on a regional and national level due to their high inherent value to fish and wildlife, use as storage areas for storm and flood waters, and water recharge, filtration, and purification functions. Technical standards for delineating wetlands have been developed by the U.S. Army Corps of Engineers (Corps) and the USFWS, which generally define wetlands through consideration of three criteria: hydrology, soils, and vegetation.

The Corps and CDFG both have jurisdiction over modifications to stream channels, river banks, lakes, and other wetland features. Corps jurisdiction is established through the provisions of Section 404 of the Clean Water Act, which prohibits the discharge of dredged or fill material into "waters" of the United States without a permit, including wetlands and unvegetated "other waters." The Corps assumes discretionary approval for permitting, including appropriate mitigation. All three of the identified technical criteria must be met for an area to be identified as a wetland under Corps jurisdiction, unless the area has been modified by human activity. Aggregate wetland impacts (defined as direct fill or indirect effects of fill) of less than one acre generally do not require an Individual 404 permit. Certain activities in wetlands or "other waters" are automatically authorized, or granted a Nationwide Permit, which allows filling where impacts are considered minor.

Jurisdictional authority of the CDFG over wetland areas is established under Section 1601-1606 of the Fish and Game Code, which pertains to activities that would disrupt the natural flow or alter the channel, bed, or bank of any lake, river, or stream. The Fish and Game Code stipulates that it is "unlawful to substantially divert or obstruct the natural flow or substantially change the bed, channel or bank of any river, stream or lake" without notifying the Department, incorporating necessary mitigation, and obtaining a Streambed Alteration agreement. The Wetlands Resources Policy of the CDFG states that the Fish and Game Commission will "strongly discourage development in or conversion of wetlands... unless, at a minimum, project mitigation assures there will be no net loss of either wetland habitat values or acreage." The CDFG is also responsible for commenting on projects requiring Corps permits under the Fish and Wildlife Coordination Act of 1958.

