CITY OF SANTA ROSA
NORTH SANTA ROSA STATION AREA SPECIFIC PLAN
DRAFT ENVIRONMENTAL IMPACT REPORT

SCH No. 2011122034

Prepared for:

CITY OF SANTA ROSA
COMMUNITY DEVELOPMENT DEPARTMENT
100 SANTA ROSA AVENUE, ROOM 3
SANTA ROSA, CA 95404

Prepared by:

PMC®

2729 PROSPECT PARK DRIVE, SUITE 220
RANCHO CORDOVA, CA 95670

APRIL 2012

City of Santa Rosa

Notice of Availability

North Santa Rosa Station Area Specific Plan

NOTICE OF AVAILABILITY

ENVIRONMENTAL IMPACT REPORT (EIR) FOR THE NORTH SANTA ROSA STATION AREA SPECIFIC PLAN
STATE CLEARINGHOUSE NO. 2011122034

APRIL 12, 2012

LEAD AGENCY: City of Santa Rosa

PROJECT TITLE: Environmental Impact Report for the North Santa Rosa Station Area Specific Plan

PROJECT LOCATION: The project area is located primarily in the incorporated City of Santa Rosa in Sonoma County, California, north of the City of Rohnert Park and south of the Town of Windsor. Small portions of the project area lay within unincorporated Sonoma County. The proposed station is located at the southeast corner of Guerneville Road and the railroad tracks (1478 and 1480 Guerneville Road), close to the Coddingtown Mall. The North Santa Rosa Station Area Specific Plan focuses on the area approximately one-half mile around the future train station.

PROJECT DESCRIPTION: The North Santa Rosa Station is one of 14 stations being planned by Sonoma Marin Area Rail Transit (SMART) for a commuter rail service along the Northwest Pacific rail corridor. The City of Santa Rosa Community Development Department is preparing a Specific Plan, which, if adopted, would guide future development of approximately 987 acres surrounding the SMART station. The North Santa Rosa Station Area Specific Plan addresses: potential land uses; station access and circulation and infrastructure; land use regulations; infrastructure development and financing implementation strategies; and design guidelines to encourage transit-oriented development within the project area. If adopted, the Specific Plan will guide all new development in the Specific Plan area.

The Draft North Santa Rosa Station Area Specific Plan supports the future SMART station by outlining strategies to establish a transit-supportive environment by improving connections between the station and adjacent destinations, densifying and intensifying land uses at key locations within the project area, and enhancing the physical design of the urban environment. While much of the existing area is developed, a few large vacant parcels in the project area afford unique opportunities for transit-supportive development. The Draft Specific Plan includes provisions for development of office, retail, institutional, residential, industrial, recreation/parks, and transportation/circulation facility land uses.

SIGNIFICANT ENVIRONMENTAL EFFECTS: The City of Santa Rosa has prepared a Draft Environmental Impact Report (EIR) to address the specific environmental effects of implementing the Specific Plan. The Draft EIR consists of a focused analysis of the following environmental issue areas that may be impacted by the project:

- Aesthetics
- Agricultural Resources
- Air Quality
- Biological Resources
- Cultural and Paleontological Resources
- Geology and Soils
- Hazardous Materials/Human Health
- Hydrology and Water Quality
- Land Use
- Noise
- Population, Housing and Employment
- Public Services and Utilities
- Traffic and Circulation
- Climate Change and Greenhouse Gases
- Cumulative Impacts
- Significant Irreversible Impacts
- Growth Inducing Impacts

Listed hazardous waste sites, hazardous materials users and other associated hazardous material sites (including sites identified under Section 65962.5 of the Government Code) that are known to be present in the project area are identified in Section 3.7 (Hazardous Materials/Human Health) of the Draft EIR.

PUBLIC REVIEW PERIOD/STATUS: A **45-day public review period** will be provided to receive written comments on the adequacy of the Draft EIR. The comment period will start on **April 12, 2012,** and end on **May 28, 2012**. Written comments should be sent to the following address:

City of Santa Rosa
Community Development Department
ATTN: Jessica Jones, City Planner
100 Santa Rosa Avenue Room 3
Santa Rosa, CA 95404
Fax: 707.543.3218
Email: jjones@srcity.org

PUBLIC HEARING: A public hearing to receive comments on the adequacy of the Draft EIR will be held before the Planning Commission on Thursday, May 24, at or after 4 p.m. at the following location:

City Council Chamber, City Hall
100 Santa Rosa Avenue
Santa Rosa, CA 95404

AVAILABILITY OF THE DRAFT EIR: Copies of the Draft EIR are available for review at the following locations:

Santa Rosa City Hall
Community Development Department, Room 3 and
City Manager's Office, Room 10
100 Santa Rosa Avenue
Santa Rosa, CA 95404

Sonoma County Library
Central Santa Rosa Library
211 E Street
Santa Rosa, CA 95404

Northwest Santa Rosa Library
150 Coddingtown Center
(Guerneville Road and Range Avenue)
Santa Rosa, CA 95401

The Draft EIR may also be reviewed on the City's website (http://ci.santa-rosa.ca.us/departments/communitydev/NSR_SASP/Pages/default.aspx). Referenced material used in the preparation of the Draft EIR may be reviewed upon request to the Community Development Department.

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ES EXECUTIVE SUMMARY

1.0 INTRODUCTION

2.0 PROJECT DESCRIPTION

3.0 INTRODUCTION TO THE ENVIRONMENTAL ANALYSIS

4.0 ALTERNATIVES

5.0 OTHER CEQA ANALYSIS

6.0 REPORT PREPARERS

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INTRODUCTION

The Draft Environmental Impact Report (Draft EIR) has been prepared in accordance with the California Environmental Quality Act (CEQA Statutes) (Public Resources Code, Section 21000, et seq.) and the State Guidelines for implementation of CEQA (CEQA Guidelines) (Title 14, Chapter 3 of the California Code of Regulations (CCR), Section 15000, et seq.). The Draft EIR will be used by the City of Santa Rosa (City) in its consideration of the environmental impacts associated with the implementation of the proposed North Santa Rosa Station Area Specific Plan. The City is the lead agency and has primary responsibility for preparing the Draft EIR.

ES.1 PURPOSE AND SCOPE OF THE DRAFT EIR

The primary purpose of the Draft EIR is to satisfy CEQA requirements by addressing the environmental effects specific to the proposed North Station Area Plan. The EIR analysis focuses on potential impacts arising from development of the proposed project. The EIR adopts this approach in order to provide a credible worst-case scenario of the impacts resulting from project implementation. Where appropriate, some impacts are analyzed under future conditions, which assume buildout of reasonably foreseeable projects in the area. Other issues that are site-specific in nature are evaluated against baseline conditions.

ES.2 PROJECT CHARACTERISTICS

The North Santa Rosa station is one of 14 stations being planned by the Sonoma-Marin Area Rail Transit (SMART) agency for a commuter rail service along the former Northwestern Pacific Railroad right-of-way. The Specific Plan will outline strategies to promote ridership and ensure connections to and from the proposed station.

Because the area is already developed, with a few exceptions, a transit-supportive environment will be created through increasing residential density, promoting economic development, improving pedestrian, bicycle, auto, and transit connections between the station and adjacent destinations, and enhancing the aesthetics of the area. A few large, vacant parcels in the project area will be planned for development of new transit-supportive uses.

The plan will govern allowable land uses (such as retail, commercial, and residential) as well as street design, parks and public spaces, and building heights and densities. Additionally, the Plan has the potential to ensure that new housing is affordable to all income levels and that new development is environmentally responsible through green building practices.

A specific plan is a planning and regulatory tool available to local governments in the State of California. As allowed under California state law (Government Code Section 65450 et seq.), the City of Santa Rosa would use the North Santa Rosa Station Area Specific Plan, in part, to implement its adopted General Plan. The Specific Plan, which must be consistent with the City's General Plan, is intended to provide a greater level of specificity in planning in and around the proposed SMART station.

The principle objectives of the proposed project are identified as follows:

1. Establish a land use plan, zoning, and a policy and design framework that will guide future development and redevelopment activities.

2. Intensify land uses and increase residential densities in the project area to support future transit improvements and ridership and to exceed the Metropolitan Transportation Commission's (MTC) residential unit thresholds.

3. Improve pedestrian, bicycle, auto, and transit access in the project area.

4. Enhance connectivity between the station site and adjacent commercial, residential, educational, and governmental areas.

5. Improve aesthetics and public safety through physical design and streetscape improvements.

6. Develop and implement urban design standards that promote a walkable environment.

7. Enhance quality of life in the project area by providing parks, trails, and recreational opportunities.

8. Transform the project area into a vibrant and distinct place that people want to visit.

9. Catalyze economic development and promote economic competitiveness in the project area by providing employment opportunities.

10. Reduce greenhouse gas emissions by promoting sustainable transit-oriented development and practical alternative modes of transport to the automobile.

11. Inform the community about transit-oriented design concepts.

12. Maximize public participation in the specific plan process through a comprehensive community involvement strategy.

ES.3 PROJECT ALTERNATIVES SUMMARY

CEQA Guidelines Section 15126.6 requires that an EIR describe a range of reasonable alternatives to the project which could feasibly attain the basic objectives of the project and reduce the degree of environmental impact. Section 4.0, Alternatives, provides a qualitative analysis of two scenarios that include:

- ***Alternative 1 – No Project Alternative:*** CEQA Guidelines Section 15126.6(e) requires that a "no-project" alternative be evaluated in an EIR. Under this alternative, the project would not be approved and current land uses on the project site, as identified in the City of Santa Rosa General Plan 2035, would remain.

- ***Alternative 2 – Reduced Development Potential Alternative:*** This alternative aims to achieve all project goals and community vision elements with an economic foundation of moderate growth scenario figures compared to the proposed Specific Plan.

The City of Santa Rosa was identified as the lead agency for the proposed project. In accordance with Section 15082 of the CEQA Guidelines, the City of Santa Rosa prepared and distributed a Notice of Preparation (NOP) of an EIR on December 13, 2011. This notice was circulated to the public, local, state, and federal agencies, and other interested parties to solicit comments on the proposed project. The NOP is presented in **Appendix A**.

ES.4 EFFECTS FOUND NOT TO BE SIGNIFICANT

CEQA Guidelines Section 15128 requires an EIR to briefly describe any possible significant effects that were determined not to be significant and were therefore not discussed in detail in the EIR. For purposes of this Draft EIR, no topics were eliminated from further evaluation in the scoping phase of the environmental analysis. Impacts to aesthetics and visual resources, agricultural resources, biological resources, cultural and paleontological resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use, noise, population and housing, public services and utilities, and climate change and greenhouse gases were fully analyzed in this Draft EIR and were determined to be less than significant; these impacts are disclosed in Section 3.1 through 3.14 of this Draft EIR.

ES.5 ISSUES TO BE RESOLVED AND AREAS OF CONTROVERSY

Section 1.0, Introduction, provides a description of issues that have been identified to date since release of the NOP. These issues include air quality and traffic concerns related to the increased population under the proposed Specific Plan beyond what was considered in the City of Santa Rosa General Plan 2035.

ES.6 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Table ES-1 provides a summary of project impacts and mitigation measures identified in the Draft EIR.

TABLE ES-1
EXECUTIVE SUMMARY

Impact		Level of Significance Without Mitigation	Mitigation Measure		Resulting Level of Significance
3.1 Aesthetics and Visual Resources					
Impact 3.1.1	Implementation of the Specific Plan would allow for taller buildings in some locations than what currently exist and what are currently allowed at those locations under the General Plan, the construction of which could affect views of scenic vistas from the Specific Plan area. This impact would be considered less than significant.	LS	None required.		LS
Impact 3.1.2	Implementation of the proposed project would not substantially damage scenic resources within a scenic highway.	LS	None required.		LS
Impact 3.1.3	Implementation of the Specific Plan would change the existing visual character of the Specific Plan area by allowing denser development and taller building heights in some locations than planned for under the General Plan.	LS	None required.		LS
Impact 3.1.4	Implementation of the proposed project could introduce new sources of light or glare. This impact would be considered less than significant after mitigation.	LSAM	**MM 3.1.4**	For construction of structures greater than three stories tall, the City shall require the use of building materials designed to reduce glare. Examples of these types of materials include, but are not limited to, windows treated with glare-reductive coating or film covering, matte-finish tiles, marble, or sheet metal, and nonreflective flashing material. *Timing/Implementation: During subsequent project design review*	LS

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Impact		Level of Significance Without Mitigation	Mitigation Measure		Resulting Level of Significance
			Enforcement/Monitoring:	*City of Santa Rosa Community Development Department, Planning Division*	
Impact 3.1.5	Implementation of the proposed project, in combination with other planned and recently approved projects in the cumulative setting, would result in a cumulative change in the visual character of the city.	LCC	None required.		LCC
3.2 Agricultural and Forestry Resources					
Impact 3.2.1	The project area does not contain any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Therefore, implementation of the proposed project would not convert any important farmland.	LS	None required.		LS
Impact 3.2.2	The project would not conflict with any existing zoning for agricultural or zoning use.	NI	None required.		NI
Impact 3.2.3	The project area does not meet the definition of forestland, nor is it suitable for timber production.	NI	None required.		NI
Impact 3.2.4	The proposed project would not contribute to cumulative impacts on agricultural or forestry lands.	LCC	None required.		LCC
3.3 Air Quality					
Impact 3.3.1	Construction-generated emissions could potentially conflict with, or obstruct implementation of, the applicable air quality plan and may contribute substantially to an existing or projected air quality violation.	LSAM	**MM 3.3.1**	During earth-disturbing activities, the contractor shall be responsible for spraying exposed soil surfaces with water or another approved dust inhibitor. The contractor would be responsible for cleaning streets and driveways of fugitive soils in the immediate vicinity of construction work, as necessary.	LS

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Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
		The contractor shall be responsible for ensuring that all construction equipment and vehicles are maintained in good operating order and that all factory-installed emission control devices are installed and functioning properly. All vehicles and construction equipment shall be turned off when not in use to minimize emissions. • Water all active construction areas at least twice daily as required. • Cover all trucks hauling soil, sand, and other loose materials or require all truck to maintain at least 2 feet of freeboard. • Sweep daily, as required, all paved access roads, parking areas and staging areas at construction sites. • Sweep streets daily as required if visible soil material is carried onto adjacent public streets. • Reduce unnecessary idling of truck equipment within proximity to sensitive receptors (i.e., idle time to 5 minutes or less). • Where possible, use newer, cleaner-burning diesel-powered construction equipment • Properly maintain construction equipment per manufacturer specifications. • Designate a disturbance coordinator responsible for ensuring that mitigation	

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Impact		Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
			measures to reduce air quality impacts from construction are properly implemented. *Timing/Implementation:* *During construction* *Enforcement/Monitoring:* *City of Santa Rosa Community Development Department, Planning Division*	
Impact 3.3.2	Operational emissions could potentially conflict with, or obstruct implementation of, the applicable air quality plan and may contribute substantially to an existing or projected air quality violation.	SU	None available.	SU
Impact 3.3.3	Future development within the Specific Plan area may result in increased exposure to localized concentrations of TACs or PM2.5 that may exceed applicable BAAQMD-recommended significance thresholds.	LSAM	**MM 3.3.3** The following measures shall be implemented for future development projects located within the Specific Plan area: a. Project-specific analyses shall be required for future development projects within the Specific Plan area that would result in the development of new sensitive land uses within 1,000 feet of a major permitted stationary source or within the overlay zones of Highway 101, sufficient to demonstrate consistency or inconsistency with applicable BAAQMD-recommended health-risk thresholds (i.e., increased cancer risk of 10 in a million, increased non-cancer risk of <1.0 Hazard Index [Chronic or Acute], ambient $PM_{2.5}$ increase of <0.3 $\mu g/m^3$ annual average). If site-specific modeling indicates that significant exposure to criteria pollutants, including toxic air contaminants, would occur, future development shall comply, to the	LS

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Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
		maximum extent feasible, with mitigation measures provided by the BAAQMD for the reduction of air quality impacts. These measures shall comply with the most current regulations available at the time of development and will likely include the following measures: • Modification to the location and height of intakes to the ventilation system. • Addition of HEPA air filtration systems. • Limiting the placement of recreational use areas, such as patio areas and balconies, to interior courtyards and requiring that they be shielded by the structure. • Triple-paned windows. • Central heating, ventilation, and air conditioning (HVAC) systems with high-efficiency filters. • Locating air intake systems for the HVAC systems as far away from the roadway as possible. • An ongoing HVAC maintenance plan. These measures shall be designed and implemented to the satisfaction of the City Community Development Department, Planning Division in consultation with the BAAQMD. b. Project-specific analyses shall be required	

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Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
		for future development projects within the Specific Plan area that would result in the development of new area sources of TAC or $PM_{2.5}$ emissions (such as non-permitted sources like loading docks involving the use of diesel-powered equipment and delivery vehicles) within 1,000 feet of a sensitive land use, sufficient to demonstrate consistency or inconsistency with applicable BAAQMD-recommended health-risk thresholds (i.e., increased cancer risk of 10 in a million, increased non-cancer risk of <1.0 Hazard Index [Chronic or Acute], ambient $PM_{2.5}$ increase of <0.3 μg/m^3 annual average). If site-specific modeling indicates that significant exposure to criteria pollutants, including toxic air contaminants, would occur, future development shall comply, to the maximum extent feasible, with mitigation measures provided by BAAQMD for the reduction of air quality impacts. These measures shall comply with the most current regulations available at the time of development and will likely include the following measures: • Increase new area sources of TAC or PM2.5 emissions distance from sensitive land uses. • Design the site layout to locate any permitted major stationary source of air toxics or other non-permitted TAC sources (e.g., loading docks, parking lots) as far as possible from sensitive receptors.	

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			• Large projects involving non-permitted TAC sources like loading docks or parking lots shall consider phased development where commercial/retail portions of the project that are near sensitive land uses are developed last. This would allow time for CARB's diesel regulations to take effect in reducing diesel emissions. Ultimately, lower concentrations would be anticipated in the near future such that residential development would be impacted by less risk in later phases of development. • Tiered plantings of trees such as redwood, deodar cedar, live oak, and oleander shall be installed between loading docks and parking lots and sensitive land uses in order to reduce TAC and diesel PM exposure. *Timing/Implementation:* *Prior to construction* *Enforcement/Monitoring:* *City of Santa Rosa Community Development Department, Planning Division*	
Impact 3.3.4	Future development within the Specific Plan area would not result in exposure of sensitive receptors to substantial odorous emissions.	LS	None required.	LS
Impact 3.3.5	Future development within the Specific Plan area would not contribute to localized concentrations of CO that would exceed	LS	None required.	LS

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Impact		Level of Significance Without Mitigation	Mitigation Measure		Resulting Level of Significance
	applicable ambient air quality standards.				
Impact 3.3.6	Implementation of the proposed Specific Plan, in combination with cumulative development in the SFBAAB, would result in a cumulatively considerable net increase of ozone and coarse and fine particulate matter.	CC/SU	None available.		SU
3.4 Biological Resources					
Impact 3.4.1	Implementation of the Specific Plan could result in impacts to special-status species and their habitat from redevelopment activities, but not to wildlife movement corridors.	LSAM	**MM 3.4.1**	If there is the potential for destruction of a nest or substantial disturbance to nesting birds or bats due to construction activities, a plan to monitor nesting birds or bats during construction shall be prepared and submitted to the USFWS and CDFG for review and approval. The City shall comply with all USFWS or CDFG guidance for protection of nesting birds. If vegetation, buildings, or bridges that potentially provide nesting sites must be removed, a qualified wildlife biologist shall conduct pre-construction surveys. If an active bird nest is found, the bird shall be identified as to species and the approximate distance from the closest work site to the nest estimated. No additional measures need be implemented if active nests are more than the following distances from the nearest work site: (a) 300 feet for raptors; or (b) 75 feet for other non-special-status bird species. Disturbance of active nests shall be avoided to the extent possible until it is determined that nesting is complete and the young have fledged. Bats shall be absent or flushed from roost locations prior to demolition of buildings. If flushing of	LS

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				bats from buildings is necessary, it shall be done by the qualified biologist during the non-breeding season from October 1 to March 31. When flushing bats, structures shall be moved carefully to avoid harming individuals, and torpid bats given time to completely arouse and fly away. During the maternity season from April 1 to September 30, prior to building demolition or construction, a qualified biologist shall determine if a bat nursery is present at any sites identified as potentially housing bats. If an active nursery is present, disturbance of bats shall be avoided until the biologist determines that breeding is complete and young are reared. *Timing/Implementation:* *Prior to construction of any subsequent project that could result in disturbance to bird or bat nests* *Enforcement/Monitoring:* *City of Santa Rosa Community Development Department, Planning Division*	
Impact 3.4.2	Implementation of the Specific Plan could result in fill of seasonal wetlands that may be present within the Specific Plan area.	LSAM	**MM 3.4.2**	A formal wetland delineation shall be conducted for areas that will be permanently or temporarily impacted by the project. If jurisdictional waters cannot be avoided, the City shall apply for a CWA Section 404 permit from the USACE and a Section 401 permit from the RWQCB. These permits shall be obtained prior to issuance of grading permits and implementation of the proposed project. The City shall ensure that the project will result	LS

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Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
		in no net loss of waters of the U.S. by providing mitigation through impact avoidance, impact minimization, and/or compensatory mitigation for the impact, as determined in the CWA Section 404/401 permits. Compensatory mitigation may consist of (a) obtaining credits from a mitigation bank; (b) making a payment to an in-lieu fee program that will conduct wetland, stream, or other aquatic resource restoration, creation, enhancement, or preservation activities (these programs are generally administered by government agencies or nonprofit organizations that have established an agreement with the regulatory agencies to use in-lieu fee payments collected from permit applicants); and/or (c) providing compensatory mitigation through an aquatic resource restoration, establishment, enhancement, and/or preservation activity. This last type of compensatory mitigation may be provided at or adjacent the impact site (i.e., on-site mitigation) or at another location, usually within the same watershed as the permitted impact (i.e., off-site mitigation). The project proponent/permit applicant retains responsibility for the implementation and success of the mitigation project. Evidence of compliance with this mitigation measure shall be provided prior to construction and grading activities for the proposed project. *Timing/Implementation:* *Prior to any vegetation removal or ground-disturbing activities* *Enforcement/Monitoring:* *City of Santa Rosa Community Development Department, Planning*	

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			Division	
Impact 3.4.3	The proposed project would not conflict with applicable City policies, ordinances, or adopted conservation plan.	NI	None required.	NI
Impact 3.4.4	The implementation of the proposed project, in combination with other reasonably foreseeable projects, would result in minimal direct mortality and loss of habitat for special-status species, wetlands, and waters of the U.S.	LCC	None required.	LCC
3.5 Cultural and Paleontological Resources				
Impact 3.5.1	The project area contains properties that are listed in Santa Rosa's Historic Properties Inventory. Development within and redevelopment of the Specific Plan area could affect these properties through modification of historic character and though construction activities.	LS	None required.	LS
Impact 3.5.2	Implementation of the project could result in the potential disturbance of known and undiscovered archeological resources.	LS	None required.	LS
Impact 3.5.3	Implementation of the project could result in the potential disturbance of human remains.	LS	None required.	LS
Impact 3.5.4	Implementation of the proposed project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	LS	None required.	LS
Impact 3.5.5	Implementation of the project, along with any	LCC	None required.	LCC

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	foreseeable development in the project vicinity, could contribute to cumulative impacts to cultural resources.			
3.6 Geology and Soils				
Impact 3.6.1	In the event of a major earthquake in the region, surface fault rupture would cause damage to, destruction of, or injury in development anticipated under the proposed Specific Plan.	LS	None required.	LS
Impact 3.6.2	In the event of a major earthquake in the region, ground shaking would cause damage to, destruction of, or injury in development anticipated under the proposed Specific Plan.	LS	None required.	LS
Impact 3.6.3	In the event of a major earthquake in the region, localized liquefaction would cause damage to, destruction of, or injury in development anticipated under the proposed Specific Plan.	LS	None required.	LS
Impact 3.6.4	In the event of a major earthquake in the region, seismic-related landsliding would cause damage to, destruction of, or injury in development anticipated under the proposed Specific Plan.	LS	None required.	LS
Impact 3.6.5	New development anticipated under the proposed Specific Plan would be subjected to erosion and loss of topsoil.	LS	None required.	LS
Impact 3.6.6	New development anticipated under the proposed Specific Plan would be subjected to differential settlement.	LS	None required.	LS
Impact 3.6.7	New development anticipated under the	LS	None required.	LS

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Impact		Level of Significance Without Mitigation	Mitigation Measure		Resulting Level of Significance
	proposed Specific Plan could be subject to erosion.				
Impact 3.6.8	The proposed project will be located on soils that may have the potential for expansion and contraction.	LS	None required.		LS
Impact 3.6.9	Land uses in the Specific Plan would not use septic tanks.	NI	None required.		NI
Impact 3.6.10	No significant mineral resources exist within the Specific Plan area.	NI	None required.		NI
Impact 3.6.11	Development described by the proposed Specific Plan in addition to other proposed and approved projects in the vicinity would not result in creation or exacerbation of any identified geological or soils impacts.	LCC	None required.		LCC
3.7 Hazardous Materials/Human Health					
Impact 3.7.1	Implementation of the proposed Specific Plan would result in transport, use, and storage of hazardous materials commonly associated with construction. Accidental release of these materials could constitute a hazard to the public or the environment.	LS	None required.		LS
Impact 3.7.2	Review of environmental hazards databases conducted for the Specific Plan area identified areas of environmental concern.	LSAM	**MM 3.7.2**	If contamination is discovered in a Phase I environmental site assessment, developers shall complete site remediation in accordance with OSHA standards, Santa Rosa Fire Department, Sonoma County Environmental Health Department, and State Water Resources Control Board guidelines. The Department of Toxic	LS

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Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
		Substances Control (DTSC) may become involved wherever toxic levels of contamination are found that pose an immediate hazard. Remediation shall reduce human exposure risk and environmental hazards, both during and after construction. The remediation plan shall be prepared in accordance with recommendations of the environmental consultant and established procedures for safe remediation. Specific mitigation measures designed to protect human health and the environment will be provided in the plan. Requirements shall include, but not be limited to, the following: i. Documentation of the extent of previous environmental investigation and remediation at the site, including closure reports for underground storage tanks (USTs) and contaminant concentrations. ii. A site-specific Health and Safety Plan to be prepared by all contractors at the project site, where applicable. This includes a Health and Safety Plan for all demolition, grading, and excavation on the site, as well as for future subsurface maintenance work. The plan shall include appropriate training, any required personal protective equipment, and monitoring of contaminants to determine exposure. The Health and Safety Plan will be reviewed and approved by a certified industrial hygienist. iii. Description of protocols for the investigation and evaluation of previously unidentified hazardous materials that could	

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Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
		be encountered during project development, including engineering controls that may be required to reduce exposure to construction workers and future users of the site. iv. Requirements for site-specific construction techniques that would minimize exposure to any subsurface contamination, where applicable. This shall include treatment and disposal measures for any contaminated groundwater removed from excavations, trenches, and dewatering systems in accordance with local and Regional Water Quality Control Board guidelines. v. Sampling and testing plan for excavated soils to determine suitability for reuse or acceptability for disposal at a state-licensed landfill facility. vi. Restrictions limiting future excavation or development of the subsurface by residents and visitors to the proposed development, and prohibition of groundwater development should it be determined from test results. vii. Completion of an approved remediation plan should land use restrictions be insufficient to allow development to proceed safely. Remediation measures may include excavation and replacement of contaminated soil with clean fill, pumping and treatment of groundwater, thermal	

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Impact		Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
			treatment, etc. *Timing/Implementation: As a condition of subsequent project approval, and implemented during construction activities* *Enforcement/Monitoring: City of Santa Rosa Fire Department*	
Impact 3.7.3	The increased density of the proposed Specific Plan would lead to an associated increased use of hazardous materials. The proposed Specific Plan therefore has potential to result in an increased risk of accidental release of hazardous materials.	LSAM	**MM 3.7.3** Registration and compliance with the Hazardous Materials Business Plan, Hazardous Waste Generator Program, and Accidental Release Program, wherever applicable, is required for businesses with the following quantities of hazardous materials: at least 55 gallons (liquids), 500 pounds (solids), or 200 cubic feet (gases). *Timing/Implementation: As a condition of subsequent project approval, and implemented during construction activities* *Enforcement/Monitoring: City of Santa Rosa Fire Department*	LS
Impact 3.7.4	Several schools are located within and in the vicinity of the Specific Plan area. Hazardous materials or substances may be handled in the vicinity of these schools.	LS	None required.	LS
Impact 3.7.5	The Specific Plan area is not located in an airport land use plan or within 2 miles of a public or private airport.	NI	None required.	NI
Impact 3.7.6	The proposed project could have an impact on area roadways used to respond to hazardous materials incidents and/or for emergency evacuations.	LS	None required.	LS
Impact 3.7.7	Implementation of the proposed Specific Plan would not expose people and structures to	NI	None required.	NI

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Impact		Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
	significant hazards involving wildland fires.			
Impact 3.7.8	Implementation of the proposed project, in addition to other reasonably foreseeable projects, may result in cumulative hazardous material and human health risk impacts.	LCC	None required.	LCC
3.8 Hydrology and Water Quality				
Impact 3.8.1	Development and redevelopment under the Specific Plan include construction-related activities that could expose soil to erosion during storm events, causing degradation of water quality.	LS	None required.	LS
Impact 3.8.2	Development and redevelopment under the Specific Plan would not significantly deplete groundwater supplies or alter the area available for recharge of the groundwater aquifer.	LS	None required.	LS
Impact 3.8.3	Development and redevelopment under the Specific Plan could increase impervious surfaces and, as a result, alter drainage patterns and increase drainage rates over existing conditions.	LS	None required.	LS
Impact 3.8.4	Development and redevelopment under the Specific Plan could increase impervious surfaces and, as a result, increase runoff over existing conditions. Runoff from urban uses may also contribute to the degradation of water quality in the area.	LS	None required.	LS
Impact 3.8.5	Development in the Specific Plan area may result in increased runoff and flows to the	LS	None required.	LS

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Impact		Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
	municipal storm drain system.			
Impact 3.8.6	The Specific Plan area would not be subject to substantial impacts related to inundation by seiche, tsunami, or mudflow events.	LS	None required.	LS
Impact 3.8.7	The proposed project, in combination with existing, approved, proposed, and reasonably foreseeable development in the Laguna de Santa Rosa watershed, would alter drainage conditions, rates, volumes, and water quality, which could result in potential flooding and stormwater quality impacts within the overall watershed.	LCC	None required.	LCC
3.9 Land Use				
Impact 3.9.1	The proposed project would not physically divide an established community.	NI	None required.	NI
Impact 3.9.2	The proposed project will change the existing General Plan land use designation and zoning districts for the site.	LS	None required.	LS
Impact 3.9.3	The project site is not within the boundaries of or otherwise subject to any habitat conservation plans or natural community conservation plans.	NI	None required.	NI
Impact 3.9.4	Denser and more intense development within the project area, as called for under the Specific Plan, would not result in cumulatively considerable impacts to land use or cumulatively considerable conflicts with applicable planning documents.	LCC	None required.	LCC

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Impact		Level of Significance Without Mitigation	Mitigation Measure		Resulting Level of Significance
3.10 Noise					
Impact 3.10.1	Construction activities could result in a substantial temporary increase in ambient noise levels at nearby noise-sensitive land uses, which may result in increased levels of annoyance, activity interference, and sleep disruption.	LS	None required.		LS
Impact 3.10.2	Implementation of the proposed project would not result in significant increase in traffic noise levels at nearby noise-sensitive receptors.	LS	None required.		LS
Impact 3.10.3	Projected on-site noise levels at on-site land uses could exceed applicable City noise exposure standards.	LS	None required.		LS
Impact 3.10.4	Groundborne vibration levels associated with pile-driving activities, if required, could exceed applicable groundborne vibration criterion at nearby land uses.	LSAM	**MM 3.10.4**	Impact pile driving equipment used within 160 feet of nearby structures shall be substituted with equipment or procedures that would generate lower levels of groundborne vibration, to the extent that geological conditions would permit their use. For instance, in comparison to impact pile drivers, drilled piles or the use of sonic or vibratory pile drivers is the preferred alternative. In the event that the use of impact pile drivers is required due to geological conditions, groundborne vibration monitoring shall be conducted for impact pile driving that occurs within 160 feet of existing structures. Pile driving activities shall be suspended if measured groundborne vibration levels approach within 0.1 in/sec ppv of commonly	LS

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Impact		Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
			applied threshold of 0.5 in/sec ppv for structural damage. In such instances, additional attenuation measures or changes in pile driving techniques shall be implemented, prior to recommencing pile driving activities, to reduce groundborne vibration levels. For impact pile driving activities that occur within approximately 75 feet of existing structures, a structural crack survey is recommended for existing structures to document existing structural conditions. Repair of any structural damage resulting from nearby impact pile driving activities shall be initiated upon completion of pile driving activities. *Timing/Implementation:* *Prior to subsequent project construction* *Enforcement/Monitoring:* *City of Santa Rosa Community Development Department, Building Division*	
Impact 3.10.5	Implementation of the proposed North Station Specific Plan, in combination with cumulative development as described in the Santa Rosa General Plan, would result in a cumulatively considerable net increase of noise levels.	LCC	None required.	LCC
3.11 Population, Housing, and Employment				
Impact 3.11.1	Implementation of the proposed Specific Plan would allow for the addition of approximately 4,217 residents, 1,714 housing units, and 33 acres of office, commercial, shopping center, and institutional uses to the Specific Plan area beyond what would be allowed under buildout of the General Plan. This is not considered	LS	None required.	LS

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Impact		Level of Significance Without Mitigation	Mitigation Measure		Resulting Level of Significance
	substantial growth in excess of the General Plan 2035 projections.				
Impact 3.11.2	Implementation of the proposed project would not result in the displacement of substantial numbers of housing and/or persons.	LS	None required.		LS
Impact 3.11.3	The proposed Specific Plan, along with other approved, proposed, and reasonably foreseeable development, could induce population and housing growth in the region.	LCC	None required.		LCC
3.12 Public Services and Utilities					
Impact 3.12.1.1	Development under the proposed Specific Plan could increase the need for public safety services, including fire protection, emergency medical response, and law enforcement.	LSAM	**MM 3.12.1**	Future residential subdivisions and multi-family residential development within the Specific Plan area shall be required to mitigate the impacts of the increased need for public safety services, including fire protection, emergency medical services, and law enforcement, resulting from a proposed development to a less than significant level by implementation of one of the following mitigation measures: 1. Annexation of all newly created parcels and multi-family residential development to the City's existing Special Tax District Number 2006-1. 2. Payment of a lump sum adequate to cover the increased public safety service costs associated with providing services to a proposed residential subdivision or	LS

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Impact		Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
			multi-family residential development. 3. Provision of private security, fire protection, and emergency medical services to the residents of a proposed residential subdivision or multi-family residential development in perpetuity. 4. Inclusion of other uses, consistent with the City of Santa Rosa General Plan 2035 and zoning regulations, within a proposed residential development that would generate revenue to offset the costs of providing public safety services to the development, where appropriate. *Timing/Implementation:* *Prior to construction* *Enforcement/Monitoring:* *City of Santa Rosa Community Development Department, Planning Division*	
Impact 3.12.1.2	Implementation of the Specific Plan, in combination with other reasonably foreseeable development, could increase population in Santa Rosa and could contribute to the need for expanded fire protection services, emergency medical services, and law enforcement, thus requiring additional facilities, the development of which could cause significant physical impacts to the environment.	LCC	None required.	LCC
Impact 3.12.2.1	Implementation of the Specific Plan would result in increased development in the Specific Plan area, which would subsequently increase student enrollment in local schools. New or	LS	None required.	LS

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Impact		Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
	expanded school facilities would be necessary to serve the increased demand.			
Impact 3.12.2.2	Population growth associated with implementation of the proposed Specific Plan, in combination with other existing, planned, proposed, approved, and reasonably foreseeable development in the cumulative setting, would result in a cumulative increase in student enrollment and require additional schools and related facilities to accommodate the growth.	LCC	None required.	LCC
Impact 3.12.3.1	Implementation of the proposed project would increase demand for library facilities.	LS	None required.	LS
Impact 3.12.3.2	Implementation of the proposed project, in addition to reasonably foreseeable development, would require increased library facilities.	LCC	None required.	LCC
Impact 3.12.4.1	Buildout under the Specific Plan would increase demand for water.	LS	None required.	LS
Impact 3.12.4.2	Buildout under the Specific Plan would increase use of existing water infrastructure.	LS	None required.	LS
Impact 3.12.4.3	Implementation of the proposed Santa Rosa General Plan 2035, along with growth within the Sonoma County Water Agency service area, would result in cumulative water supply impacts.	LCC	None required.	LCC

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Impact		Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
Impact 3.12.5.1	Subsequent land use activities associated with implementation of the proposed Specific Plan would increase wastewater flows and require additional infrastructure and may require additional treatment capacity to accommodate anticipated demands. However, implementation of proposed Specific Plan policies would provide wastewater infrastructure upgrades as needed to support increased density and intensity in the Specific Plan area.	LS	None required.	LS
Impact 3.12.5.2	Subsequent development under the proposed project could increase stormwater flows and require additional infrastructure to accommodate anticipated capacity needs. However, the Specific Plan would provide stormwater infrastructure upgrades as needed to support increased density and intensity in the Specific Plan area.	LS	None required.	LS
Impact 3.12.5.3	Implementation of the proposed project, in combination with existing, approved, proposed, and reasonably foreseeable development, would increase the current demand for wastewater collection and treatment and stormwater facilities.	LCC	None required.	LCC
Impact 3.12.6.1	Development allowed under the proposed Specific Plan would result in increased demand for solid waste services and facilities to serve the Specific Plan area.	LS	None required.	LS
Impact 3.12.6.2	Implementation of the proposed project would not be expected to result in conflicts with any federal, state, or local solid waste regulations.	LS	None required.	LS

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Impact		Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
Impact 3.12.6.3	The proposed project would contribute to cumulative demands for solid waste disposal services.	LCC	None required.	LCC
Impact 3.12.7.1	The proposed project would not contribute to deterioration of existing facilities.	LS	None required.	LS
Impact 3.12.7.2	Implementation of the proposed Specific Plan, in conjunction with other future development, would not require additional park and recreation facilities within the boundaries of the city.	LCC	None required.	LCC
Impact 3.12.8.1	Implementation of the proposed project would increase demand for electric, natural gas, and telecommunication services and require the extension of existing infrastructure.	LS	None required.	LS
Impact 3.12.8.2	Implementation of the proposed Specific Plan, as well as potential development in the surrounding areas, would result in an increase in cumulative utility service demands.	LCC	None required.	LCC

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Impact		Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
3.13 Traffic and Circulation				
Impact 3.13.1	Buildout of the Specific Plan would result in added traffic demands on Santa Rosa streets beyond those already envisioned upon buildout of the City's General Plan.	LS	None required.	LS
Impact 3.13.2	The three Highway 101 freeway segments from downtown Santa Rosa to College Avenue, College Avenue to Steele Lane, and Steele Lane to Bicentennial Avenue are projected to operate below Caltrans' LOS standard of the LOS C/D threshold in the future, both without and with the Specific Plan.	CC/SU	None available.	CC/SU
Impact 3.13.3	Intersection operation and off-ramp queues at the Highway 101 interchanges at College Avenue and Steele Lane are expected to operate within acceptable ranges with buildout of the Specific Plan and its affiliated roadway improvements.	LS	None required.	LS
Impact 3.13.4	The proposed project would not conflict with adopted policies, plans, or programs supporting alternative transportation.	LS	None required.	LS
Impact 3.13.5	By design and intent, implementation of the Specific Plan would result in a beneficial impact to pedestrian and bicycle circulation.	LS	None required.	LS
Impact 3.13.6	Implementation of the Specific Plan would have a beneficial impact on both bus transit and planned SMART commuter rail transit.	LS	None required.	LS
Impact 3.13.7	Construction activities associated with development in the Specific Plan area may temporarily affect vehicular, pedestrian, and	LS	None required.	LS

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Impact		Level of Significance Without Mitigation	Mitigation Measure		Resulting Level of Significance
	bicycle circulation.				
Impact 3.13.8	The proposed project would not result in a change in air traffic patterns.	NI	None required.		NI
Impact 3.13.9	The proposed project would not substantially increase hazards due to a design feature.	LS	None required.		LS
Impact 3.13.10	The Specific Plan designates new streets that will improve connectivity within the Plan area, creating new routes for all users including emergency response providers.	LS	None required.		LS
3.14 Climate Change and Greenhouse Gases					
Impact 3.14.1	Implementation of the proposed project would result in the direct and indirect generation of greenhouse gas emissions that could result in a negative impact to the environment as well as conflict with the goals of AB 32.	LCCAM	**MM 3.14.1**	The City shall require all subsequent development projects located within the Specific Plan area to implement applicable BAAQMD-recommended basic construction mitigation measures and, where applicable, additional BAAQMD-recommended control measures/best management practices. a. Prior to issuance of grading or building permits, all future development projects, to the extent applicable and practical, shall specify on the final project plans implementation of BAAQMD-recommended construction-related measures to reduce GHG emissions during construction activities. These measures include, as feasible: 1. Use of alternative-fueled (i.e., biodiesel, electric) construction vehicles and	LS

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Impact	Level of Significance Without Mitigation	Mitigation Measure	Resulting Level of Significance
		equipment to the maximum extent possible; 2. Use of local construction materials (within 100 miles) to the maximum extent possible; and 3. Recycle construction waste and demolition materials to the maximum extent possible. *Timing/Implementation: During construction* *Enforcement/Monitoring: City of Santa Rosa Community Development Department, Planning Division*	

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1.0 INTRODUCTION

This section summarizes the purpose of the Environmental Impact Report (EIR); describes the environmental procedures that are to be followed according to state law; discusses the intended uses of the EIR; discusses the project's relationship to the City of Santa Rosa General Plan; describes the EIR scope and organization, contact person, and impact terminology; and provides definitions of commonly used terms and abbreviations used throughout this EIR.

1.1 DOCUMENT AND PURPOSE

This Draft EIR has been prepared in conformance with the provisions of the California Environmental Quality Act (CEQA) to evaluate the environmental effects of the proposed North Santa Rosa Station Area Specific Plan project (proposed project; project) in the City of Santa Rosa.

The City of Santa Rosa (City), acting as the lead agency, has prepared this Draft EIR to provide the public and responsible and trustee agencies with information about the potential environmental effects of the proposed project. As described in CEQA Guidelines Section 15121(a), an EIR is a public informational document that assesses potential environmental effects of a proposed project, as well as identifies mitigation measures and alternatives to the proposed project that could reduce or avoid its adverse environmental impacts. Public agencies are charged with the duty to consider and minimize environmental impacts of proposed development where feasible, and obligated to balance a variety of public objectives including economic, environmental, and social factors.

CEQA requires the preparation of an EIR prior to approving any project that may have a significant effect on the environment. For the purposes of CEQA, the term "project" refers to the whole of an action which has the potential for resulting in a direct physical change or a reasonably foreseeable indirect physical change in the environment (CEQA Guidelines Section 15378[a]). With respect to the proposed project, the City has determined that adoption and implementation of the proposed plan is a "project" within the definition of CEQA.

1.2 TRUSTEE AND KNOWN RESPONSIBLE AGENCIES

For the purposes of CEQA, a "trustee" agency has jurisdiction by law over natural resources that are held in trust for the people of the State of California (CEQA Guidelines Section 15386). The California Department of Fish and Game is a trustee agency with regard to the fish and wildlife of the state and designated rare or endangered native plants. The term "responsible agency" includes all public agencies other than the lead agency that have discretionary approval power over the project or an aspect of the project (CEQA Guidelines Section 15381). The following agencies are identified as potential responsible agencies:

- Bay Area Air Quality Management District (BAAQMD)
- Regional Water Quality Control Board (RWQCB)
- State Water Resources Control Board (SWRCB)
- U.S. Army Corps of Engineers (USACE)
- California Department of Toxic Substances Control (DTSC)
- Native American Heritage Commission
- Sonoma County Department of Health Services
- U.S. Fish and Wildlife Service (USFWS)
- California Public Utilities Commission (CPUC)
- California Department of Transportation (Caltrans)
- California Department of Fish and Game (CDFG)

1.3 TYPE OF DOCUMENT

The CEQA Guidelines identify several types of EIRs, each applicable to different project circumstances. This EIR has been prepared as a program EIR pursuant to CEQA Guidelines Section 15168. The analysis associated with a program EIR focuses primarily on the changes in the environment that would occur as a result of project implementation and examines all phases of the project.

Ultimately, the EIR is used by the City as a tool in evaluating the proposed project's environmental impacts and can be further used to modify, approve, or deny approval of the proposed project based on the analysis provided in the EIR.

1.4 INTENDED USES OF THE EIR

This Draft EIR is intended to evaluate the environmental impacts of the project to the greatest extent possible. This Draft EIR, in accordance with CEQA Guidelines Section 15126, should be used as the primary environmental document to evaluate all planning and permitting actions associated with the project. These actions include, but are not limited to, the following:

- General Plan Amendment
- Zoning Code Amendment
- Design Guidelines Amendment
- Citywide Creek Master Plan Amendment
- Bicycle and Pedestrian Master Plan Amendment
- General Plan Land Use Redesignation
- Rezone

1.5 RELATIONSHIP TO THE CITY OF SANTA ROSA GENERAL PLAN

The City adopted and revised the City of Santa Rosa General Plan (General Plan) in 2009. The General Plan is the City's overall guide for the use of the City's resources, expresses the development goals of the community, and is the foundation upon which all land use decisions are made. According to the Santa Rosa General Plan Land Use Diagram, the Specific Plan area is designated for Low-, Medium- and Medium-High-Residential, Mobile Home Park, Retail and Business Service, Office, Business Park, Light Industry, General Industry, Public/Institutional, Parks/Recreation, and Open Space uses.

1.6 ORGANIZATION AND SCOPE

Sections 15122 through 15132 of the CEQA Guidelines identify the content requirements for Draft and Final EIRs. An EIR must include a description of the environmental setting, an environmental impact analysis, mitigation measures, alternatives, significant irreversible environmental changes, growth-inducing impacts, and cumulative impacts. The environmental issues addressed in the Draft EIR were established through review of environmental documentation developed for the site, environmental documentation for nearby projects, and public agency responses to the Notice of Preparation (NOP). Based upon these comments, agency consultation, and review of the project application, the City determined the scope for this EIR.

This Draft EIR is organized in the following manner:

SECTION ES – EXECUTIVE SUMMARY

This section summarizes the characteristics of the proposed project and provides a concise summary matrix of the project's environmental impacts and associated mitigation measures.

SECTION 1.0 – INTRODUCTION

Section 1.0 provides an introduction and overview describing the intended use of the EIR.

SECTION 2.0 – PROJECT DESCRIPTION

This section provides a detailed description of the proposed project, including intended objectives, background information, and physical and technical characteristics.

SECTION 3.0 – ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

Section 3.0 contains an analysis of environmental topic areas as identified below. Each subsection contains a description of the existing setting of the project area, and the regulatory environment, identifies standards of significance, identifies project-related impacts, and recommends mitigation measures.

The following major environmental topics are addressed in this section:

- ***Aesthetics and Visual Resources:*** Describes the existing landscape characteristics of the project area and qualitatively assesses the anticipated impacts of changes in the visual character of the project area.

- ***Agricultural and Forestry Resources:*** Describes the existing agricultural and forestry resources within the project area and assesses the potential direct and indirect conversion of agriculture and forest resources as well as potential conflicts with existing zoning for agricultural and forestry uses.

- ***Air Quality:*** Describes the existing air quality conditions of the project area and applicable regulations, and provides an analysis of potential air quality impacts associated with the project. Mitigation measures are recommended to reduce significant air quality impacts.

- ***Biological Resources:*** Identifies the biological resources that may be present in the project area, describes relevant state and local regulations and policies associated with biological resources, and discusses the project's potential impacts on the existing biological resources, including vegetation, riparian zones, and wildlife.

- ***Cultural and Paleontological Resources:*** Discusses relevant federal, state, and local provisions regarding cultural resources, and identifies potential impacts to cultural resources and mitigation measures, where appropriate.

- ***Geology and Soils:*** Describes the existing geologic and soil conditions of the project site, identifies relevant City policies and development standards, and describes any mitigation measures required to address potential geologic and/or soil stability issues associated with project development, including the soil's suitability to accommodate the proposed project.

- ***Hazardous Materials/Human Health:*** Discusses the potential presence of hazardous materials and conditions on the project site and in the vicinity, and analyzes the risks associated with introducing the proposed development to the area.

- ***Hydrology and Water Quality:*** Describes the existing surface water and groundwater hydrologic conditions of the project area based on existing documentation, summarizes relevant law and regulations as they apply to the proposed project, and analyzes the potential degradation of water quality, alteration of existing drainage patterns, and flooding hazards that may result from the project.

- ***Land Use:*** Describes the existing land use characteristics in the project area, identifies existing General Plan land use designations and zoning, as well as relevant land use policies, and evaluates the direct and indirect environmental effects associated with the proposed land use change.

- ***Noise:*** Provides a description of existing noise setting conditions of the project area, identifies relevant General Plan and Zoning Ordinance noise standards, and analyzes potential noise impacts associated with the proposed project.

- ***Population, Housing, and Employment:*** Describes the existing demographic and housing conditions of the project area and surrounding area, identifies relevant General Plan provisions associated with the proposed project, and evaluates the direct and indirect environmental effects associated with population and housing.

- ***Public Services and Utilities:*** Discusses the results of consulting with public service providers, and evaluates the potential for the project to result in significant public service and utility impacts.

- ***Traffic and Circulation:*** Describes potential impacts on the transportation system associated with adoption of the proposed Specific Plan and evaluates the local and regional roadway, transit, bicycle, pedestrian, and aviation components of the overall transportation system.

- ***Climate Change and Greenhouse Gases:*** Provides a discussion of the project's potential effect on greenhouse gas emissions and the associated effects of climate change.

Sections 3.1 through 3.14 in this EIR provide an integrated presentation of the setting, environmental impacts, and mitigation measures for each of the environmental issue areas addressed. Potential effects of implementing the proposed project are identified, including cumulative effects, along with mitigation measures recommended to lessen or reduce identified impacts. In cases where no mitigation is available, this fact is noted. This EIR provides an analysis of environmental effects specifically associated with the proposed project, as well as an evaluation of project impacts in light of the environmental analysis provided in the General Plan EIR. Consistent with CEQA Guidelines Section 15183, this EIR addresses environmental effects that are peculiar to the project and utilizes mitigation measures that are based on adopted City development policies and standards to mitigate anticipated impacts.

SECTION 4.0 – ALTERNATIVES

CEQA Guidelines Section 15126.6 requires that an EIR describe a range of reasonable alternatives to the project which could feasibly attain the basic objectives of the project and avoid and/or lessen the environmental effects of the project. This alternatives analysis provides a comparative analysis between the project and the selected alternatives, which include:

- ***Alternative 1 – No Project Alternative:*** CEQA Guidelines Section 15126.6(e) requires that a "no-project" alternative be evaluated in an EIR. Under this alternative, the project would not be approved and current land uses, designations ,and circulation in the project area would remain unchanged from what is planned for under the Santa Rosa General Plan 2035.

- ***Alternative 2 – Reduced Development Potential Alternative*:** This alternative generally meets or exceeds the Metropolitan Transportation Commission's (MTC) suburban station guidelines. It aims to achieve all project goals and community vision elements with an economic foundation of moderate growth scenario figures developed in the June 2011 North Santa Rosa Station Area Specific Plan Market Assessment.

The Reduced Development Potential Alternative is considered the environmentally superior alternative after the No Project Alternative.

SECTION 5.0 – OTHER CEQA ANALYSIS

This section discusses cumulative impacts, significant unavoidable impacts, growth-inducing effects, and impacts found not to be significant associated with the proposed project.

SECTION 6.0 – REPORT PREPARERS

This section lists all authors and agencies that assisted in the preparation of the report by name, title, and company or agency affiliation.

APPENDICES

This section includes all notices and other procedural documents pertinent to the EIR, as well as all technical material prepared to support the analysis.

1.7 ENVIRONMENTAL REVIEW PROCESS

The review and certification process for the EIR will involve the following procedural steps:

NOTICE OF PREPARATION

In accordance with Section 15082 of the CEQA Guidelines, the City of Santa Rosa prepared a Notice of Preparation (NOP) of an EIR for the project on December 13, 2011. The City of Santa Rosa was identified as the lead agency for the proposed project. The NOP was circulated to the public, local, state, and federal agencies, and other interested parties to solicit comments on what should be addressed in the scope of the EIR. A scoping meeting was held on January 4, 2012, to solicit input from interested agencies and the public. Concerns raised in response to the NOP and at the scoping meeting were considered during preparation of the Draft EIR. The 30-

day comment period closed on January 12, 2012. The NOP and responses by interested parties are presented in **Appendix A**.

DRAFT EIR

This document constitutes the Draft EIR. The Draft EIR contains a description of the project, description of the environmental setting, identification of project impacts, and mitigation measures for impacts found to be significant, as well as an analysis of project alternatives. Upon completion of the Draft EIR, the City files the Notice of Completion (NOC) with the State Office of Planning and Research to begin the public review period (Public Resources Code Section 21161).

PUBLIC NOTICE/PUBLIC REVIEW

Concurrent with the NOC, the City will provide public notice of the availability of the Draft EIR for public review and invite comment from the general public, agencies, organizations, and other interested parties. The review period is 45 days. Public comment on the Draft EIR will be accepted in written form via common carrier or via electronic mail. All comments or questions regarding the Draft EIR should be addressed to:

City of Santa Rosa
Community Development Department
100 Santa Rosa Avenue, Room 3
Santa Rosa, CA 95404
Attn: Jessica Jones, City Planner
Phone: (707) 543-3410
Fax: (707) 543-3218
E-mail: jjones@srcity.org

RESPONSE TO COMMENTS/FINAL EIR

Following the public review period, a Final EIR will be prepared. The Final EIR will respond to written comments received during the public review period.

CERTIFICATION OF THE EIR/PROJECT CONSIDERATION

The City will review and consider the Final EIR. If the City finds that the Final EIR is "adequate and complete," the City may certify the Final EIR at a public hearing. The rule of adequacy generally holds that the EIR can be certified if it shows a good faith effort at full disclosure of environmental information and provides sufficient analysis to allow decisions to be made regarding the project in contemplation of its environmental consequences.

Upon review and consideration of the Final EIR, the City may take action to recommend approval, revise, or reject the North Santa Rosa Station Area Specific Plan and associated General Plan, Zoning Code, Design Guidelines, Citywide Creek Master Plan, and Bicycle and Pedestrian Master Plan amendments. A decision to approve the project would be accompanied by written findings in accordance with CEQA Guidelines Section 15091 and, if applicable, Section 15093. A Mitigation Monitoring and Reporting Program (MMRP), as described below, would also be adopted for mitigation measures that have been incorporated into or imposed upon the project to reduce or avoid significant effects on the environment. This MMRP will be designed to ensure that these measures are carried out during project implementation.

MITIGATION MONITORING

CEQA Section 21081.6(a) requires lead agencies to adopt an MMRP to describe measures that have been adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment. The specific "reporting or monitoring" program required by CEQA is not required to be included in the EIR; however, it will be presented to the Planning Commission and City Council for adoption. Throughout the EIR, however, mitigation measures have been clearly identified and presented in language that will facilitate establishment of an MMRP. Any mitigation measures adopted by the City will be included in an MMRP to verify compliance.

1.8 SUMMARY OF COMMENTS RECEIVED ON THE NOTICE OF PREPARATION

The City received several comment letters on the NOP for the North Santa Rosa Station Area Specific Plan project DEIR and during the public scoping meeting held during the NOP period. These comments are summarized and a copy of each letter is provided in **Appendix A** of this DEIR.

1.9 IMPACT TERMINOLOGY

This Draft EIR uses the following terminology to describe environmental effects of the proposed project:

- ***Standards of Significance:*** A set of criteria used by the lead agency to determine at what level or "threshold" an impact would be considered significant. Significance criteria used in this EIR include the CEQA Guidelines; factual or scientific information; regulatory performance standards of local, state, and federal agencies; and City goals, objectives, and policies.

- ***Less Than Significant Impact:*** A less than significant impact would cause no substantial change in the environment. No mitigation is required.

- ***Significant Impact:*** A significant impact would cause, or would potentially cause, a substantial adverse change in the physical conditions of the environment. Significant impacts are identified by the evaluation of project effects using specified standards of significance. Mitigation measures and/or project alternatives are identified to reduce project effects to the environment.

- ***Significant and Unavoidable Impact:*** A significant and unavoidable impact would result in a substantial change in the environment that cannot be avoided or mitigated to a less than significant level if the project is implemented.

- ***Cumulatively Significant Impact:*** A cumulatively significant impact would result in a new substantial change in the environment from effects of the project when evaluated in the context of reasonably foreseeable development in the surrounding area.

1.10 COMMONLY USED TERMS

Identified below are common terms used throughout this document. A complete list of abbreviations is also provided.

TERMS

- ***Draft EIR (DEIR):*** Draft Environmental Impact Report
- ***Environment:*** The physical conditions which exist within an area that will be affected by a proposed project, including land, air, water, minerals, flora, fauna, noise, and objects of historic or aesthetic significance
- ***Final EIR (FEIR):*** Final Environmental Impact Report
- ***Lead Agency:*** The public agency with the principal responsibility for carrying out or approving a project that may have a significant effect upon the environment
- ***General Plan:*** the Santa Rosa General Plan 2035
- ***Project:*** the development or improvement of the project area
- ***Specific Plan:*** References the North Santa Rosa Station Area Specific Plan, which, if adopted, would guide future development within the plan area

ABBREVIATIONS

AB	Assembly Bill
ABAG	Association of Bay Area Governments
afa	acre-feet annually
BAAQMD	Bay Area Air Quality Management District
BACT	best available control technology
BMP	best management practices
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAAQS	California ambient air quality standards
Cal-Fire	California Department of Forestry and Fire Protection
Cal-OSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CARB	California Air Resources Board
CBC	California Building Code
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEC	California Energy Commission
CEQA	California Environmental Quality Act

CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CGS	California Geological Survey
CH_4	methane
CHP	California Highway Patrol
CNEL	Community Noise Equivalent Level
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
CPUC	California Public Utilities Commission
CRHR	California Register of Historic Resources
CUPA	Certified Unified Program Agency
CUWCC	California Urban Water Conservation Council
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DHHS	Department of Health and Human Services
DOC	Department of Conservation
DSOD	Division of Safety of Dams
DTSC	Department of Toxic Substances Control
DWR	Department of Water Resources
EIR	environmental impact report
EOP	Emergency Operations Plan
EPA	United States Environmental Protection Agency
ERP	Emergency Response Plan
ESA	Endangered Species Act
FEMA	Federal Emergency Management Act
FHWA	Federal Highway Administration
FMMP	Farmland Mapping and Monitoring Program
FPPA	Farmland Protection Policy Act
GHG	greenhouse gas
gpd	gallons per day
gpm	gallons per minute
HAP	hazardous air pollutant

HCP	habitat conservation plan
HFC	hydrofluorocarbon
HOV	high-occupancy vehicle
Hz	hertz
in/sec	inches per second
ITE	Institute of Transportation Engineers
LAFCo	Local Agency Formation Commission
L_{eq}	energy mean (average) noise level
LESA	Land Evaluation and Site Assessment
LID	low impact development
lbs/day	pounds per day
L_{max}	maximum noise level
L_{min}	minimum noise level
LOS	level of service
LUST	leaking underground storage tank
MACT	maximum achievable control technology
MBTA	Migratory Bird Treaty Act
MCL	Maximum Containment Level
mgd	million gallons per day
MMRP	Mitigation Monitoring and Reporting Program
MMT	million metric tons
mph	miles per hour
MPO	metropolitan planning organization
MSR	municipal service review
MTC	Metropolitan Transportation Commission
NAAQS	national ambient air quality standards
NCCP	Natural Community Conservation Plan
NCHRP	National Cooperative Highway Research Program
NCRA	North Coast Railroad Authority
NEPA	National Environmental Policy Act
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NFIP	National Flood Insurance Program
NHTSA	National Highway Traffic Safety Administration
NIMS	National Incident Management System
NOAA	National Oceanic and Atmospheric Administration

NOC	Notice of Completion
NOP	Notice of Preparation
NO_2	nitrogen dioxide
No_x	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
N_2O	nitrous oxide
OES	State Office of Emergency Services
OSHA	Occupational Safety and Health Administration
O_3	ozone
PCB	polychlorinated biphenyl
PFC	perfluorocarbon
PG&E	Pacific Gas and Electric
PM	particulate matter
PM_{10}	coarse particulate matter ($\leq$10 microns)
$PM_{2.5}$	fine particulate matter ($\leq$2.5 microns)
ppm	parts per million
ppv	peak particle velocity
PRC	Public Resources Code
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act of 1976
REF	residential equivalency factor
ROG	reactive organic gases
RTIP	Regional Transportation Improvement Program
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCTA	Sonoma County Transportation Authority
SCWA	Sonoma County Water Agency
SEMS	Standardized Emergency Management System
SFBAAB	San Francisco Bay Area Air Basin
SF_6	sulfur hexafluoride
SIP	State Implementation Plan
SMART	Sonoma-Marin Area Rail Transit
SO_2	sulfur dioxide

SRFD	Santa Rosa Fire Department
SRPD	Santa Rosa Police Department
SSO	sanitary sewer overflow
SWPPP	stormwater pollution prevention plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TBACT	toxics best available control technology
TDS	total dissolved solids
TOD	transit-oriented development
TSCA	Toxic Substances Control Act
TSS	total suspended solids
UBC	Uniform Building Code
UGB	Urban Growth Boundary
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USDA-SCS	USDA Soil Conservation Service
USDOE	United States Department of Energy
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
VMT	vehicle miles traveled
VOC	volatile organic compounds
WDR	waste discharge requirement
WSA	water supply assessment
WTP	wastewater treatment plant

2.0 PROJECT DESCRIPTION

This section provides a detailed description of the North Santa Rosa Station Area Specific Plan. The section has been prepared in accordance with California Environmental Quality Act (CEQA) Guidelines Section 15124, which details the requirements and contents of an EIR project description under CEQA.

2.1 PROJECT LOCATION AND CURRENT USE

LOCATION

The proposed project is a Specific Plan for an area of the City of Santa Rosa (see **Figure 2.0-1**) approximately 987 acres in size. The project area is located primarily in the incorporated City of Santa Rosa in Sonoma County, California, north of the City of Rohnert Park and south of the Town of Windsor. Small portions of the project site lay within unincorporated Sonoma County.

The proposed station site is located at the southeast corner of Guerneville Road and the railroad (1478 and 1480 Guerneville Road, which are the current locations of the Sonoma Kitchen & Bath store and the Kelly-Moore Paint store), close to Coddingtown Mall. The North Santa Rosa Station Area Specific Plan (North Station Area Plan; Specific Plan) will focus on the area approximately one-half mile around the future train station (**Figure 2.0-2**). The project area is bisected from the northwest to the southeast by the Northwestern Pacific Rail Corridor. Highway 101 runs north–south through the eastern portion of the project area. The project is bounded by Paulin Creek (north of West Steele Lane) on the north, Highway 101 on the east (except for Santa Rosa Junior College and Santa Rosa High School), Ridley Avenue to the west, and just south of West College Avenue to the south. Santa Rosa Junior College and Santa Rosa High School are bounded by Mendocino Avenue on the east, Elliott Avenue on the north, Highway 101 on the west, and Ridgway Avenue on the south.

CURRENT USE

The project area has a mix of uses, including single-family and multi-family residential, office, retail, industrial, public, recreational, and educational facilities. Retail development occurs within and around Coddingtown Mall. Most of the office space in the project area is located in the business park along North Dutton Avenue. Industrial uses are concentrated between the rail corridor and Cleveland Avenue, north of College Avenue. There are a number of schools and public facilities in the project area. These include the public library on Guerneville Road, Helen Lehman Elementary School located northwest of Jennings Park, and two major educational facilities—Santa Rosa Junior College and Santa Rosa High School—which are located to the east of Highway 101. The project area is served by two parks: Jennings Park and Haydn Park. Jennings Park, a neighborhood park located in the southwest corner of the project area, comprises 6.5 acres and is intended to serve the local residents within a half-mile radius. Haydn Park, a 0.1-acre pocket park located off Tammy Way, is intended to serve the local residents within a quarter-mile radius. The remainder of the project area is residential. See **Figure 2.0-3** for a depiction of the Specific Plan area's current uses as well as adjacent uses.

According to the General Plan Land Use Diagram for the City of Santa Rosa, the Specific Plan area is designated for Low, Medium, and Medium-High Residential, Mobile Home Park, Retail and Business Service, Office, Business Park, Light Industry, General Industry, Public/Institutional, Parks/Recreation, and Open Space. See **Figure 2.0-4** for a map of planned land uses under the General Plan.

SURROUNDING LAND USES

The Specific Plan area is surrounded on all sides by existing urban development. Specifically, it is surrounded by residential, park, and school land to the west, residential and commercial land to the south, retail and office land to the east, and residential land to the north (see **Figure 2.0-3**). Highway 101 travels north–south along the eastern border of the project site (but west of the schools), Paulin Creek runs east–west along the northern border of the project site, and the Northwestern Pacific Rail Corridor runs northwest–southeast through the northwestern and southeastern borders of the project site.

T:_GIS\SONOMA_COUNTY\MXDS\SR STATION AREA PLAN\S\FIGURE 1.MXD - 10/4/2011 @ 1:59:45 PM

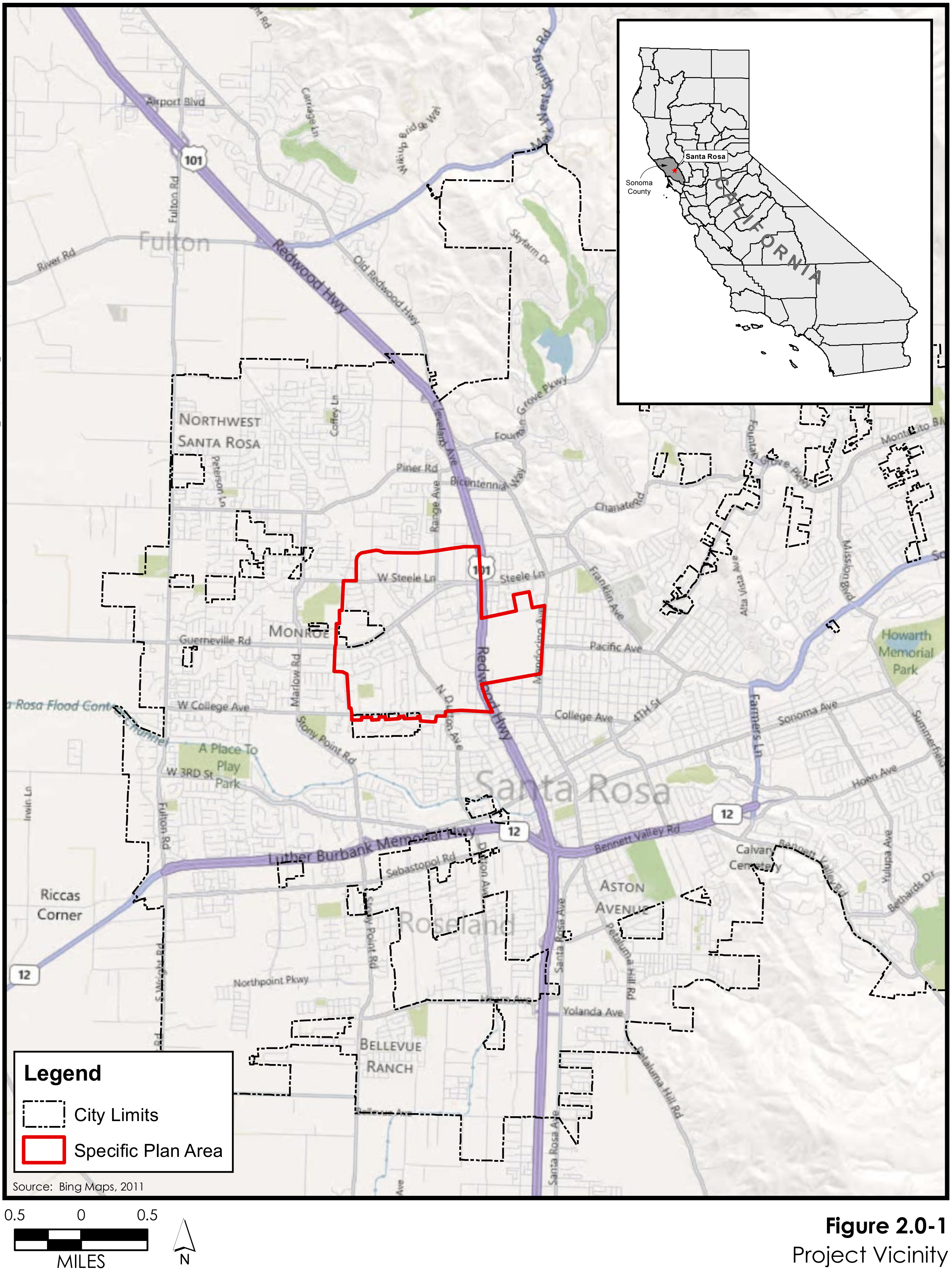

Figure 2.0-1
Project Vicinity

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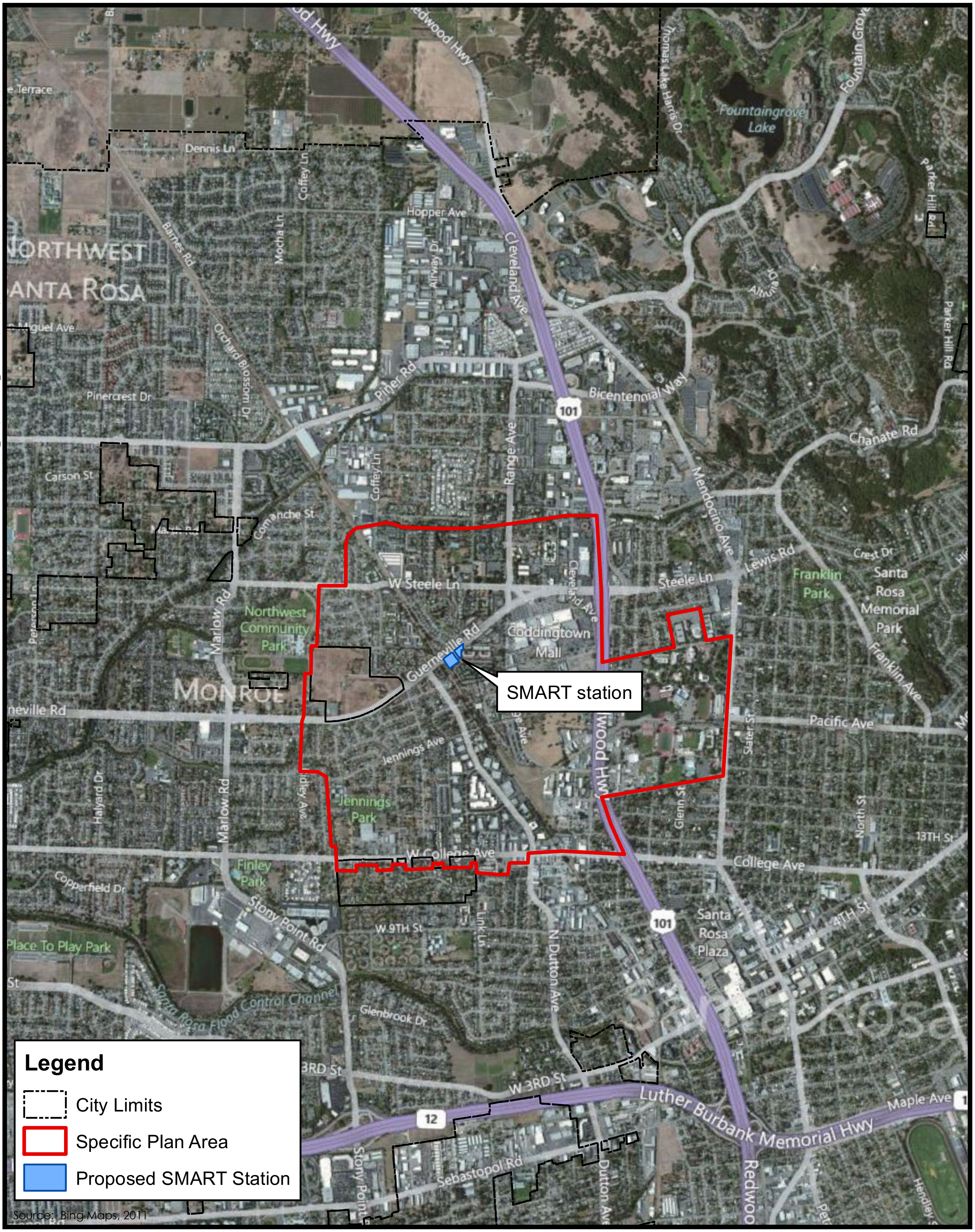

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Figure 2.0-2
Project Location
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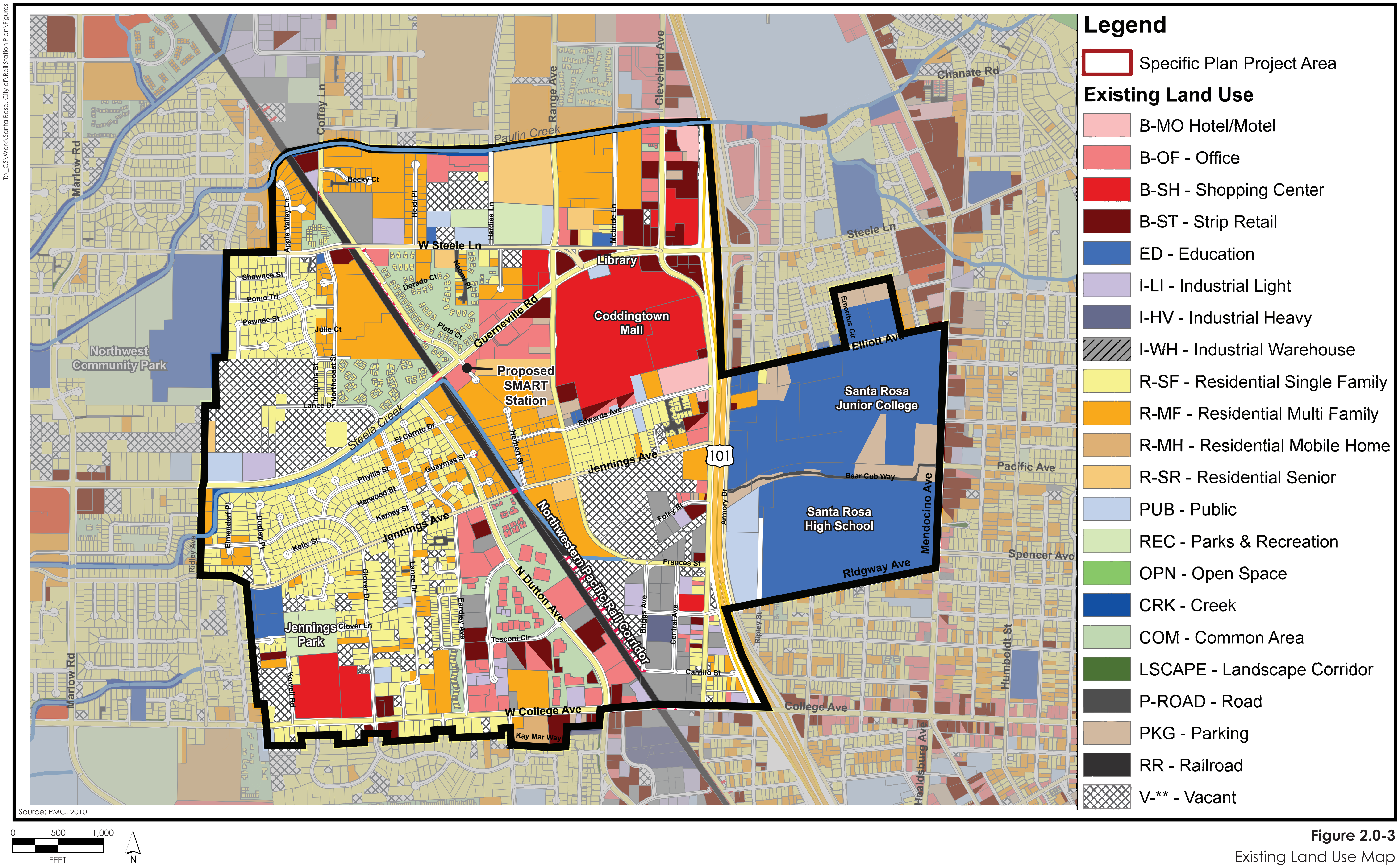

Figure 2.0-3
Existing Land Use Map

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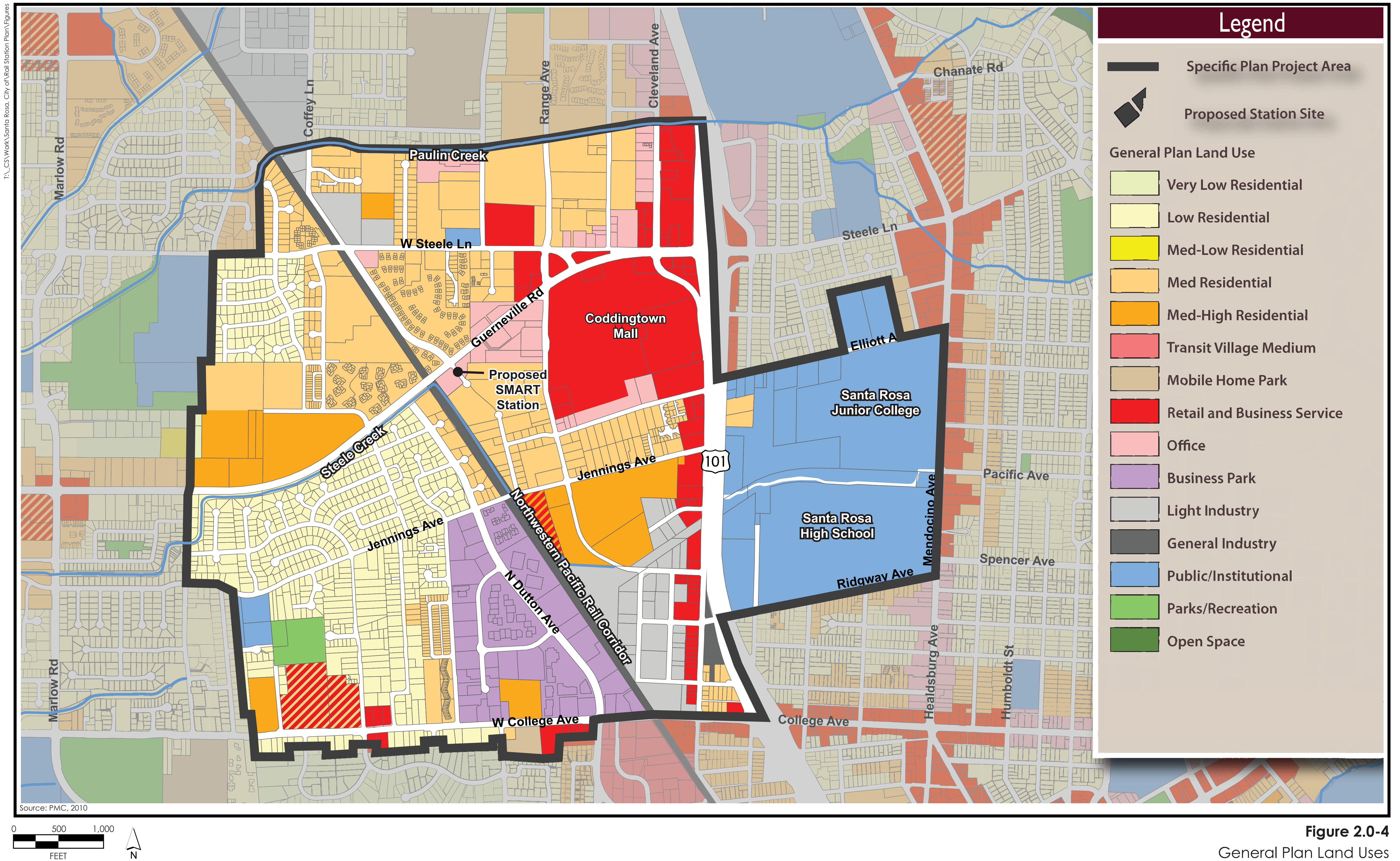

Figure 2.0-4

General Plan Land Uses

PMC

2.2 PROJECT OBJECTIVES

The City has identified the following objectives for the proposed Specific Plan:

1. Establish a land use plan, zoning, and a policy and design framework that will guide future development and redevelopment activities.

2. Intensify land uses and increase residential densities in the project area to support future transit improvements and ridership and to exceed the Metropolitan Transportation Commission's (MTC) residential unit thresholds.

3. Improve pedestrian, bicycle, auto, and transit access in the project area.

4. Enhance connectivity between the station site and adjacent commercial, residential, educational, and governmental areas.

5. Improve aesthetics and public safety through physical design and streetscape improvements.

6. Develop and implement urban design standards that promote a walkable environment.

7. Enhance quality of life in the project area by providing parks, trails, and recreational opportunities.

8. Transform the project area into a vibrant and distinct place that people want to visit.

9. Catalyze economic development and promote economic competitiveness in the project area by providing employment opportunities.

10. Reduce greenhouse gas emissions by promoting sustainable transit-oriented development and practical alternative modes of transport to the automobile.

11. Inform the community about transit-oriented design concepts.

12. Maximize public participation in the specific plan process through a comprehensive community involvement strategy.

2.3 PROJECT CHARACTERISTICS

PROPOSED USES

The North Santa Rosa Station is one of 14 stations being planned by the Sonoma-Marin Area Rail Transit (SMART) agency for a commuter rail service along the Northwest Pacific railroad. The North Station Area Plan will outline strategies to promote ridership and ensure connections to and from the proposed station.

Because the area is already developed, with a few exceptions, a transit-supportive environment will be created through increasing residential density, promoting economic development, improving pedestrian, bicycle, auto, and transit connections between the station and adjacent destinations, and enhancing the aesthetics of the area. A few large, vacant parcels in the project area will be planned for development of new transit-supportive uses.

The Specific Plan will govern allowable land uses (such as retail, commercial, and residential), as well as street design, parks and public spaces, and building heights and densities. Additionally, the plan has the potential to ensure that new housing is affordable to all income levels and that new development is environmentally responsible through green building practices.

A specific plan is a planning and regulatory tool available to local governments in the State of California. As allowed under California state law (Government Code 65450 et seq.), the City of Santa Rosa would use the North Station Area Specific Plan, in part, to implement its adopted General Plan. The Specific Plan, which must be consistent with the City's General Plan, is intended to provide a greater level of specificity in planning in and around the proposed SMART station.

As a Specific Plan, the proposed project provides standards and guidelines for future development which will be applied by the City to future project proposals in the Specific Plan area. Throughout the life of the Specific Plan—expected to be a period of 23 years—market pressures and other concerns may result in some variation in development use and intensity within the regulated parameters. To this end and for the purposes of the CEQA analysis, a series of assumptions were applied to the various land uses to determine the buildout density used in the analyses presented in the following sections of this DEIR (Sections 3.1 through 3.14). These assumptions pointed to future development of an additional 2,941 dwelling units (520 single-family units and 2,421 multi-family units) housing approximately 7,241 additional people, and 1,648,650 square feet of nonresidential development (802,484 square feet office; 617,273 square feet retail; 100,103 square feet institutional; 128,790 square feet industrial) employing 5,923 persons, beyond what currently exists within the project area. Approximately 22,676 square feet of warehouse land would be removed.

Beyond what is currently planned for under buildout of the General Plan 2035, the Specific Plan would allow for an increase of approximately 1,714 dwelling units (438 single-family units, 1,276 multi-family units) housing 4,217 more people, and 1,433,400 square feet of nonresidential development (798,600 square feet office; 537,200 square feet retail; 97,600 square feet institutional) employing approximately 5,225 persons. Approximately 22,700 square feet of existing warehouse and 34,000 square feet of light and heavy industrial land uses would be removed under the Specific Plan.

SPECIFIC PLAN AREA GROWTH BEYOND EXISTING CONDITIONS

Land Use	Amount
Total new dwelling units	2,941
Single-family detached & attached units	520
Multi-family units	2,421
Total new residents	7,241
Retail	617,273 sf
Office	802,484 sf
Public/Institutional	100,103 sf
Warehouse	-22,676 sf
Industrial	128,790 sf
Total jobs	5,923

SPECIFIC PLAN AREA GROWTH BEYOND GENERAL PLAN 2035 CONDITIONS

Land Use	Amount
Total new dwelling units	1,714
Single-family detached & attached units	438
Multi-family units	1,276
Total new residents	4,217
Retail	537,200 sf
Office	798,600 sf
Public/Institutional	97,600 sf
Warehouse	-22,700 sf
Industrial	-34,000 sf
Total jobs	5,225

PROJECT LAYOUT AND LAND USE MAP

The Land Use Map is the guide for the development and use of land in the project area. The proposed Land Use Map for the Specific Plan is shown in **Figure 2.0-5**. As shown in this figure, the project proposes a mix of uses designed to provide a cohesive development centered on the proposed SMART station and the pedestrian and motor vehicle traffic created by that station. **Table 2.0-1** below defines and describes each of the land use classifications that would be allowed within the Plan area.

The proposed Land Use Map is intended to transform the existing project area into a regional hub designed to enhance activity around the proposed SMART station. The Land Use Map is characterized by a dense development pattern with a mix of residential, retail, office, and industrial uses. The mix and concentration of higher-intensity land uses shown on the Land Use Map is intended to establish a transit-oriented environment supporting the proposed SMART station. Introduction of the Transit Village Medium and Transit Village Mixed-Use classifications into the project area is intended to support higher-density residential and a diverse mix of uses while allowing some flexibility in uses as the market dictates.

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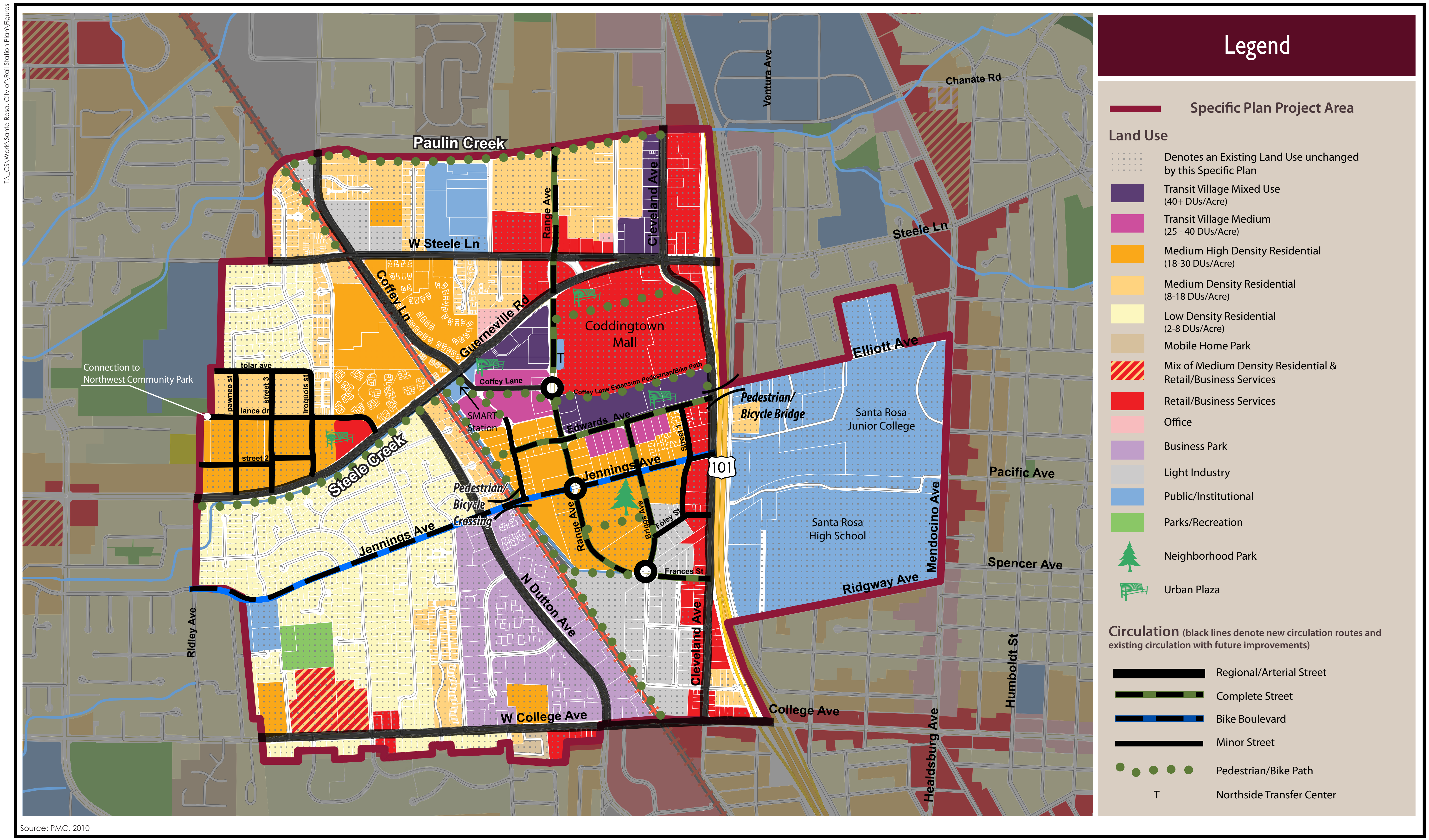

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Figure 2.0-5
Proposed Specific Plan Land Uses

PMC

TABLE 2.0-1
PROPOSED LAND USE CLASSIFICATIONS

Land Use Classification	Density/Intensity	Description
Low Density Residential	2–8 du/gross acre	Designates areas for single-family residential development at a density of 2 to 8 units per gross acre. This classification is mainly intended for detached single-family dwellings, but attached single-family and multiple-family units may be permitted.
Medium Density Residential	8–18 du/gross acre	Designates areas for attached single-family and multi-family developments.
Medium-High Density Residential	18–30 du/gross acre	Designates areas for attached single-family and multi-family developments with densities ranging from 18 to 30 units per gross acre.
Mobile Home Park	4–18 du/gross acre	Designates areas for residential mobile home development of two or more mobile home units, with densities ranging from 4 to 18 units per gross acre. Mobile homes are the only allowed housing type.
Transit Village Medium	25–40 du/gross acre	Designates areas to accommodate mixed-use development within approximately a half mile of a transit facility. Residential uses are required at a density range of 25 to 40 units per acre, and ground-floor neighborhood-serving retail and live-work uses are encouraged.
Transit Village Mixed Use	40+ du/gross acre	Designates areas to accommodate a well-integrated mix of higher-intensity residential, office, and commercial uses within a quarter mile of a transit facility. Development is designed and oriented to create a central node of activity at or near the transit facility. Housing densities shall be a minimum of 40 units per acre; there is no maximum density requirement for this designation.
Retail/Business Services		Designates areas for retail and service enterprises, offices, and restaurants. General Plan policy allows residential and mixed-use development in this land use classification.
Office		Designates areas for administrative, financial, business, professional, medical, and public offices. General Plan policy allows residential and mixed-use development in the Office classification.
Business Park		Designates areas for planned, visually attractive centers for businesses that do not generate nuisances (noise, clutter, noxious emissions, etc.). This classification accommodates campus-like environments for corporate headquarters, research and development facilities, offices, light manufacturing and assembly, and related services and facilities.
Light Industrial		Designates areas for light industrial, warehousing, and heavy commercial uses.
Public/Institutional		Designates areas for governmental or semi-public facilities, such as museums, hospitals, utility facilities, and government office centers.
Parks/Recreation		Designates areas intended for neighborhood, community, citywide, or special purpose parks and facilities, including recreation complexes, golf courses, and creekways.

Land Use Classification	Density/Intensity	Description
Neighborhood Park 		Represents the general vicinity of where a neighborhood park facility is needed.
Urban Plaza 		Represents the general vicinity of where an urban plaza facility is needed.

Source: North Santa Rosa Station Area Specific Plan 2012

Note: The land use descriptions described in Table 2.0-1 are abbreviated versions and not intended to replace the full descriptions provided in the General Plan 2035.

PROJECT ACCESS AND CIRCULATION

The Specific Plan proposes a network of roadways and bicycle and pedestrian improvements designed to serve all travel modes: walking, transit, bicycle, and motor vehicle. The circulation system map illustrates the pedestrian, bicycle, transit, and motor vehicle network of roads and paths in the project area (**Figure 2.0-6**). The circulation system aims to enhance connections between the SMART station site and adjacent uses, and improve comfort and safety for all travel modes.

The Specific Plan also proposes a number of improvements to the pedestrian and bicycle network, including continuous sidewalks, improved crossings at intersections, installation of street furnishings, and new pedestrian and bicycle routes. New pedestrian routes would be provided on sidewalks and bicycle lanes along streets as well as along off-street dedicated pedestrian/bicycle paths. **Figure 2.0-6** illustrates the proposed location of the primary off-street and on-street pedestrian and bicycle facilities. Please note that while sidewalks are not depicted on the map, they are intended to be along all street segments upon implementation of the Specific Plan.

Additionally, the Specific Plan proposes a number of improvements to improve transit service and enhance transit agency coordination. These improvements include new bus stops at the SMART station; an expanded off-street bus transfer station on Range Avenue; a pedestrian/bicycle commuter linkage along Coffey Lane to connect the bus transfer station and SMART station; and a new shuttle service connecting the SMART station to major employment centers in the periphery of the Plan area. **Figure 2.0-7** provides a map summarizing the key elements of the proposed transit network.

Finally, the Specific Plan proposes a number of improvements to roadways. A primary goal of the Specific Plan is to improve the functioning of streets for all transportation modes: pedestrian, bicycle, motor vehicle, and transit. As part of this effort, a new street type was developed for this project—the complete street—to prioritize all travel modes equally. Complete street corridors place a particularly high importance on multimodal circulation. These corridors typically include (where possible) wide sidewalks, bicycle lanes, transit amenities, street furniture, narrow lanes, pedestrian-scale lighting, landscaped buffers between automobile and pedestrian areas, on-street parking, and enhanced pedestrian street crossings. Three streets would become complete streets under the proposed project: Range Avenue, Edwards Avenue, and Briggs Avenue. In addition, Jennings Avenue would become a bicycle boulevard to prioritize bicycle mobility. **Figure 2.0-6** shows the key elements of the motor vehicle circulation network.

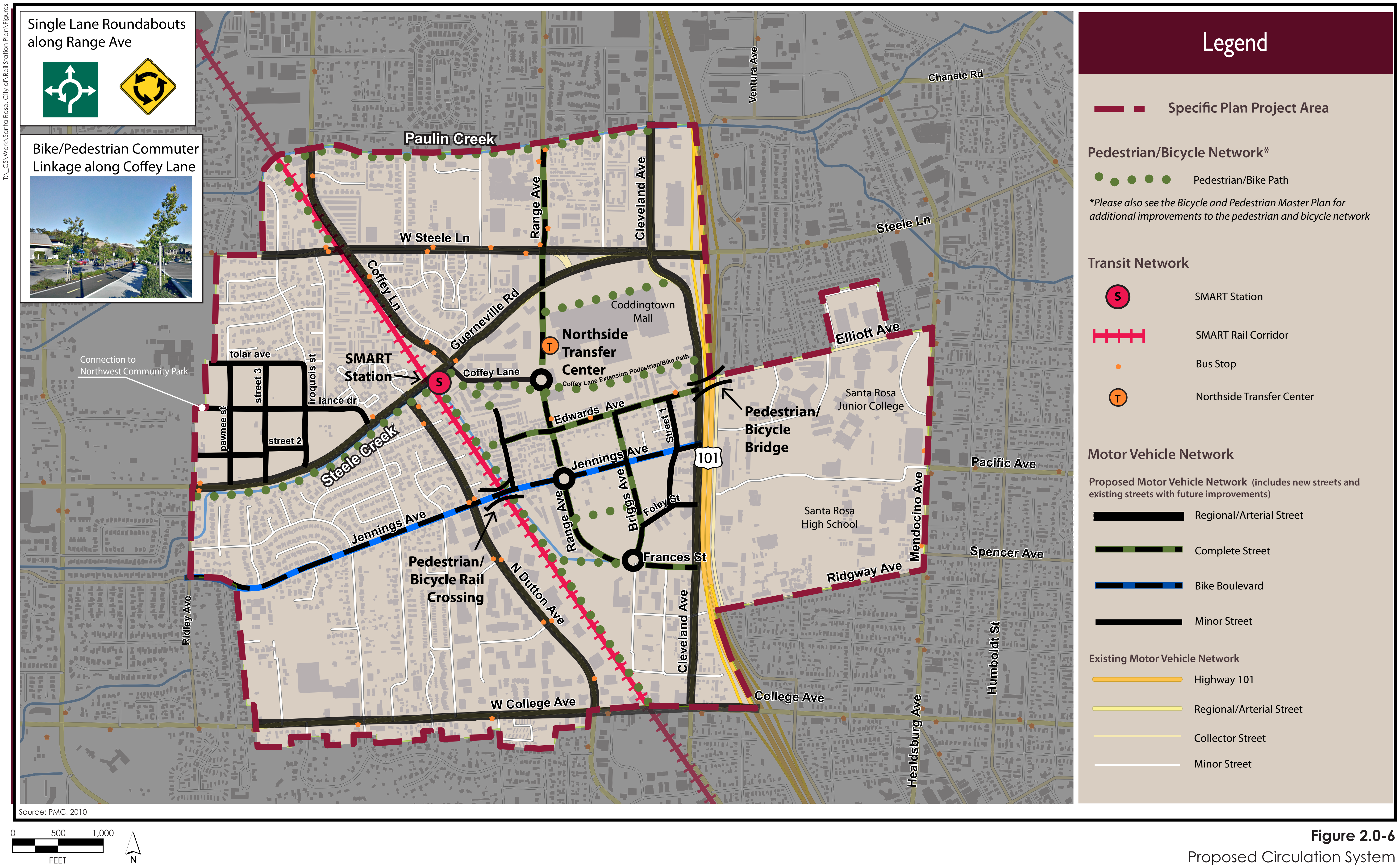

Figure 2.0-6
Proposed Circulation System

PMC®

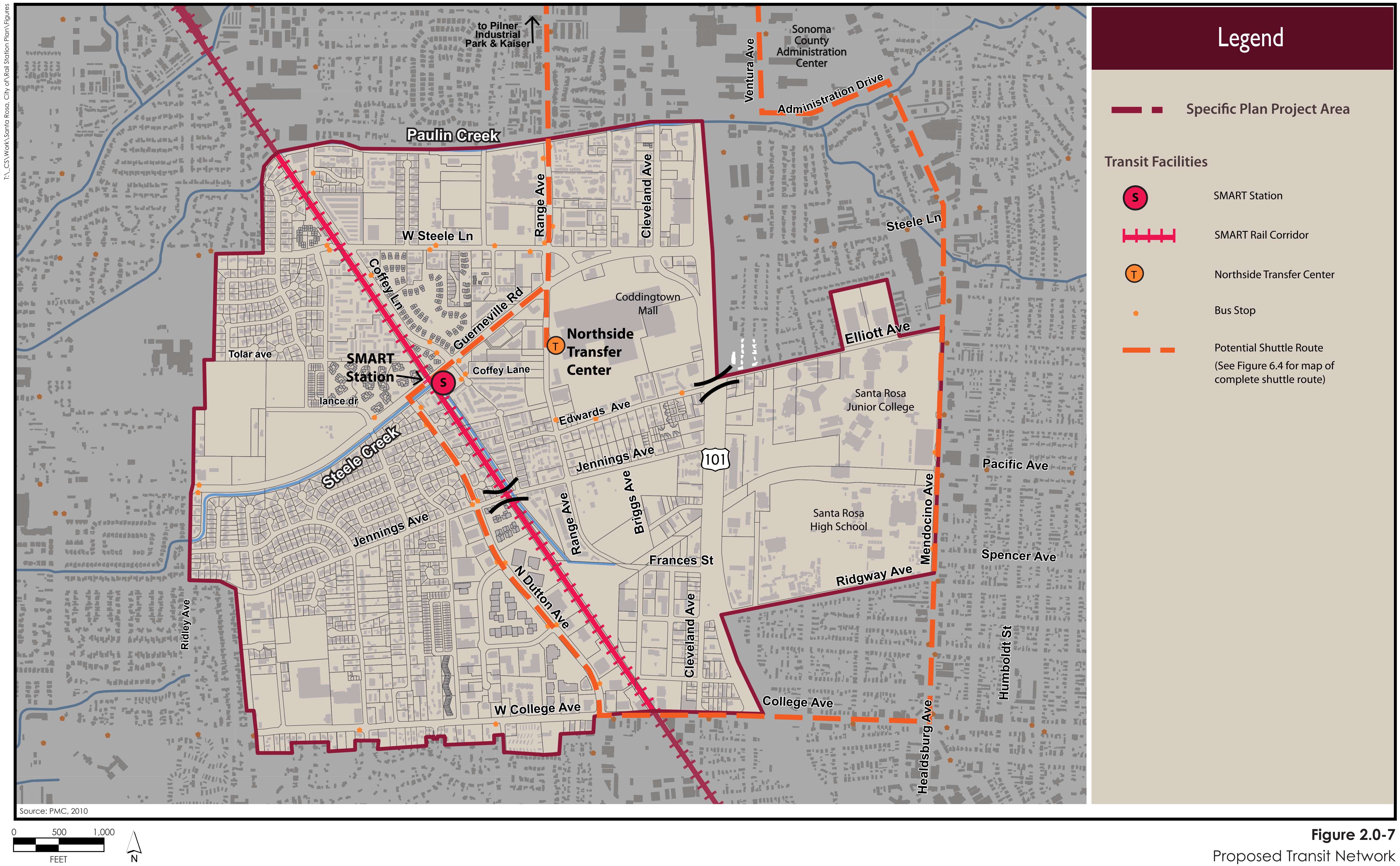

Figure 2.0-7

Proposed Transit Network

PMC®

PROJECT POLICIES, DEVELOPMENT STANDARDS, AND DESIGN GUIDELINES

The Specific Plan proposes several goals and policies, as well as development standards and design guidelines that would apply to future development within the Plan area. The proposed policies, development standards, and design guidelines would serve to guide future development and improvements in the Specific Plan area.

The Specific Plan proposes development standards and design guidelines for both private-realm and public-realm development. Development standards provide the requirements that shape the design of new buildings, streets, and public places. Design guidelines provide the ingredients needed to shape the urban design character of the project area. All future development activities in the project area would be required to address the relevant guidelines and demonstrate how a proposed project supports the vision for the Specific Plan area. All proposed development standards and design guidelines are outlined in Chapter 5 and Chapter 7 of the Specific Plan.

PROPOSED AMENDMENTS

The proposed project also includes amendments to the following City of Santa Rosa documents:

- **General Plan 2035** – The text of the Santa Rosa General Plan will be amended consistent with the Specific Plan. Amendments will include adding the goals and policies set forth in the Specific Plan, as well as amending the population, housing, and employment numbers to reflect the anticipated development in the Specific Plan area and amending language related to complete streets.

  The General Plan land use designations for certain parcels within the Specific Plan area will be amended consistent with the proposed preferred alternative Land Use Map.

- **Zoning Code** – The Santa Rosa Zoning Code will be amended consistent with the Specific Plan. Revisions will include incorporating the private realm standards identified in the Specific Plan, amending the parking requirements, and incorporating the suggested parking reduction strategies.

  Parcels in the project area will rezoned consistent with the Specific Plan and General Plan.

- **Design Guidelines** – The text of the Santa Rosa Design Guidelines will be amended consistent with the Specific Plan. A new section will be added to Section 4 of the Design Guidelines, Special Design Considerations, to incorporate both the private and public realm design guidelines outlined in the Specific Plan.

- **Citywide Creek Master Plan** – The Citywide Creek Master Plan will be amended to include the proposed paths along both Steele and Paulin creeks.

- **Bicycle and Pedestrian Master Plan** – The text of the Bicycle and Pedestrian Master Plan will be amended to include changes to bike lanes identified in the Specific Plan, such as the introduction of complete streets in the project area, as well as to add the proposed new bicycle and pedestrian paths identified in the Specific Plan.

RELATIONSHIP TO LOCAL PLANS

City of Santa Rosa General Plan

The Santa Rosa General Plan 2035 was adopted in 2009 and is the guiding document for development in the city and Specific Plan area. The General Plan identifies the land use designations and circulation network and sets the direction for development standards found in the City's Zoning Code. All specific plans must comply with Sections 65450–65457 of the Government Code, which require that a specific plan be consistent with the adopted general plan of the jurisdiction within which it is located. Also, all subsequent subdivision and development, all public works projects, and zoning regulations must be consistent with the specific plan.

The Specific Plan considered the land use and livability, urban design, housing, transportation, public services and facilities, open space and conservation, economic vitality, and noise and safety goals and policies set forth in the General Plan when developing the priorities of the Specific Plan to maximize consistency between the two documents. The following are some of the General Plan goals and policies guiding development and improvements in the Specific Plan area (a full list of the key General Plan goals and policies is provided in Appendix B of the Specific Plan):

- Goal LUL-A: Foster a compact rather than a scattered development pattern in order to reduce travel, energy, land, and materials consumption while promoting greenhouse gas emission reductions citywide.
- Goal LUL-G: Promote mixed use sites and centers.
- Goal LUL-I: Maintain vibrant, convenient, and attractive commercial centers.
- Goal LUL-J: Maintain the economic vitality of business parks and offices, and Santa Rosa's role as a regional employment center.
- Policy H-C-11: Provide opportunities for higher density and affordable housing development on regional/arterial streets and near the rail transit corridor for convenient access to bus and rail transit.
- Goal T-A: Provide a safe and sustainable transportation system.
- Goal T-B: Provide a safe, efficient, free-flowing circulation system.
- Goal T-J: Provide attractive and safe streets for pedestrians and bicyclists.
- Policy UD-G-2: Locate higher density residential uses adjacent to transit facilities, shopping, and employment centers, and link these areas with bicycle and pedestrian paths.

City of Santa Rosa Zoning Code

The Santa Rosa Zoning Code provides standards for development, including but not limited to height restrictions, setbacks, parking regulations, allowed uses, and signage requirements. These standards set the pattern and character of development in the city.

A wide variety of zoning districts are proposed in the Specific Plan area, consistent with the Specific Plan and the General Plan. Certain properties are proposed to be rezoned as part of the Specific Plan adoption process to ensure consistency and facilitate implementation.

The Specific Plan includes unique zoning regulations and/or references regulations in the City's Zoning Code. Where the Specific Plan includes unique regulations, those unique regulations would prevail within the Plan area. Where the Specific Plan is silent, subsequent development must comply with applicable regulations in the Zoning Code.

Approvals

The proposed North Santa Rosa Station Area Specific Plan is programmed for adoption by the City. However, no other approval is being sought at this time. The City of Santa Rosa is the project proponent for the Specific Plan. Once the Specific Plan is approved, it is assumed that the property owners, or their successors, will come forward with proposals for development consistent with the Specific Plan, at which time further approvals will be required. These may include, but are not limited to:

- Conditional Use Permits
- Design Review
- Tentative Subdivision Map(s)
- Final Map(s)
- Grading Permit(s)
- Development Permit(s)
- Improvement Plans
- Building Permit(s)
- Occupancy Permit(s)
- Annexation through Sonoma County Local Agency Formation Commission (LAFCo)

It is expected that these future approvals may require additional entitlements from agencies outside the City of Santa Rosa, including but not limited to:

- National Pollutant Discharge Elimination System (NPDES) Construction Activity General Permit – Requires the applicant to file a public Notice of Intent to discharge stormwater and to prepare and implement a stormwater pollution prevention plan (SWPPP).

- NPDES General Permit for Stormwater Discharges – Requires that discharges of pollutants from areas of new development be reduced to the maximum extent practicable in order to protect receiving waters and uphold water quality standards.

REFERENCES

City of Santa Rosa. 2007a. *Downtown Station Area Specific Plan Draft Program Environmental Impact Report* (State Clearinghouse Number 2006072104).

City of Santa Rosa. 2007b. *Downtown Station Area Specific Plan Final Program Environmental Impact Report* (State Clearinghouse Number 2006072104).

City of Santa Rosa. 2009a. *Santa Rosa General Plan 2035*.

City of Santa Rosa. 2009b. *Santa Rosa General Plan 2035 Draft Environmental Impact Report*.

City of Santa Rosa. 2009c. *Santa Rosa General Plan 2035 Final Environmental Impact Report*.

City of Santa Rosa. 2012. *North Santa Rosa Station Area Specific Plan*.

3.0 INTRODUCTION TO THE ENVIRONMENTAL ANALYSIS

The following is an introduction to the environmental analysis for the proposed project, including a discussion of general assumptions used in the environmental analysis and a discussion regarding the cumulative analysis. The reader is referred to the individual technical sections of this Draft EIR (Sections 3.1 through 3.14) for further information on the specific assumptions and methodologies used in the analysis for each particular technical subject.

ANALYSIS ASSUMPTIONS USED TO EVALUATE THE IMPACTS OF THE PROJECT

BASELINE ENVIRONMENTAL CONDITIONS ASSUMED IN THE DRAFT EIR

Section 15125(a) of the California Environmental Quality Act (CEQA) Guidelines requires that an EIR include a description of the physical environmental conditions in the vicinity of the project as they exist at the time the Notice of Preparation (NOP) is published. The CEQA Guidelines also specify that this description of the physical environmental conditions is to serve as the baseline physical conditions by which a lead agency determines whether impacts of a project are considered significant.

The environmental setting conditions of the project site and the surrounding area are described in detail in the technical sections of Draft EIR (see Sections 3.1 through 3.14). In general, these setting discussions describe the setting conditions of the project site and the surrounding area as they existed when the NOP for the project was released on December 13, 2011.

STRUCTURE OF THE ENVIRONMENTAL IMPACT ANALYSIS

Sections 3.1 through 3.14 of this Draft EIR contain an evaluation of the direct and indirect environmental effects resulting from the implementation of the proposed project. Furthermore, Sections 3.1 through 3.14 of this Draft EIR describe feasible mitigation measures and identify whether significant environmental effects of the project would remain after application of the feasible mitigation measures. The individual technical sections of the Draft EIR include the following information:

Existing Setting

This subsection includes a description of the physical setting associated with the technical area of discussion, consistent with CEQA Guidelines Section 15125. As previously identified, the existing setting is based on conditions as they existed when the NOP for the proposed project was released on December 13, 2011.

Regulatory Framework

This subsection identifies applicable federal, state, regional, and local plans, policies, laws, and regulations that apply to the technical area of discussion.

The City of Santa Rosa General Plan serves as the overall guiding policy document for the City. While the proposed project would include a General Plan amendment to ensure consistency with the General Plan 2035, the City of Santa Rosa City Council will make the ultimate determination of consistency with the General Plan.

Impacts and Mitigation Measures

This subsection identifies direct and indirect environmental effects associated with implementation of the proposed project. Standards of significance are identified and used to determine whether the environmental effects are considered "significant" and require the application of mitigation measures. Each environmental impact is identified numerically (e.g., Impact 3.9.1 – Physically Divide an Established Community) and is supported by substantial evidence.

Mitigation measures for the proposed project were developed through a review of the environmental effects of the Specific Plan by consultants with technical expertise as well as by environmental professionals. In some cases, the mitigation measures identified consist of "performance standards" that identify clear requirements that would avoid or minimize significant environmental effects (the use of performance standard mitigation is allowed under CEQA Guidelines Section 15126.4(a) and is supported by case law *Rio Vista Farm Bureau Center v. City of Solano* ([1st Dist. 1992] 5 Cal. App. 4th at pp. 371, 375–376 [7 Cal. Rptr. 2d 307]).

APPROACH TO THE CUMULATIVE IMPACT ANALYSIS

Definition of Cumulative Setting

CEQA Guidelines Section 15130 requires that EIRs include an analysis of the cumulative impacts of a project when the project's effect is considered cumulatively considerable. In general, the cumulative setting conditions assumed in this Draft EIR are based on the existing land use plan in the Santa Rosa General Plan 2035.