15.1.4 Specific Plan Area Biological Resources

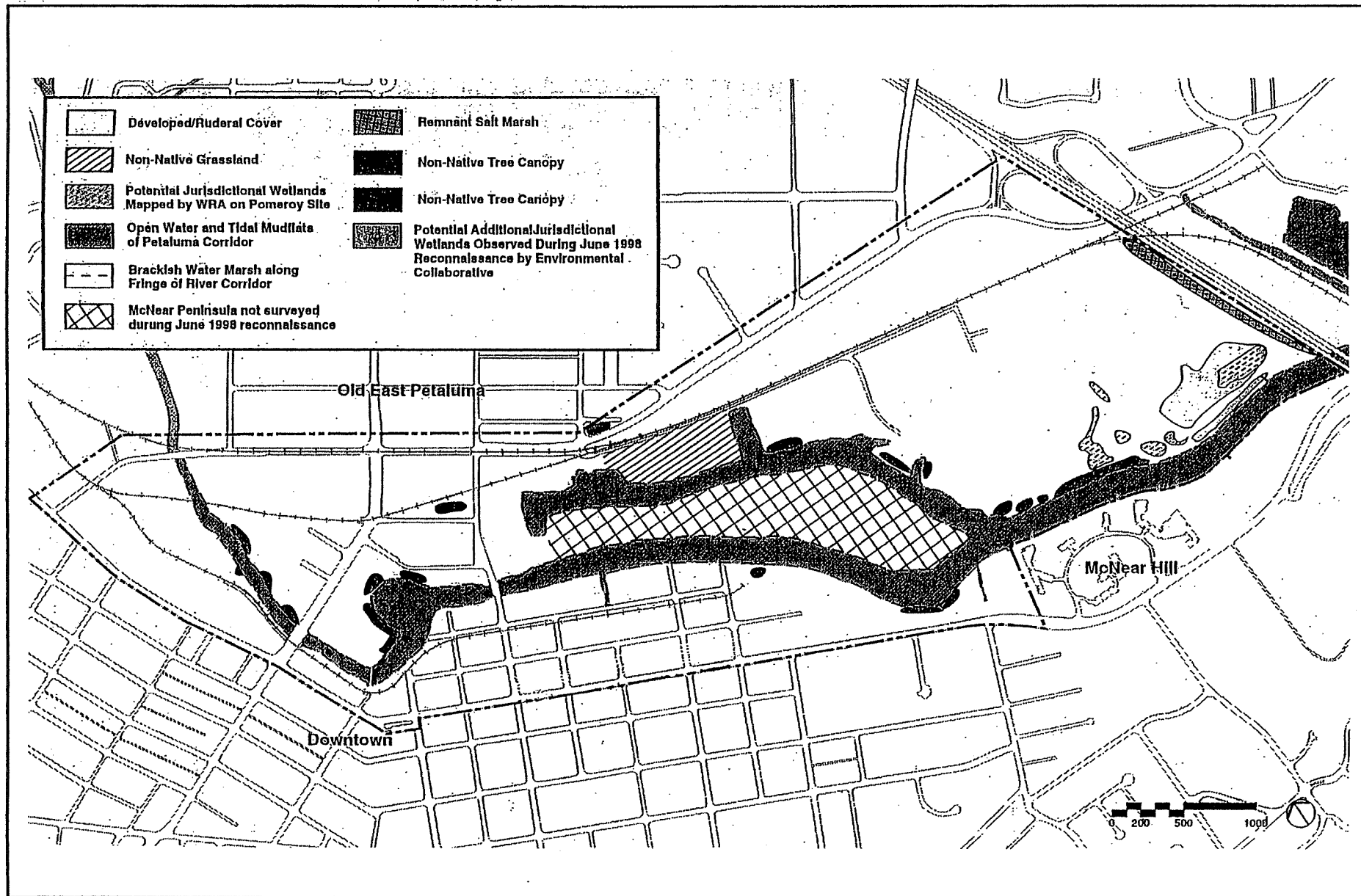
Most of the Specific Plan Area is urbanized, and existing vegetation reflects the extent of past and ongoing disturbance. The Petaluma River bisects the Specific Plan Area and continues to serve as an important resource to fish and wildlife, although development has encroached to the edge of the river, generally restricting native cover to a narrow band of emergent marsh along the banks. In some locations the banks of the river have been severely altered by dredging activities and bank stabilization, and they now support a cover of primarily weedy species. Figure 15.1 identifies the major vegetative cover and important biological features in the Specific Plan area.

The various vegetative cover types and associated wildlife species occurring in the Specific Plan Area and mapped on Figure 15.1 are summarized below.

(a) Developed Areas. Existing structures, roadways, and ornamental landscaping occupy most of the Specific Plan Area. Landscaping is composed of a variety of ornamental species, primarily non-native trees, shrubs and groundcovers such as Monterey pine (*Pinus radiata*), canary island date palm (*Phoenix canariensis*), blue gum eucalyptus (*Eucalyptus globulus*), firethorn (*Pyracantha angustifolia*), English ivy (*Hedera helix*), and periwinkle (*Vinca major*). Although they are not native, rows and clusters of pine and eucalyptus are shown in Figure 15.1 because of the habitat they provide to numerous species of birds.

Ruderal (weedy) grassland species occupy vacant lots and heavily disturbed areas such as vacant areas on the Shamrock Materials site. Dominant weedy species in such ruderal habitats include: sweet fennel (*Foeniculum vulgare*), poison hemlock (*Conium maculatum*), purple-star thistle (*Centaurea calcitrapa*), field mustard (*Brassica campestris*), and wild radish (*Rhaphanus sativus*). In general, the urbanized areas of the proposed Specific Plan area have low to poor wildlife habitat value due to replacement of natural communities, fragmentation of remaining open space areas and parks, and intensive human disturbance. Trees and shrubs used for landscaping do provide nest locations and cover for wildlife adapted to developed areas. Typical native bird species include: mourning dove, scrub jay, northern mockingbird, American robin, brown towhee, and house finch. Introduced bird species include: rock dove, European starling, and house sparrow. The urbanized areas also provide habitat for several species of native mammals such as California ground squirrel, raccoon, and striped skunk, as well as the introduced eastern fox squirrel. Introduced pest species such as Norway rat, house mouse, and opossum are also abundant in developed areas. Many of these species utilize the ruderal and marshland habitat along the fringe of the river as well.