The cumulative setting for the North Santa Rosa Station Area Specific Plan generally consists of the City of Santa Rosa and its Urban Growth Boundary (UGB). The cumulative setting varies for each environmental issue area, depending on the resources affected and any relevant boundaries, such as the San Francisco Bay Area Air Basin (SFBAAB) for air quality resources or the City of Santa Rosa Sanitation District No. 1 boundaries for sewer services. Each technical section of the Draft EIR includes a description of the geographic extent of the cumulative setting for that resource based on the characteristics of the environmental issues under consideration as set forth in Section 15130(b) of the CEQA Guidelines.

Consideration of Cumulative Impacts

Each technical section in the Draft EIR considers whether the project's effect on anticipated cumulative setting conditions is cumulatively considerable (i.e., a significant effect). The determination of the project's impact on cumulative conditions is based on applicable public agency standards, consultation with public agencies, and/or expert opinion. Each technical section of the EIR provides a summary of the cumulative impacts associated with development of the project for that topic area.

ENVIRONMENTAL IMPACT REPORTS UTILIZED IN THIS EIR

This Draft EIR utilizes technical information and analyses from previously prepared EIRs that are relevant to the consideration of environmental effects of the proposed project, which is supported by the CEQA Guidelines (see Sections 15148 [Citation] and 15150 [Incorporation by Reference]). In addition to materials cited, the following EIRs have been utilized in this Draft EIR:

- *Draft Santa Rosa 2035 Environmental Impact Report*. State Clearinghouse Number: 2008092114. March 2009.
- *Final Santa Rosa 2035 Environmental Impact Report*. State Clearinghouse Number: 2008092114. June 2009.

- *Downtown Station Area Specific Plan Draft Program EIR*. State Clearinghouse Number: 2006072104. February 1, 2007.
- *Downtown Station Area Specific Plan Final Program EIR*. State Clearinghouse Number: 2006072104. June 29, 2007.

By utilizing provisions of the CEQA Guidelines, the City, in preparing this Draft EIR, has been able to make maximum feasible and appropriate use of the technical information in these EIRs. These EIRs and other referenced materials are available for review upon request at the City of Santa Rosa Community Development Department, 100 Santa Rosa Avenue, Room 3, Santa Rosa, CA, and are also available on the City's website at www.srcity.org/cd.

3.1 Aesthetics and Visual Resources

This section describes the visual conditions and resources of the project area, summarizes its landscape characteristics, and discusses the impacts associated with implementation of the proposed North Station Area Plan. The existing setting and analysis in this section references the Santa Rosa General Plan 2035 and its associated Environmental Impact Report and Chapter 2, Existing Conditions and Opportunities, of the Specific Plan.

3.1.1 EXISTING SETTING

EXISTING CONDITIONS

Santa Rosa is a visually and culturally rich community. The downtown serves as the city's primary activity node and comprises primarily mixed office and retail uses. The city's residential neighborhoods are diverse, ranging from the traditional—such as the Junior College, Burbank Gardens, and West End—with grid street patterns and moderately high densities, to low-density hillside neighborhoods such as Chanate/Hidden Valley, Rincon Valley, and Fountaingrove.

Rural vistas on the edges of Santa Rosa contribute to the city's identity. Old farmhouses and ranches provide reminders of local agricultural history. Views of the Sonoma Mountain foothills in the eastern portion of the city are available from most parts of Santa Rosa.

Within the Specific Plan area, there are residential, commercial, office, and industrial uses. Residential neighborhoods are compact in development pattern. Most residential development in the project area is well-established and either low or medium density. Commercial and industrial uses have large building footprints and large open spaces between buildings.

Residential Development

Most residential development in the project area was constructed between 1950 and 1990. Residential development that occurred between 1950 and 1970 was for single-family residential neighborhoods. The last 20 years of development were characterized mostly by higher-density, multi-family infill residential developments. **Figure 3.1-1** illustrates examples of existing residential development within the project area.

Commercial Development

Most commercial space in the project area consists of retail and business services. Coddingtown Mall, at approximately 55 feet tall, and its large surrounding parking lot are prominent features in the project area. Coddingtown Mall stands out as one of the tallest buildings in the project area, with most other buildings one or two stories in height (under 35 feet). **Figure 3.1-2** illustrates examples of existing commercial space in the project area.

Industrial and Office Development

Office uses in the project area consist mostly of late-1970s-era business parks. Most of the office space is located in the Santa Rosa Business Park, a well-maintained office park that includes a variety of businesses, from medical and professional offices to warehousing and light manufacturing uses, as well as a local health club. Industrial uses include established businesses along the rail line, concentrated between the rail corridor and Cleveland Avenue, north of West College Avenue.

FIGURE 3.1-1
EXAMPLES OF EXISTING RESIDENTIAL DEVELOPMENT WITHIN THE PROJECT AREA

FIGURE 3.1-2
EXAMPLES OF EXISTING COMMERCIAL SPACE WITHIN THE PROJECT AREA

Rural Areas

There are a number of vacant properties within the project area, including a large area of unincorporated county land along Guerneville Road. **Figure 3.1-3** shows examples of rural vistas within the project area.

Scenic Views

Santa Rosa is framed by the Sonoma Mountain foothills that are prominently visible from many locations in the flatland areas of the city. **Figure 3.1-3** shows an example of views of the foothills from the project area.

Scenic Roads and Local Roads

A scenic road is defined as a highway, road, drive, or street that, in addition to its transportation function, provides opportunities for the enjoyment of natural and human-made scenic resources. Scenic roads direct views to areas of exceptional beauty, natural resources or landmarks, or of historic or cultural interest.

There are no state-designated scenic highways within or adjacent to the project area. Several local roads in Santa Rosa have unique scenic qualities because of their natural setting or historical and cultural features. The City's General Plan 2035 designated several Santa Rosa roadways as scenic roads. Only one, Highway 101, is within the project area limits.

Local roads are present throughout the project area and include a wide variety of street types, from two-lane neighborhood roads to wide, multiple-lane arterials with bicycle lanes and sidewalks. **Figure 3.1-4** shows examples of some of the roadways in the project area.

Lighting and Glare

Lighting and glare are commonly found throughout the project area, due to the area's urban character. Existing sources of light in the Specific Plan area include streetlights, parking lot lighting, storefront and signage lighting, vehicle headlights, residential porch lights, and interior lights from homes and buildings that spill over to the exterior of buildings through windows. Glare can also be created by reflection of sunlight and artificial light off windows and building surfaces.

3.1.2 REGULATORY FRAMEWORK

STATE

Nighttime Sky – Title 24 Outdoor Lighting Standards

The California legislature passed a bill in 2001 requiring the California Energy Commission (CEC) to adopt energy efficiency standards for outdoor lighting for both the public and private sectors. In response to the legislature, in November 2003 the CEC adopted changes to Title 24, parts 1 and 6, Building Energy Efficiency Standards. These standards became effective on October 1, 2005, and included changes to the requirements for outdoor lighting for residential and nonresidential development. The new standards will likely improve the quality of outdoor lighting and help to reduce the impacts of light pollution, light trespass, and glare. The standards regulate lighting characteristics such as maximum power and brightness, shielding, and sensor controls to turn lighting on and off. Different lighting standards are set by classifying areas by lighting zone. The classification is based on population figures of the 2000 Census. These areas are designated as LZ1 (dark), LZ2 (rural), or LZ3 (urban).

FIGURE 3.1-3
EXAMPLES OF EXISTING RURAL VISTAS WITHIN THE PROJECT AREA

FIGURE 3.1-4
EXAMPLES OF EXISTING ROADWAYS WITHIN THE PROJECT AREA

LOCAL

City of Santa Rosa General Plan

The City of Santa Rosa General Plan 2035 (General Plan), adopted in November 2009, outlines policies, standards, and programs that together provide a comprehensive, long-term plan for physical development within the city. Individual development projects proposed in the city must demonstrate general consistency with the goals and policies outlined in the General Plan, which articulates and implements the City's long-term vision as it pertains to housing, transportation, historic preservation, open space, and other areas.

The following is a list of existing City of Santa Rosa goals and policies that apply to the aesthetics of the Specific Plan area.

Goal T-G: Identify, preserve, and enhance scenic roads throughout Santa Rosa in both rural and developed areas.

Policy T-G-5: Retain existing trees and vegetation along scenic roads, as possible. Enhance roadway appearance through landscaping, using native plant material.

Policy T-G-6: Provide large setbacks from scenic roads, as possible, to avoid encroachment of buildings on the view of the roadway.

Policy T-G-10: Ensure any signage along scenic roads does not detract from the area's scenic character.

Policy T-G-11: Underground utility lines along scenic roads.

Policy T-G-13: Plant graded areas to avoid erosion and maintain a pleasing appearance.

Policy T-G-14: Use of natural materials such as stone, brick, and wood is preferable to metal posts and rails for roadside appurtenances.

Policy T-G-15: Require that scenic road rights-of-way are wide enough to preserve natural vegetation. Provide appropriate construction setbacks to retain views along the corridor.

Goal UD-A: Preserve and enhance Santa Rosa's scenic character, including its natural waterways, hillsides, and distinctive districts.

Policy UD-A-1: Maintain view corridors to natural ridgelines and landmarks, such as Taylor Mountain and Bennett Mountain.

Policy UD-A-2: Strengthen and emphasize community focal points, visual landmarks, and features that contribute to the identity of Santa Rosa using design concepts and standards implemented through the Zoning Code, Design Guidelines, Preservation District Plans, Scenic Roads policies, the Downtown Station Area Specific Plan, and the Citywide Creek Master Plan.

Examples of landmarks and community focal points are Old Courthouse Square, DeTurk Round Barn, the Railroad Square water tower, St. Rose School, Hotel La Rose, Santa Rosa Creek, Luther Burbank Home and Gardens, and views to the hills.

Policy UD-A-3: Use changes in tree species, scale, color and spacing to define neighborhoods and to differentiate street types. Update the Master Street Tree Planting Plan to accomplish this.

Street trees should relate to scale, function, and visual importance of the street, as well as the character of the neighborhood or district in which they are located.

Policy UD-A-4: In new developments, minimize overall grading by limiting site grading to the minimum necessary for driveways, parking areas, and understructure areas.

Policy UD-A-5: Require superior site and architectural design of new development projects to improve visual quality in the city.

Policy UD-A-7: Continue the city's program of utility undergrounding.

Policy UD-A-10: Relate landscape design to the natural setting. Require that graded areas within new development be revegetated.

Goal UD-C: Enhance and strengthen the visual quality of major entry routes into the city, as well as major corridors that link neighborhoods with downtown.

Policy UD-C-4: Work with Caltrans to beautify Highway 101 and Highway 12. Encourage Caltrans to incorporate more landscaping, planting of trees, and soundwall mitigation into any improvements planned for these highways. Lessen the impact of new soundwalls through the use of vegetation.

Policy UD-C-6: Require that buildings, soundwalls, and other structures highly visible from Highway 101 or Highway 12 and adjoining neighborhoods be designed to enhance and improve scenic character.

Goal UD-D: Avoid strip patterns of commercial development. Improve the appearance and functioning of existing commercial strip corridors, such as Santa Rosa Avenue and Sebastopol Road.

Policy UD-D-2: Maintain a uniform setback of structures from the street. Require parking areas to be placed to the side or rear of structures, not in front.

Policy UD-D-5: Provide planting strips with large canopy trees between the road and sidewalk to buffer pedestrians from traffic, and help define the street space along commercial streets. Install pedestrian amenities in the planting strip such as:

- Street lighting;
- Seating;
- Bus stop shelters;
- Bicycle racks; and
- Mail boxes.

Goal UD-F: Maintain and enhance the diverse character of Santa Rosa's neighborhoods. Promote the creation of neighborhoods—not subdivisions—in areas of new development.

Policy UD-F-2: Protect natural topographic features such as hillsides, ridgelines and mature trees and stands of trees. Minimize grading of natural contours in new development.

Santa Rosa Design Guidelines and Design Review

Santa Rosa's Design Guidelines and design review process ensure that new or remodeled development in the city will enhance the city's environment and blend into the style of the surrounding area. All nonresidential and multi-family developments are subject to design review. Projects are reviewed for site planning, circulation, architectural design, quality and type of materials, colors, and landscaping. Community Development Department staff reviews minor projects, as defined by the Santa Rosa Zoning Code, and the Design Review Board reviews major projects, such as those that are proposing 10,000 square feet of new floor area, or more, and projects located in visually sensitive areas.

The City has adopted Design Guidelines to implement the Urban Design Element of the General Plan. The guidelines strive to achieve superior design in all developments. They incorporate such traditional development patterns as pedestrian-oriented residential neighborhoods organized around centers that include mixed uses and open space, interconnected street systems, housing variety, and mixed uses within the downtown.

3.1.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following State CEQA Guidelines Appendix G thresholds of significance. An impact to aesthetics and visual resources is considered significant if the project would:

1) Have a substantial adverse effect on a scenic vista.
2) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.
3) Substantially degrade the existing visual character or quality of the site and its surroundings.
4) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

METHODOLOGY

The impact analysis considers what the proposed North Station Area Plan's potential impacts would be to the aesthetics and visual character of the project area compared to the existing conditions of the Specific Plan area, as well as compared to what would otherwise occur within the Specific Plan area if the Specific Plan were not implemented and development took place as planned under the Santa Rosa General Plan 2035. The adopted General Plan policies that serve to minimize visual impacts from General Plan implementation would also apply to development in the Specific Plan area.

IMPACTS AND MITIGATION MEASURES

Substantial Adverse Effect on Scenic Vista (Standard of Significance 1)

Impact 3.1.1 Implementation of the Specific Plan would allow for taller buildings in some locations than what currently exist and what are currently allowed at those locations under the General Plan, the construction of which could affect views of scenic vistas from the Specific Plan area. This impact would be considered **less than significant**.

Scenic views and vistas, including those of the Sonoma Mountain foothills and the foothills to the west of Santa Rosa, contribute to the visual character of the Specific Plan area. Views of rolling hills are visible from the Specific Plan area to the north, northeast, east, and southeast. Implementation of the proposed project could result in construction of new buildings in some locations that would be taller than what currently exists within the Specific Plan area as well as what is currently allowed in those locations under the General Plan. Construction of taller buildings may block scenic views of the surrounding foothills from the Specific Plan area.

The Specific Plan would integrate existing City goals, policies, and guidelines to preserve these scenic views and vistas. Goal UD-A of the General Plan requires the preservation and enhancement of Santa Rosa's scenic character, including its natural waterways, hillsides, and distinctive districts. Policy UD-A-1 supports this goal by requiring the City to maintain view corridors to natural ridgelines and landmarks, such as Taylor Mountain and Bennett Mountain. Policy UD-A-2 requires the City to strengthen and emphasize community focal points, visual landmarks, and features that contribute to the identity of Santa Rosa using design concepts and standards implemented through the Zoning Code, Design Review Guidelines, Preservation District Plans, Scenic Roads policies, the Downtown Station Area Specific Plan, and the Citywide Creek Master Plan. Furthermore, the Specific Plan's development standards and design guidelines generally require stepbacks for new development taller than three stories at appropriate places in an effort to prevent an impact to scenic views and vistas. Taken together, the existing goals, policies, and guidelines and those proposed by the Specific Plan would diminish the environmental impact to scenic vistas to a less than significant impact.

Mitigation Measures

None required.

Damage Scenic Resources (Standard of Significance 2)

Impact 3.1.2 Implementation of the proposed project would not substantially damage scenic resources within a scenic highway. This impact would be considered **less than significant.**

Highway 101 runs through the eastern portion of the Specific Plan area, but it is not identified as a state scenic highway by the California Department of Transportation (Caltrans). Because the proposed project does not include portions of a state scenic highway, the project would have no impact to scenic resources within a state scenic highway.

Highway 101 through the project area is identified by the City in the General Plan as a scenic roadway. Goal T-G of the General Plan requires the City to identify, preserve, and enhance scenic roads throughout Santa Rosa. Supporting this goal are several policies requiring preservation and enhancement of scenic roads. Policy T-G-15 requires that scenic road rights-of-way be wide enough to preserve natural vegetation while providing for appropriate construction setbacks to retain views along the corridor. Policy T-G-6 requires development to provide large setbacks from scenic roads, as possible, to avoid encroachment of buildings on the view of the roadway. Additionally, Policy UD-C-6 requires that buildings, soundwalls, and other structures highly visible from Highway 101 or Highway 12 and adjoining neighborhoods be designed to enhance and improve scenic character. Implementation of the City's Design Guidelines and Zoning Code would preserve and protect scenic resources along Highway 101 through the project area. As a result, the Specific Plan would have a less than significant impact to scenic resources along Highway 101.

Mitigation Measures

None required.

Degrade Existing Visual Character (Standard of Significance 3)

Impact 3.1.3 Implementation of the Specific Plan would change the existing visual character of the Specific Plan area by allowing denser development and taller building heights in some locations than planned for under the General Plan. This impact would be considered **less than significant**.

Implementation of the Specific Plan would allow for development and redevelopment within the Specific Plan area, which could change the existing character of the Plan area.

The General Plan EIR identified less than significant impacts resulting from changes in the visual character or quality of the city as a result of implementation of the General Plan. Overall, the proposed project would maintain the existing urban development pattern of the surrounding area. Currently, the majority of the project area contains residential, retail, office, institutional, and industrial land. The Specific Plan area does not contain unique visual features, although the project would potentially alter the visual characteristics of the Plan area by allowing denser development and taller building heights in some locations than currently exist or planned for in those locations under the General Plan.

At buildout of the Specific Plan in 2035, an estimated 2,941 additional housing units would be allowed for development beyond what currently exists today within the Specific Plan area. The Specific Plan would allow an additional 1,714 units beyond what would otherwise be allowed under buildout of the General Plan 2035. Along with residential development, an additional 1,433,400 square feet of nonresidential development (798,600 square feet office; 537,200 square feet retail; 97,600 square feet institutional) would be allowed to develop in the life of the Specific Plan, beyond what is approved in the General Plan. Furthermore, approximately 22,700 square feet of existing warehouse and 34,000 square feet of light and heavy industrial land uses would be removed under the Specific Plan.

The proposed development that would occur under the Specific Plan would be new development in areas that are currently vacant, underutilized, or undeveloped or would be redevelopment of existing uses. The introduction of new or redeveloped uses in existing areas and new development on currently vacant lands has the potential to alter the visual character and qualities of those places, which potentially could result in degradation of the community's aesthetic character if not developed in an appropriate manner. Implementation of the Specific Plan would integrate and supplement the General Plan Urban Design Element goals and policies. For example, Policy UD-A-1 requires the maintenance of view corridors to natural ridgelines and landmarks. Additionally, Policy UD-A-5 requires superior site and architectural design of new development projects to improve visual quality in the city. Furthermore, the City's adopted Design Guidelines, as well as the proposed Specific Plan design guidelines, would work to prevent the development of structures, buildings, and facilities in the future from having significant impacts on the existing visual quality and character by including supplemental development and streetscape standards regulating building heights and stepbacks.

With continued implementation of applicable General Plan policies and City Design Guidelines, as well as with the adoption of Specific Plan design guidelines, the Specific Plan would have a less than significant impact on the existing visual character of the Specific Plan area.

Mitigation Measures

None required.

Create New Sources of Light and Glare (Standard of Significance 4)

Impact 3.1.4 Implementation of the proposed project could introduce new sources of light or glare. This impact would be considered **less than significant after mitigation.**

There are no significant features included in the proposed project that would, by their nature or design, create a significant source of light or glare. Additional sources of light associated with residential, retail, parking lot, and street lights, as well as glare from vehicles entering and exiting the area, would be introduced to the area as a result of implementation of the project through development in the Specific Plan area; however, these sources would not be substantially greater than what was previously considered in the General Plan EIR.

Section 20-30.080 of the City's Zoning Code specifically regulates outdoor lighting, which minimizes the potential impact of additional outdoor lighting resulting from new development or redevelopment. Under the Outdoor Lighting section, the Zoning Code specifies that no permanently installed lighting shall blink, flash, or be of unusually high intensity or brightness, as determined by the City. Furthermore, the code regulates the height and shielding of lighting fixtures. The code specifies that an outdoor light fixture is limited to a maximum height of 17 feet in single-family residential, 14 feet in multi-family residential, 16 feet in business and light industrial parks, and 16 feet in retail centers and commercial districts. As for shielding, the Zoning Code specifies that lighting fixtures should confine glare and reflections within the boundaries of the site to the maximum extent feasible. Additionally, implementation of the City's Design Guidelines would further limit new sources of light, as well as glare, when specific projects are developed in the Specific Plan area. With implementation of Zoning Code regulations, the project's impacts from increased outdoor lighting would be less than significant.

The allowance for taller buildings at some locations than what currently exist and what are currently allowed could result in new sources of glare, depending on the orientation of the building and the materials used. This could result in a significant impact.

Mitigation Measures

MM 3.1.4 For construction of structures greater than three stories tall, the City shall require the use of building materials designed to reduce glare. Examples of these types of materials include, but are not limited to, windows treated with glare-reductive coating or film covering, matte-finish tiles, marble, or sheet metal, and nonreflective flashing material.

Timing/Implementation: *During subsequent project design review*

Enforcement/Monitoring: *City of Santa Rosa Community Development Department, Planning Division*

With implementation of mitigation measure **MM 3.1.4**, along with applicable Zoning Code requirements, the project would result in less than significant impacts from glare.

3.1.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for visual resources includes the Specific Plan area and all surrounding properties which have views of the Specific Plan area.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Aesthetic Impacts

Impact 3.1.5 Implementation of the proposed project, in combination with other planned and recently approved projects in the cumulative setting, would result in a cumulative change in the visual character of the city. This impact is **less than cumulatively considerable.**

Development within the Santa Rosa Urban Growth Boundary has the potential to result in a cumulative aesthetics impact. However, the General Plan EIR identified that with the policies included in the General Plan, the potential for development under the General Plan to negatively impact visual resources in the city would be reduced to a less than significant level. The Specific Plan would be subject to the same General Plan policies reducing cumulative impacts to less than significant levels. In addition, the development of the land in the Specific Plan area would not contribute to an overall shift in the visual character of Santa Rosa. Development within the Specific Plan area would result in denser land uses than what currently exist and what is currently allowed for under the General Plan; however, with implementation of General Plan policies and proposed Specific Plan policies to protect and enhance the visual character of the city and Specific Plan area, General Plan and Specific Plan design guidelines, and Santa Rosa Zoning Code regulations, the proposed project would not result in the cumulatively considerable degradation of the visual character of the project area or the city.

Mitigation Measures

None required.

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3.2 AGRICULTURAL AND FORESTRY RESOURCES

This section of the Draft EIR addresses the potential environmental impacts of the proposed project related to agriculture and forest resources. A broad background of agricultural and soils classification systems and programs is provided and any existing agriculture and forest resources of the project area and surrounding area are characterized. The impact analysis focuses on potential direct and indirect conversion of agriculture and forest resources as well as potential conflicts with existing zoning for agricultural and forestry uses. Information used in the preparation of this section was obtained primarily from the California Department of Conservation and the Santa Rosa General Plan.

3.2.1 EXISTING SETTING

AGRICULTURAL RESOURCES

Farmland Mapping

The Department of Conservation, Division of Land Resource Protection, maps important farmlands throughout California. Important farmlands are divided into the following five categories based on their suitability for agriculture:

- **Prime Farmland:** Land which has the best combination of physical and chemical characteristics for the production of crops. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed, including water management, according to current farming methods.

- **Farmland of Statewide Importance:** Land that is similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to hold and store moisture.

- **Unique Farmland:** Does not meet the criteria for Prime Farmland or Farmland of Statewide Importance but has been used for the production of specific high-economic-value crops.

- **Farmland of Local Importance:** Land of importance to the local agricultural economy, as determined by each county's board of supervisors and local advisory committees.

- **Grazing Land:** Land on which the existing vegetation, whether grown naturally or through management, is suitable for grazing or browsing of livestock.

In order to be designated Prime Farmland, the soils must be classified as prime farmland and have been used for the production of irrigated crops at some time during the four years prior to 1998, the year that the farmland mapping was completed.

Regional Setting

Rural residential, open space and resource protection, and agricultural uses constitute the majority of activities outside of the city. The agricultural resources found within the city primarily consist of farmland of local importance (9,657 acres). Additionally, 3,121 acres of prime farmland and 3,203 acres of farmland of statewide importance are located in the vicinity, a majority of which is located outside of the City's Urban Growth Boundary (UGB). Such farmland is focused along the western edge of the city, adjacent to Laguna de Santa Rosa. Within the Specific Plan area, the area of land north of Guerneville Road and east of Ridley Avenue is listed in the General Plan 2035 EIR as local farmland (Santa Rosa General Plan 2035, 2009).

Williamson Act Contract Lands

The Williamson Act is a mechanism for protecting agricultural and open space land from premature and unnecessary urban development whereby landowners receive property tax assessments which are much lower than normal in exchange for restricting their land to agricultural or related open space use (see subsection 3.2.2, Regulatory Framework, below for further details). No Williamson Act contracts are active in the project area nor on any of the adjacent properties (DOC 2009).

FORESTRY RESOURCES

Forestry Resources Defined

Forestland is defined in Public Resources Code Section 12220(g) as:

> *Land that can support 10 percent native tree cover of any species, including hardwoods, under natural conditions, and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits.*

Timberland is defined in Public Resources Code Section 4526 as:

> *Land, other than land owned by the federal government and land designated by the board as experimental forest land, which is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products, including Christmas trees.*

The project area is not currently designated or zoned for timberland production or other forestry-related uses and is not in a designated Timberland Production Zone. Therefore, the site does not meet the definition for timberland provided in Public Resources Code Section 4526, as described above.

3.2.2 REGULATORY FRAMEWORK

FEDERAL

Farmland Protection Policy Act

The Natural Resources Conservation Service (NRCS), a federal agency within the United States Department of Agriculture, is the agency primarily responsible for implementation of the Farmland Protection Policy Act (FPPA). The purpose of the FPPA is to minimize federal programs' contribution to the conversion of farmland to nonagricultural uses by ensuring that federal programs are administered in a manner that is compatible with state, local, and private programs designed to protect farmland. The NRCS provides technical assistance to federal agencies, state and local governments, tribes, or nonprofit organizations that desire to develop farmland protection programs and policies.

The NRCS summarizes FPPA implementation in an annual report to Congress. The FPPA also established the Farmland Protection Program and Land Evaluation and Site Assessment.

Farmland Protection Program

The NRCS administers the Farmland Protection Program, a voluntary program aimed at keeping productive farmland in agricultural uses. Under the program, the NRCS provides matching funds to state, local, or tribal government entities and nonprofit organizations with existing farmland protection programs to purchase conservation easements. The goal of the program is to protect between 170,000 and 340,000 acres of farmland per year (USDA-NRCS 2007). Participating landowners agree not to convert the land to nonagricultural use and retain all rights to use the property for agriculture. A minimum of 30 years is required for conservation easements and priority is given to applications with perpetual easements. The NRCS provides up to 50 percent of the fair market value of the easement being conserved (USDA-NRCS 2007).

To qualify for a conservation easement, farmland must meet several criteria. The land must be:

- Prime, unique, or other productive soil, as defined by the NRCS based on factors such as water moisture regimes, available water capacity, developed irrigation water supply, soil temperature range, acid-alkali balance, water table, soil sodium content, potential for flooding, erodibility, permeability rate, rock fragment content, and soil-rooting depth;
- Included in a pending offer to be managed by a nonprofit organization, state, tribal, or local farmland protection program;
- Privately owned;
- Placed under a conservation plan;
- Large enough to sustain agricultural production;
- Accessible to markets for the crop that the land produces; and
- Surrounded by parcels of land that can support long-term agricultural production.

Forest Plans

The United States Forest Service (USFS) Land and Resources Management Plans (Forest Plans) describe the management of national forests. These plans apply only to federal lands under the administration of the USFS; they are not applicable to privately owned land within the national forest boundaries or privately owned land adjacent to the national forest boundaries. The following types of decisions are made in the Forest Plans:

1. Establishment of forest-wide objectives, with a description of the desired condition;
2. Establishment of forest-wide management standards;
3. Establishment of management areas and management prescriptions;
4. Establishment of lands suitable for the production of timber;
5. Establishment of monitoring and evaluation requirements; and
6. Recommendations to Congress of areas eligible for wilderness or wild and scenic river designation.

Land Evaluation and Site Assessment

The Land Evaluation and Site Assessment (LESA) system ranks lands for suitability and inclusion in the Farmland Protection Program. LESA evaluates several factors, including soil potential for agricultural use, location, market access, and adjacent land use. These factors are used to numerically rank the suitability of parcels based on local resource evaluation and site considerations. The LESA system has spawned many variations, including the California LESA model, described below.

STATE

California Environmental Quality Act Definition of Agricultural Lands

Public Resources Code Section 21060.1 defines "agricultural land" as:

> *Agricultural land means prime farmland, farmland of statewide importance or unique farmland, as defined by the United States Department of Agriculture land inventory and monitoring criteria, as modified for California.*

This Draft EIR utilizes this definition for evaluating impacts associated with the loss of agricultural lands as a result of the project.

California Department of Conservation

The Department of Conservation administers and supports a number of programs, including the Williamson Act, the California Farmland Conservancy Program, the Williamson Act Easement Exchange Program, and the Farmland Mapping and Monitoring Program. These programs are designed to preserve agricultural land and provide data on conversion of agricultural land to urban use. The Department of Conservation is responsible for approving Williamson Act Easement Exchange Program agreements.

Important Farmland Inventory System and Farmland Mapping and Monitoring Program

The Important Farmland Inventory System initiated in 1975 by the U.S. Soil Conservation Service (now NRCS) classifies land based on 10 soil and climatic characteristics. The Department of Conservation started a similar system of mapping and monitoring for California in 1980, known as the Farmland Mapping and Monitoring Program (FMMP).

Under the California Environmental Quality Act (CEQA), the lead agency is required to evaluate agricultural resources in environmental assessments at least in part based on the FMMP. The state's system was designed to document how much agricultural land in California was being converted to nonagricultural land or transferred into Williamson Act contracts. The definitions of important farmland types are provided in the FMMP discussion in subsection 3.2.1, Existing Setting, above.

California Land Evaluation and Site Assessment Model

The California LESA model was developed in 1997 and was designed based on the federal LESA system and can be used to rank the relative importance of farmland and the potential significance of its conversion on a site-by-site basis. The California LESA model considers the following factors: land capability, Storie index soil rating system, water availability (drought and non-drought conditions), land uses within one-quarter mile, and "protected resource lands" (e.g., Williamson Act lands) surrounding the property. A score can be derived and used to determine if the conversion of a property would be significant under CEQA. The LESA model provides a broad range of scores and other factors that can be considered in determining impact significance.

Williamson Act

The California Land Conservation Act of 1965, commonly referred to as the Williamson Act, is a nonmandated state program administered by counties and cities to preserve agricultural land and discourage the premature conversion of agricultural land to urban uses. The act authorizes local governments and property owners to (voluntarily) enter into contracts to commit agricultural land to specified uses for 10 or more years. Once restricted, the land is valued for taxation based on its agricultural income rather than unrestricted market value, resulting in a lower tax rate for owners. In return, the owners guarantee that these properties remain under agricultural production for an initial 10-year period. The contract is renewed automatically unless the owner files a notice of nonrenewal, thereby maintaining a constant 10-year contract. Currently, approximately 70 percent of the state’s prime agricultural land is protected under this act. Participation is on a voluntary basis by both landowners and local governments and is implemented through the establishment of agricultural preserves and the execution of Williamson Act contracts.

Termination of a Williamson Act contract through the nonrenewal process is the preferred method to remove the enforceable restriction of the contract. Cancellation is not appropriate when objectives served by cancellation could be served by nonrenewal. Cancellation is reserved for unusual, “emergency” situations. In order to approve tentative cancellation, a board or council must make specific findings based on substantial evidence that a cancellation is consistent with the purposes of the act or in the public interest. Contracts can specify that both findings must be made in order to approve tentative cancellation.

Forest Practice Rules

The Z’berg-Nejedly Forest Practice Act of 1973 established a set of rules known as the Forest Practice Rules to be applied to forest management related activities (i.e., timber harvests, timberland conversions, fire hazard removal, etc.) on privately owned timberlands in California. They are intended to ensure that timber harvesting is conducted in a manner that will preserve and protect fish, wildlife, forests, and streams. Under the Forest Practice Act, a Timber Harvesting Plan is submitted to the California Department of Forestry and Fire Protection (Cal-Fire) by the landowner outlining what timber is proposed to be harvested, the harvesting method, and the steps that will be taken to prevent damage to the environment. If the landowner intends to convert timberland to non-timberland uses, such as a winery or vineyard, a Timberland Conversion Permit is required in addition to the Timber Harvesting Plan. It is Cal-Fire’s intent that a Timber Harvesting Plan will not be approved if it fails to adopt feasible mitigation measures or alternatives from the range of measures set out or provided for in the Forest Practice Rules, which would substantially lessen or avoid significant adverse environmental impacts resulting from timber harvest activities. Timber Harvesting Plans are required to be prepared by registered professional foresters who are licensed to prepare these plans.

Assembly Bill 2881 – Right-to-Farm Disclosure

Assembly Bill (AB) 2881 was passed by the State Legislature in 2008 and became effective January 1, 2009. This bill requires that as a part of real estate transactions, land sellers and agents must disclose whether the property is located within 1 mile of farmland as designated on the most recent Important Farmland Map. Any of the five agricultural categories—Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, and Grazing Land—on the map qualifies for disclosure purposes.

California Forest Taxation Reform Act of 1976

The California Forest Taxation Reform Act of 1976 made significant modifications to the manner in which annual property taxes for timber and timberlands are assessed in California. The act placed values on bare land that are related to its ability to grow trees, and it substituted a percentage tax on the value of timber at the time of harvest ("yield" tax) for the annual property tax on the trees. In exchange for this tax benefit, landowners had to be willing to dedicate their timberland to timber growing and compatible uses for a period of at least 10 years. Unless terminated by the county or landowner, these 10 years renew each year, thus creating a rolling minimum or self-perpetuating 10-year commitment.

Lands zoned in this manner are called Timberland Production Zones. Total acres of Timberland Production Zones ostensibly indicate land that is committed to timber growing and compatible uses, thus forming the long-term productive base of the state's privately owned forestland.

LOCAL

City of Santa Rosa General Plan

The Santa Rosa General Plan 2035 serves as the overall guiding policy document for the City of Santa Rosa. The following are the applicable General Plan goals and policies most pertinent to the Specific Plan in regard to agricultural resources.

Open Space and Conservation Element

Goal OSC-C: Conserve agricultural soils.

Policy OSC-C-3: Preserve and enhance agriculture within the Planning Area as a component of the economy and as a part of Santa Rosa's environmental quality.

3.2.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on State CEQA Guidelines Appendix G. An impact to agriculture and forest resources is considered significant if the project would:

1) Result in the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use.

2) Conflict with existing zoning for agricultural use, or a Williamson Act contract.

3) Conflict with existing zoning for, or cause rezoning of, forestland (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g)).

4) Result in the loss of forestland or conversion of forestland to non-forest use.

5) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to nonagricultural use, or conversion of forestland to non-forest use.

METHODOLOGY

This analysis of agriculture and forest resources was based on review of current uses of the project site, soil characteristics of the project area, and the project area's farmland classifications per the USDA-NRCS and the FMMP. This information was used to determine the proposed project's specific agriculture-related impacts, paying particular attention to the potential direct and indirect conversion of farmland and/or forestland. The impact analysis below focuses on whether those impacts would be significant and if so, whether existing regulations would mitigate impacts. After consideration of existing regulations, mitigation measures are identified for impacts that would remain potentially significant.

IMPACTS AND MITIGATION MEASURES

Convert Important Farmland (Standards of Significance 1 & 5)

Impact 3.2.1 The project area does not contain any Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. Therefore, implementation of the proposed project would not convert any important farmland. This impact would be **less than significant.**

The Santa Rosa General Plan EIR shows that a small portion of the project area, north of Guerneville Road and east of Ridley Avenue, contains local farmland. The proposed project could result in the conversion of this farmland to nonagricultural use. However, because this farmland is not identified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, this conversion would not affect farmlands in these categories. Furthermore, the City of Santa Rosa currently assigns this parcel a land use designation of medium-high density residential. The Specific Plan does not propose to change the majority of this parcel's land use designation, although the far eastern portion of the land is proposed to change to retail and business services with an urban plaza. This impact is less than significant.

Mitigation Measures

None required.

Conflict with Existing Zoning for Agricultural or Forestry Use (Standards of Significance 2 & 3)

Impact 3.2.2 The project would not conflict with any existing zoning for agricultural or zoning use. There is **no impact.**

The City of Santa Rosa has been classified by the FMMP of the State Department of California as Urban and Built-Up Land (DOC-FMMP 2008). There would be no impact related to conflicts with a Williamson Act contract (Sonoma County 2012).

No forestland (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by

Government Code Section 51104(g)) are located on or in the vicinity of the project area. There is no impact.

Mitigation Measures

None required.

Convert Forestland (Standards of Significance 4 & 5)

Impact 3.2.3 The project area does not meet the definition of forestland, nor is it suitable for timber production. There is **no impact.**

The project does not contain any forestland. No impact would occur with regard to conversion of forestland to a non-forest use.

Mitigation Measures

None required.

3.2.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

Agricultural and forestry resources are of statewide importance; as such, the cumulative setting consists of all agricultural and forestry resources within California. Throughout the state, development pressures are resulting in the conversion of thousands of acres of agricultural land. According to the latest statewide study by the FMMP (2011), approximately 162,277 acres of agricultural land were converted to nonagricultural use between 2006 and 2008. This represents a 26 percent decrease from the 2004–2006 mapping cycle.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Impacts to Agricultural and Forestry Resources

Impact 3.2.4 The proposed project would not contribute to cumulative impacts on agricultural or forestry lands. This impact would be **less than cumulatively considerable.**

Development within the Santa Rosa Urban Growth Boundary has the potential to result in a cumulative impact related to agricultural resources. However, the General Plan 2035 EIR identified that with the policies included in the General Plan, the General Plan would result in a less than cumulatively considerable impact related to agricultural resources. All of the reasonably foreseeable development in the Specific Plan area is in keeping with the overall intent of the General Plan and is subject to General Plan policies. Thus, the Specific Plan's impact related to agricultural resources would be less than cumulatively considerable.

Mitigation Measures

None required.

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3.3 AIR QUALITY

This section includes a description of existing air quality conditions, a summary of applicable regulations, a description of existing air quality conditions, and an analysis of potential air quality impacts associated with the proposed North Station Area Specific Plan project. Mitigation measures are recommended, as necessary, to reduce significant air quality impacts. This air quality analysis and associated modeling was conducted by Ambient Air Quality and Noise Consulting.

3.3.1 EXISTING SETTING

PHYSICAL ENVIRONMENT

San Francisco Bay Area Air Basin

The proposed project is located in the San Francisco Bay Area Air Basin (SFBAAB). The Bay Area Air Quality Management District (BAAQMD) is the regional air quality agency for the SFBAAB, which comprises all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara counties, the southern portion of Sonoma County, and the southwestern portion of Solano County. Air quality in this area is determined by such natural factors as topography, meteorology, and climate, in addition to the presence of existing air pollution sources and ambient conditions. These factors and applicable regulations are discussed below.

Climate, Topography, Air Pollution Potential

The SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays, all of which distort normal wind flow patterns. California's Coast Range splits, resulting in a western coast gap, Golden Gate, and an eastern coast gap, Carquinez Strait, which allow air to flow in and out of the SFBAAB and the Central Valley.

The climate is dominated by the strength and location of a semi-permanent, subtropical high-pressure cell. During the summer, the Pacific high-pressure cell is centered over the northeastern Pacific Ocean, resulting in stable meteorological conditions and a steady northwesterly wind flow. Upwelling of cold ocean water from below to the surface because of the northwesterly flow produces a band of cold water off the California coast. The cool and moisture-laden air approaching the coast from the Pacific Ocean is further cooled by the presence of the cold water band resulting in condensation and the presence of fog and stratus clouds along the Northern California coast (BAAQMD 2011a).

In the winter, the Pacific high-pressure cell weakens and shifts southward, resulting in wind flow offshore, the absence of upwelling, and the occurrence of storms. Weak inversions coupled with moderate winds result in a low air pollution potential.

High-Pressure Cell

During the summer, the large-scale meteorological condition that dominates the West Coast is a semi-permanent high-pressure cell over the Pacific Ocean. This high-pressure cell keeps storms from affecting the California coast. Hence, the SFBAAB experiences little precipitation in the summer months. Winds tend to blow onshore out of the north/northwest.

The steady northwesterly flow induces upwelling of cold water from below. This upwelling produces a band of cold water off the California coast. When air approaches the California coast, already cool and moisture-laden from its long journey over the Pacific, it is further cooled as it crosses this bank of cold water. This cooling often produces condensation, resulting in a high incidence of fog and stratus clouds along the Northern California coast in the summer.

Generally in the winter, the Pacific high-pressure cell weakens and shifts southward, winds tend to flow offshore, upwelling ceases, and storms occur. During the winter rainy periods, inversions (layers of warmer air over colder air; see below) are weak or nonexistent, winds are usually moderate, and air pollution potential is low. The Pacific high-pressure cell does periodically become dominant, bringing strong inversions, light winds, and high pollution potential (BAAQMD 2011a).

Topography

The topography of the SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys, and bays. This complex terrain, especially the higher elevations, distorts the normal wind flow patterns in the SFBAAB. The greatest distortion occurs when low-level inversions are present and the air beneath the inversion flows independently of air above the inversion, a condition that is common in the summertime.

The only major break in California's Coast Range occurs in the SFBAAB. Here, the Coast Range splits into western and eastern ranges; between the two ranges lies the San Francisco Bay. The gap in the western Coast Range is known as the Golden Gate, and the gap in the eastern Coast Range is the Carquinez Strait. These gaps allow air to pass into and out of the SFBAAB and the Central Valley (BAAQMD 2011a).

Wind Patterns

During the summer, winds flowing from the northwest are drawn inland through the Golden Gate and over the lower portions of the San Francisco Peninsula. Immediately south of Mount Tamalpais, the northwesterly winds accelerate considerably and come more directly from the west as they stream through the Golden Gate. This channeling of wind through the Golden Gate produces a jet that sweeps eastward and splits off to the northwest toward Richmond and to the southwest toward San Jose when it meets the East Bay hills.

Wind speeds may be strong locally in areas where air is channeled through a narrow opening, such as the Carquinez Strait, the Golden Gate, or the San Bruno gap. For example, the average wind speed at San Francisco International Airport in July is about 17 knots (from 3 p.m. to 4 p.m.), compared with 7 knots at San Jose and less than 6 knots at the Farallon Islands.

The air flowing in from the coast to the Central Valley, called the sea breeze, begins developing at or near ground level along the coast in late morning or early afternoon. As the day progresses, the sea breeze layer deepens and increases in velocity while spreading inland. The depth of the sea breeze depends in large part upon the height and strength of the inversion. If the inversion is low and strong, and hence stable, the flow of the sea breeze will be inhibited and stagnant conditions are likely to result.

In the winter, the SFBAAB frequently experiences stormy conditions with moderate to strong winds, as well as periods of stagnation with very light winds. Winter stagnation episodes are characterized by nighttime drainage flows in coastal valleys. Drainage is a reversal of the usual daytime air-flow patterns; air moves from the Central Valley toward the coast and back down toward the San Francisco Bay from the smaller valleys within the SFBAAB (BAAQMD 2011a).

Temperature

Summertime temperatures in the SFBAAB, which encompasses the proposed project site, are determined in large part by the effect of differential heating between land and water surfaces. Because land tends to heat up and cool off more quickly than water, a large-scale gradient (differential) in temperature is often created between the coast and the Central Valley, and small-scale local gradients are often produced along the shorelines of the ocean and bays. The temperature gradient near the ocean is also exaggerated, especially in summer, because of the upwelling of cold ocean bottom water along the coast. On summer afternoons, the temperatures at the coast can be 35°F cooler than temperatures 15 to 20 miles inland. At night, this contrast usually decreases to less than 10°F.

In the winter, the relationship of minimum and maximum temperatures is reversed. During the daytime, the temperature contrast between the coast and inland areas is small, whereas at night the variation in temperature is large (BAAQMD 2011a).

Precipitation

The SFBAAB is characterized by moderately wet winters and dry summers. Winter rains account for about 75 percent of the average annual rainfall. The amount of annual precipitation can vary greatly from one part of the SFBAAB to another even within short distances. In general, total annual rainfall can reach 40 inches in the mountains, but it is often less than 16 inches in sheltered valleys.

During rainy periods, ventilation (rapid horizontal movement of air and injection of cleaner air) and vertical mixing are usually high, and thus pollution levels tend to be low. However, frequent dry periods do occur during the winter where mixing and ventilation are low and pollutant levels build up (BAAQMD 2011a).

Air Pollution Potential

The potential for high pollutant concentrations developing at a given location depends upon the quantity of pollutants emitted into the atmosphere in the surrounding area or upwind and the ability of the atmosphere to disperse the contaminated air. The topographic and climatological factors discussed above influence the atmospheric pollution potential of an area. Atmospheric pollution potential, as the term is used here, is independent of the location of emission sources and is instead a function of factors described below.

Wind Circulation

Low wind speed contributes to the buildup of air pollution because it allows more pollutants to be emitted into the air mass per unit of time. Light winds occur most frequently during periods of low sun (fall and winter, and early morning) and at night. These are also periods when air pollutant emissions from some sources are at their peak, namely, commute traffic (early morning) and wood-burning appliances (nighttime). The problem can be compounded in valleys, when weak flows carry the pollutants upvalley during the day and cold air drainage flows move the air mass downvalley at night. Such restricted movement of trapped air provides little opportunity for ventilation and leads to buildup of pollutants to potentially unhealthful levels.

A wind-rose is a graphic tool used by meteorologists to give a succinct view of how wind speed and direction are typically distributed at a particular location. Wind-roses provide useful information for communities that contain industry, landfills, or other potentially odorous or noxious land uses. Each wind-rose diagram provides a general indication of the proportion of time that winds blow from each compass direction: The longer the vector length, the greater the frequency of wind occurring from that direction. Such information may be particularly useful in planning buffer zones. For example, sensitive receptors such as residential developments, schools, or hospitals are inappropriate uses immediately downwind from facilities that emit toxic or odorous pollutants, unless adequate separation is provided by a buffer zone. Caution should be taken in using wind-roses in planning and environmental review processes. A site on the opposite side of a hill or tall building, even a short distance from a meteorological monitoring station, may experience a significant difference in wind pattern (BAAQMD 2011a).

Inversions

An inversion is a layer of warmer air over a layer of cooler air. Inversions affect air quality conditions significantly because they influence the mixing depth, i.e., the vertical depth in the atmosphere available for diluting air contaminants near the ground. The highest air pollutant concentrations in the SFBAAB, and therefore the Specific Plan area, generally occur during inversions.

Two types of inversions occur regularly in the SFBAAB. One is more common in the summer and fall, while the other is most common during the winter. The frequent occurrence of elevated temperature inversions in summer and fall months acts to cap the mixing depth, limiting the depth of air available for dilution. Elevated inversions are caused by subsiding air from the subtropical high pressure zone and from the cool marine air layer that is drawn into the SFBAAB by the heated low-pressure region in the Central Valley.

The inversions typical of winter, called radiation inversions, are formed as heat quickly radiates from the earth's surface after sunset, causing the air in contact with it to rapidly cool. Radiation inversions are strongest on clear, low-wind, cold winter nights, allowing the buildup of such pollutants as carbon monoxide and particulate matter. When wind speeds are low, there is little mechanical turbulence to mix the air, resulting in a layer of warm air over a layer of cooler air next to the ground. Mixing depths under these conditions can be as shallow as 50 to 100 meters (164–328 feet), particularly in rural areas. Urban areas usually have deeper minimum mixing layers because of heat island effects and increased surface roughness. During radiation inversions, downwind transport is slow, the mixing depths are shallow, and turbulence is minimal, all factors which contribute to ozone formation.

Although each type of inversion is most common during a specific season, either inversion mechanism can occur at any time of the year. Sometimes both occur simultaneously. Moreover, the characteristics of an inversion often change throughout the course of a day. The terrain of the SFBAAB also induces significant variations among subregions. The proposed Specific Plan area is located in the Cotati and Petaluma valleys climatological subregion of the SFBAAB described in further detail below.

Solar Radiation

The frequency of hot, sunny days during the summer months in the SFBAAB is another important factor that affects air pollution potential. It is at the higher temperatures that ozone is formed. In the presence of ultraviolet sunlight and warm temperatures, reactive organic gases and oxides of nitrogen react to form secondary photochemical pollutants, including ozone.

Because temperatures in many of the SFBAAB inland valleys are so much higher than near the coast, the inland areas are especially prone to photochemical air pollution. In late fall and winter, solar angles are low, resulting in insufficient ultraviolet light and warming of the atmosphere to drive the photochemical reactions. Ozone concentrations do not reach significant levels in the SFBAAB during these seasons (BAAQMD 2011a).

Sheltered Terrain

The hills and mountains in the SFBAAB contribute to the high pollution potential of some areas. During the day, or at night during windy conditions, areas in the leeward sides of mountains (the sides not facing into the direction of winds) are sheltered from the prevailing winds, thereby reducing turbulence and downwind transport. At night, when wind speeds are low, the upper atmospheric layers are often decoupled from the surface layers during radiation conditions. If elevated terrain is present, it will tend to block pollutant transport in that direction. Elevated terrain also can create a recirculation pattern by inducing upvalley air flows during the day and reverse downvalley flows during the night, allowing little inflow of fresh air.

The areas having the highest air pollution potential tend to be those that experience the highest temperatures in the summer and the lowest temperatures in the winter. The coastal areas are exposed to the prevailing marine air, creating cooler temperatures in the summer, warmer temperatures in winter, and stratus clouds all year. The inland valleys are sheltered from the marine air and experience hotter summers and colder winters. Thus, the topography of the inland valleys creates conditions conducive to high air pollution potential (BAAQMD 2011a).

Pollution Potential Related to Emissions

Although air pollution potential is strongly influenced by climate and topography, the air pollution that occurs in a location also depends upon the amount of air pollutant emissions in the surrounding area or transported from more distant places. Air pollutant emissions generally are highest in areas that have high population densities, high motor vehicle use and/or industrialization. These contaminants created by photochemical processes in the atmosphere, such as ozone, may result in high concentrations many miles downwind from the sources of their precursor chemicals (BAAQMD 2011a).

Cotati and Petaluma Valleys Climatological Subregion

The subregion that stretches from Santa Rosa to the San Pablo Bay is often considered as two different valleys: the Cotati Valley in the north and the Petaluma Valley in the south. To the east, the valley is bordered by the Sonoma Mountains, while to the west is a series of low hills, followed by the Estero Lowlands, which open to the Pacific Ocean. The region from the Estero Lowlands to the San Pablo Bay is known as the Petaluma Gap. This low-terrain area allows marine air to travel into the SFBAAB.

Wind patterns in the Petaluma and Cotati valleys are strongly influenced by the Petaluma Gap, with winds flowing predominantly from the west. As marine air travels through the Petaluma Gap, it splits into northward and southward paths moving into the Cotati and Petaluma valleys. The southward path crosses San Pablo Bay and moves eastward through the Carquinez Strait. The northward path contributes to Santa Rosa's prevailing winds from the south and southeast.

When the ocean breeze is weak, strong winds from the east can predominate, carrying pollutants from the Central Valley and the Carquinez Strait. During these periods, upvalley flows can carry the polluted air as far north as Santa Rosa and the proposed Specific Plan area.

Winds are usually stronger in the Petaluma Valley than in the Cotati Valley because the former is directly in line with the Petaluma Gap. Average annual wind speed at the Petaluma Airport is 7 miles per hour (mph). The Cotati Valley, being slightly north of the Petaluma Gap, experiences lower wind speeds. The annual average wind speed in Santa Rosa is 5 mph.

Air temperatures are very similar in the two valleys. Summer maximum temperatures for this subregion are in the low to mid 80s (in degrees Fahrenheit), while winter maximum temperatures are in the high 50s to low 60s. Summer minimum temperatures are around 50 degrees, and winter minimum temperatures are in the high 30s.

Generally, air pollution potential is low in the Petaluma Valley because of its link to the Petaluma Gap and because of its low population density. Two scenarios could produce elevated pollutant levels: (1) stagnant conditions in the morning hours created when a weak ocean breeze meets a weak bay breeze, and (2) an eastern or southeastern wind pattern in the afternoon brings in pollution from the Carquinez Strait Region and the Central Valley.

The Cotati Valley has a higher pollution potential than does the Petaluma Valley. The Cotati Valley lacks a gap to the sea, contains a larger population, and has natural barriers at its northern and eastern ends. There are also industrial facilities in and around Santa Rosa. Both valleys of this subregion are also threatened by increased motor vehicle traffic and the associated air contaminants. Population and motor vehicle use are increasingly significant, and housing costs and the suburbanization of employment are leading to more and longer commutes traversing the subregion (BAAQMD 2011a).

EXISTING AMBIENT AIR QUALITY

Criteria Air Pollutants

The California Air Resources Board (CARB) and the U.S. Environmental Protection Agency (EPA) currently focus on the following air pollutants as indicators of ambient air quality: ozone, particulate matter (PM), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), and lead. Because these are the most prevalent air pollutants known to be deleterious to human health and extensive health-effects criteria documents are available, they are commonly referred to as criteria air pollutants. Ambient air quality standards are summarized in **Table 3.3-1**.

TABLE 3.3-1
AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards[1]	National Standards[2]
Ozone	8 Hour	0.070 ppm (137μg/m^3)	0.075 ppm
	1 Hour	0.09 ppm (180 μg/m^3)	–
Carbon Monoxide	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)
Nitrogen Dioxide	1 Hour	0.18 ppm (339 μg/m^3)	100 ppb
	Annual Arithmetic Mean	0.030 ppm (57 μg/m^3)	53 ppb

Pollutant	Averaging Time	California Standards[1]	National Standards[2]
Sulfur Dioxide	24 Hour	0.04 ppm (105 μg/m^3)	N/A
	3 Hour	--	N/A
	1 Hour	0.25 ppm (665 μg/m^3)	75 ppb
Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 μg/m^3	N/A
	24 Hour	50 μg/m^3	150 μg/m^3
Particulate Matter – Fine ($PM_{2.5}$)	Annual Arithmetic Mean	12 μg/m^3	15 μg/m^3
	24 Hour	N/A	35 μg/m^3
Sulfates	24 Hour	25 μg/m^3	N/A
Lead	Calendar Quarter	N/A	1.5 μg/m^3
	30 Day Average	1.5 μg/m^3	N/A
Hydrogen Sulfide	1 Hour	0.03 ppm (42 μg/m^3)	N/A
Vinyl Chloride (chloroethene)	24 Hour	0.01 ppm (26 μg/m^3)	N/A
Visibility Reducing particles	8 Hour (10:00 to 18:00 PST)	Extinction coefficient: 0.23/kilometer-visibility of 10 miles or more (0.07-30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70%.	N/A

*Sources: **CARB 2011a, 2011b; EPA 2011***

Notes: N/A = Not Applicable; mg/m^3 = milligrams per cubic meter; ppm = parts per million; ppb = parts per billion; μg/m^3 = micrograms per cubic meter

1. This table provides a summary of current air quality standards and attainment designations at the time of this analysis. For more information on standards visit the CARB website at http//www.arb.ca.gov.research/aaqs/aaqs2.pdf.

2. As of September 27, 2010, all carbon monoxide areas have been redesignated to maintenance areas.

The most problematic pollutants in the Specific Plan area and surrounding region include ozone and PM. The health effects and major sources of these pollutants are described below. Toxic air contaminants are a separate class of pollutants and are discussed later in this section.

Ozone

Ozone, or smog, is not emitted directly into the environment, but is formed in the atmosphere by complex chemical reactions between reactive organic gases (ROG) and nitrogen oxide (NO_X) in the presence of sunlight. Ozone formation is greatest on warm, windless, sunny days. The main sources of NO_X and ROG, often referred to as ozone precursors, are combustion processes (including motor vehicle engines) the evaporation of solvents, paints, and fuels, and biogenic sources. Automobiles are the single largest source of ozone precursors in the SFBAAB. Tailpipe emissions of ROG are highest during cold starts, hard acceleration, stop-and-go conditions, and slow speeds. They decline as speeds increase up to about 50 mph, then increase again at high speeds and high engine loads. ROG emissions associated with evaporation of unburned fuel depend on vehicle and ambient temperature cycles. NO_X emissions exhibit a different curve;

emissions decrease as the vehicle approaches 30 mph and then begin to increase with increasing speeds.

Ozone levels usually build up during the day and peak in the afternoon hours. Short-term exposure can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, it can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema. Chronic exposure to high ozone levels can permanently damage lung tissue. Ozone can also damage plants and trees, and materials such as rubber and fabrics.

Particulate Matter

Particulate matter (PM) refers to a wide range of solid or liquid particles in the atmosphere, including smoke, dust, aerosols, and metallic oxides. Respirable PM with an aerodynamic diameter of 10 micrometers or less is referred to as PM_{10}. $PM_{2.5}$ includes a subgroup of finer particles that have an aerodynamic diameter of 2.5 micrometers or less. Some particulate matter, such as pollen, is naturally occurring. In the SFBAAB, most particulate matter is caused by combustion, factories, construction, grading, demolition, agricultural activities, and motor vehicles. Extended exposure to PM can increase the risk of chronic respiratory disease. PM_{10} is of concern because it bypasses the body's natural filtration system more easily than larger particles and can lodge deep in the lungs. The EPA and the State of California revised their PM standards several years ago to apply only to these fine particles. $PM_{2.5}$ poses an increased health risk because the particles can deposit deep in the lungs and contain substances that are particularly harmful to human health. Motor vehicles are currently responsible for about half of particulates in the SFBAAB. Wood burning in fireplaces and stoves is another large source of fine particulates.

Nitrogen Dioxide

Nitrogen dioxide (NO_2) is a reddish-brown gas that is a byproduct of combustion processes. Automobiles and industrial operations are the main sources of NO_2. Aside from its contribution to ozone formation, nitrogen dioxide can increase the risk of acute and chronic respiratory disease and reduce visibility. NO_2 may be visible as a coloring component of a brown cloud on high pollution days, especially in conjunction with high ozone levels.

Sulfur Dioxide

Sulfur dioxide (SO_2) is a colorless acid gas with a pungent odor. It has potential to damage materials and it can have health effects at high concentrations. It is produced by the combustion of sulfur-containing fuels, such as oil, coal, and diesel. SO_2 can irritate lung tissue and increase the risk of acute and chronic respiratory disease.

Lead

Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phase-out of leaded gasoline, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.

Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, the EPA set national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. The EPA banned the use of leaded gasoline in highway vehicles in December 1995. As a result of the EPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector and levels of lead in the air decreased dramatically.

Volatile Organic Compounds/Reactive Organic Gases

It should be noted that there are no state or federal ambient air quality standards for volatile organic compounds (VOCs) (also referred to as reactive organic gases [ROG]) because they are not classified as criteria pollutants. VOCs/ROGs are regulated, however, because a reduction in VOC/ROG emissions reduces certain chemical reactions which contribute to the formation of ozone. VOC/ROG emissions are also transformed into organic aerosols in the atmosphere, contributing to higher PM_{10} and lower visibility levels.

Although health-based standards have not been established for VOC/ROG emissions, health effects can occur from exposures to high concentrations of VOC/ROG. Some hydrocarbon components classified as VOC/ROG are hazardous air pollutants. Benzene, for example, is a hydrocarbon component of VOC/ROG emissions that is known to be a human carcinogen.

Carbon Monoxide

Carbon monoxide (CO) is an odorless, colorless gas. It is formed by the incomplete combustion of fuels. The single largest source of CO in the SFBAAB is motor vehicles. Emissions are highest during cold starts, hard acceleration, stop-and-go driving, and when a vehicle is moving at low speeds. New findings indicate that CO emissions per mile are lowest at about 45 mph for the average light-duty motor vehicle and begin to increase again at higher speeds. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia, as well as for fetuses. Even healthy people exposed to high CO concentrations can experience headaches, dizziness, fatigue, unconsciousness, and even death (BAAQMD 2011a).

Criteria Air Pollutant Monitoring Data

Air quality conditions in the San Francisco Bay Area Air Basin have improved significantly since the BAAQMD was created in 1955. Ambient concentrations and the number of days on which the region exceeds standards have declined dramatically. Neither state nor national ambient air quality standards of these chemicals have been violated in recent decades for NO_2, SO_2, sulfates, lead, hydrogen sulfide, and vinyl chloride (BAAQMD 2011a).

The BAAQMD operates a regional air quality monitoring network that regularly measures the concentrations of the five major criteria air pollutants. Ambient air quality in the project area can be inferred from ambient air quality measurements conducted at nearby air quality monitoring stations, which include the Santa Rosa-5th Street monitoring station. **Table 3.3-2** summarizes the last three years of published ambient air quality data obtained from this nearest air quality monitoring station. As depicted in **Table 3.3-2**, ambient air quality standards for ozone, PM_{10}, $PM_{2.5}$, CO, and NO_X have not been exceeded during the last three years of available data.

TABLE 3.3-2
SUMMARY OF AIR QUALITY DATA

Pollutant Standards	2008	2009	2010
Ozone			
Maximum concentration (1-hr/8hr, ppm)	0.076/0.064	0.086/0.065	0.084/0.068
Number of days state standard (1-hr/8-hr) exceeded	0/0	0/0	0/0
Number of days national standard exceeded	0	0	0
Respirable Particulate Matter (PM_{10})			
Maximum daily concentration (National/State, μg/m^3)	48.5	N/A	N/A
Number of days state standard exceeded	0	N/A	N/A
Number of days national standard exceeded	N/A	N/A	N/A
Fine Particulate Matter ($PM_{2.5}$)			
Maximum 24-hour concentration (National/State, μg/m^3)	30.8	29.0	26.6
Number of days national standard exceeded (estimated)	0	0	0
Carbon Monoxide (O_3)			
Maximum concentration (1-hr/8-hr, ppm)	4.0/1.49	4.0/1.34	3.0/1.14
Number of days state standard (1-hr/8-hr) exceeded	0/0	0/0	0/0
Number of days national standard exceeded	0	0	3
Nitrogen Dioxide (NO_2)			
Maximum concentration (1-hr, ppm)	0.049	0.045	0.042
Number of days state standard exceeded	0	0	0

Sources: CARB 2012; EPA 2012
Notes: Ambient air quality data obtained from the Santa Rosa-5th Street air monitoring station. PM_{10} monitoring data for years 2009 and 2010 was not available for this monitoring station.
(μg/m^3) = micrograms per cubic meter
ppm = parts per million
N/A = data not available

Attainment Status for Criteria Air Pollutants

Both the federal and state clean air laws require the identification and designation of areas that either do or do not meet ambient air quality standards. An attainment designation for an area signifies that pollutant concentrations did not violate the standard for that pollutant in that area. A nonattainment designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation(s) was caused by an exceptional event, as defined in the criteria. Areas for which there is insufficient data available are designated unclassified.

The SFBAAB, which encompasses the Specific Plan area, is currently designated as a nonattainment area for state and national ozone standards and state particulate matter ambient air quality standards. The SFBAAB's current attainment status with regard to federal and state ambient air quality standards is summarized in **Table 3.3-3**.

TABLE 3.3-3
FEDERAL AND STATE AMBIENT AIR QUALITY ATTAINMENT STATUS FOR SFBAAB

Pollutant	Federal	State
1-hour Ozone (O_3)	–	Nonattainment
8-hour Ozone (O_3)	Nonattainment	Nonattainment
Coarse Particulate Matter (PM_{10})	Unclassified	Nonattainment
Fine Particulate Matter ($PM_{2.5}$)	Nonattainment	Nonattainment
Carbon Monoxide (CO)	Attainment/Maintenance	Attainment
Nitrogen Dioxide (NO_2)	Unclassified/Attainment	Attainment
Sulfur Dioxide (SO_2)	Attainment	Attainment

Sources: CARB 2011a, 2011b; EPA 2011

Toxic Air Contaminants

In addition to the criteria air pollutants listed above, another group of pollutants, commonly referred to as toxic air contaminants (TACs) or hazardous air pollutants, can result in health effects that can be quite severe. Many TACs are confirmed or suspected carcinogens, or are known or suspected to cause birth defects or neurological damage. Secondly, many TACs can be toxic at very low concentrations. For some chemicals, such as carcinogens, there are no thresholds below which exposure can be considered risk-free.

Industrial facilities and mobile sources are significant sources of TACs. Sources of TACs go beyond industry. Various common urban facilities also produce TAC emissions, such as gasoline stations (benzene), hospitals (ethylene oxide), and dry cleaners (perchloroethylene). Automobile exhaust also contains TACs such as benzene and 1,3-butadiene. Most recently, diesel particulate matter was identified as a toxic air contaminant by CARB. Diesel PM differs from other TACs in that it is not a single substance but rather a complex mixture of hundreds of substances. BAAQMD research indicates that mobile-source emissions of diesel PM, benzene, and 1,3-butadiene represent a substantial portion of the ambient background risk from TACs in the SFBAAB.

The health effects associated with TACs are quite diverse and generally are assessed locally, rather than regionally. TACs can cause long-term health effects such as cancer, birth defects, neurological damage, asthma, bronchitis, or genetic damage, or short-term acute affects such as eye watering, respiratory irritation (a cough), running nose, throat pain, and headaches. For evaluation purposes, TACs are separated into carcinogens and non-carcinogens based on the nature of the physiological effects associated with exposure to the pollutant. Carcinogens are assumed to have no safe threshold below which health impacts would not occur. Non-carcinogenic substances differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis (BAAQMD 2011a).

Land Use Compatibility with TAC Emission Sources

The location of a development project is a major factor in determining whether it will result in localized air quality impacts. The potential for adverse air quality impacts increases as the distance between the source of emissions and members of the public decreases. While impacts on all members of the population should be considered, impacts on sensitive receptors, such as schools or hospitals, are of particular concern. **Table 3.3-9** below provides a summary of the stationary sources identified in the Specific Plan area and sources within 1,000 feet of the Specific Plan area, as well as the cancer risk and $PM_{2.5}$ concentration associated with these sources.

In 2005, CARB published an informational guide entitled *Air Quality and Land Use Handbook: A Community Health Perspective*. The purpose of this guide is to provide information to aid local jurisdictions in addressing issues and concerns related to the placement of sensitive land uses near major sources of air pollution. The handbook includes recommended separation distances for various land uses, summarized in **Table 3.3-4**. However, these recommendations are not site-specific and should not be interpreted as defined "buffer zones." It is also important to note that the recommendations of the handbook are advisory and need to be balanced with other state and local policies (CARB 2005).

TABLE 3.3-4
RECOMMENDATIONS ON SITING NEW SENSITIVE LAND USES
NEAR AIR POLLUTANT SOURCES

Source Category	Advisory Recommendations
Freeways and High-Traffic Roads	• Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles per day.
Distribution Centers	• Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units per day, or where TRU unit operations exceed 300 hrs/week). • Take into account the configuration of existing distribution centers and avoid locating residences and other new sensitive land uses near entry and exit points.
Rail Yards	• Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard. • Within 1 mile of a rail yard, consider possible siting limitations and mitigation.
Ports	• Avoid siting of new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or CARB on the status of pending analyses of health risks.
Refineries	• Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.
Chrome Platers	• Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.
Dry Cleaners Using Perchloroethylene	• Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with three or more machines, consult with the local air district. • Do not site new sensitive land uses in the same building with perc. dry cleaners.
Gasoline Dispensing Facilities	• Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50-foot separation is recommended for typical gas dispensing facilities.

Source: CARB 2005
Notes: Recommendations are advisory, are not site-specific, and may not fully account for future reductions in emissions, including those resulting from compliance with existing/future regulatory requirements, such as reductions in diesel-exhaust emissions anticipated to occur with continued implementation of CARB's Diesel Risk Reduction Plan.

Odors

Typically, odors are generally regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from the psychological (i.e. irritation, anger, or anxiety) to the physiological, including circulatory and respiratory effects, nausea, vomiting, and headache. The ability to detect odors varies considerably among the population and overall is quite subjective. Some individuals have the ability to smell very minute quantities of specific substances; others may not have the same sensitivity but may have sensitivities to odors of other substances. In addition, people may have different reactions to the same odor and in fact an odor that is offensive to one person may be perfectly acceptable to another (e.g., a fast-food restaurant).

Quality and intensity are two properties present in any odor. The quality of an odor indicates the nature of the smell experience. For instance, if a person describes an odor as flowery or sweet, then the person is describing the quality of the odor. Intensity refers to the strength of the odor. For example, a person may use the word strong to describe the intensity of an odor. Odor intensity depends on the odorant concentration in the air. When an odorous sample is progressively diluted, the odorant concentration decreases. As this occurs, the odor intensity weakens and eventually becomes so low that the detection or recognition of the odor is quite difficult. At some point during dilution, the concentration of the odorant reaches a detection threshold. An odorant concentration below the detection threshold means that the concentration in the air is not detectable by the average human.

Neither the state nor the federal governments have adopted rules or regulations for the control of odor sources. BAAQMD Regulation 7 specifically addresses odors by establishing general limitations on odorous substances and specific emission limitations on certain odorous compounds. Any actions related to odors would be based on citizen complaints to local governments and the BAAQMD. No major sources of odors have been identified in the Specific Plan area.

Existing Nearby Sensitive Receptors

One of the most important reasons for air quality standards is the protection of those members of the population who are most sensitive to the adverse health effects of air pollution, termed "sensitive receptors." The term "sensitive receptors" refers to specific population groups as well as the land uses where individuals would reside for long periods. Commonly identified sensitive population groups are children, the elderly, the acutely ill, and the chronically ill. Commonly identified sensitive land uses would include facilities that house or attract children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants. Residential dwellings, schools, parks, playgrounds, child-care centers, convalescent homes, and hospitals are examples of sensitive land uses. Sensitive land uses located in the Specific Plan area consist primarily of residential dwellings. Other sensitive land uses located in the Specific Plan area include, but are not limited to, neighborhood parks, educational facilities, senior living facilities, and places of worship.

3.3.2 REGULATORY FRAMEWORK

Air quality with respect to criteria air pollutants and toxic air contaminants in the SFBAAB is regulated by such agencies as the BAAQMD, CARB, and the EPA. Each of these agencies develops rules, regulations, policies, and/or goals to attain the goals or directives imposed through legislation. Although the EPA regulations may not be superseded, both state and local regulations may be more stringent.

FEDERAL

U.S. Environmental Protection Agency

At the federal level, the EPA has been charged with implementing national air quality programs. The EPA's air quality mandates are drawn primarily from the federal Clean Air Act (CAA), which was enacted in 1963. The CAA was amended in 1970, 1977, and 1990.

The CAA required the EPA to establish primary and secondary national ambient air quality standards (NAAQS), which are available at http://www.arb.ca.gov/research/aaqs/aaqs2.pdf. The CAA also required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The CAA Amendments of 1990 (CAAA) added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. The EPA has responsibility to review all SIPs to determine conformation to the mandates of the CAAA and determine if implementation will achieve air quality goals. If the EPA determines a SIP to be inadequate, a Federal Implementation Plan may be prepared for the nonattainment area that imposes additional control measures. Failure to submit an approvable SIP or to implement the plan within the mandated time frame may result in sanctions being applied to transportation funding and stationary air pollution sources in the air basin (BAAQMD 2011a).

Toxic Air Contaminants

Toxic air contaminants (TACs), or in federal parlance under the CAA, hazardous air pollutants (HAPs), are pollutants that result in an increase in mortality, a serious illness, or pose a present or potential hazard to human health. Health effects of TACs may include cancer, birth defects, and immune system and neurological damage.

TACs can be separated into carcinogens and non-carcinogens based on the nature of the physiological degradation associated with exposure to the pollutant. For regulatory purposes, carcinogens are assumed to have no safe threshold below which health impacts will not occur. Non-carcinogenic TACs differ in that there is a safe level in which it is generally assumed that no negative health impacts would occur. These levels are determined on a pollutant-by-pollutant basis.

It is important to understand that TACs are not considered criteria air pollutants and thus are not specifically addressed through the setting of ambient air quality standards. Instead, the EPA and CARB regulate HAPs and TACs, respectively, through statutes and regulations that generally require the use of the maximum or best available control technology (MACT and BACT) to limit emissions. These in conjunction with additional rules set forth by the BAAQMD establish the regulatory framework for TACs (BAAQMD 2011a).

Title III of the CAAA requires the EPA to promulgate National Emissions Standards for Hazardous Air Pollutants (NESHAPs). The NESHAP may differ for major sources than for area sources of HAPs (major sources are defined as stationary sources with potential to emit more than 10 tons per year of any HAP or more than 25 tons per year of any combination of HAPs; all other sources are considered area sources). The emissions standards are to be promulgated in two phases. In the first phase (1992–2000), the EPA developed technology-based emission standards designed to produce the maximum emission reduction achievable. These standards are generally referred to as requiring maximum achievable control technology (MACT). These federal rules are also commonly referred to as MACT standards, because they reflect the maximum achievable control technology. For area sources, the standards may be different, based on generally available control technology. In the second phase (2001–2008), the EPA is required to promulgate health risk-based emissions standards where deemed necessary to address risks remaining after implementation of the technology-based NESHAP standards. The CAAA required the EPA to promulgate vehicle or fuel standards containing reasonable requirements that control toxic emissions, at a minimum to benzene and formaldehyde. Performance criteria were established to limit mobile-source emissions of toxics, including benzene, formaldehyde, and 1,3-butadiene. In addition, Section 219 required the use of reformulated gasoline in selected U.S. cities (those with the most severe ozone nonattainment conditions) to further reduce mobile-source emissions (BAAQMD 2011a).

STATE

In 1992 and 1993, CARB requested delegation of authority for the implementation and enforcement of specified New Source Performance Standards and NESHAPS to the following local agencies: Bay Area and South Coast Air Quality Management Districts. The EPA's review of the State of California's laws, rules, and regulations showed them to be adequate for the implementation and enforcement of these federal standards, and the EPA granted the delegations as requested.

California Air Resources Board

CARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA), which was adopted in 1988. The CCAA requires that all air districts in the state endeavor to achieve and maintain the California ambient air quality standards (CAAQS) by the earliest practical date. The act specifies that districts should focus particular attention on reducing the emissions from transportation and area-wide emission sources, and provides districts with the authority to regulate indirect sources.

CARB is primarily responsible for developing and implementing air pollution control plans to achieve and maintain the NAAQS. CARB is primarily responsible for statewide pollution sources and produces a major part of the SIP. Local air districts are still relied upon to provide additional strategies for sources under their jurisdiction. CARB combines this data and submits the completed State Implementation Plan to the EPA.

Other CARB duties include monitoring air quality (in conjunction with air monitoring networks maintained by air pollution control and air quality management districts), establishing CAAQS (which in many cases are more stringent than the NAAQS), determining and updating area designations and maps, and setting emissions standards for new mobile sources, consumer products, small utility engines, and off-road vehicles (BAAQMD 2011a).

Transport of Pollutants

The California Clean Air Act, Section 39610(a), directs CARB to identify each district in which transported air pollutants from upwind areas outside the district cause or contribute to a violation of the ozone standard and to identify the district of origin of transported pollutants. The information regarding the transport of air pollutants from one basin to another was to be quantified to assist interrelated basins in the preparation of plans for the attainment of California ambient air quality standards. Numerous studies conducted by CARB have identified air basins that are impacted by pollutants transported from other air basins (as of 1993). Among the air basins affected by air pollution transport from the SFBAAB are the North Central Coast Air Basin, the Mountain Counties Air Basin, the San Joaquin Valley Air Basin, and the Sacramento Valley Air

Basin. The San Francisco Bay Area Air Basin was also identified as an area impacted by the transport of air pollutants from the Sacramento region (BAAQMD 2011a).

Toxic Air Contaminants

California regulates TACs primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). The Tanner Act sets forth a formal procedure for CARB to designate substances as toxic air contaminants. This includes research, public participation, and scientific peer review before CARB can designate a substance as a TAC. To date, CARB has identified over 21 TACs, and adopted the EPA's list of hazardous air pollutants as TACs. Most recently, diesel exhaust particulate was added to the CARB list of toxic air contaminants. Once a TAC is identified, CARB then adopts an Airborne Toxics Control Measure for sources that emit that particular TAC. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure below that threshold. If there is no safe threshold, the measure must incorporate BACT to minimize emissions. None of the TACs identified by CARB have a safe threshold. The Hot Spots Act requires that existing facilities that emit toxic substances above a specified level:

- Prepare a toxic emission inventory;
- Prepare a risk assessment if emissions are significant;
- Notify the public of significant risk levels;
- Prepare and implement risk reduction measures.

CARB has adopted diesel exhaust control measures and more stringent emission standards for various on-road mobile sources of emissions, including transit buses, and off-road diesel equipment (e.g., tractors, generators). In February 2000, CARB adopted a new public transit bus fleet rule and emission standards for new urban buses. These new rules and standards provide for (1) more stringent emission standards for some new urban bus engines beginning with 2002 model year engines, (2) zero-emission bus demonstration and purchase requirements applicable to transit agencies, and (3) reporting requirements with which transit agencies must demonstrate compliance with the urban transit bus fleet rule. Upcoming milestones include the low sulfur diesel fuel requirement, and tighter emission standards for heavy-duty diesel trucks (2007) and off-road diesel equipment (2011) nationwide. Over time, the replacement of older vehicles will result in a vehicle fleet that produces substantially less TACs than under current conditions. Mobile-source emissions of TACs (e.g., benzene, 1-3-butadiene, diesel PM) have been reduced significantly over the last decade and will be reduced further in California through a progression of regulatory measures (e.g., low emission vehicles/clean fuels and Phase II reformulated gasoline regulations) and control technologies. With implementation of CARB's Risk Reduction Plan, it is expected that diesel PM concentrations will be reduced by 75 percent in 2010 and 85 percent in 2020 from the estimated year 2000 level. Adopted regulations are also expected to continue to reduce formaldehyde emissions from cars and light-duty trucks. As emissions are reduced, it is expected that risks associated with exposure to the emissions will also be reduced (BAAQMD 2011a).

LOCAL

Bay Area Air Quality Management District

BAAQMD attains and maintains air quality conditions in the SFBAAB through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. BAAQMD's clean air strategy includes the preparation of plans for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations concerning sources of air pollution, and issuance of permits for stationary sources of air pollution. The BAAQMD also inspects stationary sources of air pollution and responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by the Clean Air Act, Clean Air Act Amendments, and California Clean Air Act.

In 2009, the BAAQMD released the update to its CEQA Guidelines. This is an advisory document that provides lead agencies, consultants, and project applicants with uniform procedures for addressing air quality in environmental documents. The handbook contains the following applicable components (BAAQMD 2011a):

- Criteria and thresholds for determining whether a project may have a significant adverse air quality impact;
- Specific procedures and modeling protocols for quantifying and analyzing air quality impacts;
- Methods available to mitigate air quality impacts;
- Information for use in air quality assessments and environmental documents that will be updated more frequently such as air quality data, regulatory setting, climate, and topography.

Rules and Regulations

The BAAQMD develops regulations to improve air quality and protect the health and welfare of Bay Area residents and their environment. BAAQMD rules and regulations most applicable to the project area include, but are not limited to, the following:

- *Regulation 2*: Specifies the requirements for authorities to construct and permits to operate stationary sources of emissions.
- *Regulation 2, Rule 2: New Source Review*. Applies to new or modified sources. Rule 2 contains requirements for best available control technology and emission offsets. Rule 2 implements federal New Source Review and Prevention of Significant Deterioration requirements.
- *Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants*. Applies preconstruction permit review to new and modified sources of toxic air contaminants; contains project health risk limits and requirements for toxics best available control technology.
- *Regulation 6, Rule 2: Commercial Cooking Equipment*. The purpose of this rule is to reduce emissions from commercial cooking equipment, including highly utilized charbroilers in restaurants.
- *Regulation 6, Rule 3: Wood-burning Devices*. The purpose of this rule is to limit emissions of particulate matter and visible emissions from wood-burning devices, such as fireplaces and stoves. This rule also bans the burning of wood or firelogs in household fireplaces and woodstoves during wintertime Spare the Air health advisories and also prohibits the sale and installation of non-EPA-certified wood-burning devices in new construction or remodels.

- *Regulation 7: Odorous Substances*. Establishes general limitations on odorous substances and specific emission limitations on certain odorous compounds.

- *Regulation 8, Rule 3: Architectural Coatings*. The purpose of this rule is to limit the quantity of volatile organic compounds in architectural coatings supplied, sold, offered for sale, applied, solicited for application, or manufactured for use within the district.

- *Regulation 11: Hazardous Pollutants*. Sets emission and/or performance standards for hazardous pollutants for various permitted sources and operations.

- *Regulation 11, Rule 2: Asbestos Demolition, Renovation and Manufacturing*. The purpose of this rule is to control emissions of asbestos to the atmosphere during demolition, renovation, milling, and manufacturing and to establish appropriate waste disposal procedures.

The above list represents rules and regulations most applicable to the project area. Additional rules and regulations may apply depending on the sources proposed and activities conducted. Additional information regarding BAAQMD rules and regulations can be obtained on the BAAQMD's website (http://www.baaqmd.gov/Divisions/Planning-and-Research/Rules-and-Regulations.aspx).

Air Quality Plans

As stated above, the BAAQMD prepares plans to attain ambient air quality standards in the SFBAAB. The BAAQMD prepares ozone attainment plans for the national ozone standard and clean air plans for the California standard both in coordination with the Metropolitan Transportation Commission and the Association of Bay Area Governments (ABAG).

With respect to applicable air quality plans, the BAAQMD prepared the *2010 Clean Air Plan* to address nonattainment of the national 1-hour ozone standard in the SFBAAB. The Clean Air Plan defines a control strategy that the BAAQMD and its partners will implement to (1) reduce emissions and decrease ambient concentrations of harmful pollutants; (2) safeguard public health by reducing exposure to air pollutants that pose the greatest health risk, with an emphasis on protecting the communities most heavily impacted by air pollution; and (3) reduce greenhouse gas (GHG) emissions to protect the climate. It is important to note that, in addition to updating the previously prepared ozone plan, the newly adopted Clean Air Plan also serves as a multi-pollutant plan to protect public health and the climate. This effort to develop its first-ever multi-pollutant air quality plan is a voluntary initiative by the BAAQMD. The district believes that an integrated and comprehensive approach to planning is critical to respond to air quality and climate protection challenges in the years ahead. In its dual roles as an update to the state ozone plan and a multi-pollutant plan, the *2010 Clean Air Plan* addresses four categories of pollutants (BAAQMD 2011a):

- Ground-level ozone and its key precursors, ROG and NO_X
- Particulate matter: primary $PM_{2.5}$, as well as precursors to secondary $PM_{2.5}$
- Air toxics
- Greenhouse gases

Toxic Air Contaminants

The BAAQMD has regulated TACs since the 1980s. At the local level, air pollution control or management districts may adopt and enforce CARB's control measures. Under BAAQMD

Regulation 2-1 (General Permit Requirements), Regulation 2-2 (New Source Review), and Regulation 2-5 (New Source Review), all nonexempt sources that possess the potential to emit TACs are required to obtain permits from the BAAQMD. Permits may be granted to these operations if they are constructed and operated in accordance with applicable regulations, including new source review standards and air toxics control measures. The BAAQMD limits emissions and public exposure to TACs through a number of programs. The BAAQMD prioritizes TAC-emitting stationary sources based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors. In addition, the BAAQMD has adopted Regulation 11 Rules 2 and 14, which address asbestos demolition renovation, manufacturing, and standards for asbestos-containing serpentine (BAAQMD 2011a).

City of Santa Rosa General Plan

The City of Santa Rosa General Plan 2035 includes numerous goals and policies to reduce long-term emissions through land use design, the promotion of alternative transportation modes, use of alternatively fueled vehicles, reductions in energy use, the preservation of open space, and reductions in short-term construction-generated emissions. The City of Santa Rosa General Plan serves as the overall guiding policy document for the city. See **Table 3.3-7** in the impact analysis below for applicable General Plan goals and policies most pertinent to the Specific Plan in regard to air quality.

At the time of this analysis, the City of Santa Rosa has released a draft Climate Action Plan (CAP), which focuses on local measures to reduce greenhouse gas emissions. While the framework of the CAP consists of inventorying and reducing greenhouse gas emissions and not criteria air pollutants, the goals, objectives, and strategies within the CAP that have been devised to reduce greenhouse gas emissions would also reduce criteria air pollutants, as both greenhouse gases and criteria air pollutants are generated from the same sources in many instances.

3.3.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the application of the following State CEQA Guidelines Appendix G thresholds of significance. An air quality impact is considered significant if the project would:

1) Conflict with or obstruct implementation of any applicable air quality plan.

2) Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

3) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).

4) Expose sensitive receptors to substantial pollutant concentrations.

5) Create objectionable odors affecting a substantial number of people.

6) Applicable BAAQMD's thresholds of significance for large projects, such as community and specific plans, are summarized in **Table 3.3-5** below. In developing recommended CEQA thresholds of significance, the BAAQMD considered the emission levels for which a project's individual emissions would be considered cumulatively considerable.

TABLE 3.3-5
BAAQMD-RECOMMENDED THRESHOLDS OF SIGNIFICANCE FOR PLANS

Pollutant	Thresholds of Significance/Criteria
Criteria Air Pollutants and Precursors	Construction: best management practices* Operational: (1) Consistency with the current air quality plan control measures; and (2) projected vehicle miles traveled or vehicle trip increase is less than or equal to the projected population increase.
Local Community Risk and Hazards	Land use diagram identifies: (1) special overlay zones around existing and planned sources of TACs and $PM_{2.5}$; and (2) special overlay zones of at least 500 feet (or Air District-approved modeled distance) on each side of all freeways and high-volume roadways; and (3) plan identifies goals, policies, and objectives to minimize potentially adverse impacts.
Odors	Identify locations of odor sources in the plan area; and (2) identify goals, policies, and objectives to minimize potentially adverse impacts.
Carbon Monoxide*	Localized CO concentrations would exceed 9.0 ppm (8-hour average), 20.0 ppm (1-hour average).

Source: BAAQMD 2011
**Based on project-level significance thresholds*

METHODOLOGY

Criteria Air Pollutants

Short-term, construction emissions associated with buildout of the proposed facilities were qualitatively assessed. Long-term emissions were calculated using the California Emissions Estimator Model (CalEEMod), version 2011.1.1, computer program. This model was developed in coordination with the South Coast Air Quality Management District and is the most current emissions model approved for use within the State of California by various air districts. Emissions modeling was conducted based on the default parameters contained in the model for the portion of Sonoma County located within the San Francisco Bay Area Air Basin. Vehicle trip generation rates and trip distances for proposed land uses were adjusted to reflect project-specific data obtained from the traffic analysis prepared for the proposed project. Short-term increases of criteria air pollutants associated with development of proposed land uses and removal of existing land use designations were qualitatively assessed. Emissions modeling assumptions and results are included in the Air Quality Report prepared for the project. Consistency with the BAAQMD's *2010 Clean Air Plan* was qualitatively assessed based, in part, on predicted increases in population and vehicle miles traveled associated with buildout of the proposed Specific Plan.

Localized CO Concentrations

Potential short-term exposure to CO and odorous emissions were qualitatively assessed, based on a review of project-generated traffic volumes and predicted intersection levels of service. Analysis of localized CO impacts relied, in part, on the screening methodologies recommended by the BAAQMD. Accordingly, the proposed project would result in a less than significant impact to localized CO concentrations if the following screening criteria are met:

- Project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans.

- The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.

- The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

Exposure to Hazardous Air Pollutants

Exposure to localized concentrations of toxic air contaminants and $PM_{2.5}$ were assessed based on a review of permitted stationary sources located within the Specific Plan area and stationary sources within 1,000 feet of the Plan area. The BAAQMD permit data was reviewed to determine potential risk to sensitive receptors located within the Specific Plan area. Potential increases in risk associated with the future development of new sources within the Plan area were also qualitatively assessed. Potential exposure to localized mobile-source pollutants were qualitatively assessed based on a review of major roadways in the vicinity of the proposed Specific Plan area and associated predicted risks provided by the BAAQMD.

Exposure to Odorous Emissions

The BAAQMD considers appropriate land use planning the primary method to mitigate odor impacts. Providing a sufficient buffer zone between sensitive receptors and odor sources should be considered prior to analyzing implementation of odor mitigation technology. For existing odor sources, five or more confirmed complaints per year averaged over three years is considered to have a significant impact (BAAQMD 2011a). In accordance with BAAQMD methodologies, potential exposure to odorous emissions was qualitatively assessed, based on a review of nearby potential odor-generating sources and odor-complaint information obtained from the BAAQMD.

IMPACTS AND MITIGATION MEASURES

Short-Term Construction-Generated Emissions of Criteria Air Pollutants and Precursors

Impact 3.3.1 Construction-generated emissions could potentially conflict with, or obstruct implementation of, the applicable air quality plan and may contribute substantially to an existing or projected air quality violation. This impact is considered **less than significant after mitigation.**

Short-term increases in emissions would occur during demolition and construction. Construction-generated emissions are temporary, lasting only as long as construction activities occur. Even though they are temporary, they have the potential to represent a significant air quality impact. Short-term construction emissions would result in increased emissions of ozone-precursor pollutants (i.e., ROG and NO_X) and emissions of PM. Emissions of ozone precursors would result from the operation of on-road and off-road motorized vehicles and equipment. Emissions of airborne PM are largely associated with ground-disturbing activities, such as those occurring during site preparation. Localized concentrations of construction-generated emissions, including emissions of PM, can adversely impact nearby sensitive land uses.

Future projects located within the Specific Plan area have not yet been adequately defined to allow for an estimation of construction-generated emissions. The proposed Specific Plan does not include policy provisions implementing BAAQMD-recommended best management practices (BMPs) for the control of construction-generated fugitive PM emissions, although General Plan Policy OSC-J-1 requires the review of all new construction projects and requires dust abatement actions as contained in the BAAQMD CEQA Handbook. While General Plan Policy OSC-J-1 would serve to reduce the project's future PM emissions, it does not address potential construction-related ozone emissions. Without implementation of BMPs for the control of construction-generated emissions, short-term increases of criteria air pollutants could potentially conflict with or obstruct implementation of the applicable air quality plan and may contribute substantially to an existing or projected air quality violation. Therefore, uncontrolled construction-generated emissions would be considered potentially significant.

Mitigation Measures

The following standard mitigation shall be applied to the proposed Specific Plan:

MM 3.3.1 During earth-disturbing activities, the contractor shall be responsible for spraying exposed soil surfaces with water or another approved dust inhibitor. The contractor would be responsible for cleaning streets and driveways of fugitive soils in the immediate vicinity of construction work, as necessary.

The contractor shall be responsible for ensuring that all construction equipment and vehicles are maintained in good operating order and that all factory-installed emission control devices are installed and functioning properly. All vehicles and construction equipment shall be turned off when not in use to minimize emissions.

- Water all active construction areas at least twice daily as required.
- Cover all trucks hauling soil, sand, and other loose materials or require all truck to maintain at least 2 feet of freeboard.
- Sweep daily, as required, all paved access roads, parking areas and staging areas at construction sites.
- Sweep streets daily as required if visible soil material is carried onto adjacent public streets.
- Reduce unnecessary idling of truck equipment within proximity to sensitive receptors (i.e., idle time to 5 minutes or less).
- Where possible, use newer, cleaner-burning diesel-powered construction equipment
- Properly maintain construction equipment per manufacturer specifications.

- Designate a disturbance coordinator responsible for ensuring that mitigation measures to reduce air quality impacts from construction are properly implemented.

Timing/Implementation: *During construction*

Enforcement/Monitoring: *City of Santa Rosa Community Development Department, Planning Division*

Implementation of the above measures would substantially reduce construction-related emissions. It is also important to note that any future demolition of structures may be subject to BAAQMD Regulation 11, Rule 2 (Asbestos Demolition, Renovation and Manufacturing). Compliance with Regulation 11 would reduce short-term emissions during demolition activities. With mitigation, this impact is considered **less than significant**.

Long-Term Operational Emissions of Criteria Air Pollutants and Precursors

Impact 3.3.2 Operational emissions could potentially conflict with, or obstruct implementation of, the applicable air quality plan and may contribute substantially to an existing or projected air quality violation. This impact is considered **significant and unavoidable.**

Buildout of the Specific Plan would result in long-term operational emissions of criteria air pollutants and ozone precursors (i.e., ROG and NOx). Project-generated increases in emissions would be predominantly associated with motor vehicle use. To a lesser extent, area sources, such as the use of natural-gas-fired appliances, landscape maintenance equipment, architectural coatings, and hearth fuel combustion, would also contribute to overall increases in emissions.

In addition to the future planned Sonoma-Marin Area Rail Transit (SMART) station, the proposed Specific Plan would include the development of approximately 438 single-family dwelling units, 1,276 multi-family dwelling units, 798,600 square feet of office, 537,200 square feet of retail, and 97,600 square feet of institutional land uses beyond what is currently planned for under buildout of the General Plan. Approximately 22,700 square feet of existing warehouse and 34,000 square feet of light and heavy industrial land uses would be removed with future development. Based on the traffic analysis prepared for this project, at buildout these new proposed land uses would result in a net increase of approximately 37,800 vehicle trips and approximately 114,114 vehicle miles traveled (VMT) within the county. Although the project is projected to result in an overall net increase in VMT, it is important to note that the proposed Specific Plan was designed to be a transit-oriented development (TOD). The proposed Specific Plan would result in an increased development density in close proximity to the planned SMART station. In comparison to traditional development, the TOD mixed-use design of the Specific Plan would be anticipated to result in long-term reductions in vehicle trips, trip distances, and overall reductions in regional VMT, which may not be fully accounted for in the transportation modeling conducted for the proposed project.

Long-term operational emissions attributable to the proposed buildout of the Specific Plan area are summarized in **Table 3.3-6**. At buildout, the Specific Plan would result in a net increase of approximately 866.48 pounds per day (lbs/day) of ROG, 77.94 lbs/day of NOx, 291.54 lbs/day of PM_{10}, and 194.70 lbs/day of $PM_{2.5}$ beyond what would occur under buildout of the General Plan. It is important to note that these emissions estimates reflect combined emissions from all proposed land uses and do not reflect emissions attributable to individual projects. Project-level analyses of air quality impacts, in accordance with CEQA requirements, would be conducted at the project level, as future development within the Specific Plan area proceeds.

TABLE 3.3-6
LONG-TERM OPERATIONAL EMISSIONS

Source	Emissions (lbs/day)[1]			
	ROG	NO_x	PM_{10}	$PM_{2.5}$
Specific Plan Proposed New Land Uses				
Area Source & Energy Use	819.16	30.29	189.62	189.61
Mobile Source[2]	48.91	47.83	101.93	5.1
Total	868.07	78.12	291.55	194.71
Existing Land Uses to be Removed[3]	-1.59	-0.18	-0.01	-0.01
Net Increase[4]	866.48	77.94	291.54	194.70

Notes: lbs/day=pounds per day; ROG=reactive organic gases; NOx=oxides of nitrogen; PM_{10}=particulate matter less than or equal to 10 microns in diameter; $PM_{2.5}$=particulate matter less than or equal to 2.5 microns in diameter

1. *Based on emissions modeling conducted using the CalEEMod computer program. Reflects the highest daily emissions for either winter or summer conditions.*
2. *Based on a net increase of approximately 114,114 VMT.*
3. *Includes area source and energy-use emissions associated with an approximate 22,700 square feet of warehouse and 34,000 square feet of light/heavy industrial anticipated to be removed with future development.*
4. ***Net increase in emissions represents the gross operational emissions associated with buildout of the Specific Plan area minus the area** sources **attributable to existing land uses that are anticipated to be removed.***

Consistency with the BAAQMD's 2010 Clean Air Plan

As noted above, the proposed Specific Plan has been designed as a transit-oriented development in support of the planned future SMART station. The Specific Plan includes strategies to establish a transit-supportive environment by improving connections between the station and adjacent destinations, densifying and intensifying land uses at key locations within the project area, and enhancing the physical design of the urban environment. As such, the Specific Plan would result in improved access to local and regional transit services, as well as the promotion of alternative means of transportation through increased access to pedestrian and bicycle facilities.

Consistency with the 2010 Clean Air Plan Control Strategies

As noted previously, the BAAQMD's *2010 Clean Air Plan* includes various control strategies to reduce emissions of local and regional pollutants and promote public health and energy conservation. Consistent with the control strategies identified in the Clean Air Plan, Santa Rosa's General Plan includes numerous goals and policies to reduce emissions of local and regional pollutants and to promote public health and energy conservation. The Clean Air Plan control strategies and General Plan policies that are most applicable to the proposed project are summarized in **Table 3.3-7**.

TABLE 3.3-7
SPECIFIC PLAN CONSISTENCY WITH CLEAN AIR PLAN CONTROL STRATEGIES

Clean Air Plan Strategies	General Plan Policies
Transportation Control Measures	
TCM A: Improve Transit Services A-1 Improve Local & Areawide Bus Service A-2: Improve Local & Regional Rail Service	T-H-1: Provide convenient, efficient routes to major employment centers throughout the city. T-H-2: Implement the Long and Short Range Transit Plans which include CityBus proposals for transit and TSM improvements. T-H-3: Require new development to provide transit improvements, where a rough proportionality to demand from the project is established. Transit improvements may include: • Direct and paved pedestrian access to transit stops; • Bus turnouts and shelters; and • Lane width to accommodate buses. T-H-8: Improve transit service along corridors where increased densities are planned. T-I: Support implementation of rail service along the Northeast Pacific Railroad.
TCM B: Improve System Efficiency B-1: Freeway & Arterial Operational Strategies B-2: Transit Efficiency & Use Strategies B-3: Bay Area Express Lane Network B-4: Goods Movement Improvements & Emission Reduction Strategies	T-A-4: Cooperate with Caltrans and public transit providers to establish park-and-ride lots. T-A-5: Pursue cooperation between local and regional transportation agencies to coordinate multi-modal connections throughout the city. T-F-1: Participate in discussions addressing regional through-traffic with the County of Sonoma, the Metropolitan Transportation Commission, and other municipalities.
TCM C: Encourage Sustainable Travel Behavior C-1: Voluntary Employer Based Trip Reduction Program C-2: Safe Routes to School & Safe Routes to Transit C-3: Rideshare Services and Incentives C-4: Conduct Public Outreach & Education C-5: Smart Driving	UD-D-4: Provide continuous sidewalks and bicycle lanes on both sides of major regional/arterial streets. UD-E-4: Enhance pedestrian activity and safety by designing streets, buildings, pathways, and trails to provide a visual connection with public spaces such as parks and Santa Rosa Creek. Review and revise the Zoning Code and Subdivision Guidelines to support this policy. UD-G-2: Locate higher density residential uses adjacent to transit facilities, shopping, and employment centers, and link these areas with bicycle and pedestrian paths. UD-G-3: Design new residential streets to be in scale with the adjacent structures and uses, and appropriate to their intended purpose. Neighborhood streets should be scaled for slow moving traffic, pedestrian and bicycle access, and children's play. UD-G-4: Provide through-connections for pedestrians and bicyclists in new developments. Avoid cul-de-sac streets, unless public pedestrian/bikeways interconnect them. UD-G-8: Promote personal safety in project design, particularly in multifamily development, by locating windows and walkways to assure visual access to common areas. Locate children's play space within view of the nearest units, and discourage designs with unutilized open space. UD-G-9: Encourage pedestrian-oriented village character,

Clean Air Plan Strategies	General Plan Policies
	rather than strip malls, in neighborhood centers for local shops and services. Shops should front on streets rather than parking lots. Parking areas should be located in less visible locations behind buildings and away from the street edge. T-A-7: Expand non-motorized and bus infrastructure throughout the city such that greater amenities exist for cyclists, pedestrians and transit users in order to promote a healthy, sustainable city and further reduce GHG emissions. T-J-1: Pursue implementation of walking and bicycling facilities as envisioned in the city's Bicycle and Pedestrian Master Plan. T-J-2: Provide street lighting that is attractive, functional, and appropriate to the character and scale of the neighborhood or district, and that contributes to vehicular and pedestrian safety. T-J-3: Strengthen and expand east-west linkages across the Highway 101 corridor. T-J-4: Provide street trees to enhance the city's livability and to provide identity to neighborhoods and districts. T-J-5: Support Safe Routes to School by pursuing available grants for this program and ensuring that approaches to schools are safe for cyclists and pedestrians by providing needed amenities such as sidewalks, crosswalks, bike lanes, and traffic calming on streets near schools. T-K-5: Ensure provision of safe pedestrian access for students of new and existing school sites throughout the city.
TCM D: Support Focused Growth D-1: Bicycle Access & Facilities Improvement D-2: Pedestrian Access & Facilities Improvement D-3: Local Land Use Strategies	UD-D-4: Provide continuous sidewalks and bicycle lanes on both sides of major regional/arterial streets. UD-D-5: Provide planting strips with large canopy trees between the road and sidewalk to buffer pedestrians from traffic, and help define the street space along commercial streets. Install pedestrian amenities in the planting strip such as: • Street lighting; • Seating; • Bus stop shelters; • Bicycle racks; and • Mail boxes. T-A: Provide a safe and sustainable transportation system. T-A-2: Work with employers and business associations to meet employee transportation needs that will lead to reduction of the use of single occupant vehicles. T-K-1: Link the various citywide pedestrian paths, including street sidewalks, downtown walkways, pedestrian areas in shopping centers and work complexes, park pathways, and other creekside and open space pathways. T-K-2: Allow the sharing or parallel development of pedestrian walkways with bicycle paths, where this can be safely done, in order to maximize the use of public rights-of-way. T-K-3: Orient building plans and pedestrian facilities to allow for easy pedestrian access from street sidewalks, transit stops, and other pedestrian facilities, in addition to access from parking lots.

Clean Air Plan Strategies	General Plan Policies
	T-K-4: Require construction of attractive pedestrian walkways and areas in new residential, commercial, office, and industrial developments. Provide landscaping or other appropriate buffers between sidewalks and heavily traveled vehicular traffic lanes, as well as through and to parking lots. Include pedestrian amenities to encourage and facilitate walking.
TCM E: Implement Pricing Strategies E-1: Value Pricing Strategies E-2: Promote Parking Pricing to Reduce Motor Vehicle Travel E-3: Implement Transportation Parking Reform	T-A-1: Expand Transportation Systems Management programs for employers, and reduce peak hour single-occupancy automobile trips through the following techniques. • Promotion of transit service; • Staggering of work shifts; • Flextime (e.g. 9/80 work schedule); • Telecommuting; • Carpool and vanpool incentives; • Provision of bicycle facilities; • Trip reduction incentive programs; • Parking disincentives for single-occupant vehicles; and • Car sharing programs.
Land Use & Local Impact Measures	
LUM 1: Goods Movement LUM 4: Land Use Guidance	LUL-A: Foster a compact rather than a scattered development pattern in order to reduce travel, energy, land, and materials consumption while promoting greenhouse gas emission reductions citywide. LUL-A-1: As part of plan implementation—including development review, capital improvements programming, and preparation of detailed area plans—foster close land use/transportation relationships to promote use of alternative transportation modes and discourage travel by automobile. LUL-E: Promote livable neighborhoods by requiring compliance with green building programs to ensure that new construction meets high standards of energy efficiency and sustainable material use. Ensure that everyday shopping, park and recreation facilities, and schools are within easy walking distance of most residents. LUL-E-1: Provide new neighborhood parks and recreation facilities, elementary schools, and convenience shopping in accordance with the General Plan Land Use Diagram and Table 2-4. LUL-E-2: As part of planning and development review activities, ensure that projects, subdivisions, and neighborhoods are designed to foster livability. LUL-E-6: Allow residential or mixed use development in the Retail and Business Services or Office designations. LUL-E-7: Develop a zoning category to implement the complete neighborhoods concept to allow the development of compact, walkable, mixed-use neighborhoods including various housing types, non-residential job generating uses, services, and public facilities which center on a square or green and which include a transit stop. Include criteria for the district's application in developed and undeveloped sites, such as ideal size, and consider the use of form-based regulations.

Clean Air Plan Strategies	General Plan Policies
Energy & Climate Measures	
ECM 1: Energy Efficiency ECM 2: Renewable Energy ECM 3: Urban Heat Island Mitigation ECM 4: Shade Tree Planting	H-G-1: Maximize energy efficiency in residential areas. Utilize the following techniques: Continue to enforce California Title 24 energy requirements; Use the guidelines set forth in the Design Review Guidelines; Fund energy conservation through the Housing Authority's rehabilitation loans; and Promote home improvement strategies for energy efficiency. H-G-2: Promote energy efficiency through site planning and building design by establishing a technical assistance program to aid residential developers in identifying energy conservation and efficiency measures appropriate to the Santa Rosa area. Measures may include: use of site daylight; solar orientation; cool roofs; window design and insulation; shade landscaping; solar water heaters; solar heating of swimming pools; bicycle and pedestrian connections; and mixed land uses to reduce vehicle trips. UD-A-13: Review guidelines for parking lot trees to ensure adequate summertime shading. OSC-K-1: Promote the use of site planning, solar orientation, cool roofs, and landscaping to decrease summer cooling and winter heating needs. Encourage the use of recycled content construction materials.

Consistency with the 2010 Clean Air Plan Emissions Inventory

In accordance with BAAQMD-recommended methodologies, consistency with the *2010 Clean Air Plan* is based on a comparison of projected increases in vehicle miles traveled (VMT) with population growth. The proposed Specific Plan would be considered to have a less than significant impact if projected increases in VMT are less than or equal to projected increases in population growth.

Projected overall increases in citywide population and VMT, with and without implementation of the proposed Specific Plan, are summarized in **Table 3.3-8**. With buildout of the proposed Specific Plan, the projected citywide 2035 population would increase by approximately 1.8 percent compared with current 2035 population projections which do not account for the proposed Specific Plan. This projected increase in population would contribute a corresponding increase in citywide VMT of approximately 2.8 percent compared with current 2035 VMT projections that do not account for the proposed Specific Plan. However, it is important to note that, even with these projected increases in population and VMT, the calculated average-daily VMT per person would be projected to remain exactly the same with implementation of the proposed Specific Plan. Although the proposed Specific Plan is projected to result in no change to the average individual VMT rate, VMT would continue to exceed the projected increases in population. For this reason, the proposed Specific Plan would be considered inconsistent with the BAAQMD's *2010 Clean Air Plan*. This impact is therefore considered potentially significant.

TABLE 3.3-8
CHANGE IN VEHICLE MILES TRAVELED COMPARED TO POPULATION
WITHIN THE CITY OF SANTA ROSA

Criteria	Existing Conditions (Year 2005)	Buildout (Year 2035)	Percentage Change
General Plan Without Project			
Daily VMT	3,452,745	4,850,462	40.5%
Population	165,850	233,520	40.8%
Average-Daily VMT/Person:			**20.8**
General Plan With Project			
Daily VMT	3,452,745	4,950,794	43.3%
Population	165,850	237,737	43.3%
Average-Daily VMT/Person			**20.8**

The Specific Plan contains several proposed policies that would serve to reduce the project's air quality impacts. For example, Policy LU-1.1 would intensify land uses and increase residential densities in the project area to support future transit improvements and ridership; Policy LU-1.2 would support transit-oriented development in the project area by allowing adequate intensity of use and requiring pedestrian-oriented development; and Policy C-1.3 would ensure the provision of continuous paths of travel for pedestrians and bicycles to the station from developments within a half mile. Additionally, Policy C-5.5 would identify gaps and build sidewalks to complete the pedestrian network in neighborhoods and commercial areas. Finally, Policy C-1.4 would require that the City continue to coordinate with SMART to seek funds and construct segments of the SMART multi-use trail through the Plan area.

Implementation of the City of Santa Rosa General Plan 2035 policies, including those noted in **Table 3.3-7**, would reduce air quality impacts attributable to the proposed project. The inclusion of additional policies, as proposed in the Specific Plan, would ensure further consistency with BAAQMD's Clean Air Plan control strategies. However, although the proposed Specific Plan would result in no increase in VMT per person, the rate of increase in VMT would continue to exceed the rate of population increase, at buildout. As a result, this impact would be considered **significant and unavoidable**.

Mitigation Measures

None available.

Exposure of Sensitive Receptors to Localized Concentrations of Hazardous Air Pollutants

Impact 3.3.3 Future development within the Specific Plan area may result in increased exposure to localized concentrations of TACs or $PM_{2.5}$ that may exceed applicable BAAQMD-recommended significance thresholds. This impact is considered **less than significant after mitigation**.

Within the San Francisco Bay Area Air Basin, localized risks are primarily associated with emissions of toxic air contaminants (TACs) and fine particulate matter ($PM_{2.5}$). TACs are a defined set of airborne pollutants that may pose a present or potential hazard to human health. Like TACs, $PM_{2.5}$ is a complex mixture of substances that includes elements such as carbon and metals; compounds such as nitrates, organics, and sulfates; and complex mixtures such as diesel exhaust and wood smoke. Both TACs and $PM_{2.5}$ can be emitted directly and can also be formed in the atmosphere through reactions among different pollutants. As noted earlier, localized concentrations of TACs can cause or contribute to long-term health effects, such as cancer, birth defects, neurological damage, asthma, bronchitis, or genetic damage, or short-term acute effects such as eye watering, respiratory irritation (a cough), running nose, throat pain, and headaches. Long-term and short-term exposure to $PM_{2.5}$ can cause a wide range of health effects (e.g., aggravating asthma and bronchitis, and possible contribution to heart attacks and deaths) (BAAQMD 2011a).

Common sources of TAC and $PM_{2.5}$ emissions include stationary sources (e.g., gasoline stations, dry cleaners, and diesel backup generators), which are subject to BAAQMD permit requirements, as well as on-road motor vehicles on high-volume roads, and off-road sources such as construction equipment and trains. Emissions from these sources are addressed separately below.

Stationary Sources

Stationary sources include, but are not limited to, refineries, gasoline dispensing facilities, dry cleaners, diesel internal combustion engines, natural gas turbines, crematories, landfills, waste water treatment facilities, hospitals, and coffee roasters. The BAAQMD CEQA Air Quality Guidelines recommend evaluation of risks for receptors located within 1,000 feet of TAC and $PM_{2.5}$ emission sources or at distances approved/recommended by the BAAQMD.

To aid in the identification and evaluation of stationary sources, the BAAQMD has provided maps that identify permitted stationary sources, as well as the cancer risk, chronic non-cancer hazard index, and $PM_{2.5}$ concentration associated with these sources. It is important to note that the health risks and $PM_{2.5}$ concentrations identified for these sources were calculated using a highly conservative screening methodology. Actual risks for nearby sensitive receptors would be significantly lower than those identified. Furthermore, these stationary sources are subject to BAAQMD's permitting requirements. As part of the BAAQMD's permitting requirements, sources having the potential to emit localized concentrations of pollutants would be required to implement measures designed to ensure that potential health risks to nearby existing receptors would not exceed established standards. For community and area plans which may result in the introduction of new receptors near existing permitted sources, the BAAQMD recommends the inclusion of overlay zones for major sources, within which proposed new sensitive land uses would be further evaluated to assess potential localized air quality impacts. The inclusion of goals, policies, and objectives to minimize potential impacts is also recommended (BAAQMD 2011a).

Table 3.3-9 provides a summary of the stationary sources identified within the Specific Plan area and sources within 1,000 feet of the Specific Plan area, as well as the cancer risk and $PM_{2.5}$ concentration associated with these sources. Source and risk data were obtained from the BAAQMD's Stationary Source Screening Analysis Tool. Identified cancer risks and pollutant concentrations were calculated by the BAAQMD based on conservative modeling parameters and assumptions and do not take into account site-specific conditions. As a result, actual risks and pollutant concentrations would be expected to be substantially lower. Of the stationary sources identified, none were estimated to have predicted cancer risks in excess of the BAAQMD's risk thresholds. However, two stationary sources were identified with predicted $PM_{2.5}$ concentrations in excess of the BAAQMD's single-source annual average threshold of 0.3 $\mu g/m^3$. The location of these stationary sources in relation to the Specific Plan Area is depicted in

Figure 3.3-1. Predicted zones of influence, within which localized concentrations from these sources could potentially exceed applicable BAAQMD-recommended thresholds, were not available at the time of this analysis. In the absence of site-/source-specific information, the BAAQMD recommends a 1,000-foot zone of influence, also referred to as an overlay zone, be applied. These overlay zones depict distances at which localized concentrations from the identified source may contribute to elevated risks in excess of the BAAQMD's recommended significance thresholds. The projected 1,000-foot overlay zones for these nearby major sources are depicted in **Figure 3.3-1**.

TABLE 3.3-9
BAAQMD-PERMITTED STATIONARY SOURCES WITHIN THE SPECIFIC PLAN AREA AND SOURCES WITHIN 1,000 FEET OF THE SPECIFIC PLAN AREA AND REPORTED CANCER RISK & $PM_{2.5}$ CONCENTRATION

Facility Number, Name & Address	Source Type	Cancer Risk[1]	Exceeds BAAQMD Threshold?[3]	$PM_{2.5}$ Concentration[2]	Exceeds BAAQMD Threshold?[3]
18072 – Donaldson Property 3015 Coffey Lane	No Data	0	No	0	No
3430 – Eurocal Autocraft 345 W. College Ave.	Spray Booths	0	No	0	No
13584 – Bodean Company, Inc. 1060 Maxwell Dr.	GencoGas/Oil Combination Dryer, Aggregate Handling, Oil Heaters, Asphalt Storage Tank	0.03	No	33.5	**Yes**
18709 – Kauth Bros, Inc. 1054 N Dutton Ave.	No Data	0	No	0	No
18967 – Santa Rosa Systems, Inc. 55 College Ave.	No Data	0	No	0	No
1486 – Superior Supplies, Inc. 40 Ridgeway Ave.	Aggregate Handling	0	No	138	**Yes**
11648 – Union Pacific Railroad 99 Frances St.	Groundwater Treatment Facility	2.53	No	0	No
12911 – Scott Arch. Graphics, Inc. 1275 N. Dutton Ave.	Spray Booth Drying Oven	0.000457	No	0.00421	No
16047 – Graphic Enterprises, Inc. 440 Tesconi Cir.	No Data	0	No	0	No
14417 – ITT Industries, Inc. 500 Tesconi Cir.	Wipe Cleaning Operation	3.25	No	0	No
15870 – Santa Rosa Junior College 1501 Mendocino Ave.	Natural Gas/Diesel Fueled IC Gensets	1.87	No	0.0059	No
16397 – JC Penney Company 800 Coddingtown Ctr.	Emergency Standby Genset	0.00123	No	0.000054	No
16246 – Macy's Inc. 555 Coddingtown Ctr.	No Data	0	No	0	No
19710 – Orchard Supply Hardware, 2230 Cleveland Ave.	No Data	0	No	0	No

Sources: BAAQMD 2012a; Gordon 2012

Notes: Source and risk data were obtained from the BAAQMD's Stationary Source Screening Analysis Tool and source data provided by BAAQMD. Identified risks and concentrations were calculated by the BAAQMD based on conservative modeling parameters and assumptions and do not take into account site-specific conditions.

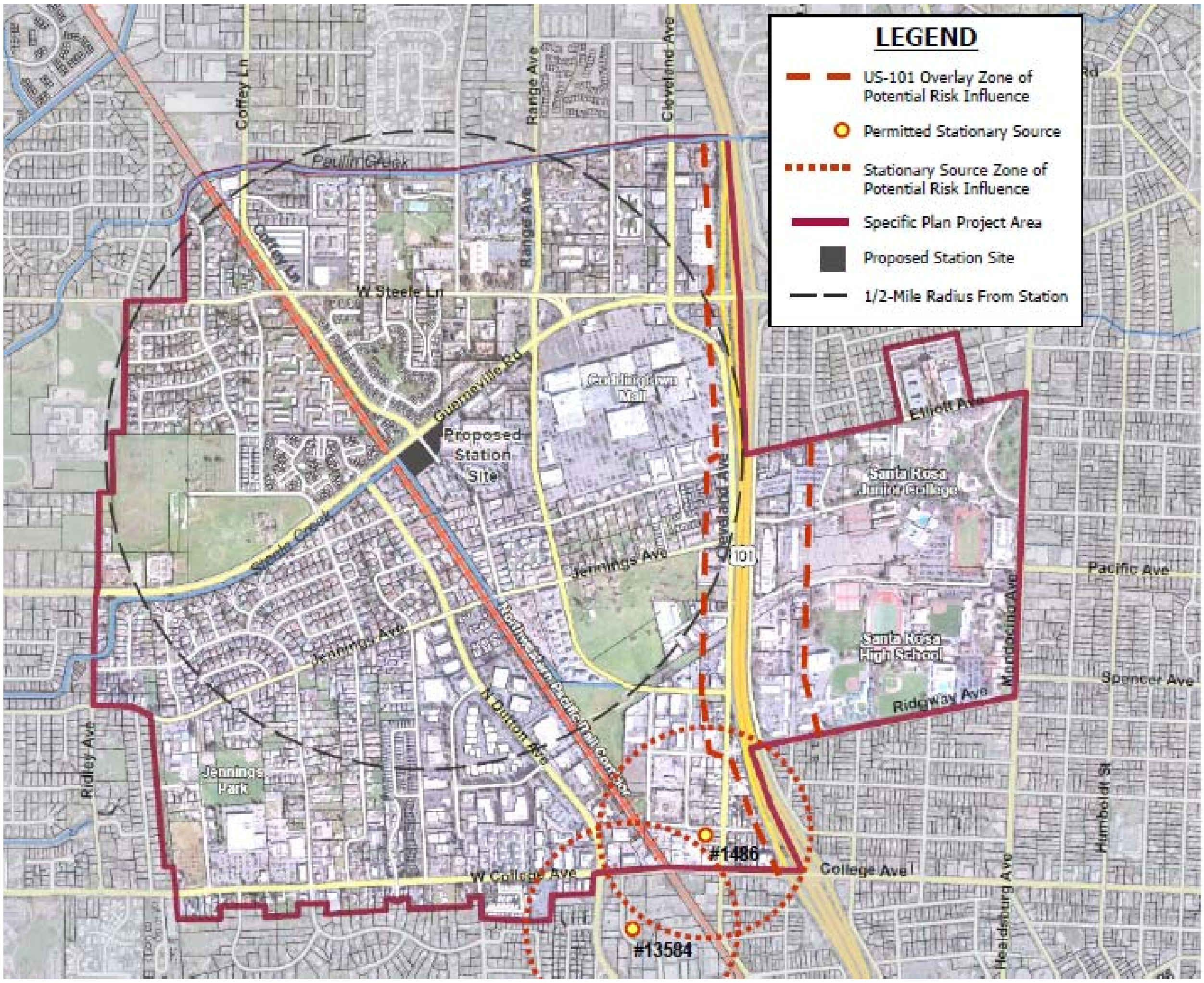
1. *Cancer units are in number of additional cancer incidents per one million.*
2. *$PM_{2.5}$ concentration is in units of $\mu g/m^3$ annual average.*
3. *Based on BAAQMD single-source cancer threshold of 10 in one million and $PM_{2.5}$ concentration of 0.3 $\mu g/m^3$.*

Major stationary sources could be developed in areas located within or near the Specific Plan area in future years, which may have potentially adverse impacts to sensitive land uses located in the Specific Plan area. Project-specific analyses are required by the BAAQMD for future development projects that would result in the development of new stationary or area sources TAC or $PM_{2.5}$ emission sources. The BAAQMD's New Source Review Rule, Regulation 2, Rule 2, and BAAQMD's Air Toxics Risk Management Policy require that new or modified sources of air pollutants undergo permit review for best available control technology (BACT) and/or toxics best available control technology (TBACT) when certain thresholds are exceeded. (BACTs and TBACTS are pollution control technologies to be used to control a specific pollutant to a specified limit.) This requirement ensures that existing stationary sources and future stationary sources which could potentially be developed in areas located within or near the Specific Plan area would not result in adverse impacts to sensitive land uses due to the use of mitigation technologies, BACT, and TBACT.

However, it is also important to note that future development within the Specific Plan area could potentially occur within 1,000 feet of the identified existing major stationary sources.

In addition, commercial and mixed land uses may also include non-permitted sources such as loading docks involving the use of diesel-powered equipment and delivery vehicles. These sources may also result in localized concentrations of pollutants that could adversely impact nearby sensitive land uses. Given that future development could result in the increased exposure to sensitive land uses to pollutant concentrations that may exceed applicable BAAQMD-recommended significance thresholds, this impact would be considered potentially significant.

FIGURE 3.3-1
POTENTIAL HIGH-RISK OVERLAY ZONES FOR MAJOR ROADWAYS AND STATIONARY SOURCES



Note: Overlay zones depict areas within which increased health-related risks may occur, based on data provided by the BAAQMD. Predicted areas of risk and zone distances are conservative. Actual risks would be determined on a project-by-project basis.

Freeways and High-Volume Roadways

As noted previously, CARB recommends that new sensitive land uses should generally not be located within 500 feet of a major roadway (i.e., 100,000 vehicles per day) without consideration of potential health-related air quality impacts. For community and area plans, the BAAQMD recommends that projects located within 1,000 feet of high-volume roadways take into consideration potential health-related air quality impacts. For the portion of Sonoma County located within the San Francisco Bay Area Air Basin, the BAAQMD provides a list of the roadways of concern along with predicted health-related risks at specified distances from these roadways. Projects located in excess of 1,000 feet from a major roadway are not considered to be potentially impacted by high-volume roadways (BAAQMD 2011a).

Major roadway segments within the Specific Plan area that would potentially affect nearby sensitive land uses include segments of Highway 101. The highest-volume local roadway primarily affected by the proposed Specific Plan is Guerneville Road, which generally extends in an east–west direction through the Specific Plan area. Predicted cancer risks and $PM_{2.5}$ concentrations for these roadways are summarized in **Table 3.3-10**. As depicted, predicted risks along Guerneville Road would not be expected to exceed BAAQMD-recommended health-risk thresholds at the nearest receptors. However, depending on location, areas up to a maximum of approximately 300 feet to the west and approximately 565 feet to the east of Highway 101 could be exposed to localized mobile-source emissions that may exceed applicable BAAQMD-recommended significance thresholds. Overlay zones for Highway 101, within which exposure levels could potentially exceed BAAQMD-recommended significance thresholds, are depicted in **Figure 3.3-1**. Future development within the proposed Specific Plan area could potentially occur within the projected overlay zone of Highway 101. Exposure to localized concentrations of mobile-source emissions would be considered potentially significant.

TABLE 3.3-10
MOBILE-SOURCE EMISSIONS ALONG MAJOR ROADWAYS IN THE PLANNING AREA AND DISTANCES TO HIGH-RISK OVERLAY ZONES

Roadway	Segment	$PM_{2.5}$ Concentration[2] at Specified Distance (feet)	Cancer Risk[1] at Specified Distance (feet)	$PM_{2.5}$ Concentration[2] at Specified Distance (feet)	Cancer Risk[1] at Specified Distance (feet)
Highway 101	College Ave. to Ridgway Ave.	0.296 @ 25′ West	8.9 @ 150′ West*	0.28 @ 150′ East*	9.806 @ 400′ East
	Ridgway Ave. to Elliott Ave.	0.29 @ 75′ West	10.2 @ 300′ West	0.279 @ 150′ East	10.0 @ 565′ East
	Elliott Ave. to Steele Ln.	0.245 @ 75′ West	9.58 @ 225′ West	0.301 @ 100′ East	9.720 @ 400′ East
	North of Steele Ln.	0.284 @ 50′ West	9.275 @ 200′ West	0.294 @ 100′ East	9.366 @ 400′ East
Guerneville Rd.	West of N. Dutton Ave.	0.143 @ 10′ N/S	5.02 @ 10′ N/S		
	N. Dutton Ave. to West of Range Ave.	0.210 @ 10′ N/S	7.42 @ 10′ N/S		
	East of Range Ave.	0.143 @ 10′ N/S	5.02 @ 10′ N/S		

Sources: BAAQMD 2011, 2011c
Notes: N/S = north/south
Estimated distances, concentrations, and risks are approximate.
1. *Cancer units are in number of additional cancer incidents per one million. The BAAQMD's significance threshold is 10 in one million.*
2. *$PM_{2.5}$ concentration is in units of $\mu g/m^3$ annual average. The BAAQMD's significance threshold is 0.3 $\mu g/m^3$ annual average.*

SMART Station and Corridor

The proposed Specific Plan would include development of land uses in close proximity to the planned Sonoma-Marin Area Rail Transit (SMART) station and along the SMART corridor. Health-related air quality risks associated with the planned operation of transit passenger trains were evaluated in the *Sonoma-Marin Area Rail Transit Draft Environmental Impact Report* (DEIR) (SMART 2005). As part of this analysis, a screening-level assessment was conducted using the SCREEN3 computer program to estimate hourly concentrations of diesel PM in µg/m^3. The screening-level assessment evaluated exposure of residents located along the SMART corridor and near the proposed SMART station. Train idling associated with regular passenger stops at the SMART station, idling associated with potential train layovers, and idling of shuttle buses at the station was also included in the assessment. Predicted concentrations obtained from the SCREEN3 computer model were converted to an annual average concentration by applying a factor of 0.08, consistent with EPA-recommended methodologies, which is considered to provide a conservative estimation of emissions concentrations. Potential cancer risks were calculated assuming an average exposure period of 70 years (SMART 2005).

Based on the analysis conducted for the SMART DEIR, predicted cancer risks ranged from 1.5 in one million at 75 feet from the station to 0.5 in one million at approximately 360 feet from the station. The predicted cancer risk along the SMART corridor was 0.6 in one million at 30 feet from the track (SMART 2005). Based on the analysis conducted for the SMART DEIR, increased exposure to pollutant concentrations along the planned SMART corridor and near the SMART station would be considered less than significant.

Mitigation Measures

MM 3.3.3 The following measures shall be implemented for future development projects located within the Specific Plan area:

a. Project-specific analyses shall be required for future development projects within the Specific Plan area that would result in the development of new sensitive land uses within 1,000 feet of a major permitted stationary source or within the overlay zones of Highway 101, sufficient to demonstrate consistency or inconsistency with applicable BAAQMD-recommended health-risk thresholds (i.e., increased cancer risk of 10 in a million, increased non-cancer risk of <1.0 Hazard Index [Chronic or Acute], ambient $PM_{2.5}$ increase of <0.3 µg/m^3 annual average). If site-specific modeling indicates that significant exposure to criteria pollutants, including toxic air contaminants, would occur, future development shall comply, to the maximum extent feasible, with mitigation measures provided by the BAAQMD for the reduction of air quality impacts. These measures shall comply with the most current regulations available at the time of development and will likely include the following measures:

   - Modification to the location and height of intakes to the ventilation system.
   - Addition of HEPA air filtration systems.
   - Limiting the placement of recreational use areas, such as patio areas and balconies, to interior courtyards and requiring that they be shielded by the structure.

- Triple-paned windows.

- Central heating, ventilation, and air conditioning (HVAC) systems with high-efficiency filters.

- Locating air intake systems for the HVAC systems as far away from the roadway as possible.

- An ongoing HVAC maintenance plan.

These measures shall be designed and implemented to the satisfaction of the City Community Development Department, Planning Division in consultation with the BAAQMD.

b. Project-specific analyses shall be required for future development projects within the Specific Plan area that would result in the development of new area sources of TAC or $PM_{2.5}$ emissions (such as non-permitted sources like loading docks involving the use of diesel-powered equipment and delivery vehicles) within 1,000 feet of a sensitive land use, sufficient to demonstrate consistency or inconsistency with applicable BAAQMD-recommended health-risk thresholds (i.e., increased cancer risk of 10 in a million, increased non-cancer risk of <1.0 Hazard Index [Chronic or Acute], ambient $PM_{2.5}$ increase of <0.3 μg/m^3 annual average). If site-specific modeling indicates that significant exposure to criteria pollutants, including toxic air contaminants, would occur, future development shall comply, to the maximum extent feasible, with mitigation measures provided by BAAQMD for the reduction of air quality impacts. These measures shall comply with the most current regulations available at the time of development and will likely include the following measures:

- Increase new area sources of TAC or $PM_{2.5}$ emissions distance from sensitive land uses.

- Design the site layout to locate any permitted major stationary source of air toxics or other non-permitted TAC sources (e.g., loading docks, parking lots) as far as possible from sensitive receptors.

- Large projects involving non-permitted TAC sources like loading docks or parking lots shall consider phased development where commercial/retail portions of the project that are near sensitive land uses are developed last. This would allow time for CARB's diesel regulations to take effect in reducing diesel emissions. Ultimately, lower concentrations would be anticipated in the near future such that residential development would be impacted by less risk in later phases of development.

- Tiered plantings of trees such as redwood, deodar cedar, live oak, and oleander shall be installed between loading docks and parking lots and sensitive land uses in order to reduce TAC and diesel PM exposure.[1]

Timing/Implementation: *Prior to construction*

Enforcement/Monitoring: *City of Santa Rosa Community Development Department, Planning Division*

Implementation of the above mitigation measures would reduce exposure of sensitive uses to substantial pollutant concentrations. The above measures would lessen health-related risks associated with sources of TACs and $PM_{2.5}$ located within the Specific Plan area, as well as those located outside the Plan area. This impact is **less than significant** after mitigation.

Exposure of Sensitive Receptors to Odorous Emissions

Impact 3.3.4 Future development within the Specific Plan area would not result in exposure of sensitive receptors to substantial odorous emissions. This impact is considered **less than significant**.

The occurrence and severity of odor impacts depends on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the receptors. While offensive odors rarely cause any physical harm, they still can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and regulatory agencies. Projects with the potential to frequently expose members of the public to objectionable odors would be deemed to have a significant impact. Land uses commonly considered to be potential sources of odorous emissions include, but are not limited to, wastewater treatment plants, sanitary landfills, food processing facilities, chemical manufacturing plants, rendering plants, paint/coating operations, asphalt batch plants, agricultural feedlots, and dairies. Short-term construction activities may also result in localized increases of odorous emissions. Short- and long-term increases in localized concentrations of odors are discussed below.

Short-Term Exposure to Odors

Construction within the Specific Plan area is not anticipated to expose nearby receptors to objectionable odors. Construction-generated odors are typically associated with exhaust emissions from diesel-fueled equipment and the application of architectural coatings and paving materials, which may be considered objectionable to some individuals. However, because construction-related odors would be intermittent, temporary, and would disperse rapidly with distance from the source, construction-related odors would not result in the frequent exposure of a substantial number of individuals to objectionable odors. It is also important to note that projects developed as part of Specific Plan buildout would be required to comply with BAAQMD Regulation 8, Rule 3, Architectural Coatings, and Rule 15, Emulsified Asphalt, which

[1] This recommendation is based on a laboratory study that measured the removal rates of PM passing through leaves and needles of vegetation. Particles were generated in a wind tunnel and a static chamber and passed through vegetative layers at low wind velocities. Redwood, deodar cedar, live oak, and oleander were tested. The results indicated that all forms of vegetation were able to remove 65–85 percent of very fine particles at wind velocities below 1.5 meters per second (approximately 3 miles per hour), with redwood and deodar cedar being the most effective (BAAQMD 2011a). Even greater removal rates were predicted for ultra-fine PM (i.e., aerodynamic resistance diameter of 0.1 micrometer or less) (BAAQMD 2011a).

establish VOC content limits for these construction materials. VOCs are the main sources of odors from these sources. Therefore, compliance with these regulatory requirements would further reduce odor impacts associated with these sources. Short-term exposure to odorous emissions would therefore be considered less than significant**.**

Long-Term Exposure to Odors

The proposed Specific Plan will guide the development of residential, institutional, office, and commercial land uses, which are not considered major sources of odorous emissions. The proposed project would not be expected to result in the installation of any major odor emission sources. In addition, no existing major stationary sources of odors have been identified in the Specific Plan area. Existing odor sources located outside the Specific Plan area, which could potentially adversely affect land uses within the Plan area, include an existing asphalt batch plant located at 1060 Maxwell Drive, south of College Avenue. The BAAQMD CEQA Air Quality Guidelines include recommended odor screening criteria for the evaluation of various odor-generating facilities. According to these screening criteria, receptors located within approximately 2 miles of an asphalt batch plant, which would include land uses located in the Specific Plan area, could be adversely affected. However, according to the BAAQMD, there have been no confirmed or unconfirmed odor-related complaints filed for this facility. Therefore, it is not expected that this facility would have a significant impact on new development within the Specific Plan area. As a result, long-term exposure to odorous emissions would be considered less than significant.

Mitigation Measures

None required.

Contribution to Local Mobile-Source CO Concentrations

Impact 3.3.5 Future development within the Specific Plan area would not contribute to localized concentrations of CO that would exceed applicable ambient air quality standards. This impact is considered **less than significant**.

Local mobile-source CO emissions near roadway intersections are a direct function of traffic volume, speed, and delay. Transport of carbon monoxide is extremely limited because CO disperses rapidly with distance from the source under normal meteorological conditions. However, under specific meteorological conditions, CO concentrations near roadways and/or intersections may reach unhealthy levels. For this reason, modeling of CO concentrations is typically recommended for sensitive land uses located near signalized roadway intersections that are projected to operate at unacceptable levels of service (LOS) (i.e., LOS E or F). Unsignalized intersections projected to operate at unacceptable LOS do not typically have sufficient traffic volumes, and therefore, projected unacceptable LOS at unsignalized intersections do not typically result in localized concentrations of CO that exceeds applicable standards. According to the BAAQMD's CEQA Air Quality Guidelines, a project would result in a potentially significant contribution to localized CO concentrations, if the proposed project would increase traffic volumes at affected intersections by more than 44,000 vehicles per hour, or by more than 24,000 vehicles per hour in areas of limited vertical mixing (e.g., parking garages, tunnels, bridge underpasses).

Implementation of the proposed project would not result in unacceptable levels of service at existing nearby intersections. Based on the traffic analysis prepared for this project, local roadway intersections are projected to operate at LOS D or better with project implementation.

Based on the traffic analysis prepared for the proposed project, the highest volume roadway intersection would be the intersection of Cleveland Avenue/Steele Lane/Guerneville Road, which would have a projected peak-hour volume of 6,694 vehicles with buildout of the proposed Specific Plan. Traffic volumes at affected roadway intersections would not exceed 44,000 vehicles per hour. Localized concentrations of mobile-source CO would therefore not be expected to exceed applicable ambient air quality standards. For these reasons, the project's contribution to localized concentrations of mobile-source CO would be considered less than significant.

Mitigation Measures

None required.

3.3.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The setting for the cumulative air quality analysis consists of the San Francisco Bay Area Air Basin.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Result in a Cumulatively Considerable Net Increase of Nonattainment Criteria Pollutants and Precursors

Impact 3.3.6 Implementation of the proposed Specific Plan, in combination with cumulative development in the SFBAAB, would result in a cumulatively considerable net increase of ozone and coarse and fine particulate matter. This impact is considered **cumulatively considerable** and **significant and unavoidable**.

With buildout of the proposed Specific Plan, the projected citywide 2035 population would increase by approximately 1.8 percent compared with current 2035 population projections which do not account for the proposed Specific Plan. This projected increase in population would contribute a corresponding increase in citywide VMT of approximately 2.8 percent compared with current 2035 VMT projections which do not account for the proposed Specific Plan. However, it is important to note that, even with these projected increases in population and VMT, the calculated average-daily VMT per person would be projected to remain exactly the same with implementation of the proposed Specific Plan. Although the proposed Specific Plan is projected to result in no change to the average individual VMT rate, VMT would continue to exceed the projected increases in population. For this reason, the proposed Specific Plan would be considered inconsistent with the BAAQMD's *2010 Clean Air Plan*. This impact is therefore considered potentially significant.

The proposed Specific Plan would be considered to have a less than significant cumulative impact if projected increases in VMT are less than or equal to projected increases in population growth. As previously identified under Impact 3.3.2, the proposed Specific Plan at buildout would result in a net increase of approximately 37,800 vehicle trips and approximately 114,114 vehicle miles traveled (VMT) above what would occur under buildout of the General Plan. Projected overall increases in citywide population and VMT, with and without implementation of the proposed Specific Plan, are summarized in **Table 3.3-8**.

The proposed Specific Plan has been designed as a transit-oriented development in support of the planned future SMART station. The Specific Plan includes strategies to establish a transit-supportive environment by improving connections between the station and adjacent destinations, increasing the density of development and intensifying land uses at key locations within the project area, and enhancing the physical design of the urban environment. As such, the Specific Plan would result in improved access to local and regional transit services, as well as the promotion of alternative means of transportation through increased access to pedestrian and bicycle facilities. In comparison to traditional development, the transit-oriented development mixed-use design of the Specific Plan would be anticipated to result in long-term reductions in vehicle trips, trip distances, and overall reductions in regional VMT, which may not be fully accounted for in the transportation modeling conducted for this project.

The proposed Specific Plan and application of current General Plan policies and proposed Specific Plan policies aimed at reducing air quality impacts would assist in reducing the proposed project's contribution to cumulative air quality impacts. However, this alone may not be sufficient to reduce this impact to a less than significant level. Projected increases in VMT would continue to exceed the projected increases in population. For this reason, the proposed Specific Plan's contribution to cumulative impacts is considered **cumulatively considerable** and thus a **significant and unavoidable** impact.

Mitigation Measures

Because the determination of where to live or work and whether to drive are personal choices, no feasible mitigation measures can be imposed on the project that will completely offset the increase of VMT. While the application of current General Plan policies and proposed Specific Plan policies aimed at reducing air quality impacts would not increase the intensity of the impact, nonetheless the impact would remain **significant and unavoidable**. Despite the project's impacts would be cumulatively considerable, the project would fulfill overarching local and regional goals of supporting development of high-density, mixed-use infill development adjacent to existing and planned transit. The Specific Plan would serve to support a truly multimodal environment, thereby ultimately reducing vehicle miles traveled both within and from the project area.

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3.4 BIOLOGICAL RESOURCES

This section evaluates potential impacts on the existing biological resources including vegetation, riparian zones, and wildlife found within the Specific Plan area.

3.4.1 EXISTING SETTING

According to the General Plan 2035 EIR, the eastern portion of Santa Rosa is located in the foothills of the Sonoma Mountains (part of the inner Coast Range) and the western portion is on the Santa Rosa Plain (also called the Llano de Santa Rosa). Santa Rosa is horizontally bisected by Santa Rosa Creek, which originates in the foothills of the Sonoma Mountains and drains from east to west through the city, across the Santa Rosa Plain, and into Laguna de Santa Rosa. Other creeks, including Piner Creek, Brush Creek, and Matanzas Creek, traverse through or near the city limits and are tributaries of Santa Rosa Creek. (Santa Rosa General Plan 2035, 2009)

The city's natural areas are integrated into industrial, residential, and agricultural uses. These developed areas have encroached on native vegetation, but there are still numerous natural areas near the city, some of which support populations of sensitive plants and animals. The vernal pools and surrounding grasslands west of the city are particularly important in this regard, but the eastern upland woodlands and forests, and the city creeks and riparian corridors, are also inhabited by sensitive plants and animals. (Santa Rosa General Plan 2035, 2009)

The Santa Rosa General Plan EIR shows that the Jepson's leptosiphon, a special-status plant species, exists in the vicinity of the Specific Plan area. However, because the Specific Plan area is highly disturbed and fragmented, it has limited value to wildlife. Animal species using this area are mostly those adapted to human environments. The General Plan EIR does not map any steelhead or Chinook salmon critical habitat or other special-status animal species in the project area. However, Cooper's hawk, sharp-shinned hawk, white-tailed kite, golden eagle, and other raptors such as red-tailed hawk and American kestrel may nest in the oak woodlands or riparian areas and forage over the grasslands in the Santa Rosa Plain. Additionally, pallid bats have been identified as potentially roosting in larger trees within the city. (Santa Rosa General Plan 2035, 2009)

Paulin Creek runs along the northern boundary of the Specific Plan area, and Steele Creek traverses the center of the project area. The Specific Plan area contains some areas of undeveloped open space. Residential developments and other areas with ornamental landscaping can provide habitat for wildlife species adapted to human habitation, such as striped skunk, Virginia opossum, raccoon, European starling, American robin, and mourning dove. Bat species, including Myotis species, pallid bats, and Townsend's big-eared bats, may roost in larger trees or buildings within the project area. Larger trees may provide roosting and nesting habitat for raptors and other birds, and buildings and bridges can be suitable substrate for swallows.

Some seasonal wetlands may be present on undeveloped lands within the project area. Seasonal wetlands occur in small drainages, in localized depressions, and along the lower banks and in sediments that accumulate in creeks. Where soils do not absorb water readily or are shallow and have only a limited capacity to store it, water can pond wherever the ground is low-lying. Because of rainfall amounts on the Santa Rosa Plain, water can collect and remain ponded for long periods in even shallow depressions. (Santa Rosa General Plan 2035, 2009)

3.4.2 REGULATORY FRAMEWORK

This section lists specific environmental review and consultation requirements and identifies permits and approvals that must be obtained from local, state, and federal agencies before implementation of the proposed project.

FEDERAL

Endangered Species Act

Provisions of the federal Endangered Species Act (ESA), as amended (16 USC 1531), protect federally listed threatened and endangered species and their habitats from unlawful take. "Take" under the ESA includes activities such as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." U.S. Fish and Wildlife Service (USFWS) regulations define harm to include some types of "significant habitat modification or degradation." In the case of *Babbitt, Secretary of Interior, et al., Petitioners v. Sweet Home Chapter of Communities for a Great Oregon, et al.* (No. 94-859), the United States Supreme Court ruled on June 29, 1995, that "harm" may include habitat modification "where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering."

For projects with a federal connection, Section 7 of the ESA requires that federal agencies, in consultation with the USFWS or National Oceanic and Atmospheric Administration (NOAA) Fisheries, use their authority to further the purpose of the ESA and to ensure that their actions are not likely to jeopardize the continued existence of listed species or result in destruction or adverse modification of critical habitat. Section 10(a)(1)(B) allows non-federal entities to obtain permits for incidental taking of threatened or endangered species through consultation with USFWS or NOAA Fisheries. Key provisions of the ESA are summarized below under the section that implements them.

Section 10

Section 10 of the ESA provides a means for non-federal entities (states, local agencies, and private parties) that are not permitted or funded by a federal agency to receive authorization to disturb, displace, or kill (i.e., take) threatened and endangered species. It allows the USFWS to issue an incidental take permit authorizing take resulting from otherwise legal activities, as long as the take would not jeopardize the continued existence of the species. Section 10 requires the applicant to prepare a habitat conservation plan (HCP) addressing project impacts and proposing mitigation measures to compensate for those impacts. The HCP is subject to USFWS or NOAA Fisheries review and must be approved by the reviewing agency or agencies before the proposed project can be initiated. Because the issuance of the incidental take permit is a federal action, the USFWS or NOAA Fisheries must also comply with the requirements of the ESA Section 7 and the National Environmental Policy Act (NEPA).

Section 7

Section 7 of the ESA applies to the management of federal lands as well as other federal actions, such as federal approval of private activities through the issuance of federal permits, licenses, funding, or other actions that may affect listed species. Section 7 directs all federal agencies to use their existing authorities to conserve threatened and endangered species and, in consultation with the USFWS or NOAA Fisheries, to ensure that their actions do not jeopardize listed species or destroy or adversely modify critical habitat. Critical habitat is defined as specific areas that are essential to the conservation of federally listed species.

Clean Water Act, Section 404

The objective of the Clean Water Act (CWA 1977, as amended) is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. Discharge of fill material into waters of the United States, including wetlands, is regulated by the U.S. Army Corps of Engineers (USACE) under Section 404 of the federal Clean Water Act (33 USC 1251–1376). USACE regulations implementing Section 404 define waters of the U.S. to include intrastate waters, including lakes, rivers, streams, wetlands, and natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce. Wetlands are defined for regulatory purposes as “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3; 40 CFR 230.3). The jurisdictional boundaries for other waters of the U.S. are identified based on the presence of an ordinary high water mark as defined in 33 CFR 328.3(e). The placement of structures in “navigable waters of the U.S.” is also regulated by USACE under Section 10 of the federal Rivers and Harbors Act (33 USC 401 et seq.). Projects are permitted under either individual or general (e.g., nationwide) permits. Specific applicability of permit type is determined by the USACE on a case-by-case basis.

In 1987, the USACE published a manual that standardized the manner in which wetlands were to be delineated nationwide. To determine whether areas that appear to be wetlands are subject to USACE jurisdiction (jurisdictional wetlands), a wetlands delineation must be performed. Under normal circumstances, positive indicators from three parameters—(1) wetland hydrology, (2) hydrophytic vegetation, and (3) hydric soils—must be present to classify a feature as a jurisdictional wetland. More recently, the USACE developed the Arid West Regional Supplement (USACE 2008) for identifying wetlands and distinguishing them from aquatic habitats and other non-wetlands. The supplement presents wetland indicators, delineation guidance, and other information that is specific to the Arid West Region. For any wetland delineations submitted after June 5, 2007, the USACE requires that the site be surveyed according to both the 1987 manual and the supplement guidelines. In addition to verifying wetlands for potential jurisdiction, the USACE is responsible for the issuance of permits for projects that propose filling of wetlands. Any permanent loss of a jurisdictional wetland as a result of project construction activities is considered a significant impact.

A “no net loss” wetlands policy is an overall policy goal for wetland protection first adopted by the George H. W. Bush Administration (1989–1993) and endorsed and updated by the Clinton Administration (1993–2001).

Clean Water Act, Section 401

Section 401 of the CWA requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards. The appropriate Regional Water Quality Control Board regulates Section 401 requirements (see under State).

Migratory Bird Treaty Act

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703–711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21).

Bald and Golden Eagle Protection Act

The bald eagle and golden eagle are federally protected under the Bald and Golden Eagle Protection Act (16 USC 668–668c). It is illegal to take, possess, sell, purchase, barter, offer to sell or purchase or barter, transport, export, or import at any time or in any manner a bald or golden eagle, alive or dead, or any part, nest or egg of these eagles unless authorized by the Secretary of the Interior. Violations are subject to fines and/or imprisonment for up to one year. Active nest sites are also protected from disturbance during the breeding season.

STATE

California Endangered Species Act

Under the California Endangered Species Act (CESA), the California Department of Fish and Game (CDFG) has the responsibility for maintaining a list of endangered and threatened species (California Fish and Game Code 2070). The CDFG maintains a list of "candidate species," which are species that the CDFG formally notices as being under review for addition to the list of endangered or threatened species. The CDFG also maintains lists of "species of special concern," which serve as species "watch lists." Pursuant to the requirements of the CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed endangered or threatened species may be present in the project site and determine whether the proposed project will have a potentially significant impact on such species. In addition, the CDFG encourages informal consultation on any proposed project that may impact a candidate species.

Project-related impacts to species on the CESA endangered or threatened list would be considered significant. State-listed species are fully protected under the mandates of the CESA. "Take" of protected species incidental to otherwise lawful management activities may be authorized under California Fish and Game Code Section 206.591. Authorization from the CDFG would be in the form of an Incidental Take Permit.

California Wetlands Conservation Policy

In August 1993, the governor announced the California Wetlands Conservation Policy. The goals of the policy are to establish a framework and strategy that will:

- Ensure no overall net loss and achieve a long-term net gain in the quantity, quality, and permanence of wetlands acreage and values in California in a manner that fosters creativity, stewardship, and respect for private property.

- Reduce procedural complexity in the administration of state and federal wetlands conservation programs.

- Encourage partnerships to make landowner incentive programs and cooperative planning efforts the primary focus of wetlands conservation and restoration.

The governor also signed Executive Order W-59-93, which incorporated the goals and objectives contained in the new policy and directed the Resources Agency to establish an Interagency Task Force to direct and coordinate administration and implementation of the policy.

California Regional Water Quality Control Board

Clean Water Act, Section 401 Water Quality Certification

Section 401 of the CWA (33 USC 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States to obtain certification that the discharge will comply with the applicable effluent limitations and water quality standards. The appropriate Regional Water Quality Control Board (in California) regulates Section 401 requirements. The North Coast Regional Water Quality Control Board (RWQCB) covers Sonoma County. The RWQCB is responsible for controlling discharges to surface waters of the state by issuing waste discharge requirements (WDR) or commonly by issuing conditional waivers to WDRs.

Delegated Permit Authority

California has been delegated permit authority for the National Pollutant Discharge Elimination System (NPDES) permit program including stormwater permits for all areas except Indian lands. Issuing CWA Section 404 dredge and fill permits remains the responsibility of the USACE, but the State actively uses its CWA Section 401 certification authority to ensure 404 permits protect state water quality standards.

State Definition of Covered Waters

Under California state law, "waters of the state" means "any surface water or groundwater, including saline waters, within the boundaries of the state." Therefore, water quality laws apply to both surface and groundwater. After the U.S. Supreme Court decision in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers*, the Office of Chief Counsel of the State Water Regional Control Board (SWRCB) released a legal memorandum confirming the State's jurisdiction over isolated wetlands. The memorandum stated that under the California Porter-Cologne Water Quality Control Act, discharges to wetlands and other waters of the state are subject to state regulation, and this includes isolated wetlands. In general, the RWQCBs regulate discharges to isolated waters in much the same way as they do for federal-jurisdictional waters, using Porter-Cologne rather than CWA authority.

California Fish and Game Code

Fully Protected Species

Certain species are considered fully protected, meaning that the code explicitly prohibits all take of individuals of these species except for take permitted for scientific research. Section 5050 lists fully protected amphibians and reptiles, Section 5515 lists fully protected fish, Section 3511 lists fully protected birds, and Section 4700 lists fully protected mammals.

It is possible for a species to be protected under the California Fish and Game Code, but not fully protected. For instance, mountain lion (*Puma concolor*) is protected under Section 4800 et seq. but is not a fully protected species.

Protection of Birds and Their Nests

Eggs and nests of all birds are protected under Section 3503 of the California Fish and Game Code, nesting birds (including raptors and passerines) under Sections 3503.5 and 3513, and birds of prey under Section 3503.5. Migratory non-game birds are protected under Section 3800 and other specified birds under Section 3505.

Stream and Lake Protection

The CDFG has jurisdictional authority over streams and lakes and the wetland resources associated with these aquatic systems under California Fish and Game Code Sections 1600 et seq. through administration of lake or streambed alteration agreements. Such agreements are not a permit, but rather a mutual accord between the CDFG and the project proponent. California Fish and Game Code Section 1600 et seq. was repealed and replaced in October of 2003 with the new Section 1600–1616 that took effect on January 1, 2004 (Senate Bill 418, Sher). Under the new code, the CDFG has the authority to regulate work that will "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river lake or stream." The CDFG enters into a streambed alteration agreement with the project proponent and can impose conditions in the agreement to minimize and mitigate impacts to fish and wildlife resources. Because the CDFG includes under its jurisdiction streamside habitats that may not qualify as wetlands under the federal Clean Water Act definition, CDFG jurisdiction may be broader than USACE jurisdiction.

A project proponent must submit a notification of streambed alteration to the CDFG before construction. The notification requires an application fee for streambed alteration agreements, with a specific fee schedule to be determined by the CDFG. The CDFG can enter into programmatic agreements that cover recurring operation and maintenance activities and regional plans. These agreements are sometimes referred to as Master Streambed Alteration Agreements.

LOCAL

City of Santa Rosa General Plan

The Santa Rosa General Plan 2035 includes policies and programs that are intended to guide future development in a way that reduces impacts to biological resources. The following lists the General Plan goals and policies related to biological resources that are applicable to the proposed project.

Goal OSC-B: Conserve the city's open spaces and significant natural features.

Policy OSC-B-3:Require that new subdivisions, multifamily, and non-residential development abutting creek corridors are appropriately designed with respect to the creek. Development may orient toward the creek as an amenity, but adequate setbacks shall be used to ensure riparian habitat is protected.

Goal OSC-D: Conserve wetlands, vernal pools, wildlife ecosystems, rare plant habitats, and waterways.

Policy OSC-D-1: Utilize existing regulations and procedures, including Subdivision Guidelines, Zoning, Design Review, and environmental law, to conserve wetlands and rare plants. Comply with the federal policy of no net loss of wetlands using mitigation measures such as:

- Avoidance of sensitive habitat;
- Clustered development;
- Transfer of development rights; and/or
- Compensatory mitigation, such as restoration or creation.

Policy OSC-D-2: Protect high quality wetlands and vernal pools from development or other activities as determined by the Vernal Pool Ecosystem Preservation Plan.

Policy OSC-D-9: Ensure that construction adjacent to creek channels is sensitive to the natural environment. Ensure that natural topography and vegetation is preserved along the creek, and that construction activities do not disrupt or pollute the waterway.

Policy OSC-D-10: Orient development and buildings toward creeks, while providing privacy, security, and an open transition between public and private open spaces.

Goal OSC-H: Conserve significant vegetation and trees.

Policy OSC-H-1: Preserve trees and other vegetation, including wildflowers, both as individual specimens and as parts of larger plant communities.

Policy OSC-H-2: Preserve and regenerate native oak trees.

Policy OSC-H-4: Require incorporation of native plants into landscape plans for new development, where appropriate and feasible, especially in areas adjacent to open space areas or along waterways.

Santa Rosa Citywide Creek Master Plan

In March 2007, Santa Rosa adopted the Santa Rosa Citywide Creek Master Plan, as guided by Santa Rosa 2020 General Plan Policy OSC-D-13. The purpose of the Santa Rosa Citywide Creek Master Plan is to provide the guidelines, policies, and criteria for the protection, care, management, restoration, and enhancement of waterways in Santa Rosa. Relevant policies are incorporated into the Santa Rosa General Plan 2035 (2009).

The Citywide Creek Master Plan includes the portions of the Laguna de Santa Rosa watershed that are within the 45.5-square-mile Santa Rosa Urban Growth Boundary, which includes approximately 90 miles of creeks. One of the plan's goals is to preserve, enhance, and restore habitat for fish, birds, mammals, and other wildlife in local creeks and riparian corridors. The plan outlines several objectives and policies to achieve this goal. Those that may be applicable to development activities in the Specific Plan area are listed below:

Objective HA-1: Preserve healthy and/or environmentally sensitive creek areas.

Policy HA-1-1: Avoid channelization of additional creeks to preserve remaining wildlife habitat.

Policy HA-1-2: Meet or exceed the required creek setback to provide ecological buffers, recognize the 100 year floodplain, and allow for stream corridor restoration. Development shall locate outside the creek setback, as defined within the Santa Rosa Zoning Code.

Objective HA-5: Focus preservation, enhancement, and restoration efforts on habitat that supports one or more special-status species, including those species that are state or federally listed as threatened or endangered, or as a Species of Special Concern.

Policy HA-5-1: Protect habitat for endangered species, through preservation, enhancement, and restoration of riparian corridors (as discussed above) and prevention of storm water pollution.

Policy HA-5-2: Reestablish populations of special-status species as ecologically appropriate.

Objective HA-6: Obtain and comply with all necessary regulatory agency permits.

Policy HA-6-1: Coordinate, as appropriate, with regulatory agencies on Master Plan projects.

Policy HA-6-2. Consistent with federal, state, and local regulations, impacts to existing habitat will be avoided if possible. Minimization and mitigation of any unavoidable impacts will be required.

Objective HA-7: Use the "best available science" when planning and implementing a creek project.

Policy HA-7-1: Consult with knowledgeable experts as appropriate, including natural resources agency staff and other jurisdictions or organizations that have successfully completed similar projects.

Santa Rosa City Code

Trees

In 1990, the City Council of Santa Rosa passed Ordinance 2858, which enacted the following regulations to protect certain trees that are an essential part of the city's natural heritage, called "heritage trees," while at the same time recognizing an individual property owner's freedom in how they treat their land:

- Section 17-14.030 describes the conditions in which a permit is required to remove or alter any tree, including heritage, protected, or street trees.
- Section 17-14.040 describes tree alteration/relocation/removal requirements on properties where no additional development is proposed and permit information requirements.
- Section 17-14.050 describes tree alteration/relocation/removal requirements on properties proposed for development. This section also describes protection measures for heritage trees that must be implemented for all development projects (including fencing during construction, avoidance of disturbance and trenching within driplines, maintaining grade around trees, and prohibiting the placement of paving or landscaping requiring summer irrigation in the vicinity of oaks), and a tree replacement program for all trees and heritage trees that are removed.
- Section 17-14.070 lists acceptable street tree species and the tree removal permit requirements for removing a street tree(s).

Creekside Development

Santa Rosa City Code Section 20-30.040, Creekside Development, established the following creek setback requirements for any new development:

- Waterways with a defined bank will have a setback area of 50 feet from the top of the highest bank. When the bank of a waterway is steeper than 2.5:1, the exterior setback boundary shall be measured by the projections of a slope of 2.5:1 from the toe of the stream bank to ground level, plus 50 feet.

- Waterways without a defined bank will have a setback area of 50 feet, measured horizontally, from the established 100-year storm freeboard level. Exceptions are permitted for any defined channel that is owned by the Sonoma County Water Agency, for developments in compliance with setback requirements prior to September 3, 2004, for new developments that are surrounded by existing structures that were developed in compliance with setback requirements prior to September 3, 2004, and for bridges and utilities.

3.4.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the State CEQA Guidelines Appendix G. An impact to biological resources is considered significant if the project would:

1) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status in local or regional plans, policies, or regulations, or by the CDFG or USFWS.

2) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the CDFG or USFWS.

3) 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.

4) 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.

5) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

6) Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

METHODOLOGY

Specific subsequent projects, their associated locations, and physical effects on the environment from the implementation of the Specific Plan are not known at this time. Thus, this analysis uses a programmatic approach to evaluating possible impacts to biological resources from implementation of the Specific Plan.

IMPACTS AND MITIGATION MEASURES

Impact on Special-status Species or Their Habitat or Movement (Standards of Significance 1 and 4)

Impact 3.4.1 Implementation of the Specific Plan could result in impacts to special-status species and their habitat from redevelopment activities, but not to wildlife movement corridors. This impact would be considered **less than significant after mitigation.**

As no wildlife movement corridors are identified in the Specific Plan area, the project would have no impact to this resource.

Implementation of the Specific Plan would encourage new development and redevelopment of some parcels in the project area. New development could result in fill of isolated seasonal wetlands that may be present within the project area or removal of trees that could provide habitat to raptors and other important or special-status wildlife. The General Plan, however, identifies several policies to protect these resources, such as Policy OSC-D-1, which requires the conservation of wetlands, vernal pools, wildlife ecosystems, rare plant habitats, and waterways, and Policies OSC-H-1 and OSC-H-2, which require conservation of trees. With application of these and other General Plan policies, the project would not have significant impacts to biological resources from new development.

Implementation of the Specific Plan would also encourage redevelopment of some parcels in the project area, which could affect wildlife habitat. Specifically, existing structures, including buildings and bridges, can provide habitat to bat and bird species, some of which may be special-status species or, in the case of birds, protected by the Migratory Bird Treaty Act. Disturbance of these habitats by redevelopment activities could result in significant impacts. As such, this would represent a potentially significant impact and mitigation is recommended.

Mitigation Measures

MM 3.4.1 If there is the potential for destruction of a nest or substantial disturbance to nesting birds or bats due to construction activities, a plan to monitor nesting birds or bats during construction shall be prepared and submitted to the USFWS and CDFG for review and approval. The City shall comply with all USFWS or CDFG guidance for protection of nesting birds.

If vegetation, buildings, or bridges that potentially provide nesting sites must be removed, a qualified wildlife biologist shall conduct pre-construction surveys. If an active bird nest is found, the bird shall be identified as to species and the approximate distance from the closest work site to the nest estimated. No additional measures need be implemented if active nests are more than the following distances from the nearest work site: (a) 300 feet for raptors; or (b) 75 feet for other non-special-status bird species. Disturbance of active nests shall be avoided to the extent possible until it is determined that nesting is complete and the young have fledged. Bats shall be absent or flushed from roost locations prior to demolition of buildings. If flushing of bats from buildings is necessary, it shall be done by the qualified biologist during the non-breeding season from October 1 to March 31. When flushing bats, structures shall be moved carefully to avoid harming individuals, and torpid bats given time to completely arouse and fly away. During the maternity season from April 1 to September 30, prior to building demolition or construction, a qualified biologist shall determine if a bat nursery is present at any sites identified as potentially housing bats. If an active nursery is present, disturbance of bats shall be avoided until the biologist determines that breeding is complete and young are reared.

Timing/Implementation: *Prior to construction of any subsequent project that could result in disturbance to bird or bat nests*

Enforcement/Monitoring: *City of Santa Rosa Community Development Department, Planning Division*

Implementation of mitigation measure **MM 3.4.1** would ensure that bird and bat nesting habitats are protected from demolition or remodeling activities associated with subsequent projects built within the Specific Plan area. This would ensure that impacts are reduced to less than significant levels after mitigation.

Affect Wetland or Riparian Habitats (Standards of Significance 2 and 3)

Impact 3.4.2 Implementation of the Specific Plan could result in fill of seasonal wetlands that may be present within the Specific Plan area. This impact would be considered **less than significant after mitigation.**

Implementation of the Specific Plan would encourage new development and redevelopment of some parcels within the project area. New development could result in fill of seasonal wetlands that may be present within the Specific Plan area. Construction activities along or near Paulin Creek or Steele Creek could result in effects to wetlands or riparian habitats located along these creeks. The General Plan, however, identifies several policies to protect these resources, such as Policy OSC-D-1, which requires the conservation of wetlands, vernal pools, wildlife ecosystems, rare plant habitats, and waterways, and Policies OSC-D-9 and OSC-D-10, which require protection of creek corridors and riparian habitat, and context-sensitive development along creek corridors. Future development within the Specific Plan area would be subject to these and other General Plan policies to protect wetland and riparian habitats within the project area.

Additionally, the provisions of the Santa Rosa Citywide Creek Master Plan and applicable sections of the Santa Rosa City Code related to creekside development would also apply to future development within the Specific Plan area. These provisions would serve to further protect wetland and riparian resources within the project area.

With application of appropriate General Plan policies, as well as appropriate provisions of the Santa Rosa Citywide Creek Master Plan and Santa Rosa City Code, the project impact to wetland or riparian habitat would be minimized but would be considered potentially significant.

Mitigation Measures

MM 3.4.2 A formal wetland delineation shall be conducted for areas that will be permanently or temporarily impacted by the project. If jurisdictional waters cannot be avoided, the City shall apply for a CWA Section 404 permit from the USACE and a Section 401 permit from the RWQCB. These permits shall be obtained prior to issuance of grading permits and implementation of the proposed project.

The City shall ensure that the project will result in no net loss of waters of the U.S. by providing mitigation through impact avoidance, impact minimization, and/or compensatory mitigation for the impact, as determined in the CWA Section 404/401 permits.

Compensatory mitigation may consist of (a) obtaining credits from a mitigation bank; (b) making a payment to an in-lieu fee program that will conduct wetland, stream, or other aquatic resource restoration, creation, enhancement, or preservation activities (these programs are generally administered by government agencies or nonprofit organizations that have established an agreement with the regulatory agencies to use in-lieu fee payments collected from permit applicants); and/or (c) providing compensatory mitigation through an aquatic resource restoration, establishment, enhancement, and/or preservation activity. This last type of compensatory mitigation may be provided at or adjacent the impact site (i.e., on-site mitigation) or at another location, usually within the same watershed as the permitted impact (i.e., off-site mitigation). The project proponent/permit applicant retains responsibility for the implementation and success of the mitigation project.

Evidence of compliance with this mitigation measure shall be provided prior to construction and grading activities for the proposed project.

Timing/Implementation:	*Prior to any vegetation removal or ground-disturbing activities*
Enforcement/Monitoring:	*City of Santa Rosa Community Development Department, Planning Division*

Implementation of the above mitigation measure would reduce impacts to wetlands and other waters of the United States to a less than significant level.

Conflict with Policies, Ordinances, or Adopted Conservation Plans (Standards of Significance 5 and 6)

Impact 3.4.3 The proposed project would not conflict with applicable City policies, ordinances, or adopted conservation plan. Thus, the proposed project would result in **no impact.**

There are no adopted habitat conservation plans covering this area. Therefore, the Specific Plan would result in no impact to conservation plans.

The proposed project would not conflict with local policies or ordinances protecting biological resources. The Specific Plan is intended to support the goals and policies of the General Plan, including those related to protection of biological resources. Additionally, future projects constructed as part of the Specific Plan would be subject to applicable General Plan policies, Santa Rosa Citywide Creek Master Plan policies, and the City Zoning Code. As such, the project would have no impact from conflicts with policies, ordinances, or adopted conservation plans.

Mitigation Measures

None required.

3.4.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for biological resources is the City of Santa Rosa and its Urban Growth Boundary.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Biological Impacts

Impact 3.4.4 The implementation of the proposed project, in combination with other reasonably foreseeable projects, would result in minimal direct mortality and loss of habitat for special-status species, wetlands, and waters of the U.S. Therefore, this impact is considered **less than cumulatively considerable**.

Development within the Santa Rosa Urban Growth Boundary has the potential to result in cumulative impacts to sensitive biological resources, such as sensitive species and wetlands. However, the General Plan 2035 EIR identified that with the policies included in the General Plan, the potential for development under the General Plan to cumulatively impact biological resources would be reduced to a less than significant level. Implementation of the Specific Plan without mitigation measures could result in impacts to biological resources, including tree nesting birds and bats, and wetlands; however, as discussed previously, the identified General Plan policies and mitigation measures identified in this Draft EIR would reduce the impact to a less than significant level. In addition, the majority of the vegetation currently present in the Specific Plan area consists primarily of non-native plant species occurring in discontinuous patches, which provides relatively low habitat value to wildlife. The Specific Plan's compliance with existing General Plan policies and identified mitigation measures would result in a less than cumulatively considerable contribution to impacts to biological resources from implementation of the Specific Plan.

Mitigation Measures

None required.

REFERENCES

City of Santa Rosa. 2009a. *Santa Rosa General Plan 2035.*

City of Santa Rosa. 2009b. *Santa Rosa General Plan 2035 Draft Environmental Impact Report*.

City of Santa Rosa. 2009c. *Santa Rosa General Plan 2035 Final Environmental Impact Report*.

USACE (United States Army Corps of Engineers). 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). Accessed March 29, 2012. http://www.usace.army.mil/Portals/2/docs/civilworks/regulatory/reg_supp/trel08-28.pdf.

3.5 CULTURAL AND PALEONTOLOGICAL RESOURCES

This section evaluates the potential impacts of the proposed Specific Plan on historical, cultural, and paleontological resources. Cultural resources are defined as prehistoric and historic properties, structures, and districts or any other physical evidence associated with human activity considered important to a culture, subculture, or community for scientific, traditional, or religious reasons. Paleontological resources include fossil remains, as well as fossil localities and formations which have produced fossil material. Existing setting and analysis in this section utilizes the Santa Rosa General Plan 2035 and its associated EIR and the City of Santa Rosa Zoning Code.

3.5.1 EXISTING SETTING

Cultural resources contribute to an understanding of past human activities, including Native American history, local and regional European, African, and Asian settlement in North America, urban development, historic engineering activities, cross-cultural influences, and human adaptations to the environment. Cultural resources, like many natural resources found on our planet, are nonrenewable. Once these resources have been destroyed, by whatever means, a fragment of history permanently disappears.

PREHISTORIC AND ETHNOGRAPHIC OVERVIEW

Categorizing prehistoric times into broad cultural stages allows researchers to describe a wide number of archaeological sites with similar cultural patterns and components during a given period of time, thereby creating a regional chronology. This section provides a brief discussion of the chronology for the city. The General Plan 2035 divides human history in California into three broad periods: the Early period, the Middle period, and the Late period. Economic patterns, stylistic aspects, and regional phases further subdivide cultural patterns into shorter phases. This scheme uses economic and technological types, socio-politics, trade networks, population density, and variations of artifact types to differentiate between cultural periods.

The Paleoindian period (11,500 to 8000 B.C.) was characterized by big-game hunters occupying broad geographic areas—evidence for this period has not yet been discovered in the San Francisco Bay or Sonoma County vicinity. During the Early period, consisting of the Early Holocene (8000 to 3500 B.C.) and Early Period (3500 B.C. to 500 B.C.), geographic mobility continued and is characterized by the millingslab and handstone as well as large wide-stemmed and leaf-shaped projectile points. The first cut shell beads and the mortar and pestle are first documented in burials during this period, indicating the beginning of a shift to sedentism. During the Middle period, which includes the Lower Middle Period (500 B.C. to A.D. 430), and Upper Middle Period (A.D. 430 to 1050), geographic mobility may have continued, although groups began to establish longer-term base camps in localities from which a more diverse range of resources could be utilized. The first rich black middens (culturally darkened soils) are recorded from this period. The addition of milling tools, obsidian and chert concave-base points, and the occurrence of sites in a wider range of environments suggest that the economic base was more diverse. By the Upper Middle Period, mobility was being replaced by the development of numerous small villages. Around A.D. 430 a "dramatic cultural disruption" occurred evidenced by the sudden collapse of the Olivella saucer bead trade network. During the Initial Late period (A.D. 1050 to 1550), social complexity developed toward lifeways of large, central villages with resident political leaders and specialized activity sites. Artifacts associated with the period include the bow and arrow, small corner-notched points, and a diversity of beads and ornaments. (Santa Rosa General Plan 2035, 2009)

Ethnographic literature indicates that at the time of historic contact, the Santa Rosa Planning Area was within the territory of the Southern Pomo people. The Southern Pomo are one of a group of seven distinct languages (Southern, Kayasha, Central, Northern, Eastern, Southeastern, and Northeastern) that have been associated with the larger Pomoan linguistic family. The Pomo people organized themselves into small groups, referred to by anthropologists as “tribelets” or village communities. The closest reported ethnographic village to the Planning Area was Hukabetawi, located in the vicinity of southwestern Santa Rosa. The Pomo economy was traditionally based on a seasonal round of fishing, hunting, and the collection of a variety of plants used for food, tools, and structures. (Santa Rosa General Plan 2035, 2009)

By the mid-1800s, Spanish missionization, diseases, raids by Mexican slave traders, and dense immigrant settlement had disrupted Southern Pomo culture, dramatically reducing the population and displacing the native people from their villages and land-based resources. In 1920, the Bureau of Indian Affairs purchased a 15.45-acre tract of land in Graton for the Marshall, Bodega, Tomales, and Sebastopol Indians. This land was put into a federal trust, and these neighboring peoples that included both Coast Miwok and Southern Pomo were consolidated into one recognized group called the Graton Rancheria. The Lytton Band of Pomo Indians was first established in 1937 when Bert Steele, who was part Achomawi and part Nomlaki, and his Bodega Pomo wife, petitioned the government for a 50-acre parcel north of Healdsburg. In 1958, the U.S. government enacted the Rancheria Act of 1958, transferring tribal property into private ownership. Forty-four rancherias in California were affected, including the Graton and Lytton rancherias. (Santa Rosa General Plan 2035, 2009)

Throughout the remaining century, tribal members continued to protect their cultural heritage and identity despite being essentially landless. On December 27, 2000, President Clinton signed into law legislation restoring federal recognition to the Federated Indians of Graton Rancheria. The tribe currently has approximately 1,100 members. The Lytton Band of Pomo Indians also has federal recognition and currently has approximately 200 members. (Santa Rosa General Plan 2035, 2009)

Prehistoric Archaeological Resources

Santa Rosa is located in the Santa Rosa Basin with six major drainages, including Santa Rosa, Matanzas, Piner, Rincon, Austin, and Brush creeks. These creeks are significant with respect to prehistoric resources because Native American archaeological sites tend to be located near waterways, as well as along ridgetops, midslope terraces, alluvial flats, the base of hills, and near vegetation ecotones. Therefore, areas near these natural features are most likely to contain recorded or still undiscovered prehistoric resources. In addition, Annadel State Park, containing an important obsidian source for Native American tool manufacture, is located adjacent to the Santa Rosa Planning Area. Prehistoric materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil (“midden”) containing heat-affected rocks, artifacts, or shellfish remains; stone milling equipment (mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. (Santa Rosa General Plan 2035, 2009)

The 2008 review of the records and literature on file at the Northwest Information Center indicates that Santa Rosa contains 161 recorded Native American resources. Remnants of Native American civilization have been discovered along Santa Rosa Creek and its tributaries, in the adjacent alluvial valleys and surrounding plains, in the hills, in the Annadel State Park area, in Laguna de Santa Rosa, and in the Windsor area. Given the environmental setting, the archaeologically rich nature of the Santa Rosa area, and the large amount of unsurveyed land (at least 50 percent of the city has not been surveyed for archaeological resources), there is a high potential for finding additional Native American sites within the city. (Santa Rosa General Plan 2035, 2009)

HISTORIC OVERVIEW

The first known non-Native American settlers came to the Santa Rosa area in the 1830s. María Ignacia Lopez de Carrillo moved to the Rancho Cabeza de Santa Rosa with her 12 unmarried children in 1837. Carrillo was mother-in-law to General Mariano Vallejo, commander of the Mexican forces north of the Presidio of San Francisco. Her adobe was located on the south side of Santa Rosa Creek near its confluence with Matanzas Creek. The land was formally granted to her by the governor on September 30, 1841. (Santa Rosa General Plan 2035, 2009)

The post office of Santa Rosa was established in 1852, although the town consisted of only a few buildings. In 1853, a Carrillo son (Julio) purchased two square leagues of his mother's property and constructed a house on what is now Second Street in downtown Santa Rosa. Three German-born business partners—Barney Hoen, Ted Hahman, and William Hartman—rented the tavern and store at the Carrillo Adobe and called it Hoen & Company, from which they sold groceries, cattle, and real estate. They soon devised a plan to wrest the county seat away from the town of Sonoma and helped nominate Sonoma County pioneer James Bennett for the state legislature. Bennett promptly presented a bill calling for an election in the fall of 1854. The promise of a modern town and the rejection of the old Mexican lifeways typified by the town of Sonoma turned the vote and all official documents were immediately hauled to Santa Rosa. According to Carrillo's wish the town was laid out with a central plaza like that of a Hispanic city. A store, a saloon, and a Masonic hall were built by the spring of 1854, and that fall the first court of sessions was held. (Santa Rosa General Plan 2035, 2009)

In 1868, Santa Rosa was officially incorporated and had a population of 200. Two years later, the railroad came and within seven years the population increased by tenfold.

Historic-Era Architectural/Structural Resources

Historic-era resources of the built environment include structures, districts, or other physical evidence greater than 50 years old. Santa Rosa has a rich architectural heritage spanning many periods that includes Mexican-period adobes, 19th-century Gothic, Greek-revival, and Italianate houses, turn-of-the-century Stick/Eastlake styles, early 20th-century Craftsman and California bungalows, 1920s Spanish-revival, and 1930s art deco buildings. The city has 14 buildings and one district listed on the National Register of Historic Places. The Luther Burbank House and Garden, the William Hood House, and the 20th-century-folkart Medica Gardens are listed as California Historical Landmarks. Sixty-nine buildings and structures have paperwork on file at the Northwest Information Center. (Santa Rosa General Plan 2035, 2009)

Although many historic structures have been lost through reconstruction, fire, and neglect, many restoration opportunities remain. A growing interest in the city's historic resources and appreciation of the value of special historic architecture is resulting in continued restoration and preservation efforts. Owners of landmark properties and individual historic properties within a preservation district can take advantage of the State Historic Building Code (which provides safe alternatives to the Uniform Building Code), housing rehabilitation assistance, possible federal income tax credits, technical assistance from the Community Development Department, increased property values, neighborhood protection, and official recognition. (Santa Rosa General Plan 2035, 2009)

The 2008 records and literature review for the General Plan 2035 identified 21 local landmarks and 8 historic preservation districts in Santa Rosa. A local landmark is any site having a specific historical, archaeological, cultural, or architectural value. Preservation districts are areas that have special historic significance or represent one or more architectural periods or styles typical to the city's history. Preservation districts include the Burbank Gardens, Cherry Street, Saint Rose, Olive Park, Railroad Square, West End, McDonald, and Ridgway neighborhoods. (Santa Rosa General Plan 2035, 2009)

In addition to the listed buildings and districts, 40 individual buildings have been determined to be potentially eligible local landmarks. Five neighborhoods in southwest Santa Rosa have been identified as the Northeast Roseland Historic Neighborhoods for which special design considerations must be given (Northeast Roseland Planned Community Policy Statement, October 1, 1996, Ordinance 3283). Seven neighborhoods in the southwest area have also been determined to contain properties that may make them potentially eligible historic neighborhoods. (Santa Rosa General Plan 2035, 2009)

Table 3.5-1 below lists all of the properties within the Specific Plan area boundaries that are listed on Santa Rosa's Historic Properties Inventory. The inventory summarizes three separate historic surveys that were completed in the city. Almost all of these properties are residential and are listed because they were constructed prior to 1946. The revolving Coddingtown sign, located at Coddingtown Mall, is the only structure in the project area designated as a local landmark (designated by the City Council in 1993). A landmark is defined by the City as "any site, including significant trees or other significant permanent landscaping located on a site, and/or place, building, structure, street, street furniture, sign, work of art, natural feature or other object having a specific historical, archaeological, cultural or architectural value in the City and which has been designated a landmark by the Council." In addition, two of the listed properties—Santa Rosa Junior College and Santa Rosa High School—were noted by the historic surveyor as appearing to be eligible for the National Register of Historic Places. (Santa Rosa General Plan 2035, 2012)

TABLE 3.5-1
HISTORIC PROPERTIES IN THE PROJECT AREA

ID	APN	Address	Year Built	Building Type
1	012-061-029	111 Carrillo St	1906	Colonial Revival/house
2	012-062-018	112 Carrillo St	1930	Bungalow/house
3	012-062-019	116 Carrillo St	1920	Bungalow/house
4	012-061-004	117 Carrillo St	1880–1890	Italianate/house
5	012-072-002	62 Carrillo St	1939	Colonial revival/house
6	012-072-013	68 Carrillo St	1939	Colonial revival/house
7	012-062-040	1112 Cleveland Ave	1906	Bungalow/house
8	012-072-012	1127 Cleveland Ave	1910	Bungalow/house
9	012-071-026	1207 Cleveland Ave	1920	Bungalow/house
10	012-071-009	1215 Cleveland Ave	1924	Bungalow/house
11	012-071-008	1225 Cleveland Ave	1923	Bungalow/house
12	012-071-006	1233 Cleveland Ave	1905	Vernacular L-plan/house
13	012-061-030	1254 Cleveland Ave	1924	Bungalow/house
14	012-082-002	1341 Cleveland Ave	1920	Mediterranean revival/house

ID	APN	Address	Year Built	Building Type
15	010-522-019	1167 Clover Dr	1940	Bungalow/house
16	012-490-045	101 Coddingtown Ctr	1963	Designated Local Landmark #9: Coddingtown Revolving Sign Tower
17	012-062-034	105 College Ave	1931	Provincial/house
18	012-062-035	113 College Ave	1936	Provincial/house
19	012-062-036	117 College Ave	1914	Bungalow/house
20	010-510-021	1385 W College Ave	pre-1946	Craftsman/house
21	036-253-049	471 W College Ave	pre-1946	Queen Anne/two-story house
22	036-253-042	555 W College Ave	pre-1946	Bungalow/house
23	037-031-051	600 W College Ave	1925	Bungalow/house
24	152-080-063	829 W College Ave	pre-1946	Bungalow/house
25	010-521-029	895 W College Ave	pre-1946	Queen Anne/cottage
26	041-161-031	1020 Jennings Ave	pre-1946	Bungalow/house
27	012-456-019	1125 Jennings Ave	1932	Bungalow/house
28	012-451-073	1215 Jennings Ave	pre-1946	Colonial revival/house
29	152-080-055	1114 Lance Dr	pre-1946	Barn
30	152-080-056	1114 Lance Dr	1914	Italianate/house
31	152-080-036	1124 Lance Dr	1941	Bungalow/house
32	152-080-035	1126 Lance Dr	1944	Bungalow/house
33	180-470-008	1501 Mendocino Ave	1930	Gothic revival/school
34	180-470-007	1141 Mendocino Ave	1924	Gothic revival/school
35	041-141-011	1508 Range Ave	1948	Colonial revival/house
36	041-043-050	2097 Range Ave	pre-1946	House
37	012-061-033	100 Ridgway	1931	Provincial/house

Source: Santa Rosa Cultural Heritage Survey: Historic Properties Inventory, 1990

Historic-Era Archaeological Resources

Historic-era archaeological resources in the city include remnants of Spanish, Mexican, and Euro-american use and occupation. Historical materials might include stone, concrete, or adobe footings and walls; artifact-filled wells or privies; deposits of metal, glass, and/or ceramic refuse; and remnant roads and railroad grades. Historic-era sites enhance information about early non-Native American settlement and its effects on indigenous peoples, as well as later development, urbanization, and industrialization. (Santa Rosa General Plan 2035, 2009)

Fifty historic-era archaeological resources have been recorded in Santa Rosa. New development projects within the city, especially in more urban locations, have a probability of uncovering previously unknown historic-era archaeological resources. (Santa Rosa General Plan 2035, 2009)

3.5.2 REGULATORY FRAMEWORK

FEDERAL

National Historic Preservation Act of 1966

The National Historic Preservation Act of 1966 requires that the federal government list significant historic resources on the National Register of Historic Places (NRHP). Federal agencies must consult the NRHP when planning to undertake or grant approval through permits for a project. Prior to the issuance of any license or implementation of any project, the federal agency must consider the effects of a project or license on any historical buildings, sites, structures, or objects that are included on, or eligible for inclusion on, the NRHP (16 USC Section 470(f)). This typically includes consultation with the federal agency responsible for the undertaking, the state historic preservation officer, local Native American groups and individuals, local and state historical societies and organizations, and relevant archival sources, including the appropriate facility of the California Historical Resources Information System.

STATE

California Native American Historical, Cultural and Sacred Sites Act

The California Native American Historical, Cultural and Sacred Sites Act (CNAHCSSA) applies to both State and private lands. The Act requires that upon discovery of human remains, construction or excavation activity cease and that the county coroner be notified. If the remains are of a Native American, the coroner must notify the NAHC. The NAHC then notifies those persons mostly likely to be descended from the Native American remains. The Act stipulates the procedures the descendants may follow for treating or disposing of the remains and associated grave goods

California Register of Historical Resources

The State Historical Resources Commission has designed the California Register of Historic Resources (CRHR) for use by state and local agencies, private groups, and citizens to identify, evaluate, register, and protect California's historical resources. The CRHR is the authoritative guide to the state's significant historical and archaeological resources. This program encourages public recognition and protection of resources of architectural, historical, archaeological, and cultural significance, identifies historical resources for state and local planning purposes, determines eligibility for state historic preservation grant funding, and affords certain protections under the California Environmental Quality Act (CEQA).

California Environmental Quality Act

Under CEQA, public agencies must consider the effects of their actions on both "historical resources" and "unique archaeological resources." Pursuant to Public Resources Code (PRC) Section 21084.1, a "project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment."

Section 21083.2 requires agencies to determine whether proposed projects would have effects on unique archaeological resources.

Historical resource is a term with a defined statutory meaning (PRC Section 21084.1; determining significant impacts to historical and archaeological resources is described in CEQA Guidelines Section 15064.5 [a], [b]). Under CEQA Guidelines Section 15064.5(a), historical resources include the following:

1) A resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CRHR (PRC Section 5024.1).

2) A resource included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, will be presumed to be historically or culturally significant. Public agencies must treat any such resource as significant unless the preponderance of evidence demonstrates that it is not historically or culturally significant.

3) Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California may be considered to be a historical resource, provided the lead agency's determination is supported by substantial evidence in light of the whole record. Generally, a resource will be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing in the CRHR (PRC Section 5024.1), including the following:

    a) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

    b) Is associated with the lives of persons important in our past;

    c) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

    d) Has yielded, or may be likely to yield, information important in prehistory or history.

4) The fact that a resource is not listed in, determined to be eligible for listing in the CRHR, not included in a local register of historical resources (pursuant to PRC Section 5020.1(k)), or identified in a historical resources survey (meeting the criteria in PRC Section 5024.1(g)) does not preclude a lead agency from determining that the resource may be a historical resource as defined in PRC Section 5020.1(j) or 5024.1.

Historic resources are usually 45 years old or older and must meet at least one of the criteria for listing in the CRHR, described above (such as association with historical events, important people, or architectural significance), in addition to maintaining a sufficient level of physical integrity.

Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the CRHR and are presumed to be historical resources for purposes of CEQA unless a preponderance of evidence indicates otherwise (PRC

Section 5024.1 and California Code of Regulations (CCR), Title 14, Section 4850). Unless a resource listed in a survey has been demolished, lost substantial integrity, or there is a preponderance of evidence indicating that it is otherwise not eligible for listing, a lead agency should consider the resource to be potentially eligible for the CRHR.

For historic structures, CEQA Guidelines Section 15064.5, subdivision (b)(3), indicates that a project that follows the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings, or the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (1995) shall be considered as mitigating impacts to a less than significant level.

As noted above, CEQA also requires lead agencies to consider whether projects will impact "unique archaeological resources." Public Resources Code Section 21083.2, subdivision (g), states that " 'unique archaeological resource' means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person."

Treatment options under Section 21083.2 include activities that preserve such resources in place in an undisturbed state. Other acceptable methods of mitigation under Section 21083.2 include excavation and curation or study in place without excavation and curation (if the study finds that the artifacts would not meet one or more of the criteria for defining a unique archaeological resource).

Section 7050.5(b) of the California Health and Safety Code specifies protocol when human remains are discovered, as follows:

> *In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.*

CEQA Guidelines Section 15064.5, subdivision (e), requires that excavation activities be stopped whenever human remains are uncovered and that the county coroner be called in to assess the remains. If the county coroner determines that the remains are those of Native Americans, the

Native American Heritage Commission must be contacted within 24 hours. At that time, the lead agency must consult with the appropriate Native Americans, if any, as timely identified by the Native American Heritage Commission. Section 15064.5 directs the lead agency (or applicant), under certain circumstances, to develop an agreement with the Native Americans for the treatment and disposition of the remains.

In addition to the mitigation provisions pertaining to accidental discovery of human remains, the CEQA Guidelines also require that a lead agency make provisions for the accidental discovery of historical or archaeological resources, generally. Pursuant to Section 15064.5, subdivision (f), these provisions should include "an immediate evaluation of the find by a qualified archaeologist. If the find is determined to be an historical or unique archaeological resource, contingency funding and a time allotment sufficient to allow for implementation of avoidance measures or appropriate mitigation should be available. Work could continue on other parts of the building site while historical or unique archaeological resource mitigation takes place."

Paleontological resources are classified as non-renewable scientific resources. California Public Resources Code Section 5097.5 et seq. makes it a misdemeanor for anyone to knowingly disturb any archaeological, paleontological, or historical features situated on public lands. No state or local agencies have specific jurisdiction over paleontological resources. No state or local agency requires a paleontological collecting permit to allow for the recovery of fossil remains discovered as a result of construction-related earth-moving on state or private land in a project site.

LOCAL

City of Santa Rosa General Plan

The Santa Rosa General Plan 2035 serves as the overall guiding policy document for the City of Santa Rosa. The following is a list of applicable General Plan goals and policies most pertinent to the Specific Plan in regard to cultural resources.

Historic Preservation Element

Goal HP-A: Protect Native American heritage.

Policy HP-A-1: Review proposed developments and work in conjunction with the California Historical Resources Information System, Northwest Information Center at Sonoma State University, to determine whether project areas contain known archaeological resources, either prehistoric and/or historic-era, or have the potential for such resources.

Policy HP-A-2: Require that project areas found to contain significant archaeological resources be examined by a qualified consulting archaeologist for recommendations concerning protection and preservation.

Policy HP-A-3: If cultural resources are encountered during development, work should be halted to avoid altering the materials and their context until a qualified consulting archaeologist and Native American representative (if appropriate) have evaluated the situation, and recorded identified cultural resources and determined suitable mitigation measures.

Policy HP-A-4: Consult with local Native American tribes to identify, evaluate, and appropriately address cultural resources and tribal sacred sites through the development review process.

Policy HP-A-5: Ensure that Native American human remains are treated with sensitivity and dignity and assure compliance with the provisions of California Health and Safety Code Section 7050.5 and California Public Resources Code Section 5097.98.

Goal HP-B: Preserve Santa Rosa's historic structures and neighborhoods.

Policy HP-B-1: Ensure that alterations to historic buildings and their surrounding settings are compatible with the character of the structure and the neighborhood. Ensure that specific rehabilitation projects follow the Secretary of Interior's Standards for Rehabilitation to a reasonable extent, taking into consideration economic and technical feasibility.

Policy HP-B-2: Preserve significant historic structures. Consider the life cycle costs when evaluating the alternatives to demolition of these structures, including the adaptive reuse of historic buildings for contemporary uses.

Policy HP-B-8: Preserve sites that are eligible for the National Register of Historic Places, and pursue listing eligible sites in the Register.

HP-C: Increase public participation in the historic preservation process.

Policy HP-C-1: Prepare and distribute educational guides and walking tour brochures of places of historical, architectural or cultural interest in Santa Rosa, to increase public awareness of these resources.

Policy HP-C-2: Hold neighborhood meetings to achieve the following:

- Increase public awareness of preservation issues and opportunities;
- Provide information on the historic designation process;
- Publicize low-impact/low-cost/high benefit options for energy efficiency upgrades in context of green building program requirements; and
- Alert neighborhoods, when necessary, to the pending loss of significant buildings or other features.

Cultural Heritage Board

Adopted in 1988, the Historic and Cultural Preservation Ordinance created the Cultural Heritage Board. The board recommends to the City Council designation of landmarks and preservation districts, reviews permits for alterations to landmarks and buildings within preservation districts, and promotes public awareness of historic resources.

Landmarks and Preservation Districts

Under City of Santa Rosa Municipal Code 17-22.030, any site, including trees or other significant landscaping, place, building, structure, street, sign, work of art, natural feature, or other object of special historical, cultural, archaeological, or architectural value, may be designated as a historical landmark by the City Council, with the recommendation of the Cultural Heritage Board.

Additionally, any area having historical significance or representing an architectural period or style typical to the history of the city may be designated as a preservation district. Before a landmark or structure within a preservation district is restored, developed, demolished, or otherwise altered a landmark alteration permit must be granted by the Zoning Administrator, or minor projects (generally only those alterations that are not visible from a public street), or the Cultural Heritage Board.

There are no preservation districts within the boundaries of the Specific Plan area. The Coddingtown Mall rotating sign is the only designated landmark.

3.5.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

Following Public Resources Code Sections 21083.2 and 21084.1, and Section 15064.5 and Appendix G of the CEQA Guidelines, cultural resource impacts are considered to be significant if implementation of the project under consideration would result in any of the following:

1) Cause a substantial adverse change in the significance of a historical resource as defined in Public Resources Code Section 21084.1 and CEQA Guidelines Section 15064.5.

2) Cause a substantial adverse change in the significance of an archaeological resource as defined in Public Resources Code Sections 21083.2 and 21084.1, and CEQA Guidelines Section 15064.5.

3) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature.

4) Disturb any human remains, including those interred outside of formal cemeteries.

CEQA Guidelines Section 15064.5 defines "substantial adverse change" as physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource is materially impaired.

CEQA Guidelines Section 15064.5, subdivision (b)(2), defines "materially impaired" for purposes of the definition of substantial adverse change as follows:

The significance of an historical resource is materially impaired when a project:

(A) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources; or

(B) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or

(C) Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance

> *and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA.*

CEQA requires that if a project would result in an effect that may cause a substantial adverse change in the significance of a historical resource or would cause significant effects on a unique archaeological resource, then alternative plans or mitigation measures must be considered. Therefore, prior to assessing effects or developing mitigation measures, the significance of cultural resources must first be determined. The steps that are normally taken in a cultural resources investigation for CEQA compliance are as follows:

1. Identify potential historical resources and unique archaeological resources;
2. Evaluate the eligibility of historical resources; and
3. Evaluate the effects of the project on eligible historical resources.

METHODOLOGY

The potential impacts of the proposed project on cultural resources have been evaluated by considering both potential future construction activities and operational impacts of potential proposed projects which could occur under the proposed Specific Plan. The Caltrans Transportation- and Construction-Induced Vibration Guidance Manual (2004) was reviewed to assist in determining potential impacts on historic structures from construction vibration. The manual provides standards for consideration as well as monitoring methodology.

IMPACTS AND MITIGATION MEASURES

Historical Resources (Standard of Significance 1)

Impact 3.5.1 The project area contains properties that are listed in Santa Rosa's Historic Properties Inventory. Development within and redevelopment of the Specific Plan area could affect these properties through modification of historic character and though construction activities. This impact is considered **less than significant**.

As noted above in **Table 3.5-1**, the proposed project area includes several properties that are listed on the Historic Properties Inventory. The majority of the historic properties are residences constructed prior to 1946. In addition, the Coddingtown Mall sign was designated by the City Council in 1993 as a local landmark, and Santa Rosa Junior College and Santa Rosa High School were identified in past historic surveys of the city as containing properties that may eligible for inclusion in the NRHP. Given the several historical properties in the Specific Plan area, development allowed under the proposed Specific Plan could involve the destruction and/or adverse alteration of the physical characteristics of a historical property. In addition, the demolition, construction, renovation, and relocation of buildings may adversely impact the historical character or setting of historic resources. Building and renovation staging areas may also have short-term impacts on the resources by detracting from the character of historical resources.

Existing regulations, policies, and standards reduce potential impacts. For example, the Secretary of the Interior's Standards for Identification (Standards I and II) require survey activities to be conducted to document the information necessary to achieve defined preservation goals. Adherence to the standards from the Secretary of the Interior guidelines is required by General Plan Policy HP-B-1. Additionally, the City's Preservation Ordinance of 1988 and General

Plan Policies HP-B-2 to HP-B-9 are designed to preserve and enhance the city's historic properties and neighborhoods. The only structure that would be subject to review by the Cultural Heritage Board would be the Coddingtown Mall rotating sign. There are no preservation districts in the project area, and the Cultural Heritage Board does not have authority over older homes on the list that are not in a preservation district.

While the Specific Plan would need to comply with these regulations, any new construction activities in the vicinity of a historical structure listed or eligible for listing on local, state, or national registers could impact or alter the historic structure and/or the character or setting of the area. However, the properties listed in the Historic Properties Inventory (with the exception of the Coddingtown Mall rotating sign, which is a designated landmark, and the junior college and high school, which were noted as being potentially eligible for the National Register) were listed mainly because of their age. Because they are not in any of the city's preservation districts, they are not subject to the Landmark Alteration section of the Zoning Code and are not under the jurisdiction of the Cultural Heritage Board. Further, the buildings on the junior college and high school campuses are not governed by the City. The Specific Plan does not propose to change the land uses that would affect the rotating sign.

This impact would be less than significant.

Mitigation Measures

None required.

Known and Undiscovered Archaeological Resources (Standard of Significance 2)

Impact 3.5.2 Implementation of the project could result in the potential disturbance of known and undiscovered archeological resources. This impact is considered **less than significant**.

While not likely, the possibility exists for unanticipated and accidental archaeological discoveries to occur during ground-disturbing project-related activities. Any such discoveries have the potential to affect unique archaeological resources. The project would be subject to state requirements (e.g., Section 7050.5 of the Health and Safety Code) for the protection of cultural resources, as required under General Plan 2035 Policies HP-A-4 and HP-A-5. These requirements specify that all work within 100 feet of the discovery be stopped and an archaeological survey by a qualified professional be completed whenever there is evidence of an archaeological or paleontological site in a proposed project area. In addition, representatives of the Native American community must be consulted when necessary to ensure the respectful treatment of Native American sacred places. Any significant historical or archaeological impacts identified on the site must be mitigated in accordance with Section 7050.5 of the Health and Safety Code.

The Secretary of the Interior's Standards for Identification (Standards I and II) require survey activities to be conducted to document the information necessary to achieve defined preservation goals. Adherence to the standards from the Secretary of the Interior guidelines is required by General Plan Policy HP-B-1. In addition, General Plan Policy HP-B-8 requires sites to be preserved that are eligible for the NRHP and pursue listing eligible sites in the register. Additionally, the California Native American Historical, Cultural, and Sacred Sites Act and General Plan Policies HP-A-2 and HP-A-3 require proper notification of experts upon discovery of human remains, significant artifacts, or cultural resources for proper assessment and to determine the necessity for construction or excavation activity to cease.

General Plan Policy HP-A-1 requires review of proposed developments and work in conjunction with the California Historical Resources Information System, Northwest Information Center at Sonoma State University, to determine whether project areas contain known archaeological resources. Proper implementation of regulations from the Public Resources Code, specifically Section 21083.2, would diminish the potential impacts from any project involving the demolition or adverse change of an archaeological site that is listed on the NRHP or CRHR or is eligible for listing.

The Specific Plan's compliance with these regulations would ensure that potential disturbance of known and undiscovered archeological resources would have a less than significant impact.

Mitigation Measures

None required.

Human Remains (Standard of Significance 4)

Impact 3.5.3 Implementation of the project could result in the potential disturbance of human remains. This impact is considered **less than significant**.

Although it is not anticipated that any human remains would be encountered during project activities, the proposed project would be subject to the provisions of California Health and Safety Code Section 7050.5 and Public Resources Code Section 5097.94 et seq., regarding the discovery and disturbance of human remains. These provisions include contacting the Sonoma County Coroner and the Native American Heritage Commission if discovered remains appear to be human. Furthermore, the Secretary of the Interior's Standards for Identification (Standards I and II) require survey activities to be conducted to document the information necessary to achieve defined preservation goals. Adherence to the standards from the Secretary of the Interior guidelines are required by General Plan Policy HP-B-1. Additionally, the California Native American Historical, Cultural and Sacred Sites Act and General Plan Policies HP-A-2 and HP-A-3 require for proper notification of experts upon discovery of human remains and for construction or excavation activity to cease. Therefore, existing goals, policies, and guidelines would diminish the environmental impact from accidental disturbance of any human remains to a less than significant impact.

Mitigation Measures

None required.

Paleontological Resources (Standard of Significance 3)

Impact 3.5.4 Implementation of the proposed project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature. This impact is considered **less than significant**.

As with any project that involves earth moving, there is potential for the discovery of paleontological resources during project grading and excavation activities. However, the Santa Rosa General Plan 2035 EIR does not identify paleontological resources in the city. As such, it is not anticipated that there would be significant risk of discovery of or damage to paleontological resources from implementation of the proposed project. Although the potential exists for ground-disturbing activities to inadvertently impact an unknown resource, the likelihood of direct or indirect impacts is low due to the highly developed condition of the area. However, if these resources are inadvertently discovered, General Plan Policies HP-A-2 and HP-A-3 (with assistance from a paleontologist) will be implemented along with federal and state statutes protecting these resources from disturbance and destruction.

Therefore, existing goals, policies, and guidelines would diminish the environmental impact from potential destruction of unique paleontological resources, sites, or unique geologic features resulting from development or redevelopment to a less than significant impact.

Mitigation Measures

None required.

3.5.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting associated with the proposed Specific Plan includes existing, proposed, planned, and reasonably foreseeable projects and growth within the city and the region. Continued growth in the region would contribute to potential conflicts with cultural and paleontological resources. These resources include archaeological resources associated with Native American activities and historic resources associated with settlement, farming, and economic development.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cultural Resources

Impact 3.5.5 Implementation of the project, along with any foreseeable development in the project vicinity, could contribute to cumulative impacts to cultural resources. This impact is considered **less than cumulatively considerable**.

The General Plan 2035 EIR found that the impacts related to the potential for development under the General Plan would be reduced to less than cumulatively considerable levels with the policies included in the General Plan. The impacts resulting from the activities set forth in the Specific Plan are consistent with Santa Rosa's General Plan and require the same mitigation measures. Such regulations and mitigation measures include the monitoring of construction sites in proximity to known resources, immediate cessation of construction activity upon discovery of unidentified human remains, and the protection of cultural resources. Since the Specific Plan would be subject to the same regulations and policies, it would result in a **less than cumulatively considerable** impact to cultural resources.

Mitigation Measures

None required.

REFERENCES

Caltrans (California Department of Transportation). 2004. *Transportation- and Construction-Induced Vibration Guidance Manual*. Sacramento: Caltrans, Noise, Vibration, and Hazardous Waste Management Office.

City of Santa Rosa. 1990. *Cultural Heritage Survey: Historic Properties Inventory.*

City of Santa Rosa. 2007. *Downtown Station Area Specific Plan Draft Program EIR.*

City of Santa Rosa. 2009a. *Santa Rosa General Plan 2035*.

City of Santa Rosa. 2009b. *Santa Rosa General Plan 2035 Draft Environmental Impact Report*.

City of Santa Rosa. 2012. *Existing Conditions Report for the North Santa Rosa Station Area Specific Plan*.

3.6 Geology and Soils

This section describes the geology of the project site and surrounding vicinity and analyzes issues such as potential exposure of people and future improvements to geologic hazards, alterations to terrain, and erosion. It also discusses the types of soil that have been identified on the site and their properties as they relate to the proposed project. In addition, potential geologic and seismic hazards such as earthquakes and landslides are discussed. Finally, mineral resources are discussed and analyzed.

3.6.1 SETTING

LOCAL GEOLOGY AND TOPOGRAPHY

The Specific Plan area lies within the geologic region of California referred to as the Coast Ranges geomorphic province. The Coast Ranges province lies between the Pacific Ocean and the Great Valley (Sacramento and San Joaquin valleys) provinces and stretches from the Oregon border to the Santa Ynez Mountains near Santa Barbara. Much of the Coast Ranges province is composed of marine sedimentary deposits and volcanic rocks that form northwest-trending mountain ridges and valleys, running subparallel to the San Andreas Fault Zone. The relatively thick marine sediments dip east beneath the alluvium of the Great Valley. The Coast Ranges can be further divided into the northern and southern ranges, which are separated by the San Francisco Bay. The San Francisco Bay lies within a broad depression created from an east–west expansion between the San Andreas and the Hayward fault systems. (Santa Rosa General Plan 2035 DEIR, 2009)

The Northern Coast Ranges largely comprise the Franciscan Complex or Assemblage, which consists primarily of graywacke, shale, greenstone (altered volcanic rocks), basalt, chert (ancient silica-rich ocean deposits), and sandstone that originated as ancient sea floor sediments. Franciscan rocks are overlain by volcanic cones and flows of the Quien Sabe, Sonoma, and Clear Lake volcanic fields. (Santa Rosa General Plan 2035 DEIR, 2009)

The City of Santa Rosa lies within the northeastern portion of the Cotati valley found along the Santa Rosa Plain and also includes part of the Sonoma Mountains to the east. The Specific Plan area can be characterized by three distinct topographic regimes: gently sloping alluvial plains, upland foothills, and low valleys. The city is situated at the confluence of Matanzas Creek and Santa Rosa Creek, both of which originate from the Sonoma Mountains to the east. The Santa Rosa Plain slopes gently to the west, away from the uplands, toward the lowest elevations of Cotati Valley. Elevations within the Specific Plan area range between 120 and 200 feet above mean sea level. Eastern valleys such as Rincon Valley and Bennett Valley are considered the low intervening valleys at 200 to 300 feet above mean sea level with gentle slopes ranging from 0 to 15 percent. (Santa Rosa General Plan 2035, 2009)

In general, Santa Rosa is underlain by volcanic flow deposits known as the Sonoma Volcanics, sedimentary rocks known as the Petaluma Formation, and alluvial deposits. The Sonoma Volcanics formed during volcanic activity in the region approximately 3 to 6 million years ago and are generally found in the hilly upland areas. The Petaluma Formation is similar in age and consists of claystones, siltsones, and mudstones formed from the deposition of eroded materials in the upland areas. The alluvial deposits have been divided into the younger Huichia Formation and the Glen Ellen Formation, which consist of gravels, silt, sands, and clays found predominantly in the lower valley areas east of Santa Rosa. Recent alluvial sediments deposited after the aforementioned formations are divided into younger and older deposits. The older deposits are considered to be older alluvial fan deposits, dissected by river action, and consist of gravels from the nearby Rodgers Creek Fault Zone. The younger alluvial sediments consist of gravels, sands, silts, and clays. These deposits fill the valleys and originated from continued erosion of the upland areas (Santa Rosa General Plan 2035, 2009). The California Geological Survey (CGS) of the Department of Conservation designates the entire Specific Plan area as Qo (older alluvium) on the Geologic Map of the Santa Rosa Quadrangle (CGS 2012).

SOILS

The United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) (formerly known as the Soil Conservation Service) has characterized the majority of soils in Santa Rosa as clayey alluvial soils and riverwash, as well as some silty and gravelly soils and loams. The most prominent soil type in the city is the Zamora silty claim loam found on 0 to 2 percent slopes, although many other soil units are also mapped in the area including Arbuckle, Clear Lake, Guenoc, Haire Clays, Spreckles, Wright, and Yolo. Zamora soils are moderately permeable and exhibit slow runoff and slight susceptibility to erosion hazards. (Santa Rosa General Plan 2035, 2009)

Site Soils

Soil is generally defined as the unconsolidated mixture of mineral grains and organic material that mantles the land surface. Soils can develop on unconsolidated sediments and weathered bedrock. The characteristics of soil reflect the five major influences on their development: topography, climate, biological activity, parent (source) material, and time. The study area is mantled by surface soils that reflect the characteristics of the underlying materials on which the soil is developed.

The soils of the Specific Plan area are predominantly of the Huichica-Wright-Zamora association. According to the Sonoma County Soils Survey, the Specific Plan area is underlain by Zamora silty clay loam (ZaA) (70 percent), Wright loam (WgC, WhA, WmB) (20 percent), alluvial land (AeA) (8 percent), Clear Lake clay (CfA) (1 percent), and other soils (1 percent). These soils are formed on weathered alluvial deposits and sedimentary alluvium. Specific Plan area soils range from somewhat poorly drained to well drained and are generally described as silty clay loams. Most subtypes are classified as having moderate to high shrink-swell potential. (NRCS 2012)

Site Geology

An area geologic map shows that the Specific Plan area is mapped as old alluvial fan deposits (Qof) of Quaternary Age (greater than 10,000 years old and less than 2 million years old). These fan deposits are described as consisting of deeply weathered and poorly sorted coarse sand and gravel. The deposits are coarse since they are near the sediment source. Since the area has been developed, these deposits are likely to have been significantly graded. There is also a significant volume of imported fill in developed areas that may have a totally different composition. (Santa Rosa General Plan 2035 DEIR, 2009)

Expansiveness

Expansive soils possess a “shrink-swell” characteristic. Shrink-swell is the cyclic change in volume (expansion and contraction) that occurs in fine-grained clay sediments from the process of wetting and drying. Structural damage may occur over a long period of time, usually the result of inadequate soil and foundation engineering or the placement of structures directly on expansive soils.

Expansion and contraction of volume can occur when expansive soils undergo alternating cycles of wetting (swelling) and drying (shrinking). During these cycles, the volume of the soil changes markedly. As a consequence of such volume changes, structural damage to buildings and infrastructure may occur if the potentially expansive soils were not considered in project design and during construction.

Most of the study area is located on alluvial flatlands. Alluvium and associated materials can result in weak, compressible or expansive soils. The alluvial deposits and soils underlying the study area have moderate to high shrink-swell potential and are generally classified as expansive soils (Santa Rosa General Plan 2035 DEIR, 2009).

Soil Erosion

Soil erosion is a process whereby soil materials are worn away and transported to another area, either by wind or water. Rates of erosion can vary depending on the soil material and structure, placement, and human activity. Soil containing high amounts of silt can be easily eroded, while sandy soils are less susceptible. Excessive soil erosion can eventually damage building foundations and roadways. Erosion is most likely to occur on sloped areas with exposed soil, especially where unnatural slopes are created by cut and fill activities. Soil erosion rates can be higher during the construction phase. Typically, the soil erosion potential is reduced once the soil is graded and covered with concrete, structures, or asphalt. Although the project site is relatively level and existing on-site soils are not characterized as erosion-prone, grading or stockpiling activities during construction could result in soil erosion. (Santa Rosa General Plan 2035 DEIR, 2009)

Settlement

Settlement is the depression of the bearing soil when a load, such as that of a building or new fill material, is placed upon it. Soils tend to settle at different rates and by varying amounts depending on the load weight, which is referred to as differential settlement. Areas are susceptible to differential settlement if underlain by compressible sediments, such as poorly engineered artificial fill or loose unconsolidated alluvial sediments.

Differential settlement or subsidence could occur if buildings or other improvements were built on low-strength foundation materials (including imported fill) or if improvements straddle the boundary between different types of subsurface materials (e.g., a boundary between native material and fill). Although differential settlement generally occurs slowly enough that its effects are not dangerous to inhabitants, it can cause significant building damage over time. Any portions of the project area that contain loose or uncontrolled (non-engineered) fill may be susceptible to differential settlement. (Santa Rosa General Plan 2035 DEIR, 2009)

Slope Failure/Landslide Hazards

Slope failures, commonly referred to as landslides, include many phenomena that involve the downslope displacement and movement of material, either triggered by static (i.e., gravity) or dynamic (i.e., earthquake) forces. A slope failure is a mass of rock, soil, and debris displaced downslope by sliding, flowing, or falling. Exposed rock slopes undergo rockfalls, rockslides, or rock avalanches, while soil slopes experience shallow soil slides, rapid debris flows, and deep-seated rotational slides. Landslides may occur on slopes of 15 percent or less; however, the probability is greater on steeper slopes that exhibit old landslide features such as scarps, slanted vegetation, and transverse ridges. Landslide-susceptible areas are characterized by steep slopes and downslope creep of surface materials. Debris flows consist of a loose mass of rocks and other granular material that, if saturated and present on a steep slope, can move downslope. The rate of rock and soil movement can vary from a slow creep over many years to a sudden mass movement. Landslides occur throughout California, but the density of incidents increases in zones of active faulting. The Specific Plan area is not highly susceptible to slope failure or landslides.

FAULTS AND SEISMICITY

Local Seismic Activity

The San Francisco Bay Area contains both active and potentially active faults and is considered a region of high seismic activity. The United States Geological Survey (USGS), along with the California Geological Survey and the Southern California Earthquake Center, formed the 2007 Working Group on California Earthquake Probabilities, which has evaluated the probability of one or more earthquakes of magnitude 6.7 or higher occurring in California over the next 30 years. The result of the evaluation indicated a 63 percent likelihood that such an earthquake event will occur in the Bay Area between 2003 and 2032 (Santa Rosa General Plan 2035 DEIR, 2009). For Northern California, the combined Hayward-Rodgers Creek Fault has the highest probability (31percent in the next 30 years) for being the source of a magnitude 6.7 or higher seismic event. However, many of the other active faults in the region are also capable of causing significant ground-shaking in the Specific Plan area. (Santa Rosa General Plan 2035 DEIR, 2009)

Santa Rosa lies adjacent to the Rodgers Creek Fault Zone and is approximately 8 miles southeast of the Maacama Fault Zone and 20 miles northeast of the San Andreas Fault Zone. The San Andreas Fault Zone is a major structural feature in the region and forms a boundary between the North American and Pacific tectonic plates. The Hayward-Rodgers Creek and San Andreas fault systems are two principally active Bay Area strike-slip-type faults that within the last 150 years have been responsible for historic earthquakes such as the 1989 Loma Prieta earthquake in Santa Cruz. The Rodgers Creek fault is considered an extension of the Hayward fault and has experienced historic seismic events in 1969 and 1898. The Maacama Fault Zone experienced movement within the last 11,000 years and is capable of producing a maximum moment magnitude 7.1 earthquake. Other principal faults capable of producing ground-shaking in Santa Rosa include the East Bay's Hayward fault, the San Gregorio-Hosgri Fault Zone along the San Mateo Coast, the Calaveras fault, and the Concord-Green Valley fault.

The hazards associated with these regional active faults are related to the estimated potential magnitude of each fault. The estimated (moment) magnitudes represent characteristic earthquakes on particular faults. While magnitude is a measure of the energy released in an earthquake, intensity is a measure of the ground-shaking effects at a particular location. Ground movement during an earthquake can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geologic material. The composition of underlying soils, even those relatively distant from faults, can intensify ground shaking. The Modified Mercalli intensity scale is commonly used to measure earthquake effects due to ground shaking. The Modified Mercalli values for intensity range from I (earthquake not felt) to XII (damage nearly total), and intensities ranging from IV to X could cause moderate to significant structural damage. In Santa Rosa, maximum ground shaking intensity resulting from a 7.0 earthquake generated on the Rodgers Creek fault is anticipated to be very strong (Modified Mercalli VIII) to very violent (X) (Santa Rosa General Plan 2035 DEIR, 2009). As a comparison, ground shaking during the 1989 Loma Prieta earthquake (7.1) resulted in light (Modified Mercalli V) ground shaking, whereas the 1906 earthquake produced moderate (VI) to very strong (VIII) ground shaking in the city (Santa Rosa General Plan 2035 DEIR, 2009).

The San Andreas Fault Zone includes numerous active faults found by the California Division of Mines and Geology (now named California Geological Survey) under the Alquist-Priolo Earthquake Fault Zoning Act to be "active" (i.e., to have evidence of fault rupture in the past

11,000 years). Some of the major active faults within the San Andreas Fault Zone include the San Andreas, Hayward, Rodgers Creek, Calaveras, San Gregorio- Seal Cove, Maacama, West Napa, Green Valley, Concord, Greenville, and Calaveras faults. The closest fault to the Specific Plan area is the Rodgers Creek fault, located about 0.5 mile to the east of Santa Rosa.

In a fact sheet published in 2003, the USGS estimated there was a 62 percent probability that between the years 2003 and 2032, a 6.7 or greater magnitude earthquake would occur in the San Francisco Bay Region. The probability of a 6.7 magnitude or greater earthquake occurring along individual faults was estimated to be 21 percent along the San Andreas fault, 10 percent along the San Gregorio fault, 27 percent along the Hayward-Rodgers Creek fault, and 11 percent along the Calaveras fault (Santa Rosa General Plan 2035 DEIR, 2009).

Surface Fault Rupture

Seismically induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake's seismic waves. The magnitude and nature of fault rupture can vary for different faults or even along different strands of the same fault. Surface rupture can damage or collapse buildings, cause severe damage to roads and pavement structures, and cause failure of overhead as well as underground utilities. As a result of the damage, buildings could become uninhabitable, roads could close, and utility service could be disrupted for an undetermined length of time. Future earthquakes are generally more likely to occur on faults that have had more recent activity and are aligned to relieve accumulating stresses. Ground rupture is typically confined to relatively narrow zones (a few feet to tens of feet wide) and considered more likely along active faults. An Alquist-Priolo Fault Rupture Hazard Zone, as designated through the Alquist-Priolo Earthquake Fault Zoning Act, extends through downtown Santa Rosa.

Ground Shaking

Strong ground movement from a major earthquake could affect the project area during the next 30 years. Earthquakes on the active faults (listed in Table 4.M-1 of the General Plan EIR) are expected to produce a range of ground-shaking intensities at the project area. Ground shaking may affect areas hundreds of miles distant from the earthquake's epicenter. A major seismic event on one of these active faults could cause violent (Modified Mercalli IX) to moderate (VI) ground shaking at the site, as experienced during earthquakes in recent history, namely the 1989 Loma Prieta earthquake. Violent ground shaking from an earthquake on the Rodgers Creek fault could result in considerable damage, with buildings shifted off their foundations and underground pipes broken.

The common way to describe ground motion during an earthquake is with the motion parameters of acceleration and velocity in addition to the duration of the shaking. A common measure of ground motion is the peak ground acceleration. The peak ground acceleration for a given component of motion is the largest value of horizontal acceleration obtained from a seismograph. Peak ground acceleration is expressed as the percentage of the acceleration due to gravity (g), which is approximately 980 centimeters per second squared. In terms of automobile accelerations, one "g" of acceleration is a rate of increase in speed equivalent to a car traveling 328 feet from rest in 4.5 seconds. According to the USGS/CGS Probabilistic Seismic Hazard Assessment Model, peak ground acceleration in the city could reach or exceed 0.63 g (affect a particular site, and expresses the probability of exceeding a certain ground motion) (Santa Rosa General Plan 2035 DEIR, 2009). A probabilistic seismic hazard map represents the severity of ground shaking from earthquakes that geologists and seismologists agree could occur, but has a 90 percent chance of not exceeding in 50 years (an annual probability occurrence of 1 in 475). It is "probabilistic" in the sense that the analysis takes into consideration the uncertainties in the size and location of earthquakes and the resulting ground motions that can affect a particular site, and expresses the probability of exceeding a certain ground motion. (Santa Rosa General Plan 2035 DEIR, 2009)

Liquefaction

Liquefaction is a phenomenon whereby unconsolidated and/or near-saturated soils lose cohesion and are converted to a fluid state as a result of severe vibratory motion. The relatively rapid loss of soil shear strength during strong earthquake shaking results in temporary, fluid-like behavior of the soil. Soil liquefaction causes ground failure that can damage roads, pipelines, underground cables, and buildings with shallow foundations. Liquefaction can occur in areas characterized by water-saturated, cohesionless, granular materials at shallow depths or in saturated unconsolidated or artificial fill sediments located in reclaimed areas along the margin of the San Francisco Bay.

Liquefaction potential is highest in areas underlain by loose fills, Bay mud, and unconsolidated alluvium. The CGS has not investigated the project area or surrounding area for potential designation as a Seismic Hazard Zone for liquefaction. However, according to mapping compiled by the Association of Bay Area Governments (ABAG), the majority of the Specific Plan area has a moderate liquefaction potential, but there are some isolated areas where the potential is greater (Santa Rosa General Plan 2035 DEIR, 2009).

Earthquake-Induced Settlement

Settlement of the ground surface can be accelerated and accentuated by earthquakes. During an earthquake, settlement can occur as a result of the relatively rapid rearrangement, compaction, and settling of subsurface materials (particularly loose, non-compacted, and variable sandy sediments). Settlement can occur both uniformly and differentially (i.e., where adjoining areas settle at different rates). Areas are susceptible to differential settlement if underlain by compressible sediments, such as poorly engineered artificial fill or loose alluvial sediments. (Santa Rosa General Plan 2035 DEIR, 2009)

3.6.2 REGULATORY FRAMEWORK

FEDERAL

Uniform Building Code

The purpose of the Uniform Building Code (UBC) is to provide minimum standards to preserve the public peace, health, and safety by regulating the design, construction, quality of materials, certain equipment, location, grading, use, occupancy, and maintenance of all buildings and structures. UBC standards address foundation design, shear wall strength, and other structural related conditions.

STATE

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. A direct result of the 1971 San Fernando earthquake and the extensive surface fault ruptures that damaged numerous homes, commercial buildings, and other structures, the act's main purpose is to prevent the construction of buildings used for human occupancy on the surface of active faults. The act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards. The Seismic Hazards Mapping Act (discussed below) addresses non-surface fault rupture earthquake hazards, including liquefaction and seismically induced landslides.

The law requires the state geologist to establish regulatory zones (known as Earthquake Fault Zones) around the surface traces of active faults and to issue appropriate maps. The maps are distributed to all affected cities, counties, and state agencies for their use in planning and controlling new or renewed construction. The law requires that before a project can be permitted, cities and counties must require a geologic investigation to demonstrate that proposed buildings will not be constructed across active faults. An evaluation and written report of a specific site must be prepared by a licensed geologist. If an active fault is found, a structure for human occupancy cannot be placed over the trace of the fault and must be set back from the fault (generally 50 feet) (DOC 2012).

Seismic Hazards Mapping Act

The Seismic Hazards Mapping Act of 1990 (Public Resources Code, Chapter 7.8, Sections 2690–2699.6), passed by the legislature following the 1989 Loma Prieta earthquake, directs the Department of Conservation, California Geological Survey to identify and map areas prone to liquefaction, earthquake-induced landslides, and amplified ground shaking. The purpose of the act is to minimize loss of life and property through the identification, evaluation, and mitigation of seismic hazards.

Staff geologists in the Seismic Hazard Zonation Program gather existing geological, geophysical, and geotechnical data from numerous sources to produce the Seismic Hazard Zone Maps. They integrate and interpret these data regionally in order to evaluate the severity of the seismic hazards and designate as Zones of Required Investigation those areas prone to liquefaction and earthquake-induced landslides. The City of Santa Rosa, including the Specific Plan area, is not affected by Seismic Hazard Zonation Program zones (DOC 2012).

California Building Code

The State of California provides minimum standards for building design through the California Code of Regulations, Title 24, also known as the California Building Standard Code or the California Building Code (CBC). The CBC is based on the Uniform Building Code but modifies UBC regulations for specific conditions found in California and includes a large number of more detailed and/or more restrictive regulations. For example, the CBC includes common engineering practices requiring special design and construction methods that reduce or eliminate potential expansive soil related impacts. The CBC requires structures to be built to withstand ground shaking in areas of high earthquake hazards and the placement of strong motion instruments in larger buildings to monitor and record the response of the structure and the site of seismic activity. Compliance with CBC regulations ensures the adequate design and construction of building foundations to resist soil movement. In addition, the CBC contains drainage requirements in order to control surface drainage and to reduce seasonal fluctuations in soil moisture content.

National Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES) permit program, authorized by Section 402(p) of the federal Clean Water Act, controls water pollution by regulating point sources, such as construction sites and industrial operations that discharge pollutants into waters of the United States. In California, NPDES general permits require filing of a Notice of Intent to discharge and the preparation of a stormwater pollution prevention plan (SWPPP) to control discharges from the site, including soils, to protect waterways. A SWPPP describes the measures or practices to control discharges during both the construction and operational phases of the proposed project. A SWPPP identifies project design features and structural and non-structural best management practices (BMPs) that will be used to control, prevent, remove, or reduce stormwater pollution from the site, including sediment from erosion.

Local

City of Santa Rosa General Plan

The Santa Rosa General Plan 2035 serves as the overall guiding policy document for the City of Santa Rosa. The following is a list of applicable General Plan goals and policies most pertinent to the Specific Plan in regard to geology and soils.

Noise and Safety Element

Goal NS-C: Prohibit development in high-risk geologic and seismic hazard areas to avoid exposure to seismic and geologic hazards.

Policy NS-C-1: Prior to development approval, require appropriate geologic studies to identify fault trace locations within active fault zones as designated by the provisions of the Alquist-Priolo Earthquake Fault Zoning Act. California registered geologists or engineers must conduct these studies and investigation methodologies must comply with guidelines set forth by the Alquist-Priolo Earthquake Fault Zoning Act. Compliance with the Act would insure proper setback or appropriate design to minimize the potential hazards resulting from fault movement and surface displacement.

Policy NS-C-2: Require comprehensive geotechnical investigations prior to development approval, where applicable. Investigations shall include evaluation of landslide risk, liquefaction potential, settlement, seismically induced landsliding, or weak and expansive soils. Evaluation and mitigation of seismic hazards, including ground shaking, liquefaction, and seismically induced landslides, shall comply with guidelines set forth in the most recent version of the California Division of Mines and Geology (CDMG) Special Publication 117. The level of investigation would depend on physical site location, local or regional geologic or seismic hazards, and recommendations by a consulting engineer.

Policy NS-C-3: Restrict development from areas where people might be adversely affected by known natural or manmade geologic hazards. Hazards might include unstable slopes, liquefiable soils, expansive soils or weak poorly engineered fills, as determined by a California registered geologist or engineer.

Policy NS-C-4: Restrict development of critical facilities--such as hospitals, fire stations, emergency management headquarters, and utility lifelines, including broadcast services, sewage treatment plants, and other places of large congregations—in areas determined as high-risk geologic hazard zones (e.g. Rodgers Creek Fault zone, liquefiable soils, areas of slope instability).

Policy NS-C-5: Require identification and evaluation of existing structural hazards related to unreinforced masonry, poor or outdated construction techniques, and lack of seismic retrofit. Abate or remove any structural hazard that creates an unacceptable level of risk, including requiring post-earthquake buildings that are not currently retrofitted and are located within areas determined to experience strong ground shaking during an earthquake.

Policy NS-C-6: Require appropriate and feasible seismic retrofit, as determined by a registered structural engineer, of commercial, industrial, and public buildings that are not currently retrofitted and are located within areas determined to experience strong ground shaking during an earthquake.

Policy NS-C-7: Require inspection for structural integrity of water storage facilities, water conveyance facilities, electricity transmission lines, roadways, water detention facilities, levees, and other utilities after a major seismic event, especially on the San Andreas or Rodgers Creek faults.

Local Hazards Mitigation Plan

The Local Hazards Mitigation Plan is a multijurisdictional document entitled *Taming Natural Disasters*. The City of Santa Rosa adopted the document as its mitigation strategy in May 2006. The goal of the mitigation plan is to maintain and enhance a disaster-resistant region by reducing the potential loss of life, property damage, and environmental degradation from natural disasters, while accelerating economic recovery from those disasters. The City of Santa Rosa is committed to reviewing and updating this plan at least once every five years, as required by the Disaster Mitigation Act of 2000. This plan is currently being updating.

Building Code

Chapter Title 18 of the Santa Rosa Municipal Code addresses general building and construction practices and lists requirements. Building and construction is required to be in accordance with the California Building Code Volumes 1 & 2, 2001 Edition, published by the International Conference of Building Officials and the California Building Standards Commission. Review and abatement of existing buildings considered seismic hazards is included under Chapter 18-48 of the Municipal Code.