(b) Non-native Grassland. Non-native grasslands form the dominant cover on a few vacant lots where ground disturbance appears to have been limited. These remaining grasslands tend to be composed of introduced grasses and broadleaf weedy species. Common species in the grasslands include: vetch (*Vicia* sp.), annual ryegrass (*Lolium* sp.), wild oat (*Avena fatua*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus mollis*), foxtail barley (*Hordeum*



SOURCE: ROMA Design Group

Figure 15.1

PROJECT AREA BIOLOGICAL RESOURCES

leporinum), and bindweed (*Convolvulus arvensis*). A few native species remain in the grasslands, such as California poppy (*Escholzia californica*).

Non-native grasslands support a variety of mammals, birds, and reptiles, and provide foraging habitat for raptors. Grassland cover provides foraging, nesting, and denning opportunities for resident species such as western fence lizard, northern alligator lizard, gopher snake, western meadowlark, goldfinch, red-winged blackbird, California ground squirrel, California vole, Botta pocket gopher, black-tailed jackrabbit, and occasionally black-tailed deer. The rodent, bird, and reptile populations in turn offer foraging opportunities for avian predators such as black-shouldered kite, northern harrier, American kestrel, red-tailed hawk, barn owl, and great horned owl.

(c) Northern Coastal Salt Marsh and Coastal Brackish Marsh. Remnant stands of native marshland natural communities occur along the fringe of the Petaluma River, bordered by ruderal species. Characteristic species are typically segregated by elevation and degree of inundation. Pickleweed (*Salicornia* sp.), bulrush (*Scirpus* sp.), and alkali bulrush (*Scirpus robustus*) form a narrow band at lower elevations. Narrow-leaf cattail (*Typha angustifolia*) occurs where freshwater sources enter the river, and occasionally at higher elevations. While no populations of special-status plant species have been reported in the Specific Plan Area, there remains a potential for several to occur in the remaining marshland habitat along the river, such as soft bird's-beak (*Cordylanthus mollis* ssp. *mollis*) and Mason's lilaeopsis (*Lilaeopsis masonii*).

The Petaluma River continues to be of regional importance to fish and wildlife, providing habitat for aquatic plant and animal species, open water habitat for birds, and serving as the major movement corridor between the marshlands to the southeast and the upper Petaluma Valley. Intertidal mudflats occur as a linear band between the low-flow channel and the river banks. These mudflats provide habitat for a variety of aquatic invertebrates, which provide primary food sources for fish, shorebirds, and wading birds. Phytoplankton and detritus are consumed by zooplankton and benthic organisms, which are food for benthic feeding fish, filter feeding fish, larger crustaceans, waterfowl and shorebirds. The river serves as a movement corridor for both anadromous¹ and resident fish species. Species composition ranges widely from saltwater fish such as Pacific herring to freshwater fish such as mosquitofish. Over 25 fish species were caught along the river during a survey conducted in the early 1990's, including Sacramento splittail, which has been officially proposed for listing as a federally-threatened species (U.S. Army Corps of Engineers, 1995). Other fish species encountered include inland silverside, pacific staghorn sculpin, striped bass, shiner surfperch, and chameleon goby.

The salt and brackish marshlands form the transition between open water and upland habitat, a highly productive zone that supports a wide variety of wildlife. Special-status species associated with marshland habitat of the river to the southeast of the Specific Plan Area

¹Anadromous fish spawn in freshwater, and the young migrate to sea to mature.

include: salt marsh harvest mouse, Suisun shrew, California clapper rail, California black rail, and salt marsh yellowthroat. For many of these species, the upper limits of the marshland and the remaining adjacent upland habitat are essential retreat areas during extreme high tides. Protection of an adequate buffer to preserve sufficient retreat habitat is essential to maintaining the value of the marshlands. However, most of this zone has been developed with urban uses along the river corridor in the Specific Plan Area, and the continued use by these species is remote.

(b) Freshwater Marsh and Riparian. Due to the salinity levels along the river channel, freshwater marsh and riparian habitat is generally poorly developed and is restricted to drainage ditches and other upland areas. This habitat is dominated by cattail and weedy species such as curly dock (*Rumex crispus*), bristly ox-tongue (*Picris echioides*), wild celery (*Apium graveolens*), and ryegrass.

Native trees and shrubs form a dense cover of riparian vegetation just upstream from the Specific Plan Area, composed of coast live oak (*Quercus agrifolia*), California buckeye (*Aesculus californica*), valley oak (*Quercus lobata*), Fremont cottonwood (*Populus fremontii*), black walnut (*Juglans hindsii*), wild blackberry (*Rubus ursinus*), and wild rose (*Rosa californica*). A few scattered willows (*Salix lasiolepis*) occur as isolated shrubs in a number of locations.

15.1.5 Specific Plan Area Special-Status Species and Sensitive Natural Communities

A CNDDDB records search, together with other relevant information, indicates that occurrences of numerous plant and animal species with special-status have been recorded in or are suspected to occur in the southern Sonoma County area and Petaluma vicinity. Other than the Sacramento splittail and winter run Chinook Salmon, which have been collected in the Petaluma River, none of the species of concern with legal protective status under the Endangered Species Acts have actually been reported in the Specific Plan Area. However, the brackishwater marsh and other native wetland habitats have a high inventory priority with the CNDDDB due to rarity and threats, and are considered sensitive resources.

(a) Plant Species. Several plant species with special-status have been reported in the Petaluma vicinity, and based on recorded geographic range and preferred habitat, numerous other species may have historically occurred in the Specific Plan Area. Species reported from the surrounding area include: Petaluma popcorn-flower (*Plagiobothrys mollis* var. *vestitus*), showy indian clover (*Trifolium amoenum*), alkali milk-vetch (*Astragalus tener* var. *tener*), Sonoma spineflower (*Sidalcea calycosa* ssp. *rhizomata*), Bakers navarretia (*Navarretia leucocephala* ssp. *bakeri*), yellow larkspur (*Delphinium luteum*), Sonoma sunshine (*Blennosperma bakeri*), Burke's goldfields (*Lasthenia burkei*), Sebastopol meadowfoam (*Limnanthes vinculans*), Sonoma alopecurus (*Alopecurus aequalis* var. *somonensis*), dwarf downingia (*Downingia pusilla*), legenere (*Legenere limosa*), Douglas pogogyne (*Pogogyne douglasii* ssp. *parviflora*), fragrant fritillary (*Fritillaria liliacea*), and Mason's lilaeopsis (*Liliaopsis masonii*). These have varied legal status, and many are considered rare (list 1B) by the CNPS.

Existing development and past disturbance limits the likelihood of occurrence of most of the species associated with upland habitat in the Specific Plan Area. There is a remote potential for species associated with brackishwater marsh to have become reestablished along the river banks. Of particular concern is the aquatic Mason's lilaepsis which forms sod mats on wave cut benches, pilings, and emergent vegetation.

(b) Animal Species. Table 15.1 provides information on the name, status, preferred habitat, and reported occurrences of animal species known from or suspected to have a remote potential for occurrence in the Petaluma vicinity. Most of the species of concern are restricted to the tidal marshlands and open water habitat in the Petaluma marsh to the southeast of the U.S. 101 overcrossing, and suitable habitat for these species is absent within the Specific Plan Area segment of the river corridor. Fish species of concern are known to use the river (i.e., Sacramento splittail and small runs of steelhead and Chinook salmon). Occurrences of the numerous bird species of concern is most likely limited to occasional foraging along the river corridor and on the larger undeveloped parcels, and essential nesting habitat for most of these species does not occur within the Specific Plan Area. Potential nesting habitat for black-shouldered kite and marsh hawk occurs on the undeveloped parcels, but no nests of these or other raptor species were detected during the June 1998 Specific Plan study reconnaissance.

(c) Wetlands. Wetlands in the Specific Plan Area include tidally influenced salt and brackish marshes and relatively small areas of freshwater marsh located in uplands. Wetlands mapped by the Corps as part of the National Wetlands Inventory (NWI) program consist primarily of intertidal estuarine and tidal riverine along the Petaluma River. The brackishwater marsh along the fringe of the river is not indicated on the NWI maps, most likely because of its narrow width and relatively small area. Based on vegetative indicators observed during the June 1998 reconnaissance, it appears that the extent of jurisdictional habitat in the project vicinity is confined to the Pomeroy property, which is in the Lower Reach subarea.