Grading and Soils Ordinances

Title 19 of the Santa Rosa Municipal Code discusses grading and soils requirements for structural foundations. Provisions include completion of a preliminary soils report prepared by a licensed civil engineer based upon adequate test borings or excavations for subdivisions. This may be waived if the City's Chief Building Official determines that critically expansive soil or other soils problems which could lead to structural defects do not exist. If the soils report indicates the presence of critically expansive soil or other soil problems which, if not corrected, would lead to structural damage, the City requires a complete soils investigation for each lot in a subdivision prepared by a licensed civil engineer. This report is required to include recommended corrective actions to prevent structural damage to proposed structures. The report and investigation are conditions of approval for subsequent plan-level and building permits.

Santa Rosa Storm Water Management Plan

In 2010, Santa Rosa was issued a joint Municipal Separate Storm Sewer (MS4) NPDES permit with the County of Sonoma and Sonoma County Water Agency (SCWA) by the North Coast Regional Water Quality Control Board (North Coast RWQCB). The City must comply with the provisions of the permit by ensuring that new development and redevelopment mitigate water quality impacts to stormwater runoff both during construction and post construction.

Under direction from the North Coast RWQCB, the City prepared the Storm Water Low Impact Development Technical Design Manual (LID Manual). The LID Manual was adopted in October 2011 and implemented in 2012 as a part of the MS4 NPDES permit for the City of Santa Rosa, the County of Sonoma, and the SCWA. The purpose of the manual is to manage the quality and volume of stormwater runoff in the Santa Rosa area and to aid in the conservation of natural areas in the region. The manual describes and evaluates various best management practices for stormwater management and outlines procedures for BMP maintenance and inspection. Both privately sponsored and public capital improvement projects in the Santa Rosa area are governed by LID Manual requirements.

Additionally, a Notice of Intent with the State Water Resources Control Board (SWRCB) is required for discharges of stormwater associated with construction activity of projects disturbing 1 acre or more of soil. A developer must propose control measures that are consistent with the California Stormwater Quality Association. A stormwater pollution prevention plan (SWPPP) must be developed and implemented for each site covered by the State General Permit.

3.6.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following State CEQA Guidelines Appendix G thresholds of significance. An impact to geology, soils, and mineral resources is considered significant if the project would:

1) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault.

2) Strong seismic ground shaking.

3) Seismic-related ground failure, including liquefaction.

4) Landslides.

5) Result in substantial soil erosion or the loss of topsoil.

6) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

7) Locating on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.

8) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

9) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state, or a locally important mineral resource recovery site delineated on a local land use plan.

METHODOLOGY

Evaluation of potential geologic and soil impacts of the proposed Specific Plan was based on review of available documentation, including the City of Santa Rosa General Plan, General Plan EIR, and other documentation. Other documents reviewed include the Downtown Station Area Specific Plan EIR and documentation from ABAG, the USDA, and the USGS.

PROJECT IMPACTS AND MITIGATION MEASURES

Ground Rupture (Standard of Significance 1)

Impact 3.6.1 In the event of a major earthquake in the region, surface fault rupture would cause damage to, destruction of, or injury in development anticipated under the proposed Specific Plan. The impacts of ground rupture on the Specific Plan area are considered **less than significant.**

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 initiated a program of mapping active and potentially active faults. Active and potentially active faults in Sonoma County have undergone extensive investigation in the past. ABAG has summarized results from many of these studies to quantify the potential impact to certain areas, while the CGS has established Earthquake Fault Zone boundaries.

The latest available maps show the nearest Earthquake Fault Zone to the Specific Plan area is the Rodgers Creek fault, with the greatest impact on the commercial corridors along Highway 101 (Santa Rosa General Plan 2035 DEIR, 2009). No other faults considered active or potentially active are mapped across the Specific Plan area. Aside from mapped faults, there could also be a rupture on an undiscovered or blind thrust fault. Such an earthquake caused major damage in the Northridge area of the San Fernando Valley in Southern California in 1994. This risk is difficult to assess, but is considered most likely parallel to a mapped thrust fault zone, particularly where there has been evidence of recent uplift or mountain building. However, this is not the case in the Specific Plan area, so the risk from fault rupture is considered a **less than significant** impact.

Mitigation Measures

None required.

Ground Shaking (Standard of Significance 2)

Impact 3.6.2 In the event of a major earthquake in the region, ground shaking would cause damage to, destruction of, or injury in development anticipated under the proposed Specific Plan. The impacts of ground shaking on the Specific Plan area are considered **less than significant**.

Strong to violent ground shaking can cause foundation or other major structural damage leading to damage or collapse, falling objects endangering people and structures, and creation of general ground instability undermining or weakening structures leading to eventual collapse or requiring major repairs. The San Francisco Bay Area is a seismically active region, and experts consider it likely that Santa Rosa, including the Specific Plan area, would be subjected to at least strong seismically induced ground shaking within the design life of the development in the area. According to a recent study completed by the Working Group on California Earthquake Probabilities assessing the probability of earthquakes in the San Francisco Bay Area, there is a 62 percent probability that a major earthquake of Richter Magnitude 6.7 or greater will strike the region during the next 30 years. (Santa Rosa General Plan 2035 DEIR, 2009)

The intensity of ground shaking will vary with the distance and magnitude of the earthquake causing the ground shaking. There is likely to be at least strong shaking equivalent to a Modified Mercalli intensity of VII due to a major earthquake along the San Andreas, Maacama, Hayward, or other faults. A major earthquake along the nearby Rodgers Creek fault is predicted to generate violent ground shaking equivalent to a Modified Mercalli intensity level of IX. (Downtown Station Area Specific Plan DEIR 2007)

According to ABAG, such shaking could completely destroy or badly damage unreinforced masonry or poorly built structures not meeting the current seismic code. Structures built to meet the current seismic code for resistance to lateral movement, including shear keys, bolted foundations, shear walls, and other precautionary engineering methods, are not predicted to be destroyed, but are likely to suffer at least minor damage, especially from items falling off shelves, cracked facades, damaged utility pipes, etc. Frame structures are predicted to shift off foundations if not bolted.

Actual ground motions resulting from ground acceleration may be amplified or dampened depending on the underlying geologic materials. Deep and soft soils tend to amplify waves, whereas shallow soils overlying hard bedrock tend to dampen shaking intensity. In the Specific Plan area, a relatively thick layer of alluvium from Steele Creek or Paulin Creek could amplify shaking where sedimentary layers are unconsolidated or where there are weak soils. Factors reducing amplification of ground waves include use of engineered fill, shallow rock, and subsurface drains designed to reduce ground saturation underneath foundations.

However, all structures in the Specific Plan area must be designed in accordance with currently adopted building codes and ordinances of the City of Santa Rosa, including the California Building Code. Furthermore, General Plan Policy NS-C-2 requires a comprehensive geotechnical investigation prior to development approval, where applicable. Such investigation must include evaluation of all seismic hazards, including seismic ground shaking. Additionally, Policy NS-C-4 restricts development of critical facilities in high-risk geologic hazard zones. General Plan Policies NS-C-5 and NS-C-6 further require identification, evaluation, and retrofitting of historical buildings. Moreover, Policy NS-C-7 requires inspection of major utilities following earthquakes. In addition, Title 19 of the Santa Rosa Municipal Code requires proper foundation engineering and construction in accordance with recommendations of a licensed civil engineer. Incorporation of seismic construction standards will reduce the potential for significant catastrophic effects of ground shaking such as complete structural failure, but may not eliminate completely the hazard of seismically induced ground shaking. However, subsurface geotechnical investigations would be performed to evaluate soils in the subsurface at each proposed development or redevelopment site within the Specific Plan area. Therefore, seismic shaking is considered a less than significant impact.

Mitigation Measures

None required.

Liquefaction (Standard of Significance 3)

Impact 3.6.3 In the event of a major earthquake in the region, localized liquefaction would cause damage to, destruction of, or injury in development anticipated under the proposed Specific Plan. The impacts of liquefaction on the Specific Plan area are considered **less than significant.**

Liquefaction is the temporary transformation of saturated, cohesionless soil into a viscous liquid as a result of ground shaking. As stated above, the majority of the Specific Plan area, like the rest of the city, has a moderate liquefaction potential, but there are some isolated areas where the potential is greater. This assessment is likely due to the occurrence of deep alluvial soils in close proximity to active faults.

A geotechnical investigation or geologic assessment would assess the site-specific liquefaction potential in more detail. While this may have been done for newer structures or renovations in the Specific Plan area, it has not been comparatively assessed for all sites in the Specific Plan area. However, general soils characteristics used to determine liquefaction potential may be determined from the soils survey. In addition to shallow groundwater causing saturated soils, cohesion is the most important measure determining whether a soil is prone to liquefaction. Cohesion reduces liquefaction potential, with those soils at greatest risk having little or no cohesion, such as sandy or silty soils. While the soils survey did not directly measure cohesion, it is well known that clayey or highly plastic soils have the highest cohesion.

General Plan Policy NS-C-2 requires an investigation prior to development approval for the potential of soil liquefaction during seismic ground shaking to result in damage to structures, pavements, and utilities. Furthermore, subsurface geotechnical investigations will be performed to evaluate soils in the subsurface at each proposed development or redevelopment site within the Specific Plan area. Therefore, liquefaction represents a less than significant impact to development proposed in the Specific Plan area.

Mitigation Measures

None required.

Landslides (Standard of Significance 4)

Impact 3.6.4 In the event of a major earthquake in the region, seismic-related landsliding would cause damage to, destruction of, or injury in development anticipated under the proposed Specific Plan. The impacts of seismic-related landslides on the Specific Plan area are considered **less than significant.**

During earthquake-induced ground shaking, unstable slopes can fail, causing landslides and debris flows. The Specific Plan aea is not known to be located within an earthquake-induced landslide zone. However, very steep slopes greater than 50 percent adjacent to Steele Creek or Paulin Creek may be subject to some type of slope failure as a result of violent ground shaking. Another feature characteristic of slope instability that could result from an earthquake is lurch cracking, the development of fissures or cracks on slopes overlain by weak soils that can result from swaying, rolling, or spreading of the ground during a strong earthquake. This hazard is considered minimal due to lack of slopes, except at the top of bank next to Steele Creek or Paulin Creek where development that encroaches upon the bank top may be susceptible to some sort of slope failure. Although General Plan Policy NS-C-3 requires development restrictions in unstable areas, including any unstable slopes, the policy does not identify the banks of Steele Creek or Paulin Creek as particularly unstable. The greatest chance of such failure would occur in response to strong seismic shaking and therefore seismically induced slope failure and instability adjacent to Steele Creek and Paulin Creek.

In the city, if a project meets the Zoning Code-required creek setback standards, no further stability analysis is required. If there is evidence of a stability problem or if a structure would encroach into the creek setback, the Building Division would require an analysis. Soils reports are required by the Building Division for new structures and additions larger than 500 square feet. A soils engineer would identify if there are stream bank issues. Compliance with these City-mandated requirements would ensure that this impact is less than significant.

Mitigation Measures

None required.

Soil Erosion or Loss of Topsoil (Standard of Significance 5)

Impact 3.6.5 New development anticipated under the proposed Specific Plan would be subjected to erosion and loss of topsoil. The impacts of soil erosion or loss of topsoil on the Specific Plan area are considered **less than significant.**

Redevelopment of sites within the Specific Plan area will involve the removal of existing structures and pavement that currently help to stabilize site soils. The exposure of the soils during land clearing and grading activities may lead to increased surface runoff and erosion, with possible impacts to Steele Creek or Paulin Creek. However, because the Plan area does not contain steep slopes or grades, the potential for soil erosion is slight and soil loss can be easily controlled. To reduce erosion, the City of Santa Rosa Grading and Erosion Control Ordinance requires the preparation and implementation of an erosion control plan. Moreover, General Plan Policy NS-C-8 requires erosion control measures to be implemented to reduce soil erosion from runoff, construction operations, wind, and other causes. These requirements overlap those of the Storm Water Management Plan, which requires the preparation and implementation of a SWPPP for individual development or redevelopment projects proposed under the Specific Plan. Therefore, erosion and loss of topsoil is considered a less than significant impact.

Mitigation Measures

None required.

Soil Settlement (Standard of Significance 6)

Impact 3.6.6 New development anticipated under the proposed Specific Plan would be subjected to differential settlement. The impacts of differential settlement on the Specific Plan area are considered **less than significant.**

Settlement of soils is a primary consideration for the stability of any foundation or structure. Settlement may be due to removal of groundwater trapped in pore spaces within soils. This type of settlement generally occurs in sand and silty sand soils. The reduction in pore pressure would cause the load to compress the pore space, causing settlement. Settlement may also occur due to compressibility of dry soils. Fine-grained soils such as silts and clays may also settle. Settlement of fine-grained soils is generally related to the density and moisture content of the soils. Low-density, high moisture content soils commonly settle during loading. Deep, fine-grained soils are present in the Specific Plan area and may be subject to compression and settlement during loading with fill soils or structural foundations.

According to the Geotracker database maintained by the State of California that contains monitoring well data, the depth to groundwater in the area has been recorded between 2 and 35 feet below the ground surface (SWRCB 2012).

In general, soils conditions are suitable for development and may be engineered in accordance with the California Building Code and other geotechnical requirements to provide sufficient foundation for structures. Requirements include removal of any non-suitable soils consisting of native subgrade or fill soils and replacement with compacted and moisture-conditioned engineered fill in accordance with accepted geotechnical standards. Testing, required under General Plan Policy NS-C-2, will be required prior to development approval, where applicable. Investigations shall include evaluation of landslide risk, liquefaction potential, settlement, seismically induced landsliding, or weak and expansive soils. Proper implementation of these regulations and policies would reduce the impact on development to a less than significant level.

Mitigation Measures

None required.

Unstable Geologic Soils (Standard of Significance 6)

Impact 3.6.7 New development anticipated under the proposed Specific Plan could be subject to erosion. The impacts of erosion on the Specific Plan area are considered **less than significant.**

Slope steepness is generally the dominant factor governing slope stability, along with drainage and soil and bedrock conditions. Steep slopes that exceed 50 percent are especially prone to landslides in areas of weak soil and/or bedrock. Debris flows and shallow slope failures are known to occur on very steep slopes with shallow soils.

Slope failures occur when the shear stress of a soil or rock mass exceeds its shear strength. Shear stress can be increased by adding to the weight of the soil or rock mass through saturation or loading. Shear strength can be reduced by erosion or grading at the toe of a slide mass. Failure can occur due to either an increase in shear stress or a decrease in shear strength. Zones of low shear strength are often associated with the presence of expansive clay soils and weak bedrock units or structural features susceptible to failure. Sandy soils on steep slopes can experience failure during periods of intense rainfall when loading of the soil with water exceeds the rate at which the soil can drain. These types of failures are generally termed debris flows or mudflows when finer material is involved. Landslides involve the discrete or coherent motion of a block of material and frequently occur along fault traces or structural discontinuities.

Geologic maps show no landslides that threaten the project area, so the risk of slope failure in the majority of the Specific Plan area is considered low. However, maps are not detailed enough to show small slope failures such as could occur along the banks of Steele Creek and Paulin Creek.

While existing conditions do not indicate particularly unstable soil conditions, improper compaction of engineered fill, creation of unstable slopes or cuts during mass grading, or unforeseen conditions could be an issue. General Plan Policies NS-C-1 through NS-C-4 generally restrict development in areas of high hazards and require geotechnical investigations to evaluate potential hazards and provide recommendations to mitigate them. These policies require more stringent requirements for critical facilities. In addition, Policy NS-C-8 requires minimum erosion control measures for current properties and those under construction to protect from soil erosion and loss of topsoil. Compliance with the City-mandated creek setback requirements discussed under Impact 3.6.4 above would ensure that this impact is less than significant.

Mitigation Measures

None required.

Expansive Soil (Standard of Significance 7)

Impact 3.6.8 The proposed project will be located on soils that may have the potential for expansion and contraction. Impacts associated with expansive soils are considered **less than significant.**

Soils with moderate to high expansion potential are susceptible to shrinking and swelling due to fluctuations in moisture content and are a common cause of foundation deterioration, especially cracking of concrete slabs. Expansive soils are defined in Table 18-1-B of the Uniform Building Code (1994), later adapted in the California Building Code adopted by the City of Santa Rosa. According to these criteria, highly expansive soils have an expansion index exceeding 90. Such soils are highly plastic, as they will deform constantly under a constant stress, not the case for brittle or visco-elastic solids and liquids. Highly plastic soils have a large plasticity index and behave plastically over a wide range of moisture conditions. In the Specific Plan area, soils are considered moderately plastic and are therefore considered to have at least moderate expansion and shrink-swell potential. Compliance with the City-mandated requirements discussed under Impact 3.6.4 above would ensure that this impact is less than significant.

Mitigation Measures

None required.

Septic Tank Support (Standard of Significance 8)

Impact 3.6.9 Land uses in the Specific Plan would not use septic tanks. There is **no impact**.

The area wastewater will be serviced by the City of Santa Rosa's sewer system. Therefore, the project is considered to have no impact related to septic tanks.

Mitigation Measures

None required.

Mineral Resources (Standard of Significance 9)

Impact 3.6.10 No significant mineral resources exist within the Specific Plan area. There is **no impact**.

According to the Santa Rosa General Plan 2035, no significant mineral resources are identified with the Specific Plan area (Santa Rosa General Plan 2035 DEIR, 2009). Therefore, no impact would occur.

Mitigation Measures

None required.

3.6.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

Impacts associated with geology and soils generally are site-specific (determined by a particular site's soil characteristics, topography, and proposed land uses) rather than cumulative in nature. Individual development projects in the region would be subject to, at a minimum, uniform site development and construction standards relative to seismic and other geologic conditions that are prevalent in the region. Impacts regarding surficial deposits, namely erosion and sediment deposition, can be cumulative in nature within a watershed.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Geology and Soils Impacts

Impact 3.6.11 Development described by the proposed Specific Plan in addition to other proposed and approved projects in the vicinity would not result in creation or exacerbation of any identified geological or soils impacts. This impact is **less than cumulatively considerable.**

Development within the Santa Rosa Urban Growth Boundary has the potential to result in a cumulative impact related to geology and seismicity. However, the General Plan 2035 EIR identified that with the policies included in the General Plan, the General Plan would result in a less than cumulatively considerable impact related to geologic and seismic impacts. Given that the Specific Plan area is relatively flat, there is low potential for the Specific Plan to cumulatively contribute to erosion or landslides. Soils in the Specific Plan area are not designated for protection; therefore, there is no impact if they are graded in compliance with existing policies and regulations. There is a potential impact from increased population in a seismic zone. However, this impact is discussed under the risk from seismic shaking and would be adequately addressed through compliance with the City's General Plan policies and ordinances. In addition, the Specific Plan would result in no impact to mineral resources. Overall development is unlikely to change the geology of the region; therefore, the Specific Plan would not contribute to a cumulative impact regarding geological and soil concerns. This impact is less than cumulatively considerable.

Mitigation Measures

None required.

REFERENCES

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3.7 Hazardous Materials / Human Health

This section addresses the potential presence of hazardous materials and conditions on the project site and in the vicinity, and analyzes the risks associated with introducing the proposed development to the area. The reader is referred to Section 3.6, Geology and Soils, for information regarding impacts associated with geologic and seismic hazards and to Section 3.3, Air Quality, regarding air quality hazards.

3.7.1 EXISTING SETTING

HAZARDOUS MATERIALS DEFINED

Under Title 22 of the California Code of Regulations (CCR), the term hazardous substance refers to both hazardous materials and hazardous wastes. Both of these are classified according to four properties: toxicity, ignitability, corrosiveness, and reactivity (CCR Title 22, Chapter 11, Article 3). A hazardous material is defined as a substance or combination of substances that may cause or significantly contribute to an increase in serious, irreversible, or incapacitating illness, or may pose a substantial presence or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. Hazardous wastes are hazardous substances that no longer have practical use, such as materials that have been discarded, discharged, spilled, or contaminated or are being stored until they can be disposed of properly (CCR Title 22, Chapter 11, Article 2, Section 66261.10). While hazardous substances are regulated by multiple agencies, as described below in subsection 3.6.2, Regulatory Framework, cleanup requirements are determined on a case-by-case basis according to the agency with lead jurisdiction over the project.

Public health is potentially at risk whenever hazardous materials are, or will, be used. It is necessary to differentiate between the "hazard" of these materials and the acceptability of the "risk" they pose to human health and the environment. A hazard is any situation that has the potential to cause damage to human health and the environment. The risk to health and public safety is determined by the probability of exposure, in addition to the inherent toxicity of a material (DTSC 2011).

Factors that can influence the health effects when human beings are exposed to hazardous materials include the dose the person is exposed to, the frequency of exposure, the duration of exposure, the exposure pathway (route by which a chemical enters a person's body), and the individual's unique biological susceptibility.

PROJECT SETTING

Records Review Findings

Several hazardous materials databases were searched to determine the potential for the presence of hazardous materials and hazardous waste in the project area pursuant to Government Code Section 65962.5. These databases are listed below.

Federal Record Sources

- NPL – National Priority List
- CERCLIS – Comprehensive Environmental Response, Compensation, and Liability Information System
- CERCLIS-NFRAP – CERCLIS No Further Remedial Action Planned

- RCRIS – Resource Conservation and Recovery Information System
- ERNS – Emergency Response Notification System
- BRS – Biennial Reporting System
- ROD – Records of Decision
- TRIS – Toxic Chemical Release Inventory System
- SNAP – Superfund NPL Assessment Program Database
- RCRA Info – Resource Conservation and Recovery Act Information
- EPA's Envirofacts – Environmental Protection Agency Envirofacts Database

State Record Sources

- CAL-SITES – contains potential or confirmed hazardous substance release properties
- CORTESE – "Cortese" Hazardous Waste and Substances Sites List
- SWF/LF (SWIS) – Solid Waste Information System
- LUST – Leaking Underground Storage Tank Information System
- CA UST – Active Underground Storage Tank Facilities

The California Leaking Underground Storage Tanks (LUST) List is an inventory of reported spills and leaks, both active and inactive, which is maintained by the various California Regional Water Quality Control Boards. It includes stationary and non-stationary source spills reported to state and federal agencies, including remediated and contaminated LUST sites. Using the State Water Resources Control Board's (SWRCB) Geotracker tool, 11 active sites were found in the LUST inventory within the Specific Plan area. Geotracker also lists 14 Cleanup Program Sites in the Specific Plan area. A Department of Toxic Substances Control (DTSC) Cleanup Site is listed in the Specific Plan area, but its status is "No Action Required" (SWRCB 2012).

CAL-SITES did not identify any hazardous sites (federal superfund, state response, voluntary cleanup, school cleanup sites, etc.) in the Specific Plan area.

The United States Environmental Protection Agency (EPA) lists multiple facilities of interest in the Specific Plan area. These include 41 EPA Facilities of Interest and three State/Tribe Facilities of Interest. The EPA's Enviromapper tool shows three Superfund (CERCLIS) sites, one Toxic Release (TRI) site, and 32 Hazardous Waste (RCRA Info) sites in the Specific Plan area (EPA 2012).

OTHER HAZARDS

A number of industrial sites in the project area have existing soil and groundwater contamination. Of particular concern is the "WYE" site, which is owned by Union Pacific Railroad and is contaminated with a number of hazardous substances. The WYE property site is located at 99 Francis Street, and both volatile organic compounds (VOCs) and heavy metals have been identified at the site. Of primary concern among the VOCs are trichloroethene, (trichloroethane), and Freon 1-13. Lead is the main heavy metal of concern, with hazardous levels in the soils. (Existing Conditions Report for the North Santa Rosa Station Area Specific Plan, 2012)

Transportation of Hazardous Materials

The transportation of hazardous materials in California is subject to various federal, state, and local regulations. It is illegal to transport explosives or inhalation hazards on any public highway not designated for that purpose, unless the use of the highway is required to permit delivery, or the loading of such materials (California Vehicle Code Sections 31602(b) and 32104(a)). The California Highway Patrol (CHP) designates through routes to be used for the transportation of hazardous materials. Transportation of hazardous materials is restricted to these routes except in cases where additional travel is required from that route to deliver or receive hazardous materials to and from users.

Airport Operations Hazards

Charles M. Schulz-Sonoma County Airport is located approximately 5.25 miles northwest of the project area (middle of the airstrip to middle of the project area). The comprehensive Airport Land Use Plan for Sonoma County indicates the Outer Safety Zone ends at Guerneville Road, west of the Specific Plan area (Sonoma County 2001).

3.7.2 REGULATORY FRAMEWORK

FEDERAL

Federal Clean Air Act (42 USC Section 7401 et seq.)

Administered by the United States Environmental Protection Agency, the federal Clean Air Act (CAA) regulates hazardous air pollutants from stationary and mobile sources via national ambient air quality standards (NAAQS). Section 112 of the CAA requires issuance of technology-based standards for major sources and certain area sources. Major sources are defined as a stationary source or group of stationary sources that emit or have the potential to emit 10 tons per year or more of a hazardous air pollutant or 25 tons per year or more of a combination of hazardous air pollutants. An area source is any stationary source that is not a major source. For major sources, Section 112 requires that the EPA establish emission standards which require the maximum degree of reduction in emissions of hazardous air pollutants. These emission standards are commonly referred to as maximum achievable control technology, or MACT standards (EPA 2011).

Federal Clean Water Act (33 USC Section 1251 et seq.)

The federal Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. Under the act, the EPA implements pollution control programs such as setting wastewater standards for industry and setting water quality standards for all contaminants in surface waters (EPA 2011).

The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained. Industrial, municipal, and other facilities must obtain permits through the EPA's National Pollutant Discharge Elimination System (NPDES) permit program if their discharges go directly to surface waters. In California, the EPA has authorized the state to administer the NPDES permit program.

Comprehensive Environmental Response, Compensation, and Liability Act (42 USC Section 9601 et seq.)

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) provides a federal "superfund" to clean uncontrolled or abandoned hazardous waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. Through CERCLA, the EPA identifies parties responsible for any release and ensures their participation in the cleanup. The EPA is authorized to implement CERCLA in all 50 states and in U.S. territories, though Superfund site identification, monitoring, and response activities are coordinated through the state environmental protection or waste management agencies. The Superfund Amendments and Reauthorization Act of 1986 reauthorized CERCLA to continue cleanup activities around the country and included several site-specific amendments, definition clarifications, and technical requirements (EPA 2011).

Resource Conservation and Recovery Act (42 USC Section 6901 et seq.)

The Resource Conservation and Recovery Act (RCRA) gives the EPA the authority to control hazardous waste from "cradle-to-grave," including the generation, transportation, treatment, storage, and disposal of hazardous waste. The RCRA also sets forth a framework for the management of nonhazardous solid wastes.

The federal Hazardous and Solid Waste Amendments are the 1984 amendments to the RCRA that focus on waste minimization and phasing out land disposal of hazardous waste as well as corrective action for releases. Some of the other mandates of this law include increased enforcement authority for the EPA, more stringent hazardous waste management standards, and a comprehensive underground storage tank program (EPA 2011).

Occupational and Safety Health Act (29 USC Section 651 et seq.)

The Occupational and Safety Health Act is intended to ensure worker and workplace safety by requiring that employers provide their workers a place of employment free from recognized hazards to safety and health, such as exposure to toxic chemicals, excessive noise levels, mechanical dangers, heat or cold stress, or unsanitary conditions. The Occupational Safety and Health Administration (OSHA) is a division of the United State Department of Labor that oversees the administration of the act and enforces standards in all 50 states.

Toxic Substances Control Act 15 USC Section 2601 et seq.

The Toxic Substances Control Act (TSCA) provides the EPA with authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. The TSCA addresses the production, importation, use, and disposal of specific chemicals including polychlorinated biphenyls (PCBs), asbestos, radon, and lead-based paint (EPA 2011).

Various sections of the TSCA provide authority to:

- Require, under Section 5, pre-manufacture notification for "new chemical substances" before manufacture.
- Require, under Section 4, testing of chemicals by manufacturers, importers, and processors where risks or exposures of concern are found.

- Issue Significant New Use Rules, under Section 5, when it identifies a “significant new use” that could result in exposures to, or releases of, a substance of concern.
- Maintain the TSCA Inventory, under Section 8, which contains more than 83,000 chemicals. As new chemicals are commercially manufactured or imported, they are placed on the list.
- Require those importing or exporting chemicals, under Sections 12(b) and 13, to comply with certification reporting and/or other requirements.
- Require, under Section 8, reporting and recordkeeping by persons who manufacture, import, process, and/or distribute chemical substances in commerce.
- Require, under Section 8(e), that any person who manufactures (including imports), processes, or distributes in commerce a chemical substance or mixture and who obtains information which reasonably supports the conclusion that such substance or mixture presents a substantial risk of injury to health or the environment to immediately inform EPA, except where EPA has been adequately informed of such information.

Federal Hazardous Materials Transportation Law and Hazardous Materials Regulations (49 USC Section 5101 et seq.)

The federal hazardous materials (hazmat) transportation law is the basic statute regulating hazardous materials transportation in the United States. Section 5101 of the federal hazmat law states that the purpose of the law is to protect against the risks to life, property, and the environment that are inherent in the transportation of hazardous material in intrastate, interstate, and foreign commerce.

The Hazardous Materials Regulations are administered by the Pipeline and Hazardous Material Safety Administration (PHMSA) and implement the federal hazmat law. The Hazardous Materials Regulations govern the transportation of hazardous materials via highway, rail, vessel, and air by addressing hazardous materials classification, packaging, hazard communication, emergency response information, and training. They also issue procedural regulations, including provisions on registration and public sector training and planning grants (49 CFR Parts 105, 106, 107, and 110). The PHMSA issues the Hazardous Materials Regulations (PHMSA 2011).

STATE

Unified Program

The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of the following six environmental and emergency response programs (CalEPA 2011):

- The Hazardous Waste Generator program and Hazardous Waste Onsite Treatment activities
- The Aboveground Storage Tank program Spill Prevention Control and Countermeasure Plan requirements
- The Underground Storage Tank program

- The Hazardous Materials Release Response Plans and Inventory program
- California Accidental Release Prevention program
- The Hazardous Materials Management Plans and the Hazardous Materials Inventory Statement requirements

The state agencies responsible for these programs set the standards, while local governments implement the standards. The California Environmental Protection Agency (CalEPA) oversees implementation of the Unified Program as a whole, and the local Certified Unified Program Agency (CUPA) is required to consolidate, coordinate, and make consistent the administrative requirements, permits, fee structures, and inspection and enforcement activities for these six program elements. Most CUPAs have been established as a function of a local environmental health or fire department. The Santa Rosa Fire Department is the CUPA for the City.

Local

City of Santa Rosa General Plan

The City of Santa Rosa General Plan serves as the overall guiding policy document for the City. The General Plan identifies several goals and policies regarding hazards and hazardous materials that are applicable to the proposed project, as listed below.

Noise and Safety Element

Goal NS-A: Prepare for disasters.

Policy NS-A-1: Maintain the Emergency Operations Plan as the City's disaster-response plan. Work with Sonoma County to update joint emergency response and disaster response plans, as needed.

Policy NS-A-2: Continue to promote the Citizens Organized to Prepare for Emergencies (COPE) public awareness program on the nature and extent of natural hazards in the Planning Area, and ways of minimizing the effects of disasters.

Policy NS-A-3: Establish community programs which train volunteers to assist police, fire and civil defense personnel during and after disasters.

Goal NS-F: Minimize dangers from hazardous materials.

Policy NS-F-1: Require remediation and cleanup, and evaluate risk prior to reuse, in identified areas where hazardous materials and petroleum products have impacted soil or groundwater.

Policy NS-F-2: Require that hazardous materials used in business and industry are transported, handled and stored in accordance with applicable local regulations.

Policy NS-F-3: Restrict siting of businesses, including hazardous waste repositories, incinerators or other hazardous waste disposal facilities, that use, store, process, or dispose large quantities of hazardous materials or wastes in areas subject to seismic fault rupture or very violent ground shaking.

Policy NS-F-4: Where applicable, identify and regulate appropriate regional and local routes for transportation of hazardous materials and hazardous waste. Require that fire and emergency personnel can easily access these routes for response to spill incidences.

Policy NS-F-5: Require commercial and industrial compliance with the Sonoma County Hazardous Materials and Waste Management Plan.

Policy NS-F-6: Generate and support public awareness and participation in household waste management, control and recycling through county programs including the Sonoma County Household Hazardous Waste Management Plan.

Goal NS-G: Minimize the potential for wildland fires.

Policy NS-G-1: Require proposed developments in high or medium fire hazard areas to investigate a site's vulnerability to fire and to minimize risk accordingly.

Policy NS-G-2: Require new development in areas of high wildfire hazard to utilize fire-resistant building materials. Require the use of on-site fire suppression systems, including automatic sprinklers, smoke and/or detection systems, buffers and fuel breaks and fire retardant landscaping.

Policy NS-G-3: Prohibit untreated wood shake roofs in areas of high fire hazard.

Policy NS-G-4: Continue monitoring water fire-flow capabilities throughout the City and improving water availability at any locations having flows considered inadequate for fire protection.

Policy NS-G-5: Require detailed fire prevention and control measures, including community firebreaks, for development projects in high fire hazard zones.

Policy NS-G-6: Minimize single-access residential neighborhoods in development areas near open space and provide adequate access for fire and other emergency response personnel.

Transportation Element

Goal T-M: Continue the availability of air transportation services.

Policy T-M-2: Work with Sonoma County to maintain Charles M. Schulz-Sonoma County Airport's continued safe and successful operation by discouraging the development of incompatible uses in airport safety zones.

Policy T-M-3: Support efforts at the Charles M. Schulz-Sonoma County Airport to minimize negative effects of air transportation, such as surface street congestion, air pollution, noise and safety concerns.

City of Santa Rosa Emergency Operations Plan

The Santa Rosa Emergency Operations Plan (EOP) identifies the City's emergency planning, organization, and response policies and procedures. The plan also addresses the integration and coordination with other governmental levels and special districts as required.

This plan is based on the principles and functions of the California required Standardized Emergency Management System (SEMS), which is based on the FIRESCOPE Incident Command System, and identifies how the City of Santa Rosa fits in the overall state SEMS structure. In addition, the plan incorporates the additional required elements of the National Incident Management System (NIMS) as directed by Homeland Security Presidential Directive 5, issued February 28, 2003.

Environmental Standards

While many regulatory programs exist, there are fewer standards for determining exposure risks due to contamination. Currently, the most commonly used are the Regional Water Quality Control Board (RWQCB) environmental screening levels for commercial/industrial and residential developments, the California Environmental Protection Agency, and the Department of Toxic Substances Control California Human Health Screening Levels. The RWQCB states that environmental screening levels are to be used as Tier 1 guidelines. In other words, the presence of a chemical at concentrations in excess of an environmental screening level does not necessarily indicate that adverse impacts to human health or the environment are occurring, but indicates that a potential for adverse risk may exist and that additional evaluation is warranted.

In general, the environmental screening levels facilitate a site review, including comparison of contaminant levels with standards, review of remediation plans and procedures, and review of closure documentation and limitations on future land use. Other standards, such as the Total Threshold Limit Concentration and Soluble Threshold Limit Concentration have been developed to establish hazardous materials concentrations for industrial sites and landfills through work completed by the DTSC. Most of this information can be found through a search of environmental databases and file review at local agencies. Regulatory agencies maintain a database of properties and businesses affected by contamination or properties and businesses where there is significant risk from contamination due to use, storage, or disposal of hazardous materials, underground fuel tanks, or other hazards.

Local Hazardous Materials Oversight

In the Specific Plan area, hazardous materials and contaminants are locally regulated through the Santa Rosa Fire Department. The Fire Department operates as a Certified Unified Program Agency (CUPA). CUPA programs include the Hazardous Materials Business Plan Program, Hazardous Waste Program, Underground Storage Tank Program, Accidental Release Program, and the portions of the Uniform Fire Code that address hazardous materials.

General program requirements include inspections of businesses and review of permit conditions and procedures for the handling, storage, use and disposal of hazardous materials. The Hazardous Materials Business Plan is used to keep track of the use of hazardous materials by businesses in accordance with both state and federal laws. The Hazardous Waste Generator Program is based on the Hazardous Waste Control Law found in the California Health and Safety Code Division 20, Chapter 6.5, and regulations found in the California Code of Regulations, Title 22, Division 4.5.

The Fire Department also administers the local oversight program, which oversees the investigation and cleanup of fuel releases from underground storage tanks. Sites are entered into the local oversight program when a release from an underground tank is reported. A similar program provides for the permitting, monitoring, and surveillance of septic tanks, chemical toilets, and vaults, as well as abandonment and disposal of septic waste within Sonoma County.

The Santa Rosa Industrial Waste Program enforces regulations issued to businesses that discharge wastewater into the Santa Rosa Subregional Water Reclamation System. The Industrial Waste Program consists of inspections, monitoring, and permitting of businesses to ensure their compliance.

First responders to hazardous material emergencies could be the Santa Rosa Fire Department or hazardous material specialists such as the Sonoma County Hazardous Materials Response Team. State law requires that first responders to a release of hazardous materials have a minimum 40 hours of training in accordance with the OSHA Hazardous Waste Operations and Emergency Response standard.

Hazardous Material Regulatory Enforcement

Enforcement of environmental regulations depends upon both public and private reporting of spills, leaks, or other violations. The Santa Rosa Police Department Environmental Crimes Unit also provides enforcement. Officers in this program have specialized training in environmental crime investigations and hazardous materials recognition and work closely with regulatory specialists from other City departments such as the Fire Department's Hazardous Materials Team, Utilities Department Industrial Waste Section, Community Development Building Inspectors, and the Public Works Department Storm Water Management Program to ensure that environmental regulations are followed.

The Sonoma County Environmental Health Division is charged with administering the State of California's Medical Waste Program. Regulation of potentially hazardous pesticide and herbicides is under the jurisdiction of the Sonoma County Agricultural Commissioner. The City's Public Works Department administers the Stormwater Management Program that is designed to reduce urban runoff from polluting local waterways through use of best management practices, low impact design, monitoring, and other techniques.

3.7.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following State CEQA Guidelines Appendix G thresholds of significance. An impact to hazardous materials and human health is considered significant if the project would:

1) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

2) 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.

3) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

4) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment.

5) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area.

6) For a project within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area.

7) Implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

8) Expose people or structures to a significant risk of loss, injury, or death involving fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.

METHODOLOGY

This section analyzes the impacts associated with implementation of the proposed project, including the risk of upset due to potential hazardous substances, such as hazardous materials and/or hazardous waste in the project area and the vicinity as well as other hazards to public safety.

PROJECT IMPACTS AND MITIGATION MEASURES

Transport, Use, and Storage of Hazardous Materials (Standard of Significance 1)

Impact 3.7.1 Implementation of the proposed Specific Plan would result in transport, use, and storage of hazardous materials commonly associated with construction. Accidental release of these materials could constitute a hazard to the public or the environment. This impact is considered **less than significant**.

The transportation of hazardous materials on area roadways is regulated by the CHP, U.S. Department of Transportation (Hazardous Materials Transportation Act), and the California Department of Transportation (Caltrans). Use of these materials is regulated by the DTSC (22 California Code of Regulations Sections 66001, et seq.). The use, storage, and transport of hazardous materials by developers, contractors, business owners, and others are required to be in compliance with local, state, and federal regulations during project construction and operation. Facilities that use hazardous materials are required to obtain permits and comply with appropriate regulatory agency standards designed to avoid hazardous waste releases. The proposed project is required to comply with federal, state, and local regulations regarding the handling, transportation, disposal, and cleanup of hazardous materials. Considering the level of protection afforded by the various requirements, restrictions, and policies enforced by agencies with jurisdiction over the use, storage, or disposal of hazardous materials on the project site, the release of any such substances is unlikely. The impact is considered less than significant.

Mitigation Measures

None required.

Potential On-Site Hazards (Standard of Significance 4)

Impact 3.7.2 Review of environmental hazards databases conducted for the Specific Plan area identified areas of environmental concern. This impact is considered **less than significant after mitigation**.

There are several environmentally sensitive sites with a history of contamination in the Specific Plan area. Other industrial sites, including the WYE site (as discussed above under "Other Hazards"), have not yet been evaluated, but are considered likely to have some remnant contamination of soil and underlying groundwater. These sites pose an existing threat to soil and groundwater, a threat to workers during construction from exposure, and to a lesser extent to future occupants and visitors to the site. Post-development impacts depend on the nature of new development.

The increase in population associated with the Specific Plan would lead to a greater usage of common and potentially hazardous household cleaners, pesticides, and herbicides to maintain landscape and control pests and a greater need for vehicle maintenance, railroad maintenance, etc. The greatest exposure risk is likely to occur during construction, when demolition and excavation may expose and potentially spread contaminated soil and debris from impacted areas. Contamination would most likely be spread through surface runoff, windblown dust, or groundwater seepage.

Identified construction and demolition hazards include inhalation of possible asbestos, lead and creosote associate with old structures and railroad ties, and general exposure associated with site redevelopment, including remediation. Certain sites will require closure of existing hazardous material storage facilities. These sites may contain contamination that will need remediation.

In order to protect worker safety on sites with contamination, a health and safety plan will need to be developed including provisions for personal protective equipment such as respirators, impermeable clothing, and gloves. Other sites that have had leaks or documented contamination which have been remediated to no further action levels may require reevaluation prior to construction. This will require some oversight, where applicable, by the Santa Rosa Fire Department, Department of Toxic Substances Control, Regional Water Quality Control Board, or another agency to determine whether the remediation is adequate for the proposed land use. The level of exposure risk on these sites is variable. Finally, sites with no hazards or hazardous materials outside of normal construction-related risks would have a low exposure risk.

The Santa Rosa Fire Department requires a Phase I environmental site assessment for subdivisions, multi-family residential, and commercial developments where the project has not already gone through a Phase I as part of a previous subdivision or other review. Single-family residential is exempt unless the site has not been secured and there is a reason to believe dumping has occurred on the site. Development of sites where contamination is discovered in a Phase I is considered a potentially significant impact**.**

Mitigation Measures

MM 3.7.2 If contamination is discovered in a Phase I environmental site assessment, developers shall complete site remediation in accordance with OSHA standards, Santa Rosa Fire Department, Sonoma County Environmental Health Department, and State Water Resources Control Board guidelines. The Department of Toxic Substances Control (DTSC) may become involved wherever toxic levels of contamination are found that pose an immediate hazard. Remediation shall reduce human exposure risk and environmental hazards, both during and after construction. The remediation plan shall be prepared in accordance with recommendations of the environmental consultant and established procedures for safe remediation. Specific mitigation measures designed to protect human health and the environment will be provided in the plan. Requirements shall include, but not be limited to, the following:

i. Documentation of the extent of previous environmental investigation and remediation at the site, including closure reports for underground storage tanks (USTs) and contaminant concentrations.

ii. A site-specific Health and Safety Plan to be prepared by all contractors at the project site, where applicable. This includes a Health and Safety Plan for all demolition, grading, and excavation on the site, as well as for future subsurface maintenance work. The plan shall include appropriate training, any required personal protective equipment, and monitoring of contaminants to determine exposure. The Health and Safety Plan will be reviewed and approved by a certified industrial hygienist.

iii. Description of protocols for the investigation and evaluation of previously unidentified hazardous materials that could be encountered during project development, including engineering controls that may be required to reduce exposure to construction workers and future users of the site.

iv. Requirements for site-specific construction techniques that would minimize exposure to any subsurface contamination, where applicable. This shall include treatment and disposal measures for any contaminated groundwater removed from excavations, trenches, and dewatering systems in accordance with local and Regional Water Quality Control Board guidelines.

v. Sampling and testing plan for excavated soils to determine suitability for reuse or acceptability for disposal at a state-licensed landfill facility.

vi. Restrictions limiting future excavation or development of the subsurface by residents and visitors to the proposed development, and prohibition of groundwater development should it be determined from test results.

vii. Completion of an approved remediation plan should land use restrictions be insufficient to allow development to proceed safely. Remediation measures may include excavation and replacement of contaminated soil with clean fill, pumping and treatment of groundwater, thermal treatment, etc.

Timing/Implementation:	*As a condition of subsequent project approval, and implemented during construction activities*
Enforcement/Monitoring:	*City of Santa Rosa Fire Department*

Implementation of mitigation measure MM 3.7.2 would ensure that on-site hazard effects are minimized, resulting in a less than significant impact after mitigation.

Accidental Release of Hazardous Materials (Standard of Significance 2)

Impact 3.7.3 The increased density of the proposed Specific Plan would lead to an associated increased use of hazardous materials. The proposed Specific Plan therefore has potential to result in an increased risk of accidental release of hazardous materials. This impact is considered **less than significant after mitigation**.

The proposed project would encourage mixed-use development comprising primarily residential uses. The most common types of hazardous materials found in households include bleach, paint thinner, and other common yet toxic household products. Existing local, state, and federal regulations regarding the appropriate, legal use, storage, and disposal of hazardous materials associated with household and commercial uses (e.g., dry cleaners' disposal of solvents) would ensure that the potential for accidental release of toxins into the environment is less than significant. Therefore, the potential for the accidental release of hazardous materials into the environment is considered less than significant.

While significant new routine, use, storage, and disposal of hazardous materials would not occur under the Specific Plan, there will be an increase in population and associated greater usage of common and potentially hazardous household cleaners, use of pesticides and herbicides to maintain landscape and control pests, and a greater need for vehicle maintenance, railroad maintenance, etc.

With the increase in population, there will be the development of potentially hazardous infrastructure such as natural gas pipelines, storage of hazardous chemicals in a commercial or retail setting, additional use of landscaping and cleaning chemicals, and increased population requiring basic garbage or litter disposal, as well as special disposal of used motor oil, antifreeze, paint, batteries, etc.

General Plan Policies NS-F-1 through NS-F-6 are aimed at reducing the risk from accidental release of chemicals, waste, or other hazardous materials. Policy NS-F-4 specifically addresses the accidental release of hazardous materials. Implementation of these policies will be critical to reducing the risk from a hazardous materials spill. Particularly pertinent is reduction and cleanup of spills of normal household hazardous wastes, as this is the biggest growth area proposed in the Specific Plan.

Through the city's Storm Water Low Impact Development Technical Design Manual, projects requiring grading or other ground disturbance are required to prepare and implement a post-development stormwater pollution prevention plan (SWPPP) for any development or redevelopment that creates or replaces a combined total of 1 acre or more of impervious surfaces. Compliance with the SWPPP would prevent runoff from dumpsters, maintenance areas, and other areas where potentially hazardous or hazardous materials are stored or used from discharging into site waterways. However, any business that would use high quantities of hazardous materials would require registration and compliance with the Hazardous Materials Business Plan, Hazardous Waste Generator Program, and Accidental Release Program. Therefore, this impact is considered potentially significant.

Mitigation Measures

MM 3.7.3 Registration and compliance with the Hazardous Materials Business Plan, Hazardous Waste Generator Program, and Accidental Release Program, wherever applicable, is required for businesses with the following quantities of hazardous materials: at least 55 gallons (liquids), 500 pounds (solids), or 200 cubic feet (gases).

Timing/Implementation: *As a condition of subsequent project approval, and implemented during construction activities*

Enforcement/Monitoring: *City of Santa Rosa Fire Department*

Implementation of mitigation measure MM 3.7.3 would ensure that effects related to accidental release of hazardous materials are minimized, resulting in a less than significant impact after mitigation.

School Hazards (Standard of Significance 3)

Impact 3.7.4 Several schools are located within and in the vicinity of the Specific Plan area. Hazardous materials or substances may be handled in the vicinity of these schools. This impact is considered **less than significant**.

Several schools are located within and in the vicinity of the Specific Plan area. Santa Rosa Junior College, Santa Rosa High School, and Helen Lehman Elementary School are within the Specific Plan area. Comstock Middle School is located adjacent to the Specific Plan area on the west side. Construction activities associated with implementation of the proposed project could result in hazardous emissions (i.e., heavy equipment diesel exhaust) or handling of hazardous materials, substances, or waste (i.e., construction materials) within one-quarter mile of these schools. However, the Specific Plan does not include development of factories or other major emitters, and the Specific Plan proposes to eliminate approximately 56,700 square feet of warehouse and industrial land uses, which would otherwise most likely involve the handling of large volumes of hazardous materials. General Plan policies and other existing restrictions are considered adequate mitigation. The impact is considered less than significant.

Mitigation Measures

None required.

Airport Hazards (Standards of Significance 5 and 6)

Impact 3.7.5 The Specific Plan area is not located in an airport land use plan or within 2 miles of a public or private airport. There is **no impact**.

The Specific Plan area is not located in an airport land use plan or within 2 miles of a public airport or public use airport. Furthermore, the Specific Plan area is not located near a private airstrip and therefore would not result in a safety hazard for people residing or working in the project area. The nearest airport to the project site is Charles M. Schulz-Sonoma County Airport, located approximately 5.25 miles to the northwest of the Specific Plan area. As such, no impact is anticipated.

Mitigation Measures

None required.

Emergency Plans (Standard of Significance 7)

Impact 3.7.6 The proposed project could have an impact on area roadways used to respond to hazardous materials incidents and/or for emergency evacuations. Impacts associated with adopted emergency response and evacuation plans would be **less than significant**.

In the event of a fire, explosion, earthquake, or even a terrorist attack, an emergency response and evacuation plan is used to coordinate the response from firefighters, law enforcement, and other personnel who have the job of saving lives and reducing casualties. Lack of a plan could be disastrous by hindering response time and critical access and evacuation routes.

The City has adopted an Emergency Operations Plan (EOP) that provides a blueprint for emergency management in the city in the case of a major earthquake, hazardous materials incident, flood, national security emergency, wildfire, landslide, dam failure, or other emergency. The EOP guides the City's response to emergency in five phases: preparedness; increased readiness; initial response operations; extended response operations; and recovery operations.

General Plan Policy NS-A-1 requires the City to maintain the EOP as the City's disaster response plan and to work with Sonoma County to update joint emergency response and disaster response plans, as needed. Furthermore, Policy NS-A-3 requires the establishment of a community program to train volunteers to assist police, fire, and civil defense personnel during and after disasters.

Furthermore, the Santa Rosa Fire Department would review construction plans for roadway modifications within the Specific Plan area and establish temporary alternative emergency routes necessary for the duration of the construction project. During design review of subsequent projects, the City would ensure that roads and driveways are established meeting ordinance and Uniform Building Code requirements for emergency access. The Fire Department will also review building plans for compliance with the Fire Code and establish a future inspection schedule for continuing compliance.

When taken together, existing goals, policies, and guidelines would reduce the environmental impact of interference with an emergency access or evacuation plan to a less than significant level.

Mitigation Measures

None required.

Wildland Fires (Standard of Significance 8)

Impact 3.7.7 Implementation of the proposed Specific Plan would not expose people and structures to significant hazards involving wildland fires. There is **no impact**.

The Specific Plan area is highly developed and is surrounded by other highly developed land. No wildlands exist on or in the vicinity of the Specific Plan area. Therefore, no impact related to wildland fires would occur as a result of the project.

Mitigation Measures

None required.

3.7.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for hazards associated with the proposed project generally consists of existing and future uses in Santa Rosa and unincorporated portions of Sonoma County. In particular, this cumulative setting condition includes planned development in the city and planned and proposed land uses in communities near the city. Cumulative impacts associated with hazardous materials and human health risks from increased development may include, but are not limited to, impacts on transportation, air quality, hydrology and water quality, and biological resources. The cumulative impacts associated with these potentially affected resources are analyzed in the applicable sections of this DEIR.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Hazards and Hazardous Material Impacts

Impact 3.7.8 Implementation of the proposed project, in addition to other reasonably foreseeable projects, may result in cumulative hazardous material and human health risk impacts. The proposed project's contribution to cumulative hazard impacts would be **less than cumulatively considerable**.

The cumulative effect of ongoing development in the cumulative setting could increase the number of residents in the vicinity, exposing individuals to existing hazards and hazardous materials identified in the impact discussion above. However, exposure to existing known hazardous materials is typically site-specific and not cumulative in nature. Development of the proposed project, for example, would not necessarily result in additional exposure to people elsewhere in the cumulative setting, nor would development of the proposed project result in an increase in environmental hazards from pre-existing hazardous materials or operations on the project site.

Some hazard impacts can be considered cumulative. Increased commercial and industrial development can create the potential for more transportation of hazardous materials through a cumulative area. Greater numbers of businesses and industries commonly result in additional storage, use, and the need for disposal of hazardous materials in the common course of business. However, increased storage, use, and disposal of hazardous materials would be limited to small quantities associated with household use and park maintenance.

Implementation of the proposed project would result in some hazards and hazardous materials impacts. However, these impacts are largely site-specific, and mitigation identified above would reduce those impacts to less than significant levels. Regardless of whether the proposed project is approved or not, existing hazards such as these would not be more or less prevalent in the area. Therefore, impacts related to such hazards are not cumulative in nature.

While some cumulative impacts will occur in the region as the area identified in the cumulative setting continues to develop, several regulations, policies, and laws are in place that will reduce the risk to people and structures in the region. Considering the protection granted by local, state, and federal agencies and their requirements for development and use of hazardous materials in the region, the overall cumulative impact would not be significant. Similarly, the proposed project's incremental contribution to cumulative hazards and human health impacts would be less than cumulatively considerable.

Mitigation Measures

None required.

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3.8 HYDROLOGY AND WATER QUALITY

This section of the Draft EIR addresses the potential environmental impacts of the proposed project related to hydrology and water quality. The existing surface water and groundwater hydrologic conditions of the project site and surrounding area are characterized and a summary of relevant law and regulations as they apply to the proposed project is provided. The impact analysis focuses on potential degradation of water quality, alteration of existing drainage patterns, and flooding hazards. Information used in the preparation of this section was obtained primarily from the City of Santa Rosa General Plan and Zoning Code, as well as from Federal Emergency Management Agency (FEMA) flood data.

3.8.1 EXISTING SETTING

REGIONAL CLIMATE AND TOPOGRAPHY

Santa Rosa is located in a Mediterranean climate zone typical of central coastal California. This climate zone is characterized by cool, wet winters and warm, dry summers. The city receives a mean annual precipitation of approximately 30 inches in the lower elevations and about 45 inches in the higher elevations. The majority of the rainfall typically occurs between October 1 and April 1. Influenced by marine air about 85 percent of the time, the region is generally protected from the hot weather of the Central Valley by the interior Coast Ranges. Although the Pacific Ocean moderates temperatures, they have a wider range than along the coast, occasionally exceeding 100 degrees Fahrenheit and sometimes falling as low as several degrees below freezing for several consecutive nights. (Santa Rosa General Plan 2035 DEIR, 2009)

Santa Rosa is located within the Santa Rosa Plain, an alluvial plain that stretches into Sonoma Valley on the east and spills into the Laguna de Santa Rosa catchment basin to the west. The city is located at the foot of the Mayacamas Mountains where elevations are as high as 220 feet above mean sea level in the easternmost portion of the city limits and slope down to 120 feet above mean sea level at the furthest westernmost end of the city. Santa Rosa Creek flows east to west and runs generally through the center of the city. (Santa Rosa General Plan 2035 DEIR, 2009)

REGIONAL HYDROLOGY

The entire city is located within the Laguna de Santa Rosa watershed, which originates at Hood Mountain in the Mayacamas Mountains to the east and discharges to Laguna de Santa Rosa, a large wetland complex downstream of the Santa Rosa urban area. Tributary basins to Santa Rosa Creek that lie primarily in the city are Brush Creek, Matanzas Creek, Paulin Creek, Roseland/Colgan Creek, and Piner/Peterson Creek. Mark West Creek drains the northern portion of the city, Naval Creek the westernmost portion, and Todd Creek the southernmost portion of the city. All of these tributaries ultimately drain to Laguna de Santa Rosa, which in turn drains into the Russian River and out to the ocean. Other waterbodies located in or around the city include Fountaingrove Lake, Lake Ralphine, and Santa Rosa Creek Reservoir.

SURFACE WATER QUALITY

Surface water quality in Sonoma County is monitored by the North Coast Regional Water Quality Control Board (RWQCB) and the City of Santa Rosa. The Water Quality Control Plan for the North Coast Region (Basin Plan), prepared by the North Coast RWQCB, identifies the beneficial uses of surface waters in its region and specifies water quality objectives to maintain the continued beneficial uses of these waters. According to the Basin Plan, beneficial uses of the Santa Rosa subarea of the Russian River include municipal, agricultural, and industrial supply; groundwater recharge; warm and cold freshwater habitat; navigation; spawning, reproduction, and development; water contact recreation; non-water contact recreation; wildlife habitat; rare species; and possible shellfish and aquatic plant and animal harvesting. (Santa Rosa General Plan 2035, 2009)

The Russian River hydrologic unit that includes the Laguna de Santa Rosa watershed is listed under Clean Water Act Section 303(d) as impaired for indicator bacteria, low dissolved oxygen, mercury, nitrogen, phosphorus, sediment, and temperature. Santa Rosa Creek is listed for impairments associated with indicator bacteria, sediment, and temperature. The Laguna de Santa Rosa unit of the Russian River is also listed for impairments associated with low dissolved oxygen, mercury, nitrogen, phosphorus, sediment, and temperature. (Santa Rosa General Plan 2035, 2009)

GROUNDWATER RESOURCES

The Santa Rosa Plain Subbasin of the Santa Rosa Valley Groundwater Basin covers an area of 80,000 acres, or approximately 125 square miles. It is the largest subbasin of the Santa Rosa Valley Groundwater Basin and is characterized by low relief with an average ground surface elevation of approximately 145 feet above mean sea level. (Existing Conditions Report for the North Santa Rosa Station Area Specific Plan, 2012)

The Santa Rosa Plain Subbasin is approximately 22 miles long and 0.2 miles wide at the northern end, approximately 9 miles wide through the Santa Rosa area, and about 6 miles wide at the south end of the plain near Cotati. The Santa Rosa Plain Subbasin is bounded on the northwest by the Russian River plain approximately 1 mile south of Healdsburg and the Healdsburg Subbasin. Mountains of the Mendocino Range flank the remaining western boundary. The southern end of the subbasin is marked by a series of low hills, which form a drainage divide that separates the Santa Rosa Valley from the Petaluma Valley basin south of Cotati. The eastern subbasin boundary is formed by the Sonoma Mountains south of Santa Rosa and the Mayacamas Mountains north of Santa Rosa. (Existing Conditions Report for the North Santa Rosa Station Area Specific Plan, 2012)

The Santa Rosa Plain Subbasin is drained principally by Santa Rosa Creek flowing westward into Laguna de Santa Rosa. Laguna de Santa Rosa flows into Mark West Creek, which discharges into the Russian River. Annual precipitation in the Santa Rosa Plain ranges from approximately 28 inches in the south to about 40 inches in the north. (Existing Conditions Report for the North Santa Rosa Station Area Specific Plan, 2012)

The major geologic formations comprising the Santa Rosa Plain Subbasin are, from youngest to oldest, Younger Alluvium, Older Alluvium (alluvial fan deposits), the undifferentiated Glen Ellen, Huichica Formations and related continental deposits, the Sonoma Volcanics, the Wilson Grove (formerly Merced) Formation, and the Petaluma Formation. The Tolay Volcanics may also be present in the subsurface. The groundwater subbasin is floored by low permeability rocks of the Franciscan Formation. (SB 610 WSA for the North Santa Rosa Station Area Specific Plan, 2012)

WATER QUALITY

Two creeks run through the project area: Paulin Creek and Steele Creek. Steele and Paulin creeks within the project boundaries are identified in the Citywide Creek Master Plan as modified-natural creeks. There is an unpaved/gravel trail along the east side of Steele Creek from Guerneville Road to 300 yards south of Jennings Avenue. Paulin Creek has an unpaved/gravel path running along the north side of the creek from McBride Lane to Hardies Lane. The unpaved/gravel path continues on the southern side of the creek from Hardies Lane to Coffey Lane. The RWQCB has identified toxic contaminants on several industrial properties located adjacent to Paulin Creek.

Although high iron, manganese, and hardness have been reported in groundwater for some portions of the Santa Rosa Plain Subbasin, the overall quality of groundwater in the subbasin is good. Groundwater underlying the City's service area generally meets primary and secondary drinking water standards for municipal use. The City's Farmers Lane wells have historically exhibited slightly elevated concentrations of both iron and manganese, exceeding secondary drinking water standards. (SB 610 WSA for the North Santa Rosa Station Area Specific Plan, 2012)

DRAINAGE AND FLOODING

Flooding Hazards

Flooding is inundation of normally dry land as a result of a rise in the level of surface waters or rapid accumulation of stormwater runoff. Regional flooding hazards are generally evaluated by FEMA and presented in community Flood Insurance Rate Maps as part of the floodplain mapping program. Following a very severe flood in 1955, local improvement programs were developed and focused on increasing the flood capacity of Santa Rosa Creek, Matanzas Creek, Piner Creek, Paulin Creek, Brush Creek, and Spring Creek. However, following the construction of 25 miles of flood control channels in the 1960s, the lower reach of Spring Creek continued to consistently overflow. (Santa Rosa General Plan 2035, 2009)

FEMA maps are currently being finalized for the southern Santa Rosa area, including Naval, Roseland, and Colgan creeks, and are anticipated to become effective in late 2012. In addition, the US Army Corps of Engineers has partnered with FEMA to develop flood hazard maps for Santa Rosa Creek and its tributaries. This study is currently under way, and draft flood hazard maps are not yet available. Once completed, federal flood hazard mapping will exist for both Paulin and Steele creeks in the project area.

Dam Inundation

In addition to natural flood hazards, flooding can also occur as a result of dam inundation caused by dam failure. Structural failure may be caused by seismic activity. The most extreme flood risk to the City of Santa Rosa would be from an uncontrolled release from a failure at Matanzas Creek Reservoir, or to a lesser degree Lake Ralphine or Fountaingrove. However, all of these dams are annually inspected by the California Division of Safety of Dams (DSOD) engineers to ensure they are performing and being maintained in a safe manner. Figure 12-4 of the General Plan 2035 shows that the Specific Plan area is not located within a sam inundation area. When determined to be structurally inadequate to withstand anticipated ground shaking, dams under the jurisdiction of the DSOD are required to undergo seismic retrofitting. With annual DSOD inspection and oversight, the potential for catastrophic failure is considered to be very low. (Santa Rosa General Plan 2035, 2009)

Tsunami and Seiche Inundation

Flooding can also occur due to tsunamis, seiches, or mudflows. Tsunamis are waves caused by an underwater earthquake, landslide, or volcanic eruption. Since the project site is located inland, it could not experience a tsunami. A seiche is a rhythmic motion of water in a partially or completely landlocked waterbody caused by landslides, earthquake-induced ground accelerations, or ground offset. There are several reservoirs located within or near the city limits that could potentially experience seiche waves from a significant seismic event. However, none of these reservoirs are in the vicinity of the Specific Plan area. A mudflow or mudslide is the most rapid and fluid type of downhill mass wasting. It is a rapid movement of a large mass of mud formed from loose earth and water. Similar terms are debris flow (e.g., in high mountains) and mudslide (not very liquid). (Santa Rosa General Plan 2035, 2009)

3.8.2 REGULATORY FRAMEWORK

FEDERAL

Clean Water Act

The Clean Water Act (CWA) regulates the water quality of all discharges into waters of the United States, including wetlands, as well as perennial and intermittent stream channels. Section 401, Title 33, Section 1341 of the CWA sets forth water quality certification requirements for "any applicant applying for a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters." Section 404, Title 33, Section 1344 of the CWA in part authorizes the U.S. Army Corps of Engineers to:

- Set requirements and standards pertaining to such discharges: subparagraph (e);
- Issue permits "for the discharge of dredged or fill material into the navigable waters at specified disposal sites": subparagraph (a);
- Specify the disposal sites for such permits: subparagraph (b);
- Deny or restrict the use of specified disposal sites if "the discharge of such materials into such area will have an unacceptable adverse effect on municipal water supplies and fishery areas": subparagraph (c);
- Specify type of and conditions for non-prohibited discharges: subparagraph (f);
- Provide for individual state or interstate compact administration of general permit programs: subparagraphs (g), (h), and (j);
- Withdraw approval of such state or interstate permit programs: subparagraph (i);
- Ensure public availability of permits and permit applications: subparagraph (o);
- Exempt certain federal or state projects from regulation under this Section: subparagraph (r); and
- Determine conditions and penalties for violation of permit conditions or limitations: subparagraph (s).
- Section 401 certification is required prior to final issuance of Section 404 permits from the U.S. Army Corps of Engineers.

Section 303(d) of the federal Clean Water Act requires that all states in the U.S. identify waterbodies that do not meet specified water quality standards and that do not support intended beneficial uses. Identified waters are placed on the Section 303(d) List of Impaired Waterbodies.

Once placed on this list, states are required to develop a water quality control plan for each water body and each associated pollutant/stressor. (Santa Rosa General Plan 2035, 2009)

National Pollutant Discharge Elimination System

Since 1972, the CWA has regulated the discharge of pollutants to waters of the U.S. from all point sources. Section 402(d) of the CWA establishes a framework for regulating nonpoint source stormwater discharges under the National Pollutant Discharge Elimination System (NPDES). Established in 1990, Phase I of the NPDES stormwater program regulates stormwater discharges from major industrial facilities, large and medium-sized municipal separate storm sewer systems (those serving more than 100,000 persons), and construction sites that meet certain established criteria. In 1999, the NPDES stormwater program was expanded to include Phase II communities. Activities that result in the disturbance of 1 acre of land or more must also apply for coverage under the statewide NPDES General Construction Activities Permit.

To comply with the NPDES General Construction Permit, a project applicant is required to submit a Notice of Intent to the State Water Resource Control Board's (SWRCB) Division of Water Quality. The Notice of Intent includes general information on the types of construction activities that will occur on the site. The applicant (for a site-specific project) is also required to submit a site-specific plan called the stormwater pollution prevention plan (SWPPP) to minimize the discharge of pollutants during construction. The SWPPP must include a description of best management practices (BMPs) for preventing the discharge of silt and sediment from the site. The SWPPP must also include BMPs for preventing the discharge of other nonpoint source pollutants besides sediment (e.g., drilling lubricant, oil, concrete, cement) from the site, as well as a detailed description of (and schedule for) all sampling and monitoring. Construction activities that are subject these requirements include, but are not limited to, clearing, grading, demolition, excavation, construction of new structures, and reconstruction of existing facilities involving removal and replacement that results in soil disturbance.

The Sacramento Trial Court ordered the SWRCB to set aside the numeric effluent limits for pH and turbidity established in the general construction permit for Level 3 construction sites and to refrain from enforcing those limits until the SWRCB adopts new limits based on specified best control treatments assessed in accordance with the factors contained in Section 304(b)(4)(B) of the Clean Water Act. If and when new pH and turbidity NELs are adopted, the SWRCB must also determine the appropriate size of a compliance storm event exemption from the numeric effluent limits. The remaining portions of the permit were deemed valid and enforceable. (Abbott & Kindermann 2011)

Federal Emergency Management Agency

FEMA administers the National Flood Insurance Program (NFIP) to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development in floodplains. FEMA also issues Flood Insurance Rate Maps identifying which land areas are subject to flooding. The maps provide flood information and identify flood hazard zones in the community. The design standard for flood protection is established by FEMA, with the minimum level of flood protection for new development determined to be the 1-in-100 annual exceedence probability (i.e. the 100-year flood event).

STATE

Porter-Cologne Water Quality Act

In 1969, the California Legislature enacted the Porter-Cologne Water Quality Control Act to preserve, enhance, and restore the quality of the state's water resources. The act established the State Water Resources Control Board and nine Regional Water Quality Control Boards as the principal state agencies with the responsibility for controlling water quality in California. Under the act, water quality policy is established, water quality standards are enforced for both surface water and groundwater, and the discharges of pollutants from point and nonpoint sources are regulated. The act authorizes the State Water Resources Control Board to establish water quality principles and guidelines for long-range resource planning including groundwater and surface water management programs and control and use of recycled water (USDOE 2012).

State Water Resources Control Board

The five-member State Water Resources Control Board allocates water rights, adjudicates water right disputes, develops statewide water protection plans, establishes water quality standards, and guides the nine regional water quality control boards located in the major watersheds of the state. The joint authority of water allocation and water quality protection enables the SWRCB to provide comprehensive protection for California's waters (SWRCB 2012). The SWRCB is responsible for implementing the Clean Water Act, issues NPDES permits to cities and counties through Regional Water Quality Control Boards, and implements and enforces the General Construction Permit.

REGIONAL

Regional Water Quality Control Board, North Coast Region

Each RWQCB is required to develop, adopt, and implement a Water Quality Control Plan (Basin Plan) for its respective region. The Basin Plan is the master policy document that contains descriptions of the legal, technical, and programmatic bases of water quality regulation in each region. Basin Plans identify beneficial uses of surface waters and groundwater within the corresponding region; specify water quality standards, known as water quality objectives, for both surface water and groundwater; and develop the actions necessary to maintain the standards to control nonpoint and point sources of pollutants to the state's waters. All discretionary projects requiring permits from the RWQCB (i.e., waste and pollutant discharge permits) must implement Basin Plan requirements (i.e., water quality standards), taking into consideration the beneficial uses to be protected. The Specific Plan aea is within the jurisdiction of the North Coast RWQCB. The North Coast RWQCB also issues the NPDES Municipal Separate Storm Sewer (MS4) Phase 1 permit to the City requiring post-construction stormwater quality measures and site design consistent with the Storm Water Low Impact Development Technical Design Manual.

LOCAL

City of Santa Rosa General Plan

The Santa Rosa General Plan 2035 serves as the overall guiding policy document for the City of Santa Rosa. The following is a list of applicable General Plan goals and policies most pertinent to the Specific Plan in regard to hydrologic or water quality and flooding issues.

Public Services and Facilities Element

Goal PSF-I: Manage, maintain and improve stormwater drainage and capacity.

Policy PSF-I-1: Require dedication, improvement and maintenance of stormwater flow and retention areas as a condition of approval.

Policy PSF-I-2: Require developers to cover the costs of drainage facilities needed for surface runoff generated as a result of new development.

Policy PSF-I-3: Require erosion and sedimentation control measures to maintain an operational drainage system, preserve drainage capacity and protect water quality.

Policy PSF-I-4: Require measures to maintain and improve the storm drainage system, consistent with goals of the Santa Rosa Citywide Creek Master Plan, to preserve natural conditions of waterways and minimize paving of creek channels.

Policy PSF-I-5: Cooperate with the Sonoma County Water Agency and the Northern California Regional Water Quality Control Board to conduct regular assessment of stormwater drainage facilities, to ensure that adequate drainage capacity is maintained throughout the system to accommodate increases in residential and commercial development.

Policy PSF-I-6: Require implementation of Best Management Practices to reduce drainage system discharge of non-point source pollutants originating from streets, parking lots, residential areas, businesses, industrial operations and those open space areas involved with pesticide application.

Policy PSF-I-7: Prepare and distribute information to increase awareness of businesses and residents about the need to reduce drainage system discharge of non-point source pollutants.

Policy PSF-I-8: Implement the Standard Urban Stormwater Mitigation Plan (SUSMP) in order to reduce pollutants and runoffs flows from new development and significant redevelopment projects.

Policy PSF-I-9: Consider installation of creekside pathways, consistent with the Citywide Creek Master Plan and Bicycle and Pedestrian Master Plan, when possible as part of stormwater improvement projects along the city's creek corridors.

Noise and Safety Element

Goal NS-C: Prohibit development in high-risk geologic and seismic hazard areas to avoid exposure to seismic and geologic hazards.

Policy NS-C-7: Require inspection for structural integrity of water storage facilities, water conveyance facilities, electricity transmission lines, roadways, water detention facilities, levees, and other utilities after a major seismic event, especially on the San Andreas or Rodgers Creek faults.

Goal NS-D: Minimize hazards associated with storm flooding.

Policy NS-D-1: Ensure flood plain protection by retaining existing open areas and creating new open areas needed to retain stormwater, recharge aquifers and prevent flooding.

Policy NS-D-2: Maintain current flood hazard data and coordinate with the Army Corps of Engineers, FEMA, Sonoma County Water Agency and other responsible agencies to coordinate flood hazard analysis and management activities.

Policy NS-D-3: Require that new development incorporate features into site drainage plans that would reduce impermeable surface area, increase surface water infiltration and minimize surface water runoff during storm events. Such features may include:

- Additional landscape areas,
- Parking lots with bio-infiltration systems,
- Permeable paving designs, and
- Stormwater detention basins.

Policy NS-D-4: Incorporate features and appropriate standards that reduce flooding hazards, as described in Policy NS-D-3, into the City's design standards.

Policy NS-D-5: Apply design standards to new development that help reduce project runoff into local creeks, tributaries, and drainage ways.

Policy NS-D-6:Locate new essential public facilities such as hospitals and fire stations outside of flood areas or areas subject to dam inundation.

Goal NS-E: Provide protection of public and private properties from hazards associated with dam inundation.

Policy NS-E-1: Support efforts to conduct periodic inspections of local dams to ensure all safety measures are in place.

Sonoma County Water Agency Flood Control Design Criteria

The Sonoma County Water Agency (SCWA) was formed in 1949 with the primary responsibility to produce and furnish water for beneficial uses, water conservation, and flood management. Nine geographical zones, each encompassing a major watershed, were proposed in 1958 as a means of financing the construction and maintenance of flood control works in the county. The SCWA works cooperatively with the incorporated cities, unincorporated communities, and the state and federal governments to oversee flood control channel modifications and flood control revenue collection in the six active zones. The City of Santa Rosa is located in Flood Zone 1A—Laguna de Santa Rosa—Mark West Creek Watershed.

Storm drainage infrastructure in unincorporated Sonoma County is designed using the SCWA Flood Control Design Criteria. In compliance with the SCWA criteria, all culverts and drainage systems must be designed to accommodate the runoff from a 25-year recurrence interval storm event and protect finished floors from the 100-year recurrence interval storm. The SCWA reviews project plans for proposed drainage improvements. In addition, the SCWA is in the process of revising and updating the Flood Control Design Criteria.

Storm Water Low Impact Development Technical Design Manual

The Storm Water Low Impact Development Technical Design Manual (LID Manual), adopted by the City of Santa Rosa in October 2011 and implemented in 2012, applies to both privately sponsored projects and capital improvement projects. The LID Manual requires applicable projects to design and implement post-development measures to reduce stormwater pollution.

Under the LID Manual, applicable projects are required to design and implement post-development measures for the management of stormwater quality and stormwater volume for the entire development site. The LID Manual emphasizes managing stormwater runoff through landscape-based treatment methods to reduce the potential impacts to local drainage systems.

The goal of the manual is to reduce pollution and runoff flows to the best practicable extent for all new capital improvement program and development projects meeting the following criteria:

- Development that creates or replaces a combined total of 1 acre or more of new impervious surface.
- Street, road, highway, or freeway construction or reconstruction, creating or replacing 10,000 square feet or more of impervious surface.
- All development that includes four or more dwelling units.
- Industrial parks, commercial strip malls, retail gasoline outlets, restaurants, or automotive service facilities creating or replacing 10,000 square feet or more of impervious surface. Parking lots, 25 or more spaces or 10,000 square feet not associated with other projects.
- Parking lots with 25 or more spaces or 10,000 square feet not associated with other projects.

As new developments are planned, measures for treatment of erosion and stormwater are addressed at the source. As sites are developed each site must establish acceptable source control methods. Varied methods can be employed to satisfy the requirements set forth by the Storm Water Management Plan. The City of Santa Rosa works in conjunction with Sonoma County and the SCWA to ensure the requirements are met.

California Green Building Standards Code

The California Building Standards Code (CALGreen) is published in its entirety every three years by order of the California Legislature. The California Legislature delegated authority to various state agencies, boards, commissions, and departments to create building regulations to implement the state's statutes. These building regulations or standards have the same force of law and take effect 180 days after their publication unless otherwise stipulated. The California Building Standards Code applies to all occupancies in the State of California as annotated.

A city, county, or city and county may establish more restrictive standards reasonably necessary because of local climatic, geological, or topographical conditions. For the purpose of this code, these conditions include local environmental conditions as established by a city, county, or city and county. Findings of the local condition(s) and the adopted local building standard(s) must be filed with the California Building Standards Commission to become effective and may not be effective sooner than the effective date of this edition of the California Building Standards Code. Local building standards that were adopted and applicable to previous editions of the California Building Standards Code do not apply to this edition without appropriate adoption and the required filing.

Citywide Creek Master Plan Background

The Santa Rosa Citywide Creek Master Plan, adopted by the City Council on March 27, 2007, implements General Plan 2035 Policy OSC-D-13 and provides guidelines for the care, management, restoration, and enhancement of nearly 90 miles of creeks in Santa Rosa. The master plan is intended for use by city and county staff when planning creek enhancement and restoration activities, coordination and expansion of creekside trail systems, making broader land-use planning decisions concerning creeks, and in the development approval process for projects proposed adjacent to a waterway.

The Citywide Creek Master Plan consolidates previously adopted creek policies that are contained in numerous city documents adopted over a span of several decades. The master plan presents these policies in a comprehensive and illustrative form that includes recommendations for habitat preservation, enhancement, restoration, and development of trails by each watershed. Project recommendations are based on community input, literature reviews, and extensive field research. Site-specific recommendations are presented in the text as well as on a set of geographical information system (GIS)-based maps, organized by watershed area. Detailed conceptual plans were developed for two locations: Upper Colgan Creek and Roseland Creek. Previously adopted concept plans incorporated into the master plan include Pierson Reach of Santa Rosa Creek and Lower Colgan Creek.

Implementation of the Citywide Creek Master Plan will occur over several years, perhaps decades, and will be accomplished through partnerships with citizens, organizations, agencies, and the development community. Project funding will come primarily from grants or other funding sources designated for restoring fish and wildlife habitat and for improving creekside recreation, access, and transportation opportunities.

The proposed project includes an amendment to the Citywide Creek Master Plan to incorporate the proposed bicycle and pedestrian trails along Paulin and Steele creeks.

3.8.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following State CEQA Guidelines Appendix G thresholds of significance. An impact to hydrology and water quality is considered significant if the project would:

1) Violate any water quality standards or waste discharge requirements.

2) 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 (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).

3) 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.

4) 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 or amount of surface runoff in a manner which would result in flooding on- or off-site.

5) 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.

6) Otherwise substantially degrade water quality.

7) 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.

8) Place within a 100-year flood hazard area structures which would impede or redirect flood flows.

9) Expose people or structures to a significant loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.

10) Inundation by seiche, tsunami, or mudflow.

METHODOLOGY

The hydrology and water quality analysis presented below is based on a review of published information, reports, and plans regarding regional and local hydrology, climate, topography, and geology obtained from private and governmental agencies as well as from Internet websites. Primary sources include the Santa Rosa General Plan 2035, North Coast RWQCB's Basin Plan, California Stormwater Quality Association Best Management Practice Handbooks, and FEMA Flood Insurance Rate Maps.

PROJECT IMPACTS AND MITIGATION MEASURES

Violate Water Quality Standards or Waste Discharge Requirements (Standard of Significance 1)

Impact 3.8.1 Development and redevelopment under the Specific Plan include construction-related activities that could expose soil to erosion during storm events, causing degradation of water quality. This impact is considered to be **less than significant**.

During construction of projects under the Specific Plan, especially during site grading activities, stormwater runoff could remove sediment from exposed soil areas, increasing the chance of runoff or wind mobilization and thereby causing increases in sediment loads in nearby storm drain systems and downstream waterways, including Paulin Creek and Steele Creek. Additionally, the grading process uses heavy construction equipment powered with diesel fuel or gasoline and also requiring motor oil, hydraulic oils, and other potential contaminants. A leak, most common during refueling, could contaminate proximate waterways. A release of construction materials such as concrete, asphaltic emulsion, or paint could also affect downstream water quality through surface runoff or groundwater seepage.

However, every project that is subject to the Storm Water Low Impact Development Technical Design Manual is required to apply for coverage and develop and implement a project-specific SWPPP. These SWPPS include erosion control/soil stabilization techniques, BMPs for preventing the discharge of construction-related pollutants, drainage facility inspections, monitoring and maintenance programs, and training and information programs. Implementation of these requirements would ensure that the potential for violation of water quality standards and waste discharge requirements pose a less than significant impact both during and after construction.

Mitigation Measures

None required.

Deplete Groundwater Supplies or Interfere with Groundwater Recharge (Standard of Significance 2)

Impact 3.8.2 Development and redevelopment under the Specific Plan would not significantly deplete groundwater supplies or alter the area available for recharge of the groundwater aquifer. This impact would be **less than significant.**

The developments within the Specific Plan area would utilize municipal water sources, which would include the use of groundwater. As discussed in more detail in Section 3.12, Public Services and Utilities, of this DEIR, according to the Water Supply Assessment completed for the Specific Plan, the City will be able to support the growth that would result from the Specific Plan, in combination with existing demands and planned future demands. In addition, the Water Supply Assessment determined that the groundwater supply would be adequate to support the projected amount of groundwater (2,300 acre-feet per year) anticipated to be pumped as a share of the potable water supply needed to support future growth in Santa Rosa, including the Specific Plan area. As a result, the Specific Plan would not substantially deplete groundwater supplies since it would not result in the need to pump more water than can be supported by the local groundwater basin.

The areas of development and redevelopment in the Specific Plan area are mainly developed sites and therefore covered with buildings, paving, roadways, or a heavily compacted, otherwise impervious surface. Future redevelopment would not alter the area available for groundwater recharge. Since the Specific Plan would not significantly alter groundwater recharge, there is a less than significant impact to the groundwater of the area.

Mitigation Measures

None required.

Alter Existing Drainage Patterns (Standards of Significance 3 & 4)

Impact 3.8.3 Development and redevelopment under the Specific Plan could increase impervious surfaces and, as a result, alter drainage patterns and increase drainage rates over existing conditions. This impact is considered to be **less than significant**.

The areas of development and redevelopment in the Specific Plan area are mainly developed sites and therefore covered with buildings, paving, roadways, or a heavily compacted, otherwise impervious surface. As a result, drainage patterns due to development have already been established. None of the projects anticipated under the Specific Plan are likely to require substantial alteration of existing drainage patterns that would cause substantial erosion or siltation. Development would occur on a nearly level terrace with minimal required grading and few channels. The only work near major drainage channels would occur adjacent to Paulin

Creek and Steele Creek (including the proposed bicycle and pedestrian paths), possibly requiring some bank stabilization or the installation or reconstruction of new storm drain outfalls. While none of these projects are planned to substantially alter the course of the adjacent waterways, unforeseen circumstances, such as uncontrolled grading or placement of fill and unregulated discharge of water, may alter drainage patterns sufficiently to contribute to substantial erosion or siltation.

However, development of sites adjacent to Paulin Creek and Steele Creek will require permitting with the California Department of Fish and Game (CDFG) and the Sonoma County Water Agency, where applicable. The following describes the potential permits that may be required:

- **Streambed Alteration Agreement**. Any portions of the proposed project occurring along the banks of Paulin Creek or Steele Creek would be subject to the requirements for a CDFG Streambed Alteration Agreement. Restoration and enhancement of bank areas covered by concrete slabs and riprap would be included as part of any project located adjacent to the creek.

- **Sonoma County Water Agency Review.** Individual project applicants would be required to submit drainage design plans for review and approval by the SCWA for any portions of the project occurring along the banks of Paulin Creek or Steele Creek. Applicants would be required to obtain a revocable license from the SCWA prior to construction within the agency's property.

In addition, proposed projects under the Specific Plan would be required to comply with the City's General Plan goals and policies which require the City to manage, maintain, and improve stormwater drainage and capacity. Two policies most pertinent under this goal are General Plan Policy PSF-I-1 and Policy PSF-I-9. These policies require dedication, improvement, and maintenance of stormwater flow and retention areas as a condition of approval.

By complying with existing regulations and permitting processes, the potential impact related to altering drainage patterns and increases in siltation and/or erosion would be reduced to a less than significant.

Mitigation Measures

None required.

Runoff Water, Polluted Runoff, and Water Quality Degradation (Standards of Significance 5 & 6)

Impact 3.8.4 Development and redevelopment under the Specific Plan could increase impervious surfaces and, as a result, increase runoff over existing conditions. Runoff from urban uses may also contribute to the degradation of water quality in the area. This impact is considered to be **less than significant.**

The areas of development and redevelopment in the Specific Plan area are mainly developed sites and therefore covered with buildings, paving, roadways, or a heavily compacted surface. Non-point source pollutants are washed by rainwater from roofs, landscape areas, and streets and parking areas into the drainage network. Development and redevelopment in the Specific Plan area could increase the levels of non-point source pollutants and litter entering Steele Creek and Paulin Creek. An increase in non-point source pollutants could have adverse effects on wildlife, vegetation, and human health. These pollutants could also infiltrate into groundwater and degrade the quality of potential groundwater drinking sources.

Pollutant concentrations in site runoff are dependent on a number of factors, including land use conditions, site drainage conditions, intensity and duration of rainfall, the climatic conditions preceding the rainfall event, and implementation of water quality best management practices. Due to the variability of urban runoff characteristics, it is difficult to estimate pollutant loads for non-point source pollutants. Increases in the levels of oil, grease, petroleum hydrocarbons, organics and toxicants, metals, and possibly nutrients are likely.

The City requires developers to prepare and implement the requirements set forth in the Storm Water Low Impact Development Technical Design Manual (LID Manual), pursuant to NPDES Municipal Separate Storm Sewer (MS4) Permit requirements. As the area is gradually redeveloped consistent with the LID Manual, the water quality associated with stormwater runoff would gradually increase over existing conditions. Implementation of the LID Manual, as described under Impact 3.8.1 above, would ensure that impacts related to runoff and water quality degradation are reduced to a less than significant level.

Mitigation Measures

None required.

Change in Flood Potential (Standards of Significance 7, 8 & 9)

Impact 3.8.5 Development in the Specific Plan area may result in increased runoff and flows to the municipal storm drain system. This impact would be **less than significant.**

The Specific Plan area is not currently within a designated FEMA floodplain (Community Panel Numbers 060381 0001-0013). However, once the US Army Corps of Engineers and FEMA complete their current analysis, flood hazard areas are expected to exist in the project area. Subsequent development in the Specific Plan area may result in increased runoff and flows to the municipal storm drain system due to new paving or surfacing, the addition or removal of storm drain inlets, or other changes to the existing storm drain system. Flows contributed by the Specific Plan may have an adverse impact on the capacity of storm drain conveyance within the municipal system, ultimately affecting Steele Creek, Paulin Creek, and the Laguna de Santa Rosa watershed.

General Plan Policy NS-D-3 requires that new development incorporate features into site drainage plans that would reduce impermeable surface area, increase surface water infiltration, and minimize surface water runoff during storm events. Furthermore, Policy NS-C-7 requires inspection of water storage facilities and water conveyance facilities to minimize the possibility of dam failure.

Every project that is subject to the Storm Water Low Impact Development Technical Design Manual is required to develop hydrology and hydraulic calculations, maps, and a report in accordance with the Sonoma County Water Agency flood control criteria. These plans include design drawings and calculations of the capacity of the proposed storm drain system for the project. The plan also includes a hydraulic analysis prepared consistent with Sonoma County Water Agency flood control design criteria to establish whether the existing municipal system has capacity to accommodate any increased flows resulting from the proposed project. In addition, once flood hazard areas are delineated and incorporated into FEMA maps, all subsequent projects will comply with the City's floodplain administrator requirements and Municipal Code.

Mitigation Measures

None required.

Inundation by Seiche, Tsunami, or Mudflow (Standard of Significance 10)

Impact 3.8.6 The Specific Plan area would not be subject to substantial impacts related to inundation by seiche, tsunami, or mudflow events. This impact would be **less than significant**.

Tsunamis are waves caused by an underwater earthquake, landslide, or volcanic eruption. Since the project site is located inland, it could not experience a tsunami. A seiche is a rhythmic motion of water in a partially or completely landlocked waterbody caused by landslides, earthquake-induced ground accelerations, or ground offset. There are no large bodies of water near the Specific Plan area to pose a substantial seiche threat. A mudflow or mudslide is the most rapid and fluid type of downhill mass wasting. It is a rapid movement of a large mass of mud formed from loose earth and water. Similar terms are debris flow (e.g., in high mountains) and mudslide (not very liquid). The Specific Plan area is relatively flat, and mudslides are therefore not an issue. This impact would be **less than significant.**

Mitigation Measures

None required.

3.8.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for hydrology and water quality is the Laguna de Santa Rosa watershed, which originates at Hood Mountain in the Mayacamas Mountains to the east and discharges to Laguna de Santa Rosa, a large wetland complex downstream of the Santa Rosa urban area. While most of the Laguna de Santa Rosa watershed is in Sonoma County, it crosses the border of Napa County and is therefore affected by the land use practices in both counties. Various cities, water districts, sanitation districts, school districts, public lands, and private lands are also devoted to various resource extraction and other uses within the watershed.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Water Quality, Runoff, and Flooding Impacts

Impact 3.8.7 The proposed project, in combination with existing, approved, proposed, and reasonably foreseeable development in the Laguna de Santa Rosa watershed, would alter drainage conditions, rates, volumes, and water quality, which could result in potential flooding and stormwater quality impacts within the overall watershed. This impact is considered **less than cumulatively considerable**.

Development within the Santa Rosa Urban Growth Boundary has the potential to result in a cumulative impact related to hydrology and water quality. However, the General Plan 2035 EIR identified that with the policies included in the General Plan, the General Plan would result in a less than cumulatively considerable impact related to hydrology and water quality. The Specific Plan would be subject to the same General Plan policies. Therefore, the development of the lands within the Specific Plan area is not expected to contribute to a cumulative hydrologic or water quality impact to the Santa Rosa area.

The Specific Plan calls for increased residential, transit village, mixed use, retail, and public/institutional development. Peak runoff could increase gradually, due to increased impervious surface area, as development proceeds. However, these impacts will be reduced through improvements to the storm drain network identified in Section 3.12, Public Services and Utilities and are not expected to contribute to the cumulative effects to stormwater capacity (see subsection 3.12.5 for more details). Additionally, General Plan Policy NS-D-3 requires that new development incorporate features into site drainage plans that would reduce impermeable surface area, increase surface water infiltration, and minimize surface water runoff during storm events.

The impact to water quality depends almost entirely on the effectiveness of best management practices and engineering controls to prevent pollution, contaminated runoff, leaks, or spills from entering the storm drain system and area waterways, especially Santa Rosa Creek. Adherence to the City's Storm Water Low Impact Development Technical Design Manual in developing a site-specific SWPPP based on current best management practices will not result in a cumulative impact that would reduce water quality. The city's trash receptacles and pet waste bag dispensers would also add a level of protection against increased trash and bacterial concerns in the adjoining waterways.

The developments within the Specific Plan area and Santa Rosa would utilize municipal water sources, which include the use of some groundwater to supplement potable water sources. As discussed above, according to the Water Supply Assessment for the North Santa Rosa Station Area Specific Plan, the planned municipal supply is adequate to handle the projected cumulative water demand increase resulting from growth in Santa Rosa as well as in the Specific Plan area, and no depletion of the groundwater aquifer is anticipated. Therefore, the Specific Plan would not contribute to a cumulative impact to groundwater resources.

Taken together, existing General Plan policies and requirements reduce the project's potential to contribute to cumulative hydrologic and water quality impacts to a level that is less than cumulatively considerable.

Mitigation Measures

None required.

REFERENCES

Abbott & Kindermann. 2011. Sacramento Trial Court Strikes Down Key Provisions of State Water Board's General NPDES Construction Permit. Accessed March 30, 2012. http://blog.aklandlaw.com/2011/12/articles/water-quality-wetlands-clean-water-act/sacramento-trial-court-strikes-down-key-provisions-of-state-water-boards-general-npdes-construction-permit/ .

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3.9 LAND USE

This section addresses the potential environmental impacts of the proposed project related to land use and planning. The existing land use characteristics of the project site and surrounding area are described in the context of the City of Santa Rosa General Plan 2035 and Zoning Code and other adopted plans and policies. The impact analysis focuses on land use compatibility, consistency with applicable land use plans and policies, and conversion of open space, as well as the potential indirect environmental effects of the proposed text amendments to the General Plan and Zoning Code. Information used in the preparation of this section was obtained primarily from applicable land use plans, site reconnaissance, and aerial photography.

3.9.1 EXISTING SETTING

PROJECT AREA

The project site is located primarily in the incorporated City of Santa Rosa and is focused on an area approximately one-half mile around the future Sonoma-Marin Area Rail Transit (SMART) rail station, located at the southeast corner of Guerneville Road and the railroad (1478 and 1480 Guerneville Road, which are the current locations of the Sonoma Kitchen & Bath store and the Kelly-Moore Paint store), close to Coddingtown Mall. Small portions of the project site lay within unincorporated Sonoma County.

EXISTING LAND USE DESIGNATIONS AND ZONING

The project area has a mix of uses, including low, medium, and medium-high density residential, office, retail, industrial, public, recreational, and educational facilities. Retail development occurs within and in the vicinity of Coddingtown Mall. Most of the office space is located in the business park along North Dutton Avenue. Industrial uses are concentrated between the rail corridor and Cleveland Avenue, north of College Avenue. There are a number of schools and public facilities in the project area. These include the public library on Guerneville Road and two major educational facilities—Santa Rosa Junior College and Santa Rosa High School—which are located to the east of Highway 101. The project area is served by two parks: Jennings Park and Haydn Park. Jennings Park is located in the southwest corner of the project area and comprises 6.5 acres. Haydn Park is a 0.1-acre pocket park located off of Tammy Way. The remainder of the project area is residential.

ADJACENT LAND USES

The Specific Plan area is surrounded on all sides by existing urban development. Specifically, it is surrounded by residential, park, and school land to the west, residential and commercial land to the south, retail and office land to the east, and residential land to the north (see **Figure 2.0-3**). Highway 101 travels north–south, Paulin Creek runs east–west along the northern border of the project site, and the Northwestern Pacific Rail Corridor runs northwest–southeast through the northwestern and southeastern borders of the project site. Commercial uses exist on Mendocino Avenue, east of the junior college and high school.

3.9.2 REGULATORY FRAMEWORK

LOCAL

City of Santa Rosa General Plan

The City of Santa Rosa General Plan serves as the overall guiding policy document for the City. Several policies in the General Plan address land use within the city. The following is a list of General Plan goals and policies applicable to the proposed project.

Goal LUL-A: Foster a compact rather than a scattered development pattern in order to reduce travel, energy, land, and materials consumption while promoting greenhouse gas emission reductions citywide.

Policy LUL-A-1: As part of plan implementation—including development review, capital improvements programming, and preparation of detailed area plans—foster close land use/transportation relationships to promote use of alternative transportation modes and discourage travel by automobile.

Goal LUL-E: Promote livable neighborhoods by requiring compliance with green building programs to ensure that new construction meets high standards of energy efficiency and sustainable material use. Ensure that everyday shopping, park and recreation facilities, and schools are within easy walking distance of most residents.

Policy LUL-E-1: Provide new neighborhood parks and recreation facilities, elementary schools, and convenience shopping in accordance with the General Plan Land Use Diagram and Table 2-4.

Policy LUL-E-6: Allow residential or mixed use development in the Retail and Business Services or Office designations.

Goal LUL-F: Maintain a diversity of neighborhoods and varied housing stock to satisfy a wide range of needs.

Policy LUL-F-1: Do not allow development at less than the minimum density prescribed by each residential land use classification.

Goal LUL-G: Promote mixed use sites and centers.

Policy LUL-G-2: Require design of mixed use projects to focus residential uses in the upper stories or toward the back of parcels, with retail and office activities fronting the regional/arterial street. Site design with residential uses at the rear is intended to reduce potential for housing units to exceed maximum noise levels along a regional/arterial street.

Goal LUL-I: Maintain vibrant, convenient, and attractive commercial centers.

Policy LUL-I-1: Provide a range of commercial services that are easily accessible and attractive, that satisfies the needs of people who live and work in Santa Rosa and that also attracts a regional clientele.

Policy LUL-I-3: Allow small neighborhood convenience centers with less than 5,000 square feet of total retail floor area that include corner groceries, cleaners, and similar establishments, where they can be supported, within walking distance of residential uses. Ensure that neighborhood centers do not create unacceptable traffic or nuisances for residents due to the hours and nature of their operation, and are designed to facilitate walking and bicycling.

Goal LUL-K: Protect industrial land supply and ensure compatibility between industrial development and surrounding neighborhoods.

Policy LUL-K-1: Require industrial development adjacent to residential areas to provide buffers, and institute setback, landscaping, and screening requirements intended to minimize noise, light, and glare and other impacts.

Goal UD-E: Create a framework of public spaces at the neighborhood, city, and regional scale.

Policy UD-E-2: Provide an open space network that is linked by pedestrian and bicycle paths, and that preserves and enhances Santa Rosa's significant visual and natural resources.

Goal UD-F: Maintain and enhance the diverse character of Santa Rosa's neighborhoods. Promote the creation of neighborhoods – not subdivisions – in areas of new development.

Policy UD-F-1: Encourage the sensitive rehabilitation of older structures in neighborhoods to preserve the city's history, improve energy efficiency with consideration to the principles of life cycle costs, and to allow for diversity of architectural styles.

Goal UD-G: Design residential neighborhoods to be safe, human-scaled, and livable by addressing compact development, multi-modal connectivity and reducing energy use.

Policy UD-G-2: Locate higher density residential uses adjacent to transit facilities, shopping, and employment centers, and link these areas with bicycle and pedestrian paths.

Goal H-A: Meet the housing needs of all Santa Rosa residents.

Policy H-A-2: Pursue the goal of meeting Santa Rosa's housing needs through increased densities, when consistent with preservation of existing neighborhoods. Higher density sites are illustrated on the General Plan Land Use Diagram, which will allow the development of dwellings for 210 very low and 138 low income households annually. Development of these sites or proposals for new higher density sites must be designed in context with existing, surrounding neighborhoods. The number of affordable units permitted each year and the adequacy of higher density sites shall be reported as part of the General Plan Annual Review report.

Goal T-A: Provide a safe and sustainable transportation system.

Policy T-A-7: Expand non-motorized and bus infrastructure throughout the city such that greater amenities exist for cyclists, pedestrians and transit users in order to promote a healthy, sustainable city and further reduce GHG emissions.

Goal T-B: Provide a safe, efficient, free-flowing circulation system.

Policy T-B-2: Locate uses generating heavy traffic so that they have direct access or immediate secondary access to regional/arterial streets or highways.

Goal T-K: Develop a safe, convenient, and continuous network of pedestrian sidewalks and pathways that link neighborhoods with schools, parks, shopping areas, and employment centers.

Policy T-K-1: Link the various citywide pedestrian paths, including street sidewalks, downtown walkways, pedestrian areas in shopping centers and work complexes, park pathways, and other creekside and open space pathways.

Policy T-K-3: Orient building plans and pedestrian facilities to allow for easy pedestrian access from street sidewalks, transit stops, and other pedestrian facilities, in addition to access from parking lots.

Policy T-K-4: Require construction of attractive pedestrian walkways and areas in new residential, commercial, office, and industrial developments. Provide landscaping or other appropriate buffers between sidewalks and heavily traveled vehicular traffic lanes, as well as through and to parking lots. Include pedestrian amenities to encourage and facilitate walking.

Policy T-K-5: Ensure provision of safe pedestrian access for students of new and existing school sites throughout the city.

Policy T-K-6: Integrate multi-use paths into all creek corridors, railroad rights-of-way, and park designs.

Goal T-L: Develop a citywide system of designated bikeways that serves both experienced and casual bicyclists, and which maximizes bicycle use for commuting, recreation, and local transport.

Policy T-L-1: Provide bicycle lanes along all regional/arterial streets and high volume transitional/collector streets.

Policy T-L-2: Provide bicycle lanes on major access routes to all schools and parks.

Policy T-L-3: Improve bicycle networks by finishing incomplete or disconnected bicycle routes.

Santa Rosa Zoning Code

The Santa Rosa Zoning Code implements the goals and policies of the Santa Rosa General Plan by classifying and regulating the uses of land and structures in Santa Rosa. In addition, the Zoning Code is adopted to protect and to promote the public health, safety, and general welfare of residents and to preserve and enhance the aesthetic quality of the city.

3.9.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following CEQA Guidelines Appendix G thresholds of significance. Any land use and planning impact is considered significant if the project would:

1) Physically divide an established community.

2) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigation an environmental effect.

3) Conflicting with any applicable habitat conservation plan or natural community conservation plan.

METHODOLOGY

The following impact analysis was based on a review of the Santa Rosa General Plan 2035, the Santa Rosa Zoning Code, and the proposed amendments to these documents resulting from the proposed Specific Plan.

Potential land use conflicts or incompatibilities are typically the result of other environmental effects, such as the generation of noise or air emissions resulting from grading activities or increased traffic on area roadways. The reader is also referred to Sections 3.1 through 3.14 of this DEIR for detailed analysis of other environmental impacts, including hazardous materials, traffic, noise, air quality, hydrology/drainage, aesthetics, and agriculture.

IMPACTS AND MITIGATION MEASURES

Physically Divide an Established Community (Standard of Significance 1)

Impact 3.9.1 The proposed project would not physically divide an established community. There would be **no impact.**

Land uses surrounding the Specific Plan area include residential development, office, retail, and institutional land. The proposed project would expand the existing urban development pattern in the area through eventual construction or redevelopment of residential, retail, and commercial uses. The proposed project does not include any design features or other characteristics that would divide an existing community. Rather, the proposed project would improve community connectivity through improvement of motor vehicle, bicycle, and pedestrian facilities throughout the project area.

Mitigation Measures

None required.

Conflict with Santa Rosa 2035 General Plan and Zoning Code (Standard of Significance 2)

Impact 3.9.2 The proposed project will change the existing General Plan land use designation and zoning districts for the site. This impact is **less than significant.**

Proposed General Plan amendments to ensure consistency between the General Plan and the Specific Plan are part of this project. Similarly, rezoning consistent with the Specific Plan land use designations are also part of the project. A compact urban project such as proposed in the Specific Plan is consistent with General Plan policies such as LUL-A-1 and LUL-E-6 as noted above. General Plan Goal LUL-A encourages a compact rather than a scattered development pattern. Supporting this goal is General Plan Policy LUL-A-1, which fosters close land use/transportation relationships to promote use of alternative transportation modes and discourages travel by automobile. The application of Specific Plan Policy LU-1.1, which supports efforts to Intensify land uses and increase residential densities in the project area to support future transit improvements and ridership, would further strengthen this General Plan policy.

As another example, General Plan Goal T-K calls for the development of a safe, convenient, and continuous network of pedestrian sidewalks and pathways that link neighborhoods with schools, parks, shopping areas, and employment centers. Specific Plan Policy C-5.5 would identify gaps and build sidewalks to complete the pedestrian network in neighborhoods and commercial areas, which further strengthens the General Plan policy.

Rezoning for consistency with the Specific Plan will eliminate potential conflicts between zoning and the Specific Plan. The proposed project implements all of the policies in the General Plan that serve to protect the environment, such as erosion control, air quality, etc. As a result, the Specific Plan would result in a less than significant impact related to consistency with adopted plans.

Mitigation Measures

None required.

Conflict with a Habitat Conservation Plan or Natural Community Conservation Plan (Standard of Significance 3)

Impact 3.9.3 The project site is not within the boundaries of or otherwise subject to any habitat conservation plans or natural community conservation plans. There would be **no impact.**

There are no adopted habitat conservation plans or natural community conservation plans covering the project area. As such, the project site and surrounding area are not subject to any such plans. Therefore, the proposed project would not conflict with a habitat conservation plan or natural community conservation plan, and there would be no impact.

Mitigation Measures

None required.

3.9.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for land use consists of the City of Santa Rosa Urban Growth Boundary (UGB), as identified in the General Plan 2035.

Cumulative Compatibility Impacts

Impact 3.9.4 Denser and more intense development within the project area, as called for under the Specific Plan, would not result in cumulatively considerable impacts to land use or cumulatively considerable conflicts with applicable planning documents. This impact would be considered **less than cumulatively considerable**.

Development within the Santa Rosa UGB has the potential to result in a cumulative impact related to land use. However, the General Plan 2035 EIR identified that with the policies included in the General Plan, the potential for development under the General Plan to result in a cumulative impact related to land use would be reduced to a less than significant level. All of the reasonably foreseeable development that may occur under the Specific Plan would be in keeping with the overall intent of the General Plan and is subject to General Plan policies. The proposed Specific Plan policies regarding land use are designed to help the City better anticipate patterns of growth and focus development in the project area, consistent with the General Plan 2035. Thus, the Specific Plan would not contribute to a cumulatively considerable impact related to land use.

Mitigation Measures

None required.

REFERENCES

City of Santa Rosa. 2007. *Downtown Station Area Specific Plan Draft Program EIR.*

City of Santa Rosa. 2009. *Draft Santa Rosa General Plan 2035 Environmental Impact Report*.

3.10 Noise

This section includes a description of existing noise conditions, a summary of applicable regulations, and an analysis of potential noise impacts associated with the North Station Area Specific Plan project. Mitigation measures are recommended, as necessary, to reduce significant noise impacts. This noise analysis was conducted by Ambient Air Quality and Noise Consulting. The technical analyses and noise modeling related to this section were performed by Ambient Noise and Air Quality Consulting.

3.10.1 EXISTING SETTING

CONCEPTS AND TERMINOLOGY

Acoustic Fundamentals

Noise is generally defined as sound that is loud, disagreeable, or unexpected. Sound is mechanical energy transmitted in the form of a wave because of a disturbance or vibration. Sound levels are described in terms of both amplitude and frequency.

Amplitude

Amplitude is defined as the difference between ambient air pressure and the peak pressure of the sound wave. Amplitude is measured in decibels (dB) on a logarithmic scale. For example, a 65 dB source of sound, such as a truck, when joined by another 65 dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). Amplitude is interpreted by the ear as corresponding to different degrees of loudness. Laboratory measurements correlate a 10 dB increase in amplitude with a perceived doubling of loudness and establish a 3 dB change in amplitude as the minimum audible difference perceptible to the average person.

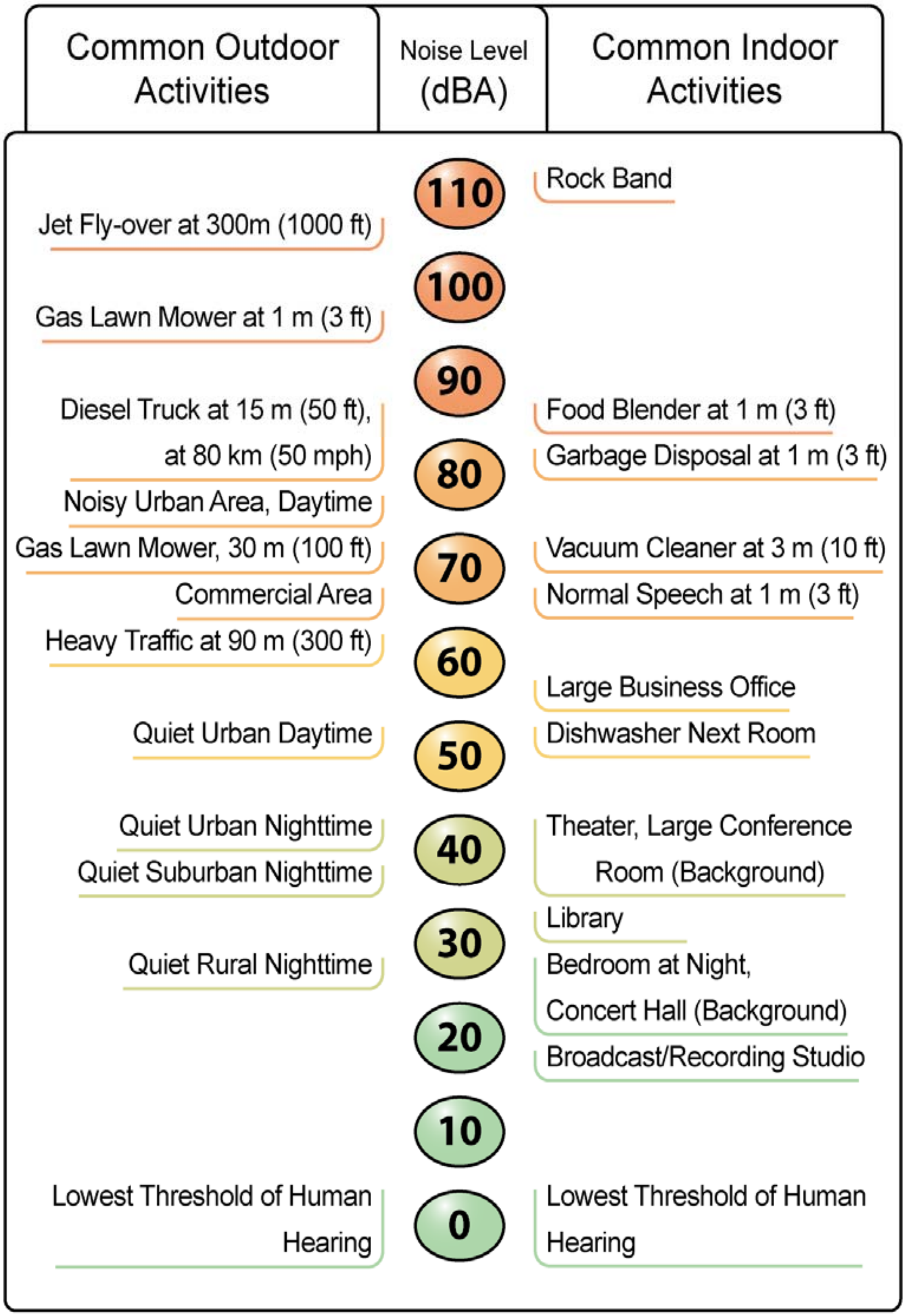
Frequency

The frequency of a sound is defined as the number of fluctuations of the pressure wave per second. The unit of frequency is the hertz (Hz). One Hz equals one cycle per second. The human ear is not equally sensitive to sound of different frequencies. For instance, the human ear is more sensitive to sound in the higher portion of this range than in the lower and sound waves below 16 Hz or above 20,000 Hz cannot be heard at all. To approximate the sensitivity of the human ear to changes in frequency, environmental sound is usually measured in what is referred to as “A-weighted decibels” (dBA). On this scale, the normal range of human hearing extends from about 10 dBA to about 140 dBA (EPA 1971). Common community noise sources and associated noise levels, in dBA, are depicted in **Figure 3.10-1**.

Addition of Decibels

Because decibels are logarithmic units, sound levels cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3 dB increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, if one automobile produces a sound level of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB; rather, they would combine to produce 73 dB. Under the decibel scale, three sources of equal loudness together would produce an increase of 5 dB.

FIGURE 3.10-1
COMMON NOISE LEVELS



Source: Caltrans 2011

Noise Descriptors

The intensity of environmental noise fluctuates over time, and several descriptors of time-averaged noise levels are used. The three most commonly used descriptors are L_{eq}, L_{dn}, and CNEL. The energy-equivalent noise level, L_{eq}, is a measure of the average energy content (intensity) of noise over any given period. Many communities use 24-hour descriptors of noise levels to regulate noise. The day-night average noise level, L_{dn}, is the 24-hour average of the noise intensity, with a 10-dBA "penalty" added for nighttime noise (10 p.m. to 7 a.m.) to account for the greater sensitivity to noise during this period. CNEL, the community equivalent noise level, is similar to L_{dn} but adds an additional 5-dBA penalty for evening noise (7 p.m. to 10 p.m.). Noise analyses may also depend on measurements of L_{max}, the maximum instantaneous noise level during a specific period of time, and L_{min}, the minimum instantaneous noise level during a specific period. Common noise level descriptors are summarized as follows:

- **Energy Equivalent Noise Level (L_{eq}):** The energy mean (average) noise level. The instantaneous noise levels during a specific period of time in dBA are converted to relative energy values. From the sum of the relative energy values, an average energy value (in dBA) is calculated.

- **Minimum Noise Level (L_{min}):** The minimum instantaneous noise level during a specific period of time.

- **Maximum Noise Level (L_{max}):** The maximum instantaneous noise level during a specific period of time.

- **Day-Night Average Noise Level (DNL or L_{dn}):** The 24-hour L_{eq} with a 10 dBA "penalty" for noise events that occur during the noise-sensitive hours between 10:00 p.m. and 7:00 a.m. In other words, 10 dBA is "added" to noise events that occur in the nighttime hours to account for increases sensitivity to noise during these hours.

- **Community Noise Equivalent Level (CNEL):** The CNEL is similar to the L_{dn} described above, but with an additional 5 dBA "penalty" added to noise events that occur between the hours of 7:00 p.m. to 10:00 p.m. The calculated CNEL is typically approximately 0.5 dBA higher than the calculated L_{dn}.