With the exception of the fringe of marsh habitat along the banks of the Petaluma River, potential wetlands on the Pomeroy and possibly McNear Peninsula sites, both in the Lower Reach subarea, and small areas of ruderal freshwater marsh along several drainage ditches, no other wetland habitat was observed during the June 1998 reconnaissance or is known to occur in the Specific Plan Area.

Table 15.1
**SPECIAL-STATUS ANIMAL SPECIES KNOWN OR SUSPECTED TO OCCUR IN THE
 SPECIFIC PLAN AREA**

Species	Status	
	Federal/State	Preferred Habitat Type (Occurrence)
<i>Amphibians/Reptiles/Fish:</i>		
California tiger salamander	C/CSC	Vernal pools, ponds, streams and adjacent grassland (unlikely)
California red-legged frog	FT/CSC	Ponds and streams (unlikely)
Sacramento splittail	PT/CSC	Sloughs and other slow-moving waters of Delta (known)
Northwestern pond turtle	*/CSC	Pond, rivers, and streams (possible)
Winter-run chinook salmon	FE/SE	Open water of Bay and Delta, tributary drainages (known)
<i>Birds:</i>		
Black-shouldered kite	-/CP	Grassland (known)
Burrowing owl	-/CSC	Grassland (unlikely)
California black rail	*/ST	Salt marsh (unlikely)
California brown pelican	FE/SE	Coastal shoreline and bays (unlikely)
California clapper rail	FE/SE	Salt marsh (unlikely)
Cooper's hawk	-/CSC	Riparian and grassland (unlikely)
Double-crested cormorant	-/CSC	Bays, rivers and lakes (known)
Golden eagle	-/CSC,CP	Open grassland and savanna (unlikely)
Northern harrier	-/CSC	Grassland (known)
Osprey	-/CSC	Open water and fringe of lakes, rivers, and bays (unlikely)
Peregrine falcon	FE/SE,CP	Open water and grassland (unlikely)
Prairie falcon	-/CSC	Grassland (unlikely)
Salt marsh yellowthroat	*/-	Salt and brackish water marsh (unlikely)
Sharp-shinned hawk	-/CSC	Riparian and grassland (unlikely)
<i>Mammals:</i>		
Salt marsh harvest mouse	FE/SE	Salt marsh and adjacent grassland (unlikely)

SOURCE: Vincent Smith and ROMA; Administrative Draft Central Area Specific Plan EIR, Dec. 1999.

Federal Status:

FE = Listed as "endangered" under the FESA.

FT = Listed as "threatened" under the FESA.

PT = Proposed as "threatened" under the FESA.

C = A candidate for Federal listing. Taxa for which the USFWS has sufficient biological information to support listing endangered or threatened.

* = A species of concern. Species once considered a candidate, but now believed to be too widespread or abundant for listing. Status may change if additional information on vulnerability warrants listing.

State Status:

SE = Listed as "endangered" under CESA.

ST = Listed as "threatened" under CESA.

CP = California fully protected species; individual may not be possessed or taken at any time.

CSC = Considered a species of special concern by the CDFG; taxa have no formal legal protection but nest sites and communal roosts are generally recognized as significant biotic features.

Occurrence:

Indicates likelihood of occurrence in Specific Plan area based on known distribution and habitat suitability.

15.2 PERTINENT PLANS AND POLICIES

In addition to policies outlined in the current Petaluma General Plan, the USFWS, Corps, CDFG, Sonoma County, and CNPS have enacted specific policies designed to protect or to regulate the impact of biological resources such as riparian corridors, wetlands, woodlands, and sensitive habitats hosting special status species.