Sound Propagation and Attenuation

Geometric Spreading

Sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level decreases (attenuates) at a rate of approximately 6 decibels for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path, and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of approximately 3 decibels for each doubling of distance from a line source, depending on ground surface characteristics. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between the source and the receiver, such as soft dirt, grass, or scattered bushes and trees), an excess ground-attenuation value of 1.5 decibels per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation for soft surfaces results in an overall attenuation rate of 4.5 decibels per doubling of distance from the source.

Atmospheric Effects

Receptors located downwind from a source can be exposed to increased noise levels relative to calm conditions, whereas locations upwind can have lowered noise levels. Sound levels can be increased at large distances (e.g., more than 500 feet) from the highway due to atmospheric temperature inversion (i.e., increasing temperature with elevation). Other factors such as air temperature, humidity, and turbulence can also have significant effects.

Shielding by Natural or Human-Made Features

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in minimum 5 dB of noise reduction. Taller barriers provide increased noise reduction.

Noise reductions afforded by building construction can vary depending on construction materials and techniques. Standard construction practices typically provide approximately 15 dBA exterior-to-interior noise reductions for building facades, with windows open, and approximately 20–25 dBA, with windows closed. With compliance with current Title 24 energy efficiency standards, which require increased building insulation and inclusion of an interior air ventilation system to allow windows on noise-impacted facades to remain closed, exterior-to-interior noise reductions typically average approximately 25 dBA. The absorptive characteristics of interior rooms, such as carpeted floors, draperies, and furniture, can result in further reductions in interior noise.

Human Response to Noise

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases. The acceptability of noise and the threat to public well-being are the basis for land use planning policies preventing exposure to excessive community noise levels.

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and habituation to noise over differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted: the so-called "ambient" environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged.

Regarding increases in A-weighted noise levels, knowledge of the following relationships will be helpful in understanding this analysis:

- Except in carefully controlled laboratory experiments, a change of 1 dB cannot be perceived by humans.
- Outside of the laboratory, a 3 dB change is considered a just-perceivable difference.
- A change in level of at least 5 dB is required before any noticeable change in community response would be expected. An increase of 5 dB is typically considered substantial.
- A 10 dB change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

Effects of Noise on Human Activities

The extent to which environmental noise is deemed to result in increased levels of annoyance, activity interference, and sleep disruption varies greatly from individual to individual depending on various factors, including the loudness or suddenness of the noise, the information value of the noise (e.g., aircraft overflights, child crying, fire alarm), and an individual's sleep state and sleep habits. Over time, adaptation to noise events and increased levels of noise may also occur. In terms of land use compatibility, environmental noise is often evaluated in terms of the potential for noise events to result in increased levels of annoyance, sleep disruption, or interference with speech communication, activities, and learning. Noise-related effects on human activities are discussed in more detail below.

Speech Communication

For most noise-sensitive land uses, an interior noise level of 45 dB L_{eq} is typically identified for the protection of speech communication in order to provide for 100 percent intelligibility of speech sounds. Assuming an average 20 dB reduction in sound level between outdoors and indoors (which is an average amount of sound attenuation that assumes windows are closed), this interior noise level would equate to an exterior noise level of 65 dBA L_{eq}. For outdoor voice communication, an exterior noise level of 60 dBA L_{eq} allows normal conversation at distances up to 2 meters with 95 percent sentence intelligibility (EPA 1974). Based on this information, speech interference begins to become a problem when steady noise levels reach approximately 60 to 65 dBA. Within interior noise environments, an average-hourly background noise level of 45 dBA L_{eq} is typically recommended for noise-sensitive land uses, such as educational facilities (Caltrans 2002a).

Annoyance and Sleep Disruption

With regard to potential increases in annoyance, activity interference, and sleep disruption, land use compatibility determinations are typically based on the use of the cumulative noise exposure metrics (i.e., CNEL or L_{dn}). Perhaps the most comprehensive and widely accepted evaluation of the relationship between noise exposure and the extent of annoyance was one originally developed by Theodore J. Schultz in 1978. In 1978, Schultz's research findings provided support for L_{dn} as the descriptor for environmental noise. Research conducted by Schultz identified a correlation between the cumulative noise exposure metric and individuals who were highly annoyed by transportation noise. The Schultz curve, expressing this correlation, became a basis for noise standards. When expressed graphically, this relationship is typically referred to as the Schultz curve, which indicates that approximately 13 percent of the population is highly annoyed at a noise level of 65 dBA L_{dn}. It also indicates that the percentage of people describing themselves as being highly annoyed accelerates smoothly between 55 and 70 dBA L_{dn}. A noise level of 65 dBA L_{dn} is a commonly referenced dividing point between lower and higher rates of people describing themselves as being highly annoyed (Caltrans 2002a).

The Schultz curve and associated research became the basis for many of the noise criteria subsequently established for federal, state, and local entities. Most federal and California regulations and policies related to transportation noise sources establish a noise level of 65 dBA CNEL/L_{dn} as the basic limit of acceptable noise exposure for residential and other noise-sensitive land uses. For instance, with respect to aircraft noise, both the Federal Aviation Administration and the State of California have identified a noise level of 65 dBA L_{dn} as the dividing point between normally compatible and normally incompatible residential land use generally applied for determination of land use compatibility. For noise-sensitive land uses exposed to aircraft noise, noise levels in excess of 65 dBA CNEL/L_{dn} are typically considered to result in a potentially significant increase in levels of annoyance (Caltrans 2002a).

Allowing for an average exterior-to-interior noise reduction of 20 dB, an exterior noise level of 65 dBA CNEL/L_{dn} would equate to an interior noise level of 45 dBA CNEL/L_{dn}. An interior noise level of 45 dB CNEL/L_{dn} is generally considered sufficient to protect against activity interference at most noise-sensitive land uses, including residential dwellings, and would also be sufficient to protect against sleep interference (EPA 1974). In California, the California Building Code establishes a noise level of 45 dBA CNEL as the maximum acceptable interior noise level for residential uses (other than detached single-family dwellings). Use of the 45 dBA CNEL threshold is further supported by recommendations provided in the State of California Office of Planning and Research's General Plan Guidelines, which recommend an interior noise level of 45 dB CNEL/L_{dn} as the maximum allowable interior noise level sufficient to permit "normal residential activity" (OPR 2003).

The cumulative noise exposure metric is currently the only noise metric for which there is a substantial body of research data and regulatory guidance defining the relationship between noise exposure, people's reactions, and land use compatibility. However, when evaluating environmental noise impacts involving intermittent noise events, such as aircraft overflights and train passbys, the use of cumulative noise metrics may not provide a thorough understanding of the resultant impact. The general public often finds it difficult to understand the relationship between intermittent noise events and cumulative noise exposure metrics. In such instances, supplemental use of other noise metrics, such as the L_{eq} or L_{max} descriptor, may be helpful as a means of increasing public understanding regarding the relationship between these metrics and the extent of the resultant noise impact (Caltrans 2002a).

AFFECTED ENVIRONMENT

To document existing ambient noise levels in the Specific Plan area, short-term ambient noise measurements were conducted on November 17, 2011, using a Larson Davis Laboratories, Type I, Model 820 integrating sound-level meter. The meter was calibrated before use and is certified to be in compliance with American National Standards Institute specifications. Measured ambient noise levels are summarized in **Table 3.10-1**. As depicted, measured ambient daytime noise levels ranged from a low of approximately 44 dBA L_{eq} to a high of approximately 70 dBA L_{eq}. Maximum intermittent noise levels were also influenced predominantly by vehicle traffic on area roadways and ranged from approximately 61 to 80 dBA L_{max}. Based on the measurements conducted, average-hourly noise levels (in L_{eq}) within the Plan area are predominantly influenced by vehicle traffic on area roadways, with the highest ambient noise levels generally occurring at locations nearest Highway 101.

The project area noise environment is defined primarily by vehicular traffic along area roadways. Northwestern Pacific freight trains, which have recently resumed service along the existing rail corridor, also contribute to the existing noise environment. This same railroad corridor is also proposed for future Sonoma-Marin Area Rail Transit (SMART) commuter/passenger operations. To a lesser extent, activities at nearby commercial and industrial uses also contribute on an intermittent basis to ambient noise levels in the Plan area. Primary existing noise sources are discussed below.

Existing Traffic Noise

The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA RD77-108) was used to determine existing traffic noise levels along major area roadways in the Plan area. The FHWA model used California vehicle reference noise factors for automobiles, medium trucks, and heavy trucks, with consideration given to vehicle volume, speed, and roadway configuration. Traffic data used in the modeling effort was obtained from the Section 3.13 Traffic and Circulation of this document.

Table 3.10-2 depicts predicted existing average-daily traffic noise levels (in CNEL/L_{dn}) at a distance of 50 feet from the near travel-lane centerline for major roadways within the project area, as well as distances to the predicted existing 60, 65, and 70 dBA CNEL/L_{dn} traffic noise contours. The extent by which nearby land uses are affected by existing traffic noise depends on their respective proximity to the roadways and their individual sensitivity to noise.

TABLE 3.10-1
SUMMARY OF MEASURED AMBIENT NOISE LEVELS

Location		Monitoring Period	Noise Levels (dBA)	
			L_{eq}	L_{max}
NM-1	Range Ave., North of Guerneville Rd. Approximately 25′ from Roadway Centerline	14:20–14:30	67.7	77.6
NM-2	Guerneville Rd., West of Lance Dr. Approximately 40′ from Roadway Centerline	12:00–12:15	69.1	79.9
NM-3	Range Ave., North of Jennings Ave. Approximately 25′ from Roadway Centerline	13:30–13:40	60.3	70.4
NM-4	Cleveland Ave., North of Edwards Ave. Approximately 25′ from Roadway Centerline	13:55–1405	71.2	78.0
NM-5	Mendocino Ave., South of Elliott Ave. Approximately 35′ from Roadway Centerline	14:55–15:20	68.2	78.1
NM-6	N. Dutton Ave., South of Jennings Ave. Approximately 45′ from Roadway Centerline	10:30–10:45	67.2	76.6
NM-7	Jennings Park at Clover Lane Approximately 25′ from Roadway Centerline	12:50–13:10	43.9	61.4
NM-8	W. College Ave., West of Clover Dr. Approximately 55′ from Roadway Centerline	11:15–11:40	65.7	72.7

Ambient noise measurements were conducted on November 17, 2011, using a Larson Davis Laboratories, Type I, Model 820 integrating sound-level meter. Refer to Figure 3.10-2 for corresponding measurement locations.

TABLE 3.10-2
EXISTING TRAFFIC NOISE LEVELS

Segment	Existing ADT	CNEL/L_{dn} at 50 Feet from Near-Travel-Lane Centerline	Distance (feet) to Noise Level Contours (dBA CNEL/L_{dn}) from Roadway Centerline		
			60	65	70
W. Steele Ln., West of Range Ave.	8,840	63.66	97.8	WR	WR
W. Steele Ln., East of Range Ave.	9,050	63.76	99.3	WR	WR
Guerneville Rd., West of N. Dutton Ave.	19,060	66.91	203.5	96.9	WR
Guerneville Rd., East of N. Dutton Ave.	26,440	68.33	252.5	119.1	59.3
Guerneville Rd., West of Range Ave.	20,940	67.32	216.5	102.8	WR
Guerneville Rd., East of Range Ave.	16,220	66.21	183.1	87.6	WR
W. College Ave., West of N. Dutton Ave.	14,580	64.33	138.1	67.5	WR
W. College Ave., East of N. Dutton Ave.	16,140	64.77	147.4	71.7	WR
W. College Ave., East of Cleveland Ave.	22,350	66.18	182.3	87.3	WR
N. Dutton Ave., South of Guerneville Rd.	14,410	66.13	168.8	80.0	WR
N. Dutton Ave., North of College Ave.	16,020	66.59	181.0	85.5	WR
Range Ave., North of W. Steele Ln.	9,980	64.53	132.6	63.6	WR
Range Ave., South of W. Steele Ln.	9,670	64.39	129.9	62.4	WR
Range Ave., South of Guerneville Rd.	9,760	62.27	81.8	WR	WR
Range Ave., South of Jennings Ave.	3,770	59.38	56.5	WR	WR
Cleveland Ave., North of W. Steele Ln.	13,370	63.95	130.5	64.2	WR
Cleveland Ave., South of W. Steele Ln.	10,770	63.44	112.6	54.7	WR
Cleveland Ave., South of Jennings Ave.	10,630	63.38	111.7	54.2	WR
Cleveland Ave., South of Frances St.	13,030	64.27	127.5	61.3	WR

WR = Within roadway right-of-way

ADT=Average Daily Traffic. Based on peak-hour volumes derived from the traffic section of this document. Assumes peak-hour volumes represent roughly ten percent of ADT volumes.

Refer to Appendix C of this document for modeling assumptions and results.

Railroad Noise

Northwestern Pacific Railroad

The North Coast Railroad Authority (NCRA) recently resumed service along the Northwestern Pacific Railroad. Based on information derived from the NCRA's Russian River Division Freight Rail Project Draft Environmental Impact Report prepared in November 2009, freight train service along the railroad line would consist of a total of two round-trip freight train operations per day. One of these trains is anticipated to include a single locomotive engine with 10 to 25 cars, while the second would likely consist of two locomotive engines with approximately 60 cars. Based on this information, predicted freight train noise levels within the Specific Plan area would be approximately 58 dBA L_{dn} at 50 feet from the track centerline, without the sounding of locomotive warning horns (NCRA 2009). Assuming a maximum instantaneous noise level of 108 dB with locomotive warning horns sounding, predicted average-daily noise levels at 50 feet from the track centerline would be 67 dBA L_{dn}. The sounding of warning horns generally occur within approximately one-quarter mile of a grade crossing. Given the number of grade crossings in the Specific Plan area, the sounding of warning horns would be expected. Predicted distances to train noise contours are summarized in **Table 3.10-3** below.

Sonoma-Marin Area Rail Transit

In addition to potential exposure to traffic noise, the Northwestern Pacific Railroad corridor has been proposed as a rail transit corridor by SMART. According to the SMART DEIR prepared in 2005, approximately 12 passenger trains would travel along this rail corridor between the hours of 5:00 a.m. and 8:00 p.m. According to the SMART DEIR, the predicted 60 dBA L_{dn} noise contour for the SMART rail corridor would extent to a distance of approximately 25 feet from the track centerline, without the sounding of train horns. The sounding of train horns is typically required within approximately one-quarter mile of grade crossings. With the sounding of train horns, instantaneous maximum noise levels could reach 105 dBA at 70 feet. However, the SMART DEIR does not present calculated average-daily noise levels (in CNEL/L_{dn}) or projected average-daily noise contours with the sounding of train horns.

Predicted noise contours for the SMART passenger trains, with the sounding of train horns, were calculated based on the noise data and anticipated hours of operation provided in the SMART DEIR and assuming that trains would be somewhat equally distributed throughout the anticipated hours of operation. Based on the modeling conducted, SMART train noise levels would be approximately 74 dBA L_{dn} at 50 feet from the track centerline. Predicted noise levels are summarized in **Table 3.10-3** below.

Cumulative Train Noise Levels

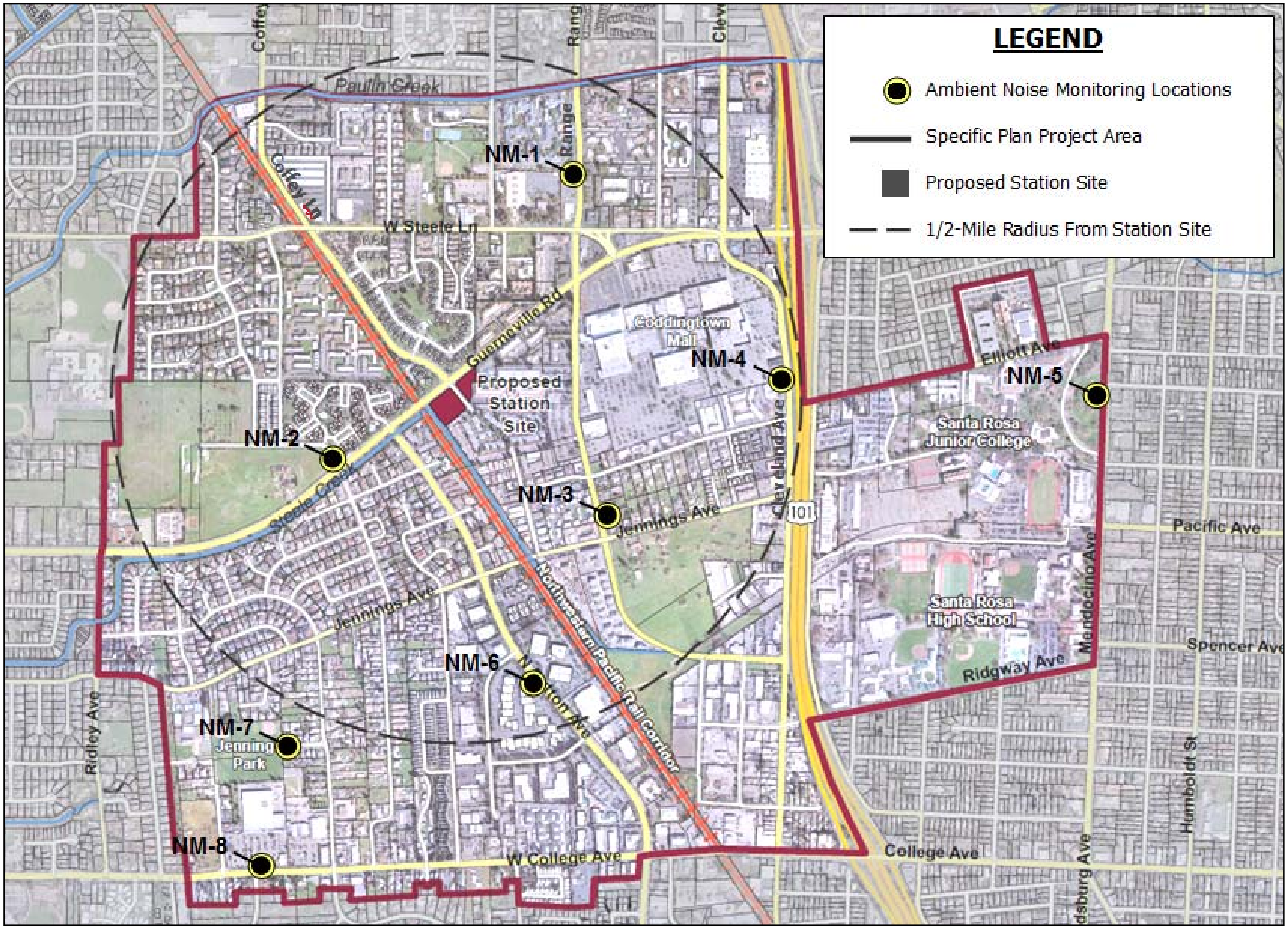
Cumulative average-daily train noise levels were calculated based on the above predicted noise levels for freight and passenger trains. Given the number of grade crossings and distances between grade crossings, the sounding of locomotive warning horns would be anticipated within the Specific Plan area. Predicted distances to average-daily noise contours were calculated assuming an average noise attenuation rate of 4.5 dB per doubling of distance from the railroad centerline. Predicted train noise levels and distances to cumulative train noise contours are summarized in **Table 3.10-3** below. As depicted, predicted cumulative train noise levels would be 75 dBA L_{dn} at 50 feet from the track. The projected 60 dBA L_{dn} noise contour would extend to a distance of approximately 430 feet from the track centerline. The 65 and 70 L_{dn} contours would extend to approximately 200 and 90 feet from the track centerline, respectively.

TABLE 3.10-3
SONOMA-MARIN AREA RAIL TRANSIT CORRIDOR NOISE LEVELS

L_{dn} at 50 Feet from Railroad Centerline			Distance (feet) to Cumulative L_{dn} Contours from Railroad Centerline		
NWPR	**SMART**	**Cumulative**	60	65	70
67	74	75	430	200	90

Assumes a maximum instantaneous noise level of 108 dB with horns sounding. Assumes 2 freight trains and 12 passenger trains daily.

FIGURE 3.10-2
AMBIENT NOISE MEASUREMENT LOCATIONS



Ambient noise measurement locations correspond to those depicted in ***Table 3.10-1****.*

3.10.2 REGULATORY FRAMEWORK

NOISE

State

California General Plan Guidelines

The State of California regulates vehicular and freeway noise affecting classrooms, sets standards for sound transmission and occupational noise control, and identifies noise insulation standards and airport noise/land use compatibility criteria. The State of California General Plan Guidelines (2003), published by the Governor's Office of Planning and Research (OPR), also provides guidance for the acceptability of projects within specific CNEL/L_{dn} contours.

California Building Code

Title 24 of the California Code of Regulations contains standards for allowable interior noise levels associated with exterior noise sources (California Building Code, 1998 edition, Volume 1, Appendix Chapter 12, Section 1208A). The standards apply to new hotels, motels, dormitories, apartment houses, and dwellings other than detached single-family residences. The standards state that the interior noise level attributable to exterior sources shall not exceed 45 dBA CNEL in any habitable room. Proposed residential structures to be located where the CNEL exceeds 60 dBA require an acoustical analysis showing that the proposed building design would achieve the prescribed allowable interior noise standard. Worst-case noise levels, either existing or future, are used as the basis for determining compliance with these standards.

LOCAL

City of Santa Rosa General Plan

The Santa Rosa General Plan 2035 serves as the overall guiding policy document for the City. The City's land use compatibility noise standards are summarized in **Figure 3.10-3**. The following is a list of applicable General Plan goals and policies most pertinent to the Specific Plan in regard to noise issues.

Noise and Safety Element

Goal NS-B: Maintain an acceptable community noise level to protect the health and comfort of people living, working and/or visiting in Santa Rosa, while maintaining a visually appealing community.

Policy NS-B-1: Do not locate noise-sensitive uses in proximity to major noise sources, except residential is allowed near rail to promote future ridership.

Policy NS-B-2: Encourage residential developers to provide buffers other than sound walls, where practical. Allow sound walls only when projected noise levels at a site exceed land use compatibility standards in Figure 12-1.

In some established neighborhoods and subdivisions, sound walls may provide the only alternative to reduce noise to acceptable community standards. The Design Review process shall evaluate sound wall aesthetics and landscaping to ensure attractiveness along with functionality.

Policy NS-B-3: Prevent new stationary and transportation noise sources from creating a nuisance in existing developed areas. Use a comprehensive program of noise prevention through planning and mitigation, and consider noise impacts as a crucial factor in project approval.

The Land Use Compatibility Standards specify normally acceptable levels for community noise in various land use areas.

Policy NS-B-4: Require new projects in the following categories to submit an acoustical study, prepared by a qualified acoustical consultant:

- All new projects proposed for areas with existing noise above 60dBA DNL. Mitigation shall be sufficient to reduce noise levels below 45 dBA DNL in habitable rooms and 60 dBA DNL in private and shared recreational facilities. Additions to existing housing units are exempt.

- All new projects that could generate noise whose impacts on other existing uses would be greater than those normally acceptable (as specified in the Land Use Compatibility Standards).

Policy NS-B-5: Pursue measures to reduce noise impacts primarily through site planning. Engineering solutions for noise mitigation, such as sound walls, are the least desirable alternative.

Policy NS-B-8: Adopt mitigations, including reduced speed limits, improved paving texture, and traffic controls, to reduce noise to normally acceptable levels in areas where noise standards may be exceeded (e.g., where homes front regional/arterial streets and in areas of mixed use development.)

Policy NS-B-9: Encourage developers to incorporate acoustical site planning into their projects. Recommended measures include:

- Incorporating buffers and/or landscaped earth berms;

- Orienting windows and outdoor living areas away from unacceptable noise exposure;

- Using reduced-noise pavement (rubberized asphalt);

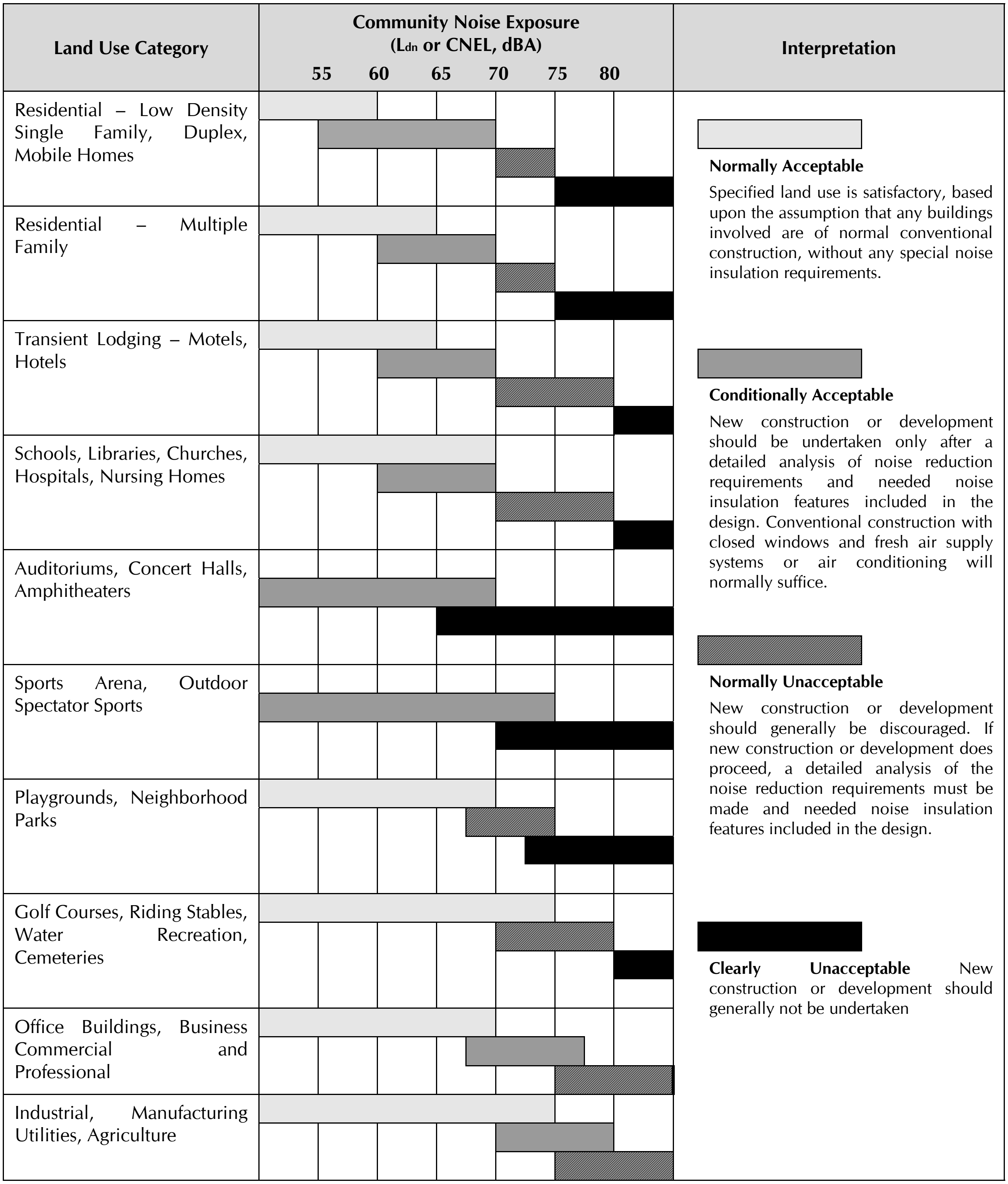
- Incorporating traffic calming measures, alternative intersection designs, and lower speed limits; and

- Incorporating state-of-the-art structural sound attenuation and setbacks.

Policy NS-B-10: Work with private enterprises to reduce or eliminate nuisance noise from industrial and commercial sources that impact nearby residential areas. If progress is not made within a reasonable time, the city shall issue abatement orders or take other legal measures.

Policy NS-B-14: Discourage new projects that have potential to create ambient noise levels more than 5 dBA DNL above existing background, within 250 feet of sensitive receptors.

FIGURE 3.10-3
CITY OF SANTA ROSA LAND USE COMPATIBILITY NOISE CRITERIA



Source: Santa Rosa General Plan 2035, 2009

City of Santa Rosa Municipal Code

The City of Santa Rosa Municipal Code includes noise-related provisions for the control of stationary-source noise levels from existing uses located within Santa Rosa.

Section 17-16.030, Ambient Base Noise Level Criteria, of the City's Municipal Code establishes noise level criteria for various land uses, which are depicted in **Table 3.10-4**. Section 17-16.120 prohibits the operation of any machinery, equipment, pump, fan, air-conditioning apparatus, or similar mechanical device in a manner that results in the noise level at the property line of any property to exceed the applicable noise criteria by more than 5 decibels.

TABLE 3.10-4
CITY OF SANTA ROSA MUNICIPAL CODE
NOISE LEVEL CRITERIA BY LAND USE

Zone	Time	Sound Level A (decibels) Community Environment Classification
R1 and R2	10 p.m. to 7 a.m.	45
R1 and R2	7 p.m. to 10 p.m.	50
R1 and R2	7 a.m. to 7 p.m.	55
Multi-Family	10 p.m. to 7 a.m.	50
Multi-Family	7 a.m. to 10 p.m.	55
Office & Commercial	10 p.m. to 7 a.m.	55
Office & Commercial	7 a.m. to 10 p.m.	60
Intensive Commercial*	10 p.m. to 7 a.m.	55
Intensive Commercial	7 a.m. to 10 p.m.	65
Industrial	Anytime	70

Source: Santa Rosa Municipal Code, 2011

**"Intensive Commercial" means those office and commercial zones within the City which exhibit ambient noise levels in excess of the "Office & Commercial" areas defined above.*

GROUNDBORNE VIBRATION

There are no federal, state, or local regulatory standards for groundborne vibration. However, various criteria have been established to assist in the evaluation of vibration impacts. For instance, the California Department of Transportation (Caltrans) has developed vibration criteria based on potential structural damage risks and human annoyance. Caltrans-recommended criteria for the evaluation of groundborne vibration levels, with regard to structural damage and human annoyance, are summarized in **Table 3.10-5** and **Table 3.10-6**, respectively. The criteria differentiate between transient and continuous/frequent sources. Transient sources of groundborne vibration include intermittent events, such as blasting, whereas continuous and frequent events would include the operations of equipment, including construction equipment, and vehicle traffic on roadways (Caltrans 2002b, 2004).

The groundborne vibration criteria recommended by Caltrans for evaluation of potential structural damage is based on building classifications which take into account the age and condition of the building. For residential structures and newer buildings, Caltrans considers a minimum peak-particle velocity (ppv) threshold of 0.5 inches per second (in/sec) for transient sources and 0.3 in/sec for continuous/frequent sources to be sufficient to protect against building damage. With the exception of fragile buildings, ruins, and ancient monuments, continuous groundborne vibration levels below approximately 0.2 in/sec ppv are unlikely to cause structural damage. In terms of human annoyance, continuous vibrations in excess of 0.04 in/sec ppv and transient sources in excess of 0.25 in/sec ppv are identified by Caltrans as being "distinctly perceptible." Within buildings, short periods of ground vibration in excess of 0.2 in/sec ppv are generally considered to result in increased levels of annoyance (Caltrans 2002b, 2004).

TABLE 3.10-5
DAMAGE POTENTIAL TO BUILDINGS AT VARIOUS GROUNDBORNE VIBRATION LEVELS

Structure and Condition	Vibration Level (in/sec ppv)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely Fragile Historic Buildings, Ruins, Ancient Monuments	0.12	0.08
Fragile Buildings	0.20	0.10
Historic and Some Old Buildings	0.50	0.25
Older Residential Structures	0.50	0.30
New Residential Structures	1.00	0.50
Modern Industrial/Commercial Buildings	2.00	0.50

Source: Caltrans 2002b, 2004

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

TABLE 3.10-6
ANNOYANCE POTENTIAL TO PEOPLE AT VARIOUS GROUNDBORNE VIBRATION LEVELS

Human Response	Vibration Level (in/sec ppv)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely Perceptible	0.04	0.01
Distinctly Perceptible	0.25	0.04
Strongly Perceptible	0.90	0.10
Severe	2.00	0.40

Source: Caltrans 2002b, 2004

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

3.10.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the application of the following State CEQA Guidelines Appendix G thresholds of significance. A noise impact is considered significant if the project 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 of 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.

4) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The Specific Plan area is not located within an airport land use plan, within 2 miles of a public airport or public use airport, or in the vicinity of a private airstrip. For these reasons, further analysis of potential exposure of noise-sensitive land uses to aircraft noise is not included in this Draft EIR.

METHODOLOGY

A combination of existing literature, noise level measurements, and application of accepted noise prediction and sound propagation algorithms were used for the prediction of short-term construction and long-term non-transportation and transportation source noise levels, as well as for the evaluation of groundborne vibration impacts.

Short-Term Construction Noise

Predicted noise levels at nearby noise-sensitive land uses were calculated utilizing typical noise levels and usage rates associated with construction equipment, derived from the U.S. Department of Transportation, Federal Highway Administration's Roadway Construction Noise Model (version 1.1). Construction noise levels were predicted assuming an average noise attenuation rate of 6 dB per doubling of distance from the source.

Traffic Noise

Traffic noise levels were calculated using the FHWA roadway noise prediction model (FHWA-RD-77-108) based on California vehicle reference noise levels and traffic data obtained from the traffic analysis prepared for this project. Traffic volumes were calculated based on peak-hour traffic volumes derived from the Section 4.13 Traffic and Circulation of this document and assuming that peak-hour volumes represent 10 percent of the average-daily volumes. Additional input data included day/night percentages of autos, medium and heavy trucks, vehicle speeds, ground attenuation factors, and roadway widths. Predicted noise levels were calculated at a distance of 50 feet from the travel lane located nearest the receptor (i.e., the near-travel-lane centerline), as well as distances to the predicted noise contours. Increases in traffic noise levels attributable to the proposed project were determined based on a comparison of predicted noise levels, with and without buildout of the General Plan. Traffic noise modeling is included in Appendix C of this DEIR.

Land Use Compatibility

The compatibility of proposed land uses was evaluated based on projected future on-site transportation and non-transportation noise levels with project implementation. Predicted on-site noise levels were compared with the City's corresponding noise criteria for determination of land use compatibility (**Figure 3.10-3**).

Groundborne Vibration

Groundborne vibration levels associated with construction-related activities were evaluated utilizing typical groundborne vibration levels rates associated with construction equipment, obtained from the U.S. Department of Transportation, Federal Transit Administration's Transit Noise and Vibration Impact Assessment guidelines (2006). Groundborne vibration impacts related to structural damage and human annoyance were evaluated taking into account the distance from construction activities to nearby land uses and typically applied criteria for structural damage and human annoyance (**Tables 3.10-5** and **3.10-6**).

IMPACTS AND MITIGATION MEASURES

Exposure to Construction Noise

Impact 3.10.1 Construction activities could result in a substantial temporary increase in ambient noise levels at nearby noise-sensitive land uses, which may result in increased levels of annoyance, activity interference, and sleep disruption. This impact is considered **less than significant.**

Construction noise associated with future development would be temporary and would vary depending on the nature of the construction activities being performed. Noise generated during construction is typically associated with the operation of heavy-duty off-road equipment during demolition and site preparation activities.

Table 3.10-7 lists typical uncontrolled noise levels generated by individual pieces of representative construction equipment likely to be used during construction. Noise levels associated with individual construction equipment typically range from approximately 74 to 89 dBA L_{max}. Given these typical noise levels and assuming an average noise-attenuation rate of 6 dB per doubling of distance from source, construction-generated noise levels associated with typical construction activities could reach levels of up to approximately 78 dBA L_{eq} at a distance of approximately 100 feet from the construction site.

TABLE 3.10-7
TYPICAL CONSTRUCTION EQUIPMENT NOISE LEVELS

Equipment	Typical Noise Level (dBA L_{max}) 50 feet from Source
Air Compressor	81
Backhoe	80
Compactor	82
Dozer/Grader/Front-End Loader	85
Concrete Mixer	85
Concrete Pump	82
Crane, Mobile	83
Generator	81
Jack Hammer	88
Paver	89
Roller	74
Saw	76

Source: FTA 2006

Existing and future land uses could be intermittently exposed to substantial increases in ambient noise levels associated with future construction-related activities occurring within the Plan area. However, according to the City, implementation of best management practices (BMPs) for the control of construction-generated noise levels is required for all development projects. Commonly applied BMPs include limiting noise-generating construction activities to the less noise-sensitive hours of the day, prohibiting idling of heavy-duty off-road equipment when not in use, and ensuring that construction equipment is properly maintained and equipped with noise-reduction intake and exhaust mufflers and shrouds, in accordance with manufacturers' recommendations. Implementation of these BMPs and compliance with the City's noise regulations (Municipal Code Chapter 17-16) would minimize potential impacts to nearby noise-sensitive land uses. This impact would be considered less than significant.

Mitigation Measures

None required.

Increases in Traffic Noise

Impact 3.10.2 Implementation of the proposed project would not result in significant increase in traffic noise levels at nearby noise-sensitive receptors. This impact would be considered **less than significant**.

Implementation of the proposed project would result in increased traffic volumes on some area roadways. The increase in traffic volumes resulting from implementation of the proposed project would therefore contribute to predicted increases in traffic noise levels. The FHWA roadway noise prediction model was used to predict traffic noise levels along primarily affected roadway segments, with and without implementation of the proposed project. The project's contribution to traffic noise levels along area roadways was determined by comparing the predicted noise levels with and without project-generated traffic. Predicted traffic noise levels, with and without development of the proposed plan, are summarized in **Table 3.10-8**.

As depicted in **Table 3.10-8**, increases in traffic noise levels along area roadways attributable to the proposed project would range from 0.11 to 2.06 dBA. The proposed plan would not result in a substantial increase (i.e., 5 dBA or greater) in traffic noise levels along primarily affected area roadways. Furthermore, as discussed earlier, Policy NS-B-14 of the City General Plan would discourage new projects that have potential to create ambient noise levels more than 5 dBA DNL above existing background, within 250 feet of sensitive receptors. As a result, increases in traffic noise levels attributable to the proposed project would be considered less than significant.

TABLE 3.10-8
PREDICTED INCREASES IN TRAFFIC NOISE LEVELS GENERAL PLAN BUILDOUT CONDITIONS

Roadway	CNEL/L_{dn} at 50 Feet from Near-Travel-Lane Centerline[1]		Predicted Increase	Substantial Increase?[2]
	Without Project	With Project		
W. Steele Ln., West of Range Ave.	64.18	65.06	0.88	No
W. Steele Ln., East of Range Ave.	64.09	64.86	0.77	No
Guerneville Rd., West of N. Dutton Ave.	67.77	68.85	1.08	No
Guerneville Rd., East of N. Dutton Ave.	68.97	69.82	0.85	No
Guerneville Rd., West of Range Ave.	68.00	68.88	0.88	No
Guerneville Rd., East of Range Ave.	66.69	68.75	2.06	No
W. College Ave., West of N. Dutton Ave.	65.18	65.29	0.11	No
W. College Ave., East of N. Dutton Ave.	65.62	66.10	0.48	No
W. College Ave., East of Cleveland Ave.	67.11	67.79	0.68	No
N. Dutton Ave., South of Guerneville Rd.	67.08	67.75	0.67	No
N. Dutton Ave., North of College Ave.	67.47	67.89	0.42	No
Range Ave., North of W. Steele Ln.	65.34	65.94	0.60	No
Range Ave., South of W. Steele Ln.	65.31	66.08	0.77	No
Range Ave., South of Guerneville Rd.	62.86	64.11	1.25	No
Range Ave., South of Jennings Ave.	60.51	62.31	1.80	No
Cleveland Ave., North of W. Steele Ln.	65.40	65.94	0.54	No
Cleveland Ave., South of W. Steele Ln.	63.98	65.20	1.22	No
Cleveland Ave., South of Jennings Ave.	64.55	65.21	0.66	No
Cleveland Ave., South of Frances St.	65.59	66.60	1.01	No

Traffic noise levels were calculated using the FHWA roadway noise prediction model.
Substantial increase is defined as an increase of 5.0, or greater.

Mitigation Measures

None required.

Compatibility of Proposed Land Uses with Projected Future Noise Levels

Impact 3.10.3 Projected on-site noise levels at on-site land uses could exceed applicable City noise exposure standards. As a result, this impact is considered **less than significant**.

As noted earlier, noise levels within the Plan area are predominantly influenced by vehicle traffic on area roadways. Northwestern Pacific freight trains, which have recently resumed service along the existing rail corridor, also contribute to the existing noise environment. This same railroad corridor is also proposed for future SMART commuter/passenger operations. To a lesser extent, activities at nearby commercial and industrial uses also contribute on an intermittent basis to ambient noise levels in the Plan area. The compatibility of land uses is evaluated based on a comparison of predicted future transportation and non-transportation noise levels in the Plan area to applicable City's noise standards (**Figure 3.10-3** and **Table 3.10-3**, respectively).

Roadway Traffic Noise

Predicted future noise levels for roadways located within the Specific Plan area, with implementation of the proposed project, were calculated using the FHWA roadway noise prediction model (FHWA-RD-77-108) based on California vehicle reference noise levels and traffic data obtained from the traffic analysis prepared for this project. Predicted distance to future cumulative traffic noise levels are summarized in **Table 3.10-9**.

TABLE 3.10-9
PREDICTED FUTURE TRAFFIC NOISE LEVELS AND DISTANCES TO TRAFFIC NOISE CONTOURS
GENERAL PLAN PLUS PROJECT CONDITIONS

Segment	CNEL/L_{dn} at 50 Feet from Near-Travel-Lane Centerline	Distance (feet) to CNEL/L_{dn} Contours from Roadway Centerline		
		60	65	70
W. Steele Ln., West of Range Ave.	65.06	121.2	56.5	WR
W. Steele Ln., East of Range Ave.	64.86	117.5	54.8	WR
Guerneville Rd., West of N. Dutton Ave.	68.85	273.4	128.7	63.4
Guerneville Rd., East of N. Dutton Ave.	69.82	316.6	148.5	72.2
Guerneville Rd., West of Range Ave.	68.88	274.6	129.2	63.7
Guerneville Rd., East of Range Ave.	68.75	269.0	126.7	62.5
W. College Ave., West of N. Dutton Ave.	65.29	159.4	77.0	WR
W. College Ave., East of N. Dutton Ave.	66.10	180.0	86.2	WR
W. College Ave., East of Cleveland Ave.	67.79	232.6	110.1	WR
N. Dutton Ave., South of Guerneville Rd.	67.75	216.1	101.6	WR
N. Dutton Ave., North of College Ave.	67.89	220.7	103.7	WR

Segment	CNEL/L_{dn} at 50 Feet from Near-Travel-Lane Centerline	Distance (feet) to CNEL/L_{dn} Contours from Roadway Centerline		
		60	65	70
Range Ave., North of W. Steele Ln.	65.94	164.1	77.8	WR
Range Ave., South of W. Steele Ln.	66.08	167.7	79.5	WR
Range Ave., South of Guerneville Rd.	64.11	108.3	50.8	WR
Range Ave., South of Jennings Ave.	62.31	87.5	WR	WR
Cleveland Ave., North of W. Steele Ln.	65.94	175.7	84.3	WR
Cleveland Ave., South of W. Steele Ln.	65.20	146.6	69.9	WR
Cleveland Ave., South of Jennings Ave.	65.21	146.9	70.0	WR
Cleveland Ave., South of Frances St.	66.60	181.4	85.7	WR
US-101, North of College Ave.*	85	5,263	1,664	526

WR = Within roadway right-of-way

**Derived from the Santa Rosa General Plan 2035 DEIR (2009).*

Refer to Appendix C of this document for modeling assumptions and results.

The proposed Specific Plan would result in the development of noise-sensitive land uses along area roadways. As noted in **Table 3.10-9**, the predicted 60 dBA CNEL/L_{dn} noise contour, which is the City's maximum "normally acceptable" noise standard for most noise-sensitive land uses, would extend from approximately 88 to 317 feet from the roadway centerline along area roadways to approximately 5,263 feet from the centerline of Highway 101. Future land uses may be exposed to traffic noise levels that may exceed the City's noise criteria for land use compatibility (**Figure 3.10-3**).

General Plan Policy NS-B-4 requires all new projects proposed for areas with existing noise above 60dBA DNL or that could generate noise whose impacts on other existing uses would be greater than those normally acceptable to submit an acoustical study, prepared by a qualified acoustical consultant. Compliance with this policy would ensure that operational noise levels at on-site land uses would comply with applicable City noise standards. Impacts related to roadway noise would be considered less than significant.

Railroad Noise

The North Coast Railroad Authority (NCRA) recently resumed service along the Northwestern Pacific Railroad. As noted earlier, freight train service along the railway line would consist of a total of two round-trip freight train operations per day. In addition, the railroad corridor has been proposed as a rail transit corridor by SMART. A total of approximately 12 passenger trains would travel along this rail corridor on a daily basis between the hours of 5:00 a.m. and 8:00 p.m.

As depicted in **Table 3.10-3**, predicted cumulative train noise levels, taking into account both existing and planned freight and passenger trains, would be 75 dBA L_{dn} at 50 feet from the track. The projected 60 dBA L_{dn} noise contour would extend to a distance of approximately 430 feet from the track centerline. The 65 and 70 L_{dn} contours would extend to approximately 200 and 90 feet from the track centerline, respectively. Future land uses located in the vicinity of the railroad corridor could be exposed to noise levels in excess of the City's noise criteria for land use compatibility (**Figure 3.10-3**). In addition, instantaneous noise levels associated with the sounding of train horns would also result in intermittent increases in interior noise levels of nearby structures that may result in activity interference or sleep disruption. For these reasons, exposure to train noise would be considered a potentially significant impact to land use compatibility.

Non-Transportation Noise

Non-transportation noise sources in the Specific Plan area would be primarily associated with operational activities conducted at nearby commercial, retail, and light industrial uses. Noise generated by such uses is typically associated with the operation of building mechanical equipment (e.g., heating and air conditioning systems), backup power generators, and compressors. Loading and unloading of materials and operation of portable equipment may also contribute to overall operational noise levels. Average-daily noise levels associated with these land uses can vary substantially, depending on various factors, such as the activities conducted, equipment being used, and hours of operation. Noise-sensitive land uses located in the vicinity of nearby commercial, retail, and industrial uses may be exposed to noise levels in excess of the City's noise criteria for land use compatibility. Of particular concern would be mixed-use development where residential land uses are located immediately adjacent to or above nonresidential uses. However, compliance with General Plan Policy NS-B-4, as described above, would ensure that operational noise levels at on-site land uses would comply with applicable City noise standards. Impacts related to non-transportation noise would be considered less than significant.

Mitigation Measures

None required.

Exposure to Groundborne Vibration

Impact 3.10.4 Groundborne vibration levels associated with pile-driving activities, if required, could exceed applicable groundborne vibration criterion at nearby land uses. This impact would be **less than significant after mitigation**.

Ground vibration spreads through the ground and diminishes in strength with distance. The effects of ground vibration can vary, with no perceptible effects at the lowest levels, low rumbling sounds and detectable vibrations at moderate levels, and slight damage to nearby structures at the highest levels. At the highest levels of vibration, damage to structures is primarily architectural (e.g., loosening and cracking of plaster or stucco coatings) and rarely results in structural damage. For most structures, a peak particle velocity (ppv) threshold of 0.5 inches per second (in/sec) is sufficient to avoid structure damage, with the exception of fragile historic structures or ruins. For the protection of fragile, historic, and residential structures, Caltrans recommends a more conservative threshold of 0.2 inches per second ppv. This same threshold would represent the level at which vibrations would be potentially annoying to people in buildings (FTA 2006; Caltrans 2004).

Long-Term Exposure to Groundborne Vibration

Long-term operational activities associated with the proposed project would not involve the use of any equipment or processes that would result in potentially significant levels of ground vibration. In addition, no major sources of ground vibration were identified in the Specific Plan area. However, future development would occur in proximity to the proposed future SMART corridor associated with future operation of passenger rail trains. Groundborne vibration impacts associated with the SMART trains were previously analyzed in the Sonoma-Marin Area Rail Transit

Draft Environmental Impact Report (2005). Based on the analysis conducted for the SMART DEIR, groundborne vibration levels associated with SMART train operations were determined to not result in groundborne vibration levels at land uses located along the SMART corridor that would exceed applicable impact significance thresholds. For these reasons, long-term exposure of sensitive receptors to groundborne vibration within the Specific Plan area would be considered to have a less than significant impact.

Short-Term Exposure to Groundborne Vibration

Increases in groundborne vibration levels attributable to the proposed project would be primarily associated with short-term construction-related activities. Groundborne vibration levels associated with construction equipment are summarized in **Table 3.10-10**. Construction activities associated with the proposed improvements would likely require the use of various tractors, trucks, and jackhammers. Pile drivers may also be required during construction of the proposed parking garages.

Based on the vibration levels presented in **Table 3.10-10**, ground vibration generated by most off-road construction equipment, such as tractors, trucks, and tractors, would be less than 0.09 inches per second ppv at 25 feet and would not pose a significant risk to nearby structures or occupants. However, in the event that pile driving would be required for construction of proposed land uses, detectable increases in groundborne vibration levels at off-site locations could potentially occur. Groundborne vibration levels would depend on the specific equipment being used, the distance from the source to the receptor, and soil conditions. Based on the upper range of vibration levels associated with pile driving and conservative assumptions for ground attenuation, structures located within 75 feet of pile driving activities could potentially exceed the commonly applied threshold of 0.5 in/sec ppv for structural damage. In addition, land uses located within approximately 160 feet of impact pile driving activities could also exceed commonly applied thresholds for human annoyance (i.e., 0.2 in/sec ppv). This impact would be considered potentially significant.

TABLE 3.10-10
REPRESENTATIVE CONSTRUCTION EQUIPMENT VIBRATION LEVELS

Equipment	Peak Particle Velocity at 25 Feet (in/sec ppv)
Impact Pile Driver (Upper Range)	1.518
Impact Pile Driver (Typical)	0.644
Sonic Pile Driver (Upper Range)	0.734
Sonic Pile Driver(Typical)	0.17
Vibratory Roller	0.21
Large Tractors	0.089
Caisson Drilling	0.089
Loaded Trucks	0.076
Jackhammer	0.035
Small Tractors	0.003

Source: Caltrans 2004; FTA 2006

Mitigation Measures

The following mitigation measure shall be implemented for future development projects within the Specific Plan area:

MM 3.10.4 Impact pile driving equipment used within 160 feet of nearby structures shall be substituted with equipment or procedures that would generate lower levels of groundborne vibration, to the extent that geological conditions would permit their use. For instance, in comparison to impact pile drivers, drilled piles or the use of sonic or vibratory pile drivers is the preferred alternative. In the event that the use of impact pile drivers is required due to geological conditions, groundborne vibration monitoring shall be conducted for impact pile driving that occurs within 160 feet of existing structures. Pile driving activities shall be suspended if measured groundborne vibration levels approach within 0.1 in/sec ppv of commonly applied threshold of 0.5 in/sec ppv for structural damage. In such instances, additional attenuation measures or changes in pile driving techniques shall be implemented, prior to recommencing pile driving activities, to reduce groundborne vibration levels. For impact pile driving activities that occur within approximately 75 feet of existing structures, a structural crack survey is recommended for existing structures to document existing structural conditions. Repair of any structural damage resulting from nearby impact pile driving activities shall be initiated upon completion of pile driving activities.

Timing/Implementation: *Prior to subsequent project construction*

Enforcement/Monitoring: *City of Santa Rosa Community Development Department, Building Division*

With mitigation, in the event that pile driving is required for the construction of proposed structures, the use of impact pile drivers within 160 feet of nearby structures would be substituted with equipment or procedures that would generate lower levels of groundborne vibration. Implementation of the proposed mitigation measures would reduce this impact to a less than significant level.

3.10.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The setting for the cumulative noise analysis consists of the Santa Rosa General Plan area.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Result in a Cumulatively Considerable Net Increase of Noise Criteria

Impact 3.10.5 Implementation of the proposed North Station Specific Plan, in combination with cumulative development as described in the Santa Rosa General Plan, would result in a cumulatively considerable net increase of noise levels. This is considered a **less than cumulatively considerable** impact.

Development within the Santa Rosa Urban Growth Boundary has the potential to result in a cumulative impact related to noise sources. However, the General Plan 2035 EIR identified that with the policies included in the General Plan, the potential for noise disturbance to result in a cumulative impact related to noise would be reduced to a less than significant level with the included General Plan policies. All of the reasonably foreseeable development in the Specific Plan area is in keeping with the overall intent of the General Plan and is subject to General Plan policies. Additionally, the future traffic projections used for the noise analysis were generated by a traffic model that considered the cumulative growth for the entire city in conjunction with the Specific Plan (see Section 3.13, Traffic and Circulation). No significant impact associated with increased traffic noise was identified, and there would not be a cumulative traffic noise-related impact. For these reasons, the Specific Plan would not result in a significant cumulative impact on noise.

Mitigation Measures

None required.

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3.11 POPULATION, HOUSING, AND EMPLOYMENT

This section discusses the population, housing, and employment impacts of the proposed project on current and projected future conditions. This section also presents information regarding the proposed project's relationship to adopted programs and plans.

3.11.1 EXISTING SETTING

CITY OF SANTA ROSA DEMOGRAPHICS

Population Trends

In 2010, Sonoma County had an estimated population of approximately 497,900. Sonoma County is the sixth largest county among the nine Bay Area counties. By 2035, the Association of Bay Area Governments (ABAG) estimates that Sonoma County will have a population of approximately 561,500, an increase of approximately 63,600 from 2010. (Santa Rosa General Plan 2035 DEIR, 2009)

According to ABAG, Santa Rosa had an estimated 2010 population of 162,500. Population within the city grew by approximately 28,272 between 1990 and 2010, from 134,228 to 162,500. This population represents an average annual increase of 2.8 percent over the 20-year period.

According to ABAG projections, summarized below in **Table 3.11-1**, Santa Rosa's population is anticipated to grow by about 26,500 from 162,500 in 2010 to approximately 189,000 in 2035.

TABLE 3.11-1
HISTORICAL AND PROJECTED POPULATION

Year	Santa Rosa and Sphere of Influence Population	Sonoma County Population
2000	147,595	458,614
2005	155,964	478,800
2010	162,500	497,900
2020	187,070	535,830
2035	189,000	561,500

Source: Santa Rosa General Plan 2035 DEIR, 2009; ABAG 2009

Housing

According to the City's Community Development Department, there were approximately 71,070 housing units within the City's Urban Growth Boundary (UGB) in 2007. The General Plan 2035 estimates that the city will add approximately 23,770 housing units within its UGB by 2035, for a total of 94,840 housing units. The U.S. Census Bureau estimates that approximately 56.2 percent of the existing housing units in the city are owner-occupied. The average household size in Santa Rosa in 2010 was 2.56 persons, which was slightly higher than Sonoma County's average of 2.52 (U.S. Census Bureau 2012). ABAG projects that the Santa Rosa's average household size will decrease slightly by 2035 to about 2.54 persons. The average household size in the county is expected to be 2.53 persons. (Santa Rosa General Plan 2035, 2009)

Employment Trends

The General Plan 2035 EIR estimated approximately 100,960 jobs in Santa Rosa in 2010. The number of jobs in Santa Rosa was forecast to increase by 27,440 by 2035 to a total of 128,400 jobs (Santa Rosa General Plan 2035 DEIR, 2009). **Table 3.11-2** summarizes employment trends in Santa Rosa.

TABLE 3.11-2
EMPLOYMENT TRENDS AND PROJECTIONS IN SANTA ROSA

Year	Employment
2000	94,590
2005	93,510
2010	100,960
2015	111,400
2035	128,400

Source: Santa Rosa General Plan 2035 DEIR, 2009

Population, Housing, and Employment in the Project Area

The project area comprises approximately 10 percent of the city's population. The total population in the Specific Plan area declined between 2000 and 2009, following an increase in the previous 10-year period. Household size followed a similar pattern. During the 2000–2009 period, median household income and per capita income in the project area did not keep pace with those of Santa Rosa as a whole. The median household income in the project area is approximately $42,225, compared to $58,899 for Santa Rosa overall. About 18 percent of project area residents have attained a bachelor's degree or higher, compared to 39 percent in the city as a whole. About 66 percent of project area households are renters, compared to 44 percent of Santa Rosa households overall.

Table 3.11-3 shows the total number of residential units in the project area.

TABLE 3.11-3
TOTAL RESIDENTIAL UNITS

Residential Type	Number of Units
Residential Multi-Family	2,384
Residential Mobile Home	34
Residential Single-Family	1,322
Residential Senior	570
Total	4,310

Source: Existing Conditions Report for North Santa Rosa Station Area Specific Plan, 2012

Of the 4,310 residential units in the project area, 791 (18 percent) are identified as "affordable." In addition, 84 percent of the recently developed (in the last five years) housing units in the project area are affordable to households of moderate income or below. (Existing Conditions Report for North Santa Rosa Station Area Specific Plan, 2012)

3.11.2 REGULATORY FRAMEWORK

STATE

Assembly Bill 2853

Assembly Bill (AB) 2853, enacted in 1980, requires all cities to discuss their regional fair share allocation of housing needs by income group in the housing element. For the nine-county Bay Area, the Association of Bay Area Governments determines the local share of regional housing and must take into consideration factors such as market demand for housing, employment opportunities, availability of suitable sites and public facilities based on local plans, commuting patterns as they relate to the differences between job creation and labor supply, type and tenure of housing, and housing needs of farmworkers.

LOCAL

City of Santa Rosa General Plan

The Santa Rosa General Plan 2035 serves as the overall guiding policy document for the City of Santa Rosa. The following is a list of applicable General Plan goals and policies most pertinent to the Specific Plan in regard to population, housing, and employment issues.

Housing Element

Goal H-A: Meet the housing needs of all Santa Rosa residents.

Policy H-A-1: Ensure adequate sites are available for development of a variety of housing types for all income levels, including single and multifamily units, mobile homes, transitional housing, and homeless shelters.

Policy H-A-2: Pursue the goal of meeting Santa Rosa's housing needs through increased densities, when consistent with preservation of existing neighborhoods. Higher density sites are illustrated on the General Plan Land Use Diagram, which will allow the development of dwellings for 210 very low and 138 low income households annually. Development of these sites or proposals for new higher density sites must be designed in context with existing, surrounding neighborhoods. The number of affordable units permitted each year and the adequacy of higher density sites shall be reported as part of the General Plan Annual Review report.

Policy H-A-3: Promote conservation and rehabilitation of the existing housing stock and discourage intrusion of incompatible uses into residential neighborhoods which would erode the character of established neighborhoods or lead to use conflicts.

Goal H-B: Maintain and rehabilitate, as needed, the existing affordable housing supply.

Policy H-B-1: Rehabilitate 50 housing units annually through the city's rehabilitation programs, focusing on very low and low income beneficiaries. Utilize the following programs:

- The Housing Rehabilitation and Conservation Program (HRCP), which targets very low and low income owner-occupied units and certain investor owned projects providing affordable rental units;

- The Mobile Home Repair Loan Program, which provides low interest loans to very low and low income mobile home owners for necessary repairs; and

- The Neighborhood Revitalization and Housing Quality Standard Code Compliance Program of the Section 8 rental assistance program, which, through code compliance, improve health and safety of local rental units.

Policy H-B-2: Discourage the subdivision of mobile home parks or conversion to other uses through enforcement of the Conversion of Mobile Home Parks chapter of the City Code.

Policy H-B-3: Retain federal, state and locally subsidized affordable units which may be lost through contract termination. Utilize the following techniques:

- Work with property owners to maintain the projects for lower incomes;

- Work with nonprofit housing providers to purchase and operate projects at risk of converting to market rate;

- Use Redevelopment Low and Moderate Income Housing funds; and

- Investigate the use of revenue sources such as CDBG and HUD 202.

Goal H-C: Expand the supply of housing available to lower income households.

Policy H-C-11: Provide opportunities for higher density and affordable housing development on regional/arterial streets and near the rail transit corridor for convenient access to bus and rail transit.

Urban Design Element

Goal UD-G: Design residential neighborhoods to be safe, human-scaled, and livable by addressing compact development, multimodal connectivity and reducing energy use.

Policy UD-G-2: Locate higher density residential uses adjacent to transit facilities, shopping, and employment centers, and link these areas with bicycle and pedestrian paths.

3.11.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the State CEQA Guidelines Appendix G thresholds of significance, which indicate that a project would have a significant impact if it would:

1) Induce substantial population growth in an area, either directly or indirectly.

2) Displace substantial numbers of existing housing necessitating the construction or replacement housing elsewhere.

3) Displace substantial numbers of people necessitating the construction of replacement housing elsewhere.

METHODOLOGY

This section was prepared using U.S. Census Bureau, ABAG, and California Employment Development Department data, as well as demographic, housing, and employment information and projections. When considering the potential impacts the project may have on the physical environment, the existing conditions as described above were compared to the expected outcome the project may produce and the potential direct and indirect environmental impacts this change may cause. It should be noted that California Environmental Quality Act (CEQA) Guidelines Section 15131 states that economic and social effects are not considered environmental impacts. However, physical impacts to the environment as a result of social and economic effects may be considered significant. Environmental effects, such as air quality and noise, related to additional population and employment created by the project are discussed in the relevant chapters of this Draft EIR.

PROJECT IMPACTS AND MITIGATION MEASURES

Population, Housing, and Employment Growth (Standard of Significance 1)

Impact 3.11.1 Implementation of the proposed Specific Plan would allow for the addition of approximately 4,217 residents, 1,714 housing units, and 33 acres of office, commercial, shopping center, and institutional uses to the Specific Plan area beyond what would be allowed under buildout of the General Plan. This is not considered substantial growth in excess of the General Plan 2035 projections. This impact is considered **less than significant.**

Implementation of the Specific Plan would add 438 single-family units and 1,276 multi-family units beyond what was considered in the General Plan 2035. Additionally, the Specific Plan would add approximately 798,600 square feet of office space, 537,200 square feet of retail, and 97,600 square feet of institutional space beyond what was considered in the 2035 General Plan, while decreasing about 22,700 square feet of existing warehouse space and approximately 34,000 square feet of light and heavy industrial space.

This increase of housing would translate to an increase of roughly 4,217 new residents beyond what was considered in the General Plan 2035. This represents a 1.8 percent increase in population beyond the 2035 projection of 233,520 residents in the city and in the Urban Growth Boundary. The addition of commercial, shopping center, institutional, and office space could also indirectly increase the demand for housing not only within the Specific Plan area but throughout Santa Rosa by increasing the number of employees.

While ultimately allowing for an increase of population in the Specific Plan area, the Specific Plan is designed to help the City of Santa Rosa address ongoing demand for housing in the city in an environmentally sensitive manner. This goal is accomplished, in part, by focusing on the redevelopment of developed or underutilized land and by infill development. Furthermore, the vast majority of the increased population associated with the proposed Specific Plan would be concentrated near the proposed SMART station. The 1.8 percent increase in population is not considered substantial in light of projections in the General Plan 2035. Growth associated with the Specific Plan is within the realm of projections for density and intensity of the existing General Plan land uses. This impact is considered less than significant.

Mitigation Measures

None required.

Displacement of a Substantial Number of Persons or Housing (Standards of Significance 2 & 3)

Impact 3.11.2 Implementation of the proposed project would not result in the displacement of substantial numbers of housing and/or persons. This impact is considered **less than significant.**

While the Specific Plan area includes development in an area that currently includes residential structures, the Plan does not propose to remove any of these residential structures, nor would it directly convert residences to nonresidential uses. It is possible that over time some homes might be converted to higher-intensity residential uses or nonresidential uses such as offices or shops. Design standards, including those for public safety, fire, loading, electrical, parking, etc., can make conversion of older homes to commercial establishments expensive and time consuming. So while some homes may be converted to nonresidential uses, the expectation is that conversions will be rare. As a result, home conversion is not expected to be widespread or result in a significant reduction in available housing stock or displacement of people.

There is the potential to displace existing people or housing, particularly through large-scale redevelopment of already developed land and buildings. However, the Specific Plan is intended to increase the amount of housing available and orient the new housing to transit opportunities. The current vacancy rate in the community is 7.2 percent, and as construction will occur until the buildout date of 2035, it is anticipated that natural market forces in the city will keep pace with housing demand. Current housing stock in the city is 67,448 units, including 4,310 units in the Specific Plan area (Existing Conditions Report for North Santa Rosa Station Area Specific Plan, 2012). Any displaced people or housing would be able to be accommodated by existing housing stock. This impact is less than significant.

Mitigation Measures

None required.

3.11.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting consists of the City of Santa Rosa Urban Growth Boundary and includes all existing, approved, proposed, and reasonably foreseeable development in the city.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Increase in Population, Housing, and Employment

Impact 3.11.3 The proposed Specific Plan, along with other approved, proposed, and reasonably foreseeable development, could induce population and housing growth in the region. The proposed project would have a **less than cumulatively considerable** contribution to this impact.

Because the Specific Plan will allow up to 4,217 more residents than projected in the current General Plan, the proposed project has the potential to result in a cumulative impact related to population and housing. However, the General Plan 2035 EIR identified that with policies included in the General Plan, the General Plan would result in a less than cumulatively considerable impact related to population, housing, and employment. The proposed Specific

Plan policies regarding population and housing are designed to help the City better anticipate patterns of growth and focus development in the project area, consistent with the General Plan 2035. The Specific Plan is intended to help the City meet its housing demand through focused urban development. As stated above, the vast majority of the increased population associated with the proposed Specific Plan would be concentrated near the proposed SMART station. Furthermore, the 1.8 percent increase in population is not considered substantial in light of projections in the General Plan 2035. Growth associated with the Specific Plan is within the realm of projections for density and intensity of the existing General Plan land uses. Thus, the Specific Plan would not contribute to a significant cumulative impact related to population, housing, and employment, and this impact would be less than cumulatively considerable.

Mitigation Measures

None required.

REFERENCES

ABAG (Association of Bay Area Governments). 2009. *Projections and Priorities 2009.*

City of Santa Rosa. 2007. *Downtown Station Area Specific Plan Draft Program EIR.*

City of Santa Rosa. 2009a. *Santa Rosa General Plan 2035 Draft Environmental Impact Report*.

City of Santa Rosa. 2009b. *Santa Rosa General Plan 2035*.

City of Santa Rosa. 2012. *Existing Conditions Report for the North Santa Rosa Station Area Specific Plan*.

U.S. Census Bureau. 2012. "State and County Quickfacts. Sonoma, County, California." Accessed February 13. http://quickfacts.census.gov/qfd/states/06/06097.html.

3.12 Public Services and Utilities

This section describes public services and utilities for the Specific Plan area. Specifically, this section includes an examination of fire protection and emergency medical services, law enforcement services, public schools, water services (supply and infrastructure), wastewater services and stormwater drainage facilities, solid waste services, parks and recreation, electricity, propane, and telephone services, and library services. Each subsection includes a description of existing facilities and infrastructure, applicable service goals, and potential environmental impacts resulting from implementation of the proposed North Santa Rosa Station Area Specific Plan.

3.12.1 PUBLIC SAFETY: FIRE PROTECTION, EMERGENCY MEDICAL, AND LAW ENFORCEMENT SERVICES

3.12.1.1 EXISTING SETTING

FIRE PROTECTION AND EMERGENCY MEDICAL SERVICES SETTING

Fire protection and emergency medical services in the Specific Plan area are primarily the responsibility of the Santa Rosa Fire Department (SRFD). The SRFD serves the City of Santa Rosa as well as the Roseland Fire Protection District through a contractual agreement, for a total population served of over 168,000 in an area of approximately 43 square miles. The department comprises three divisions—Administrative, Fire Suppression, and Fire Prevention—and is staffed with 129 sworn employees and 7 civilians. In 2011, the SRFD responded to 20,205 service calls (Moon 2012). In addition, the SRFD has an agreement with the Rincon Valley Fire Protection District, with whom they jointly utilize the equipment and personnel assigned to the Rincon Valley Station on Todd Road (Santa Rosa General Plan 2035, 2009).

In 2009, the Fire Department moved to a national standard for response time reporting. The department's new standard is to arrive on scene within 5 minutes of being dispatched. In 2011, the department arrived on scene within 5 minutes 74.25 percent of the time (Moon 2012).

The Santa Rosa Emergency Operations Plan addresses how the City will respond to extraordinary events or disasters, from preparation through recovery. It includes a comprehensive assessment of potential hazards and threats, and sets forth policies and procedures pertaining to emergency planning, organization, and response. The plan is based on the principles and functions of the Standardized Emergency Management System (SEMS) (Santa Rosa General Plan 2035, 2009).

Each of Santa Rosa's eleven fire stations houses an engine company and is staffed 24 hours per day. Each of the engine companies is staffed with a captain, an engineer, and a firefighter. Additionally, Headquarters and Station 2 each house two ladder trucks with two engineers, a firefighter, and a captain. There are no fire stations located within the Specific Plan boundaries; the closest stations to the area are Station 11, located at 550 Lewis Road (the east side of Highway 101, approximately one-half mile east of the plan boundary), and Station 3, located at 3311 Coffey Lane (approximately one-half mile north of the plan boundary). Due to budget cuts, there are currently "brownouts" for various stations.

To improve SRFD fire and emergency response resources and capabilities, the City participates in a countywide mutual aid system. The SRFD has entered into mutual aid agreements with the Rincon Valley Fire Protection District and the California Department of Forestry and Fire Protection (Cal-Fire), as well as with the neighboring jurisdictions of Bennett Valley, Gold Ridge, and Sebastopol. Additional resources provided by these agreements include engines, water tender, air tankers, a helicopter, a bulldozer, and a battalion chief in urban areas (Downtown Station Area Specific Plan, 2007).

POLICE SERVICES SETTING

The Santa Rosa Police Department (SRPD) provides neighborhood-oriented policing services via patrol operations and traffic enforcement. The Police Department has 247 employees working within the community to provide public safety services, including 171 sworn positions and approximately 76 civilian staff (Weeks 2012). Neighborhood-oriented policing is based on encouraging citizen input and involvement to resolve issues concerning public safety, law enforcement, and criminal activity throughout the community. The SRPD is organized into five areas: Administrative, Field Services (patrol), Special Services (Investigations Bureau and Support Bureau), Technical Services (Communications Bureau and Records Bureau), and Personnel Services. Officers comprise patrol teams, which are divided among various beats. Under the field services division, officers are assigned to a beat for six months at a time. The patrol teams are managed by a lieutenant and staffed with sergeants, patrol officers, and field and evidence technicians. On the highways and within the unincorporated areas, the Sonoma County Sheriff's Office handles criminal law enforcement and the California Highway Patrol assists with traffic enforcement. Mutual aid between neighboring law enforcement agencies is provided on an as-needed basis. The nearest police station to the Specific Plan area is located at 965 Sonoma Avenue, which is approximately 1 mile southeast of the project boundaries.

The City's standard for police service requires the SRPD to provide for citizen safety through an expedient response to emergency calls, requiring response standards at 6 minutes for emergency calls (Priority One), 14 minutes for urgent calls (Priority Two), and 32 minutes for routine calls (Priority Three. In 2011, the Police Department's average response times were 5 minutes and 39 seconds for Priority One calls, of which there were 6,510 calls for service, 9 minutes and 35 seconds for Priority Two calls, of which there were 73,820 calls for service, and 19 minutes 2 seconds for Priority Three calls for service, of which there were 44,390 calls for service (SRPD 2012).

3.12.1.2 REGULATORY FRAMEWORK

STATE

California Fire Code

The 2010 California Fire Code (Title 24, Part 9 of the California Code of Regulations) established regulations to safeguard against hazards of fire, explosion, or dangerous conditions in new and existing buildings, structures, and premises. The Fire Code also establishes requirements intended to provide safety and assistance to firefighters and emergency responders during emergency operations. The provisions of the Fire Code apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal, and demolition of every building or structure throughout California. The code includes regulations regarding fire-resistance-rated construction, fire protection systems such as alarm and sprinkler systems, fire services features such as fire apparatus access roads, means of egress, fire safety during construction and demolition, wildland-urban interface areas, flammable and combustible liquids storage, use, and handling, and hazardous materials regulations.

California Health and Safety Code

Additional state fire regulations are set forth in Sections 13000 et seq. of the California Health and Safety Code, which include regulations for building standards, fire protection and notification systems, fire protection devices such as extinguishers, smoke alarms, high-rise building and child-care facility standards, and fire suppression training.

California Occupational Safety and Health Administration

In accordance with the California Code of Regulations, Title 8, Sections 1270, Fire Prevention, and 6773, Fire Protection and Fire Fighting Equipment, the California Occupational Safety and Health Administration (Cal/OSHA) has established minimum standards for fire suppression and emergency medical services. The standards include, but are not limited to, guidelines on the handling of highly combustible materials, fire hose sizing requirements, restrictions on the use of compressed air, access roads, and the testing, maintenance, and use of all firefighting and emergency medical equipment.

LOCAL

Santa Rosa Measure O (Ordinance 3680)

On August 3, 2004, the Santa Rosa City Council adopted Ordinance 3680, which imposed a special transactions and use tax to generate revenues to be utilized for specific police, fire, and gang prevention and intervention programs, as set forth in the ordinance. The special tax ballot measure, known as Measure O, was approved by over two-thirds of the voters and the election results certified on December 7, 2004. The ordinance sets forth permissible uses for the revenue generated and allocates proceeds from the tax in the following manner: police (40 percent), fire (40 percent), and neighborhood safety/gang prevention (20 percent). These uses include, among other programs, traffic enforcement, patrol expansion, gang enforcement, school resource services, downtown enforcement, and replacement of the patrol fleet.

City of Santa Rosa General Plan 2035

The City of Santa Rosa General Plan 2035 serves as the overall guiding policy document for the City of Santa Rosa. The following is a list of applicable General Plan goals and policies most pertinent to the Specific Plan in regard to fire, emergency medical, and police services.

Public Services and Facilities Element

Goal PSF-E: Provide fire and police services that ensure the safety of the community.

Policy PSF-E-1: Provide for citizen safety through expedient response to emergency calls.

Policy PSF-E-2: Provide for the safety of Santa Rosa citizens by maintaining efficient, well trained, and adequately equipped police and fire personnel.

Policy PSF-E-3: Collaborate with other local jurisdictions in the provision of some police and fire services, if such collaboration can improve service levels and is cost effective.

Policy PSF-E-4: Require implementation of fire protection measures, such as non-combustible roofing materials and fire sprinklers in areas of high fire hazard.

Policy PSF-E-5: Assist neighborhoods and increase community contact through the Neighborhood Oriented Policing Program.

3.12.1.3 IMPACTS AND MITIGATION MEASURES

STANDARD OF SIGNIFICANCE

The impact analysis provided below is based on the following California Environmental Quality Act (CEQA) Guidelines Appendix G thresholds of significance, which state that a project would have a significant impact if it would:

1) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for 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 fire protection, emergency medical services, or police services.

METHODOLOGY

The analysis of fire protection, medical services, and police services impacts is based on consultations with the SRFD and SRPD, as well as a review of the City of Santa Rosa General Plan 2035.

IMPACTS AND MITIGATION MEASURES

Increased Demand for Fire Protection, Emergency Medical Services, and Law Enforcement

Impact 3.12.1.1 Development under the proposed Specific Plan could increase the need for public safety services, including fire protection, emergency medical response, and law enforcement. This represents a **less than significant impact after mitigation**.

An increase in population and new construction anticipated by the Specific Plan could have the potential to increase the demand for fire, emergency medical, and police services within the Specific Plan area. In addition to the planned Sonoma-Marin Area Rail Transit (SMART) station, the proposed Specific Plan would allow for the development of approximately 438 single-family dwelling units, 1,276 multi-family dwelling units, 798,600 square feet of office, 537,200 square feet of retail, and 97,600 square feet of institutional land uses. Approximately 22,700 square feet of existing warehouse and 34,000 square feet of light and heavy industrial land uses would be removed with future development. This increase in population and development without a corresponding increase in fire and police department personnel could adversely affect the provision of fire, emergency medical, and police services in terms of increased service calls.

The City does not have an established standard for the ratio of police officers per thousand residents. However, the SRPD's goal is to maintain the current ratio of officers to residents and to increase this ratio over time as budget constraints allow. The SRPD has stated that it will eventually need more personnel and equipment to maintain the city's current level of service in new development under the Specific Plan. Each new development within the Specific Plan area will be evaluated by the SRPD as part of the City review process to determine whether additional resources (e.g., staff, equipment, and/or work space) are needed (Weeks 2012).

Specific Plan Policy PF-10.4 considers reopening the Police Department substation located at 2090 West Steele Lane to the public as funding becomes available.

New development along the SMART rail corridor must comply with Fire Department requirements for equipment access and circulation. The SRFD estimates that implementation of the Specific Plan would result in approximately 400 additional calls for service to the Specific Plan area (Moon 2012). The Specific Plan contains a series of policies aimed at addressing the need for fire services. For example, Specific Plan Policy PF-10.1 would require developers to be in compliance with the Fire Department's High-Rise Requirements. Additionally, Specific Plan Policy PF-10.2 would require new development along the SMART rail corridor to comply with Fire Department requirements for equipment access and circulation. Furthermore, Policy PF-10.3 states that proposed roundabouts on Range Avenue will be designed to ensure all Fire Department vehicles can safely and efficiently navigate through the intersection without rolling over any curb in order to navigate the circle.

The SRFD and SRPD will utilize Measure O funds, as described above, to construct new fire and police stations, provide for new equipment, fire engines, and police vehicles, and fund firefighter and police positions. However, Measure O funds are not anticipated to fully cover the cost of providing adequate fire or police services to the community in accordance with General Plan response time goals. To that end, the Specific Plan includes a goal and supporting policies to provide funding for public services and utilities in the Plan area (Goal PF-4). Specific Plan Policy PF-4.1 would ensure that private development provides its fair share of funding for necessary improvements to public services and utilities in the Plan area. Additionally, Specific Plan Policy PF-4.2 would use the City's Capital Improvement Program, Park and Utility Fees, redevelopment program funds, federal and state grant funds, and other funding sources to implement area-wide improvements that cannot be conditioned as part of private development projects.

Because residential development does not generate revenue for City services, as commercial development does, primarily through sales tax, new residential units planned in the area will contribute to a gap in funding for public safety services. While the above-noted policies (PF-4.1 and PF-4.2) provide language relative to evaluation of funding, new residential development within the Specific Plan area will need to specifically address impacts to these services. As such, proposed residential subdivisions and new multi-family residential development within the Plan area will be required to consider impacts to fire protection, emergency medical services, and law enforcement through the discretionary approval process, and determine the most appropriate mechanism to mitigate impacts. This represents a potentially significant impact.

Mitigation Measures

MM 3.12.1 Future residential subdivisions and multi-family residential development within the Specific Plan area shall be required to mitigate the impacts of the increased need for public safety services, including fire protection, emergency medical services, and law enforcement, resulting from a proposed development to a less than significant level by implementation of one of the following mitigation measures:

1. Annexation of all newly created parcels and multi-family residential development to the City's existing Special Tax District Number 2006-1.

2. Payment of a lump sum adequate to cover the increased public safety service costs associated with providing services to a proposed residential subdivision or multi-family residential development.

3. Provision of private security, fire protection, and emergency medical services to the residents of a proposed residential subdivision or multi-family residential development in perpetuity.

4. Inclusion of other uses, consistent with the City of Santa Rosa General Plan 2035 and zoning regulations, within a proposed residential development that would generate revenue to offset the costs of providing public safety services to the development, where appropriate.

Timing/Implementation: *Prior to construction*

Enforcement/Monitoring: *City of Santa Rosa Community Development Department, Planning Division*

Implementation of this mitigation measure would ensure that impacts to public safety services under the Specific Plan would be less than significant.

3.12.1.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for fire, emergency medical, and police services includes the current service area boundaries of the Santa Rosa Fire Department and Santa Rosa Police Department, which includes the entirety of the City of Santa Rosa.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Impacts to Fire Protection, Medical Services, and Law Enforcement

Impact 3.12.1.2 Implementation of the Specific Plan, in combination with other reasonably foreseeable development, could increase population in Santa Rosa and could contribute to the need for expanded fire protection services, emergency medical services, and law enforcement, thus requiring additional facilities, the development of which could cause significant physical impacts to the environment. However, this impact is considered **less than cumulatively considerable.**

Cumulatively, in conjunction with the anticipated buildout of the General Plan 2035, the Specific Plan may require increased fire, emergency medical, and police staffing and equipment, as implementation of the Specific Plan increase the number of residents, customers, and employees in the area, resulting in the need to increase the number of full-time equivalent fire, emergency medical, and police staff necessary for adequate staffing ratios and public safety coverage. However, the Specific Plan would not contribute to a significant cumulative impact related to the creation or expansion of physical fire, emergency medical, or police protection facilities, since it would not result in the need for additional facilities beyond those already planned.

Furthermore, implementation of the General Plan 2035 policy provisions, which include mutual aid agreements with surrounding communities, and continued funding from property taxes, developer fees, and other alternative sources, would provide sufficient resources to serve the projected needs of the Fire Department under buildout conditions, including future development within the Specific Plan area. These provisions would also ensure adequate response times and high-quality law enforcement services are maintained in Santa Rosa.

Sonoma County has established an Emergency Operations Plan in compliance with the California Emergency Management Agency's SEMS program to address regional emergency disasters. Furthermore, the SRFD and SRPD will utilize Measure O funds, as described above, to help construct new fire and police stations, provide for new equipment, fire engines, and police vehicles, and fund firefighter and police positions. Individual development projects would be subject to SRFD and SRPD review and approval. Therefore, the increased cumulative demand for fire, emergency medical, and police service in Santa Rosa would be offset and would result in a **less than cumulatively considerable** impact.

Mitigation Measures

None required.

3.12.2 PUBLIC SCHOOLS

3.12.2.1 EXISTING SETTING

The North Station Area Plan is located entirely within the Santa Rosa City Schools district. The district's elementary school population is expected to increase by approximately 1.2 percent between 2011 and 2012, while the middle and high schools are expected to decline by approximately 0.7 percent (North Santa Rosa Station Area Specific Plan, 2012; Santa Rosa City Schools 2012). The Santa Rosa public school system comprises eight public school districts. Santa Rosa City High School District is a grade 7–12 district, Piner-Olivet is a grade K–8 district, and there are six smaller elementary school districts: Bellevue, Bennett Valley, Rincon Valley, Roseland, Santa Rosa City, and Wright. Additionally, the boundaries of Mark West and Kenwood elementary school districts overlap the Santa Rosa Urban Growth Boundary (UGB). Students from the elementary school districts later attend Santa Rosa High School's facilities. Helen Lehman Elementary School and Santa Rosa High School are the only schools located within the boundaries of the Plan area; however, properties within the boundaries are also served by Steele Lane, Monroe, and Lincoln elementary schools, as well as Comstock and Santa Rosa middle schools and Piner High School.

According to the City's General Plan, many Santa Rosa schools are at or near capacity. As of the 2010–2011 school year, there were approximately 16,459 students within the Santa Rosa Elementary School and High School districts, including 1,996 in Santa Rosa High School and 523 in Lehman Elementary (CDE 2012).

School district boundaries are adjusted periodically based on shifts in the school-age population. The number of students enrolled in Santa Rosa schools is projected to increase by 11,567 students by year 2035. In response to projected demand for new middle and elementary schools during the next 25 years, the City has identified future school sites in the General Plan 2035. Two middle school sites and four elementary school sites are proposed to accommodate Santa Rosa's student population. However, the proposed locations are not specific. (Santa Rosa General Plan 2035 DEIR, 2009)

Also located within the Plan area is Santa Rosa Junior College on Mendocino Avenue. Santa Rosa Junior College is a public, two-year community college governed by a local board of trustees under the laws of the State of California (North Santa Rosa Station Area Specific Plan, 2012; Santa Rosa Junior College 2012). As of the 2010 spring semester, the student population was nearly 33,000. Over the past 10 years, the enrollment has remained relatively steady, at between 33,000 and 37,000 students.

FUNDING AND FINANCING MECHANISMS

State Funding

The State of California has traditionally been responsible for the funding of local public schools. To assist in providing facilities to serve students generated by new development projects, the State passed Assembly Bill (AB) 2926 in 1986. This bill allowed school districts to collect impact fees from developers of new residential and commercial/industrial building space. Development impact fees were also referenced in the 1998 Leroy Greene Lease-Purchase Act (described below), which required school districts to contribute a matching share of project costs for construction, modernization, or reconstruction.

The Kindergarten-University Public Education Facilities Bond Act of 2002 (Prop 47)

This act was approved by voters in November 2002 and provides for a bond issue of $13.05 billion to fund necessary education facilities to relieve overcrowding and to repair older schools. Funds will be targeted to areas of greatest need and must be spent according to strict accountability measures. Funds will also be used to upgrade and build new classrooms in the California Community Colleges, the California State University, and the University of California to provide adequate higher education facilities to accommodate growing student enrollment.

Proposition 55

On March 2, 2004, voters in California passed Proposition 55, a statewide bond authorizing $12.3 billion to help fund public school facility needs. Specifically, the bond funds will provide a total of $7.75 billion for new K–12 school construction and $2.25 billion for K–12 reconstruction/modernization needs. The remaining $2.3 billion is reserved for community college, California State University, and University of California facilities.

3.12.2.2 REGULATORY FRAMEWORK

STATE

Leroy F. Greene School Facilities Act of 1998 (SB 50)

The Leroy F. Greene School Facilities Act of 1998, also known as Senate Bill 50 (Stats. 1998, Ch. 407), governs a school district's authority to levy school impact fees.

Senate Bill (SB) 50 and Proposition 1A provide a comprehensive school facilities financing and reform program by primarily authorizing a $9.2 billion school facilities bond issue, school construction cost containment provisions, and an eight-year suspension of the Mira, Hart, and Murrieta court cases. Specifically, the bond funds are to provide $2.9 billion for new construction and $2.1 billion for reconstruction/modernization needs. The provisions of SB 50 prohibit local agencies from denying either legislative or adjudicative land use approvals on the basis that school facilities are inadequate and reinstate the school facility fee cap for legislative actions (e.g., general plan amendments, specific plan adoption, zoning plan amendments). According to Government Code Section 65996, the development fees authorized by SB 50 are deemed to be full and complete school facilities mitigation. These provisions were written to be in effect until 2006 and will remain in place as long as subsequent state bonds are approved and available.

SB 50 establishes three levels of developer fees:

1) Level One fees are the base statutory fees of $2.05 per square foot of assessable space for residential development and $0.31 per square foot of chargeable, covered and enclosed commercial/industrial development.

2) Level Two fees allow the school district to impose developer fees above the statutory levels, up to 50 percent of certain costs under designated circumstances. The State would match the 50 percent funding if funds are available.

3) Level Three fees apply if the State runs out of bond funds after 2006, allowing the school district to impose 100 percent of the cost of the school facility or mitigation minus any local dedicated school moneys.

In order to levy the alternate (Level Two) fee and qualify for 50 percent state-matching funds, a school district must prepare and adopt a School Facilities Needs Analysis, apply and be eligible for state funding, and satisfy two of the four specified criteria after January 1, 2000: (1) 40 percent of pupils are enrolled on multi-track year-round schedule; (2) a general obligation bond to finance new school facilities has been placed on the ballot in the past four years and passed with 50 percent +1 vote; (3) at least 20 percent of teaching stations are portable classrooms; or (4) the school district has issued debt or incurred obligations for capital outlay in an amount equal to 15 percent of school district's local bonding capacity including property taxes, parcel taxes, the district's general fund, redevelopment agency funds, and special taxes from community facilities districts approved prior to November 1998 (or 30 percent if post-November 1998 landowner-approved Mello-Roos bonds are counted). The ability of a city or county to impose fees is limited to the statutory and potential additional charges allowed by the act, as described above.

LOCAL

City of Santa Rosa General Plan

The City of Santa Rosa General Plan 2035 serves as the overall guiding policy document for the City of Santa Rosa. The following is a list of applicable General Plan goals and policies most pertinent to the Specific Plan in regard to school services.

Public Services and Facilities Element

Goal PSF-C: Provide superior educational opportunities for children and all members of the community.

Policy PSF-C-1: Assist the various school districts in developing school sites and facilities to serve all neighborhoods in the city, and to respond to the educational needs of various sectors of the population.

Policy PSF-C-2: Maintain good communication with area school districts on all matters pertaining to the need for and the provision of school sites and facilities. Integrate the planning efforts of the city and the school districts by:

- Locating school facilities that allow safe pedestrian and bicycle access, as well as ensuring construction of traffic calming measures in the vicinity; and
- Designing attractive facilities that contribute to neighborhood identity and pride.

Policy PSF-C-3: Continue cooperation with Santa Rosa Junior College administration to further the accessibility to and the quality of local community college education. Encourage the improvement of campus parking in order to reduce parking impacts on adjacent neighborhoods.

In response to projected demand for new middle and elementary schools during the next 25 years, the General Plan 2035 identified potential school facilities in General Plan Figure 6-2. Two middle school sites and four elementary school sites are identified in the event that they are needed to accommodate Santa Rosa's student population. The proposed locations are not site-specific; they merely indicate a school is needed in the vicinity.

3.12.2.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following State CEQA Guidelines Appendix G thresholds of significance, which state that a project would have a significant impact if it would:

1) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, or other performance objectives for schools.

METHODOLOGY

Evaluation of potential public school impacts for the proposed project was based on data from the Santa Rosa City Schools, review of the City of Santa Rosa General Plan 2035, and consultation with Santa Rosa City Schools staff.

PROJECT IMPACTS AND MITIGATION MEASURES

School Impacts

Impact 3.12.2.1 Implementation of the Specific Plan would result in increased development in the Specific Plan area, which would subsequently increase student enrollment in local schools. New or expanded school facilities would be necessary to serve the increased demand. This impact is considered to be **less than significant**.

Families with children comprise approximately 28 percent of total households within the Specific Plan area, as projected through buildout. This percentage indicates a slight decline of families with children over time. The need for expansion of the existing schools to meet the demands of growth in the Specific Plan area will depend on enrollment at each school in the area. If enrollment remains stable or declines, it is expected that the school district will be able to absorb the impact of new development in the area. Schools receive funding from the School Impact Fee Assessment, which will be charged per residential unit developed in the area and is applied to school facilities for new students.

An increase in population under the Specific Plan could have the potential to increase the demand on schools serving the Specific Plan area. Development under the Specific Plan would add approximately 438 single-family dwelling units and 1,276 multi-family dwelling units, with an estimated buildout population of 4,217 people beyond what was assumed in the General Plan 2035. The estimated population increase would produce an estimated 686 students, given Santa Rosa City Schools' generation factor of 0.4 students per housing unit (Downtown Station Area Specific Plan DEIR, 2007). These students would attend the various schools operated by Santa Rosa City Schools within and adjacent to the Specific Plan area. This increase in population could adversely affect the provision of educational services and school facilities.

As stated above, two middle school sites and four elementary school sites are proposed to accommodate Santa Rosa's student population. However, the proposed locations are not specific. Public school facilities and services are supported through the assessment of development fees in addition to funds from the state and local school districts. All new development in the Specific Plan area will be required to pay impact fees to offset the impact of new development on the school system. These fees will be assessed in accordance with provisions detailed under SB 50.

Given that student generation expected to result from the Specific Plan would develop over the next 25 years and would be supported in already planned educational facilities, the Specific Plan would not result in the need for new, unplanned facilities. Therefore, the Specific Plan would result in a **less than significant** impact.

Mitigation Measures

None required.

3.12.2.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for the project is the Santa Rosa City Schools' service area, which includes much of the City of Santa Rosa.

Cumulative Impacts to Schools

Impact 3.12.2.2 Population growth associated with implementation of the proposed Specific Plan, in combination with other existing, planned, proposed, approved, and reasonably foreseeable development in the cumulative setting, would result in a cumulative increase in student enrollment and require additional schools and related facilities to accommodate the growth. This impact is **less than cumulatively considerable**.

Cumulatively, in conjunction with the anticipated buildout of the General Plan 2035, the Specific Plan may require an increased number of teachers and support staffing. Implementation of the Specific Plan will result in an increase in residents, resulting in the need to increase the number of full-time equivalent teachers and support staff necessary to maintain adequate staffing ratios. However, the Specific Plan would not contribute to a significant cumulative impact related to the creation or expansion of physical educational facilities since it would not result in the creation or expansion of physical facilities other than those already planned in the General Plan 2035 within the school districts. Implementation of existing General Plan 2035 land use policies and payment of required impact fees would ensure that long-term facility needs and funding for future school facilities would be maintained for the Santa Rosa City Schools district. Therefore, the project would have a **less than cumulatively considerable** contribution to cumulative impacts associated with school facilities.

Mitigation Measures

None required.

3.12.3 LIBRARY SERVICES

3.12.3.1 SETTING

Public library services in Santa Rosa are provided by Sonoma County. The Northwest Santa Rosa Library is located within the Plan area, on a small City-owned property at the northern boundary of the Coddingtown Mall shopping center off of Guerneville Road. The Northwest Library was constructed in 1968 and serves the area bounded roughly by West College Avenue to the south, Mendocino Avenue to the east, the city border to the west, and up to the Larkfield area in the north (North Santa Rosa Station Area Specific Plan, 2012).

Capacity at the Northwest Library was identified as an issue in the Sonoma County Library Facilities Master Plan, which was completed in the spring of 2003. In order to accommodate the full range of services needed at this location, the master plan states that a significantly larger library is required to meet current and future needs for the northwest service area. Specifically, the existing building is approximately 7,800 square feet in size, and the projected need is for 27,600 to 30,500 square feet. Given the small size of the parcel on which the library is located, a larger site would be required to accommodate the necessary floor area and patron parking. The master plan suggests exploring discussions with the mall owners and management to increase the size of the existing parcel, or considering relocation of the library to another site that would be accessible by transit, pedestrians, and bicyclists and would provide ample parking. (North Santa Rosa Station Area Specific Plan, 2012)

Individual branch deficiencies are partially offset by the fact that Santa Rosa residents are able to patronize other Sonoma County Library branches with their assigned library cards. This is a result of the library system's Joint Partnership Agreement with the County and all nine cities in the county. Per the agreement, cities are required to build new library facilities as needed. The library is funded through a special tax district.

The library's countywide service level guidelines establish a standard of 0.55 to 0.63 square feet of library area per capita. Currently, the three branches in Santa Rosa have a combined square footage of 90,040. Compared with the current estimated Santa Rosa population of 168,856, city residents experience 0.54 square feet of library area per capita, which is slightly below the library's established service standards.

To maintain these standards based on anticipated growth, the library plans to replace the Northwest Branch, complete extensive additions to the other two Santa Rosa branches, and construct a new library in southwestern Santa Rosa. If all planned improvements are completed, Santa Rosa libraries would provide a combined 0.59 to 0.68 square feet of library area per capita. (Downtown Station Area Specific Plan DEIR, 2007)

3.12.3.2 REGULATORY FRAMEWORK

LOCAL

City of Santa Rosa General Plan

The City of Santa Rosa General Plan 2035 serves as the overall guiding policy document for the City of Santa Rosa. The following is a list of applicable General Plan goals and policies most pertinent to the Specific Plan in regard to library services.

Public Services and Facilities Element

Goal PSF-D: Provide library facilities necessary to meet the needs of the community.

Policy PSF-D-1: Provide a wide range of library services through a strong central facility and local branches needed to serve a growing and varied population.

Policy PSF-D-2: Develop additional library facilities and assist the library administration in its attempts to secure state and federal funds for facilities and services.

Policy PSF-D-3: Require community shopping centers and other major developments to consider incorporating sites and/or building spaces for branch facilities, when the locations coincide with the library administration's Master Plan.

3.12.3.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

For purposes of this DEIR, the following criteria were used in determining whether the proposed project would result in a significant impact to library service. An impact would be considered significant if the project would:

1) Result in the increased demand for additional personnel, equipment, or facilities that impairs the ability of library service providers to maintain an acceptable level of service.

METHODOLOGY

Evaluation of potential library impacts of the proposed project was based on consultations with the City as well as review of the City of Santa Rosa General Plan 2035.

IMPACTS AND MITIGATION MEASURES

Library Service

Impact 3.12.3.1 Implementation of the proposed project would increase demand for library facilities. This impact would be **less than significant**.

An increase in population under the Specific Plan could have the potential to increase the demand on libraries serving the Specific Plan area. Development under the Specific Plan would add approximately 4,217 residents beyond what was assumed in the General Plan 2035. This increase in population could adversely affect the provision of library facilities.

The estimated population increase resulting from implementation of the Specific Plan would decrease Santa Rosa's existing square footage of library area per capita from 0.54 to 0.52 based on the library's countywide service standards. This is equivalent to 1,686 square feet of current library space. Although such a population increase would push the City's library service standard below the countywide service standards, the library is already planning the replacement of the Northwest Branch and the expansion of the Rincon Valley Branch, extensive additions to the other two Santa Rosa branches, and construction of a new library in southwestern Santa Rosa independent of the status of this Specific Plan. The City of Santa Rosa is currently aware of these planning efforts and is assisting in the library improvements. Each of the new library facilities will undergo independent environmental analysis.

The Specific Plan contains policies addressing the need to maintain and improve adequate library services. Specific Plan Goal PF-4 ensures that development pays their fair share of funding for public services in the Specific Plan area and that available funding sources are used to implement additional area-wide improvements. Policy PF-11.1 calls for collaboration with the Sonoma County Library in their planning efforts to develop a new facility at an alternative site within the Specific Plan area. Funding for the library will continue through the special tax district already established.

Since the Specific Plan would not result in the need for additional library facilities in excess of what is already planned, potential impacts related to the implementation of the Specific Plan would be **less than significant**.

Mitigation Measures

None required.

3.12.3.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting consists of the Sonoma County Library's jurisdiction, which includes all cities in Sonoma County.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Library Services

Impact 3.12.3.2 Implementation of the proposed project, in addition to reasonably foreseeable development, would require increased library facilities. The project would have a **less than cumulatively considerable** contribution to this cumulative impact.

Cumulatively, the Specific Plan may require increased library staffing, as implementation of the Specific Plan will result in an increase in residents, resulting in the need to increase the number of full-time equivalent librarians necessary to maintain adequate staffing ratios. However, the Specific Plan would not contribute to a significant cumulative impact related to the creation or expansion of physical library facilities since it would not result in the creation or expansion of physical library facilities, other than those already planned. Funding for the library and its staffing needs will continue through the existing special tax district.

Mitigation Measures

None required.

3.12.4 WATER SUPPLY AND SERVICE

3.12.4.1 EXISTING CONDITIONS

Surface Water Supply

The City of Santa Rosa receives its primary potable water supply from the Russian River watershed. Water is provided through the Russian River Project managed by the Sonoma County Water Agency (SCWA). The SCWA has supplied water to meet the City of Santa Rosa's demands since the 1970s. From its headwaters in central Mendocino County, the Russian River drains a 1,485-square-mile area. Principal tributaries of the Russian River are the East Fork of the Russian River, Big Sulphur Creek, Mark West Creek, Maacama Creek, and Dry Creek. Two major reservoir projects located within the Russian River watershed (Lake Mendocino on the East Fork of the Russian River, and Lake Sonoma on Dry Creek) provide water supply storage. A third reservoir project, Lake Pillsbury, indirectly contributes to the water supply through releases into the Eel River, a portion of which are diverted into the East Fork of the Russian River, through the Potter Valley project. The SCWA source of water is collected from the Russian River through Ranney water collector systems from two intake sites at Wohler and Mirabel located near Forestville. Infiltration ponds surround the SCWA river collectors, and an inflatable dam on the Russian River assists in raising the water level during periods of low flow. The dam serves to divert water from the river into the infiltration ponds and also raises water levels upstream that supply the intake sites.

Groundwater Supply

The city is located within the Santa Rosa Plain subbasin of the Santa Rosa Valley Groundwater Basin, located at the confluence of the Santa Rosa, Bennett, and Rincon valleys. The City's groundwater supply is derived exclusively from the Santa Rosa Plain Subbasin. The City maintains a total of six municipal groundwater wells within the Santa Rosa Plain Subbasin. (Santa Rosa 2010 UWMP, 2011)

The SCWA also has three groundwater wells in the Santa Rosa Plain Subbasin of the Santa Rosa Valley Groundwater Basin, which drains northwest toward the Russian River. Although there are no legal constraints to the SCWA's ability to use groundwater supplies, the amount of groundwater expected to be pumped by the agency is projected to remain stable until 2035, at 2,300 acre-feet annually (Santa Rosa 2010 UWMP, 2011).

In addition to the potable supply provided by the two Farmers Lane wells, the Leete, Carley and Peters Spring wells provide the City with approximately 2.1 million gallons per day (mgd) of groundwater capacity on a stand-by emergency basis. Since the mid 1990s, Santa Rosa has had an adopted Capital Improvement Program for the development of the City's groundwater resources to provide an additional 8.7 mgd emergency groundwater supply suitable for potable use by the City (Santa Rosa 2010 UWMP, 2011).

Wholesale Water Rights and Supply

The City currently receives the majority of its potable water supply from the SCWA under the provisions of the Restructured Agreement for Water Supply (Restructured Agreement) dated June 2006. The remaining potable water supply is provided by the City's own groundwater wells. The City's contractual entitlement under the Restructured Agreement is 29,100 acre-feet annually. Should the SCWA at any time not be able to provide the City its full entitlement, shortage provisions are outlined in Section 3.5 of the Restructured Agreement and the SCWA's adopted Water Shortage Allocation Methodology (adopted per the requirements of Section 3.5). Based on the City's aggressive water conservation implementation, under the Water Shortage Allocation Methodology, it is anticipated that the City's allocation would be 29,100 acre-feet annually (afa), the full entitlement of the Restructured Agreement. (Santa Rosa 2010 UWMP, 2011)

Historical Water Use

The increase in Santa Rosa's water use is relatively slow and can be attributed to various factors including aggressive conservation practices implemented by the City and above-normal and wet rain years through the later part of the 1990s. Under the current water entitlement agreement (referred to as the Restructured Agreement) between the SCWA and eight contracting agencies, water is supplied to the City of Santa Rosa to meet its demands. Under the Restructured Agreement, the City of Santa Rosa's monthly water entitlement from the SCWA is an average-day peak month supply of 56.6 mgd and its supply is limited to a total of 29,100 afa (General Plan 2035 DEIR, 2009).

In 2010, the City had 43,494 single-family accounts, 3,129 multi-family accounts, 2,573 commercial, industrial, and institutional accounts combined, and 1,695 landscape irrigation accounts. The metered projections for 2035 without implementation of the proposed project are 12,244 afa single-family residential, 4,273 afa multi-family, 4,521 afa commercial, industrial, and institutional, 3,913 afa landscape, and 5,932 afa new single-family, totaling 30,883 acre-feet annually. Additionally, 3,735 afa of additional water uses and losses are anticipated for 2035 without the proposed project, bringing the total demand to 33,518 afa (Santa Rosa 2010 UWMP, 2011).

Existing Infrastructure

The existing water system in the area south of Coddingtown Mall consists primarily of 6-inch and 8-inch asbestos cement pipe with some newer polyvinyl chloride pipe. The area at the west end of Guerneville Road is bordered on the east and west sides by 8-inch asbestos cement pipe mainline; there is also an 8-inch polyvinyl chloride main in Pawnee Street, which dead-ends at the north side of the unincorporated area. The area is within one pressure zone, with three Sonoma County Water Agency (SCWA) connections in the area (Coastland 2012).

Planned Capital Improvement Projects

The City has three Capital Improvement Projects (CIP) planned for water main replacements to improve the quality of the system over the next five years:

1. Apple Valley Lane north of Steele Lane

2. West College Avenue near Highway 101 (fire hydrant relocation only)

3. Cleveland Avenue between Ridgway Avenue and Edwards Avenue, including Jennings Avenue from Range Avenue to Cleveland Avenue.

The first two locations are within the Specific Plan area but not within the areas proposed to be modified. The third location in Cleveland Avenue and Jennings Avenue is within the area to be modified in the Specific Plan. The proposed improvements are to replace the existing 4-inch and 6-inch mains in Cleveland Avenue between Ridgway Avenue and Edwards Avenue with a new 12-inch water main. The 4-inch and 14-inch mains in Jennings Avenue from Range Avenue to Cleveland Avenue will be replaced with one 12-inch main. These improvements will increase fire flows, reduce maintenance costs, and bring the area up to current City standards for commercial areas. (Coastland 2011)

3.12.4.2 REGULATORY FRAMEWORK

FEDERAL

Environmental Protection Agency

The U.S. Environmental Protection Agency (EPA) is the federal agency assigned to maintain safe air and water throughout the country. Santa Rosa is in EPA Region 9, which includes Arizona, California, Hawaii, Nevada, the Pacific Islands, and over 140 Tribal Nations. The State Water Quality Control Board (SWQCB) works with the EPA to control and reduce pollutants from entering drinking water sources.

STATE

Urban Water Management Planning Act

The Urban Water Management Planning Act (Water Code Sections 10610–10656) requires every urban water supplier that either provides over 3,000 acre-feet of water annually or serves more than 3,000 connections to assess the reliability of its water sources over a 20-year planning horizon considering normal, dry, and multiple dry years. This assessment is to be included in an Urban Water Management Plan (UWMP); these plans are required to be prepared every five years and submitted to the Department of Water Resources (DWR 2012).

Senate Bill 610 and Senate Bill 221

Senate Bill (SB) 610 and SB 221 (Water Code Section 10910(c)(2)) amended state law, effective January 1, 2002, to improve the link between information on water supply availability and certain land use decisions made by cities and counties. SB 610 and SB 221 are measures that seek to promote more collaborative planning between local water suppliers and cities and counties by requiring that detailed information regarding water availability be provided to decision-makers prior to approval of specified large development projects. SB 610 requires that detailed information be included in a water supply assessment (WSA), which is then included in the administrative record that serves as the evidentiary basis for an approval action by the city or county. SB 221 requires that the detailed information be included in a verification of water supply.

Under SB 610, WSAs must be furnished to local governments for inclusion in any environmental documentation for certain projects (as defined in Water Code Section 10912[a]) subject to CEQA. The proposed Specific Plan is such a project under these criteria. The WSA adopted for the proposed Specific Plan addresses the current and planned future water demand of the water supplier, the projected demand of the proposed project, and the projected water supply of the water supplier, and makes a determination of the sufficiency of its water supplies for the project, in addition to existing and planned future uses.

LOCAL

Santa Rosa Municipal Service Review

In accordance with the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000, municipal service reviews (MSRs) are required by Local Agency Formation Commissions (LAFCos) on cities and service districts in conjunction with review and update of city and district spheres of influence every five years, according to Government Code Section 56425. Section 56430 requires MSRs to be conducted prior to or in conjunction with the sphere updates. MSRs must address at least the following nine factors: infrastructure needs or deficiencies; growth and population projections for the affected area; financing constraints and opportunities; cost avoidance opportunities; opportunities for rate restructuring; opportunities for shared facilities; government structure options, including advantages and disadvantages or consolidation or reorganization of service providers; evaluation of management efficiencies; and local accountability and governance.

Santa Rosa 2010 Urban Water Management Plan

Each urban water purveyor serving more than 3,000 connections or 3,000 afa is required by the State of California Urban Water Management Planning Act to prepare and submit an urban water management plan (UWMP) every five years. The City's 2010 UWMP was prepared according to the requirements of the Urban Water Management Planning Act and includes details about Santa Rosa's projected water supply and demand through 2035 during an average water year, a single dry year, and multiple dry years; current and projected recycled water use; water conservation program details; and detailed information about regional water supply. The City's 2010 UWMP also includes an update to the City's Urban Water Shortage Contingency Plan.

Water Conservation Efforts

In 1998, the City became a signatory to the California Urban Water Conservation Council (CUWCC) Memorandum of Understanding Regarding Urban Water Conservation dated September 1997 and is fully committed to implementing the CUWCC best management practices (BMPs). To assist with water conservation implementation, the City has an aggressive, conservation-oriented water rate structure that encourages water conservation implementation. Table ES-3 of the Santa Rosa 2010 Urban Water Management Plan provides the status of the City's CUWCC BMP implementation. BMPs include foundational utility operations and educational programs and programmatic residential, commercial, industrial, institutional, and landscape programs.

Santa Rosa Fire Flow Requirements

City standards provide a guide to fire flow requirements for development within the Urban Growth Boundary. In general, single- and two-family residential lots require 1,500 gallons per minute (gpm) of flow. Schools, commercial, industrial, and multi-family residential (three or more units) typically require 2,500 gpm from two hydrants to conform to the City Fire Code. Mid-rise and high-rise structures require higher flows. In addition, all parcels located in the High Fire Severity Zone are required to have a fire flow of 2,500 gpm. All fire flows mentioned above must maintain a residual of 30 pounds per square inch while providing the required flow. Compliance with fire flow requirements noted above is ultimately under the jurisdiction of the Santa Rosa Fire Department.

City of Santa Rosa General Plan

The City of Santa Rosa General Plan 2035 serves as the overall guiding policy document for the City of Santa Rosa. The following is a list of applicable General Plan goals and policies most pertinent to the Specific Plan in regard to water services.

Public Services and Facilities Element

Goal PSF-F: Ensure that an adequate supply of water is available to serve existing and future needs of the city.

Policy PSF-F-1: Utilize high quality water from the Sonoma County Water Agency (SCWA) aqueduct system as the primary water supply.

Policy PSF-F-2: Ensure that water supply capacity and infrastructure are in place prior to occupancy of new development.

Policy PSF-F-3: Develop available groundwater resources for the purpose of providing a supplemental source of water in the event of an emergency.

Policy PSF-F-4: Maintain existing levels of water service by preserving and improving infrastructure, replacing water mains as necessary, and improving water transmission lines.

Policy PSF-F-5: Decline requests for extension of water beyond the Urban Growth Boundary, except in cases of existing documented health hazards and in areas where the city has agreements to provide services.

Policy PSF-F-6: Evaluate the city's long-term water supply strategies, including development of new sources of water supply, improved water conservation and re-use, and implementation of appropriate growth control measures if necessary.

3.12.4.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the CEQA Guidelines Appendix G thresholds of significance. The project would have a significant impact related to water supply if it would:

1) Require or result in the construction of new water treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

2) Have insufficient water supplies available to serve the project from existing entitlements and resources and/or require new or expanded entitlements.

METHODOLOGY

Evaluation of potential water service impacts for the proposed project was based on technical memoranda prepared for the proposed project, including the Water Supply Assessment (WSA), Hydraulic Analysis, and Infrastructure Report, as well as review of the City of Santa Rosa General Plan and associated environmental impact report. The City's 2010 Urban Water Management Plan (UWMP) was also used in this analysis.

The WSA determined additional water needed to serve the development proposed in the Specific Plan using residential equivalency factors (REFs) consistent with the project and zoning code land use classifications for residential attached buildings, residential detached buildings, retail, office, industrial, public/institutional, and park or public landscape uses. These REFs translate nonresidential square footages into equivalent residential use in detached buildings.

The WSA states that the City's annual projected residential water use is 100,000 gallons per detached residential unit per year, based on the average of the last ten years of annual single-family residential water use. Attached units' residential water use includes minimal landscape irrigation and averages two-thirds of detached units' residential water use. This is based on an analysis of the past ten years of actual residential water use in detached and attached units. The REFs for the nonresidential use categories are based on land use categories and equivalent water use per Water Code Section 10912(a) (SB 610 WSA for the North Santa Rosa Station Area Specific Plan, 2012).

The annual water demand for the project's developed area is 100,000 gallons per REF multiplied by 3,702 REFs for the project, or a total of 370.2 million gallons per year (3,702 X 100,000 gallons), or approximately 1,136 acre-feet annually. The total demand for the project must also include the system standard for unaccounted-for water, which is the difference between water produced and water sold. Unaccounted-for water includes metered and unmetered water use, such as water used for fire protection and training, water system flushing, sewer cleaning, construction, and system leaks, as well as water used by unauthorized connections. Unaccounted-for water use can also result from meter inaccuracies. Based on the City's 2010 Urban Water Management Plan, this factor is 7.9 percent for the Santa Rosa system. The addition of system unaccounted-for water brings the total project demand to 1,226 afa beyond what was considered in the General Plan 2035 (SB 610 WSA for the North Santa Rosa Station Area Specific Plan, 2012).

IMPACTS AND MITIGATION MEASURES

Adequate Water Supply

Impact 3.12.4.1 Buildout under the Specific Plan would increase demand for water. This impact is considered **less than significant**.