15.2.1 Petaluma General Plan

Relevant Petaluma General Plan, 1987-2005 goals, objectives and policies pertaining to vegetation and wildlife resources and consideration of the potential effects of the proposed Specific Plan on those resources are identified in the plan's *River* chapter and include the following:

- *Goal 2: Preserve and protect the Petaluma River and streams in their natural state as open spaces, natural resources and habitats.*
- *Objective (i): Preserve and protect the Petaluma River as open space, resource and habitat.*
- *Objective (j): Protect and preserve streams and the river in their natural state.*

15.2.2 Federal and State Provisions

As indicated above, special status species include those listed by the federal or state governments as endangered, threatened, rare, or candidate for listing, or listed by the CNPS as rare or endangered. These species have varying degrees of legal protection under the Federal Endangered Species Act, the California Endangered Species Act, and CEQA. The USFWS and CDFG share responsibility for management and protection of natural resources in the proposed Specific Plan Area. Under separate state and federal legislation, each agency would conduct a detailed review of any individual project that could affect a special status plant or animal species. If a listed species may be affected, the lead agency must initiate a formal consultation with the USFWS and/or CDFG, as applicable under federal or state law.

(a) Clean Water Act. Section 404 of the federal Clean Water Act (33 CFR Part 323) regulates discharge of fill into "Waters of the United States". For proposed development within wetlands, the individual project applicant is required to: (1) prepare, submit, and obtain confirmation of a jurisdictional determination (detailed wetland map) from the Corps; (2) complete surveys and analyses for potential sensitive species occurrences; and (3) submit a permit application to fill wetlands. Mitigation plans are required, with the general requirement that there is no net loss of wetland functions, values, or acreage when the project and its mitigation are completed.

(b) Streambed Alteration Permit. CDFG has jurisdiction over development activities that affect riparian corridors under Fish and Game Code 1601-1603. If an individual development

project proposes to significantly alter the natural flow of a stream, significantly change its bed or bank, including bridging, or use any material from the streambed, the applicant must obtain a Streambed Alteration Permit from the CDFG.

15.3 IMPACTS AND MITIGATION MEASURES

15.3.1 Significance Criteria

Based on the *CEQA Guidelines*,¹ an impact on biological resources would be considered *significant* if it would:

- (a) have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service;
- (b) have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service;
- (c) have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means; and/or
- (d) interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

15.3.2 Impacts and Mitigation Measures

General Impacts on Vegetation and Wildlife. Development consistent with the proposed Specific Plan policies could replace remaining existing vegetative wildlife habitats in the Specific Plan Area with new structures and landscaping. This is considered to be a less-than-significant impact. The new development would replace the existing degraded habitat with new structures and landscaping. Most of the area is already developed with industrial and commercial uses, and anticipated new development and intensification would not have a significant impact on the general vegetation and wildlife habitat value of the Specific Plan Area. The remaining undeveloped land has been disturbed by past agricultural, industrial and dredging activities, limiting its habitat value.

¹CEQA Guidelines, 2002. Appendix G, Item IV.

Under proposed Specific Plan policies, disturbance to the river corridor itself would generally be avoided. Considerably more street trees would be provided as landscaping along streets and margins of proposed uses would be introduced to improve the aesthetic character of the Specific Plan Area, thereby improving the habitat available to common wildlife. Use of native trees and shrubs as recommended in the draft Specific Plan would contribute to the habitat value of landscape plantings.

Due to the low wildlife habitat value, the limited extent of sensitive natural communities, and the fact that the river edge would remain largely unaffected by development, the general impact of the proposed Specific Plan on vegetation and wildlife values in the Specific Plan Area is considered to be ***less-than-significant***.

Mitigation. No significant impact has been identified; no mitigation is required.

Impact 15-1: Loss of Heritage and/or Landmark Trees. New development consistent with the proposed Specific Plan may result in the removal of city designated heritage and/or landmark trees. This possibility represents a ***potentially significant impact***. (See criteria (b) and (e) under subsection 15.3.1, "Significance Criteria," above).

Designated trees in the city are protected under the City's *Heritage and Landmark Trees Ordinance* (City Ordinance 1855), which provides for their protection and requires that a permit be obtained if removal is necessary. The City maintains a list of registered heritage or landmark trees.

A row of five eucalyptus along Copeland Street north of East D Street were designated with landmark status in 1993 because of their distinctive visual character and age. This portion of the Turning Basin subarea has been proposed in the draft Specific Plan for mixed use development. A considerable setback would be required around the base of these trees if they are to be preserved. Falling limbs and debris may create nuisance and at times hazardous conditions which may conflict with intensification of land uses and human activity at or in the vicinity of the trees.