Development in accordance with the proposed project would include construction of residential units and commercial/retail square footage in the Specific Plan area, resulting in an increase in demand for water supply to the project site. The Specific Plan area would be served by the City of Santa Rosa's water system, and the City generally receives its water from the Sonoma County Water Agency (SCWA). The source of SCWA water is the Russian River, which is a component of the Russian River Project.

As described in Section 2.0, Project Description, the proposed project would result in approximately 438 single-family dwelling units, 1,276 multi-family dwelling units, 798,600 square feet of office, 537,200 square feet of retail, and 97,600 square feet of institutional land uses. Approximately 22,700 square feet of existing warehouse and 34,000 square feet of light and heavy industrial land uses would be removed with future development. Therefore, by applying the REFs for each use category, the proposed project would result in a total of 3,702 resident unit equivalents, which translates to 1,136 afa, or 1,226 afa with unaccounted-for water. See the Methodology section above and the WSA, attached as **Appendix D1**, for these calculations.

According to the City's 2010 UWMP, 34,878 afa of water would be available to the City in the year 2035 (Santa Rosa 2010 UWMP, 2011). Under the UWMP, demand would be 33,518 afa in 2035. With the additional 1,226 afa assumed for the proposed project, the total water demand of the City would be 34,744 acre-feet annually. Therefore, 134 afa of capacity would remain in 2035. The City would therefore have adequate supply to meet existing demands and planned future demands plus the maximum anticipated demand associated with the Specific Plan. Furthermore, the WSA concludes that the City's projected water supplies are sufficient to meet the projected water demand associated with the Specific Plan, in addition to current and planned future uses, for the 20-year projection.

Furthermore, the Specific Plan is designed to minimize potential impacts to utilities in general. For example, Specific Plan Goal PF-1 would support anticipated levels of development intensity in the Specific Plan area with adequate infrastructure. Supporting this goal is Specific Plan Policy PF-1.1, which would provide utility upgrades as needed to support increased density and intensity in the Specific Plan area. Furthermore, Policy PF-4.1 would ensure that private development provides its fair share of funding for necessary improvements to public services and utilities in the Plan area. Additionally, Specific Plan Policy PF-4.2 would use the City's Capital Improvement Program, Park and Utility Fees, redevelopment program funds, federal and state grant funds, and other funding sources to implement area-wide improvements that cannot be conditioned as part of private development projects. Goal PF-5 would ensure that adequate water supply and water supply system improvements are available to serve existing and new development in the Specific Plan area. Specific Plan Policy PF-5.1 supports this goal by ensuring that water supply capacity and infrastructure are in place prior to occupancy of new development in the Specific Plan area. Additionally, Specific Plan Policy PF-5.2 would require new development and streetscape landscaping to employ water conservation and reuse measures. These policies are designed to make certain that growth occurs only as appropriate water supplies are available. Therefore, implementation of the Specific Plan would result in a **less than significant** impact in regard to water supplies.

Mitigation Measures

None required.

Water Facilities

Impact 3.12.4.2 Buildout under the Specific Plan would increase use of existing water infrastructure. This impact is considered **less than significant**.

As the Specific Plan area is developed, improvements will be required to provide water supply systems to serve new development as well as improvements to the existing system where deficiencies are caused by the development. The project's Infrastructure Report stated that all existing mains are adequately sized under current peak hour conditions. However, under the maximum day demand with fire flow conditions, significant water infrastructure improvements are needed at buildout of the Specific Plan. Overall, a total of 5.86 miles of new water mains (including those that would likely be required where new roads are constructed) will be needed to provide for more intense development and sufficient fire flow rates. Other improvements that will be needed include fire hydrants and valves to be located as required by City standards. New service laterals will need to be installed from the new main to the existing meter box. No new connections into the SCWA transmission system are needed (Coastland 2012). Improvements must be consistent with the City's utilities standards. The Infrastructure Plan (included as **Appendix D3**) includes a detailed list of the improvements that would be required in the Specific Plan area to ensure that adequate water supply system would be provided to support the development that would occur under the Specific Plan. These improvements have been incorporated into the Specific Plan. As specific improvements are designed, additional project-level environmental review may be required. Incorporation of these improvements would ensure that adequate water facilities would be available in the Specific Plan area. This impact is considered less than significant.

Mitigation Measures

None required.

3.12.4.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative water supply setting consists of the water service area of the SCWA, which includes the entirety of Sonoma County and portions of Marin County and Mendocino County. The cumulative setting includes the full buildout of the Specific Plan area, which is expected to occur by 2035, as well as all existing, planned, proposed, approved, and reasonably foreseeable development within the SCWA service area that currently places demand on these water supplies or is expected to place demand on them in the future.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Water Impacts

Impact 3.12.4.3 Implementation of the proposed Santa Rosa General Plan 2035, along with growth within the Sonoma County Water Agency service area, would result in cumulative water supply impacts. The project's contribution to cumulative impacts to water supply is considered **less than cumulatively considerable.**

The additional population and density resulting from all other planned and foreseeable development under the cumulative scenario, including development within the SCWA service area, would contribute to the increased demand for water supply. As discussed above in Impact 3.12.4.1, the City of Santa Rosa would have adequate water supply, including existing and additional supply, to meet planned future development demands plus the maximum anticipated demands from development that would occur under the General Plan 2035. The potential cumulative impacts associated with the water supply are consistent with the findings of the WSA since the WSA took into consideration the cumulative growth anticipated for Santa Rosa when determining the project-level impact associated with water supply. As stated above, the WSA concludes that there would be adequate water supplies for both the Specific Plan, as well as cumulative growth in Santa Rosa. As a result, the proposed project would not contribute to a significant cumulative impact associated with water supply.

Additionally, the potential cumulative impacts related to water supply infrastructure within the Specific Plan area necessary to supply the Plan area are analyzed under each of the other sections of this Draft EIR, because the construction of the water supply system is analyzed as part of the overall Specific Plan.

Therefore, application of policies outlined in the proposed Specific Plan and in the General Plan 2035, as well as the City's required water conservation measures, would result in a **less than cumulatively considerable** impact to water supply and infrastructure.

Mitigation Measures

None required.

3.12.5 WASTEWATER SERVICE AND STORMWATER DRAINAGE FACILITIES

3.12.5.1 EXISTING CONDITIONS

EXISTING WASTEWATER TREATMENT FACILITIES

The City of Santa Rosa is responsible for the collection of wastewater within the city and Specific Plan area. There are approximately 581 miles of wastewater piping in the Santa Rosa wastewater system. Sewage generated from residential, commercial, and industrial uses in Santa Rosa is collected and transported to the Laguna Wastewater Treatment Plant (WTP), located southwest of the city on Llano Road. The Laguna WTP, managed by the City of Santa Rosa, provides wastewater treatment and disposal services for the city as well as for Rohnert Park, Cotati, Sebastopol, and the South Park Sanitation District. Wastewater is tertiary-treated and, depending upon the amount of rainfall received in any given year, between 90 and 100 percent is recycled for urban and agricultural irrigation and for the Geysers Recharge Project. Currently, 6,000 acres of crops are irrigated with recycled water to grow hay, pasture, vegetables, and wine grapes and for landscaped areas (Santa Rosa General Plan 2035 DEIR, 2009).

The Laguna Wastewater Treatment Plant is a tertiary-level treatment facility that has an average daily dry weather flow of 15.5 million gallons per day (mgd) and is permitted for 21.34 mgd average daily dry weather flow. Projects under Santa Rosa's Subregional Water Reuse System Incremental Recycled Water Program, which was originally undertaken in 2001, will be implemented as growth occurs, eventually increasing the plant's capacity to 25.79 mgd, 18.25 mgd of which would be allocated to Santa Rosa. This expanded capacity will be sufficient to meet the city's wastewater needs up to 2020 (General Plan 2035 DEIR, 2009). The plant takes wastewater from homes, businesses, and industry located within the cities of Santa Rosa, Rohnert Park, Sebastopol, and Cotati and the South Park Sanitation District. Over 500 miles of underground pipes bring wastewater to the treatment plant, where water goes through three stages of treatment prior to disinfection, storage, and reuse. The water is treated to the highest level recognized in state water recycling regulations (Title 22) (Santa Rosa 2010 UWMP, 2011). The current and projected volume of collected and treated wastewater and the amount that meets the recycled water standard from the Laguna Wastewater Treatment Plant are shown in **Table 3.12.5-1**. The City contributes approximately 75 percent of these wastewater quantities (Santa Rosa 2010 UWMP, 2011).

TABLE 3.12.5-1
RECYCLED WATER — WASTEWATER COLLECTION AND TREATMENT

Type of Wastewater	2005	2010	2015	2020	2025	2030	2035
Wastewater collected & treated in service area (afa)	24,858	23,047	24,882	26,718	28,553	30,388	32,223

Source: Santa Rosa 2010 UWMP, 2011

Existing Wastewater Collection Facilities

The existing wastewater collection system in the Specific Plan area consists primarily of 6-inch asbestos cement pipe and 8-inch polyvinyl chloride (PVC) pipe in Edwards, Jennings, and Range avenues flowing to a 12-inch PVC pipe running north along the railroad from Jennings Avenue to Guerneville Road. The flows are then routed to a 30-inch reinforced concrete pipe trunk main in Northcoast Street. The 30-inch trunk main runs south through the unincorporated site at the west end of Guerneville Road and then turns west onto Guerneville Road. In addition to the trunk main, there is also an 8-inch asbestos cement pipe collector main present in the unincorporated area. (Coastland 2012)

Capital Improvement Projects

The Infrastructure Assessment for the Land Use & Circulation Alternatives Report prepared as part of the Specific Plan process states that the City has three Capital Improvement Projects (CIP) planned for sewer replacements to improve the quality of the system over the next five years: Apple Valley Lane north of Steele Lane; West College Avenue near Highway 101 (sewer lateral relocation only); and Foley Avenue adjacent to Cleveland Avenue. The first two locations are within the North Santa Rosa Station area, but are not within the areas to be modified in the Specific Plan. The third location in Foley Avenue is within the area to be modified; the proposed improvements are to abandon the existing 6-inch vitrified clay pipe and extend approximately ten sewer laterals to the new 27-inch PVC trunk main in Cleveland Avenue. The City has also stated that three additional projects, the Edwards Avenue freeway crossing sewer repair work, Illinois Avenue/Sucher Lane water and sewer replacement, and the Nordyke Avenue/Oliver Lane/Victor Drive sewer project (Coastland 2011).

EXISTING STORMWATER FACILITIES

Within Santa Rosa, the Public Works Department maintains over 338 miles of underground stormwater pipes and over 18,000 stormwater structures. The City provides storm drainage collection within the project area and is responsible for operation and maintenance of the collection system. The existing storm drain systems in the area consist of 15- to 54-inch-diameter storm drain pipes in Cleveland Avenue, Edwards Avenue, Jennings Avenue, Frances Street, Steele Lane, and Guerneville Road, with multiple outfalls into Steele Creek. There is one location of poor drainage in the existing system between the railroad and Coffey Lane immediately north of West Steele Lane. The land at this location drains poorly (North Santa Rosa Station Area Specific Plan, 2012).

The City's stormwater Phase 1 MS4 National Pollutant Discharge Elimination System (NPDES) permit with the North Coast Regional Water Quality Control Board regulates both stormwater and non-stormwater discharges out of the Santa Rosa storm drain system with the intent to reduce stormwater pollution, protect the water quality of creeks and waterways, and promote infiltration (North Santa Rosa Station Area Specific Plan, 2012).

3.12.5.2 REGULATORY FRAMEWORK

FEDERAL

Clean Water Act

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. Under the CWA, the United States Environmental Protection Agency (EPA) has implemented pollution control programs such as setting wastewater standards for industry and water quality standards for all contaminants in surface waters.

The CWA made it unlawful to discharge any pollutant from a point source (direct discharge) into navigable waters. The EPA's National Pollutant Discharge Elimination System permit program controls direct and non-point discharges through the North Coast Regional Water Quality Control Board (EPA 2012).

STATE

Porter-Cologne Water Quality Control Act

In 1969, the California Legislature enacted the Porter-Cologne Water Quality Control Act to preserve, enhance, and restore the quality of the state's water resources. The act established the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCBs) as the principal state agencies with the responsibility for controlling water quality in California. Under the act, water quality policy is established, water quality standards are enforced for both surface water and groundwater, and the discharges of pollutants from point and nonpoint sources are regulated. The act authorizes the North Coast RWQCB to establish water quality principles and guidelines and permits for long-range resource planning including groundwater and surface water management programs and control and use of recycled water (USDOE 2012).

State Water Resources Control Board

The SWRCB is responsible for implementing the Clean Water Act and the Porter-Cologne Water Quality Control Act. The SWRCB allocates water rights, adjudicates water right disputes, develops statewide water protection plans, establishes water quality standards, and guides the nine RWQCBs located in the major watersheds of the state. The SWRCB also issues NPDES permits to cities and counties through the RWQCBs (SWRCB 2012).

Waste Discharge Requirements Program

State regulations pertaining to the treatment, storage, processing, or disposal of solid waste are found in Title 27, CCR, Section 20005 et seq. (Title 27). In general, the waste discharge requirements (sometimes referred to as the Non Chapter 15 (Non 15) Program) regulate point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the federal Clean Water Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDR program also includes the discharge of wastes classified as inert, pursuant to Section 20230 of Title 27. Several SWRCB programs are administered under the WDR program, including the Sanitary Sewer Order and recycled water programs (SWRCB 2012).

If the operation or discharges from a property or business affect California's surface water, coastal waters, or groundwater, the discharger is required to obtain a permit from the appropriate RWQCB to discharge waste. For those discharging pollutants (or proposing to) into surface waters, a federal NPDES permit must be obtained. For other types of discharges, such as those affecting groundwater or in a diffused manner (e.g., erosion from soil disturbance or waste discharges to land), a Report of Waste Discharge must be filed with the appropriate Regional Water Quality Control Board in order to obtain WDRs.

Sanitary Sewer Overflow Program

A sanitary sewer overflow (SSO) is any overflow, spill, release, discharge, or diversion of untreated or partially treated wastewater from a sanitary sewer system. Sanitary sewer overflows often contain high levels of suspended solids, pathogenic organisms, toxic pollutants, nutrients, oil, and grease and can pollute surface waters and groundwater, threaten public health, adversely affect aquatic life, and impair the recreational use and aesthetic enjoyment of surface waters. To provide a consistent, statewide regulatory approach to address SSOs, the SWRCB adopted Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order No. 2006-0003 (Sanitary Sewer Order) on May 2, 2006. The Sanitary Sewer Order requires public agencies that own or operate sanitary sewer systems to develop and implement sewer system management plans and report all sanitary sewer overflows to the SWRCB's online SSO database. All public agencies that own or operate a sanitary sewer system that comprises more than 1 mile of pipes or sewer lines which convey wastewater to a publicly owned treatment facility must apply for coverage under the Sanitary Sewer Order (SWRCB 2012).

LOCAL

North Coast Regional Water Quality Control Board

The North Coast Regional Water Quality Control Board (North Coast RWQCB) is the regional governing agency for water quality. The North Coast RWQCB is a state department that provides a definitive program of actions designed to preserve and enhance water quality and to protect beneficial uses of water in the north coast region. The RWQCB issues National Pollutant Discharge Elimination System (NPDES) permits.

Santa Rosa Sanitary Sewer System Master Plan – 2006

The purpose of the Sanitary Sewer System Master Plan is to evaluate the adequacy of the City's sewer collection system, identify system deficiencies both present and future, and develop prioritized lists of improvement projects that will be needed to meet the City's collection system needs based on General Plan buildout projections.

Santa Rosa Municipal Service Review

In accordance with the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000, municipal service reviews (MSRs) are required by LAFCOs on cities and service districts in conjunction with review and update of city and district spheres of influence every five years, according to Government Code Section 56425. Section 56430 requires MSRs to be conducted prior to or in conjunction with the sphere of influence updates.

MSRs must address at least the following nine factors: infrastructure needs or deficiencies; growth and population projections for the affected area; financing constraints and opportunities; cost avoidance opportunities; opportunities for rate restructuring; opportunities for shared facilities; government structure options, including advantages and disadvantages or consolidation or reorganization of service providers; evaluation of management efficiencies; and local accountability and governance.

Stormwater Requirements

The EPA mandate of the federal Clean Water Act 1987 amendment has brought the City of Santa Rosa, the County of Sonoma, and the Sonoma County Water Agency (SCWA) together in 1997 to jointly obtain a Phase I municipal separate storm sewer system (MS4) NPDES permit from the North Coast RWQCB.

As part of the MS4 permit requirements, Sonoma County and the City of Santa Rosa joined efforts to publish stormwater management guidelines. The Storm Water Low Impact Development Technical Design Manual provides technical guidance for project designs that require the implementation of permanent stormwater best management practices (BMPs). This manual supersedes the 2005 Standard Urban Stormwater Mitigation Plan Guidelines. The goal of the manual is to reduce pollution and runoff for all new and redevelopment capital improvement programs and development projects meeting the criteria.

As new developments are planned, measures for treatment of erosion and stormwater are addressed at the source. As sites are developed, each site must establish acceptable source control methods.

Development in the Specific Plan area will need to comply with the Storm Water Low Impact Development Technical Design Manual to control runoff quality and quantity. These requirements will need to be handled on an area-wide integrated basis or individually on each parcel as development or redevelopment occurs. Low impact development practices consist of such measures as green roofs, tree canopies, vegetated swales and buffer strips, permeable paving, and rain gardens.

City of Santa Rosa General Plan

The City of Santa Rosa General Plan 2035 serves as the overall guiding policy document for the City of Santa Rosa. The following is a list of applicable General Plan goals and policies most pertinent to the Specific Plan in regard to wastewater services.

Public Services and Facilities Element

Goal PSF-G: Ensure that adequate sewer capacity is available to serve existing and future needs of the city.

Policy PSF-G-1: Continue to explore and develop new uses for treated wastewater, including expanding existing programs such as urban and agricultural irrigation, consistent with objectives adopted by the Board of Public Utilities and the City Council. Examples of urban reuse include park and landscaping irrigation.

Policy PSF-G-3: Decline requests for extension of sewer services beyond the Urban Growth Boundary, except in cases of existing documented health hazards and in areas where the city has agreements to provide services.

3.12.5.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following State CEQA Guidelines Appendix G thresholds of significance, which state that a project would have a significant impact if it would:

1) Require or result in the construction of wastewater treatment facilities or expansion or existing facilities, the construction of which could cause significant environmental effects.

2) Result in a determination by the wastewater treatment provider, which serves or may serve the project, that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

3) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.

METHODOLOGY

Evaluation of potential wastewater and storm drainage impacts was based on technical memoranda prepared for the proposed project, including the Water Supply Assessment and Infrastructure Report, as well as review of the City of Santa Rosa General Plan 2035 and associated environmental impact report.

IMPACTS AND MITIGATION MEASURES

Wastewater Conveyance and Treatment

Impact 3.12.5.1 Subsequent land use activities associated with implementation of the proposed Specific Plan would increase wastewater flows and require additional infrastructure and may require additional treatment capacity to accommodate anticipated demands. However, implementation of proposed Specific Plan policies would provide wastewater infrastructure upgrades as needed to support increased density and intensity in the Specific Plan area. This impact is considered **less than significant**.

Santa Rosa is responsible for the operation, maintenance, and regulatory compliance of the Laguna Wastewater Treatment Plant. Discharges to the Russian River and other water bodies from the Laguna WTP are required to comply with North Coast RWQCB permitting requirements. It is assumed that as long as the plant is adequately maintained and development does not occur at a rate that exceeds the plant's capacity, the WTP will continue to comply with permitting requirements.

The Water Supply Assessment (WSA) states that the city has historically used approximately 350 acre-feet annually (afa) of recycled water for landscape irrigation and has up to 3,000 afa of additional recycled supply available that can be developed to serve the Specific Plan area. The WSA determined that the City would have adequate capacity to meet the new demands under the proposed Specific Plan (SB 610 WSA for the North Santa Rosa Station Area Specific Plan, 2012).

The improvements identified in the Infrastructure Plan (included as **Appendix D3**), taking into account new wastewater mains that would likely be required where new roads are constructed, include 2.99 miles of new mains, as well as manholes spaced every 300 feet. New sewer laterals will need to be installed from the new main to the back of sidewalk.

The Specific Plan includes goals and polices to ensure that new development pays for improvements to the wastewater system. Specific Plan Goal PF-1 would support anticipated levels of development intensity in the Specific Plan area with adequate infrastructure. Supporting this goal is Specific Plan Policy PF-1.1, which would provide utility upgrades as needed to support increased density and intensity in the Specific Plan area. Specific Plan Goal PF-2 would provide mechanisms to adequately construct and maintain public infrastructure and facilities. Specific Plan Policy PF-2.2 supports this goal by evaluating alternative funding sources to help build and maintain public improvements and support public services. Specific Plan Policy PF-4.1 would ensure that private development provides its fair share of funding for necessary improvements to public services and utilities in the Plan area. Additionally, Specific Plan Policy PF-4.2 would use the city's Capital Improvement Program, Park and Utility Fees, redevelopment program funds, federal and state grant funds, and other funding sources to implement area-wide improvements that cannot be conditioned as part of private development projects. Finally, Goal PF-6 would ensure sewer capacity is available to serve existing and new development in the Specific Plan area. Policy PF-6.1 would maintain existing levels of wastewater service and provide for new development by preserving and improving infrastructure in the Specific Plan area, including upgrading of lines as needed. Policy PF-6.2 would program construction of needed improvements as part of the City's Capital Improvement Program as timing or conditions warrant.

While the Specific Plan would result in an increase in demand for wastewater infrastructure, implementation of the Specific Plan would not exceed North Coast RWQCB water treatment requirements since, as discussed above, the General Plan and Specific Plan include goals and policies that ensure development will not occur without adequate wastewater infrastructure in place. As stated above, the Laguna WTP has an average daily dry weather flow of 15.5 mgd and is permitted for 21.34 mgd average daily dry weather flow. The plant's capacity will eventually increase to 25.79 mgd, 18.25 mgd of which would be allocated to Santa Rosa. The increase in wastewater flow associated with the proposed Specific Plan would be accommodated by the WTP as development within the Specific Plan area occurs. Further, General Plan policies would ensure that growth would occur only as appropriate wastewater supplies are available. Compliance with existing General Plan policies and proposed Specific Plan policies discussed above would ensure that impacts related to wastewater treatment and conveyance are less than significant.

<u>Mitigation Measures</u>

None required.

Stormwater Drainage

Impact 3.12.5.2 Subsequent development under the proposed project could increase stormwater flows and require additional infrastructure to accommodate anticipated capacity needs. However, the Specific Plan would provide stormwater infrastructure upgrades as needed to support increased density and intensity in the Specific Plan area. This impact is considered **less than significant**.

Improvements will be required to provide drainage systems to serve new development as well as improvements to the existing system where deficiencies are caused by the Specific Plan's development. **Appendix D3** includes a detailed list of the improvements that would be required in the Specific Plan area to ensure that adequate stormwater drainage would be provided to support the development that would occur under the Specific Plan.

Per the infrastructure report, future development will comply with the Storm Water Low Impact Development Technical Design Manual to control runoff quality and quantity. These requirements will be handled on an area-wide integrated basis or individually on each parcel as development or redevelopment occurs (North Santa Rosa Station Area Specific Plan, 2012).

City policy requires low impact development practices, which aim to mimic the existing hydraulic function of the undeveloped site by capturing, treating, and infiltrating stormwater as close to the source as possible and using small-scale landscape-based features located throughout the Specific Plan area. Based on this policy, new storm drainage facilities are anticipated, with the objective to include nonstructural treatment methods (e.g., living roofs, structural soil, infiltration, rainwater harvesting, vegetated buffer strips and swales, rain gardens, constructed wetlands, pervious pavement, and impervious area disconnection) to reduce the volume of stormwater runoff and improve stormwater quality (North Santa Rosa Station Area Specific Plan, 2012).

Storm drainage systems will be needed inside currently undeveloped areas to accept higher flow and prevent flooding. The extent of storm drainage systems and collection systems will be determined on a project-specific basis. New storm drainage systems will be constructed concurrently with the development of new streets (North Santa Rosa Station Area Specific Plan).

Specific Plan Goal PF-1 would support anticipated levels of development intensity in the Specific Plan area with adequate infrastructure. Supporting this goal is Specific Plan Policy PF-1.1 which would provide utility upgrades as needed to support increased density and intensity in the Specific Plan area. Furthermore, Goal PF-2 under the Specific Plan would provide mechanisms to adequately construct and maintain public infrastructure and facilities. Specific Plan Policy PF-2.2 supports this goal by evaluating alternative funding sources to help build and maintain public improvements and support public services. Policy PF-4.1 would ensure that private development provides its fair share of funding for necessary improvements to public services and utilities in the Plan area. Additionally, Specific Plan Policy PF-4.2 would use the city's Capital Improvement Program, Park and Utility Fees, redevelopment program funds, federal and state grant funds, and other funding sources to implement area-wide improvements that cannot be conditioned as part of private development projects. Specific Plan Goal PF-8 seeks to manage, maintain, and improve stormwater drainage and capacity in the Specific Plan area. Policy PF-8.1 supports this goal by stating that new development and capital improvement projects shall reduce pollution and runoff flows impacting Paulin and Steele creeks by following the City's Storm Water Low Impact Development Technical Design Manual. Policy PF-8.2 requires new development to upgrade and/or install storm drainage pipes as appropriate where needed; improvements shall be designed to be consistent with the City's storm drain standards. Finally, Policy PF-8.3 programs construction of storm drain improvements identified in the Specific Plan as part of the City's Capital Improvement Program as timing or conditions warrant.

Compliance with existing General Plan policies and proposed Specific Plan policies discussed above would ensure that impacts related to stormwater facilities are less than significant.

Mitigation Measures

None required.

3.12.5.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative analysis for the Specific Plan area encompasses the City of Santa Rosa, which provides a context within which to examine potential cumulative resource impacts on utility services that may result from the proposed Specific Plan in combination with other reasonably foreseeable development.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Wastewater and Stormwater Impacts

Impact 3.12.5.3 Implementation of the proposed project, in combination with existing, approved, proposed, and reasonably foreseeable development, would increase the current demand for wastewater collection and treatment and stormwater facilities. The project's contribution to cumulative wastewater and stormwater treatment impacts is considered to be **less than cumulatively considerable**.

Development within Santa Rosa has the potential to result in a cumulative impact related to wastewater and stormwater services. However, the General Plan 2035 EIR identified that, with the policies included in the General Plan, the potential for development under the General Plan to result in a cumulative impact related to wastewater and stormwater services would be reduced to a less than significant level with the included General Plan policies. All of the reasonably foreseeable development in the Specific Plan area is subject to General Plan policies. The Specific Plan policies regarding wastewater and stormwater are designed to ensure the City has adequate wastewater capacity and storm drainage facilities in future planning efforts to avoid exceeding any regulations.

Therefore, the application of policies outlined in the proposed Specific Plan and in the General Plan 2035, as well as the City's required low impact development requirements, would result in a less than cumulatively considerable impact to wastewater and stormwater resources.

Mitigation Measures

None required.

3.12.6 SOLID WASTE

3.12.6.1 SETTING

The City of Santa Rosa contracts with the North Bay Corporation to provide solid waste collection and curbside recycling for residential and commercial uses in the city. The North Bay Corporation is the licensed hauler and recycler for the Specific Plan area. For residential customers, North Bay Corporation provides recycling and green waste containers and weekly collection of these materials. The North Bay Corporation currently provides a single-stream recycling program (all recyclables in one container) (General Plan 2035 DEIR, 2009).

Solid waste management in the Specific Plan area is the responsibility of the City of Santa Rosa through a franchise agreement with the County of Sonoma. The County owns the Central Disposal Facility, which includes the landfill and the Sonoma County Waste Management Agency (SCWMA); SCWMA fulfills the solid waste planning and reporting requirements for the region. Solid waste is collected and hauled to the Central Landfill for appropriate disposal, with green waste hauled to a separate processing center operated by a contractor for the SCWMA and recyclable materials taken to be processed at any of several materials recovery facilities (SCWMA 2012).

All businesses, including but not limited to nonprofits, strip malls, government offices, and schools, that generate four or more cubic yards of waste per week are required to recycle. The law also applies to multi-family dwellings of five units or more, regardless of the amount of waste generated. Businesses and multi-family dwellings are required to separate recyclable materials from their garbage and either self-haul, subscribe to hauler service, and/or otherwise arrange for the pickup of recyclables. Sonoma County's and the City of Santa Rosa's recycling efforts target single-stream recycling where cardboard, paper, bottles, and cans are mixed together. (SCWMA 2012)

3.12.6.2 REGULATORY FRAMEWORK

STATE

California Integrated Waste Management Act

The California Integrated Waste Management Act of 1989, or AB 939 (Public Resources Code, Section 42900–42927), required all California cities and counties to reduce the volume of waste deposited in landfills by 50 percent by the year 2000 and continue to remain at 50 percent or higher for each subsequent year. The purpose of this act is to reduce, recycle, and reuse solid waste generated in the state to the maximum extent feasible.

AB 939 requires each California city and county to prepare, adopt, and submit to the California Department of Resources Recycling and Recovery (CalRecycle) a source reduction and recycling element that demonstrates how the jurisdiction will meet the Integrated Waste Management Act's mandated diversion goals. Each jurisdiction's source reduction and recycling element must include specific components, as defined in Public Resources Code Sections 41003 and 41303. In addition, the source reduction and recycling element must include a program for management of solid waste generated in the jurisdiction that is consistent with the following hierarchy: (1) source reduction, (2) recycling and composting, and (3) environmentally safe transformation and land disposal. Included in this hierarchy is the requirement to emphasize and maximize the use of all feasible source reduction, recycling, and composting options in order to reduce the amount of solid waste that must be disposed of by transformation and land disposal (Public Resources Code Sections 40051, 41002, and 41302) (CalRecycle 2012).

California Solid Waste Reuse and Recycling Access Act of 1991

The California Solid Waste Reuse and Recycling Access Act requires areas to be set aside for collecting and loading recyclable materials in development projects. The act required the California Integrated Waste Management Board (now CalRecycle) to develop a model ordinance for adoption by any local agency relating to adequate areas for collection and loading of recyclable materials in development projects. Local agencies are required to adopt the model, or an ordinance of their own, governing adequate areas for collection and loading of recyclable materials in development projects. The intent of the act is to require development projects to include advanced planning that focuses on solid waste issues at the beginning of a project and implement an adequate recycling program for the development project.

LOCAL

Sonoma County Waste Management Agency

The Sonoma County Waste Management Agency, formed in 1992, is the joint powers authority of the nine cities and the County of Sonoma. The specific focus of the agency's efforts is the implementation of regional waste diversion programs as required by AB 939. As such, the agency is tasked with operating various residential and commercial recycling, hazardous waste, composting, and green building programs throughout the county.

Sonoma County Countywide Integrated Waste Management Plan

Direction for the county's solid waste management system is provided by state law (AB 939 and subsequent legislation), the Sonoma County Waste Management Agency (SCWMA), and implementation regulations adopted by CalRecycle. The Countywide Integrated Waste Management Plan regulations serve as the primary tool for satisfying the county's solid waste management needs for the next 50 years in a manner that is cost-effective and is operated to follow the State of California's solid waste management hierarchy. The hierarchy consists of waste prevention (source reduction), reuse, recycling, composting, and disposal. Additionally, the solid waste management system for the county protects public health, safety, and well-being; preserves the environment; and provides for the maximum feasible conservation of natural resources and energy. The plan contains four elements: Source Reduction and Recycling Element, Household Hazardous Waste Element, Siting Element, and the Non-Disposal Facility Element.

City of Santa Rosa General Plan

The City of Santa Rosa General Plan 2035 serves as the overall guiding policy document for the City of Santa Rosa. The following is a list of applicable General Plan goals and policies most pertinent to the Specific Plan in regard to solid waste services.

Land Use and Livability Element

Goal LUL-A: Foster a compact rather than a scattered development pattern in order to reduce travel, energy, land, and materials consumption while promoting greenhouse gas emission reductions citywide.

Policy LUL-A-3: Require development in county areas within the Santa Rosa Urban Growth Boundary to be built to City of Santa Rosa standards to ensure consistency upon annexation.

Public Services and Facilities Element

Goal PSF-H: Meet the city's solid waste disposal needs, while maximizing opportunities for waste reduction and recycling.

PSF-H-1: Continue contracting for garbage and recycling collection services. Expand the single-stream recycling program (all recyclables in one container) to all users.

PSF-H-2: Work with Sonoma County to identify alternatives to meet the need for solid waste disposal.

PSF-H-3: Expand recycling efforts in multifamily residential and commercial projects, and continue to encourage recycling by all residents.

PSF-H-4: Require provision of attractive, convenient recycling bins and trash enclosures in residential and non-residential development.

PSF-H-5: Continue public education programs about waste reduction, including recycling, yard waste, wood waste, and household hazardous waste.

PSF-H-6: Consider development of a residential and commercial food waste composting program.

Growth Management Element

Goal GM-B: Program infrastructure improvements to keep pace with new residential growth, and ensure that such growth incorporates affordable housing provisions and is balanced with conservation of resources.

Policy GM-B-3: Strongly encourage the development of off -site improvements through the use of reimbursement agreements, assessment districts and Mello Roos districts. The city will identify areas where a lack of infrastructure is creating negative, community-wide impacts to prioritize needed off -site improvements.

Policy GM-B-4: Direct growth to areas where services and infrastructure can be provided efficiently. Do not allow any development in the approximately 453-acre area generally east of Santa Rosa Avenue and north of Todd Road (as mapped in Figure 8-1 of General Plan 2035), until 2010.

3.12.6.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following State CEQA Guidelines Appendix G thresholds of significance, which state that a project would have a significant impact if it would:

1) Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs.

2) Fail to comply with federal, state, and local statutes and regulations related to solid waste.

METHODOLOGY

Evaluation of potential solid waste impacts of the proposed project is based on consultations with the Sonoma County Waste Management Agency, as well as review of the City of Santa Rosa General Plan and review of current waste reduction and recycling programs through information provided on the CalRecycle website.

Increased Demand for Solid Waste Services

Impact 3.12.6.1 Development allowed under the proposed Specific Plan would result in increased demand for solid waste services and facilities to serve the Specific Plan area. This impact would be considered **less than significant**.

Implementation of the Specific Plan would result in increased production of solid waste generated by residential occupancy and business/retail operations. Full development of the Specific Plan is anticipated to contribute 4.1 pounds of solid waste per capita per day, based on the most recent regional data reported to the California Department of Resources Recycling and Recovery (CalRecycle) (SCWMA 2012). Therefore, buildout of the Specific Plan is anticipated to contribute an additional 8.64 tons of solid waste per day, or 3,155 tons each year. However, the increase in solid waste would be reduced through current and expanded waste recycling efforts. The City, in collaboration with the SCWMA, has stated that its collection system and the County's disposal system can accommodate the waste associated with buildout of the Specific Plan area, provided that developments implement the recycling requirements and conform to legislation regarding recycling and disposal of prohibited materials (SCWMA 2012). However, to be conservative, this Draft EIR assumes that no solid waste will be recycled. As permitted daily capacity at the Central Landfill is 2,500 tons per day (SCWMA 2011), there is adequate capacity to meet the needs of the Specific Plan, even if no recycling occurs.

Under the City of Santa Rosa General Plan, Policies PSF-H-3 and PSF-H-4 have established and actively encourage residential and nonresidential recycling programs. The California Solid Waste Reuse and Recycling Access ordinance requires areas to be set aside for collecting and loading recyclable materials in development projects. Furthermore, all new and redevelopment projects must comply with Santa Rosa's Construction and Demolition Debris Franchise Agreement and prepare and implement recycling plans for their construction phase. This recycling plan will address the major materials generated by a construction project and will identify the means to divert these materials away from landfill disposal. These efforts allow the City to meet the AB 939 diversion requirements and Chapter 22 of the County Code (Section 22-7A), which explicitly bans the disposal at County disposal sites of yard debris, recyclable wood waste, scrap metal, and corrugated cardboard.

The Specific Plan includes a goal (PF-7) to ensure that solid waste disposal needs of existing and new development in the Specific Plan area would be met while providing opportunities for reduction, reuse, and recycling. This goal is supported by Policy PF-7.1, which seeks to expand recycling efforts in multi-family and commercial projects in the Specific Plan area and to continue to encourage recycling by all residents. The goal is also supported by Policy PF-7.2, which states that new development requiring demolition of existing structures in the Plan area should reuse and recycle materials to the greatest extent possible.

The Specific Plan would result in a less than significant impact in regard to solid waste capacity and disposal.

Mitigation Measures

None required.

Solid Waste Regulation Conflict

Impact 3.12.6.2 Implementation of the proposed project would not be expected to result in conflicts with any federal, state, or local solid waste regulations. This impact is considered **less than significant**.

The project will be required to comply with federal, state, and local regulations relating to the disposal of solid waste. The project would also need to participate in recycling efforts to assist the City of Santa Rosa in complying with AB 939. Compliance with these regulations will ensure that this impact remains less than significant.

Mitigation Measures

None required.

3.12.6.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for solid waste services consists of the SCWMD service area, which includes the entirety of Sonoma County. Future development in the county would further increase the amount of waste disposed of at the SCWMD landfills.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Solid Waste Impacts

Impact 3.12.6.3 The proposed project would contribute to cumulative demands for solid waste disposal services. This would be a **less than cumulatively considerable** contribution to the cumulative impact.

Development within Sonoma County has the potential to result in a cumulative impact related to solid waste service and disposal. The General Plan 2035 states that current capacity of the three landfills used by the City may not accommodate solid waste disposal needs through buildout in 2035. Sonoma County and Santa Rosa focus increasingly on waste diversion and recycling through public education and new services and facilities. These factors help accommodate the growing need for solid waste disposal while decreasing per capita waste disposal demand. Compliance with General Plan measures addressing solid waste ensures that impacts on landfills would be less than significant.

The Specific Plan's contribution of 3,155 tons of solid waste per year would not have a substantial effect on landfill capacities. Furthermore, development under the Specific Plan would be required to comply with General Plan policies regarding solid waste disposal. Under cumulative conditions, each individual development project would be required to comply with all pertinent recycling programs, including AB 939. Further, all new development would be conditioned to participate in the recycling programs offered through the City's franchised waste collection company. These measures would reduce waste generated by projects under cumulative conditions to the levels required by AB 939.

Cumulative impacts to solid waste collection and landfill capacity are considered **less than cumulatively considerable**.

Mitigation Measures

None required.

3.12.7 PARKS AND RECREATION

3.12.7.1 SETTING

Currently, the Santa Rosa Recreation, Parks and Community Services Department operates and maintains 62 parks totaling approximately 531 acres. Two main types of parks exist in Santa Rosa—neighborhood parks and community parks. Neighborhood parks are generally between 2 and 10 acres in size and are located within about a half mile of the residents they serve. Facilities at neighborhood parks often include picnic areas, playground equipment, and basketball courts. At about 10 to 25 acres, community parks serve residents throughout the city and contain more space- and cost-intensive recreational facilities such as ball fields and tennis courts. Community parks are sited so that most residents will be no further than 1 mile from a community park facility.

The Specific Plan area is served by two parks: Jennings Park and Haydn Village Park. Jennings Park is located in the southwest corner of the Plan area and comprises approximately 6.5 acres; it is a neighborhood park that is intended to serve a half-mile radius. Haydn Village Park is a 0.1-acre pocket park located on Tammy Way, intended to serve the local residents within a quarter-mile radius. (North Santa Rosa Station Area Specific Plan, 2012)

It is also important to note that there are numerous existing parks in proximity (approximately one-quarter mile) to the Specific Plan boundaries, including the Northwest Community Park (37.8 acres), Finley Community Park (21.3 acres), Jacobs Park (7.8 acres), Bicentennial Park (4.1 acres), Steele Lane Park (2.3 acres), and Brendon Park (1.3 acres), providing recreational opportunities for Specific Plan area residents.

3.12.7.2 REGULATORY FRAMEWORK

STATE

The Quimby Act

Cities and counties have been authorized since the passage of the 1975 Quimby Act (California Government Code Section 66477) to pass ordinances requiring that developers set aside land, donate conservation easements, or pay fees for park improvements. Revenues generated through the Quimby Act cannot be used for the operation and maintenance of park facilities. A 1982 amendment (AB 1600) requires agencies to clearly show a reasonable relationship between the public need for the recreation facility or parkland and the type of development project upon which the fee is imposed. Cities with a high ratio of park space to inhabitants can set a standard of up to 5 acres per thousand persons for new development. Cities with a lower current ratio can only require the provision of up to 3 acres of park space per thousand population. The calculation of a city's park space to population ratio is based on a comparison of the population count of the last federal census to the amount of city-owned parkland.

LOCAL

Santa Rosa Citywide Creek Master Plan

Recreation Goals

Objective RT-1: Develop multi-use paths where appropriate.

Objective RT-2: Provide public, neighborhood, and private access to creek side trails as appropriate.

Policy RT-2-1: Provide access to the creek trail system for people and authorized vehicles, and from neighborhoods.

Objective RT-4: Accommodate connections to regional trail systems that enhance or support the creek trail system network.

Policy RT-4-1: Cooperate with various public and private entities to create, where appropriate, new public access trails along creeks to parks and open spaces within the Urban Growth Boundary, as well as connections to regional trail systems.

City of Santa Rosa General Plan

The City of Santa Rosa General Plan 2035 serves as the overall guiding policy document for the City of Santa Rosa. The following is a list of applicable General Plan goals and policies most pertinent to the Specific Plan in regard to parks and recreation.

Land Use and Livability Element

Goal LUL-E: Promote livable neighborhoods by requiring compliance with green building programs to ensure that new construction meets high standards of energy efficiency and sustainable material use. Ensure that everyday shopping, park and recreation facilities, and schools are within easy walking distance of most residents.

Policy LUL-E-1: Provide new neighborhood park and recreation facilities, elementary schools, and convenience shopping in accordance with the General Plan Land Use Diagram.

Public Services and Facilities Element

Goal PSF-A: Provide recreational facilities and parks for all sectors of the community.

Policy PSF-A-1: Provide recreation and park facilities and services needed by various segments of the population—including specific age groups, persons with special physical requirements, and groups interested in particular activities—and make these facilities and services easily accessible and affordable to all users.

Policy PSF-A-2: Acquire and develop new park facilities to achieve a citywide standard of 6 acres of parkland per thousand residents:

- 3.5 acres of city park land;
- 1.4 acres of publicly accessible school recreational park land (defined as parkland that is open to the public during standard park hours when school is not in session);
- 1.1 acres of public serving open space.

Policy PSF-A-4: Continue planning efforts to acquire and develop parklands for all Santa Rose residents, families, and neighborhoods that promote and encourage access by a variety of alternative methods such as biking and walking, and connect public spaces using the following guidelines:

- Provide access to public plazas and gathering places within one-quarter mile of residential neighborhoods.
- Provide access to neighborhood parks within one-half mile of residential neighborhoods.
- Provide access to community parks within one mile of residential neighborhoods.

Policy PSF-A-8: Integrate the bicycle and pedestrian path networks envisioned in both the Citywide Creek Master Plan and updated Bicycle and Pedestrian Master Plan with regional park plans, so that users can safely and comfortably access the full range of public open spaces.

Policy PSF-A-11: Community gardens are encouraged within city parks and on city-owned property. As part of the master plan process for new parks, the city shall consider implementing new community gardens based on input from residents.

Policy PSF-A-15: Require the provision of private play space and/or recreation centers for children, families, and older adults in small lot subdivisions, multifamily developments, and gated communities, on each lot or in common open space areas as part of the development project.

Policy PSF-A-16: Pursue development of public plazas and gathering places where provision of a neighborhood park is not feasible or where they can be connected to existing public spaces utilizing pathways, trails, and bridges.

Policy PSF-A-17: Develop special purpose parks and facilities for each recreation and park planning area throughout the city, including but not limited to multi-generational recreational centers, aquatic centers, education and community service centers and other unique facilities, with priority given to areas experiencing high growth.

Policy PSF-A-18: Develop multi-use pathways and linear parks along creeks designated by the Santa Rosa Citywide Creek Master Plan. Create a system of interconnected linear parks that provide access to parks used for active recreation as well as to open space areas that are used primarily for more passive recreation such as hiking and wildlife viewing.

Goal PSF-B: Ensure adequate funding for recreation and parks improvements and maintenance.

Policy PSF-B-4: Establish and annually evaluate mitigation fees for environmentally sensitive resource lands and/or endangered species habitat areas that are subject to development, and apply mitigation fees according to the quadrant of the city where these issues are appropriate. Evaluate fees annually to updated land costs and mitigation ratios.

Open Space and Conservation Element

Goal OSC-A: Maximize the benefits of open space.

Policy OSC-A-1: Cooperate with various public and private entities to create new public access trails and parks, open spaces, and drainage ways with the city, as well as to trail systems outside the UGB. Priorities for trail access outside of the UGB should include:

- Joe Rodota Trail (from Santa Rosa to Sebastopol);
- Bay Area Ridge Trail;
- Santa Rosa Creek Trail;
- Laguna Trail;
- Roseland Creek Trail;
- Colgan Creek Trail; and
- Paulin Creek Trail.

Santa Rosa City Code: Chapter 19-70 Park and Recreation Land and Fees

Santa Rosa City Code Chapter 19-70 requires that 6 acres of property for each 1,000 persons residing within Santa Rosa be devoted to local park and recreational purposes. The 6-acre requirement can be satisfied by a combination of parkland and park development dedications, open space, and school recreational land. The acreage of each park type per 1,000 residents is determined by the City Council by resolution. Additionally, parkland and park development standards are required to meet the minimum ratio of parkland to residents, as set forth in the Quimby Act.

3.12.7.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following State CEQA Guidelines Appendix G thresholds of significance, which state that a project would have a significant impact if it would:

1) 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, or other performance objectives for parks.

METHODOLOGY

Evaluation of potential recreation impacts of the proposed project was based on consultation with the Santa Rosa Recreation, Parks and Community Services Department, as well as review of the City of Santa Rosa General Plan.

Impacts to Park Facilities

Impact 3.12.7.1 The proposed project would not contribute to deterioration of existing facilities. This impact is considered **less than significant**.

An increase in population under the Specific Plan could have the potential to increase the demand on park and recreational facilities serving the Specific Plan area. Buildout under the Specific Plan would add approximately 1,714 new residential units with an estimated buildout population of 4,217 people beyond what was assumed in the General Plan 2035. This increase in population could affect the provision of park and recreational facilities.

The Specific Plan identifies general locations for several new urban plazas or open spaces, including in the unincorporated county area north of Guerneville Road, in the Coddingtown Mall area, near the landing of the proposed pedestrian and bicycle bridge over Highway 101, and near the SMART station on Guerneville Road. Consistent with the General Plan, the North Station Area Plan also identifies the proposed neighborhood park located on the vacant land south of Jennings Avenue. In addition, new bicycle and pedestrian paths are proposed along Steele Creek, Paulin Creek, and the railroad line, as well as connecting the proposed pedestrian/bicycle bridge over Highway 101 to the SMART station. (North Santa Rosa Station Area Specific Plan, 2012)

As mentioned above, the Specific Plan has identified locations for several new urban plazas or open spaces within the Specific Plan area. Since the majority of the Specific Plan area is already developed, the remainder of the parkland needed to meet City standards would most likely be developed outside of the Specific Plan area or would be provided through the improvement of existing facilities within the Specific Plan area using fees collected from new development pursuant to City Code Chapter 19-70, as allowed by the Quimby Act. These fees would be collected in compliance with the City's Park Development Fees ordinance, under Chapter 19-70 (Park and Recreation Land and Fees) of the City Code, as mentioned above.

Through implementation of the North Santa Rosa Station Area Specific Plan, all properties within the Plan area will be within one-half mile of a neighborhood park (North Santa Rosa Station Area Specific Plan, 2012). Furthermore, Specific Plan Policy LU-3.1 seeks to expand the system of parks, trails, and recreational opportunities in the Plan area. Specific Plan Policy PF-2.1 explores public/private partnerships for park maintenance, such as with neighborhood associations with built-in maintenance agreements. Policy PF-4.2 would use the City's Capital Improvement Program, Park and Utility Fees, redevelopment program funds, federal and state grant funds, and other funding sources to implement area-wide improvements that cannot be conditioned as part of private development projects. Given these existing and proposed policies and regulations, which will ensure that new development and the City provide adequate new recreational opportunities to avoid overusing existing facilities, a less than significant impact in regard to parks and recreation facilities is anticipated from implementation of the proposed Specific Plan.

Mitigation Measures

None required.

3.12.7.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for parks and recreation consists of the Santa Rosa Recreation, Parks and Community Services Department service area boundaries, which includes the City of Santa Rosa.

Cumulative Impacts to Park Facilities

Impact 3.12.7.2 Implementation of the proposed Specific Plan, in conjunction with other future development, would not require additional park and recreation facilities within the boundaries of the city. This impact would be **less than cumulatively considerable**.

Development within the Santa Rosa Urban Growth Boundary has the potential to result in a cumulative impact related to parks and recreational facilities. However, the General Plan 2035 EIR identified that with the policies included in the General Plan, the potential for growth under the General Plan to result in a significant impact related to parks and recreational services would be reduced to a less than significant level. The Specific Plan would comply with these same policies and has included several new urban plazas or open spaces within the Specific Plan area. Furthermore, the population increase of 4,217 residents, as allowed under the Specific Plan, would have a less than significant effect on the City's parks capacity. As a result, the Specific Plan would not contribute to a significant cumulative impact related to parks and recreational facilities.

With the implementation of the 1975 Quimby Act (California Government Code Section 66477), the dedication of parkland acres for larger projects, payment of in-lieu fees, and implementation of related policy provisions would reduce the cumulative parks and recreation impacts to less than cumulatively considerable levels.

Mitigation Measures

None required.

3.12.8 ELECTRICAL, NATURAL GAS, AND TELECOMMUNICATIONS

3.12.8.1 SETTING

TELEPHONE AND CABLE

The telephone service in Santa Rosa is provided by AT&T. AT&T has an extensive network of underground and overhead facilities that are located on or adjacent to all the areas of the Specific Plan.

The cable service in Santa Rosa is provided by City contract with Comcast. Comcast has a network of underground and overhead facilities serving most areas of Santa Rosa. If off-site improvements are necessary, the developer will be responsible for trenching to the closest cable facility, regardless of whether the line has enough capacity to serve the development.

Utility infrastructure in the area is located both above ground on utility poles and below ground. Underground utilities appear to be located in areas that are typical of public utility easements, which includes alleys, streets, and sidewalks (Coastland 2012).

GAS AND ELECTRIC

Pacific Gas and Electric (PG&E) provides electric and natural gas services. Electrical infrastructure in the area is located above ground on utility poles as well as below ground. Natural gas pipelines are below ground. (Coastland 2012)

3.12.8.2 REGULATORY FRAMEWORK

STATE

California Building Energy Efficiency Standards

Title 24, Part 6 of the California Code of Regulations, known as the Building Energy Efficiency Standards, was established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. On January 1, 2010, the California Building Standards Commission adopted CALGreen and became the first state in the United States to adopt a statewide green building standards code. CALGreen requires new buildings to reduce water consumption by 20 percent, divert 50 percent of construction waste from landfills, and install low pollutant-emitting materials. The City of Santa Rosa began enforcing the 2010 California Code of Regulations, Title 24 (CCR T24) for all new building permit applications received after January 1, 2011. Part 11 of the California Code of Regulations, Title 24, now includes CALGreen. CALGreen applies to all new buildings and is intended to set mandatory minimum green building standards and include optional tiers that may, at the discretion of the local jurisdiction be applied. Tier 1 compliance, now required by the City, consists of the inclusion of a selection of a variety of energy reduction measures.

LOCAL

City of Santa Rosa General Plan

The City of Santa Rosa General Plan 2035 serves as the overall guiding policy document for the City of Santa Rosa. The following is a list of applicable General Plan goals and policies most pertinent to the Specific Plan in regard to electrical, natural gas, and telecommunication services.

<u>Housing Element</u>

Goal H-G: Develop energy efficient residential units and rehabilitate existing units to reduce energy consumption

Policy H-G-1: Maximize energy efficiency in residential areas. Utilize the following techniques: implement the Santa Rosa – Build It Green (SR-BIG) program; fund energy conservation through the Housing Authority's rehabilitation loans; promote home improvement strategies for energy efficiency; and consider a program which would require energy efficiency improvements when a residential structure undergoes transfer of title or major renovation.

Policy H-G-2: Promote energy efficiency through site planning and building design by assisting residential developers in identifying energy conservation and efficiency measures appropriate to the Santa Rosa area.

Policy H-G-5: Promote the use of fuel efficient heating and cooling equipment and other appliances.

Policy H-G-6: Continue to fund energy conservation through the Housing Authority's rehabilitation loans and develop programs to assist low income households and rental properties in meeting weatherization and energy conservation needs.

Policy H-G-7: Work with organizations such as Solar Sonoma County to develop public private partnerships supporting energy efficiency retrofit programs for existing residential structures.

Policy H-G-8: Increase local energy awareness.

Open Space and Conservation Element

Goal OSC-J: Take appropriate actions to help Santa Rosa and the larger Bay Area region achieve and maintain all ambient air quality standards.

Policy OSC-J-3: Reduce particulate matter emission from wood burning appliances through implementation of the city's Wood Burning Appliance code.

Goal OSC-K: Reduce energy use in existing and new commercial, industrial, and public structures.

Policy OSC-K: Reduce energy use in existing and new commercial, industrial, and public structures.

Policy OSC-K-1: Promote the use of site planning, solar orientation, cool roofs, and landscaping to decrease summer cooling and winter heating needs. Encourage the use of recycled content construction materials.

Policy OSC-K-2: Identify opportunities for decreasing energy use through installation of energy efficient lighting, reduced thermostat settings, and elimination of unnecessary lighting in public facilities.

Policy OSC-K-3: Identify and implement energy conservation measures that are appropriate for public buildings. Implement measures that are at least as effective as those in the retrofit ordinances for commercial and office buildings.

Goal OSC-L: Encourage the development of nontraditional and distributed sources of electrical generation.

Policy OSC-L: Encourage the development of nontraditional and distributed sources of electrical generation.

Policy OSC-L-1: Reconsider any existing codes and policies that constrain or prohibit the installation of environmentally acceptable forms of distributed generation.

Policy OSC-L-2: Participate in state and local efforts to develop appropriate policies and review procedures for the installation of photovoltaic solar and other environmentally acceptable forms of distributed generation.

3.12.8.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

For the purposes of this DEIR, the following criteria were used in determining whether the proposed project would result in a significant impact to electricity, natural gas, or telecommunication service. An impact would be considered significant if the project would:

1) Result in the increased demand for additional personnel, equipment, or facilities that impairs the ability of electrical, natural gas, and telecommunication service providers to maintain an acceptable level of service.

2) Inefficient, wasteful, and unnecessary consumption of energy.

METHODOLOGY

Evaluation of potential electricity, natural gas, and telecommunication impacts of the proposed project was based on consultations with PG&E, AT&T, and Comcast personnel as well as review of the City of Santa Rosa General Plan.

IMPACTS AND MITIGATION MEASURES

Impacts to Electrical, Natural Gas, and Telecommunication Service

Impact 3.12.8.1 Implementation of the proposed project would increase demand for electric, natural gas, and telecommunication services and require the extension of existing infrastructure. This impact would be **less than significant**.

Electrical, natural gas, and telecommunication improvements are typically identified on a project-level and not a planning-level basis. However, AT&T has stated that they will be able to serve all improvements required under the Specific Plan. Comcast will have to deploy more fiber, fiber nodes, and coax cables as buildout of the Specific Plan area takes place. Comcast will approach the expansion on a case-by-case basis, dependent upon the needs and requests of property owners. For example, Comcast may not be required to feed all of the expansion, and certain commercial buildings may not want Comcast to service their facilities. (Coastland 2012)

The Specific Plan includes policies that support the need for new and improved infrastructure in the Specific Plan area. Policy PF-1.1 requires the provision of utility upgrades as needed to support increased density and intensity in the area. Policy PF-4.1 would ensure that private development provides its fair share of funding for necessary improvements to public services and utilities in the Plan area. Additionally, Specific Plan Policy PF-4.2 would use the City's Capital Improvement Program, Park and Utility Fees, redevelopment program funds, federal and state grant funds, and other funding sources to implement area-wide improvements that cannot be conditioned as part of private development projects. Finally, Policy PF-1.3 explores options to underground existing overhead facilities to improve the aesthetics and reliability of the utilities.

As stated above, the City requires all new construction to meet green building standards. Compliance with the General Plan measures mentioned above would exceed common energy conservation policies and can be expected to result in at least a 5 percent reduction in energy use in existing residential structures and a 10 percent reduction in existing nonresidential uses. Additionally, more than 10 percent reduction in new residential units will result, alongside more than 15 percent reduction in new commercial, industrial, and public facilities.

Compliance with General Plan and Specific Plan policies would ensure that impacts related to the provision of electrical, natural gas, and telecommunication services are less than significant.

Mitigation Measures

None required.

3.12.8.4 CUMULATIVE SETTING, IMPACTS, AND MITIGATION MEASURES

CUMULATIVE SETTING

The cumulative setting for electrical, natural gas, telephone, and cable services encompasses the service area of the each particular service provider (e.g., PG&E, AT&T, Comcast), under buildout of the Specific Plan area. The cumulative setting for electric service and natural gas also includes Northern California, which until recently was experiencing a great amount of growth and a subsequent cumulative demand for these services and related infrastructure.

CUMULATIVE IMPACTS AND MITIGATION MEASURES

Cumulative Impacts to Electric, Natural Gas, and Telecommunication Service and Infrastructure

Impact 3.12.8.2 Implementation of the proposed Specific Plan, as well as potential development in the surrounding areas, would result in an increase in cumulative utility service demands. The proposed Specific Plan would have a **less than cumulatively considerable** impact on electrical, natural gas, telephone, and cable television services.

As discussed above, project-specific energy impacts related to land use patterns, energy efficiency in new construction and building retrofits, energy consumption of non-renewable resources, and the use of energy resources for transportation systems would be less than significant. Cumulative development in the city would be required to adhere to the progressive energy conservation policies outlined in the General Plan 2035 as well as City Resolutions 26572 and 27001, which require new construction to adhere to green and sustainable building standards. In addition, the plans and policies included in General Plan 2035 would encourage implementation of energy conservation programs, result in a reduction in use of non-renewable fuels, and foster the use of renewable resources and would reduce per capita energy use.

However, cumulative projects in the surrounding region may increase overall demand and result in a significant cumulative increase in the demand for energy. Thus, the overall increase in regional energy use could result in a significant cumulative impact. However, because the proposed Specific Plan would be subject to City policies and programs designed to reduce its energy use, as discussed above, the Specific Plan's contribution to the cumulative impact would be less than cumulatively considerable.

Mitigation Measures

None required.

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3.13 Traffic and Circulation

This section describes potential impacts on the transportation system associated with adoption of the proposed North Santa Rosa Station Area Specific Plan. The impact analysis evaluates the local and regional roadway, transit, bicycle, pedestrian, and aviation components of the overall transportation system. This traffic analysis was conducted by Whitlock & Weinberger Transportation, Inc. (W-Trans).

3.13.1 EXISTING SETTING

The existing physical conditions of the transportation system are described below. This description is organized by transportation system component within the project area.

ROADWAY SYSTEM

Multimodal level of service (LOS) performance measures are determined at the corridor level. The following corridors and segments were identified as those most critical in the Specific Plan area circulation framework:

- Guerneville Road-Steele Lane (Marlow Road to Mendocino Avenue)
- West College Avenue (Marlow Road to Mendocino Avenue)
- North Dutton Avenue (Guerneville Road to West College Avenue)
- Range Avenue-Frances Street (Paulin Creek to Cleveland Avenue)
- Cleveland Avenue (Paulin Creek to West College Avenue)
- Coffey Lane (Paulin Creek to Guerneville Road)
- West Steele Lane (Comstock Middle School to Guerneville Road)
- Jennings Avenue (Ridley Avenue to SMART)
- Jennings Avenue (SMART to Cleveland Avenue)

Guerneville Road-Steele Lane: Within the study corridor, Guerneville Road-Steele Lane has a minimum of two through lanes in each direction plus left-turn lanes at intersections. The posted speed limit is 40 miles per hour (mph) west of Range Avenue, decreasing to 35 mph east of Range Avenue. The corridor is classified in the Santa Rosa General Plan as a regional/arterial street. Sidewalks are provided on both sides of the street, except for the block between Lance Drive and North Dutton Avenue where sidewalks are provided only on the north side. Class II bicycle lanes are provided along both sides of the street west of Range Avenue, but there are no bicycle lanes to the east.

West College Avenue: West College Avenue has two through lanes in each direction, plus left-turn lanes at intersections and a two-way left-turn lane west of North Dutton Avenue. The posted speed limit is 30 mph east of North Dutton Avenue and increases to 40 mph west of North Dutton Avenue. The route is identified as a regional/arterial street by the City of Santa Rosa. Bicycle lanes do not exist along the corridor. Continuous sidewalks are provided along the north side of the street, with intermittent sidewalks on the south side.

North Dutton Avenue: Within the Plan area, North Dutton Avenue is a four-lane regional/arterial street with a two-way left-turn lane south of Jennings Avenue. The posted speed limit is 35 miles per hour (mph) south of Jennings Avenue, increasing to 40 mph north of Jennings Avenue. Continuous sidewalks exist on both sides of the street, with many areas having a wide landscaping buffer between the sidewalk and street. A crosswalk with pedestrian-activated flashing beacons exists mid-segment at the intersection with Jennings Avenue. Additionally, striped bicycle lanes are present in both directions along the corridor.

Range Avenue-Frances Street: North of Guerneville Road, Range Avenue is a four-lane street with left-turn lanes at intersections. Along the frontage of Coddingtown Mall, the corridor has five lanes (two lanes in each direction and a center two-way left-turn lane) that transition to a two-lane street south of the mall. A two-way left-turn lane is present south of Jennings Avenue for approximately 900 feet where the street turns into Frances Street and transitions back to a two-lane roadway. North of Guerneville Road, the posted speed limit is 40 mph, and to the south it is 30 mph. Full sidewalk improvements are provided north of Edwards Avenue, but south of this street they are intermittent and mostly in front of more recent development. As part of a recent pavement rehabilitation project, bicycle lanes were added on Range Avenue north of West Steele Lane. Additionally, a southbound bicycle lane/shoulder is provided along a recent residential development south of Jennings Avenue, but no other bicycle facilities are provided. The Santa Rosa General Plan classifies the corridor as a transitional/collector street.

Cleveland Avenue: For most of the corridor Cleveland Avenue has four lanes, with two lanes southbound, one lane northbound, and a center two-way left-turn lane. Adjacent to Coddingtown Mall, the street widens to two lanes in each direction plus a center two-way left-turn lane that continues to the north. The posted speed limit is 35 mph, and the corridor is classified as a regional/arterial street. Continuous sidewalks are provided along both sides of the street to the north of Guerneville Road. To the south of Guerneville Road, sidewalks exist along the west side of the street, but most of the east side of the street abuts the freeway and therefore has no sidewalks (and no pedestrian demand). Sidewalks exist on the east side of the street near Coddingtown Mall and south of Ridgway Avenue where Cleveland Avenue is farther away from the freeway.

Coffey Lane: Coffey Lane is a transitional/collector street that runs parallel to the railroad tracks for much of the study segment. The street generally has two lanes, with additional turn lanes at intersections. South of West Steele Lane, the posted speed limit is 35 mph, with a 30 mph limit to the north. Bicycle lanes are provided on both sides of the street. A continuous sidewalk is provided along the east side of the street, but sidewalk is generally not provided along the west side where the street abuts the railroad tracks; however, west-side sidewalks are provided in front of developed parcels.

West Steele Lane: West Steele Lane is a transitional/collector street with a two-lane configuration and left-turn lanes at major intersections. West of Coffey Lane, the posted speed limit is 35 mph, decreasing to 30 mph to the east. Continuous sidewalks are provided along both sides of the street, with many areas having a landscaped buffer. Continuous bicycle lanes are provided in both directions along the corridor.

Jennings Avenue: Jennings Avenue is discontinuous within the corridor due to a gap at the railroad. While the entire corridor has two lanes, the characteristics of the street change often. From Ridley Avenue to Clover Drive, the street is fully improved with sidewalks and parking along both sides of the street. East of Clover Drive to the railroad tracks, sidewalks are intermittent and the width of the street varies. East of the railroad tracks to Range Avenue, sidewalks are provided on both sides, but they are intermittent to the east of Range Avenue where the street width varies. The corridor is classified as a transitional/collector street with a speed limit of 25 mph. No bicycle lanes exist along the street.

Highway 101: Highway 101 is a major north–south corridor that connects communities within Sonoma County and the remainder of the Bay Area to the south and ultimately to Oregon to the north. Within Santa Rosa, Highway 101 has three lanes in each direction, two of which are mixed-flow lanes and the third is a high-occupancy vehicle (HOV) carpool lane during morning and evening commute periods. Outside of the posted commute time periods, the HOV lanes can be used by all drivers. The following three segments of Highway 101 in Santa Rosa were studied to determine the Specific Plan's impact on freeway operations:

- Downtown Santa Rosa to College Avenue
- College Avenue to Steele Lane
- Steele Lane to Bicentennial Way

Based on review and analysis of the automobile, transit, bicycle, and pedestrian conditions for the study corridors, each of the modes was assigned an LOS using the criteria and methods described in the Highway Capacity Manual 2010 (Transportation Research Board 2010). The p.m. peak hour results are summarized in **Table 3.13-1**, and calculations are provided in the traffic report prepared for the project.

TABLE 3.13-1
EXISTING PM PEAK HOUR MULTIMODAL LOS COMPARISON

Corridor	Automobile	Transit	Bicycle	Pedestrian
1. Guerneville Road–Steele Lane				
Eastbound	C	B	D	C
Westbound	C	B	D	D
2. West College Avenue				
Eastbound	D	C	E	C
Westbound	C	C	E	C
3. Dutton Avenue				
Northbound	B	C	D	C
Southbound	A	C	D	C
4. Range Avenue–Frances Street				
Northbound	B	C	D	B
Southbound	C	C	D	B
5. Cleveland Avenue				
Northbound	B	C	E	D
Southbound	C	C	D	D
6. Coffey Lane				
Northbound	C	C	D	B
Southbound	B	C	C	B

Corridor	Automobile	Transit	Bicycle	Pedestrian
7. West Steele Lane				
Eastbound	C	C	D	C
Westbound	C	C	D	C
8. Jennings Avenue (west)				
Eastbound	–	–	D	A
Westbound	–	–	D	A
9. Jennings Avenue (east)				
Eastbound	–	–	D	A
Westbound	–	–	D	A

Following are brief descriptions of the multimodal LOS results by corridor.

Guerneville Road-Steele Lane

Automobile traffic on this major corridor flows acceptably at LOS C, with traffic progression assisted by the adaptive signal control system maintained by the City. The presence of several CityBus and Sonoma County Transit stops along the corridor, in combination with adequate pedestrian connectivity, results in LOS B for transit. Bicycle circulation is LOS D and is affected by the high traffic volumes and lack of continuous bike lanes and/or shoulders. Pedestrian circulation is LOS C/D, negatively affected by the lack of buffer space between sidewalks and lanes with high traffic volumes, as well as by the longer crossing distances at intersections.

West College Avenue

Automobile operation is currently near the LOS C/D threshold. Congestion at the College Avenue intersections at and near Highway 101 results in relatively low speeds. Transit operates at LOS C, with similar characteristics to those described for the Guerneville Road-Steele Lane segment. Bicycle circulation is LOS E due to high traffic volumes, speeds, and lack of bike lanes and/or shoulders. Pedestrian circulation is LOS C due to some gaps in the sidewalk system and other characteristics similar to those described for the Guerneville Road-Steele Lane corridor.

Dutton Avenue

This corridor operates at LOS A/B for vehicles and LOS C for transit. The bicycle result of LOS D is largely attributable to the high speeds of vehicles. Pedestrian circulation is LOS C. This corridor may be an example of a location where ample vehicle capacity is negatively affecting bicyclist and pedestrian circulation.

Range Avenue-Frances Street

Auto operation is currently near the LOS B/C threshold along the corridor. Transit operation varies along the corridor though is LOS C overall due to the presence of the transfer center near Coddingtown Mall. Bicycle circulation operates at LOS D. While large portions of the corridor lack bicycle lanes and/or shoulders, bicycle operations are improved by the relatively low volume and speed of traffic. While there are some gaps in the sidewalk network on the southern portion of the corridor, pedestrian circulation is LOS B overall.

Cleveland Avenue

The corridor is operating at the LOS B/C threshold for autos. Transit service is limited mainly to lines operating between College Avenue and Edwards Avenue and on intersecting streets, but due to the number of routes on intersecting streets, transit service operates at LOS C. Bicycle circulation is at the LOS D/E threshold, which is the worst among the corridors analyzed in the Specific Plan area. This is attributable to the lack of bike lanes or shoulders, vehicle speeds, narrower vehicle travel lanes, and long wait times to cross the major Guerneville Road and West College Avenue corridors. Pedestrian operation is LOS D.

Coffey Lane

The Coffey Lane corridor is functioning at LOS B/C for vehicle and LOS C for transit modes. Bicycle operation is LOS D/C, and pedestrian operation at LOS B.

West Steele Lane

Like the Coffey Lane segment, this segment is operating at LOS C for vehicle and transit modes. Bicycle operation is LOS D, negatively affected by the frequency of driveways and parking activity along the segment. Pedestrian operation is LOS C.

Jennings Avenue

The methodologies for determining automobile and transit LOS are not applicable on minor streets such as Jennings Avenue. Both the eastern and western portions of the Jennings Avenue corridor are operating well within traffic levels appropriate for their collector/transitional street categories. Characteristics such as traffic volumes and vehicle speeds are still considered when determining bicycle and pedestrian LOS. Bicycle operation is at LOS D on the segments of Jennings Avenue both to the east and west of the Sonoma-Marin Area Rail Transit (SMART) rail corridor. This is attributable to portions of the streets having narrow paved width with no shoulders, as well as a high frequency of driveways. Pedestrian operation is LOS A on both sides of the rail corridor.

Existing Highway 101 Operation

Mainline Operation

The three freeway segments of Highway 101 studied are operating unacceptably at LOS D or worse during the p.m. peak period except for the southbound segment from Steele Lane to Bicentennial Way, which currently operates acceptably at LOS C. Freeway operations are summarized in **Table 3.13-2**, and calculations are provided in the traffic report prepared for the project.

TABLE 3.13-2
EXISTING PEAK HOUR FREEWAY OPERATIONS

Highway 101 Study Segments	Flow Rate	Level of Service
Downtown Santa Rosa to College Avenue		
Northbound	2,119	E
Southbound	1,314	C
College Avenue to Steele Lane		
Northbound	2,012	D
Southbound	1,806	D
Steele Lane to Bicentennial Way		
Northbound	1,882	D
Southbound	1,467	C

Note: Flow rate is measured in passenger cars per hour per lane.

Ramp Operations

Ramp intersections at College Avenue and Steele Lane currently operate acceptably at LOS C or better during the p.m. peak period. Vehicle queues on the Highway 101 southbound and Highway 101 northbound off-ramps at the College Avenue and Steele Lane interchanges are accommodated within available storage. A summary of the freeway levels of service and off-ramp queues is shown in **Table 3.13-3,** and calculations are provided in the traffic report prepared for the project.

TABLE 3.13-3
EXISTING PM PEAK HOUR FREEWAY RAMP OPERATIONS

Highway 101 Ramp Intersection	Intersection Operations		Off-Ramp Queuing	
	Delay	Level of Service	Available Storage	Maximum Queue
College Avenue				
Northbound	17.6	B	630 feet	255
Southbound	13.2	B	800 feet	141
Steele Lane				
Northbound	23.3	C	850 feet	222
Southbound	16.4	B	1,080 feet	235

Note: Delay measured in seconds.

ALTERNATIVE TRANSPORTATION MODES

Transit System

Santa Rosa CityBus

Santa Rosa CityBus is the primary transit provider in Santa Rosa. CityBus provides regularly scheduled fixed-route service to residential neighborhoods, major activity centers, and transit hubs within the city limits. Seventeen fixed routes are operated with wheelchair accessible, low-floor buses, which can accommodate up to two bikes on bike racks attached to the front of each bus. CityBus routes are designed around a timed-transfer method where buses serving different routes arrive and depart at designated transfer locations at routine periodic intervals. On weekdays, routes typically depart every 30 minutes between 6:00 a.m. and 7:45 p.m. On Saturdays, routes depart every hour between 6:00 a.m. and 7:00 p.m. (routes 9 and 12 depart every 30 minutes). On Sundays, routes typically depart every hour between 10:00 a.m. and 4:45 p.m.

The primary transit hub in the Specific Plan area is the Northside Transfer Center, which is located at Coddingtown Mall on Range Avenue near Guerneville Road. The Northside Transfer Center consists of an extended bus pullout with a series of all-weather transit shelters, benches, street lighting, bicycle parking, and an information kiosk. The site serves CityBus routes 10, 11, 15, and 17.

Paratransit

Paratransit, also known as dial-a-ride or door-to-door service, is available for those who are unable to independently use the transit system due to a physical or mental disability. Individuals must be registered and certified as Americans with Disabilities Act (ADA)-eligible before using the service. The City currently contracts out paratransit service, which provides curb-to-curb transportation for disabled riders within city limits and in the Roseland area. Service hours are Monday through Saturday from 6:00 a.m. to 8:00 p.m. and Sunday from 9:00 a.m. to 5:00 p.m. Ride reservations can be scheduled daily.

Sonoma County Transit

Sonoma County Transit also provides regular service into and around the City of Santa Rosa and the Specific Plan area. Sonoma County Transit Routes 44 and 48 serve the Northside Transfer Center and run on a one- to two-hour headway schedule on weekdays and two- to three-hour headway schedule on weekends.

SMART Rail Transit

The Sonoma-Marin Area Rail Transit (SMART) commuter rail system is a 70-mile rail line that is planned to run from Cloverdale, at the north end of Sonoma County, to Larkspur, where the Golden Gate Ferry connects Marin County with San Francisco. Along the way, SMART will have stations at the major population and job centers of the North Bay including the Guerneville Road station. Upon completion, SMART will also provide a critical north–south transportation route for bicyclists and pedestrians, with a combination of multi-use pathways and on-street facilities located along or adjacent to the right-of-way between Cloverdale and Larkspur. The 14 stations along the corridor are being designed to accommodate available feeder bus services, shuttle services, and, in selected suburban locations, park-and-ride facilities. Commuter-oriented passenger train service will be provided by an estimated 14 round-trip trains per day operating at 30-minute intervals in the morning and evening peak commute hours during the week.

SMART is planning to initiate rail service in the year 2015 or 2016 on what is being referred to as the initial operating segment. The initial operating segment runs from the north Santa Rosa station on the north to the San Rafael Civic Center on the south.

The SMART Guerneville Road station will include a raised platform with shelter, benches, and ticket kiosks between the mainline tracks and a rail siding. The station is planned to include a transit plaza for bus transfers as well as bicycle racks, and at buildout will also include 350 commuter parking spaces.

Bicycle and Pedestrian System

Existing Bikeway and Trail Facilities

The City of Santa Rosa is served by an expanding network of Class II bike lanes on arterial streets and off-street multi-use trails along local creeks. Significant portions of the city's on-street bikeway network within the study area are completed. Although the existing bikeway network is not completely contiguous, bicyclists traveling to the site from outlying neighborhoods can choose from a variety of on- and off-street bikeways that lead toward the station site. In the immediate vicinity of the station, direct access is provided to the site for bicyclists from the east and west via Class II bike lanes on Guerneville Road. From the north, access is provided via a combination of Class II bike lanes and a Class III bike route on Coffey Lane. From the south, access to the site is provided via Class II bike lanes on Dutton Avenue. An unpaved trail exists along Paulin Creek between West Steele Lane and Apache Street, and between Coffey Lane and McBride Lane. An unpaved path also exists along the SMART right-of-way between Guerneville Road and Jennings Avenue.

Bicycle Support Facilities

Bicycle support facilities generally consist of bicycle racks and lockers, as well as facilities to shower and/or change and store clothing and equipment. Short-term bicycle parking spaces are currently provided at the Northside Transfer Center at Coddingtown Mall and at various commercial locations throughout the study area. Shower and locker facilities are provided at the Santa Rosa Junior College Campus.

Existing Sidewalk Facilities

Pedestrian facilities include sidewalks, crosswalks, pedestrian signals, curb ramps, and streetscape amenities. Nearly complete sidewalk coverage, accessible curb ramps, and marked crosswalks are provided along arterial streets in the study area. High-visibility crosswalk markings and pedestrian-activated flashers are provided at uncontrolled midblock crosswalk locations adjacent to Santa Rosa Junior College and the Northside Transfer Center. Sidewalks in the Plan area generally range in width from 4 to 10 feet. Pedestrian amenities provided throughout the study area include accessible pedestrian ramps, pedestrian signals, decorative paving and crosswalk treatments, curb extensions, pedestrian-scale lights, transit shelters, benches, street trees, and public art, among others.

While the pedestrian network is generally well developed in the Plan area, there are some locations where gaps in the sidewalk network can be found. Short gaps exist along undeveloped properties and various frontages on West College Avenue, Jennings Avenue, and Guerneville Road.

3.4.2 REGULATORY FRAMEWORK

STATE

Caltrans Traffic Operation Standards

The California Department of Transportation (Caltrans) *Guide for the Preparation of Traffic Impact Studies* (2002) includes criteria for evaluating the effects of land use development and changes to the circulation system on state highways. Caltrans maintains a target LOS at the transition between LOS C and LOS D for freeway facilities, which translates to a service flow rate of approximately 1,680 passenger cars per hour per lane.

LOCAL

City of Santa Rosa Parking Requirements

The 2004 Santa Rosa Zoning Code established residential parking requirements for multi-family units of 1.0 covered space plus half a visitor space per studio or 1-bedroom unit. Units with 2.0 or more bedrooms are required to provide 1.0 covered space plus 1.5 visitor spaces per unit. On-street spaces fronting the development may be counted toward the supply of visitor spaces. General retail and general office uses are required to provide 1.0 parking space per 250 square feet of building space. Parking requirements for public and institutional uses vary by specific use (e.g., meeting facility, library, museum, park/playground, school).

Multimodal Operation Standards

The City of Santa Rosa has no established criteria for multimodal levels of service. For this Draft EIR, the multimodal level of service standard is LOS D.

City of Santa Rosa General Plan

The Santa Rosa General Plan 2035 serves as the overall guiding policy document for the City. The following is a list of applicable General Plan goals and policies most pertinent to the Specific Plan in regard to traffic and circulation issues.

<u>Transportation Element</u>

Goal T-A: Provide a safe and sustainable transportation system.

Policy T-A-5: Pursue cooperation between local and regional transportation agencies to coordinate multi-modal connections throughout the city.

Goal T-F: Develop a viable solution for regional through traffic on north-south and east-west corridors.

Policy T-F-3: Explore alternative circulation network improvements to accommodate regional through-traffic, focusing on regional/arterial street circulation and regional transportation routes.

Goal T-H: Expand the existing transit network to reduce greenhouse gas emissions and to provide convenient and efficient public transportation to workplaces, shopping, SMART stations, and other destinations.

Policy T-H-3: Require new development to provide transit improvements, where a rough proportionality to demand from the project is established. Transit improvements may include:

- Direct and paved pedestrian access to transit stops;
- Bus turnouts and shelters; and
- Lane width to accommodate buses.

Goal T-I: Support implementation of rail service along the Northwest Pacific Railroad.

Policy T-I-1: Support efforts to implement rail service along the NWPRR.

Policy T-I-2: Preserve options for future rail stations along the NWPRR corridor by zoning land in proximity to the potential station sites for higher residential densities and/or mixed use development.

Goal T-J: Provide attractive and safe streets for pedestrians and bicyclists.

Policy T-J-3: Strengthen and expand east-west linkages across the Highway 101 corridor.

Policy T-J-4: Provide street trees to enhance the City's livability and to provide identity to neighborhoods and districts.

Goal T-K: Develop a safe, convenient and continuous network of pedestrian sidewalks and pathways that link neighborhoods with schools, parks, shopping areas and employment centers.

Policy T-K-2: Allow the sharing or parallel development of pedestrian walkways with bicycle paths, where this can be safely done, in order to maximize the use of public rights-of-way.

Goal T-L: Develop a citywide system of designated bikeways that serves both experienced and casual bicyclists and which maximizes bicycle use for commuting, recreation and local transportation.

Policy T-L-8: Require new development to dedicate land and/or construct/install bicycle facilities for project users, where a rough proportionality to demand from the project is established. Facilities such as showers and bicycle storage shall also be considered.

Policy T-L-9: Maintain and update, as appropriate, the city's Bicycle and Pedestrian Master Plan.

City of Santa Rosa Traffic Operation Standards

Policy T-D-1 of the General Plan states that the City will maintain a level of service (LOS) D or better along all major corridors. Exceptions to meeting this standard are allowed:

- Within downtown;
- Where attainment would result in significant environmental degradation;
- Where topography or environmental impacts makes the improvement impossible; or
- Where attainment would ensure loss of an area's unique character.

For the purposes of this analysis, the LOS D standard was also applied to the Highway 101 ramp intersections, which are part of the Guerneville Road-Steele Lane and College Avenue adaptive traffic control signal timing systems maintained by the City.

3.4.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

The impact analysis provided below is based on the following State California Environmental Quality Act (CEQA) Guidelines Appendix G thresholds of significance. Transportation impacts are considered significant when the project would:

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) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways.

3) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

4) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

5) Result in inadequate emergency access.

6) Result in inadequate parking capacity.

7) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

METHODOLOGY

Freeway Analysis

In addition to analysis of local streets, the following three segments of Highway 101 in Santa Rosa were studied to determine the Specific Plan's impact on freeway operations:

- Downtown Santa Rosa to College Avenue
- College Avenue to Steele Lane
- Steele Lane to Bicentennial Way

Mainline freeway operations were studied for only the mixed-flow lanes of traffic and excluded traffic using the high-occupancy vehicle (HOV) carpool lanes. Intersection operation and projected off-ramp queue lengths were studied at the College Avenue and Steele Lane interchanges.

Study Periods

The multimodal analysis focuses on the weekday p.m. peak hour, which captures conditions between 4:00 and 6:00 p.m. This time period typically coincides with the homeward commute and also represents a peak activity period for retail and office uses such as those occurring in the study area. The p.m. peak hour typically reflects the busiest period for automobile travel (and therefore that representing "worst-case" operating conditions for all users).

Data

Pedestrian, bicycle, and transit facilities were surveyed and observed along the study corridors, supplemented by data provided by the City. Corridor and intersection turning movement traffic volume data from 2008 were obtained from the City; it should be noted that volumes throughout Santa Rosa and Sonoma County have actually decreased on average over the past several years, so the use of 2008 data helps “normalize” volumes and deemphasize the effects of the economic downturn. Pedestrian and bicycle data were obtained by W-Trans in late April and early May of 2011. All data collection occurred on a Tuesday, Wednesday, or Thursday during normal conditions without the influence of special events or other unusual traffic conditions, and while area schools were in session. Existing vehicle traffic volumes are shown for intersections throughout the study area in **Figure 3.13-1**. Bicycle and pedestrian volumes were obtained on two separate days at each location, with each observation period occurring at a different time of the day. The two sets of volumes were then normalized using count adjustment factors obtained from the National Bicycle and Pedestrian Documentation Project published in 2009 (see http://bikepeddocumentation.org). These counts were averaged and then converted to both peak hour and daily annual averages. The existing pedestrian and bicycle volumes are shown in **Figure 3.13-2**.

Freeway traffic volumes for 2010 were provided by Caltrans as published on its website (see http://traffic-counts.dot.ca.gov). Caltrans provides peak hour traffic volumes but does not state when the peak hour occurs, therefore representing the overall worst-case conditions. Based on regional traffic patterns, it is likely that the peak period for Highway 101 corresponds with the peak period between 4:00 and 6:00 p.m. Vehicles driven in the HOV lanes were subtracted from the total freeway volumes in order to analyze conditions in mixed-flow vehicle lanes, based on HOV projections obtained from the Sonoma County Transportation Authority (SCTA).

Level of Service Methodologies

In transportation/traffic studies, level of service (LOS) has traditionally been determined for vehicle traffic at intersections and on roadway segments based on vehicle delay; however, for the purpose of the North Santa Rosa Station Area Specific Plan, a more holistic approach was desired to account for all transportation users, not just motorists. The *Highway Capacity Manual 2010* (HCM) includes methodologies to determine automobile, pedestrian, bicycle, and transit levels of service, referred to collectively as multimodal level of service. Following is a brief description of the data and physical factors used in the methodology.

Automobile LOS: The methodology applied to vehicular traffic considers the geometric configuration of the street, including the number of lanes, control delay encountered at intersections, running speed, presence of turn lanes, traffic volumes on the corridor and side streets, and numerous other factors. Automobile LOS thresholds are based on the predicted vehicle speeds as a percentage of the unimpeded free-flow speed. Additional details regarding the automobile LOS method is provided in the “Roadway Segment Level of Service Methodology” subsection below. In addition to roadway operations along study corridors, intersection operations were studied at the Highway 101 ramps on Steele Lane and College Avenue. A description of the intersection LOS methodology is provided in the “Intersection Level of Service Methodology” subsection below.

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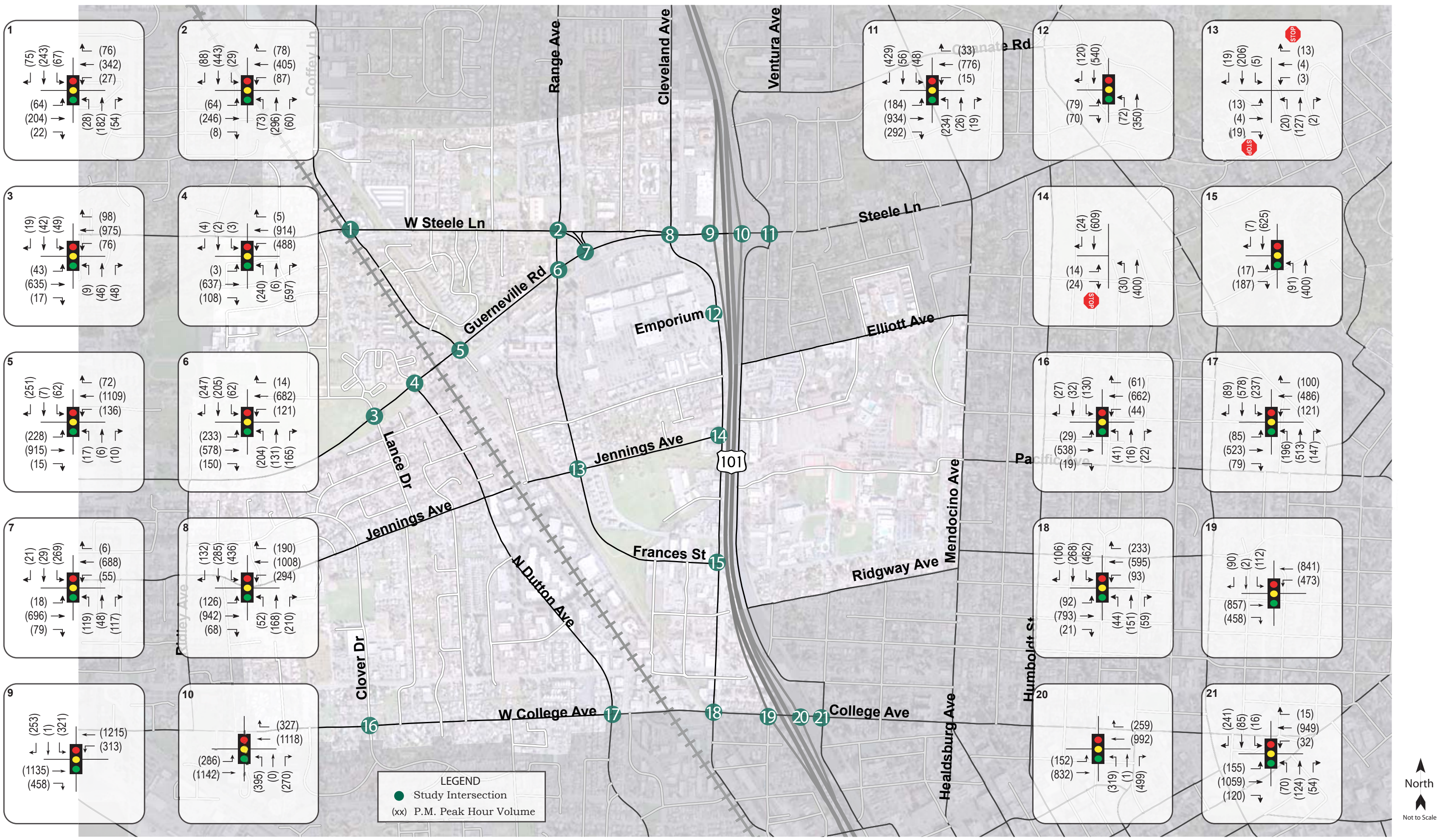

Source: W-Trans, 2011

Figure 3.13-1

Existing PM Peak Hour Volumes

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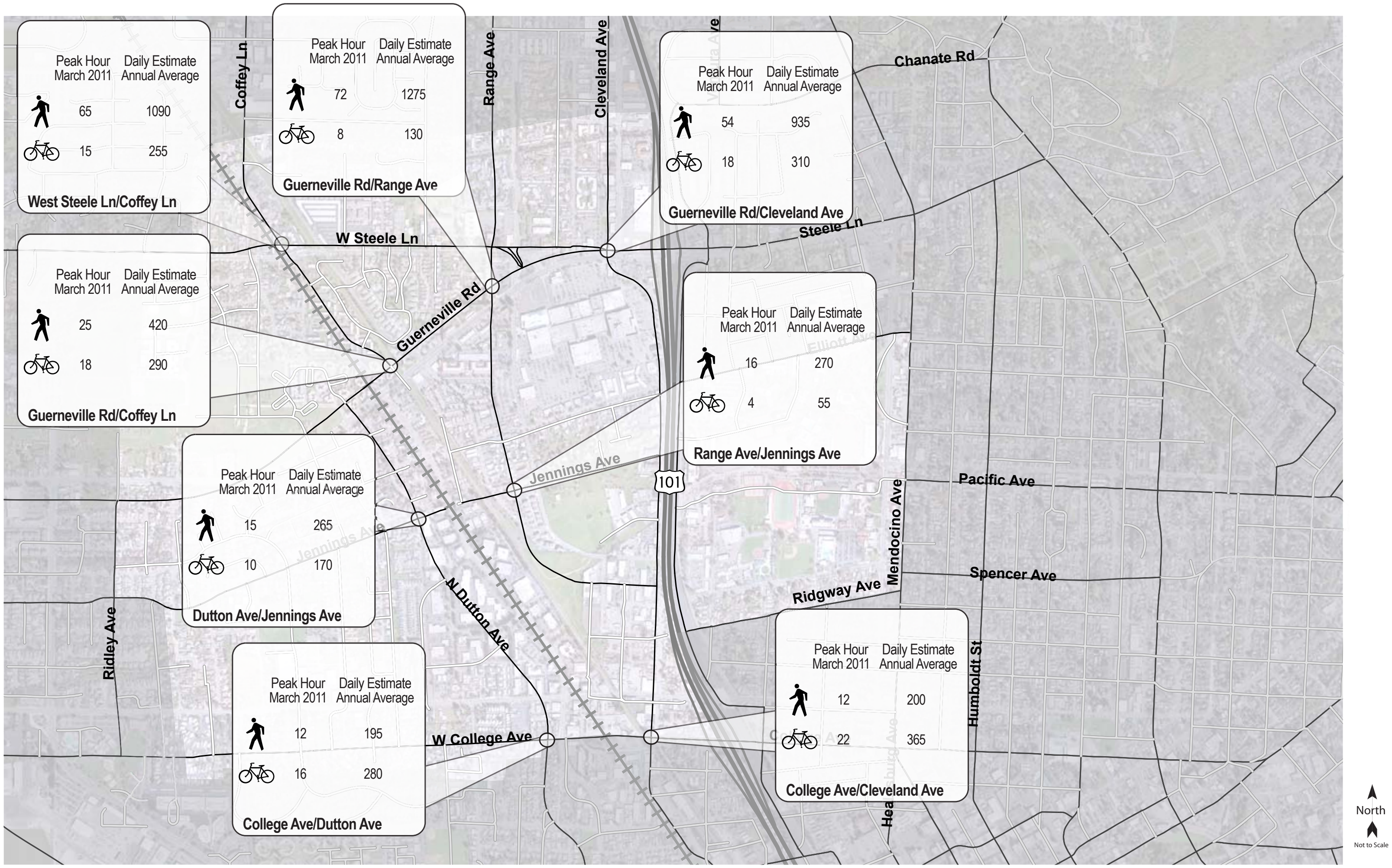

Source: W-Trans, 2011

Figure 3.13-2

Existing Bicycle and Pedestrian Volumes

Pedestrian LOS: The methodology used to evaluate adequacy of pedestrian facilities considers the presence of pedestrian facilities, lateral separation between pedestrians and vehicular traffic, width of sidewalk, speed and makeup of vehicle traffic, and number of vehicle traffic lanes. Pedestrian LOS is determined for both segments and signalized intersections. Additionally, a pedestrian midblock crossing factor is calculated, which is considered in tandem with the segment and intersection levels of service to develop an overall pedestrian LOS.

Bicycle LOS: The bicycle LOS methodology considers the presence of bicycle facilities, lateral separation between bicycles and vehicular traffic, speed and makeup of vehicle traffic, crossing distances at intersections, and pavement condition. Bicycle LOS is determined for both segments and intersections. The overall bicycle LOS reflects the segment and intersection results, as well as the number of unsignalized intersections and driveways per mile along the study segment. On urban corridors, such as those studied, the HCM defines the maximum achievable bicycle level of service as LOS C. The concept of a maximum achievable bicycle level of service is due to the fact that an urban arterial is not an ideal cycling environment because of the relatively high vehicle traffic volumes and speeds. An off-street facility would be a superior facility; however, the bicycle LOS methodology only applies to on-street facilities.

Transit LOS: This methodology considers the frequency of service, in-vehicle travel time, reliability of service, load factors, and quality of pedestrian access to transit stops. Ridership participation changes ("elasticities") based on headways and the users' perception of travel time are also included. It should be noted that the transit LOS methodology considers only bus transit service and would not account for the proposed SMART rail service. The LOS "grades" reported for transit only reflect bus service, consistent with the national standards and methodologies included in the *Highway Capacity Manual 2010*.

Automobile-based levels of service generally consider LOS A to represent free flow while LOS F represents gridlock. Note that vehicle LOS A may not represent an ideal condition, since it can be associated with facilities that have excessive capacity and characteristics (such as overly long crossing distances and higher speeds) that can be detrimental to other modes. Multimodal levels of service for pedestrian, bicycle, and transit travel are considered differently than automobile LOS. For these modes, LOS A should be considered to represent ease of travel and the presence of a circulation network that supports and encourages the travel mode. LOS F represents difficult travel conditions and a circulation network that discourages or creates barriers to that mode of travel.

Roadway Segment Level of Service Methodology

The roadway segment LOS methodology found in Chapter 17, "Urban Street Segments," of the *Highway Capacity Manual* is the basis of the automobile LOS analysis. This method does not address the capacity of a facility, but rather determines a level of service based on the calculated percentage of the street's base free-flow speed. In essence, congestion occurs as traffic volumes increase, and the overall travel speed is reduced due to increased delay. Therefore, the slower the speed, the lower that speed is as a percentage of free-flow speed and the lower the LOS. Because the automobile LOS is intended to be calculated only for major urban corridors, automobile LOS results have not been determined for Jennings Avenue.

Corridor levels of service were assessed in the Complete Streets LOS software application using calibrated segment speeds determined using the SimTraffic extension of Synchro. The applied SimTraffic network includes all signalized and roundabout intersections on each study corridor, including projected traffic volumes, lane configurations, and signal operations. Five separate simulation "runs" were performed in SimTraffic, and the projected speeds for each corridor segment averaged for input in the Complete Streets application.

The relationship between level of service and percentages of free-flow speed is presented in **Table 3.13-4**.

TABLE 3.13-4
AUTOMOBILE LEVEL OF SERVICE CRITERIA

Level of Service	Travel Speed as a Percentage of Base Free-Flow Speed (%)
LOS A	>85
LOS B	>67–85
LOS C	>50–67
LOS D	>40–50
LOS E	>30–40
LOS F	≤30

Source: Transportation Research Board 2010

Intersection Level of Service Methodology

The freeway ramp study intersections are controlled by traffic signals so were evaluated using the signalized methodology from the *Highway Capacity Manual*. This methodology is based on factors including traffic volumes, green time for each movement, phasing, whether or not the signals are coordinated, truck traffic, and pedestrian activity. Average stopped delay per vehicle in seconds is used as the basis for evaluation in this LOS methodology. Since the intersections studied are located on adaptive signal timing corridors maintained by the City, delays were calculated using optimized signal timing. The range of delay associated with signalized intersection level of service criteria is provided in **Table 3.13-5**.

TABLE 3.13-5
SIGNALIZED INTERSECTION LEVEL OF SERVICE CRITERIA

LOS A	Delay of 0 to 10 seconds. Most vehicles arrive during the green phase, so do not stop at all.
LOS B	Delay of 10 to 20 seconds. More vehicles stop than with LOS A, but many drivers still do not have to stop.
LOS C	Delay of 20 to 35 seconds. The number of vehicles stopping is significant, although many still pass through without stopping.
LOS D	Delay of 35 to 55 seconds. The influence of congestion is noticeable, and most vehicles have to stop.
LOS E	Delay of 55 to 80 seconds. Most, if not all, vehicles must stop and drivers consider the delay excessive.
LOS F	Delay of more than 80 seconds. Vehicles may wait through more than one cycle to clear the intersection.

Source: Transportation Research Board 2000

Freeway Level of Service Methodology

The freeway analysis methodology contained in Chapter 23 of the *Highway Capacity Manual*, "Basic Freeway Segments," was used to determine LOS based on vehicle density. Density is indicative of the travel demand on a freeway and is measured in the number of passenger cars per mile per lane. The ranges of densities associated with the various LOS are presented in **Table 3.13-6**. This methodology was applied to the mixed-flow travel lanes on Highway 101.

TABLE 3.13-6
FREEWAY LEVEL OF SERVICE CRITERIA

	Maximum Vehicle Density (passenger cars per mile per lane)	Maximum Service Flow Rate (passenger cars per hour per lane)
LOS A	11	710
LOS B	8	1,170
LOS C	26	1,680
LOS D	35	2,090
LOS E	45	2,350
LOS F	> 45	> 2,350

Source: Transportation Research Board 2000

Note: Criteria are for a freeway with 65-mph free-flow speed.

Queuing Methodology

Vehicle queuing was assessed at the Highway 101 off-ramps at the Steele Lane and College Avenue interchanges. This was done to determine the likelihood for queues created by the ramp terminal intersection signals to extend onto the mainline freeway, indicating potential capacity problems as well as safety concerns. Maximum queue lengths were analyzed using traffic simulation as performed in SimTraffic, which uses the same signal timing, phasing, and geometric data included in Synchro for intersection analysis. Five separate simulation "runs" were performed, with the maximum observed queues on the freeway ramps averaged and presented as the estimated maximum queue.

Future Traffic Projections

Segment volumes for the horizon year of 2035 were obtained from the Sonoma County Transportation Model 2007 (SCTM/07) travel demand model and translated to turning movement volumes at intersections throughout the study area. The SCTM/07 model's land use assumptions have been updated by City staff for traffic analysis zones within the Specific Plan area to reflect the most current information available for both current development levels as well as potential increases in development allowed by the City's current General Plan. The resulting baseline traffic forecasts represent a "no project" condition for the year 2035 (i.e., without adoption or implementation of the North Santa Rosa Station Area Specific Plan). Future projected traffic volumes are shown on **Figure 3.13-3**.

Planned Roadway Improvements

The following roadway improvements are listed in the City of Santa Rosa's Capital Improvement Program (CIP) and were assumed to be complete in the evaluation of the Future (No Project) circulation analysis.

- West College Avenue/Link Lane Traffic Signal (Project #1531, funded for year 2012) – Adds a traffic signal to the currently unsignalized intersection.
- West Steele Lane at Coffey Lane Reconstruction (Project #787, currently unfunded) – Widens and reconstructs intersection with sidewalks
- College Avenue Widening—Cleveland Avenue to Morgan Street (Project #1153, funded for year 2013) – Widens College Avenue to provide three westbound through lanes plus bicycle lanes in both directions

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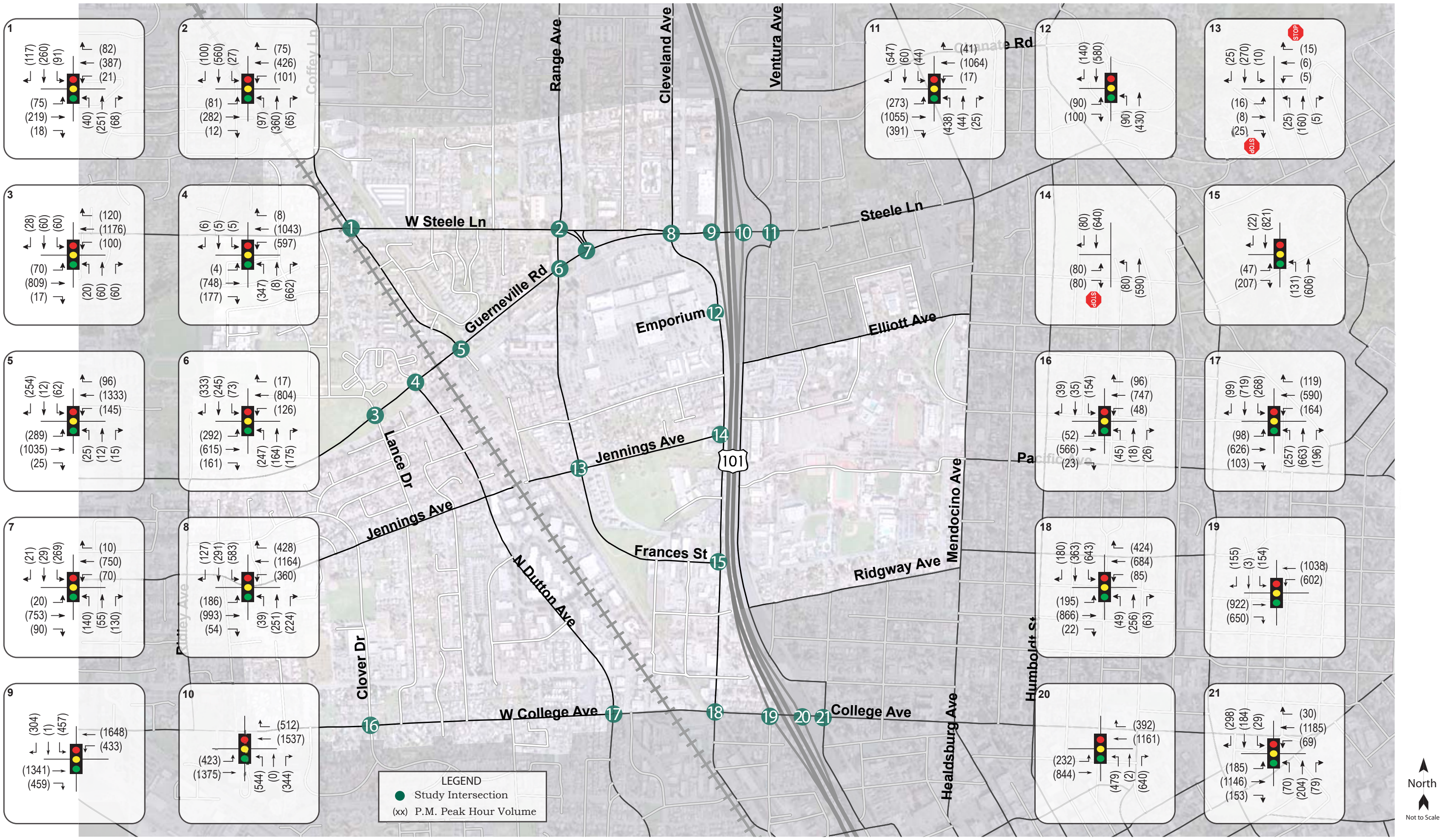

Source: W-Trans, 2011

Figure 3.13-3

General Plan Buildout (No Project) Volumes

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Future Conditions

Future multimodal operations were analyzed for buildout of the City's current General Plan without the proposed North Santa Rosa Station Area Specific Plan. The results were calculated using future projected traffic volumes and planned improvements contained in the City's General Plan, Capital Improvement Plan, and Bicycle and Pedestrian Master Plan. The p.m. peak hour results are summarized in **Table 3.13-7**.

TABLE 3.13-7
FUTURE (NO PROJECT) PM PEAK HOUR MULTIMODAL LOS

Corridor	Automobile	Transit	Bicycle	Pedestrian
1. Guerneville Road–Steele Lane				
Eastbound	C	B	D	D
Westbound	D	B	D	D
2. West College Avenue				
Eastbound	D	C	C	D
Westbound	D	C	C	D
3. Dutton Avenue				
Northbound	B	C	D	C
Southbound	B	C	D	C
4. Range Avenue–Frances Street				
Northbound	C	C	D	B
Southbound	C	C	D	B
5. Cleveland Ave				
Northbound	B	C	D	D
Southbound	D	C	D	D
6. Coffey Lane				
Northbound	C	C	D	C
Southbound	C	C	C	B
7. West Steele Lane				
Eastbound	C	C	D	C
Westbound	C	C	D	C

Corridor	Automobile	Transit	Bicycle	Pedestrian
8. Jennings Avenue (west)				
Eastbound	–	–	C	A
Westbound	–	–	D	A
9. Jennings Avenue (east)				
Eastbound	–	–	D	A
Westbound	–	–	D	A

Following are brief descriptions of the multimodal LOS results by corridor. Calculations are provided in the traffic report prepared for the project.

Guerneville Road-Steele Lane

Automobile traffic on this major corridor is expected to continue to flow acceptably at LOS D or better. The continued presence of several CityBus and Sonoma County Transit stops along the corridor, in combination with adequate pedestrian connectivity, results in LOS C conditions for transit. Bicycle circulation is projected to be LOS C and is affected by the high traffic volumes, but is positively affected by the planned implementation of bicycle lanes along the entire corridor. Pedestrian circulation is projected to be LOS D.

West College Avenue

Automobile operation is projected to remain acceptable at LOS D with increases in traffic volumes partially offset by planned corridor improvements (including widening at the Highway 101 interchange). Transit is expected to continue to operate at LOS C. Bicycle and pedestrian operations are projected to be LOS C and D, respectively, assisted by planned infrastructure improvements but hindered by high traffic volumes and little to no separation between vehicle traffic and sidewalks.

Dutton Avenue

This corridor is projected to operate at LOS B for vehicles and LOS C for transit. Due to high traffic volumes and relatively high speeds of traffic, bicycle circulation is expected to operate at LOS D. Pedestrian circulation is expected to remain at LOS C.

Range Avenue-Frances Street

Auto operation is expected to be LOS C along the corridor. Transit operation varies along the corridor, though is LOS C overall. Bicycle circulation is projected to be LOS D and pedestrian circulation is projected to be LOS C, both benefiting from planned buildout of the bicycle and pedestrian network along the corridor.

Cleveland Avenue

Vehicular traffic on the corridor is expected to operate at LOS B in the northbound direction and LOS D southbound. Although limited mainly to lines operating between College Avenue and Edwards Avenue and on intersecting streets, transit service would be expected to operate at

LOS C. Both bicycle and pedestrian circulation is expected to operate at LOS D with bicycle operations improving over existing conditions due to the planned implementation of continuous bicycle lanes.

Coffey Lane

The Coffey Lane corridor is projected to function at LOS C for vehicle and transit modes. Bicycle operation is projected to be at the LOS C/D threshold, and pedestrian operation is projected to be near the LOS B/C threshold.

West Steele Lane

Like the Coffey Lane segment, this segment is expected to operate at LOS C for vehicle and transit modes. Bicycle operation is projected at LOS D, negatively affected by the frequency of driveways and parking activity along the segment. Pedestrian operation is projected to be LOS C.

Jennings Avenue

The methodologies for determining automobile and transit LOS are not applicable on minor streets such as Jennings Avenue; however, future traffic volumes on Jennings Avenue are within the typical range expected for these types of minor streets. Bicycle operation is projected to be near the LOS C/D threshold on the segments of Jennings Avenue both to the east and west of the SMART rail corridor, benefiting from planned buildout of the bicycle facilities. Pedestrian operation is expected to be LOS A for the entire corridor.

Future Freeway Operation

Mainline Operation

The incremental growth of traffic on Highway 101 was obtained from the SCTM/07 and added to existing freeway traffic volumes. It is expected that the three freeway segments of Highway 101 studied would operate unacceptably at LOS D or worse in at least one direction during the p.m. peak period. The analysis assumes that SMART will be operational with a station at the proposed Guerneville Road site by 2035. All factors relating to mode choice, trip distribution, trip generation, and travel patterns reflect this assumption. Freeway operations are summarized in **Table** , and calculations are provided in the traffic report prepared for the project.

TABLE 3.13-8
FUTURE PEAK HOUR FREEWAY OPERATIONS

Highway 101 Study Segments	Flow Rate	Level of Service
Downtown Santa Rosa to College Avenue		
Northbound	2,253	E
Southbound	1,533	C
College Ave to Steele Lane		
Northbound	2,133	E
Southbound	2,113	E

Highway 101 Study Segments	Flow Rate	Level of Service
Steele Lane to Bicentennial Way		
Northbound	2,044	D
Southbound	1,891	D

Note: Flow rate is measured in passenger cars per hour per lane.

RAMP OPERATIONS

Intersection operations at the Highway 101 ramps at the College Avenue and Steele Lane interchanges are expected to continue to operate acceptably at LOS C or better during the p.m. peak period. Vehicle queues at these off-ramps are projected to remain within available storage. A summary of the freeway levels of service and ramp queues is provided in **Table 3.13-9,** with calculations provided in the traffic report prepared for the project.

TABLE 3.13-9
FUTURE PM PEAK HOUR FREEWAY RAMP OPERATIONS

Highway 101 Ramp Intersection	Intersection Operations		Off-Ramp Queuing	
	Delay	Level of Service	Available Storage	Maximum Queue
College Avenue				
Northbound	18.6	B	630 feet	354
Southbound	15.0	B	800 feet	339
Steele Lane				
Northbound	25.3	C	850 feet	295
Southbound	20.3	C	1,080 feet	342

Note: Delay measured in seconds.

Trip Generation

When determining the potential amount of vehicle traffic generated by future development, transportation planners and engineers typically refer to the publication *Trip Generation*, 8th Edition, by the Institute of Transportation Engineers (ITE) (2008). This publication is a standard reference used by jurisdictions throughout the country and is based on actual trip generation studies performed at numerous locations in areas of various populations. There are several shortcomings with using unadjusted *Trip Generation* rates in mixed-use, transit-oriented environments such as that envisioned in the Specific Plan. Because much of the data used to develop trip generation rates has historically been collected in auto-oriented suburban locations where individual land uses are segregated, direct application of these rates could significantly overstate traffic levels. The effects of higher residential densities, diverse land uses, proximity to employment centers, transit accessibility, and an interconnected pedestrian and roadway network would not be considered. It was therefore determined that additional trip estimation resources would be needed for analysis of Specific Plan trip generation and traffic impacts. The applied methodology relies upon standard ITE rates, but with adjustments based on recent methodologies developed by the National Cooperative Highway Research Program (NCHRP) used to determine appropriate reductions to account for the mixed-use nature of the Specific Plan.

The following trip generation land use categories were used in the analysis.

- Single-family housing – “Single Family Detached Housing” ITE Land Use #210
- Multi-family housing – “Apartment” ITE Land Use #220
- Strip commercial retail – “Specialty Retail” ITE Land Use #814
- Shopping center retail – “Shopping Center” ITE Land Use #820
- Office – “General Office Building” ITE Land Use #710
- All industrial uses – “Industrial Park” ITE Land Use #130
- Warehouse – “Warehousing” ITE Land Use #150
- Institutional – unavailable in ITE; utilizes same rates as applied in SCTM/07 model

Note that the ITE data does not include an institutional land use (such as the Schulz Museum) or the SMART station. For institutional uses, the trip generation rates assumed in the Sonoma County Transportation Model 2007 (SCTM/07) were used for this category. Trip generation rates for the SMART station were obtained from research completed and published by the San Diego Association of Governments for commuter rail stations.

Trip Reductions

Internal trip reduction rates were determined using National Cooperative Highway Research Program (NCHRP) Report 684, *Enhancing Internal Capture Estimation for Mixed-Use Developments* (Transportation Research Board 2011). Internal capture trip reduction rates were calculated separately for three areas within the plan: the core station area, the north plan area, and the outer ring plan areas including development on the western portion of Guerneville Road and West Steele Lane. For the purpose of the circulation analysis, the core plan area includes the area bounded by the SMART tracks to the west, Ridgway Avenue to the south, and Highway 101 to the east, with the northern boundary formed by Guerneville Road between SMART and Range Avenue, and by the parcels fronting the north side of West Steele Lane between Range Avenue and Highway 101. The northern plan area includes parcels fronting Cleveland Avenue, north of Guerneville Road-Steele Lane. The trip reduction calculations were based upon the total quantity of various land uses and their proximity to each other. The applied trip reduction rates are summarized in **Table 3.13-10**, and copies of the spreadsheets indicating the derivation of the internal capture rates are provided in Appendix E of the traffic report. While the NCHRP research does not include trip reduction guidance for daily trip generation, it is likely that the rate is approximately the same as that for the p.m. peak hour. For the purposes of this analysis, the p.m. rates were applied (daily trip generation is informational only and not directly used in the circulation analysis). In the core plan area, the trip reduction rate is projected to be 23 percent, which decreased to 13 percent in the north plan area and 5 percent in the outer ring plan area.

TABLE 3.13-10
TRIP REDUCTION RATES

Plan Area	Trip Reduction
Core Station Area	23%
North Plan Area	13%
Outer Ring Plan Area	5%

These reduction rates were applied only to those land uses expected to experience a significant effect of internal capture trip reduction, consistent with the NCHRP methodology. Reductions were not applied to industrial, warehouse, or institutional land uses. Where the plan resulted in a decrease in a particular use within an analysis zone, no adjustments were made to that use's trip generation.

Trip Generation Projections

Table 3.13-11 summarizes the incremental trip generation associated with buildout of the Specific Plan compared to what would have been anticipated under current General Plan land uses. The trip generation potential was calculated separately for each Traffic Analysis Zone (TAZ) defined in the SCTM/07 regional travel demand model. Detailed trip generation information by Traffic Analysis Zone for the Plan area is provided in the traffic report prepared for the project.

TABLE 3.13-11
SPECIFIC PLAN INCREMENTAL TRIP GENERATION COMPARED TO GENERAL PLAN BUILDOUT

Land Use	Units	Daily		PM Peak Hour	
		Rate	Trips	Rate	Trips
Single-Family Residential	438 du	9.57	4,192	1.01	441
Multi-Family Residential	1,276 du	6.65	8,485	0.62	790
Office	798.6 ksf	11.01	8,792	1.49	1,189
Strip Commercial	350.2 ksf	44.32	15,521	2.71	949
Shopping Center	187.0 ksf	42.94	8,031	3.73	697
Institutional	97.6 ksf	6.48	632	0.91	90
Warehouse	-22.7 ksf	3.56	-81	0.32	-7
Light and Heavy Industrial	-34.0 ksf	6.96	-236	0.86	-30
SMART Station	350 parking	2.00	700	0.30	105
Mixed-Use Internal Capture*			-8,243		-752
Specific Plan Total			**37,793**		**3,472**

Notes: du = dwelling unit; ksf = 1,000 square feet

**Mixed-Use Internal Capture data is not available for daily trip generation, so the p.m. peak hour rate was applied.*

Trip Distribution

The pattern used to allocate new project trips to the street network was based on data from SCTM/07 model. "Select zone" model runs were performed for two separate traffic analysis zones within the study area: one that contained primarily residential land uses and another that contained primarily nonresidential land uses. The model-generated distribution of trips was combined with knowledge of the roadway network and consideration of current traffic patterns to determine the anticipated distribution of plan-generated traffic. These distribution estimates are shown in **Table 3.13-12**.

TABLE 3.13-12
TRIP DISTRIBUTION ASSUMPTIONS

Route	Residential	Nonresidential
Highway 101 – North	12%	23%
Highway 101 – South	27%	25%
Coffey Ave – North	2%	2%
Piner Road-Industrial Drive	6%	6%
College Avenue – West	1%	1%
Stony Point Road – South	3%	2%
Guerneville Avenue – West	4%	6%
North West Santa Rosa – Fulton Rd	3%	4%
Dutton Avenue – South	4%	1%
Cleveland Avenue – South	6%	2%
Mendocino Avenue – South	4%	2%
College Avenue – East	11%	3%
Santa Rosa Junior College Area	6%	4%
Mendocino Avenue – North	2%	6%
Steele Lane – East	2%	4%
Internal to Plan Area		
Western Plan Area	1%	3%
Central Plan Area	1%	3%
Eastern Plan Area	5%	3%
TOTAL	**100%**	**100%**

BUILDOUT TRAFFIC PROJECTIONS

The incremental traffic growth associated with the Specific Plan was added to the future General Plan buildout volumes obtained from the SCTM/07 traffic model. The resulting volumes were then imported into the Traffix, Synchro, and SimTraffic traffic analysis software applications to determine the anticipated performance of the automobile circulation network, including data needed for the multimodal level of service analysis. The projected traffic volumes expected at buildout of the North Santa Rosa Station Area Specific Plan are shown in **Figure 3.13-4**.

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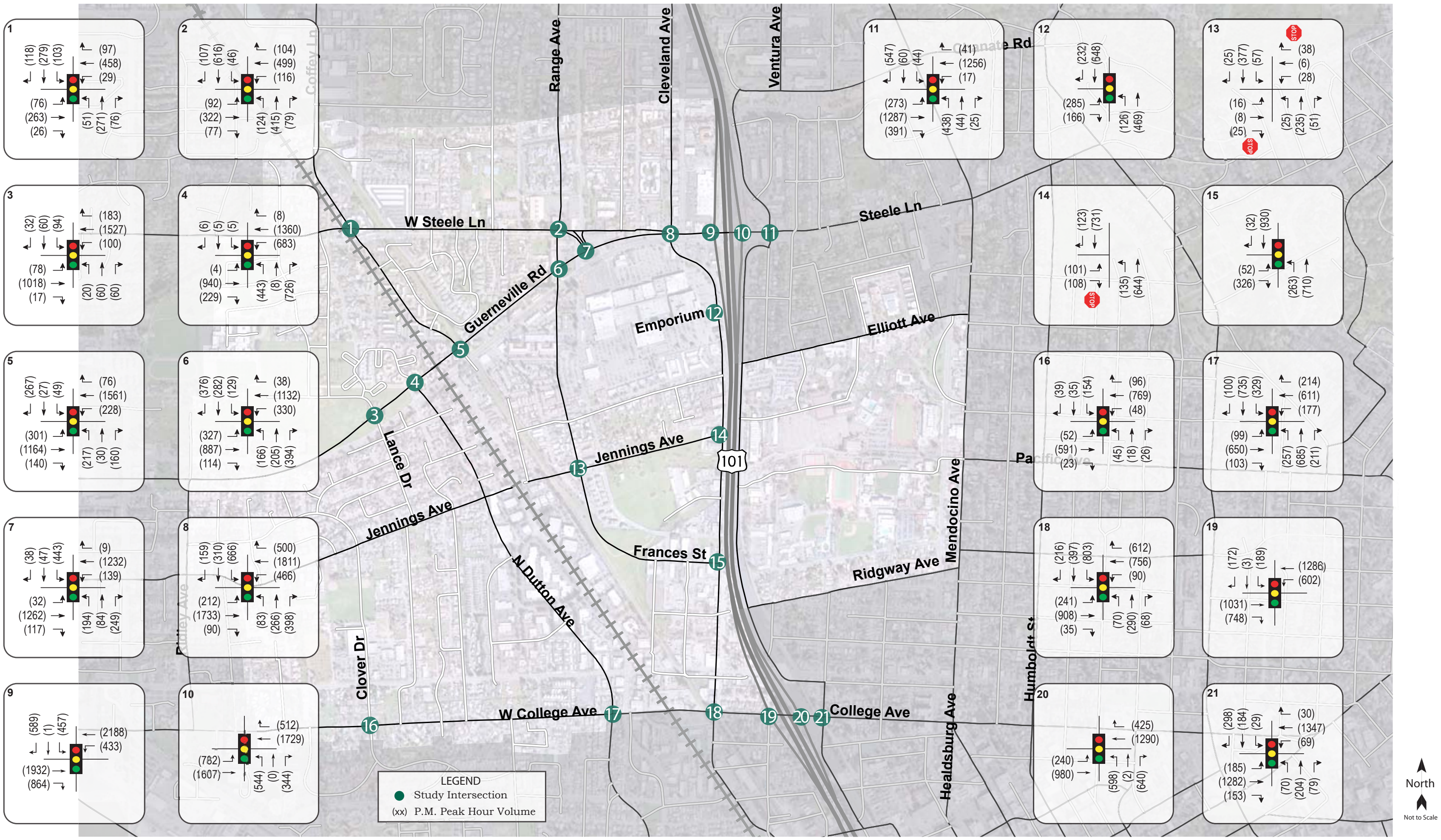

Source: W-Trans, 2011

Figure 3.13-4

General Plan Buildout plus Project Volumes

PMC®

IMPACTS AND MITIGATION MEASURES

Impacts to Area Roadways

Impact 3.13.1 Buildout of the Specific Plan would result in added traffic demands on Santa Rosa streets beyond those already envisioned upon buildout of the City's General Plan. The Specific Plan includes roadway infrastructure improvements that, in tandem with projects already included in the City's Capital Improvements Program, would reduce corridor traffic impacts to **less than significant**.

Buildout of the North Santa Rosa Station Area Specific Plan would include modifications to the circulation network as well as changes to allowed land uses within the area. These circulation changes are in addition to those already identified in adopted plans including the General Plan, Bicycle and Pedestrian Master Plan, Citywide Creek Master Plan, and the City's Capital Improvement Program.

Multimodal Level of Service Analysis

Based on analysis of the automobile, transit, bicycle, and pedestrian conditions for the study corridors upon buildout of the Specific Plan, each of the modes was assigned an LOS using the criteria and methods described in the *Highway Capacity Manual 2010*. The p.m. peak hour results are summarized in **Table 3.13-13**, and calculations are provided in the traffic report prepared for the project. Operations of the study corridors are summarized in the following section.

TABLE 3.13-13
FUTURE PLUS SPECIFIC PLAN PM PEAK HOUR MULTIMODAL LOS

Corridor	Automobile	Transit	Bicycle	Pedestrian
1. Guerneville Road–Steele Lane				
Eastbound	D	B	D	D
Westbound	D	B	D	D
2. West College Avenue				
Eastbound	D	C	C	D
Westbound	D	C	C	D
3. Dutton Avenue				
Northbound	C	B	D	C
Southbound	B	B	D	C
4. Range Avenue–Frances Street				
Northbound	D	C	D	B
Southbound	D	C	D	B

Corridor	Automobile	Transit	Bicycle	Pedestrian
5. Cleveland Avenue				
Northbound	C	C	D	D
Southbound	C	C	D	D
6. Coffey Lane				
Northbound	B	B	D	C
Southbound	C	B	C	B
7. West Steele Lane				
Eastbound	C	C	D	C
Westbound	C	C	D	C
8. Jennings Avenue (west)				
Eastbound	–	–	C	A
Westbound	–	–	D	A
9. Jennings Avenue (east)				
Eastbound	–	–	D	A
Westbound	–	–	D	A

Guerneville Road-Steele Lane

Automobile traffic on this major corridor is expected to flow acceptably at LOS D within the Specific Plan area. Transit service is projected to be in the LOS B range, which is reflective of existing bus operations on the corridor as well as the potential for a shuttle service for the SMART station to be operated by the City or another entity in the future, as recommended by the Specific Plan. Bicycle circulation is expected to be at LOS D; although continuous bicycle lanes are expected to be implemented along the entire corridor in the future, bicycle LOS is negatively affected by the high traffic volumes. Off-street bicycle facilities would be provided parallel to Guerneville Road west of Highway 101, which would provide cyclists an alternative to on-street facilities. The SMART trail would connect to Guerneville Road, providing connections to regional bicycle facilities. Pedestrian circulation is also LOS D, negatively affected by the lack of buffer space between sidewalks and lanes with high traffic volumes, as well as by the longer crossing distances at intersections. Pedestrians would be able to use the multi-use paths adjacent to the corridor, which would provide alternative access options.

West College Avenue

Automobile operation is projected to be LOS D, and bicycle circulation is expected to be LOS C. The SMART trail would connect to West College Avenue, providing regional bicycle connections. Pedestrian circulation would be improved through filling of existing gaps and implementation of streetscape improvements, though it would continue to be affected by high volumes. Transit is expected to operate at LOS C, with similar characteristics to those described for the Guerneville Road-Steele Lane segment.

Dutton Avenue

This corridor is expected to operate at the LOS B/C threshold for vehicles and LOS B for transit service. The bicycle result of LOS D is largely attributable to the speeds of adjacent auto traffic, despite the presence of on-street bicycle lanes; however, the SMART trail would run parallel to Dutton Avenue and would provide an alternative off-street facility for cyclists. Where feasible, the Specific Plan directs reallocation of portions of the center two-way left-turn lane to provide wider bicycle lanes and/or buffers between bicycle and vehicle lanes, improving bicyclists' comfort. Pedestrian circulation is projected to be LOS C due to the speed of traffic and long intersection crossing distances, but would benefit from buffers between the street and sidewalk and the presence of enhanced midblock crossing locations.

Range Avenue–Frances Street

Auto operation is projected to be LOS D along the corridor due to the increase in traffic and reduction in travel lanes associated with the Specific Plan. The installation of modern roundabouts would provide capacity at streets serving substantial growth areas south of Coddingtown Mall in a manner that eliminates the need to widen roads, reinforces low vehicle speeds, and improves overall safety compared to other intersection types. Transit operations are expected to be LOS C overall, benefited by the frequency of transit service associated with the Northside Transfer Center at Coddingtown Mall. Transit operation would also benefit from a potential future shuttle, which would primarily serve the SMART station itself but would also operate along the Range Avenue-Frances Street corridor. Bicycle circulation is projected to be LOS D; although implementation of bicycle lanes and "complete street" improvements are planned, bicycle operations will be negatively affected by the increase in vehicle traffic volumes. With closure of some gaps in the sidewalk network on the southern portion of the corridor in addition to "complete street" improvements, pedestrian circulation is expected to be LOS B.

Cleveland Avenue

The corridor is projected to operate at LOS C for autos. Transit service is expected to remain limited mainly to lines operating between College Avenue and Edwards Avenue and on intersecting streets, resulting in LOS C. Bicycle and pedestrian circulation is projected to be LOS D, though the LOS methodology may be unfairly penalizing the segment due to the lack of sidewalks on the Highway 101 side of the street. An off-street bicycle path would intersect Cleveland Avenue near Edwards Avenue and connect to the Highway 101 pedestrian/bicycle bridge, providing connections to regional bicycle routes.

Coffey Lane

The Coffey Lane corridor is expected to function near the LOS B/C threshold for vehicles, enhanced by the Coffey Lane extension that results in more efficient operation at the intersection of Coffey Lane/Guerneville Road. Transit modes are projected to operate at LOS B. Although the methodology does not account for the presence of the rail transit, anticipated enhancements to the bus transit network, including a possible shuttle for the SMART station, were accounted for resulting in improved transit operations. Bicycle operation would be at the LOS C/D threshold, and pedestrian operation would be near the LOS B/C threshold. The methodology does not account for the presence of the future SMART path adjacent to Coffey Lane since it would be a separate off-street facility; however, this facility would provide enhanced pedestrian and bicycle opportunities.

West Steele Lane

This segment is expected to operate at LOS C for vehicle and transit modes. Despite the presence of continuous on-street bicycle lanes, bicycle operation would be LOS D, negatively affected by the frequency of driveways and parking activity along the segment. Pedestrian operation is projected to be in the LOS C range, benefited by crossing and streetscape improvements included in the Specific Plan.

Jennings Avenue

Bicycle operation is expected to be at LOS D on both segments of Jennings Avenue, in large part due to the high frequency of residential driveways. Pedestrian operation is expected to be LOS A, attributable to the planned streetscape improvements, lower vehicle speeds, and moderate traffic volumes. The planned SMART trail and crossing of the SMART tracks would enhance regional bicycle and pedestrian connectivity along Jennings Avenue.

Plan Improvements to Maintain Acceptable Automobile Corridor Operation

Automobile operation on the study corridors is anticipated to remain above the LOS D threshold established by the City of Santa Rosa. Several improvements to key intersections have been incorporated into the Specific Plan in order to achieve acceptable corridor operation at buildout.

- Coffey Lane – Extend the roadway south to a new roundabout-controlled intersection with Range Avenue

- Guerneville Road/Coffey Lane – Reconfigure the intersection to include a left-turn lane and shared through/right-turn lane on the northbound and southbound approaches, and modify the signal phasing to protected left-turn movements

- Steele Lane/Cleveland Avenue – Reallocate the northbound Cleveland Avenue lanes to include separate left-turn, through, and right-turn lanes; on the southbound approach, add a 100-foot long right-turn lane and reallocate the remaining lanes to provide one through and two left-turn lanes; modify the intersection phasing to provide right-turn overlaps and protected left-turn phasing on both Cleveland Avenue approaches

The Specific Plan also includes a policy to coordinate with Caltrans to ensure that long-range congestion-management improvements take place at the Highway 101/Steele Lane interchange. Such improvements could include lengthening the right-turn lane on the southbound off-ramp and constructing a new right-turn lane on Steele Lane at the northbound ramps, or other measures deemed by the City and Caltrans to achieve acceptable operation as long-term growth associated with buildout of the Specific Plan area occurs. Currently these improvements are anticipated to be an extension of the Steele Lane/Highway 101 southbound ramp right-turn lane on the off-ramp to a length of 250 feet and construction of a 100-foot-long right-turn lane on westbound Steele Lane for the Steele Lane/Highway 101 northbound ramp. However, actual improvements will be refined by Caltrans at the time these improvements are planned.

Incorporation of the roadway improvements identified in the Specific Plan into the traffic impact fee program or another appropriate long-range funding mechanism, and continued monitoring of corridor operation over time through review of traffic impact studies conducted for proposed development, will ensure that this impact is less than significant.

Mitigation Measures

None required.

Impacts to Area Freeway Capacity

Impact 3.13.2 The three Highway 101 freeway segments from downtown Santa Rosa to College Avenue, College Avenue to Steele Lane, and Steele Lane to Bicentennial Avenue are projected to operate below Caltrans' LOS standard of the LOS C/D threshold in the future, both without and with the Specific Plan. The incremental increase in traffic associated with the Specific Plan that would be added to Highway 101 is considered to be **cumulatively considerable** and **significant and unavoidable**.

The incremental growth of traffic on Highway 101 expected to be associated with full development of the Specific Plan was added to projected future freeway traffic volumes. It is expected that the three freeway segments of Highway 101 studied would operate unacceptably at LOS D or worse in at least one direction during the p.m. peak period, with the segment from downtown Santa Rosa to College Avenue operating at LOS F in the northbound direction. Freeway operations are summarized in **Table 3.13-14,** and calculations are provided in the traffic report prepared for the project.

TABLE 3.13-14
FUTURE PLUS SPECIFIC PLAN PEAK HOUR FREEWAY OPERATIONS

Highway 101 Study Segments	Flow Rate	Level of Service
Downtown Santa Rosa to College Avenue		
Northbound	2,417	F
Southbound	1,658	C
College Avenue to Steele Lane		
Northbound	2,258	E
Southbound	2,281	E
Steele Lane to Bicentennial Way		
Northbound	2,182	E
Southbound	2,011	D

Note: Flow rate is measured in passenger cars per hour per lane.

The three Highway 101 freeway segments shown above are projected to operate below Caltrans' LOS standard of the LOS C/D threshold in the future, both without and with the Specific Plan. While the increase in density and intensity of land uses near transit proposed by the Specific Plan would help reduce dependence on the automobile in the city, the incremental increase in traffic associated with the increased population under the Specific Plan that would be added to this already deficient operation is considered to be significant and unavoidable.

Mitigation Measures

The projected unacceptable operation on Highway 101 could be mitigated by widening the freeway to include additional through lanes in each direction. Further widening of Highway 101 is not included in the SCTA's Comprehensive Transportation Plan, nor do any financing mechanisms currently exist to fund the improvement. Widening the freeway would require major reconstruction of multiple freeway structures, right-of-way acquisition including many homes and businesses, closure or relocation of city streets paralleling the freeway corridor (including Cleveland Avenue, Armory Drive, Davis Street, and Morgan Street), and the likely creation of additional secondary environmental impacts. The environmental, social, and financial impacts render such a widening project infeasible.

The City of Santa Rosa, Sonoma County, and the SCTA recognize that Highway 101 will experience congestion into the foreseeable future and that there will be no further major capacity enhancements such as expansions or new freeways. All three jurisdictions concur in various planning and policy documents that long-range solutions to regional mobility must focus on better land use planning which supports transit and alternative transportation modes, stronger jobs/housing balances, and increased support of transportation demand measures. The Specific Plan emphasizes each of these goals, and it will, by nature, emphasize travel by non-automobile modes including SMART. Because there are no known physical improvements that would result in acceptable freeway operation in the future, however, and subsequently no means for development within the Specific Plan to contribute fair-share payments to projects such as a freeway expansion, the impact would be considered **significant and unavoidable**.

Impacts to Area Freeway Ramp Operations

Impact 3.13.3 Intersection operation and off-ramp queues at the Highway 101 interchanges at College Avenue and Steele Lane are expected to operate within acceptable ranges with buildout of the Specific Plan and its affiliated roadway improvements. This impact is considered **less than significant.**

Ramp Operations

The Highway 101 freeway ramp intersections at College Avenue and Steele Lane are projected to operate at LOS D or better upon buildout of the Specific Plan. Vehicle queues on the Highway 101 southbound and northbound off-ramps at the two interchanges are also projected to be accommodated within the available storage. A summary of the freeway ramp levels of service and queuing projections is contained in **Table 3.13-15**, and calculations are provided in the traffic report prepared for the project.

TABLE 3.13-15
FUTURE PLUS SPECIFIC PLAN PM PEAK HOUR FREEWAY RAMP OPERATIONS

Highway 101 Ramp Intersection	Intersection Operations		Off-Ramp Queuing	
	Delay	Level of Service	Available Storage	Maximum Queue
College Avenue				
Northbound	20.4	C	630 feet	519
Southbound	15.4	B	800 feet	402
Steele Lane				
Northbound	41.7	D	850 feet	492
Southbound	25.7	C	1,080 feet	400

Note: Delay measured in seconds.

Intersection operation and off-ramp queues at the Highway 101 interchanges at College Avenue and Steele Lane are expected to operate within acceptable ranges with buildout of the Specific Plan and its affiliated roadway improvements. Incorporation of the roadway improvements identified in the Specific Plan into the traffic impact fee program or another appropriate long-range funding mechanism, and continued monitoring of corridor operation over time through review of traffic impact studies conducted for proposed development, will ensure that this impact is less than significant.

Mitigation Measures

None required.

Consistency with Alternative Transportation Policies and Plans

Impact 3.13.4 The proposed project would not conflict with adopted policies, plans, or programs supporting alternative transportation. This impact is considered **less than significant.**

The Specific Plan has been developed to both support and expand upon current policies regarding alternative transportation. It meets the goals of the SCTA Comprehensive Transportation Plan through policies designed to increase transit use through intensification of development around transit hubs, improve accessibility for pedestrians around activity centers, and support completion of the planned facilities outlined in the 2008 Countywide Bicycle and Pedestrian Master Plan. The Specific Plan also supports and/or strengthens the alternative transportation policies set forth in the City's General Plan and incorporates new alternative transportation facilities designated in the City's Bicycle and Pedestrian Master Plan. Therefore, this impact is considered less than significant.

Mitigation Measures

None required.

Pedestrian and Bicycle Circulation

Impact 3.13.5 By design and intent, implementation of the Specific Plan would result in a beneficial impact to pedestrian and bicycle circulation. This impact is considered **less than significant.**

The Specific Plan includes new pedestrian and bicycle connections, supporting and expanding upon the improvements identified in the City's Bicycle and Pedestrian Master Plan. The transit-oriented development pattern creates a diverse mix of land uses, resulting in a concentration of housing, jobs, and shopping all within walking and bicycling distance of one another. The Specific Plan emphasizes multimodal circulation, accommodating vehicular through traffic but at a slower pace that substantially improves safety for pedestrians and cyclists compared to traditional higher-speed roadway systems. Pedestrian and bicycle activity is likely to increase proportionately to increases in traffic volumes in the Plan area. Primary pedestrian street crossings on major streets would occur at either signals or roundabouts, both of which include specific provisions to minimize conflicts between vehicular traffic and non-motorized transportation users.

The Specific Plan would further enhance the grid network of streets in the Plan area. The grid pattern increases mobility and ease of access for both pedestrians and bicyclists by creating multiple routes and minimizing travel distances. All existing and planned streets within the Specific Plan area would include full sidewalk facilities at buildout supplemented by a network of off-street mixed-use pedestrian and bicycle paths that connect the station to nearby activity centers including the bus transfer center, Coddingtown Mall and adjacent developments, and the Highway 101 pedestrian/bicycle overcrossing leading to Santa Rosa Junior College. A new pedestrian/bicycle crossing of the SMART railroad tracks has been proposed at Jennings Avenue that would improve connectivity to the neighborhoods and business parks which exist to the west of the rail corridor. The planned SMART pedestrian/bicycle path would also provide a key north–south connection both within and beyond the Plan area, including major employment centers along Dutton Avenue. Other important off-street facilities linking to the regional trail network include the Paulin Creek and Steele Creek paths. SMART trains are being designed to accommodate bicycles on board, so the existing and proposed network of bicycle facilities would allow for the "last-mile" connection between the train and a rider's origin or destination.

The plan includes designating several "complete streets" that will further increase pedestrian and bicycle mobility and ease of travel by providing wider sidewalks, bicycle lanes, landscaped buffers between sidewalks and travel lanes, enhanced pedestrian crossings, and additional streetscape amenities. The Range Avenue-Frances Street corridor would include roundabout-controlled intersections at the Coffey Lane extension, Jennings Avenue, and Briggs Avenue. Modern roundabouts are beneficial to reaching goals of the Specific Plan because they help regulate a consistent but slower flow of traffic and can increase the capacity of a roadway without widening to build additional lanes. Single-lane roundabouts are generally easier for pedestrians and bicyclists to navigate than other forms of intersection controls.

With completion of this complete street network in addition to existing and planned facilities, the following corridors within the Plan area would include on-street bicycle lanes:

- Guerneville Road-Steele Lane
- College Avenue
- Dutton Avenue
- West Steele Lane
- Range Avenue-Frances Street
- Cleveland Avenue

East–west bicycle circulation would also be enhanced by the Jennings Avenue bicycle boulevard identified in the General Plan and Specific Plan. The bicycle boulevard concept provides an emphasis on bicycle circulation on low- to moderate-volume streets where there is insufficient space for dedicated bicycle lanes and can include amenities such as special signing and striping, traffic calming, and enhanced bicycle detection at signals.

Accessibility for the Disabled and Elderly

The City of Santa Rosa adopted its ADA transition plan in 1993 and updated the plan in 2006. The plan would improve pedestrian and transit facilities, improving mobility for all users including the elderly and disabled persons. All new facilities included in the Specific Plan area will need to comply with ADA requirements. The Santa Rosa CityBus and Sonoma County Transit fleets are equipped with electrical ramps that allow many people with disabilities to use the system independently. Most buses also kneel to the curb to facilitate easier access by the elderly and disabled. The Guerneville Road SMART station will include facilities that accommodate disabled and elderly access, as would the new bus transfer centers included in the Specific Plan. The Plan would create clear and direct paths of travel between the rail and bus transfer centers, facilitating mobility and ease of travel for disabled and elderly riders.

This impact is considered less than significant.

Mitigation Measures

None required.

Transit Impacts

Impact 3.13.6 Implementation of the Specific Plan would have a beneficial impact on both bus transit and planned SMART commuter rail transit. This impact is considered **less than significant.**

By concentrating jobs, housing, and shopping in a transit-oriented development pattern surrounding the future North Santa Rosa SMART station and the existing Northside Transfer Center, the Specific Plan is by design intended to increase transit ridership and reduce dependence on private automobile travel. The Specific Plan also emphasizes improvements to pedestrian and bicycle connectivity to transit, further increasing the convenience and utility of using transit. SMART, Sonoma County Transit, and Santa Rosa CityBus were all involved in the ongoing review of the Specific Plan during its development. All three transit agencies were supportive of the Plan's efforts to increase ridership potential in the station area, including provision of strong pedestrian and bicycle linkages to transit facilities. Santa Rosa CityBus indicated that transit service would be adjusted over time to respond to growth in the station area and supports expansion of the Northside Transfer Center to include off-street bus stops, as well as implementation of the proposed transit plaza adjacent to the SMART station.

Buildout of the Specific Plan is estimated to result in a net increase of 2,941 residential units and 5,923 jobs compared to what currently exists in the station area. These incremental increases are projected to translate to approximately 269 added daily SMART trips at the North Santa Rosa station, including 123 trips from employment-based uses and 146 trips from residential uses. This impact is considered less than significant.

Mitigation Measures

None required.

Construction Activities

Impact 3.13.7 Construction activities associated with development in the Specific Plan area may temporarily affect vehicular, pedestrian, and bicycle circulation. The impact of construction-related activities is considered to be **less than significant**.

Construction of new structures and infrastructure within the Specific Plan area would potentially result in temporary detours, traffic control, and added construction-related traffic for the movement of materials and travel by the construction workforce. Any detours or road closure plans would be incorporated into construction contract specifications, which would be reviewed and approved by the City of Santa Rosa. Construction-generated traffic would be temporary and therefore would not result in any long-term degradation in operating conditions on any project roadways. Most construction traffic would be dispersed throughout the day, typically reducing to low levels by the critical p.m. peak hour.

Construction projects generate truck traffic for a variety of purposes throughout the construction schedule, including material and equipment deliveries, earthwork, etc. The construction workforce will also generate auto commute trips, though most such trips occur during non-peak traffic hours. Construction projects may periodically require traffic detours to allow heavy equipment movements or to facilitate construction activities directly adjacent to the street, or during upgrades of the utilities infrastructure needed to support growth in the Plan area. The detours may temporarily affect traffic circulation, as well as redirect pedestrian and bicycle traffic.

The City's Standard Conditions of Approval Section C(7)(e) requires a traffic control plan for all projects, in conformance with the latest edition of the State of California Department of Transportation Manual of Traffic Controls for Construction and Maintenance Work Zones. The plan is required to detail all methods, equipment, and devices to be implemented for traffic control upon city streets within the work zone and other impacted areas. The plan is required to be included as part of encroachment permit application. Submittal of this plan would ensure that the Specific Plan's impacts related to construction activities are less than significant.

Mitigation Measures

None required.

Changes to Air Traffic

Impact 3.13.8 The proposed project would not result in a change in air traffic patterns. There is **no impact**.

The Specific Plan area is located approximately 5.25 miles southeast of the Charles M. Schulz-Sonoma County Airport. Buildout of allowed uses within the Specific Plan and implementation of the Specific Plan's policies would be expected to have no impact on air safety or operation of the airport facility other than providing additional potential passengers.

Mitigation Measures

None required.

Hazardous Design Features

Impact 3.13.9 The proposed project would not substantially increase hazards due to a design feature. This impact of construction-related activities is considered to be **less than significant**.

Improvements to the transportation and circulation system within and surrounding the Specific Plan area will be implemented over time. Any such improvements will be designed and constructed to local, regional, and federal standards, and as such, would not be expected to introduce any hazardous design features. New development allowed within the Specific Plan area would include new streets, access points, pathways, and other circulation improvements that will be checked for compliance with these standards as part of the entitlement process conducted by the City of Santa Rosa. Therefore, this impact is considered less than significant.

Mitigation Measures

None required.

Emergency Access

Impact 3.13.10 The Specific Plan designates new streets that will improve connectivity within the Plan area, creating new routes for all users including emergency response providers. This impact is considered to be **less than significant**.

The Specific Plan designates new streets that will improve connectivity within the Plan area, creating new routes for all users including emergency response providers. Roadway improvements included as part of the Specific Plan have been designed to balance the mobility needs of all users, maintaining the flow of traffic at regulated speeds through core activity areas. The use of complete streets design principles on existing and new streets in the Plan area was reviewed by the City's fire department at several points during the planning process, with designs updated as necessary to accommodate emergency responders' needs for access. Lower vehicle speeds within major activity areas translate to less severe collisions, when collisions do occur. Plans submitted for individual developments to be constructed within the Specific Plan area will be reviewed for compliance with emergency access requirements by public safety officials as part of the City's entitlement process. Overall, implementation of the Specific Plan would be expected to have a beneficial impact on emergency access. Therefore, this impact is considered less than significant.

Mitigation Measures

None required.

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3.14 Climate Change and Greenhouse Gases

This section provides a discussion of the proposed project's effect on greenhouse gas emissions and the associated effects of climate change. The California Environmental Quality Act (CEQA) requires that lead agencies consider the reasonably foreseeable adverse environmental effects of projects they are considering for approval. The reader is referred to Section 3.3, Air Quality, for a discussion of project impacts associated with air quality.

3.14.1 EXISTING SETTING

EXISTING CLIMATE SETTING

Since the early 1990s, scientific consensus holds that the world's population is releasing greenhouse gases faster than the earth's natural systems can absorb them. These gases are released as byproducts of fossil fuel combustion, waste disposal, energy use, land-use changes, and other human activities. This release of gases, such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), creates a blanket around the earth that allows light to pass through but traps heat at the surface preventing its escape into space. While this is a naturally occurring process known as the greenhouse effect, human activities have accelerated the generation of greenhouse gases beyond natural levels. The overabundance of greenhouse gases in the atmosphere has led to an unexpected warming of the earth and has the potential to severely impact the earth's climate system.

While often used interchangeably, there is a difference between the terms "climate change" and "global warming." According to the National Academy of Sciences, climate change refers to any significant, measurable change of climate lasting for an extended period of time that can be caused by both natural factors and human activities. Global warming, on the other hand, is an average increase in the temperature of the atmosphere caused by increased greenhouse gas emissions. The use of the term climate change is becoming more prevalent because it encompasses all changes to the climate, not just temperature.

To fully understand global climate change, it is important to recognize the naturally occurring greenhouse effect and to define the greenhouse gases that contribute to this phenomenon. Various gases in the earth's atmosphere, classified as atmospheric greenhouse gases (GHGs), play a critical role in determining the earth's surface temperature. Solar radiation enters the earth's atmosphere from space and a portion of the radiation is absorbed by the earth's surface. The earth emits this radiation back toward space, but the properties of the radiation change from high-frequency solar radiation to lower-frequency infrared radiation. Greenhouse gases, which are transparent to solar radiation, are effective in absorbing infrared radiation. As a result, this radiation that otherwise would have escaped back into space is now retained, resulting in a warming of the atmosphere. This phenomenon is known as the greenhouse effect. Among the prominent GHGs contributing to the greenhouse effect are CO_2, CH_4, N_2O, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

Table 3.14-1 provides descriptions of the primary greenhouse gases attributed to global climate change, including a description of their physical properties, primary sources, and contribution to the greenhouse effect.

TABLE 3.14-1
GREENHOUSE GASES

Greenhouse Gas	Description
Carbon Dioxide (CO_2)	Carbon dioxide is a colorless, odorless gas. CO_2 is emitted in a number of ways, both naturally and through human activities. The largest source of CO_2 emissions globally is the combustion of fossil fuels such as coal, oil, and gas in power plants, automobiles, industrial facilities, and other sources. A number of specialized industrial production processes and product uses such as mineral production, metal production, and the use of petroleum-based products can also lead to CO_2 emissions. The atmospheric lifetime of CO_2 is variable because it is so readily exchanged in the atmosphere.[1]
Methane (CH_4)	Methane is a colorless, odorless gas that is not flammable under most circumstances. CH_4 is the major component of natural gas, about 87 percent by volume. It is also formed and released to the atmosphere by biological processes occurring in anaerobic environments. Methane is emitted from a variety of both human-related and natural sources. Human-related sources include fossil fuel production, animal husbandry (intestinal fermentation in livestock and manure management), rice cultivation, biomass burning, and waste management. These activities release significant quantities of methane to the atmosphere. Natural sources of methane include wetlands, gas hydrates, permafrost, termites, oceans, freshwater bodies, non-wetland soils, and other sources such as wildfires. Methane's atmospheric lifetime is about 12 years.[2]
Nitrous Oxide (N_2O)	Nitrous oxide is a clear, colorless gas with a slightly sweet odor. N_2O is produced by both natural and human-related sources. Primary human-related sources of N_2O are agricultural soil management, animal manure management, sewage treatment, mobile and stationary combustion of fossil fuels, adipic acid production, and nitric acid production. N_2O is also produced naturally from a wide variety of biological sources in soil and water, particularly microbial action in wet tropical forests. The atmospheric lifetime of N_2O is approximately 120 years.[3]
Hydrofluorocarbons (HFCs)	Hydrofluorocarbons are man-made chemicals, many of which have been developed as alternatives to ozone-depleting substances for industrial, commercial, and consumer products. The only significant emissions of HFCs before 1990 were of the chemical HFC-23, which is generated as a byproduct of the production of HCFC-22 (or Freon 22, used in air conditioning applications). The atmospheric lifetime for HFCs varies from just over a year for HFC-152a to 260 years for HFC-23. Most of the commercially used HFCs have atmospheric lifetimes less than 15 years (e.g., HFC-134a, which is used in automobile air conditioning and refrigeration, has an atmospheric life of 14 years).[4]
Perfluorocarbons (PFCs)	Perfluorocarbons are colorless, highly dense, chemically inert, and nontoxic. There are seven PFC gases: perfluoromethane (CF_4), perfluoroethane (C_2F_6), perfluoropropane (C_3F_8), perfluorobutane (C_4F_{10}), perfluorocyclobutane (C_4F_8), perfluoropentane (C_5F_{12}), and perfluorohexane (C_6F1_4). Natural geological emissions have been responsible for the PFCs that have accumulated in the atmosphere in the past; however, the largest current source is aluminum production, which releases CF_4 and C_2F_6 as byproducts. The estimated atmospheric lifetimes for CF_4 and C_2F_6 are 50,000 and 10,000 years, respectively.[4,5]
Sulfur Hexafluoride (SF_6)	Sulfur hexafluoride is an inorganic compound that is colorless, odorless, nontoxic, and generally nonflammable. SF_6 is primarily used as an electrical insulator in high voltage equipment. The electric power industry uses roughly 80 percent of all SF_6 produced worldwide. Significant leaks occur from aging equipment and during equipment maintenance and servicing. SF_6 has an atmospheric life of 3,200 years.[4]

Sources: [1]EPA 2011a, [2]EPA 2011b, [3]EPA 2010a, [4]EPA 2010b, [5]EFCTC 2003

Each GHG differs in its ability to absorb heat in the atmosphere based on the lifetime, or persistence, of the gas molecule in the atmosphere. Gases with high global warming potential, such as HFCs, PFCs, and SF_6, are the most heat-absorbent. Methane traps over 21 times more heat per molecule than CO_2, and N_2O absorbs 310 times more heat per molecule than CO_2. Often, estimates of GHG emissions are presented in carbon dioxide equivalents (CO_2e), which weight each gas by its global warming potential. Expressing GHG emissions in carbon dioxide equivalents takes the contribution of all GHG emissions to the greenhouse effect and converts them to a single unit equivalent to the effect that would occur if only CO_2 were being emitted. **Table 3.14-2** shows the global warming potential for different GHGs for a 100-year time horizon.

TABLE 3.14-2
GLOBAL WARMING POTENTIAL FOR GREENHOUSE GASES

Greenhouse Gas	Global Warming Potential
Carbon Dioxide (CO_2)	1
Methane (CH_4)	21
Nitrous Dioxide (N_2O)	310
Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs)	6,500
Sulfur Hexafluoride (SF_6)	23,900

Source: California Climate Action Registry 2009

As the name implies, global climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern, respectively. California is significant emitter of CO_2 in the world and produced 477 million gross metric tons of carbon dioxide equivalents in 2008 (CARB 2010a). Consumption of fossil fuels in the transportation sector was the single largest source of California's GHG emissions in 2008, accounting for 36.4 percent of total GHG emissions in the state (CARB 2010a). This category was followed by the electric power sector (including both in-state and out-of-state sources) (24.3 percent) and the industrial sector (19.3 percent) (CARB 2010a).

EFFECTS OF GLOBAL CLIMATE CHANGE

California can draw on substantial scientific research conducted by experts at various state universities and research institutions. With more than a decade of concerted research, scientists have established that the early signs of climate change are already evident in the state—as shown, for example, in increased average temperatures, changes in temperature extremes, reduced snowpack in the Sierra Nevada, sea level rise, and ecological shifts.

Many of these changes are accelerating—locally, across the country, and around the globe. As a result of emissions already released into the atmosphere, California will face intensifying climate changes in coming decades (California Natural Resources Agency 2009). Generally, research indicates that California should expect overall hotter and drier conditions with a continued reduction in winter snow (with concurrent increases in winter rains), as well as increased average temperatures, and accelerating sea-level rise. In addition to changes in average temperatures, sea level, and precipitation patterns, the intensity of extreme weather events is also changing (California Natural Resources Agency 2009).

Climate change temperature projections identified in the 2009 California Climate Adaptation Strategy suggest the following (California Natural Resources Agency 2009):

- Average temperature increase is expected to be more pronounced in the summer than in the winter season.

- Inland areas are likely to experience more pronounced warming than coastal regions.

- Heat waves are expected to increase in frequency, with individual heat waves also showing a tendency toward becoming longer, and extending over a larger area, thus more likely to encompass multiple population centers in California at the same time.

- As GHGs remain in the atmosphere for decades, temperature changes over the next 30 to 40 years are already largely determined by past emissions. By 2050, temperatures are projected to increase by an additional 1.8 to 5.4°F (an increase one to three times as large as that which occurred over the entire 20th century).

- By 2100, the models project temperature increases between 3.6 and 9°F.

Precipitation levels are expected to change over the 21st century, though models differ in determining where and how much rain and snowfall patterns will change (California Natural Resources Agency 2009). Eleven out of 12 precipitation models run by the Scripps Institution of Oceanography suggest a small to significant (12–35 percent) overall decrease in precipitation levels by mid-century (California Natural Resources Agency 2009). In addition, higher temperatures increase evaporation and make for a generally drier climate, as higher temperatures hasten snowmelt. Moreover, the 2009 California Climate Adaptation Strategy concludes that more precipitation will fall as rain rather than as snow, with important implications for water management in the state. California communities have largely depended on runoff from yearly established snowpack to provide the water supplies during the warmer, drier months of late spring, summer, and early autumn. With rainfall and meltwater running off earlier in the year, the state will face increasing challenges of storing the water for the dry season while protecting Californians downstream from floodwaters during the wet season.

Changes in average temperature and precipitation are significant. Yet gradual changes in average conditions are not all for which California must prepare. In the next few decades, it is likely that the state will face a growing number of climate change-related extreme events such as heat waves, wildfires, droughts, and floods. Because communities, infrastructure, and other assets are at risk, such events can cause significant damages and are already responsible for a large fraction of near-term climate-related impacts every year (California Natural Resources Agency 2009).

Most climate projections developed to date, including those used in this section of the DEIR, produce gradual if sometimes substantial changes for a given climate variable. In the past, rapid climate changes have been observed and scientists are increasingly concerned about additional abrupt changes that could push natural systems past thresholds beyond which they could not recover. Such events have been recorded in paleoclimatological records but current global climate models cannot predict when they may occur again (California Natural Resources Agency 2009). Such abrupt changes have been shown to occur over very short periods of time (a few years to decades) and thus represent the most challenging situations to which society and ecosystems would need to adapt (California Natural Resources Agency 2009). Short of being able to predict such abrupt changes, scientists are focusing their attention on aspects of the climate and earth system called “tipping elements” that can rapidly bring about abrupt changes.

Tipping elements refer to thresholds where increases in temperature cause a chain reaction of mutually reinforcing physical processes in the earth's dynamic cycles. The most dangerous of these include the following (California Natural Resources Agency 2009):

- A reduction in Arctic sea ice, which allows the (darker) polar oceans to absorb more sunlight, thereby increasing regional warming, accelerating sea ice melting even further, and enhancing Arctic warming over neighboring (currently frozen) land areas.
- The release of methane (a potent GHG), which is currently trapped in frozen ground (permafrost) in the Arctic tundra, will increase with regional warming and melting of the ground, leading to further and more rapid warming and resulting in increased permafrost melting.
- Continued warming in the Amazon could cause significant rainfall loss and large scale dying of forest vegetation, which will further release CO_2.
- The accelerated melting of Greenland and West Antarctic Ice Sheets observed in recent times, together with regional warming over land and in the oceans, involves mechanisms that can reinforce the loss of ice and increase the rate of global sea-level rise.

According to the 2009 California Climate Adaptation Strategy, the impacts of climate change in California have the potential to include, but are not limited to, the areas discussed in **Table 3.14-3** below.

TABLE 3.14-3
POTENTIAL STATEWIDE IMPACTS FROM CLIMATE CHANGE

Potential Statewide Impact	Description
Public Health	Climate change is expected to lead to an increase in ambient (i.e., outdoor) average air temperature, with greater increases expected in summer than in winter months. Larger temperature increases are anticipated in inland communities as compared to the California coast. The potential health impacts from sustained and significantly higher than average temperatures include heat stroke, heat exhaustion, and the exacerbation of existing medical conditions such as cardiovascular and respiratory diseases, diabetes, nervous system disorders, emphysema, and epilepsy. Numerous studies have indicated that there are generally more deaths during periods of sustained higher temperatures, and these are due to cardiovascular causes and other chronic diseases. The elderly, infants, and socially isolated people with pre-existing illnesses who lack access to air conditioning or cooling spaces are among the most at risk during heat waves.
Floods and Droughts	The impacts of flooding can be significant. Results may include population displacement, severe psychosocial stress with resulting mental health impacts, exacerbation of pre-existing chronic conditions, and infectious disease. Additionally, impacts can range from a loss of personal belongings, and the emotional ramifications from such loss, to direct injury and/or mortality. Drinking water contamination outbreaks in the U.S. are associated with extreme precipitation events. Runoff from rainfall is also associated with coastal contamination that can lead to contamination of shellfish and contribute to food-borne illness. Floodwaters may contain household, industrial, and agricultural chemicals as well as sewage and animal waste. Flooding and heavy rainfall events can wash pathogens and chemicals from contaminated soils, farms, and streets into drinking water supplies. Flooding may also overload storm and wastewater systems, or flood septic systems, also leading to possible contamination of drinking water systems. Drought impacts develop more slowly over time. Risks to public health that Californians

Potential Statewide Impact	Description
	may face from drought include impacts on water supply and quality, food production (both agricultural and commercial fisheries), and risks of waterborne illness. As surface water supplies are reduced as a result of drought conditions, the amount of groundwater pumping is expected to increase to make up for the water shortfall. The increase in groundwater pumping has the potential to lower the water tables and cause land subsidence. Communities that utilize well water will be adversely affected by drops in water tables or through changes in water quality. Groundwater supplies have higher levels of total dissolved solids compared to surface waters. This introduces a set of effects for consumers, such as repair and maintenance costs associated with mineral deposits in water heaters and other plumbing fixtures, and on public water system infrastructure designed for lower salinity surface water supplies. Drought may also lead to increased concentration of contaminants in drinking water supplies.
Water Resources	The state's water supply system already faces challenges to provide water for California's growing population. Climate change is expected to exacerbate these challenges through increased temperatures and possible changes in precipitation patterns. The trends of the last century—especially increases in hydrologic variability—will likely intensify in this century. We can expect to experience more frequent and larger floods and deeper droughts. Rising sea level will threaten the Delta water conveyance system and increase salinity in near-coastal groundwater supplies. Planning for and adapting to these simultaneous changes, particularly their impacts on public safety and long-term water supply reliability, will be among the most significant challenges facing water and flood managers this century.
Forests and Landscapes	Global climate change has the potential to intensify the current threat to forests and landscapes by increasing the risk of wildfire and altering the distribution and character of natural vegetation. If temperatures rise into the medium warming range, wildfire occurrence statewide could increase from 57 percent to 169 percent by 2085. However, since wildfire risk is determined by a combination of factors, including precipitation, winds, temperature, and landscape and vegetation conditions, future risks will not be uniform throughout the state.

Source: California Natural Resources Agency *2009*

3.14.2 REGULATORY FRAMEWORK

Federal Regulation and the Clean Air Act

In the past, the United States Environmental Protection Agency (EPA) has not regulated GHGs under the Clean Air Act (CAA) because it asserted that the act did not authorize the EPA to issue mandatory regulations to address global climate change and that such regulation would be unwise without an unequivocally established causal link between GHGs and the increase in global surface air temperatures. However, the U.S. Supreme Court held that the EPA must consider regulation of motor vehicle GHG emissions. In *Massachusetts v. Environmental Protection Agency et al.*, twelve states and cities, including California, together with several environmental organizations, sued to require the EPA to regulate GHGs as pollutants under the Clean Air Act (127 S. Ct. 1438 [2007]). The Court ruled that GHGs fit within the Clean Air Act's definition of a pollutant and that the EPA did not have a valid rationale for not regulating GHGs. In response to this ruling, the EPA has recently made an endangerment finding that greenhouse gases pose a threat to the public health and welfare. This is the first step necessary for the establishment of federal GHG regulations under the Clean Air Act.

In April 2010, the EPA issued the final rule on new standards for GHG emissions and fuel economy for light-duty vehicles in model years 2017–2025. In November 2010, the EPA published the "Prevention of Significant Deterioration (PSD) and Title V Permitting Guidance for Greenhouse

Gases," which provides the basic information that permit writers and applicants need to address GHG emissions regulated under the Clean Air Act. In that document, the EPA described the "Tailoring Rule" in the regulation of GHG emissions. With the Tailoring Rule, the EPA established a phased schedule in the regulation of stationary sources. The first phase of the Tailoring Rule began January 2, 2011, and focuses the GHG permitting programs on the largest sources with the most Clean Air Act permitting experience. In step two, which began June 1, 2011, the rule expands to cover large sources of GHGs that may not have been previously covered by the Clean Air Act for other pollutants. The rule also describes the EPA's commitment to future rulemaking that will describe subsequent steps of the Tailoring Rule for GHG permitting (EPA 2010d).

Federal Heavy-Duty National Program

In August 2011, the EPA and the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) announced the first-ever program to reduce greenhouse gas emissions and improve fuel efficiency of heavy-duty trucks and buses. The EPA and the NHTSA have each adopted complementary standards under their respective authorities covering model years 2014–2018, which together form a comprehensive Heavy-Duty National Program. The goal of the joint rulemakings is to present coordinated federal standards that help manufacturers to build a single fleet of vehicles and engines that are able to comply with both. The EPA and NHTSA have adopted standards for CO_2 emissions and fuel consumption, respectively, tailored to each of three main regulatory categories: (1) combination tractors; (2) heavy-duty pickup trucks and vans; and (3) vocational vehicles. The EPA has additionally adopted standards to control HFC leakage from air conditioning systems in pickups, vans, and combination tractors. Also exclusive to the EPA program are the EPA's N_2O and CH_4 standards that will apply to all heavy-duty engines, pickups, and vans. For purposes of this program, the heavy-duty fleet incorporates all on-road vehicles rated at a gross vehicle weight at or above 8,500 pounds, and the engines that power them, except those covered by the current GHG emissions and Corporate Average Fuel Economy standards for model year 2012–2016 passenger vehicles.

The Heavy-Duty National Program is projected to reduce fuel use and GHG emissions from medium- and heavy-duty vehicles, from semi trucks to the largest pickup trucks and vans, as well as all types and sizes of work trucks and buses in between. Vehicles covered by this program make up the transportation segment's second largest contributor to oil consumption and GHG emissions. This comprehensive program is designed to address the urgent and closely intertwined challenges of dependence on oil, energy security, and global climate change. The EPA and the NHTSA estimate that the combined standards will reduce CO_2 emissions by about 270 million metric tons and save about 530 million barrels of oil over the life of vehicles built for the 2014 to 2018 model years, providing $49 billion in net program benefits. A second phase of regulations is planned for model years beyond 2018. The goals would include spurring innovation as well as updating the assessment of actual emissions and fuel use from this sector. Such future regulation would also be designed to align with similar programs developed outside the United States.

STATE

Assembly Bill 1493

Assembly Bill (AB) 1493 (Pavley) of 2002 (Health and Safety Code Sections 42823 and 43018.5) required the California Air Resources Board (CARB) to develop and adopt the nation's first GHG emission standards for automobiles. These standards are also known as "Pavley." On September 24, 2009, CARB adopted amendments to the Pavley regulations that reduce GHG emissions in new passenger vehicles from 2009 through 2016 and cement California's enforcement of the Pavley rule while providing vehicle manufacturers with new compliance flexibility. The amendments will also prepare California to harmonize its rules with the federal rules for passenger vehicles. It is expected that the Pavley regulations will reduce GHG emissions from California passenger vehicles by about 22 percent in 2012 and about 30 percent in 2016, all while improving fuel efficiency and reducing motorists' costs.

Executive Order S-3-05

Executive Order S-3-05 proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra's snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the Executive Order established total greenhouse gas emission targets. Specifically, emissions are to be reduced to the 2000 level by 2010, to the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

The Executive Order directed the Secretary of the California Environmental Protection Agency (CalEPA) to coordinate a multiagency effort to reduce greenhouse gas emissions to the target levels. The Secretary will also submit biannual reports to the governor and state legislature describing (1) progress made toward reaching the emission targets, (2) impacts of global warming on California's resources, and (3) mitigation and adaptation plans to combat these impacts. To comply with the Executive Order, the Secretary of CalEPA created a Climate Action Team made up of members from various state agencies and commissions. The Climate Action Team released its first report in March 2006 and continues to release periodic reports on progress. The report proposed to achieve the targets by building on voluntary actions of California businesses, local government and community actions, as well as through state incentive and regulatory programs.

AB 32, the California Global Warming Solutions Act of 2006

AB 32 (Health and Safety Code Sections 38500, 38501, 28510, 38530, 38550, 38560, 38561–38565, 38570, 38571, 38574, 38580, 38590, 38592–38599) requires that statewide GHG emissions be reduced to 1990 levels by the year 2020. The gases that are regulated by AB 32 include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, nitrogen trifluoride, and sulfur hexafluoride. The reduction to 1990 levels will be accomplished through an enforceable statewide cap on GHG emissions that will be phased in starting in 2012. To effectively implement the cap, AB 32 directs CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 specifies that regulations adopted in response to AB 1493 should be used to address GHG emissions from vehicles. However, AB 32 also includes language stating that if the AB 1493 regulations cannot be implemented, then CARB should develop new regulations to control vehicle GHG emissions under the authorization of AB 32.

AB 32 requires that CARB adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrives at the cap, institute a schedule to meet the emissions cap, and develop tracking, reporting, and enforcement mechanisms to ensure that the state achieves reductions in GHG emissions necessary to meet the cap. CARB is implementing this program. The CARB Board adopted a draft resolution for formal cap-and-trade rulemaking on December 16, 2010, and is developing offset protocols and compliance requirements. AB 32 also includes guidance to institute emissions reductions in an economically efficient manner and conditions to ensure that businesses and consumers are not unfairly affected by the reductions.

Climate Change Scoping Plan

In October of 2008, CARB published its Climate Change Proposed Scoping Plan, which is the State's plan to achieve GHG reductions in California required by AB 32. The scoping plan contains the main strategies California will implement to achieve reduction of 169 million metric tons (MMT) of CO_2e, or approximately 30 percent from the state's projected 2020 emission level of 596 MMT of CO_2e under a business-as-usual scenario (this is a reduction of 42 MMT CO_2e, or almost 10 percent, from 2002–2004 average emissions). The scoping plan also includes CARB-recommended GHG reductions for each emissions sector of the state's GHG inventory. The largest proposed GHG reduction recommendations are from improving emission standards for light-duty vehicles (estimated reductions of 31.7 MMT CO_2e), implementation of the Low-Carbon Fuel Standard (15.0 MMT CO_2e), energy efficiency measures in buildings and appliances and the widespread development of combined heat and power systems (26.3 MMT CO_2e), and a renewable portfolio standard for electricity production (21.3 MMT CO_2e). The scoping plan identifies the local equivalent of AB 32 targets as a 15 percent reduction below baseline greenhouse gas emissions level, with baseline interpreted as greenhouse gas emissions levels between 2003 and 2008. The scoping plan states that land use planning and urban growth decisions will play an important role in the state's GHG reductions because local governments have primary authority to plan, zone, approve, and permit how land is developed to accommodate population growth and the changing needs of their jurisdictions. (Meanwhile, CARB is also developing an additional protocol for community emissions.) CARB further acknowledges that decisions on how land is used will have large impacts on the GHG emissions that will result from the transportation, housing, industry, forestry, water, agriculture, electricity, and natural gas emission sectors. The proposed scoping plan states that the ultimate GHG reduction assignment to local government operations is to be determined. With regard to land use planning, the scoping plan expects approximately 5.0 MMT CO_2e will be achieved associated with implementation of Senate Bill 375, which is discussed further below. The Climate Change Proposed Scoping Plan was approved by CARB on December 11, 2008.

The status of the scoping plan had been uncertain as a result of a court decision in the case of *Association of Irritated Residents v. California Air Resources Board* (San Francisco Superior Court Case No. CPF-09-509562). The court found that CARB, in its CEQA review, had not adequately explained why it selected a scoping plan that included a cap-and-trade program rather than an alternative plan. While CARB disagrees with the trial court finding and has appealed the decision, in order to remove any doubt about the matter and in keeping with CARB's interest in public participation and informed decision making, CARB revisited the alternatives. The revised analysis includes the five alternatives included in the original environmental analysis: a "no project" alternative (that is, taking no action at all); a plan relying on a cap-and-trade program for the sectors included in a cap; a plan relying more on source-specific regulatory requirements with no cap-and-trade component; a plan relying on a carbon fee or tax; and a plan relying on a variety of proposed strategies and measures. The revised analysis relies on emissions projections updated in light of current economic forecasts, accounting for the economic downturn since 2008 and reduction measures already approved and put in place.

The public hearing to consider approval of the AB 32 Scoping Plan Functional Equivalent Document (including the Supplement) and the AB 32 Scoping Plan was held on August 24, 2011. On this date, the Scoping Plan was re-approved by CARB.

Senate Bill 1368

Senate Bill (SB) 1368 (codified at Public Utilities Code Chapter 3) is the companion bill of AB 32. SB 1368 required the California Public Utilities Commission (CPUC) to establish a greenhouse gas emission performance standard for baseload generation from investor-owned utilities by February 1, 2007. The bill also required the California Energy Commission (CEC) to establish a similar standard for local publicly owned utilities by June 30, 2007. These standards cannot exceed the greenhouse gas emission rate from a baseload combined-cycle natural-gas-fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the CPUC and CEC.

SB 1078, Governor's Order S-14-08, and Senate Bill 2X (California Renewables Portfolio Standards)

SB 1078 (Public Utilities Code Sections 387, 390.1, 399.25 and Article 16) addresses electricity supply and requires that retail sellers of electricity, including investor-owned utilities and community choice aggregators, provide a minimum 20 percent of their supply from renewable sources by 2017. The proposed project would receive energy service from the investor-owned Pacific Gas and Electric Company (PG&E). This bill will affect statewide GHG emissions associated with electricity generation. In 2008, Governor Schwarzenegger signed Executive Order S-14-08, which set the Renewable Portfolio Standard target to 33 percent by 2020. It directed state government agencies and retail sellers of electricity to take all appropriate actions to implement this target.

Prior to the Executive Order the California Public Utilities Commission and the California Energy Commission were responsible for implementing and overseeing the Renewables Portfolio Standards. The Executive Order shifted that responsibility to the California Air Resources Board, requiring them to adopt regulations by July 31, 2010. CARB is required by current law, AB 32 of 2006, to regulate sources of greenhouse gases to meet a state goal of reducing greenhouse gas emissions to 1990 levels by 2020 and an 80 percent reduction of 1990 levels by 2050.

In March 2011, Senate Bill 2X established S-14-08 as law passed the state's legislature. While Senate Bill 2X contains the same targets as Governor's Order S-14-08 (33 percent of their supply from renewable sources by 2020), as an executive order it did not have the force of law (Governor's Orders can be reversed by future governors).

SB 375

SB 375 (codified at Government Code and Public Resources Code[1]), signed in September 2008, aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires metropolitan planning organizations (MPOs) to adopt a Sustainable Communities Strategy or Alternative Planning Strategy, which will prescribe land use allocation in that MPO's Regional Transportation Plan. CARB, in consultation with MPOs, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years, but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. CARB is also charged with reviewing each MPO's Sustainable Communities Strategy or Alternative Planning Strategy for consistency with its assigned targets. If MPOs do not meet the greenhouse gas reduction targets, transportation projects would not be eligible for funding programmed after January 1, 2012.

[1] Senate Bill 375 is codified at Government Code Sections 65080, 65400, 65583, 65584.01, 65584.02, 65584.04, 65587, 65588, 14522.1, 14522.2, and 65080.01 as well as Public Resources Code Sections 21061.3, 21159.28, and Chapter 4.2.

California Building Energy Efficiency Standards

Title 24, Part 6 of the California Code of Regulations, known as the Building Energy Efficiency Standards, was established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. On January 1, 2010, the California Building Standards Commission adopted CALGreen and became the first state in the United States to adopt a statewide green building standards code. CALGreen requires new buildings to reduce water consumption by 20 percent, divert 50 percent of construction waste from landfills, and install low pollutant-emitting materials.

LOCAL

Bay Area Air Quality Management District

The Bay Area Air Quality Management District (BAAQMD) CEQA Air Quality Guidelines were developed to assist lead agencies in evaluating air quality impacts for projects and plans in the San Francisco Bay Area Air Basin. The guidelines were updated in 2010 to include guidance on assessing greenhouse gas and climate change impacts as required under CEQA Section 15183.5(b) and to establish thresholds of significance for impacts related to greenhouse gas emissions. These thresholds can be used to assess plan-level and project-level impacts and allow a lead agency to determine that a project's impact on GHG emissions is less than significant if it is in compliance with a Qualified Greenhouse Gas Reduction Strategy.

A recent court case determined that the BAAQMD significance threshold for GHG emissions is itself a CEQA "project" and requires its own environmental impact review. However, for the purposes of this analysis, BAAQMD thresholds are considered to be relevant. Compliance with such thresholds is considered to be part of the solution to the cumulative GHG emissions problem, rather than hindering the State's ability to meet its goals of reduced statewide GHG emissions under AB 32.

Santa Rosa City Council Resolution 26341

Sonoma County has taken a leadership role in climate protection by being the first county in the nation where 100 percent of its municipalities and the County pledged by resolution to reduce greenhouse gas emissions throughout the community. On December 4, 2001, the City of Santa Rosa resolved to be part of Cities for Climate Protection and follow its five-milestone program which included: (1) conducting a GHG emissions inventory; (2) setting a reduction target; (3) developing an action plan; (4) implementing the action plan; and (5) monitoring progress. Acknowledging that local governments greatly influence the community's energy usage through their actions concerning land use, transportation, construction, waste management, energy supply, and energy management, in 2005, the Santa Rosa City Council adopted Resolution 26341 to establish municipal greenhouse gas emission reduction targets for the City of Santa Rosa.

The City Council-adopted resolution aims to reduce municipal greenhouse gas emissions by 20 percent from 2000 levels by 2010 and helps facilitate the community-wide greenhouse gas emission reduction target of 25 percent from 1990 levels by 2015.

Santa Rosa City Climate Action Plan

At the time of this analysis, the City of Santa Rosa has released a draft Climate Action Plan (CAP), which focuses on local measures to reduce GHG emissions and meet local and state targets.

The framework of the CAP consists of (1) an inventory of GHG emissions that identifies and quantifies existing emissions and projected future emissions; (2) reduction targets to reduce GHG emissions incrementally by 2015, 2020, and 2035; and (3) the goals, objectives, and strategies that have been devised to reduce existing emissions to meet state, regional, and local GHG emissions reduction targets. The City's CAP and its reduction targets are consistent with AB 32 and CARB recommendations to ensure that California emissions are reduced.

3.14.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

Per Appendix G of the CEQA Guidelines and BAAQMD recommendations, the City considers impacts related to climate change significant if implementation of the proposed project would result in any of the following:

1) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

2) Conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

To meet GHG emission targets of AB 32, California would need to generate less GHG emissions in the future than current levels. It is recognized, however, that for most projects there is no simple metric available to determine if a single project would substantially increase or decrease overall GHG emission levels or conflict with the goals of AB 32. Moreover, emitting GHG emissions into the atmosphere is not itself an adverse environmental effect. It is the increased concentration of GHG emissions in the atmosphere resulting in global climate change and the associated consequences of climate change that result in adverse environmental effects (e.g., sea level rise, loss of snowpack, severe weather events). Although it is possible to generally estimate a project's incremental contribution of GHGs into the atmosphere, it is typically not possible to determine whether or how an individual project's relatively small incremental contribution might translate into physical effects on the environment. Given the complex interactions between various global and regional-scale physical, chemical, atmospheric, terrestrial, and aquatic systems that result in the physical expressions of global climate change, it is impossible to discern whether the presence or absence of GHGs emitted by the project would result in any altered conditions.

However, the State of California has established GHG reduction targets and has determined that GHG emissions as they relate to global climate change are a source of adverse environmental impacts in California that should be addressed under CEQA. Although AB 32 did not amend CEQA, it identifies the myriad environmental problems in California caused by global warming (Health and Safety Code Section 38501[a]). In response to the relative lack of guidance on addressing GHGs and climate change, SB 97 was passed in order to amend CEQA by directing the Office of Planning and Research to prepare revisions to the State CEQA Guidelines addressing the mitigation of GHGs or their consequences. These revisions to the State CEQA Guidelines went into effect in January 2010.

Thresholds of significance illustrate the extent of an impact and are a basis from which to apply mitigation measures. In June 2010, BAAQMD published its greenhouse gas threshold. If the proposed project would generate GHG emissions above the threshold level, it would be deemed to contribute substantially to a cumulative impact and the impact would be considered significant. If mitigation can be applied to lessen the emissions such that the project meets its share of emission reductions needed to address the cumulative impact, the project would be considered less than significant.

BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions. However, BAAQMD recommends that all construction projects incorporate best management practices during construction to limit GHG emissions to the extent feasible.

BAAQMD's emission threshold for operations of such a project as the proposed Specific Plan is 4.6 metric tons of CO_2e per service population (residents plus employees) per year (BAAQMD 2011). While a recent court case has determined that the BAAQMD significance threshold for GHG emissions is itself a CEQA "project" and requires its own environmental impact review, the use of these thresholds was chosen for the proposed project based on the substantial evidence that such thresholds represent quantitative and/or qualitative levels of GHG emissions within the San Francisco Bay Area Air Basin (SFBAAB), compliance with which means that the environmental impact of the GHG emissions will normally not be cumulatively considerable under CEQA (BAAQMD 2011). Compliance with such thresholds will be part of the solution to the cumulative GHG emissions problem, rather than hinder the State's ability to meet its goals of reduced statewide GHG emissions under AB 32.

METHODOLOGY

GHG emission-related impacts were assessed in accordance with methodologies recommended by BAAQMD and in comparison to the recommended BAAQMD significance thresholds, as identified in the BAAQMD *California Environmental Quality Act Air Quality Guidelines* (2011).

Emissions associated with the proposed Specific Plan were estimated for the GHGs that the California Air Resources Board finds are generated from indirect sources like the proposed project, including CO_2, N_2O, and CH_4. It is important to note that while other GHGs, such as HFCs, have a higher global warming potential than CO_2, N_2O, and CH_4, they emit negligible emissions from land use developments like the proposed project under typical operations.

The BAAQMD Greenhouse Gas Model computer modeling program was utilized to estimate the GHG emissions resulting from project operations. BAAQMD developed this model to calculate greenhouse gas emissions such as indirect emissions from electricity use and waste and direct fugitive emissions of refrigerants. The program also adjusts for state regulations, specifically California's low carbon fuel rules and Pavley regulations.

IMPACTS AND MITIGATION MEASURES

AB 32 Compliance and GHG Emissions (Standards of Significance 1 & 2)

Impact 3.14.1 Implementation of the proposed project would result in the direct and indirect generation of greenhouse gas emissions that could result in a negative impact to the environment as well as conflict with the goals of AB 32. This impact is **less than cumulatively considerable after mitigation.**

GHG emissions contribute, on a cumulative basis, to the significant adverse environmental impacts of global climate change. No single project could generate enough GHG emissions to noticeably change the global average temperature. The combination of GHG emissions from past, present, and future projects contributes substantially to the phenomenon of global climate change and its associated environmental impacts and as such is addressed only as a cumulative impact.

Construction GHG Emissions

Short-term increases in GHG emissions would occur during demolition of existing land uses and construction of proposed new land uses. Short-term construction GHG emissions would result in increased emissions of CO_2, N_2O, and CH_4.

Proposed future projects in the Specific Plan area have not yet been adequately defined to allow for an estimation of daily construction-generated GHG emissions that is not overly speculative. As stated previously, BAAQMD does not have an adopted threshold of significance for construction-related GHG emissions; however, it is recommended that all construction projects incorporate best management practices (BMPs) during construction to limit GHG emissions to the extent feasible. The proposed Specific Plan does not include policy provisions implementing BAAQMD-recommended BMPs for the control of construction-generated greenhouse gas emissions. Without implementation of GHG-reducing best management practices for the control of construction-generated emissions, short-term increases of GHG emissions could potentially conflict with or obstruct the ability to meet the State's goals of reduced statewide GHG emissions under AB 32. Therefore, uncontrolled construction-generated emissions would be considered potentially significant.

Mitigation Measures

Implementation of mitigation measure MM 3.3.1, described in Section 3.3, Air Quality, would reduce the emissions of heavy-duty diesel-powered equipment emissions during construction. For instance, mitigation measure MM 3.3.1 requires that idling times of construction trucks be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes and that clear signage be provided for construction workers at all access points to remind them of this requirement. Furthermore, all construction equipment is required to be maintained and properly tuned in accordance with manufacturers' specifications. Mitigation measure MM 3.3.1 also mandates that project applicants of development within the Specific Plan area designate a disturbance coordinator responsible for ensuring that mitigation measures to reduce air quality impacts from construction are properly implemented.

In addition to mitigation measure MM 3.3.1, the following BAAQMD-recommended BMP mitigation shall also be required in order to further minimize construction-related GHG emissions.

MM 3.14.1 The City shall require all subsequent development projects located within the Specific Plan area to implement applicable BAAQMD-recommended basic construction mitigation measures and, where applicable, additional BAAQMD-recommended control measures/best management practices.

a. Prior to issuance of grading or building permits, all future development projects, to the extent applicable and practical, shall specify on the final project plans implementation of BAAQMD-recommended construction-related measures to reduce GHG emissions during construction activities. These measures include, as feasible:

1. Use of alternative-fueled (i.e., biodiesel, electric) construction vehicles and equipment to the maximum extent possible;

2. Use of local construction materials (within 100 miles) to the maximum extent possible; and

3. Recycle construction waste and demolition materials to the maximum extent possible.

Timing/Implementation: *During construction*

Enforcement/Monitoring: *City of Santa Rosa Community Development Department, Planning Division*

Implementation of mitigation measure **MM 3.3.1**, described in Section 3.3, Air Quality, would reduce construction-related GHG emissions. Furthermore, implementation of mitigation measure **MM 3.14.1** would institute BAAQMD-recommended best management practices which were designed to help meet the State's goals of reduced statewide GHG emissions under AB 32. With implementation of these measures, construction-related GHG emissions generated would result in a less than significant impact.

Operational GHG Emissions

Buildout of the Specific Plan would result in long-term operational emissions of greenhouse gas emissions. Project-generated increases in emissions would be predominantly associated with motor vehicle use.

In addition to the future planned Sonoma-Marin Area Rail Transit (SMART) station, the proposed Specific Plan would include the development of approximately 438 single-family dwelling units, 1,276 multi-family dwelling units, 798,600 square feet of office, 537,200 square feet of retail, and 97,600 square feet of institutional land uses beyond what is currently planned under buildout of the General Plan. Approximately 22,700 square feet of existing warehouse and 34,000 square feet of light and heavy industrial land uses would be removed with future development. Based on the traffic analysis prepared for this project, at buildout, these new proposed land uses would result in a net increase of approximately 37,800 vehicle trips and approximately 114,114 vehicle miles traveled (VMT). Although the project is projected to result in an overall net increase in VMT, it is important to note that the proposed Specific Plan was designed to be a transit-oriented development (TOD). The intent of TOD is to give people the opportunity to live, shop, work, and recreate in areas that are close together. In addition, the TOD area is anticipated to provide a variety of transportation options, which would then lead to a reduction of VMT. However, the exact amount of VMT reduction cannot be accurately predicted because so much of the decision where to drive, live, work, or recreate is a personal choice. The proposed project differs from more traditional development because it significantly increases the opportunities for residents to use transportation methods other than their private automobile, thereby reducing VMT. The proposed Specific Plan would result in an increased development density within the Plan area and in close proximity to the planned SMART station. In comparison to traditional development, the TOD mixed-use design of the Specific Plan would be anticipated to result in long-term reductions in vehicle trips, trip distances, and overall reductions in regional VMT, which may not be fully accounted for in the transportation modeling conducted for the project.

TABLE 3.14-4
LONG-TERM OPERATIONAL EMISSIONS

Source	Emissions (metric tons per year)[1]			
	CO_2	CH_4	N_2O	CO_2e
Specific Plan Proposed New Land Uses				
Area Source	10	0.01	0.01	13.5
Mobile Source[2]	--	--	--	13,403
Indirect Emissions from Electricity Consumption	10,918	0.09	0.05	10,936
Indirect Emissions from Natural Gas Consumption	4,161	0.39	0.01	4,171
Water/Wastewater	393	0	0	393
Waste Generation	68	459	N/A	9,716
Total				38,633
Existing Land Use Designations to be Removed[3]				530
Net Increase[4]				**38,103**

Notes: CO_2 = carbon dioxide; N_2O = nitrous oxide; CH_4 = methane
1. *Based on emissions modeling conducted using the BAAQMD'S Greenhouse Gas Model computer program.*
2. *Based on a net increase of approximately 114,114 VMT.*
3. *Includes GHG emissions associated with an approximate 22,700 square feet of warehouse and 34,000 square feet of light/heavy industrial land use designations anticipated to be removed with future development.*
4. *Net increase in emissions represents the gross operational emissions associated with buildout of the Specific Plan area minus the sources attributable to existing land uses that are anticipated to be removed.*

BAAQMD's emission threshold is 4.6 metric tons of CO_2e per service population (residents plus employees) per year. Compliance with such thresholds will be part of the solution to the cumulative GHG emissions problem. **Table 3.14-5** depicts the projected GHG emissions per service population for the project.

TABLE 3.14-5
SPECIFIC PLAN GREENHOUSE GAS EMISSIONS PER SERVICE POPULATION

Per Capita Emissions	Emissions	Jobs	Population	Service Population (SP)	$MTCO_2e$/SP/Year
Specific Plan Buildout	38,103	5,225	4,217	9,442	4.03

Based on the population and employment figures listed in **Table 3.14-5**, the projected buildout service population would be 9,442 under the proposed Specific Plan. Dividing the GHG emissions for buildout yields a metric ton per service population ratio of 4.03 for buildout conditions. As this is less than the BAAQMD threshold of 4.6, the proposed project would improve GHG emissions per service population and would not result in a net increase in cumulative GHG emissions.

AB 32 Compliance

In December 2008, CARB approved the AB 32 Scoping Plan outlining the state's strategy to achieve the 2020 GHG emissions limit. This Scoping Plan, developed by CARB in coordination with the Climate Action Team, proposes a comprehensive set of actions designed to reduce overall GHG emissions in California, improve the environment, reduce dependence on oil, diversify California's energy sources, save energy, create new jobs, and enhance public health. The Scoping Plan contains a list of 39 recommended Actions contained in Appendices C and E of the Scoping Plan. This list is also shown in **Appendix F** of this Draft EIR.

As stated above, for the purposes of evaluating the proposed project's GHG impacts, the project would be considered to have a significant impact if it would surpass the BAAQMD greenhouse gas significance threshold. As demonstrated, the project would not surpass this threshold. Compliance with the BAAQMD threshold is part of the solution to the cumulative GHG emissions problem and equates to compliance with the State's ability to meet its goals of reduced statewide GHG emissions under AB 32.

The strategies included in the Scoping Plan that apply to the project are contained in **Table 3.14-6**, which also summarizes the extent to which the project would comply with the strategies to help California reach its emission reduction targets. The strategies listed in **Table 3.14-6** are either required Specific Plan policies and design guidelines or requirements under local or state ordinances. With implementation of these strategies/policies, the project's contribution to cumulative GHG emissions would be reduced.

TABLE 3.14-6
AB 32 COMPLIANCE

Strategy	Project Compliance
Energy Efficiency Measures	
Energy Efficiency Maximize energy efficiency building and appliance standards, and pursue additional efficiency efforts including new technologies, and new policy and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California (including both investor-owned and publicly owned utilities). **Renewable Portfolio Standard** Achieve a 33 percent renewable energy mix statewide. **Green Building Strategy** Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.	**Compliant with Mitigation Incorporated** The City of Santa Rosa complies with CALGreen Tier 1 statewide green building standards. Therefore, the proposed project will comply with the updated Title 24 standards, including the new 2010 California Building Code (CBC), for building construction. In addition, project designs that incorporate renewable energy sources, such as integrated solar panels, are encouraged per the Specific Plan design guidelines. Also, the Specific Plan states that buildings should be oriented to maximize passive solar heating during cool seasons, avoid solar heat gain during hot periods, and maximize natural ventilation.
Water Conservation and Efficiency Measures	
Water Use Efficiency Continue efficiency programs and use cleaner energy sources to move and treat water. Approximately 19 percent of all electricity, 30 percent of all natural gas, and 88 million gallons of diesel are used to convey, treat, distribute and use water and wastewater. Increasing the efficiency of water transport and reducing water use would reduce GHG emissions.	**Compliant** Per the Specific Plan design guidelines, the project would use recycled water for landscaping when possible.
Transportation and Motor Vehicle Measures	
Vehicle Climate Change Standards AB 1493 (Pavley) required the State to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of GHG emissions from passenger vehicles and light-duty trucks. Regulations were	**Compliant** The project does not involve the manufacture of vehicles. However, vehicles that are purchased and used

Strategy	Project Compliance
adopted by CARB in September 2004. **Light-Duty Vehicle Efficiency Measures** Implement additional measures that could reduce light-duty GHG emissions. For example, measures to ensure that tires are properly inflated can both reduce GHG emissions and improve fuel efficiency. **Adopt Heavy- and Medium-Duty Fuel and Engine Efficiency Measures** Regulations to require retrofits to improve the fuel efficiency of heavy-duty trucks that could include devices that reduce aerodynamic drag and rolling resistance. This measure could also include hybridization of and increased engine efficiency of vehicles. **Low Carbon Fuel Standard** CARB identified this measure as a Discrete Early Action Measure. This measure would reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020.	within the project site would comply with any vehicle and fuel standards that CARB adopts.
Regional Transportation-Related Greenhouse Gas Targets Develop regional GHG emissions reduction targets for passenger vehicles. Local governments will play a significant role in the regional planning process to reach passenger vehicle GHG emissions reduction targets. Local governments have the ability to directly influence both the siting and design of new residential and commercial developments in a way that reduces GHGs associated with vehicle travel.	**Compliant** Specific regional emission targets for transportation emissions do not directly apply to this project; regional GHG reduction target development is outside the scope of this project. The project will comply with any plans developed by the City of Santa Rosa, such as the City Climate Action Plan when adopted.
Measures to Reduce High Global Warming Potential Gases CARB has identified Discrete Early Action measures to reduce GHG emissions from the refrigerants used in car air conditioners, semiconductor manufacturing, and consumer products. CARB has also identified potential reduction opportunities for future commercial and industrial refrigeration, changing the refrigerants used in auto air conditioning systems, and ensuring that existing car air conditioning systems do not leak.	**Compliant** New products used or serviced on the project site (after implementation of the reduction of GHG gases) would comply with future CARB rules and regulations.

As previously stated, the GHG emissions resulting from implementation of the Specific Plan would be less than the BAAQMD threshold of 4.6 metric tons of CO_2e per service population (residents plus employees) per year and therefore would not result in a net increase in cumulative GHG emissions. Compliance with the BAAQMD threshold is part of the solution to the cumulative GHG emissions problem and equates to compliance with the State's ability to meet its goals of reduced statewide GHG emissions under AB 32. The proposed Specific Plan would not conflict with or impede implementation of reduction goals identified in AB 32; therefore, the project would not conflict with AB 32, adopted for the purpose of reducing the emissions of greenhouse gases. This impact is **less than cumulatively considerable** and therefore a **less than significant** impact.

Mitigation Measures

None required.

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4.0 ALTERNATIVES

4.1 INTRODUCTION

GENERAL CEQA REQUIREMENTS

California Environmental Quality Act (CEQA) Guidelines Section 15126.6(a) states "an EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." The EIR need not consider every conceivable alternative, but rather consider a "reasonable range" of potentially feasible alternatives that will foster informed decision-making and public participation. The range of potential alternatives to the proposed project shall include those alternatives that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects (CEQA Guidelines Section 15126.6(c)).

PROJECT OBJECTIVES

As described in Section 2.0, Project Description, the proposed Specific Plan was created to meet the following objectives:

1. Establish a land use plan, zoning, and a policy and design framework that will guide future development and redevelopment activities.

2. Intensify land uses and increase residential densities in the project area to support future transit improvements and ridership and to exceed the Metropolitan Transportation Commission's (MTC) residential unit thresholds.

3. Improve pedestrian, bicycle, auto, and transit access in the project area.

4. Enhance connectivity between the station site and adjacent commercial, residential, educational, and governmental areas.

5. Improve aesthetics and public safety through physical design and streetscape improvements.

6. Develop and implement urban design standards that promote a walkable environment.

7. Enhance quality of life in the project area by providing parks, trails, and recreational opportunities.

8. Transform the project area into a vibrant and distinct place that people want to visit.

9. Catalyze economic development and promote economic competitiveness in the project area by providing employment opportunities.

10. Reduce greenhouse gas emissions by promoting sustainable transit-oriented development and practical alternative modes of transport to the automobile.

11. Inform the community about transit-oriented design concepts.

12. Maximize public participation in the specific plan process through a comprehensive community involvement strategy.

SUMMARY OF SIGNIFICANT EFFECTS

The analysis presented in the technical sections of this Draft EIR (Sections 3.1 through 3.14) found several significant impacts which would result from implementation of the Specific Plan. These significant impacts were:

- New Sources of Light and Glare. Implementation of the proposed project could introduce new sources of light or glare.

- Short-Term Construction-Generated Emissions of Criteria Air Pollutants and Precursors. Construction-generated emissions could potentially conflict with, or obstruct implementation of, the applicable air quality plan and may contribute substantially to an existing or projected air quality violation.

- Long-term Operational Emissions of Criteria Air Pollutants. Operational emissions could potentially conflict with, or obstruct implementation of, the applicable air quality plan and may contribute substantially to an existing or projected air quality violation. This impact is **significant and unavoidable.**

- Exposure of Sensitive Receptors to Localized Concentrations of Hazardous Air Pollutants. Future development within the Specific Plan area may result in increased exposure to localized concentrations of TACs or $PM_{2.5}$ that may exceed applicable BAAQMD-recommended significance thresholds.

- Cumulative Net Increase of Nonattainment Criteria Pollutants. Implementation of the proposed Specific Plan, in combination with cumulative development in the SFBAAB, would result in a cumulatively considerable net increase of ozone and coarse and fine particulate matter. This impact is considered **cumulatively considerable** and **significant and unavoidable.**

- Impact on Special-Status Species or Their Habitat or Movement. Implementation of the Specific Plan could result in impacts to special-status species and their habitat from redevelopment activities, but not to wildlife movement corridors.

- Affect Wetland or Riparian Habitats. Implementation of the Specific Plan could result in fill of seasonal wetlands that may be present within the Specific Plan area.

- Potential On-Site Hazards. Review of environmental hazards databases conducted for the Specific Plan area identified areas of environmental concern.

- Accidental Release of Hazardous Materials. The increased density of the proposed Specific Plan would lead to an associated increased use of hazardous materials. The proposed Specific Plan therefore has potential to result in an increased risk of accidental release of hazardous materials.

- Exposure to Groundborne Vibration. Groundborne vibration levels associated with pile-driving activities, if required, could exceed applicable groundborne vibration criterion at nearby land uses.

- Increased Demand for Fire Protection, Emergency Medical Services, and Law Enforcement. Development under the proposed Specific Plan could increase the need for public safety services, including fire protection, emergency medical response, and law enforcement.

- Impacts to Area Freeway Capacity. The three Highway 101 freeway segments from downtown Santa Rosa to College Avenue, College Avenue to Steele Lane, and Steele Lane to Bicentennial Avenue are projected to operate below Caltrans' LOS standard of the LOS C/D threshold in the future, both without and with the Specific Plan. The incremental increase in traffic associated with the Specific Plan that would be added to Highway 101 is considered to be **cumulatively considerable** and **significant and unavoidable**.

- AB 32 Compliance and GHG Emissions. Implementation of the proposed project would result in the direct and indirect generation of greenhouse gas emissions that could result in a negative impact to the environment as well as conflict with the goals of AB 32 (construction only).

ALTERNATIVES ANALYZED IN THE EIR

Two alternatives to the proposed project are analyzed in this Draft EIR and are described below. Significant impacts associated with the proposed Specific Plan (as described above) were used to determine the range of these alternatives.

Alternative 1 – No Project Alternative. Under this alternative, no changes of the Specific Plan area would occur beyond what is currently designated in the City of Santa Rosa General Plan 2035. This alternative would consist of a continuation of the General Plan 2035 policies into the future. The land use designations of the land surrounding the proposed North Santa Rosa Station would remain medium-density residential, medium-high-density residential, office, retail and business services, light industry, general industry, business park, and public institutional. This alternative would not meet the objectives of the proposed project. However, analysis of the No Project Alternative is required under CEQA Guidelines Section 15126.6(e).

Alternative 2 – Reduced Development Potential Alternative. This alternative generally meets or exceeds MTC suburban station guidelines. It aims to achieve all project goals and community vision elements with an economic foundation of moderate growth scenario figures developed in the June 2011 North Santa Rosa Station Area Specific Plan Market Assessment. It includes 1,869 new dwelling units beyond existing conditions (452 single-family and 1,417 multi-family), resulting in 4,602 residents. This is 1,045 fewer dwelling units and 2,639 fewer residents than the proposed Specific Plan. This alternative also includes an additional 954,254 square feet of nonresidential uses beyond existing conditions, which is 694,396 fewer square feet than the proposed Specific Plan. These nonresidential land uses would result in 2,871 additional jobs beyond existing conditions, 3,052 fewer jobs than the proposed Specific Plan. See **Figure 4.0-1** for a land use map of this alternative.

4.2 ALTERNATIVES CONSIDERED BUT REJECTED

CEQA Guidelines Section 15126.6(c) states that an EIR should identify any alternatives considered by the lead agency but rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination. Additional information explaining the choice of alternatives may be included in the administrative record. Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are

(1) failure to meet most of the basic project objectives, (2) infeasibility, or (3) inability to avoid significant environmental impacts.

The land use development alternatives that were considered but rejected consist of the following:

> **Alternative Site** – The possibility of placing the proposed project on an alternative site within the Santa Rosa was not feasible. No off-site alternatives were identified during the Specific Plan development stage, nor are any included in this EIR since the Specific Plan is targeted toward development around a proposed station platform serving the Sonoma-Marin Area Rail Transit line. As a result, there are no other sites in the city that would be able to meet the objectives of the Specific Plan.
>
> **No Build Alternative** – This alternative considered halting development in the Specific Plan area entirely. All land uses would remain in their current state, and land uses under the General Plan would not be implemented. As the General Plan 2035 has already been approved, this would be largely infeasible. This arrangement would prevent the Specific Plan from attaining many of the objectives outlined for the project. For these reasons, a no build alternative was determined to be infeasible and will not be addressed further herein.

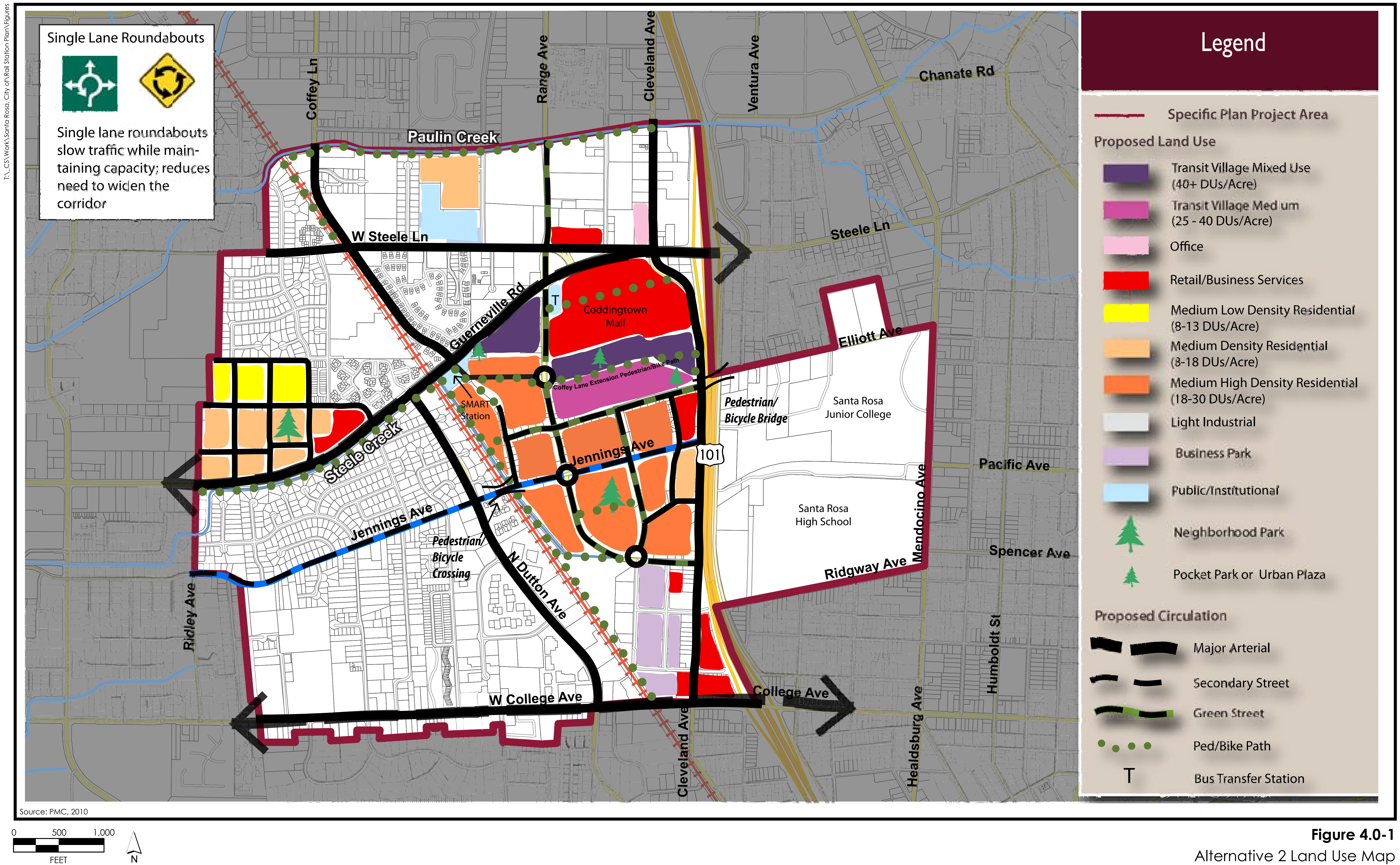

Figure 4.0-1

Alternative 2 Land Use Map

PMC

4.3 COMPARATIVE IMPACT ANALYSIS

For each project alternative, the significant environmental impacts are identified, as well as the impacts of the proposed project that would be avoided. If an alternative would cause one or more significant effects in addition to those that would be caused by the proposed project, the significant effects of the alternative are discussed, but in less detail than the significant effects of the proposed project (CEQA Guidelines Section 15126.6(d)). The discussion for each alternative addresses potential impacts on each of the environmental issues presented in Section 3.0 of this Draft EIR. If a potential impact under an alternative is similar to that under the proposed project, the discussion will so note and no further analysis of the potential impact is conducted.

While analysis of alternatives under CEQA is neither required nor meant to be as detailed as the analysis of the project as proposed, pursuant to State CEQA Guidelines Section 15126.6(d), some attempt at quantifying the impact of each alternative is appropriate and can inform decision-makers as to the comparative impacts of each alternative. To this end, the development assumptions discussed in Section 3.0 have been applied to each of the alternatives to arrive at an expected development intensity for each.

AESTHETICS AND VISUAL RESOURCES

Alternative 1 – Better (Substantial)

Implementation of the proposed Specific Plan would allow for taller buildings at some locations than what currently exist and what are currently allowed, and could therefore result in new sources of glare, depending upon the orientation of the building and the materials used.

Under Alternative 1, no structures would be constructed beyond what was considered in the General Plan 2035. No buildings taller than what is currently allowed would be built under this alternative. Therefore, this alternative would not result in new sources of glare.

Alternative 2 – Similar

Implementation of the proposed Specific Plan would allow for taller buildings at some locations than what currently exist and what are currently allowed, and could therefore result in new sources of glare, depending upon the orientation of the building and the materials used.

Alternative 2 would similarly allow taller buildings at some locations than what currently exist and what are currently allowed. Therefore, it would result in similar sources of glare to the proposed Specific Plan.

AIR QUALITY

Alternative 1 – Better (Substantial)

Construction and operational emissions associated with the proposed Specific Plan could potentially contribute to a conflict with the Bay Area Air Quality Management District's (BAAQMD) *2010 Clean Air Plan* Emissions Inventory. Growth allowed under the proposed Specific Plan would be associated with an increase in vehicle miles traveled (VMT) an additional 2.8 percent beyond what is considered in the General Plan 2035. The projected increases in VMT would continue to exceed the rate of population increase, both at buildout and under cumulative conditions. Furthermore, future development within the Specific Plan area may result in increased exposure to localized concentrations of toxic air contaminants (TACs) or fine particulate matter ($PM_{2.5}$) that may exceed applicable BAAQMD-recommended significance thresholds.

Alternative 1 would place no additional development within the Specific Plan area beyond what is considered in the General Plan 2035. As such, construction and operational emissions associated with this alternative would not contribute to a conflict with the *2010 Clean Air Plan* Emissions Inventory beyond what was considered in the General Plan 2035. Furthermore, sensitive receptors would not be exposed to localized concentrations of hazardous air pollutants beyond what was considered in the General Plan 2035.

Alternative 2 – Better (Insubstantial)

Construction and operational emissions associated with the proposed Specific Plan could potentially contribute to a conflict with the BAAQMD's *2010 Clean Air Plan* Emissions Inventory. Growth allowed under the proposed Specific Plan would be associated with an increase in VMT an additional 2.8 percent beyond what is considered in the General Plan 2035. The projected increases in VMT would continue to exceed the rate of population increase, both at buildout and under cumulative conditions. Furthermore, future development within the Specific Plan area may result in increased exposure to localized concentrations of TACs or $PM_{2.5}$ that may exceed applicable BAAQMD-recommended significance thresholds.

As Alternative 2 would include a reduced amount of development as compared to the Specific Plan, it is anticipated that construction and operational emissions would be reduced. While construction and operational emissions associated with Alternative 2 could potentially contribute to a conflict with the *2010 Clean Air Plan* Emissions Inventory, Alternative 2 would reduce the number of people in the area from 7,241 people beyond existing conditions to 4,602 people under Alternative 2. The projected increases in VMT under Alternative 2 would therefore likely be less than under the proposed project. Similarly, future development within the Specific Plan area would result in less increased exposure to localized concentrations of TACs or $PM_{2.5}$. This impact would therefore be reduced under Alternative 2, although the alternative would still generate substantial amounts of emissions. As a result, Alternative 2 would result in an insubstantial improvement over the Specific Plan with regard to air quality impacts.

BIOLOGICAL RESOURCES

Alternative 1 – Similar

Implementation of the Specific Plan would allow for land uses whose development could result in impacts to special-status species and their habitat, as well as fill of seasonal wetlands.

Alternative 1 would place no additional development within the Specific Plan area beyond what is considered in the General Plan 2035. Development could still allow for land uses whose development could result in impacts to special-status species and their habitat, as well as fill of seasonal wetlands. This impact would therefore be similar to that of the proposed Specific Plan.

Alternative 2 – Similar

Implementation of the Specific Plan would allow for land uses whose development could result in impacts to special-status species and their habitat, as well as fill of seasonal wetlands.

Alternative 2 would also allow for land uses whose development could result in impacts to special-status species and their habitat, as well as fill of seasonal wetlands. This impact would therefore be similar to that of the proposed Specific Plan.

HAZARDOUS MATERIALS AND HUMAN HEALTH

Alternative 1 – Similar

Implementation of the proposed Specific Plan would allow for development on lands that have been identified by environmental hazards databases as areas of environmental concern. Furthermore, the increased density of the proposed Specific Plan would lead to an associated increased use of hazardous materials, and therefore has potential to result in an increased risk of accidental release of hazardous materials.

Alternative 1 would place no additional development within the Specific Plan area beyond what is considered in the General Plan 2035. Development could still occur on lands that have been identified by environmental hazards databases as areas of environmental concern. While this alternative would not allow for further development beyond what is considered in the General Plan 2035, it would have a similar risk of accidental release of hazardous materials, as handling and transportation of hazardous materials would be subject to the same state and federal regulations as under the proposed Specific Plan.

Alternative 2 – Similar

Implementation of the proposed Specific Plan would allow for development on lands that have been identified by environmental hazards databases as areas of environmental concern. Furthermore, the increased density of the proposed Specific Plan would lead to an associated increased use of hazardous materials, and therefore has potential to result in an increased risk of accidental release of hazardous materials.

Alternative 2 would also allow for development on lands that have been identified by environmental hazards databases as areas of environmental concern. Development could still occur on lands that have been identified by environmental hazards databases as areas of environmental concern. While this alternative would allow for less development than the proposed Specific Plan, it would have a similar risk of accidental release of hazardous materials, as handling and transportation of hazardous materials would be subject to the same state and federal regulations.

NOISE

Alternative 1 – Similar

Groundborne vibration levels associated with pile-driving activities in development under the proposed Specific Plan could exceed applicable groundborne vibration criterion at nearby land uses.

Alternative 1 would place no additional development within the Specific Plan area beyond what is considered in the General Plan 2035. As pile-driving activities associated with development under this alternative would occur, it would similarly have the potential to exceed applicable groundborne vibration criterion at nearby land uses.

Alternative 2 – Similar

Groundborne vibration levels associated with pile-driving activities in development under the proposed Specific Plan could exceed applicable groundborne vibration criterion at nearby land uses.

Alternative 2 would similarly allow development that would be associated with pile-driving-related groundborne vibrations. Alternative 2 would allow for less development than the proposed Specific Plan; therefore less pile-driving activities would occur. However, the occurrence of these activities would continue to have the potential to exceed applicable groundborne vibration criterion at nearby land uses. This impact would therefore be similar to that of the proposed Specific Plan.

PUBLIC SERVICES AND UTILITIES

Alternative 1 – Better (Substantial)

The population increase allowed for under the proposed Specific Plan would lead to an associated increase in the need for public safety services, including fire protection, emergency medical response, and law enforcement.

Alternative 1 would place no additional development within the Specific Plan area beyond what is considered in the General Plan 2035. As such, there would be no further increase in public safety services beyond what was already considered in the General Plan 2035. This impact would therefore be better than under the proposed Specific Plan.

Alternative 2 – Better (Insubstantial)

The population increase allowed for under the proposed Specific Plan would lead to an associated increase in the need for public safety services, including fire protection, emergency medical response, and law enforcement.

Alternative 2 would also allow for a population increase in the Specific Plan area beyond General Plan 2035 levels that would lead to an associated increase in public safety services beyond what was already considered in the General Plan 2035. However, this alternative would require similar mitigation to that of the proposed project. While Alternative 2 would result in less additional demand for public safety services in the Specific Plan area than the proposed Specific Plan, the alternative would still generate a substantial demand for such services. As a result, Alternative 2 would result in an insubstantial improvement over the Specific Plan with regard to public services.

TRANSPORTATION AND CIRCULATION

Alternative 1 – Better (Substantial)

The population increase allowed for under the proposed Specific Plan would lead to an associated increase in traffic. This incremental increase in traffic would contribute to the already deficient operation of three segments of Highway 101, which would be operating unacceptably at level of service (LOS) D or worse under future conditions.

Alternative 1 would place no additional development within the Specific Plan area beyond what is considered in the General Plan 2035. As such, there would be no further increase in VMTs associated with increased population beyond what was already considered in the General Plan 2035. While these segments of Highway 101 would still operate unacceptably under this alternative, the level of service on some roadways would be better than under the proposed Specific Plan.

Alternative 2 – Better (Insubstantial)

The population increase allowed for under the proposed Specific Plan would lead to an associated increase in traffic. This incremental increase in traffic would contribute to the already deficient operation of three segments of Highway 101, which would be operating unacceptably at LOS D or worse under future conditions.

Alternative 2 would also allow for a population increase in the Specific Plan area beyond General Plan 2035 levels that would lead to an associated increase in traffic. This incremental increase in traffic would similarly contribute to the already deficient operation of three segments of Highway 101, which would be operating unacceptably at LOS D or worse under future conditions. However, Alternative 2 would allow for less additional population in the Specific Plan area than with the proposed Specific Plan. As such, there would be less of an increase in VMTs under Alternative 2 when compared to the proposed Specific Plan. However, this alternative would still generate substantial amounts of emissions. As a result, Alternative 2 would result in an insubstantial improvement over the Specific Plan with regard to traffic impacts.

CLIMATE CHANGE AND GREENHOUSE GASSES

Alternative 1 – Better (Substantial)

Implementation of the proposed project would result in the direct and indirect generation of greenhouse gas (GHG) emissions that could result in a negative impact to the environment as well as conflict with the goals of AB 32.

Alternative 1 would place no additional development within the Specific Plan area beyond what is considered in the General Plan 2035. As such, greenhouse gas emissions associated with this alternative would not result in adverse environmental impacts or contribute to a conflict with the goals of AB 32 beyond what was considered in the General Plan 2035.

Alternative 2 – Better (Insubstantial)

Implementation of the proposed project would result in the direct and indirect generation of greenhouse gas emissions that could result in a negative impact to the environment as well as conflict with the goals of AB 32.

As Alternative 2 would include a reduced amount of development as compared to the Specific Plan, it is anticipated that greenhouse gas emissions would be reduced. While greenhouse gas emissions associated with Alternative 2 could potentially contribute to a conflict with the goals of AB 32, Alternative 2 would reduce the number of people in the area from 7,241 people beyond existing conditions to 4,602 people under Alternative 2. The projected increases in GHG emissions under Alternative 2 would therefore likely be less than under the proposed project. This impact would therefore be reduced under Alternative 2, although it would still generate substantial amounts of GHG emissions. As a result, Alternative 2 would result in an insubstantial improvement over the Specific Plan with regard to climate change and greenhouse gas impacts.

4.6 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Table 4.0-1 provides a summary of the potential impacts of the alternatives evaluated in this section, as compared with the potential impacts of the proposed project.

TABLE 4.0-1
COMPARISON OF ALTERNATIVES TO THE PROPOSED SPECIFIC PLAN BY IMPACT

Impact	Proposed Project (Significance)	Alternative 1 No Project (Comparison)	Alternative 2 Reduced Development Potential (Comparison)
Aesthetics and Visual Resources			
New Sources of Light and Glare	PS	+ +	=
Air Quality			
Short-Term Construction-Generated Emissions of Criteria Air Pollutants	PS	+ +	+
Long-Term and Cumulative Operational Emissions of Criteria Air Pollutants	SU, CC	+ +	+
Exposure of Sensitive Receptors to Air Pollutants	PS	+ +	+
Biological Resources			
Impact on Special-Status Species	PS	=	=
Affect Wetland or Riparian Habitats	PS	=	=
Hazardous Materials and Human Health			
Potential On-Site Hazards	PS	=	=
Accidental Release of Hazardous Materials	PS	=	=
Noise			
Exposure to Groundborne Vibration	PS	=	=
Public Services and Utilities			
Increased Demand for Public Safety Services	PS	+ +	+
Transportation and Circulation			
Impacts to Area Freeway Capacity	SU	+ +	+
Climate Change and Greenhouse Gasses			
AB 32 Compliance and GHG Emissions	PS	+ +	+

Notes: Significance is identified by the following: PS: potentially significant, SU: significant and unavoidable, CC: cumulatively considerable.

Comparisons identified by the following:

+ +: substantial improvement compared to the proposed project (avoids a significant impact)

+: insubstantial improvement compared to the proposed project (improvement, but does not avoid a significant impact)

=: similar impact as proposed project

Based upon the evaluation described in this section, Alternative 1, the No Project Alternative, is considered to be the environmentally superior alternative. Alternative 1 was determined to have the fewest negative impacts on the physical environment. Alternative 1 would have less adverse environmental impacts than the proposed project. However, it should be noted that Alternative 1 would not meet any of the objectives of the proposed project, since it would not result in any change to the City's current policy for the Specific Plan area that would help focus development around the Sonoma-Marin Area Rail Transit (SMART) station.

Under CEQA Guidelines Section 15126.6(e)(2), if the environmentally superior alternative is the No Project Alternative, then another environmentally superior alternative must be identified. According to the analysis above, especially the accounting of **Table 4.0-1**, Alternative 2 would have the least environmental impact when compared with the proposed Specific Plan. As much of the Specific Plan development would be reduced, the impacts related to air quality, public services, transportation, and greenhouse gases associated with increased population that were identified for the proposed Specific Plan would be numerically reduced. However, while this alternative would reduce the severity of significant impacts associated with the proposed project, it does not avoid any of these significant impacts.

Alternative 2 meets some of the project objectives since it would increase the density of residential uses around the SMART station and it would contain the Specific Plan policies and guidelines. However, it would not go as far as the Specific Plan to achieve the project objectives of creating an environment that supports successful transit and alternative modes of transportation. It would not allow for the density associated with transit-conducive uses, such as the proposed Transit Village land uses surrounding the SMART station and the Medium High Density-designated land in the vicinity of Coffey Lane, West Steele Lane, and Guerneville Road (provided that the market would support such development). The land use patterns under Alternative 2 are not as compact in nature as the proposed Specific Plan. This alternative would not be as supportive of the fundamentals of smart growth and hence would not be as supportive of transit-oriented development. Limiting development around the proposed SMART station that is linked to major regional job and commercial centers would limit the use of alternative modes of transportation besides the single-occupancy vehicle. Conversely, the Specific Plan would use smart growth land use planning criteria and efficient and effective growth patterns that would dictate greater density. Therefore, the Specific Plan, as proposed, is more effective at meeting the project objectives than Alternative 2.

5.0 Other CEQA Analysis

This section discusses cumulative impacts, significant unavoidable impacts, growth-inducing effects, and impacts found not to be significant associated with the proposed North Santa Rosa Station Area Specific Plan.

5.1 CUMULATIVE IMPACTS

INTRODUCTION

The California Environmental Quality Act (CEQA) requires that an environmental impact report (EIR) contain an assessment of the cumulative impacts that could be associated with the proposed project. According to CEQA Guidelines Section 15130(a), "an EIR shall discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable." *Cumulatively considerable* means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (as defined by Section 15130). As defined in CEQA Guidelines Section 15355, a cumulative impact is an impact created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts. A cumulative impact occurs from:

> *. . . the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.*

In addition, Section 15130(b) identifies the following elements as necessary for an adequate cumulative impact analysis:

1) *Either:*

   (A) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency; or,

   (B) A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area-wide conditions contributing to the cumulative impact. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency.

2) *A definition of the geographic scope of the area affected by the cumulative effect and a reasonable explanation for the geographic limitation used;*

3) *A summary of the expected environmental effects to be produced by those projects with specific reference to additional information stating where that information is available; and*

4) *A reasonable analysis of the cumulative impacts of the relevant projects. An EIR shall examine reasonable, feasible options for mitigating or avoiding the project's contribution to any significant cumulative effects.*

Where a lead agency is examining a project with an incremental effect that is not cumulatively considerable, a lead agency need not consider that effect significant, but shall briefly describe its basis for concluding that the incremental effect is not cumulatively considerable.

Approach to the Cumulative Impact Analysis

The analysis of cumulative impacts for each environmental factor can employ one of two methods to establish the effects of other past, current, and probable future projects. A lead agency may select a list of projects, including those outside the control of the agency, or alternatively, a summary of projects. These projects may be from an adopted general plan or related planning document, or from a prior environmental document that has been adopted or certified, and they may describe or evaluate regional or area-wide conditions contributing to the cumulative impact. The analysis provided in this Draft Environmental Impact Report (Draft EIR) utilizes the latter approach.

5.2 CUMULATIVE IMPACTS ANALYSIS

This subsection provides an analysis of overall cumulative impacts of the proposed Specific Plan taken together with other past, present, and probable future projects producing related impacts, as required by Section 15130 of the CEQA Guidelines. The goal of such an exercise is twofold: first, to determine whether the overall long-term impacts of all such projects would be cumulatively significant; and second, to determine whether the proposed project itself would cause a cumulatively considerable (and thus significant) incremental contribution to any such cumulatively significant impacts. (See CEQA Guidelines Section 15130[a]–[b], Section 15355[b], Section 15064[h], Section 15065[c]; *Communities for a Better Environment v. California Resources* Agency [2002] 103 Cal.App.4th98, 120.) In other words, the required analysis intends to create a broad context in which to assess the proposed project's incremental contribution to anticipated cumulative development impacts, viewed on a geographic scale well beyond the project site itself, and then to determine whether the project's incremental contribution to any significant cumulative impacts from all projects is itself significant (i.e., cumulatively considerable in CEQA parlance).

Pursuant to Section 15130 of the CEQA Guidelines, "(t)he discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by the standards of practicality and reasonableness, and should focus on the cumulative impacts to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact." The proposed project is considered to have a significant cumulative effect if:

1) The cumulative effects of development without the project are not significant and the project's additional impact is substantial enough, when added to the cumulative effects, to result in a significant impact; or

2) The cumulative effects of development without the project are already significant and the project contributes measurably to the effect. The term "measurably" is subject to interpretation. The standards used herein to determine measurability are that either the impact must be noticeable to a reasonable person, or must exceed an established threshold of significance.

Identified below is a summary of the cumulatively considerable impacts that would result from the implementation of the proposed Specific Plan and future growth in the vicinity. The following cumulative impacts of the proposed project are specifically identified in Sections 3.1 through 3.14 of this Draft EIR. The reader is referred to the various environmental issue areas of these sections for further details and analysis of the cumulative impacts.

Air Quality

Impact 3.3.6 Implementation of the proposed Specific Plan, in combination with cumulative development in the SFBAAB, would result in a cumulatively considerable net increase of ozone and coarse and fine particulate matter. This impact is considered **cumulatively considerable** and **significant and unavoidable**.

Transportation and Circulation

Impact 3.13.2 The three Highway 101 freeway segments from downtown Santa Rosa to College Avenue, College Avenue to Steele Lane, and Steele Lane to Bicentennial Avenue are projected to operate below Caltrans' LOS standard of the LOS C/D threshold in the future, both without and with the Specific Plan. The incremental increase in traffic associated with the Specific Plan that would be added to Highway 101 is considered to be **cumulatively considerable** and **significant and unavoidable**.

5.3 EFFECTS FOUND NOT TO BE CUMULATIVELY SIGNIFICANT

There are no new or substantially more severe impacts anticipated from aesthetics and visual resources, agricultural and forestry resources, biological resources, cultural and paleontological resources, geology and soils, hazardous materials and human health, hydrology and water quality, land use, noise, population and housing, public services and utilities, and climate change and greenhouse gases as a result of the proposed project. Therefore, there would be no cumulatively significant impacts related to these areas.