Mitigation 15-1: Prior to or as a condition of finalization of plans for individual, discretionary development projects along Copeland Street that may impact one or more of the five landmark eucalyptus trees along Copeland Street, a detailed assessment of the trees shall be conducted by a certified arborist to determine their appropriateness for preservation and any hazard they may pose to humans. The assessment shall specify development setbacks, and methods to reduce the hazard of limb drop should be defined, if the trees are considered suitable for preservation. If it is determined that the trees pose too great a threat to human safety, a permit for their removal shall be obtained pursuant to Section 8.28.100 of the Heritage and Landmark Trees Ordinance of the City.

Impact 15-2: Loss of Special Status Plant Species. New development consistent with the proposed Specific Plan, on or within 50 feet of the banks of the Petaluma River, may result in a substantial adverse effect, either directly or indirectly, through habitat modification, on one or more special status species. This possibility is considered to be a ***potentially significant impact*** (see criteria (a), (b) and (e) under subsection 15.3.1, "Significance Criteria," above).

(a) Special Status Species--Plants. While no special-status plant species have been reported in the Specific Plan Area, there is a remote possibility that populations occur on the relatively undisturbed portions of aquatic habitat along the Petaluma River. If populations of plant species of concern are present, proposed modifications associated with shoreline improvements within the aquatic habitat of the river could result in their loss. Such modifications include removal of pilings and other partially submerged structures which could serve as substrate for Mason's lilaepsis.

(b) Special Status Species--Animals. No adverse impacts to terrestrial or aquatic animal species are anticipated with implementation of the proposed Specific Plan. Suitable habitat for terrestrial animal species of concern is absent from the Specific Plan Area, and no raptor nests were detected during the June 1998 field reconnaissance. Fish species of concern known from the Petaluma River, such as Sacramento splittail, steelhead and salmon, would not be directly affected, as proposed improvements associated with the Specific Plan would be generally restricted to uplands.

Mitigation 15-2: If disturbance to suitable habitat is proposed as part of an individual development or improvement project within the Specific Plan area and within 50 feet of the banks of the Petaluma River, systematic surveys shall be conducted prior to finalization of such projects in order to determine definitively whether any special-status plant species occur on the affected banks of the Petaluma River. Such surveys shall be conducted by a qualified botanist following applicable guidelines of the California Department of Fish and Game and/or U.S. Fish and Wildlife Service to provide a conclusive determination on presence or absence. If any populations with legal protective status are encountered, an appropriate mitigation plan shall be developed in consultation with, and meeting the mitigation criteria of, these jurisdictional agencies.

Implementation of this measure would ensure protection of possible populations of River-related special-status plant species in the Specific Plan Area, mitigating potential impacts to a ***less-than-significant level***.

Impact 15-3: Jurisdictional Wetland Impacts. Specific Plan-facilitated development consistent with the proposed Specific Plan could affect potential jurisdictional wetland habitat. This possibility represents a ***potentially significant impact*** (see criteria (c) and (e) under subsection 15.3.1, "Significance Criteria," above).

A potential for loss or disturbance to jurisdictional wetland habitat remains in the Specific Plan Area. This disturbance could be associated with Specific Plan-associated localized bank stabilization or other improvements such as a potential proposed boardwalk in the Riverfront Warehouse subarea. In addition, as outlined in section 15.1.5(c) above, some wetlands have been identified on the Pomeroy property in the Lower Reach subarea, and may also be present on the McNear Peninsula, also in the Lower Reach subarea.

Mitigation 15-3: All development which would involve modifications to potential wetlands and other waters of the U.S., including the banks of the Petaluma River, the Pomeroy property and the McNear Peninsula, shall be coordinated with representatives of the California Department of Fish and Game and the U.S. Army Corps of Engineers, as required by federal and state law, to ensure that any required mitigation protocols and associated individual project design modifications are incorporated into proposed improvement plans during the initial stages of project review. Implementation of this measure will ensure that potential impacts on wetland resources are minimized and this potential impact is reduced to a ***less-than-significant level***.