5.4 SIGNIFICANT UNAVOIDABLE IMPACTS

CEQA Guidelines Section 15126.2(b) requires an EIR to discuss unavoidable significant environmental effects, including those that can be mitigated but not reduced to a level of insignificance. In addition, Section 15093(a) of the CEQA Guidelines allows the decision-making agency to determine whether the benefits of a proposed project outweigh the unavoidable adverse environmental impacts of implementing the project. The City can approve a project with unavoidable adverse impacts if it prepares a Statement of Overriding Considerations setting forth the specific reasons for making such a judgment.

The following impacts of the proposed Specific Plan, which have been recognized as significant and unavoidable in either the project or cumulative context, are specifically identified in Sections 3.1 through 3.14 of this Draft EIR. The reader is referred to the various environmental issue areas of these sections for further details and analysis of these significant and unavoidable impacts.

AIR QUALITY

Long-Term Operational Emissions of Criteria Air Pollutants and Precursors

Impact 3.3.2 Operational emissions could potentially conflict with, or obstruct implementation of, the applicable air quality plan and may contribute substantially to an existing or projected air quality violation. This impact is considered **significant and unavoidable**.

Result in a Cumulatively Considerable Net Increase of Nonattainment Criteria Pollutants and Precursors

Impact 3.3.6 Implementation of the proposed Specific Plan, in combination with cumulative development in the SFBAAB, would result in a cumulatively considerable net increase of ozone and coarse and fine particulate matter. This impact is considered **cumulatively considerable** and **significant and unavoidable**.

TRANSPORTATION AND CIRCULATION

Impacts to Area Freeway Capacity

Impact 3.13.2 The three Highway 101 freeway segments from downtown Santa Rosa to College Avenue, College Avenue to Steele Lane, and Steele Lane to Bicentennial Avenue are projected to operate below Caltrans' LOS standard of the LOS C/D threshold in the future, both without and with the Specific Plan. The incremental increase in traffic associated with the Specific Plan that would be added to Highway 101 is considered to be **cumulatively considerable** and **significant and unavoidable**.

5.5 GROWTH-INDUCING IMPACTS

INTRODUCTION

CEQA Guidelines Section 15126.2(d) requires that an EIR evaluate the growth-inducing impacts of a proposed action. A growth-inducing impact is defined by the CEQA Guidelines as:

> *The way in which a proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth. It is not assumed that growth in an area is* necessarily beneficial, detrimental, or of little significance to the environment.

A project can have direct and/or indirect growth-inducement potential. For example, direct growth inducement potential would result if a project involved construction of new housing. A project would have indirect growth-inducement potential if it established substantial new permanent employment opportunities or if it involved a construction effort with substantial short-term employment opportunities that would indirectly stimulate the need for additional housing and services to support the new employment demand (*Napa Citizens for Honest Government v. Napa County Board of Supervisors*). Similarly, a project would indirectly induce growth if it removed an obstacle to additional growth and development, such as removing a constraint on a required public service. A project providing an increased water supply in an area where water service historically limited growth could be considered growth-inducing.

CEQA Guidelines further explain that the environmental effects of induced growth are considered indirect impacts of the proposed action. These indirect impacts or secondary effects of growth may result in significant, adverse environmental impacts. Potential secondary effects of growth include increased demand on other community and public services and infrastructure, increased traffic and noise, and adverse environmental impacts such as degradation of air and water quality, degradation or loss of plant and animal habitat, and conversion of agricultural and open space land to developed uses.

Growth inducement may constitute an adverse impact if the growth is not consistent with, or accommodated by, the land use plans and growth management plans and policies for the area affected. Local land use plans provide for land use development patterns and growth policies that allow for the orderly expansion of urban development supported by adequate urban public services, such as water supply, roadway infrastructure, sewer service, and solid waste service.

COMPONENTS OF GROWTH

The timing, magnitude, and location of land development and population growth in a community are based on various interrelated land use and economic variables. Key variables include regional economic trends, market demand for residential and nonresidential uses, land availability and cost, the availability and quality of transportation facilities and public services, proximity to employment centers, the supply and cost of housing, and regulatory policies or conditions. Since the general plan of a community defines the location, type, and intensity of growth, it is the primary means of regulating development and growth in California.

GROWTH EFFECTS OF THE PROJECT

The proposed Specific Plan would guide future development in the project area. While the Specific Plan does not, in itself, mandate or propose any specific development, future development will be required to meet the design, land use, and other requirements of the Specific Plan. This includes all aspects of future land use including structure design, allowed uses, parking, street design, transit accommodation, parks, landscaping, and other aspects of physical development. Furthermore, by utilizing the allowed land uses and densities delineated in the Specific Plan, an assumed amount of development that would likely occur on the project site has been formulated (see Section 3.0).

Buildout of the Specific Plan area would allow for approximately 1,714 dwelling units (438 single-family units, 1,276 multifamily units) housing 4,217 more people, and 1,433,400 square feet of nonresidential development (798,600 square feet of office; 537,200 square feet of retail; and 97,600 square feet of institutional), employing approximately 5,225 people beyond what is currently planned for under buildout of the General Plan 2035. This development represents direct growth in the Specific Plan area and in the city as a whole. The direct growth inducement of the project is discussed in Section 3.11, Population, Housing, and Employment. The associated secondary effects of this growth are discussed in aggregate in the various technical sections of this Draft EIR (Sections 3.1 through 3.14).

Population Growth

As described in Section 3.11, Population, Housing, and Employment, the direct growth anticipated from the Specific Plan would add approximately 1,714 dwellings to the City of Santa

Rosa beyond what was considered in the General Plan 2035. Population is estimated to increase by 4,217 beyond what was considered in the General Plan 2035.

Growth Effects Associated with Infrastructure Improvements

The potential to indirectly induce growth is assumed to exist if a project would remove an obstacle to additional growth and development, such as removing a constraint on a required public service or if construction of additional infrastructure or resources resulted in excess capacity that would allow additional growth to occur. In the case of the proposed Specific Plan, all infrastructure and utilities are located immediately adjacent to or within the Specific Plan area. Land uses in the Specific Plan area would utilize existing capacity for all services and utilities and would connect to existing networks. As no excess capacity would be created by the Specific Plan, indirect growth effects are not anticipated.

ENVIRONMENTAL EFFECTS OF GROWTH

As described previously, the intent of the proposed Specific Plan is to accommodate anticipated growth through compact, walkable, infill, transit-oriented, and mixed-use development. The City's General Plan provides for this anticipated growth, as does planning by service and utility providers. Thus, growth accommodated under the proposed Specific Plan would be confined to the immediate Specific Plan area and would avoid growth effects on parcels adjacent to the Specific Plan area. The environmental effects of buildout of the Specific Plan are addressed in Sections 3.1 through 3.14 of this Draft EIR, and the project's cumulative impacts are addressed above in Subsection 5.2.

5.6 EFFECTS FOUND NOT TO BE SIGNIFICANT

CEQA Guidelines Section 15128 requires an EIR to briefly describe any possible significant effects that were determined not to be significant and were, therefore, not discussed in detail in the EIR. For purposes of this Draft EIR, no topics were eliminated from further evaluation in the scoping phase of the environmental analysis. Impacts to aesthetics and visual resources, agricultural and forestry resources, air quality, biological resources, cultural and paleontological resources, geology and soils, hazardous materials and human health, hydrology and water quality, land use, noise, population and housing, public services and utilities, transportation and circulation, and climate change and greenhouse gases were fully analyzed in this Draft EIR and were determined to be less than significant; these impacts are disclosed in Section 3.1 through 3.14 of this Draft EIR.

5.7 SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES

CEQA Guidelines Sections 21100(b)(2) and 21100.1(a) require that EIRs prepared for the adoption of a plan, policy, or ordinance of a public agency must include a discussion of significant irreversible environmental changes that would result from project implementation. In addition, CEQA Guidelines Section 15126.2(c) describes irreversible environmental changes in the following manner:

> *Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also irreversible damage can result from environmental accidents associated*

> *with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.*

Implementation of the proposed Specific Plan would result in the conversion of a small portion of undeveloped and/or underutilized properties zoned for mixed use to residential, retail, office, public/institutional, and industry uses. Subsequent development under the Specific Plan would constitute a long-term commitment to these uses. It is unlikely that circumstances would arise that would justify the return of those sites to their original condition.

Development of the Specific Plan area would irretrievably commit building materials and energy to the construction and maintenance of buildings and infrastructure. Renewable, nonrenewable, and limited resources that would likely be consumed as part of the development of the proposed Specific Plan would include, but are not limited to, oil, gasoline, lumber, sand and gravel, asphalt, water, steel, and similar materials. In addition, development of the project would result in the increased demand on public services and utilities (see Section 3.12, Public Services and Utilities).

6.0 REPORT PREPARERS

CITY OF SANTA ROSA

Director of Community Development .... Chuck Regalia
City Planner .... Jessica Jones
Supervising Planner .... Lisa Kranz

PMC

Director .... Patrick Angell
Project Manager .... Scott Davidson
Environmental Planner .... Josh Kinkade
Environmental Planner .... Seth Myers
Technical Editor .... Suzanne Wirth
Technical Editor .... Ana Cotham
Internal Service Provider .... Jolene Miller

TECHNICAL SUBCONSULTANTS

Traffic Analysis .... Whitlock & Weinberger Transportation, Inc. (W-Trans)
Air Quality and Noise Analyses .... Ambient Air Quality and Noise Consultants, Inc.
Hydraulic Analysis .... West Yost Associates
Water Supply Assessment .... City of Santa Rosa Utilities Department

APPENDICES

Appendix A- Notice of Preparation and Comments Received

Notice of Completion & Environmental Document Transmittal

SCH # ____________

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

Project Title: North Santa Rosa Station Area Specific Plan Project

Lead Agency: City of Santa Rosa — **Contact Person:** Jessica Jones

Mailing Address: 100 Santa Rosa Ave. Rm. 3 — **Phone:** (707) 543-3410

City: Santa Rosa — **Zip Code:** 95404 — **County:** Sonoma

Project Location: County: Sonoma — **City/Nearest Community:** Santa Rosa

Cross Streets: W. College Ave, Hwy 101, Ridley Ave, W. Steele Ln. — **Zip Code:** 95401

Longitude/Latitude (degrees, minutes and seconds): 122° 44' 05"W 38° 27'13"N — **Total Acres:** 6.5

Assessor's Parcel Number(s): Various — **Section:** Various — **Township:** Various — **Range:** Various — **Base:** Various

Within 2 Miles: State Highway #: 101, 12 — **Waterways:** Paulin Ck, Steele Ck

Airports: - — **Railways:** Northwest Pacific Rail Corridor — **Schools:** Santa Rosa JC, Santa Rosa High, Lehman Elem, Steele Elem, Comstock Middle

Document Type:

CEQA: ☒NOP ☐Early Cons ☐Neg Dec ☐Mit Neg Dec ☐ Draft EIR ☐ Supplement/Subsequent EIR (Prior SCH No.) Other ____

NEPA ☐NOI ☐EA ☐Draft EIS ☐FONSI

OTHER ☐Joint Document ☐Final Document ☐Other ____

Local Action Type:

☐General Plan Update ☐General Plan Amendment ☐General Plan Element ☐Community Plan ☒Specific Plan ☐Master Plan ☐Planned Unit Development ☐Site Plan ☐Rezone ☐Prezone ☐Use Permit ☐Land Division (Subdivision, etc.) ☐Annexation ☐Redevelopment ☐Coastal Permit ☐Other:

Development Type:

☒Residential: Units 2,941 Acres ____
☒Office: Sq. ft. 802,484 Acres ____ Employees 3,210
☒Commercial: Sq. ft. 617,273 Acres ____ Employees 2,058
☒Industrial: Sq. ft. 128,790 Acres ____ Employees 322
☒Educational: 100,103 SF, 334 employees
☒Recreational: 1 neighborhood park;4 urban plazas/community garden
☐Water Facilities: Type ________ MGD ____
☒Transportation: Type SMART station
☐Mining Mineral ____
☐Power Type ______ MW ____
☐Waste Treatment Type ______ MGD ____
☐Hazardous Waste Type ______
☐ Other ________

Project Issues Discussed in Document

☒Aesthetic/Visual ☒Agricultural Land ☒Air Quality ☒Archaeological/Historical ☒Biological Resources ☐Coastal Zone ☒Drainage/Absorption ☐Economic/Jobs ☐Fiscal ☒Flood Plain/Flooding ☒Forest Land/Fire Hazard ☒Geological/Seismic ☒Minerals ☒Noise ☒Population/Housing Balance ☒Public Services/Facilities ☒Recreation/Parks ☒Schools/Universities ☒Septic Systems ☒Sewer Systems ☒Soil Erosion/Compaction/Grading ☒Solid Waste ☒Toxic/Hazardous ☒Traffic/Circulation ☒Vegetation ☒Water Quality ☒Water Supply/Groundwater ☒Wetland/Riparian ☒Growth Inducement ☒Land Use ☒Cumulative Effects ☐Other ____

Present Land Use/Zoning/General Plan Designation: Residential, Mobile Home Park, Business Park, Office, Retail, Industry, Parks/Recreation, Public/Institutional

Project Description: The North Santa Rosa Station is one of 14 stations being planned by Sonoma Marin Area Rail Transit (SMART) for a commuter rail service along the Northwest Pacific rail corridor. The City of Santa Rosa Community Development Department is preparing a Specific Plan, which, if adopted, would guide future development of approximately 987 acres surrounding the SMART station. The North Santa Rosa Station Area Specific Plan will describe several elements, including: potential land uses; station access and circulation and infrastructure; land use regulations; infrastructure development and financing implementation strategies; and design guidelines to encourage appropriate transit-oriented development within the project area. If adopted, the Specific Plan will guide all new development in the Specific Plan area.

The North Santa Rosa Station Area Specific Plan will support the future SMART station by outlining strategies to establish a transit-supportive environment by improving connections between the station and adjacent destinations, densifying and intensifying land uses at key locations within the project area, and enhancing the physical design of the urban environment. While much of the existing area is developed, a few large vacant parcels in the project area afford unique opportunities for transit-supportive development. The proposed project is a Specific Plan describing development on approximately 987 acres, including public rights-of-way. The proposed Specific Plan includes provisions for development of office, retail, institutional, residential, industrial, recreation/parks, and transportation/circulation facility land uses.

RECEIVED
DEC 13 2011
STATE CLEARING HOUSE

City of Santa Rosa
Notice of Preparation
North Santa Rosa Station Area Specific Plan Project

Date: December 13, 2011

To: Public Agencies and Interested Parties

From: Jessica Jones, City Planner, City of Santa Rosa

Subject: Notice of Preparation of an Environmental Impact Report for the North Santa Rosa Station Area Specific Plan Project

The City of Santa Rosa will be the lead agency and will prepare an Environmental Impact Report (EIR) for the project identified below.

The project description, location, and probable environmental effects of the North Santa Rosa Station Area Specific Plan Project are described in the attached materials. The City of Santa Rosa is soliciting comments regarding the scope and content of the environmental information from public agencies and private organizations and individuals. Note that other public agencies may need to use the EIR when considering permitting or other approvals. Because of time limits mandated by state law, your response must be sent at the earliest possible date but not later than 30 days after receipt of this notice

Please provide your written response to the address shown below by **2:30 p.m., Thursday, January 12, 2012**. We will need the name of a contact person in your agency or organization, if applicable.

City of Santa Rosa
Community Development Department
100 Santa Rosa Avenue, Room 3
Santa Rosa, CA 95404
Attn: Jessica Jones, City Planner
Phone: (707) 543-3410
Fax: (707) 543-3269
E-mail: jjones@srcity.org

A public scoping meeting will be held at **6 p.m., Wednesday, January 4, 2012,** in the Cypress Room at the Finley Community Center, 2060 W. College Avenue, Santa Rosa, CA.

NORTH SANTA ROSA STATION AREA SPECIFIC PLAN PROJECT

1.1 - Project Location

The project site is located primarily in the incorporated City of Santa Rosa in Sonoma County, California, north of the City of Rohnert Park and south of the Town of Windsor (Figure 1). Small portions of the project site lay within unincorporated Sonoma County. The proposed station site is located at the southeast corner of Guerneville Road and the railroad tracks (1478 and 1480 Guerneville Road), close to the Coddingtown Mall. The North Santa Rosa Station Area Specific Plan focuses on the area approximately one-half mile around the future train station (Figure 2).

1.2 - Existing Land Use

The project area has a mix of uses, including low, medium, and medium-high density residential, office, retail, industrial, public, recreational, and educational facilities. Retail development occurs within and around Coddingtown Mall. Most of the office space in the project area is located in the business park along North Dutton Avenue. Industrial uses are concentrated between the rail corridor and Cleveland Avenue, north of College Avenue. There are a number of schools and public facilities in the project area. These include the public library on Guerneville Road, Helen Lehman Elementary School located northwest of Jennings Park, and two major educational facilities: Santa Rosa Junior College and Santa Rosa High School, which are located to the east of Highway 101. The project area is served by two parks, Jennings Park and Haydn Park. Jennings Park, a neighborhood park located in the southwest corner of the project area, comprises 6.5 acres and is intended to serve the local residents within a half-mile radius. Haydn Park, a 0.1-acre pocket park located off Tammy Way, is intended to serve the local residents within a quarter-mile radius. The remainder of the project area is residential.

1.3 - Project Description

The North Santa Rosa Station is one of 14 stations being planned by Sonoma Marin Area Rail Transit (SMART) for a commuter rail service along the Northwest Pacific rail corridor. The City of Santa Rosa Community Development Department is preparing a Specific Plan, which, if adopted, would guide future development of approximately 987 acres surrounding the SMART station (Figure 2). The North Santa Rosa Station Area Specific Plan will describe several elements, including: potential land uses; station access and circulation and infrastructure; land use regulations; infrastructure development and financing implementation strategies; and design guidelines to encourage appropriate transit-oriented development within the project area. If adopted, the Specific Plan will guide all new development in the Specific Plan area.

The North Santa Rosa Station Area Specific Plan will support the future SMART station by outlining strategies to establish a transit-supportive environment by improving connections between the station and adjacent destinations, densifying and intensifying land uses at key locations within the project area, and enhancing the physical design of the urban environment. While much of the existing area is developed, a few large vacant parcels in the project area afford unique opportunities for transit-supportive development.

The proposed project is a Specific Plan describing development on approximately 987 acres, including public rights-of-way. The proposed Specific Plan includes provisions for development of office, retail, institutional, residential, industrial, recreation/parks, and transportation/circulation facility land uses.

1.4 - Required Approvals

The proposed project will require the following approvals:

- General Plan Amendment
- North Santa Rosa Station Area Specific Plan adoption
- Amendments to various planning documents to implement the Specific Plan (e.g., Design Guidelines)
- Amendments to the Zoning Code

1.5 - Environmental Review

Potential Environmental Effects

The EIR will evaluate whether the proposed project may potentially result in one or more significant environmental effects. The topics listed below will be further analyzed in the EIR:

- Aesthetics
- Agriculture and Forest Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Public Services
- Population and Housing
- Recreation
- Transportation/Traffic
- Utilities & Service Systems

1.6 - Scoping Meeting

A public scoping meeting will be held at **6 p.m., Wednesday, January 4, 2012,** at the following location:

Finley Community Center, Cypress Room
2060 W. College Avenue
Santa Rosa, CA 95401

At this meeting, agencies, organizations, and members of the public will be able to review the proposed project and provide comments on the scope of the environmental review process.

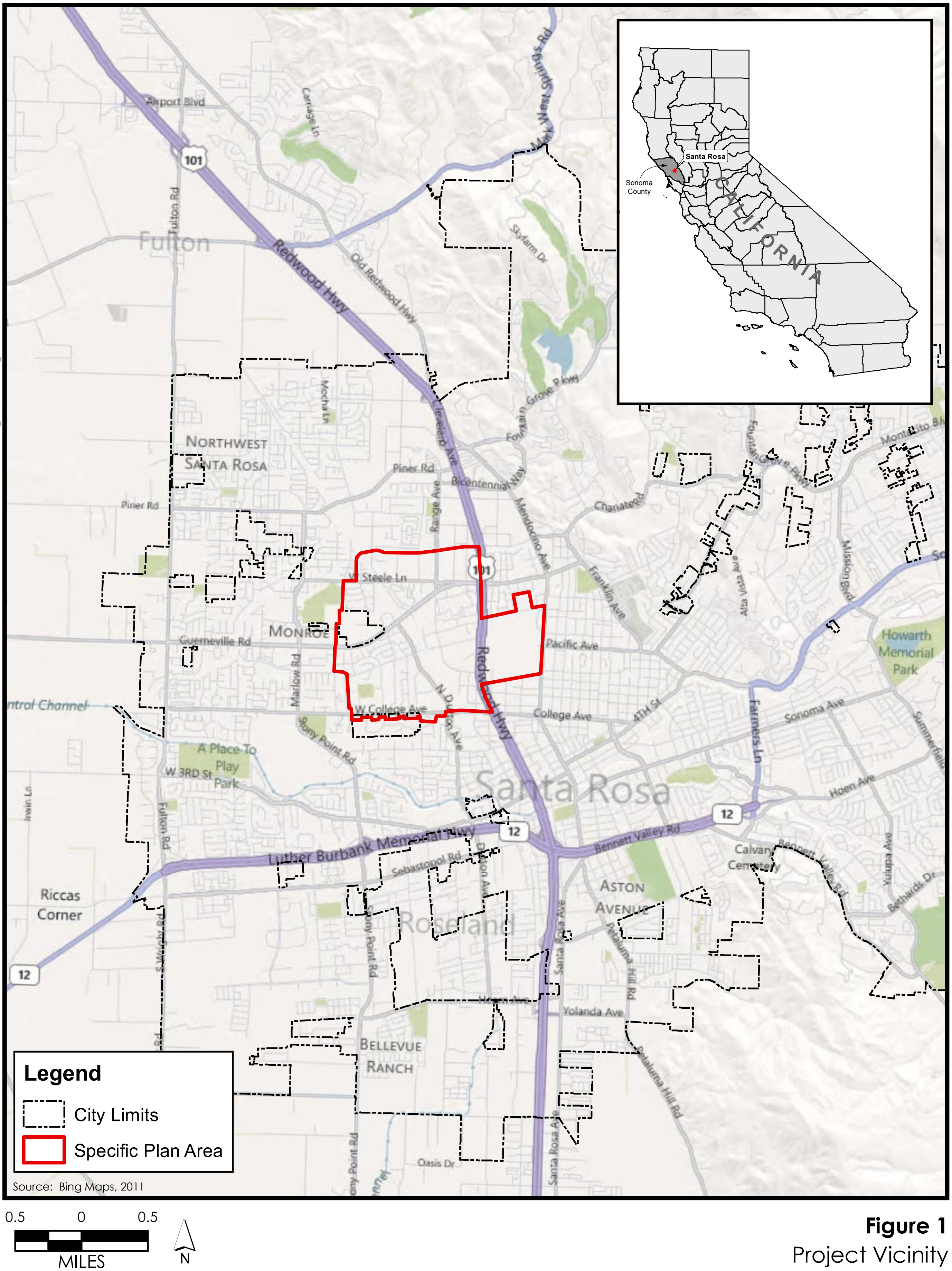

Figure 1
Project Vicinity

PMC®

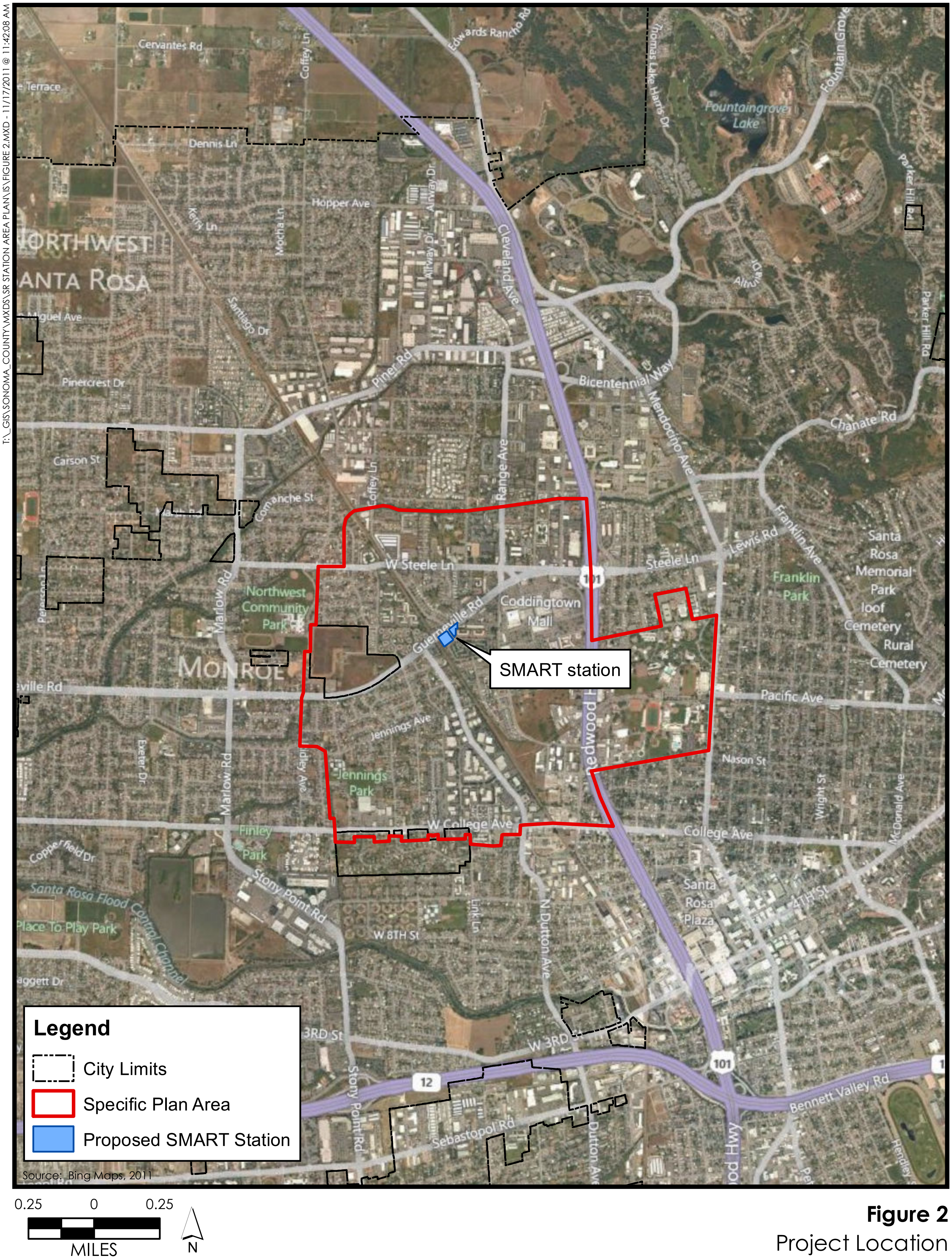

Figure 2
Project Location

PMC®

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "X".
If you have already sent your document to the agency please denote that with an "S".

- X Air Resources Board
- __Boating & Waterways, Department of
- X California Highway Patrol
- X Caltrans District # 4
- __Caltrans Division of Aeronautics
- __Caltrans Planning
- __Coachella Valley Mountains Conservancy
- __Coastal Commission
- __Colorado River Board Commission
- X Conservation, Department of
- __Corrections, Department of
- __Delta Protection Commission
- X Education, Department of
- __Office of Public School Construction
- __Energy Commission
- X Fish & Game Region # 3
- __Food & Agriculture, Department of
- __Forestry & Fire Protection
- X General Services, Department of
- __Health Services, Department of
- X Housing & Community Development
- X Integrated Waste Management Board
- __Native American Heritage Commission
- X Office of Emergency Services
- __Office of Historic Preservation
- X Parks & Recreation
- __Pesticide Regulation, Department of
- __Public Utilities Commission
- __Reclamation Board
- X Regional WQCB # 1
- __Resources Agency
- __S.F. Bay Conservation & Development Commission
- __San Gabriel & Lower Los Angeles Rivers & Mountains Conservancy
- __San Joaquin River Conservancy
- __Santa Monica Mountains Conservancy
- __State Lands Commission
- __SWRCB: Clean Water Grants
- X SWRCB: Water Quality
- X SWRCB: Water Rights
- __Tahoe Regional Planning Agency
- X Toxic Substances Control, Department of
- __Water Resources, Department of
- __Other _____
- __Other _____

Local Public Review Period (to be filled in by lead agency)

Starting Date: 12-13-11

Ending Date: 1-12-12

Lead Agency (Complete if Applicable):

Consulting Firm: PMC
Address: 2729 Prospect Park Drive, Suite 220
City/State/Zip: Rancho Cordova, CA 95670
Contact: Melissa Logue
Phone: (916) 231-2241

Applicant: City of Santa Rosa
Address: 100 Santa Rosa Avenue, Room 3.
City/State/Zip: Santa Rosa, CA 95404
Phone: (707) 543-3410

Signature of Lead Agency Representative: [signature] Date 12-5-11

Authority cited: Section 21083 and 21087, Public Resources Code. Reference: Section 21161, Public Resources Code.

CITY OF SANTA ROSA
NORTH SANTA ROSA STATION SPECIFIC PLAN EIR
SUMMARY OF PUBLIC SCOPING MEETING
AND
PUBLIC COMMENTS

WEDNESDAY, JANUARY 4, 2012
6:00 P.M. – 7:30 P.M.
FINLEY COMMUNITY CENTER
2060 W. COLLEGE AVE., SANTA ROSA

On Wednesday, January 4, 2012, the City of Santa Rosa held a public Scoping Meeting for the North Santa Rosa Station Specific Plan Environmental Impact Report at the Finley Community Center (2060 W. College Avenue, Santa Rosa, CA). The public Scoping Meeting provided the opportunity for the public to provide input on the scope and content of the environmental information that the City of Santa Rosa should consider when preparing the Environmental Impact Report (EIR) for the proposed North Santa Rosa Station Specific Plan project ("project"). Attendees included City of Santa Rosa Planning Department staff, the City's EIR consultant, and approximately eight (8) community members.

The following comments were received during the comment session following the formal presentation:

<u>Aesthetic Issues</u>

- Can you give an example of how aesthetics are part of the EIR? Will EIR examination include night light pollution and solar shadowing?

<u>Air Quality Issues</u>

- What is expected for analysis of particulate matter, ozone, etc.? With an increase in traffic, there could be an increase in air pollutants, which could have health effects. Will the EIR look at current air quality conditions, specifically attainment status for criteria pollutants? Increases in traffic will increase particulate matter emissions.

- There should be some reductions in air quality emissions as a result of people using the SMART transit instead of driving cars to San Francisco, etc.

- Santa Rosa as a whole does not have enough bicycle paths. We need to do many things to encourage people to get out of their cars and walk or bike, in order to improve air quality. People will drive between the SMART station and other gathering areas, such as the college and the mall, which increases traffic and air quality emissions. We should have bike and ped access from the SMART station to other areas, such as the college and the mall, to get people out of their cars. This can be used as mitigation to reduce traffic and air quality impacts.

- Santa Rosa is in compliance for ozone because the monitoring station is located downtown, where other emissions from traffic reduce the ozone levels. Actual ozone levels in the city, outside of the downtown area, are much higher. The air quality analysis should recognize that the city is considered in compliance for ozone only because of the inappropriate location of the monitoring station.

Greenhouse Gas Issues

- How does the EIR propose to look at greenhouse gas issues? The State has passed a law that requires a certain reduction of greenhouse gasses by a certain year. Will that be taken into account in the analysis?

Hazardous Materials Issues

- The EIR should examine if there are hazardous materials present along US 101 and other major streets, and how that may affect having increased densities in these areas.

Hydrology and Water Quality Issues

- As development densifies in the project area, unless there are some requirements for stormwater to be retained on developed parcels, runoff could have impacts on local creeks – specifically pollutant runoff into creeks and erosion of creeks.

Noise Issues

- Three story buildings can provide a noise buffer between the Plan area and US 101. The City should examine moving frontage roads along US 101 to allow for a building noise buffer from US 101.

- The EIR should examine noise impacts to the several schools that are located within the Specific Plan area.

Transportation/Traffic Issues

Traffic and Circulation:

- The traffic analysis should include examination of commute traffic to and from Santa Rosa Junior College, and include an analysis with and without the proposed bike/pedestrian bridge ("community connector bridge"). Will there be a shuttle bus between the SMART station and the school?

- The EIR for the Santa Monica General Plan Update completed by Nelson-Nygaard completed a traffic analysis that was effective in analyzing the true traffic impacts and benefits of the proposed project. Instead of just looking at localized traffic impacts to individual intersections, it looked at travel times through corridors and explained well what the project's true effects on traffic and travel through an area would be. The Specific Plan should consider doing its traffic analysis in a similar way.

- The EIR should examine traffic impacts to the several schools that are located within the Specific Plan area, but specifically the Helen Lehman school.

<u>Parking:</u>

- Where are people going to park that use the SMART train? How much parking will be at the North station site? There will be "ripple effects" of parking on RR Square, since there is no transit parking there.

<u>Bicycle/Pedestrian Access:</u>

- The City is developing extensive bicycle lanes by reducing vehicle traffic lanes. Can EIR examine bicycle ridership through the project area?

- Can the EIR examine what effects the Specific Plan will have to walking and pedestrian activities?

<u>Public Transit/Bus Issues:</u>

- How is bus/public transportation going to be handled (generally in the area)? Will bus routes or schedules be altered?

- What kind of mitigation can be offered to ensure adequacy of SMART service, in order to avoid impacts from additional vehicles entering the area, parking, etc. that would result from the SMART station? We should be doubling transit service and frequencies in the next several years.

- Has the City considered making this area a transit hub? This project could be an example of a success transportation hub.

<u>Recreational Issues</u>

- Adequate recreational capacity. Parks should be designed to have streets on all sides so that there are eyes on all sides to help provide security. The design of the parks should allow for the ability of the park to provide a neighborhood resource.

<u>**Other Issues**</u>

- How big will the project study area boundary be? Be sure to examine effects of the land use intensification that may occur outside of the Specific Plan boundary.

- What will be the environmental effects of Plan vs. No Plan?

- The fact that the SMART station is present at this location, it would predispose the area for more intense development even if a Specific Plan were not implemented. The Specific Plan is intended to guide this development. How do you filter out the environmental effect of having a plan versus not having a plan? Does the EIR assume that without a Specific Plan, the current zoning and land use would remain unchanged from what is currently approved? Without the Specific Plan, would individual projects that propose higher density uses be required to complete an EIR?

- Where will safety be discussed in the EIR? What will be the safety of pedestrians if we're encouraging people to walk and bike, etc.? Will noise be increased so much that people will experience hearing loss?

- There are documented health effects of living next to busy highways. The EIR should discuss how the proposed Specific Plan land use could impact health of nearby residences.

- What is the current median income for residences in the area? Look at median income levels and impact of rail on median income. Transit can change what types of residences get built in an area and what income levels live in these areas.

- Will the Specific Plan discuss building heights?

There were no written comments or questions submitted via comment cards at the open house, or subsequently via US Postal Service, facsimile, or email (as of January 9, 2012).

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY EDMUND G. BROWN Jr., Governor

DEPARTMENT OF TRANSPORTATION
111 GRAND AVENUE
P. O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 286-5541
FAX (510) 286-5559
TTY 711

Flex your power!
Be energy efficient!

December 19, 2011

SON1011036
SON-101-21.74
SCH 2011122034

Mrs. Jessica Jones
City of Santa Rosa
100 Santa Rosa Avenue, Room 3
Santa Rosa, CA 95402

Dear Mrs. Jones:

North Santa Rosa Station Area Specific Plan – Notice of Preparation (NOP) for Draft Environmental Impact Report (DEIR)

Thank you for including the California Department of Transportation (Department) in the environmental review process for the proposed project. One of the Department's ongoing responsibilities is to collaborate with local agencies in order to avoid, eliminate, or reduce to a level of insignificance potential adverse impacts to traveler safety on the State's highways. The Department anticipates potential adverse impacts on US Highway (US) 101 if and when an intensification of traffic-generating development occurs at the project location.

As lead agency, the City of Santa Rosa is responsible for all project mitigation, including any needed improvements to state highways. The project's fair share contribution, financing, scheduling, implementation responsibilities and lead agency monitoring should be fully discussed for all proposed mitigation measures. The project's traffic mitigation fees should be specifically identified in the environmental document for any future development. Any required roadway improvements should be completed prior to issuance of project occupancy permits. While an encroachment permit is only required when the project involves work in the State Right of Way (ROW), the Department will not issue an encroachment permit until our concerns are adequately addressed. Therefore, we strongly recommend that the lead agency ensure resolution of the Department's California Environmental Quality Act (CEQA) concerns prior to submittal of the encroachment permit application. Further comments will be provided during the encroachment permit process if required; see the end of this letter for more information regarding the encroachment permit process.

Traffic Impact Study (TIS)
A TIS or a lesser level of analysis may be required to assess the impact of the project on the adjacent road network, with specific attention to US-101 and State Route (SR) 12. We recommend using the Department's *Guide for the Preparation of Traffic Impact Studies* (TIS Guide) for determining which scenarios and methodologies to use in the analysis. The guide is available at the following website address:

http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf. If the proposed project will not generate the amount of trips needed to meet the Department's trip generation thresholds, an explanation of how this conclusion was reached must be provided. Please contact our office to coordinate preparation of the scope of the traffic study.

Transportation/Land Use Connection
The Department encourages you to locate any needed housing, jobs and neighborhood services near major mass transit nodes, and connected to these nodes with streets configured to encourage walking and biking, as a means of reducing regional vehicle miles traveled and traffic impacts on the State highways.

In addition, consider developing and applying pedestrian, bicycling and transit performance or level of service mitigation measures and modeling pedestrian, bicycle and transit trips that your project will generate so that impacts can be quantified. Mitigation measures resulting from this analysis could improve pedestrian and bicycle access to transit, thereby reducing traffic impacts on state highways. In addition, please analyze secondary impacts on pedestrians and bicyclists that may result from any mitigation measures for traffic impacts and describe any pedestrian and bicycle mitigation measures that would in turn be needed as a means of maintaining and improving access to transit and reducing traffic impacts on state highways.

Encroachment Permit
Please be advised that any work or traffic control that encroaches on State ROW requires an encroachment permit issued by the Department. Further information is available on the following website: http://www.dot.ca.gov/hq/traffops/developserv/permits/. To apply, a completed encroachment permit application, environmental documentation, and five (5) sets of plans clearly indicating State ROW must be submitted to the address below. Traffic-related mitigation measures should be incorporated into the construction plans during the encroachment permit process.

Office of Permits
California DOT, District 4
P.O. Box 23660
Oakland, CA 94623-0660

Should you have any questions regarding this letter, please call Connery Cepeda of my staff at (510) 286-5535.

Sincerely,

GARY ARNOLD
District Branch Chief
Local Development - Intergovernmental Review

c: Scott Morgan (State Clearinghouse)

SONOMA COUNTY WATER AGENCY

FILE:FDR/TENT/NOTICE OF PREPARATION NORTH SANTA ROSA STATION SPECIFIC PLAN PROJECT

January 11, 2012

Ms. Jessica Jones
City of Santa Rosa
Department of Community Development
100 Santa Rosa Avenue
Santa Rosa, CA 95404

RE: Notice of Preparation North Santa Rosa Station Specific Plan Project

Dear Ms. Jones:

Sonoma County Water Agency (Water Agency) staff has reviewed the NOP for the above mentioned project. In response, the Agency submits the following comments.

1. For site-specific improvements, Water Agency staff recommends that the drainage design for the project be in compliance with the Agency's *Flood Control Design Criteria.*

2. The Water Agency is concerned with any activity that may affect the operation and maintenance of our facilities located at Steel Creek.

3. A Revocable License will be required for access or construction work within the Agency property located along the Water Agency's Santa Rosa Aqueduct and Steel Creek.

4. The Water Agency will require the property owner to acquire an easement from the Water Agency for the improvements constructed within the Agency's Steel Creek Channel property. The property owner will also be required to provide the Agency with an appraisal of the value of the easement. In addition, the property owner will provide the Agency with an as-built copy of any improvement plans that were prepared for the existing storm drain improvements constructed within the Agency's property.

5. For the Agency to be able to grant the easement, the City of Santa Rosa (City) or property owner will need to provide the Agency with copies of all CEQA documents prepared for the subdivision project along with a finding that the grant of easement complies with the City's General Plan.

Thank you for the opportunity to comment. For questions on obtaining a Revocable License, please contact Mike Tovani at 547-1070. For questions regarding the easement agreement, please contact Kevin Campbell at 547-1921. For other questions, please contact Connie Barton at 547-1905 or Connie.Barton@scwa.ca.gov.

Sincerely,

Connie Barton

Connie Barton
Environmental Specialist

RW\\fileserver\data\Erpad\ECS\doc.review\SantaRosa\NOP NorthSanta Rosa Station Area SP.docx

SONOMA LAFCO

LOCAL AGENCY FORMATION COMMISSION
575 ADMINISTRATION DRIVE, ROOM 104A, SANTA ROSA, CA 95403
(707) 565-2577 FAX (707) 565-3778
www.sonoma-county.org/lafco

January 6, 2012

Jessica Jones
City of Santa Rosa
Community Development Department
100 Santa Rosa Avenue, Room 10
Santa Rosa, CA 95402-1678

Re: Notice of Preparation of an Environmental Impact Report for the North Santa Rosa Station Specific Plan Project Area

Dear Ms. Jones:

Sonoma LAFCO appreciates the opportunity to respond to your Notice of Preparation for the North Santa Rosa Station Specific Plan Project Area.

Sonoma LAFCO is a responsible agency as defined in Section 15381of the CEQA Guidelines. As a responsible agency, Sonoma LAFCO may use the City's Environmental Impact Report (EIR) as CEQA documentation in the consideration of the annexation of approximately 37.10 acres of unincorporated territory fronting Guerneville Road and along West College Avenue. Sonoma LAFCO's policy is to encourage cities to pre-zone unincorporated islands whenever possible. It is our understanding that the City is considering pre-zoning these unincorporated properties. If this is the City's intent, Sonoma LAFCO requests that the pre-zoning be included in your project description.

LAFCO is prohibited from regulating land use. The law states:

> ***56375: Conditions regulating land use prohibited***
>
> *(6) A commission shall not impose any conditions that would directly regulate land use density or intensity, property development, or subdivision requirements*

However, the Commission is required by the Government Code to consider factors in annexing properties. These factors include the following:

> ***56668.*** *Factors to be considered in the review of a proposal shall include, but not be limited to, all of the following:*
>
> *(a) Population and population density; land area and land use; per capita assessed valuation; topography, natural boundaries, and drainage basins; proximity to other populated areas; the likelihood of significant growth in the area, and in adjacent incorporated and unincorporated areas, during the next 10 years.*
>
> *(b) The need for organized community services; the present cost and adequacy of governmental services and controls in the area; probable future needs for those services and controls; probable effect of the*

proposed incorporation, formation, annexation, or exclusion and of alternative courses of action on the cost and adequacy of services and controls in the area and adjacent areas.

"Services," as used in this subdivision, refers to governmental services whether or not the services are services which would be provided by local agencies subject to this division, and includes the public facilities necessary to provide those services.

(c) *The effect of the proposed action and of alternative actions, on adjacent areas, on mutual social and economic interests, and on the local governmental structure of the county.*

To fulfill the CEQA requirements for the Commission's consideration of the annexation of the unincorporated territory within the project area, the environmental review needs to address:

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for 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: Fire protection, Police protection Schools, Parks, and Other public facilities?

Although CEQA requires that the EIR address the *physical* impacts of the project, we are requesting that the City, to the extent possible, also address the *fiscal* implications of the annexation of the unincorporated territory on existing services and service providers. For example, will the project necessitate additional City fire facilities or staff and will the annexation result a reduction in facilities or staff of the special districts currently providing the service?

We are looking forward to working with you to develop a complete and comprehensive EIR that can be used for the annexation of the unincorporated territory.

Sincerely,

Richard Bottarini
Executive Officer

Finali Family Partnerships

December 23, 2011

Mr. Charles J. Regalia, Director
CITY OF SANTA ROSA
Community Development Department
100 Santa Rosa Avenue, Room 3
Santa Rosa, CA 95404

SUBJECT: North Santa Rosa Station Area Specific Plan
Concerns with Draft Preferred Alternative

Dear Chuck:

Thank you for meeting with us on December 7 to discuss our concerns with the Draft Preferred Alternative for the North Santa Rosa Station Area Specific Plan. As owners of one of the "opportunity sites" identified early in the process, we appreciate the outreach from City staff and consultants to meet with us at the outset of this planning process to hear our interests and concerns, but we are disappointed that this outreach did not continue as the Preferred Alternative was prepared and released. In reviewing the outline of the process on the City's website, we were under the impression that the Draft Preferred Alternative presented at the November 7 public meeting was a draft that would be refined by further public input. We were surprised to learn at our meeting that this draft was not intended to be modified until the public hearing and adoption process which is planned to occur after the preparation of implementation documents and the EIR. Accordingly, we wish to go on record now with our concerns and we intend to follow up and reiterate these concerns during the public hearing and adoption process.

As discussed at our meeting, we believe there are significant issues with the Briggs Avenue extension and Street 1 as shown in the Draft Preferred Alternative. Additionally, we fail to see the compelling need for a specific, separate bicycle/pedestrian path to be mandated through our property. We intend to provide an interconnected grid of streets accommodating bicycles,

pedestrians, and vehicles through the neighborhood to be developed on our property and we believe such a system will serve this future neighborhood better than the circulation improvements proposed in the Draft Preferred Alternative.

<u>Issues with Proposed Briggs Avenue Extension</u>

Regarding the proposed Briggs Avenue extension, as shown it will:

- **Traverse a remnant portion of a creek and likely eliminate this natural feature**
- **Create an awkward street frontage condition where an active industrial use will face a residential use directly across the street**
- **Traverse an existing rural residential neighborhood between Edwards Avenue and Jennings Avenue and be difficult to implement until an extensive redevelopment of that neighborhood occurs or properties are acquired by eminent domain**
- **Create a wider street than a typical neighborhood street in order to accommodate bicycle lanes which will in turn compromise the pedestrian experience by creating a longer crossing distance for pedestrians**
- **Bisect our property and the new neighborhood anticipated on our property with this wider street and pedestrian obstacle**

In short, we don't see a compelling need for a wider street with bicycle lanes through our property when the connection from this area to the future SMART station is better served by the complete street proposed for Range Avenue.

<u>Issues with Proposed Street 1</u>

Regarding the street paralleling Cleveland Avenue immediately to the west and identified as "Street 1," as shown it will:

- **Create an awkward street frontage condition where it traverses the easterly edge of our property immediately adjacent to the concrete block wall along the westerly edge of the recently constructed apartment project, The Crossings**
- **Require the removal of a recently constructed multi-family residential building on the north side of Jennings Avenue and extensive disruption**

of existing commercial and residential development between Jennings Avenue and Edwards Avenue

Summary

In summary, we appreciate the initial outreach to us as property owners and your willingness to meet with us regarding this process. We do not object to the targeting of our property for a new neighborhood park as this has been in the General Plan for some time and we believe in doing our part in the way of accommodating community improvements as part of new development. However, we consider the benefits of the proposed Briggs Avenue extension, Street 1, and the separate bicycle/pedestrian path proposed in the Draft Preferred Alternative to be dubious at best and the issues associated with them to be numerous and significant. Accordingly, we believe these proposed circulation elements included in the Draft Preferred Alternative should be reconsidered.

Very truly yours,

Tina Finali
General Partner

cc: Jessica Jones, City Planner
Lisa Kranz, Supervising Planner

BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT
SINCE 1955

January 12, 2012

Jessica Jones, City Planner
City of Santa Rosa
Community Development Department
100 Santa Rosa Avenue, Room 3
Santa Rosa, CA 95404

Subject: Notice of Preparation of a Draft Environmental Impact Report for the North Santa Rosa Station Area Specific Plan Project

Dear Ms. Jones:

Bay Area Air Quality Management District (District) staff reviewed the Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) for the North Santa Rosa Station Area Specific Plan Project (Project). We understand that the Project will result in the development of approximately 987 acres, including public rights-of-way. The Project includes provisions for development of office, retail, institutional, residential, industrial, recreation/parks, and transportation/circulation facility land uses

The District has the following specific comments on the environmental analysis that should be included in the DEIR:

1. The DEIR should provide background information regarding the District's attainment status for all criteria pollutants and the implications for the region if these standards are not attained by statutory deadlines. A discussion of the health effects of air pollution, especially on sensitive receptors, should be provided. Background information on greenhouse gas emissions and the potential impacts from climate change in the Bay Area should be discussed as well.

2. The *BAAQMD CEQA Air Quality Guidelines (adopted June 2010, updated May 2011)* provide guidance on how to evaluate a project's construction, operation and cumulative air quality impacts. You may download a copy of the guidelines from the District's web site at: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES.aspx.

The DEIR should provide a detailed analysis of the Project's potential effects on local and regional air quality from construction, operations and cumulative impacts for the Project and each of the alternatives analyzed. The DEIR should estimate daily and annual volatile organic compounds (VOCs), nitrogen oxides (NOx), and particulate matter ($PM_{2.5}$ and PM_{10}) emissions, and annual emissions of greenhouse gases, from stationary, area and mobile sources resulting from long-term project operation. Emission estimates should be transparent and verifiable. These estimates should be compared to the significance thresholds in the *BAAQMD CEQA Air Quality Guidelines*. We recommend using the most recent version of the Urban Emissions Model (URBEMIS) or the California Emissions Estimator Model (CalEEMod) for estimating emissions of criteria pollutants and the District's Greenhouse Gas Model (BGM) for estimating greenhouse gas emissions.

Links to these two models, along with the appropriate user's manuals, may be found on the District's website at: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx

The DEIR should estimate and evaluate the potential health risk to current and future sensitive populations within the Project area from toxic air contaminants (TACs) and particulate matter (PM) as a result of Project construction and operation. The DEIR should evaluate any risks associated with siting sensitive land uses near major transportation corridors and other existing or future sources of TACs and PM. This can be done by identifying all existing and potential sources of TAC and PM emissions, along with the associated cancer risk and PM concentrations. Emission estimates should then be compared against the appropriate significance thresholds. The DEIR should also include mitigation measures to address any identified significant impacts from local risks and hazards (TACs) and PM on new sensitive receptors to reduce the potential impact to a less than significant level. This will ensure that the environmental analysis of future projects developed within the plan will be able to tier off of the analysis in the final DEIR.

Details on how to identify sources of TACs and how to quantify cancer risk and PM concentrations, as well as possible mitigation measures, are available on the District's website: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx. District staff is also available to assist in this process.

3. Construction equipment generates fugitive dust emissions, exhaust emissions of criteria pollutants, and TACs, specifically diesel particulate matter, a known carcinogen. The DEIR should require that all construction activities associated with the Project comply with the Basic Construction Mitigation Measures in the District's CEQA Guidelines. The DEIR should also include all feasible mitigation measures to reduce potentially significant exposure to dust, exhaust and TAC emissions for the existing community. Feasible mitigation measures can be found in the *BAAQMD CEQA Air Quality Guidelines*.

4. The DEIR should mitigate any identified potentially significant air quality impacts to the extent feasible. The *BAAQMD CEQA Air Quality Guidelines* contains numerous mitigation measures (see Chapter 9 for plan level measures) for lead agencies to consider.

The District's CEQA website contains a number of tools and resources to assist lead agencies in analyzing environmental impacts. Available documents include guidance on quantifying plan level greenhouse gas emissions and risk and hazard screening and modeling guidance. View and download available tools here: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx

We encourage lead agencies to contact District staff with any questions and or assistance during the EIR process. If you have any questions regarding these comments, please contact Christy Riviere, Principal Environmental Planner, at 415-749-4925.

Sincerely,

Jean Roggenkamp

Jean Roggenkamp
Deputy Air Pollution Control Officer

C: BAAQMD Director Susan Gorin
BAAQMD Director Shirlee Zane

STATE OF CALIFORNIA — Edmund G. Brown Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-4082
(916) 657-5390 - Fax

CITY OF SANTA ROSA
100 SANTA ROSA AVE., STE 5
SANTA ROSA, CA 95404

JAN 03 2012

DEPARTMENT OF
COMMUNITY DEVELOPMENT
PLANNING DIVISION

December 21, 2011

Jessica Jones
City of Santa Rosa
100 Santa Rosa Avenue, Room 3
Santa Rosa, CA 95402

RE: SCH# 2011122034 North Santa Rosa Station Area Specific Plan Project; Sonoma County.

Dear Ms. Jones:

The Native American Heritage Commission (NAHC) has reviewed the Notice of Preparation (NOP) referenced above. The California Environmental Quality Act (CEQA) states that any project that causes a substantial adverse change in the significance of an historical resource, which includes archeological resources, is a significant effect requiring the preparation of an EIR (CEQA Guidelines 15064(b)). To comply with this provision the lead agency is required to assess whether the project will have an adverse impact on historical resources within the area of project effect (APE), and if so to mitigate that effect. To adequately assess and mitigate project-related impacts to archaeological resources, the NAHC recommends the following actions:

✓ Contact the appropriate regional archaeological Information Center for a record search. The record search will determine:
  - If a part or all of the area of project effect (APE) has been previously surveyed for cultural resources.
  - If any known cultural resources have already been recorded on or adjacent to the APE.
  - If the probability is low, moderate, or high that cultural resources are located in the APE.
  - If a survey is required to determine whether previously unrecorded cultural resources are present.

✓ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - The final report containing site forms, site significance, and mitigation measurers should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure.
  - The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.

✓ Contact the Native American Heritage Commission for:
  - A Sacred Lands File Check. **USGS 7.5 minute quadrangle name, township, range and section required.**
  - A list of appropriate Native American contacts for consultation concerning the project site and to assist in the mitigation measures. **Native American Contacts List attached.**

✓ Lack of surface evidence of archeological resources does not preclude their subsurface existence.
  - Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) §15064.5(f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.
  - Lead agencies should include in their mitigation plan provisions for the disposition of recovered artifacts, in consultation with culturally affiliated Native Americans.
  - Lead agencies should include provisions for discovery of Native American human remains in their mitigation plan. Health and Safety Code §7050.5, CEQA §15064.5(e), and Public Resources Code §5097.98 mandates the process to be followed in the event of an accidental discovery of any human remains in a location other than a dedicated cemetery.

Sincerely,

Katy Sanchez

Katy Sanchez
Program Analyst
(916) 653-4040

cc: State Clearinghouse

Native American Contact List
Sonoma County
December 21, 2011

The Federated Indians of Graton Rancheria
Gene Buvelot
6400 Redwood Drive, Ste 300 — Coast Miwok
Rohnert Park, CA 94928 — Southern Pomo
coastmiwok@aol.com
(415) 895-1163 Home
(415) 259-7819 Cell

Ya-Ka-Ama
7465 Steve Olson Lane — Pomo
Forestville, CA 95436 — Coast Miwok
info@yakaama.org — Wappo
(707) 887-1541

Dry Creek Rancheria of Pomo Indians
Harvey Hopkins, Chairperson
P.O. Box 607 — Pomo
Geyserville, CA 95441
(707) 473-2178

The Federated Indians of Graton Rancheria
Greg Sarris, Chairperson
6400 Redwood Drive, Ste 300 — Coast Miwok
Rohnert Park, CA 94928 — Southern Pomo
coastmiwok@aol.com
707-566-2288
707-566-2291 - fax

Lytton Rancheria of California
Margie Mejia, Chairperson
437Aviation Blvd — Pomo
Santa Rosa, CA 95403
margiemejia@aol.com
(707) 575-5917
(707) 575-6974 - Fax

Suki Waters
P.O. Box 53 — Coast Miwok
Jenner, CA 95450 — Pomo
(707) 865-2248

Stewarts Point Rancheria
Ralph Sepulveda, Chairperson
3535 Industrial Dr., Suite B2 — Pomo
Santa Rosa, CA 95403
ralph@stewartspointrancheri

(707) 591-0580-voice
(707) 591-0583 - Fax

Lytton Rancheria of California
Lisa Miller, Tribal Administrator
437Aviation Blvd — Pomo
Santa Rosa, CA 95403
lyttonband@aol.com
(707) 575-5917
(707) 575-6974 FAX

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH# 2011122034 North Santa Rosa Station Area Specific Plan Project: Sonoma County.

Native American Contact List
Sonoma County
December 21, 2011

Stewarts Point Rancheria THPO
Emilio Valencia, Tribal Historic Perservation Officei
3535 Industrial Dr., Suite B2 Pomo
Santa Rosa , CA 95403
(707) 591-0580 EXT 105
(707) 591-0583 FAX

Stewarts Point Rancheria
Nina Hapner, Environmental Planning Department
3535 Industrial Dr., Suite B2 Pomo
Santa Rosa , CA 95403
nina@stewartspoint.com
(707) 591-0580 ext107
(707) 591-0583 FAX

The Federated Indians of Graton Rancheria
Frank Ross
PO Box 854 Coast Miwok
Novato , CA 94948 Southern Pomo
miwokone@yahoo.com
(415) 269-6075

Mishewal-Wappo Tribe of Alexander Valley
Scott Gabaldon, Chairperson
PO Box 1086 Wappo
Santa Rosa , CA 95402
sgdcinc@sbcglobal.net
707-494-9159

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH# 2011122034 North Santa Rosa Station Area Specific Plan Project: Sonoma County.

State of California – The Natural Resources Agency
DEPARTMENT OF FISH AND GAME
Bay Delta Region
7329 Silverado Trail
Napa, CA 94558
(707) 944-5500
www.dfg.ca.gov

***EDMUND G. BROWN JR.**, Governor*
***CHARLTON H. BONHAM,** Director*

January 5, 2012

Ms. Jessica Jones
City of Santa Rosa
100 Santa Rosa Avenue, Room 3
Santa Rosa, CA 95402

Dear Ms. Jones:

Subject: North Santa Rosa Station Area Specific Plan Project, Notice of Preparation of a Draft Environmental Impact Report, SCH #2011122034, City of Santa Rosa, Sonoma County

The Department of Fish and Game (DFG) has reviewed the Notice of Preparation (NOP) for the draft Environmental Impact Report regarding the North Santa Rosa Station Area Specific Plan Project (Project). DFG is providing comments on the NOP as a Trustee Agency and potentially a Responsible Agency. As Trustee for the State's fish and wildlife resources, DFG has jurisdiction over the conservation, protection and management of the fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of such species for the benefit and use by the people of California.

The Project is located within the Santa Rosa Plain (Plain). The Plain and adjacent areas are characterized by vernal pools, seasonal wetlands and associated grassland habitat, which support the state threatened and federally endangered Sonoma County Distinct Population Segment of the California tiger salamander (CTS) and four plant species that are both federally endangered and state endangered or threatened: Burke's goldfields, Sonoma sunshine, Sebastopol meadowfoam, and many-flowered navarretia. Development of lands could have substantial adverse impacts to these and other species. A complete biological assessment (including but not limited to type, quantity and locations) of the habitats, flora and fauna within and adjacent to the Project area, including endangered, threatened, and locally unique species and sensitive habitats should be completed to ensure avoidance or minimization of impacts to these species including tree and ground nesting birds. The assessment should include the reasonably foreseeable direct and indirect changes (temporary and permanent) that may occur with implementation of the Project. Rare, threatened and endangered species to be addressed should include all those which meet the California Environmental Quality Act (CEQA) definition (see CEQA Guidelines, Section 15380). DFG's recommended survey and monitoring protocols and guidelines are available at http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html.

Project proponents should consult the *Santa Rosa Plain Conservation Strategy Final December 1, 2005* (Conservation Strategy). The purpose of the Conservation Strategy is to create a long-term conservation program sufficient to mitigate potential adverse effects on listed species due to future development on the Plain. The Conservation Strategy provides the framework for mitigation, conservation, translocation, and appropriate minimization measures. Please note that the Conservation Strategy was developed prior to the state listing of the California tiger salamander. Minimization and mitigation measures requiring U.S. Fish and Wildlife Service approval will also require DFG approval.

Please be advised that a California Endangered Species Act (CESA) Permit must be obtained if the Project has the potential to result in take of species of plants or animals listed under CESA, either during construction or over the life of the Project. Issuance of a CESA Permit is subject to CEQA documentation; therefore, the CEQA document must specify impacts, mitigation measures, and a mitigation monitoring and reporting program. If the project will impact CESA listed species, early consultation is encouraged, as significant modification to the project and mitigation measures may be required in order to obtain a CESA Permit.

The Project location as identified in Figure 1 contains streams. For any activity that will divert or obstruct the natural flow, or change the bed, channel, or bank (which may include associated riparian resources) of a river or stream, or use material from a streambed, DFG may require a Lake and Streambed Alteration Agreement (LSAA), pursuant to Section 1600 et seq. of the Fish and Game Code, with the applicant. Issuance of an LSAA is subject to CEQA. DFG, as a responsible agency under CEQA, will consider the CEQA document for the project. The CEQA document should fully identify the potential impacts to the stream or riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments for completion of the agreement. To obtain information about the LSAA notification process, please access our website at http://www.dfg.ca.gov/habcon/1600/; or to request a notification package, contact the Lake and Streambed Alteration Program at (707) 944-5520.

If you have any questions, please contact Ms. Stephanie Buss, Staff Environmental Scientist, at (707) 944-5502; or Mr. Scott Wilson, Environmental Program Manager, at (707) 944-5584.

Sincerely,

Scott Wilson FOR
Carl Wilcox
Regional Manager
Bay Delta Region

cc: State Clearinghouse

The following comments are arranged by topic area. Multiple comments of the same nature and topic from two or more commenters are combined herein. Subtext following each comment represents the source(s) of the comments, according to the sources listed in **Table A-1**. The specific comments arranged by topic area are shown in **Table A-2**.

TABLE A-1 – LIST OF COMMENT SOURCES (ALPHABETICAL BY COMMENTER)

Reference Number	Commenter	Date of Comment
1	Public Scoping Meeting and Public Comments	1/9/12
2	Gary Arnold, California Department of Transportation (Caltrans)	12/19/11
3	Connie Barton, Sonoma County Water Agency	1/11/12
4	Richard Bottarini, Sonoma County LAFCO	1/6/12
5	Tina Finali, Finali Family Partnerships	12/23/11
6	Jean Roggenkamp, Bay Area Air Quality Management District	1/12/12
7	Katy Sanchez, Native American Heritage Commission	12/21/11
8	Scott Wilcox, California Department of Fish and Game	1/5/12

TABLE A-2 – COMMENTS BY TOPIC (ANNOTATED)

Topic Area	Comments	Where Environmental Issues Area Addressed in Draft SEIR
Aesthetics	• Address light pollution and solar shadowing	3.1 Aesthetics and Visual Resources
	• Building heights	
Air Quality	• Increased traffic causing increased air pollutants (PM, ozone, etc.)	3.3 Air Quality
	• Current air quality conditions (attainment status for criteria pollutants)	
	• Reductions in air quality emissions as a result of the SMART station	
	• Need bike/ped access from SMART station to other areas to reduce air emissions from driving	
	• Ozone levels outside of downtown area (where monitoring station is located) are higher	
	• Provide background information regarding BAAQMD's attainment status for all criteria pollutants and health effects of air pollution	
	• BAAQMD CEQA Air Quality Guidelines provide guidance on how to evaluate the project's construction	
	• Provide an analysis of the project's potential effects on local and regional air quality from construction, operations and cumulative impacts. Estimate emissions from all sources	
	• Estimate and evaluate the potential health risk to current and future sensitive populations from TACs and PM	
	• Require that all construction activities associated with the project comply with the Basic Construction Mitigation Measures and include mitigation to reduce dust, exhaust and TAC exposure.	
	• Mitigate any air quality impacts to the extent feasible.	
Biological Resources	• The project site is located within the Santa Rosa Plan, which supports the threatened California tiger salamander and four threatened plant species. Therefore, a complete biological assessment needs to be performed as part of the project.	3.4 Biological Resources
	• The project should consult the Santa Rosa Conservation Strategy.	
	• Minimization and mitigation measures requiring USFWS approval will require DFG approval	

Topic Area	Comments	Where Environmental Issues Area Addressed in Draft SEIR
	• CESA permit must be obtained if the project has the potential to result in take of species	
	• If the project will divert the streams on site, DFG may require a Lake and Streambed Alteration Agreement. The EIR should fully identify potential impacts to the stream or riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments for completion of the agreement.	
Cultural Resources	• Assess whether the project will have an adverse impact on historical resources and mitigate effects	3.5 Cultural Resources
	• Contact the appropriate archaeological Information Center for a record search	
	• If an archaeological inventory is required, a professional report detailing the findings and recommendations of the records search and field survey should occur	
	• The NAHC should be contacted for a Sacred Lands File Check and a list of appropriate Native American contacts for consultation	
	• Archeological resources may have a subsurface existence, and should be mitigated for.	
Greenhouse Gas	• State-mandated GHG reduction targets	3.14 Climate Change and Greenhouse Gases
	• Provide background information regarding GHG emissions and potential impacts from climate change	
Hazardous Materials and Human Health	• Increased densities will be exposed to hazardous materials along US 101 and other major streets.	3.7 Hazardous Materials and Human Health
	• Health effects of living near highways	
Hydrology and Water Quality	• Pollutant runoff and erosion impacts on local creeks due to increased densities	3.8 Hydrology and Water Quality
	• Drainage design should be in compliance with SCWA's Flood Control Design Criteria	
	• Project's effect on operation and maintenance of SCWA's Steel Creek facilities. Revocable License and easements required for access or construction work on this property.	
	• Provide SCWA with copies of improvement plans for existing storm drain improvements constructed within SCWA's property and copies of all CEQA documents prepared for the subdivision project along with a finding that the grant of easement complies with the City's GP.	
	• Briggs Ave. extension would traverse a remnant portion of a creek and likely eliminate this natural feature	

Topic Area	Comments	Where Environmental Issues Area Addressed in Draft SEIR
Land Use	• Effects of land use intensification outside of SPA	3.9 Land Use and Planning
	• Pre-zoning of unincorporated islands should be included in the project description	
	• Environmental review of annexation of unincorporated land within the project area needs to address fiscal implications related to public services	
	• Briggs Ave extension would create an awkward street frontage condition (industrial/residential) and would traverse an existing rural residential neighborhood (difficult to implement until neighborhood is redeveloped)	
	• "Street 1" would create an awkward street frontage condition	
Noise	• Tall buildings provide noise buffers from US 101, move frontage roads along US 101	3.10 Noise
	• Noise impacts to schools in SPA	
	• Hearing loss due to new noise sources?	
Population/Housing	• Impact of SMART station on median income in area	3.11 Population, Housing and Employment
	• Briggs Ave extension would bisect Finali property	
	• "Street 1" would require the removal of a recently constructed multi-family residential building and extensive disruption of existing commercial and residential development	
Recreation	• Streets on all sides of parks?	3.12 Public Services and Utilities
Traffic	• Commute traffic for Santa Rosa Junior College	3.13 Transportation and Circulation
	• Analysis with and without proposed connector bridge	
	• Shuttle bus between SMART station and school?	
	• Travel times through corridors (i.e. Santa Monica GPU)	
	• Traffic impacts to schools within SPA (specifically Helen Lehman)	
	• SMART station parking (ripple effects)	
	• Bicycle ridership through SPA	
	• Effects to walking and pedestrian activities	
	• Public transit alterations?	
	• Mitigation to avoid impacts from additional vehicles entering area due to station	
	• Transit hub considered?	

Topic Area	Comments	Where Environmental Issues Area Addressed in Draft SEIR
	• Pedestrian safety	
	• Potential adverse impacts on US 101 with the increase in development	
	• Project's fair share contribution, financing, scheduling, implementation responsibilities and lead agency monitoring should be discussed in mitigation	
	• Identify traffic mitigation fees	
	• Roadway improvements should be completed prior to issuance of occupancy permits	
	• Encroachment permits will not be issued until CEQA concerns are addressed	
	• A Traffic Impact Study (TIS) may be required to assess impacts of project on US 101 and SR 12	
	• Locate and connect any needed housing, jobs and neighborhood sources near major mass transit nodes	
	• Consider developing and applying quantifiable pedestrian, bicycling and transit performance or LOS mitigation	
	• Analyze secondary impacts on pedestrians and bicyclists resulting from mitigation measures for traffic impacts	
	• Any work or traffic control that encroaches on State ROW requires an encroachment permit.	
	• No need for separate bike/ped paths through Finali property, which already intends to provide their own road network	
	• Briggs Ave. extension would compromise pedestrian experience by creating a longer crossing distance	
General Miscellaneous	• Environmental effects of plan vs. no plan	Throughout document
	• Without SP, would projects that propose higher density uses be required to complete an EIR?	4.0 Alternatives

APPENDIX B- AIR QUALITY EMISSIONS MODELING

NEW LAND USES	UNIT AMOUNT	UNIT	TRIPS	PERCENT OF TOTAL TRIPS	TRIPS (ADJUSTED TO ACCOUNT FOR INTERNAL CAPTURE)	TRIPS/UNIT (ADJUSTED)
				MIXED USE INTERNAL CAPTURE:	-8243	
OFFICE	798.6	KSF	8792	18.97%	7229	9.05
INSTITUTIONAL	97.6	KSF	632	1.36%	520	5.32
SMART STATION	350	SPACES	700	1.51%	576	1.64
MFR	1276	DU	8485	18.31%	6976	5.47
SFR	438	DU	4192	9.04%	3447	7.87
SHOPPING CENTER	187	KSF	8031	17.33%	6603	35.31
STRIP COMMERCIAL	350.2	KSF	15521	33.48%	12761	36.44
			46353	100.00%	38110	
EXISTING LAND USES REMOVED						
WAREHOUSE	22.7	KSF	81		-81	3.56
LIGHT/HEAVY INDUST	34	KSF	236		-236	6.96
				NET INCREASE IN DAILY VMT:	37793	
Source: W-Trans 2011.						

SANTA ROSA NORTH STATION AREA SP-EXISTING USES REMOVED

Sonoma-San Francisco County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Industrial Park	34	1000sqft
Unrefrigerated Warehouse-No Rail	22.7	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	4	**Precipitation Freq (Days)**	75		

1.3 User Entered Comments

Project Characteristics -

Land Use - Includes 22.7 KSF of existing warehouse and 34 KSF of industrial to be removed.

Construction Phase - Construction & Demo not included.

Vehicle Trips - Based on default trip-generation rates and modeling parameters contained in the model.

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2011	5.93	43.59	27.00	0.04	0.19	2.72	2.92	0.01	2.72	2.73						
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2011	5.93	43.59	27.00	0.04	0.01	2.72	2.73	0.01	2.72	2.73						
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.57	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Energy	0.02	0.18	0.15	0.00		0.00	0.01		0.00	0.01						
Mobile	0.77	0.81	5.67	0.02	2.62	0.09	2.71	0.04	0.09	0.13						
Total	**2.36**	**0.99**	**5.82**	**0.02**	**2.62**	**0.09**	**2.72**	**0.04**	**0.09**	**0.14**						

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.57	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Energy	0.02	0.18	0.15	0.00		0.00	0.01		0.00	0.01						
Mobile	0.77	0.81	5.67	0.02	2.62	0.09	2.71	0.04	0.09	0.13						
Total	**2.36**	**0.99**	**5.82**	**0.02**	**2.62**	**0.09**	**2.72**	**0.04**	**0.09**	**0.14**						

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2011

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.76	43.43	25.53	0.04		2.72	2.72		2.72	2.72						
Total	**5.76**	**43.43**	**25.53**	**0.04**		**2.72**	**2.72**		**2.72**	**2.72**						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.16	0.16	1.47	0.00	0.19	0.01	0.20	0.01	0.01	0.01						
Total	**0.16**	**0.16**	**1.47**	**0.00**	**0.19**	**0.01**	**0.20**	**0.01**	**0.01**	**0.01**						

3.2 Demolition - 2011

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.76	43.43	25.53	0.04		2.72	2.72		2.72	2.72						
Total	**5.76**	**43.43**	**25.53**	**0.04**		**2.72**	**2.72**		**2.72**	**2.72**						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.16	0.16	1.47	0.00	0.01	0.01	0.01	0.01	0.01	0.01						
Total	**0.16**	**0.16**	**1.47**	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**						

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.77	0.81	5.67	0.02	2.62	0.09	2.71	0.04	0.09	0.13						
Unmitigated	0.77	0.81	5.67	0.02	2.62	0.09	2.71	0.04	0.09	0.13						
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Industrial Park	236.64	84.66	24.82	484,169	484,169
Unrefrigerated Warehouse-No Rail	58.79	58.79	58.79	171,647	171,647
Total	295.43	143.45	83.61	655,816	655,816

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Industrial Park	9.50	7.30	7.30	59.00	28.00	13.00
Unrefrigerated Warehouse-No Rail	9.50	7.30	7.30	59.00	0.00	41.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.02	0.18	0.15	0.00		0.00	0.01		0.00	0.01						
NaturalGas Unmitigated	0.02	0.18	0.15	0.00		0.00	0.01		0.00	0.01						
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Industrial Park	1604.05	0.02	0.16	0.13	0.00		0.00	0.01		0.00	0.01						
Unrefrigerated Warehouse-No Rail	227	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00						
Total		**0.02**	**0.18**	**0.15**	**0.00**		**0.00**	**0.01**		**0.00**	**0.01**						

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Industrial Park	1.60405	0.02	0.16	0.13	0.00		0.00	0.01		0.00	0.01						
Unrefrigerated Warehouse-No Rail	0.227	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00						
Total		**0.02**	**0.18**	**0.15**	**0.00**		**0.00**	**0.01**		**0.00**	**0.01**						

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.57	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Unmitigated	1.57	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.36					0.00	0.00		0.00	0.00						
Consumer Products	1.21					0.00	0.00		0.00	0.00						
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Total	**1.57**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**						

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.36					0.00	0.00		0.00	0.00						
Consumer Products	1.21					0.00	0.00		0.00	0.00						
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Total	**1.57**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**						

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

SANTA ROSA NORTH STATION AREA SP-EXISTING USES REMOVED

Sonoma-San Francisco County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Industrial Park	34	1000sqft
Unrefrigerated Warehouse-No Rail	22.7	1000sqft

1.2 Other Project Characteristics

Urbanization Urban

Wind Speed (m/s) 2.2

Utility Company Pacific Gas & Electric Company

Climate Zone 4

Precipitation Freq (Days) 75

1.3 User Entered Comments

Project Characteristics -

Land Use - Includes 22.7 KSF of existing warehouse and 34 KSF of industrial to be removed.

Construction Phase - Construction & Demo not included.

Vehicle Trips - Based on default trip-generation rates and modeling parameters contained in the model.

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2011	5.92	43.57	27.07	0.04	0.19	2.72	2.92	0.01	2.72	2.73						
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2011	5.92	43.57	27.07	0.04	0.01	2.72	2.73	0.01	2.72	2.73						
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.57	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Energy	0.02	0.18	0.15	0.00		0.00	0.01		0.00	0.01						
Mobile	0.76	0.75	5.71	0.03	2.62	0.09	2.71	0.04	0.09	0.13						
Total	**2.35**	**0.93**	**5.86**	**0.03**	**2.62**	**0.09**	**2.72**	**0.04**	**0.09**	**0.14**						

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.57	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Energy	0.02	0.18	0.15	0.00		0.00	0.01		0.00	0.01						
Mobile	0.76	0.75	5.71	0.03	2.62	0.09	2.71	0.04	0.09	0.13						
Total	**2.35**	**0.93**	**5.86**	**0.03**	**2.62**	**0.09**	**2.72**	**0.04**	**0.09**	**0.14**						

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2011

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.76	43.43	25.53	0.04		2.72	2.72		2.72	2.72						
Total	**5.76**	**43.43**	**25.53**	**0.04**		**2.72**	**2.72**		**2.72**	**2.72**						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.15	0.14	1.54	0.00	0.19	0.01	0.20	0.01	0.01	0.01						
Total	**0.15**	**0.14**	**1.54**	**0.00**	**0.19**	**0.01**	**0.20**	**0.01**	**0.01**	**0.01**						

3.2 Demolition - 2011

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	5.76	43.43	25.53	0.04		2.72	2.72		2.72	2.72						
Total	**5.76**	**43.43**	**25.53**	**0.04**		**2.72**	**2.72**		**2.72**	**2.72**						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.15	0.14	1.54	0.00	0.01	0.01	0.01	0.01	0.01	0.01						
Total	**0.15**	**0.14**	**1.54**	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**						

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.76	0.75	5.71	0.03	2.62	0.09	2.71	0.04	0.09	0.13						
Unmitigated	0.76	0.75	5.71	0.03	2.62	0.09	2.71	0.04	0.09	0.13						
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Industrial Park	236.64	84.66	24.82	484,169	484,169
Unrefrigerated Warehouse-No Rail	58.79	58.79	58.79	171,647	171,647
Total	295.43	143.45	83.61	655,816	655,816

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Industrial Park	9.50	7.30	7.30	59.00	28.00	13.00
Unrefrigerated Warehouse-No Rail	9.50	7.30	7.30	59.00	0.00	41.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.02	0.18	0.15	0.00		0.00	0.01		0.00	0.01						
NaturalGas Unmitigated	0.02	0.18	0.15	0.00		0.00	0.01		0.00	0.01						
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Industrial Park	1604.05	0.02	0.16	0.13	0.00		0.00	0.01		0.00	0.01						
Unrefrigerated Warehouse-No Rail	227	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00						
Total		**0.02**	**0.18**	**0.15**	**0.00**		**0.00**	**0.01**		**0.00**	**0.01**						

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Industrial Park	1.60405	0.02	0.16	0.13	0.00		0.00	0.01		0.00	0.01						
Unrefrigerated Warehouse-No Rail	0.227	0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00						
Total		**0.02**	**0.18**	**0.15**	**0.00**		**0.00**	**0.01**		**0.00**	**0.01**						

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.57	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Unmitigated	1.57	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.36					0.00	0.00		0.00	0.00						
Consumer Products	1.21					0.00	0.00		0.00	0.00						
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Total	**1.57**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**						

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.36					0.00	0.00		0.00	0.00						
Consumer Products	1.21					0.00	0.00		0.00	0.00						
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Total	**1.57**	**0.00**	**0.00**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**						

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

North Santa Rosa Station Area Plan

Sonoma-San Francisco County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	798.6	1000sqft
Elementary School	97.6	1000sqft
Parking Lot	350	Space
Apartments Mid Rise	1276	Dwelling Unit
Single Family Housing	438	Dwelling Unit
Regional Shopping Center	187	1000sqft
Strip Mall	350.2	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	4	**Precipitation Freq (Days)**	75		

1.3 User Entered Comments

Project Characteristics -

Land Use - Based on trip-generation data derived from the traffic analysis.

Construction Phase - No construction included

Off-road Equipment - No construction included.

Trips and VMT - No construction emissions included.

Demolition - Assumes 22.7 ksf of existing warehouse and 34.0 ksf of existing industrial demolition.

Vehicle Trips - Based on trip generation data obtained from the traffic analysis and projected net increases in VMT attributable to the proposed project for Sonoma County (37,793 miles). Trip distribution based on model default parameters.

Construction Off-road Equipment Mitigation -

Area Mitigation - Mitigation includes use of Low-VOC paint and natural gas hearths.

Energy Mitigation - Mitigation includes building improvements that would exceed Title 24 by 10% and installation of high efficiency lighting.

Water Mitigation -

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2011	10.07	80.56	48.15	0.07	6.42	4.12	10.54	0.01	4.12	4.14						
2012	9.55	75.76	46.18	0.07	6.42	3.82	10.24	0.01	3.82	3.83						
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2011	10.07	80.56	48.15	0.07	6.30	4.12	10.43	0.01	4.12	4.14						
2012	9.55	75.76	46.18	0.07	6.30	3.82	10.13	0.01	3.82	3.83						
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	817.75	17.95	1,405.92	1.80		0.00	188.64		0.00	188.63						
Energy	1.41	12.34	7.14	0.08		0.00	0.98		0.00	0.98						
Mobile	48.91	45.82	277.30	1.00	98.07	3.85	101.92	1.34	3.75	5.10						
Total	**868.07**	**76.11**	**1,690.36**	**2.88**	**98.07**	**3.85**	**291.54**	**1.34**	**3.75**	**194.71**						

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	111.37	1.64	142.63	0.01		0.00	1.90		0.00	1.89						
Energy	1.29	11.24	6.48	0.07		0.00	0.89		0.00	0.89						
Mobile	48.91	45.82	277.30	1.00	98.07	3.85	101.92	1.34	3.75	5.10						
Total	**161.57**	**58.70**	**426.41**	**1.08**	**98.07**	**3.85**	**104.71**	**1.34**	**3.75**	**7.88**						

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2011

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.19	0.00	0.19	0.00	0.00	0.00						
Off-Road	9.84	79.87	45.95	0.07		4.10	4.10		4.10	4.10						
Total	**9.84**	**79.87**	**45.95**	**0.07**	**0.19**	**4.10**	**4.29**	**0.00**	**4.10**	**4.10**						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.05	0.53	0.42	0.00	6.01	0.02	6.02	0.00	0.02	0.02						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.17	0.16	1.78	0.00	0.22	0.01	0.23	0.01	0.01	0.02						
Total	**0.22**	**0.69**	**2.20**	**0.00**	**6.23**	**0.03**	**6.25**	**0.01**	**0.03**	**0.04**						

3.2 Demolition - 2011

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.07	0.00	0.07	0.00	0.00	0.00						
Off-Road	9.84	79.87	45.95	0.07		4.10	4.10		4.10	4.10						
Total	**9.84**	**79.87**	**45.95**	**0.07**	**0.07**	**4.10**	**4.17**	**0.00**	**4.10**	**4.10**						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.05	0.53	0.42	0.00	6.01	0.02	6.02	0.00	0.02	0.02						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.17	0.16	1.78	0.00	0.22	0.01	0.23	0.01	0.01	0.02						
Total	**0.22**	**0.69**	**2.20**	**0.00**	**6.23**	**0.03**	**6.25**	**0.01**	**0.03**	**0.04**						

3.2 Demolition - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.19	0.00	0.19	0.00	0.00	0.00						
Off-Road	9.34	75.14	44.19	0.07		3.80	3.80		3.80	3.80						
Total	**9.34**	**75.14**	**44.19**	**0.07**	**0.19**	**3.80**	**3.99**	**0.00**	**3.80**	**3.80**						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.05	0.48	0.38	0.00	6.01	0.02	6.02	0.00	0.02	0.02						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.16	0.15	1.60	0.00	0.22	0.01	0.23	0.01	0.01	0.02						
Total	**0.21**	**0.63**	**1.98**	**0.00**	**6.23**	**0.03**	**6.25**	**0.01**	**0.03**	**0.04**						

3.2 Demolition - 2012

Mitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Fugitive Dust					0.07	0.00	0.07	0.00	0.00	0.00						
Off-Road	9.34	75.14	44.19	0.07		3.80	3.80		3.80	3.80						
Total	**9.34**	**75.14**	**44.19**	**0.07**	**0.07**	**3.80**	**3.87**	**0.00**	**3.80**	**3.80**						

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.05	0.48	0.38	0.00	6.01	0.02	6.02	0.00	0.02	0.02						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.16	0.15	1.60	0.00	0.22	0.01	0.23	0.01	0.01	0.02						
Total	**0.21**	**0.63**	**1.98**	**0.00**	**6.23**	**0.03**	**6.25**	**0.01**	**0.03**	**0.04**						

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Mitigated	48.91	45.82	277.30	1.00	98.07	3.85	101.92	1.34	3.75	5.10						
Unmitigated	48.91	45.82	277.30	1.00	98.07	3.85	101.92	1.34	3.75	5.10						
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	6,966.96	6,966.96	6966.96	6,804,651	6,804,651
Elementary School	517.28	517.28	517.28	396,040	396,040
General Office Building	7,347.12	7,347.12	7347.12	6,613,271	6,613,271
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	6,638.50	6,638.50	6638.50	4,605,806	4,605,806
Single Family Housing	3,504.00	3,504.00	3504.00	3,422,367	3,422,367
Strip Mall	12,817.32	12,817.32	12817.32	7,819,386	7,819,386
Total	37,791.18	37,791.18	37,791.18	29,661,520	29,661,520

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Mid Rise	3.02	3.02	3.02	26.10	29.10	44.80
Elementary School	3.02	3.02	3.02	65.00	30.00	5.00
General Office Building	3.02	3.02	3.02	33.00	48.00	19.00
Parking Lot	3.02	3.02	3.02	0.00	0.00	0.00
Regional Shopping Center	3.02	3.02	3.02	16.30	64.70	19.00
Single Family Housing	3.02	3.02	3.02	26.10	29.10	44.80
Strip Mall	3.02	3.02	3.02	16.60	64.40	19.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

Exceed Title 24

Install High Efficiency Lighting

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	1.29	11.24	6.48	0.07		0.00	0.89		0.00	0.89						
NaturalGas Unmitigated	1.41	12.34	7.14	0.08		0.00	0.98		0.00	0.98						
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Mid Rise	38091.9	0.41	3.51	1.49	0.02		0.00	0.28		0.00	0.28						
Elementary School	5176.81	0.06	0.51	0.43	0.00		0.00	0.04		0.00	0.04						
General Office Building	37676.4	0.41	3.69	3.10	0.02		0.00	0.28		0.00	0.28						
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Regional Shopping Center	1275.7	0.01	0.13	0.11	0.00		0.00	0.01		0.00	0.01						
Single Family Housing	46302.5	0.50	4.27	1.82	0.03		0.00	0.34		0.00	0.34						
Strip Mall	2389.04	0.03	0.23	0.20	0.00		0.00	0.02		0.00	0.02						
Total		**1.42**	**12.34**	**7.15**	**0.07**		**0.00**	**0.97**		**0.00**	**0.97**						

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Mid Rise	34.9754	0.38	3.22	1.37	0.02		0.00	0.26		0.00	0.26						
Elementary School	4.684	0.05	0.46	0.39	0.00		0.00	0.03		0.00	0.03						
General Office Building	33.9219	0.37	3.33	2.79	0.02		0.00	0.25		0.00	0.25						
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Regional Shopping Center	1.14813	0.01	0.11	0.09	0.00		0.00	0.01		0.00	0.01						
Single Family Housing	42.3869	0.46	3.91	1.66	0.02		0.00	0.32		0.00	0.32						
Strip Mall	2.15013	0.02	0.21	0.18	0.00		0.00	0.02		0.00	0.02						
Total		**1.29**	**11.24**	**6.48**	**0.06**		**0.00**	**0.89**		**0.00**	**0.89**						

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	111.37	1.64	142.63	0.01		0.00	1.90		0.00	1.89						
Unmitigated	817.75	17.95	1,405.92	1.80		0.00	188.64		0.00	188.63						
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	27.66					0.00	0.00		0.00	0.00						
Consumer Products	77.85					0.00	0.00		0.00	0.00						
Hearth	707.98	16.31	1,263.37	1.79		0.00	187.85		0.00	187.84						
Landscaping	4.26	1.64	142.55	0.01		0.00	0.79		0.00	0.79						
Total	**817.75**	**17.95**	**1,405.92**	**1.80**		**0.00**	**188.64**		**0.00**	**188.63**						

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	27.66					0.00	0.00		0.00	0.00						
Consumer Products	77.85					0.00	0.00		0.00	0.00						
Hearth	1.60	0.00	0.09	0.00		0.00	1.11		0.00	1.10						
Landscaping	4.26	1.64	142.55	0.01		0.00	0.79		0.00	0.79						
Total	**111.37**	**1.64**	**142.64**	**0.01**		**0.00**	**1.90**		**0.00**	**1.89**						

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

North Santa Rosa Station Area Plan

Sonoma-San Francisco County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
General Office Building	798.6	1000sqft
Elementary School	97.6	1000sqft
Parking Lot	350	Space
Apartments Mid Rise	1276	Dwelling Unit
Single Family Housing	438	Dwelling Unit
Regional Shopping Center	187	1000sqft
Strip Mall	350.2	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	4	**Precipitation Freq (Days)**	75		

1.3 User Entered Comments

Project Characteristics -

Land Use - Based on trip-generation data derived from the traffic analysis.

Construction Phase - No construction included

Off-road Equipment - No construction included.

Trips and VMT - No construction emissions included.

Demolition - Assumes 22.7 ksf of existing warehouse and 34.0 ksf of existing industrial demolition.

Vehicle Trips - Based on trip generation data obtained from the traffic analysis and projected net increases in VMT attributable to the proposed project for Sonoma County (37,793 miles). Trip distribution based on model default parameters.

Construction Off-road Equipment Mitigation -

Area Mitigation - Mitigation includes use of Low-VOC paint and natural gas hearths.

Energy Mitigation - Mitigation includes building improvements that would exceed Title 24 by 10% and installation of high efficiency lighting.

Water Mitigation -

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2011	10.09	80.59	48.12	0.07	6.42	4.13	10.54	0.01	4.13	4.14						
2012	9.57	75.79	46.15	0.07	6.42	3.82	10.24	0.01	3.82	3.83						
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2011	10.09	80.59	48.12	0.07	6.30	4.13	10.43	0.01	4.13	4.14						
2012	9.57	75.79	46.15	0.07	6.30	3.82	10.13	0.01	3.82	3.83						
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	817.75	17.95	1,405.92	1.80		0.00	188.64		0.00	188.63						
Energy	1.41	12.34	7.14	0.08		0.00	0.98		0.00	0.98						
Mobile	43.66	47.83	318.95	0.91	98.07	3.86	101.93	1.34	3.76	5.10						
Total	**862.82**	**78.12**	**1,732.01**	**2.79**	**98.07**	**3.86**	**291.55**	**1.34**	**3.76**	**194.71**						

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	111.37	1.64	142.63	0.01		0.00	1.90		0.00	1.89						
Energy	1.29	11.24	6.48	0.07		0.00	0.89		0.00	0.89						
Mobile	43.66	47.83	318.95	0.91	98.07	3.86	101.93	1.34	3.76	5.10						
Total	**156.32**	**60.71**	**468.06**	**0.99**	**98.07**	**3.86**	**104.72**	**1.34**	**3.76**	**7.88**						

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2011

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.19	0.00	0.19	0.00	0.00	0.00						
Off-Road	9.84	79.87	45.95	0.07		4.10	4.10		4.10	4.10						
Total	**9.84**	**79.87**	**45.95**	**0.07**	**0.19**	**4.10**	**4.29**	**0.00**	**4.10**	**4.10**						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.06	0.54	0.47	0.00	6.01	0.02	6.02	0.00	0.02	0.02						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.19	0.18	1.70	0.00	0.22	0.01	0.23	0.01	0.01	0.02						
Total	**0.25**	**0.72**	**2.17**	**0.00**	**6.23**	**0.03**	**6.25**	**0.01**	**0.03**	**0.04**						

3.2 Demolition - 2011

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.07	0.00	0.07	0.00	0.00	0.00						
Off-Road	9.84	79.87	45.95	0.07		4.10	4.10		4.10	4.10						
Total	**9.84**	**79.87**	**45.95**	**0.07**	**0.07**	**4.10**	**4.17**	**0.00**	**4.10**	**4.10**						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.06	0.54	0.47	0.00	6.01	0.02	6.02	0.00	0.02	0.02						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.19	0.18	1.70	0.00	0.22	0.01	0.23	0.01	0.01	0.02						
Total	**0.25**	**0.72**	**2.17**	**0.00**	**6.23**	**0.03**	**6.25**	**0.01**	**0.03**	**0.04**						

3.2 Demolition - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.19	0.00	0.19	0.00	0.00	0.00						
Off-Road	9.34	75.14	44.19	0.07		3.80	3.80		3.80	3.80						
Total	**9.34**	**75.14**	**44.19**	**0.07**	**0.19**	**3.80**	**3.99**	**0.00**	**3.80**	**3.80**						

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.05	0.49	0.43	0.00	6.01	0.02	6.02	0.00	0.02	0.02						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.17	0.16	1.52	0.00	0.22	0.01	0.23	0.01	0.01	0.02						
Total	**0.22**	**0.65**	**1.95**	**0.00**	**6.23**	**0.03**	**6.25**	**0.01**	**0.03**	**0.04**						

3.2 Demolition - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.07	0.00	0.07	0.00	0.00	0.00						
Off-Road	9.34	75.14	44.19	0.07		3.80	3.80		3.80	3.80						
Total	**9.34**	**75.14**	**44.19**	**0.07**	**0.07**	**3.80**	**3.87**	**0.00**	**3.80**	**3.80**						

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.05	0.49	0.43	0.00	6.01	0.02	6.02	0.00	0.02	0.02						
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Worker	0.17	0.16	1.52	0.00	0.22	0.01	0.23	0.01	0.01	0.02						
Total	**0.22**	**0.65**	**1.95**	**0.00**	**6.23**	**0.03**	**6.25**	**0.01**	**0.03**	**0.04**						

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	43.66	47.83	318.95	0.91	98.07	3.86	101.93	1.34	3.76	5.10						
Unmitigated	43.66	47.83	318.95	0.91	98.07	3.86	101.93	1.34	3.76	5.10						
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	6,966.96	6,966.96	6966.96	6,804,651	6,804,651
Elementary School	517.28	517.28	517.28	396,040	396,040
General Office Building	7,347.12	7,347.12	7347.12	6,613,271	6,613,271
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	6,638.50	6,638.50	6638.50	4,605,806	4,605,806
Single Family Housing	3,504.00	3,504.00	3504.00	3,422,367	3,422,367
Strip Mall	12,817.32	12,817.32	12817.32	7,819,386	7,819,386
Total	37,791.18	37,791.18	37,791.18	29,661,520	29,661,520

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Mid Rise	3.02	3.02	3.02	26.10	29.10	44.80
Elementary School	3.02	3.02	3.02	65.00	30.00	5.00
General Office Building	3.02	3.02	3.02	33.00	48.00	19.00
Parking Lot	3.02	3.02	3.02	0.00	0.00	0.00
Regional Shopping Center	3.02	3.02	3.02	16.30	64.70	19.00
Single Family Housing	3.02	3.02	3.02	26.10	29.10	44.80
Strip Mall	3.02	3.02	3.02	16.60	64.40	19.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

Exceed Title 24

Install High Efficiency Lighting

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	1.29	11.24	6.48	0.07		0.00	0.89		0.00	0.89						
NaturalGas Unmitigated	1.41	12.34	7.14	0.08		0.00	0.98		0.00	0.98						
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Mid Rise	38091.9	0.41	3.51	1.49	0.02		0.00	0.28		0.00	0.28						
Elementary School	5176.81	0.06	0.51	0.43	0.00		0.00	0.04		0.00	0.04						
General Office Building	37676.4	0.41	3.69	3.10	0.02		0.00	0.28		0.00	0.28						
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Regional Shopping Center	1275.7	0.01	0.13	0.11	0.00		0.00	0.01		0.00	0.01						
Single Family Housing	46302.5	0.50	4.27	1.82	0.03		0.00	0.34		0.00	0.34						
Strip Mall	2389.04	0.03	0.23	0.20	0.00		0.00	0.02		0.00	0.02						
Total		**1.42**	**12.34**	**7.15**	**0.07**		**0.00**	**0.97**		**0.00**	**0.97**						

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Mid Rise	34.9754	0.38	3.22	1.37	0.02		0.00	0.26		0.00	0.26						
Elementary School	4.684	0.05	0.46	0.39	0.00		0.00	0.03		0.00	0.03						
General Office Building	33.9219	0.37	3.33	2.79	0.02		0.00	0.25		0.00	0.25						
Parking Lot	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00						
Regional Shopping Center	1.14813	0.01	0.11	0.09	0.00		0.00	0.01		0.00	0.01						
Single Family Housing	42.3869	0.46	3.91	1.66	0.02		0.00	0.32		0.00	0.32						
Strip Mall	2.15013	0.02	0.21	0.18	0.00		0.00	0.02		0.00	0.02						
Total		**1.29**	**11.24**	**6.48**	**0.06**		**0.00**	**0.89**		**0.00**	**0.89**						

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Residential Interior

Use Low VOC Paint - Residential Exterior

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	111.37	1.64	142.63	0.01		0.00	1.90		0.00	1.89						
Unmitigated	817.75	17.95	1,405.92	1.80		0.00	188.64		0.00	188.63						
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	27.66					0.00	0.00		0.00	0.00						
Consumer Products	77.85					0.00	0.00		0.00	0.00						
Hearth	707.98	16.31	1,263.37	1.79		0.00	187.85		0.00	187.84						
Landscaping	4.26	1.64	142.55	0.01		0.00	0.79		0.00	0.79						
Total	**817.75**	**17.95**	**1,405.92**	**1.80**		**0.00**	**188.64**		**0.00**	**188.63**						

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	27.66					0.00	0.00		0.00	0.00						
Consumer Products	77.85					0.00	0.00		0.00	0.00						
Hearth	1.60	0.00	0.09	0.00		0.00	1.11		0.00	1.10						
Landscaping	4.26	1.64	142.55	0.01		0.00	0.79		0.00	0.79						
Total	**111.37**	**1.64**	**142.64**	**0.01**		**0.00**	**1.90**		**0.00**	**1.89**						

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

APPENDIX C- TRAFFIC NOISE MODELING

TRAFFIC NOISE MODELING

TRAFFIC DISTRIBUTION PERCENTAGES

	DAY	EVE	NIGHT
AUTOS	75.51	12.57	9.34
M-TRUCKS	1.56	0.09	0.19
H-TRUCKS	0.64	0.02	0.08

<u>EXISTING</u>

W STEELE LANE, WEST OF RANGE AVE
ADT: 8840 SPEED: 35 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 63.66
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	97.8	210.3

W STEELE LANE, EAST OF RANGE AVE
ADT: 9050 SPEED: 35 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 63.76
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	99.3	213.6

GUERNEVILLE RD, WEST OF N DUTTON AVE
ADT: 19060 SPEED: 40 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 66.91
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	96.9	203.5	436.0

GUERNEVILLE RD, EAST OF N DUTTON AVE
ADT: 26440 SPEED: 40 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 68.33
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
59.3	119.1	252.5	542.0

GUERNEVILLE RD, WEST OF RANGE AVE
ADT: 20940 SPEED: 40 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 67.32
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	102.8	216.5	464.2

GUERNEVILLE RD, EAST OF RANGE AVE
ADT: 16220 SPEED: 40 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 66.21
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	87.6	183.1	391.7

W COLLEGE AVE, WEST OF N DUTTON AVE

ADT: 14580 SPEED: 35 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 64.33
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	67.5	138.1	293.8

W COLLEGE AVE, EAST OF N DUTTON AVE
ADT: 16140 SPEED: 35 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 64.77
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	71.7	147.4	314.3

W COLLEGE AVE, EAST OF CLEVELAND AVE
ADT: 22350 SPEED: 35 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 66.18
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	87.3	182.3	390.1

N DUTTON AVE, SOUTH OF GUERNEVILLE RD
ADT: 14410 SPEED: 40 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 66.13
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	80.0	168.8	362.0

N DUTTON AVE, NORTH OF W COLLEGE AVE
ADT: 16020 SPEED: 40 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 66.59
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	85.5	181.0	388.4

RANGE AVE, NORTH OF W STEELE LANE
ADT: 9980 SPEED: 40 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 64.53
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	63.6	132.6	283.6

RANGE AVE, SOUTH OF W STEELE LANE
ADT: 9670 SPEED: 40 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 64.39
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	62.4	129.9	277.7

RANGE AVE, SOUTH OF GUERNEVILLE RD

ADT: 9760 SPEED: 30 ACTIVE HALF WIDTH (FT): 8
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 62.27
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	81.8	175.5

RANGE AVE, SOUTH OF JENNINGS AVE
ADT: 3770 SPEED: 35 ACTIVE HALF WIDTH (FT): 12
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 59.38
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	56.5	119.6

CLEVELAND AVE, NORTH OF W STEELE LN
ADT: 13370 SPEED: 35 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 63.95
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	64.2	130.5	277.4

CLEVELAND AVE, SOUTH OF W STEELE LN
ADT: 10770 SPEED: 35 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 63.44
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	54.7	112.6	240.1

CLEVELAND AVE, SOUTH OF JENNINGS AVE
ADT: 10630 SPEED: 35 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 63.38
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	54.2	111.7	238.0

CLEVELAND AVE, SOUTH OF FRANCES ST
ADT: 13030 SPEED: 35 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 64.27
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	61.3	127.5	272.4

<u>GENERAL PLAN NO PROJECT</u>

W STEELE LANE, WEST OF RANGE AVE
ADT: 9980 SPEED: 35 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 64.18
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	106.0	228.0

W STEELE LANE, EAST OF RANGE AVE

ADT: 9760 SPEED: 35 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 64.09
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	104.4	224.6

GUERNEVILLE RD, WEST OF N DUTTON AVE
ADT: 23250 SPEED: 40 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 67.77
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	109.8	232.0	497.6

GUERNEVILLE RD, EAST OF N DUTTON AVE
ADT: 30630 SPEED: 40 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 68.97
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
64.4	130.9	278.3	597.7

GUERNEVILLE RD, WEST OF RANGE AVE
ADT: 24520 SPEED: 40 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 68.00
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
56.8	113.5	240.2	515.4

GUERNEVILLE RD, EAST OF RANGE AVE
ADT: 18100 SPEED: 40 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 66.69
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	93.8	196.8	421.3

W COLLEGE AVE, WEST OF N DUTTON AVE
ADT: 17730 SPEED: 35 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 65.18
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	75.8	156.7	334.5

W COLLEGE AVE, EAST OF N DUTTON AVE
ADT: 19630 SPEED: 35 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 65.62
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	80.6	167.5	357.9

W COLLEGE AVE, EAST OF CLEVELAND AVE
ADT: 27650 SPEED: 35 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 67.11
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	99.6	209.7	449.3

N DUTTON AVE, SOUTH OF GUERNEVILLE RD
ADT: 17960 SPEED: 40 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 67.08
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	92.0	195.2	419.1

N DUTTON AVE, NORTH OF W COLLEGE AVE
ADT: 19660 SPEED: 40 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 67.47
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	97.5	207.2	445.1

RANGE AVE, NORTH OF W STEELE LANE
ADT: 12030 SPEED: 40 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 65.34
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	71.4	149.9	321.0

RANGE AVE, SOUTH OF W STEELE LANE
ADT: 11950 SPEED: 40 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 65.31
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	71.1	149.2	319.6

RANGE AVE, SOUTH OF GUERNEVILLE RD
ADT: 11180 SPEED: 30 ACTIVE HALF WIDTH (FT): 8
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 62.86
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	89.5	192.1

RANGE AVE, SOUTH OF JENNINGS AVE
ADT: 4900 SPEED: 35 ACTIVE HALF WIDTH (FT): 12
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 60.51
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	66.9	142.3

CLEVELAND AVE, NORTH OF W STEELE LN
ADT: 18660 SPEED: 35 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 65.40
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	78.2	162.0	346.0

CLEVELAND AVE, SOUTH OF W STEELE LN
ADT: 12190 SPEED: 35 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 63.98
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	58.9	122.1	260.7

CLEVELAND AVE, SOUTH OF JENNINGS AVE
ADT: 13900 SPEED: 35 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 64.55
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	63.8	133.0	284.4

CLEVELAND AVE, SOUTH OF FRANCES ST
ADT: 17650 SPEED: 35 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 65.59
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	74.0	155.6	333.3

GENERAL PLAN PLUS PROJECT

W STEELE LANE, WEST OF RANGE AVE
ADT: 12210 SPEED: 35 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 65.06
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	56.5	121.2	260.7

W STEELE LANE, EAST OF RANGE AVE
ADT: 11660 SPEED: 35 ACTIVE HALF WIDTH (FT): 6
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 64.86
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	54.8	117.5	252.8

GUERNEVILLE RD, WEST OF N DUTTON AVE
ADT: 29820 SPEED: 40 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 68.85
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
63.4	128.7	273.4	587.1

GUERNEVILLE RD, EAST OF N DUTTON AVE
ADT: 37220 SPEED: 40 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 69.82
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
72.2	148.5	316.6	680.5

GUERNEVILLE RD, WEST OF RANGE AVE
ADT: 30020 SPEED: 40 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 68.88
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
63.7	129.2	274.6	589.7

GUERNEVILLE RD, EAST OF RANGE AVE
ADT: 29100 SPEED: 40 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 68.75
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
62.5	126.7	269.0	577.7

W COLLEGE AVE, WEST OF N DUTTON AVE
ADT: 18200 SPEED: 35 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 65.29
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	77.0	159.4	340.3

W COLLEGE AVE, EAST OF N DUTTON AVE
ADT: 21920 SPEED: 35 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 66.10
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	86.2	180.0	385.1

W COLLEGE AVE, EAST OF CLEVELAND AVE
ADT: 32370 SPEED: 35 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 67.79
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	110.1	232.6	498.9

N DUTTON AVE, SOUTH OF GUERNEVILLE RD
ADT: 20940 SPEED: 40 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 67.75
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	101.6	216.1	464.2

N DUTTON AVE, NORTH OF W COLLEGE AVE
ADT: 21620 SPEED: 40 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 67.89
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	103.7	220.7	474.2

RANGE AVE, NORTH OF W STEELE LANE
ADT: 13800 SPEED: 40 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 65.94
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	77.8	164.1	351.7

RANGE AVE, SOUTH OF W STEELE LANE
ADT: 14270 SPEED: 40 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 66.08
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	79.5	167.7	359.6

RANGE AVE, SOUTH OF GUERNEVILLE RD
ADT: 14910 SPEED: 30 ACTIVE HALF WIDTH (FT): 8
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 64.11
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	50.8	108.3	232.7

RANGE AVE, SOUTH OF JENNINGS AVE
ADT: 7410 SPEED: 35 ACTIVE HALF WIDTH (FT): 12
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 62.31
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	0.0	87.5	187.1

CLEVELAND AVE, NORTH OF W STEELE LN
ADT: 21130 SPEED: 35 ACTIVE HALF WIDTH (FT): 24
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 65.94
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	84.3	175.7	375.8

CLEVELAND AVE, SOUTH OF W STEELE LN
ADT: 16130 SPEED: 35 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 65.20
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	69.9	146.6	313.9

CLEVELAND AVE, SOUTH OF JENNINGS AVE
ADT: 16180 SPEED: 35 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 65.21
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	70.0	146.9	314.6

CLEVELAND AVE, SOUTH OF FRANCES ST
ADT: 22290 SPEED: 35 ACTIVE HALF WIDTH (FT): 18
SITE CHARACTERISTICS: SOFT GRADE (PERCENT): .5
CNEL AT 50 FT FROM NEAR TRAVEL LANE CENTERLINE = 66.60
* * DISTANCE (FEET) FROM ROADWAY CENTERLINE TO CNEL * *

70 CNEL	65 CNEL	60 CNEL	55 CNEL
0.0	85.7	181.4	389.3

APPENDIX D1- SB 610
WATER SUPPLY ASSESSMENT

SB 610 Water Supply Assessment

For

<u>North Santa Rosa Station Area Specific Plan</u>

February 14, 2012

City of Santa Rosa
Utilities Department

Acronyms

AF - Acre-feet

AFY – Acre-feet per year

BMP – Best Management Practice

CASGEM – California Statewide Groundwater Elevation Monitoring

CDFG – California Department of Fish and Game

CEQA – California Environmental Quality Act

CFR – Code of Federal Regulations

CFS – Cubic Feet per Second

COE – Corps of Engineers

CUWCC – California Urban Water Conservation Council

DPH – Department of Public Health

DOI – Department of Interior

DWR – Department of Water Resources

EIR – Environmental Impact Report

EIS – Environmental Impact Statement

ESA – Endangered Species Act

ESU – Evolutionarily Significant Unit

FERC – Federal Energy Regulatory Commission

GPM – Gallons per minute

IRWP – Incremental Recycled Water Program

MGD – Million gallons per day

MOU – Memorandum of Understanding

NMFS – National Marine Fisheries Service

PG&E – Pacific Gas and Electric Company

PRMD – Sonoma County Permit and Resources Management District

PVP – Potter Valley Project

REF – Residential Equivalency Factor

RPA – Reasonable and Prudent Alternative

RPM – Reasonable and Prudent Measures

SB – Senate Bill

SCWA – Sonoma County Water Agency

SWRCB – State Water Resources Control Board

USFWS – United States Fish and Wildlife Service

UGB – Urban Growth Boundary

USGS – United States Geological Survey

UWMP – Urban Water Management Plan

WSA – Water Supply Assessment

WSTSP – Water Supply and Transmission System Project

Water Supply Assessment for North Santa Rosa Station Area Specific Plan

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Executive Summary

Senate Bill 610 of 2001 (SB 610) requires that water suppliers provide a Water Supply Assessment (WSA) to planning agencies for any proposed projects which are subject to the California Environmental Quality Act (CEQA) and would demand an amount of water equivalent to or greater than the amount of water required by a 500 dwelling unit project. The proposed North Santa Rosa Station Area Specific Plan (Project) is subject to CEQA and has an increase in the number of residential dwelling units over the current Santa Rosa General Plan 2035 (General Plan 2035) of approximately 3,702 residential equivalent units, so it is subject to SB 610. The City of Santa Rosa (City) is both the public water system and land use planning agency for the Project.

A WSA addresses the current and planned future water demand of the water supplier, the projected demand of the proposed project, the projected water supply of the water supplier, and makes a determination of the sufficiency of its water supplies for the project, in addition to the existing and planned future uses. The Project that is the subject of this WSA deals only with the change in development from General Plan 2035 as a result of the proposed Project. Therefore, the Project water demand analyzed in this WSA is the increment of increased demand from General Plan 2035 as a result of the Project.

SB 610 requires the water supplier to analyze total projected water supply sufficiency for twenty (20) years following the request for the WSA, which for this WSA is through 2032. Although this Project updates the General Plan through the horizon year of 2035, for purposes of this WSA, and in light of the 20 year projection required by SB 610, the City is making the conservative assumption that the entire Project water demand would occur by 2032.

As set forth in this WSA, the water demand for the Project is projected to be a maximum of 1,226 acre-feet per year (AFY). The density and land use of the Project have been defined as part of the Project.

The WSA concludes that the City’s projected water supplies, consisting of existing and additional water supplies, are sufficient to meet the projected water demand associated with the Project, in addition to current and planned future uses, for the 20 year projection.

A combination of existing and additional sources comprises the City’s projected water supply for the water demand projected for the Project, in addition to current and future uses. The primary source of supply is contractual entitlement from SCWA as defined in the Restructured Agreement for Water Supply. Water supply is also provided from Santa Rosa’s groundwater sources and recycled water sources. The current existing supplies are projected to meet all demands through approximately 2027.

Therefore, for any part of the Project developed after 2027, the demand may be met with the existing SCWA supply source and local groundwater supply sources, or it may be met with one or any combination of the additional water supplies – a portion of the City's 3,000 AFY recycled water project, additional local groundwater, or more stringent conservation measures.

1 ASSESSMENT

1.1 Introduction

California Water Code:
10910. (a) Any city or county that determines that a project, as defined in Section 10912, is subject to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) under Section 21080 of the Public Resources Code shall comply with this part.

10914. (a) Nothing in this part is intended to create a right or entitlement to water service or any specific level of water service.
(b) Nothing in this part is intended to either impose, expand, or limit any duty concerning the obligation of a public water system to provide certain service to its existing customers or to any future potential customers.
(c) Nothing in this part is intended to modify or otherwise change existing law with respect to projects which are not subject to this part.
(d) This part applies only to a project for which a notice of preparation is submitted on or after January 1, 1996.

The City has prepared this WSA for the North Santa Rosa Station Area Specific Plan (Project) pursuant to California Water Code (Code) sections 10910-10915 as required by SB 610. To increase the accessibility of the information presented herein, each section of the WSA that responds directly to a requirement of the Code begins with a recitation of the applicable language from the pertinent Code provisions, which are addressed in that section of the WSA.

The purpose of this WSA is to perform the evaluation required by SB 610 in connection with the Project. It is not to reserve water, or to function as a "will serve" letter or any other form of commitment to supply water (per Water Code section 10914). The provision of water service will continue to be undertaken in a manner consistent with applicable City policies and procedures, consistent with existing law.

In accordance with SB 610, this WSA evaluates projected supply and demand for a twenty-year period, or until 2031. Although this Project updates the General Plan through the horizon year of 2035, for purposes of this WSA, it is anticipated that the entire Project water demand would occur by 2031. Because the City 2010 Urban Water Management Plan (City 2010 UWMP) includes supply and demand projections through 2035, where the City 2010 UWMP is the source of information, data through 2035 is presented in this WSA.

1.2 Applicability

1.2.1 When a WSA is Required

California Water Code:
10910. (a) Any city or county that determines that a project, as defined in Section 10912, is subject to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) under Section 21080 of the Public Resources Code shall comply with this part.

10912. For the purposes of this part, the following terms have the following meanings:
(a) "Project" means any of the following:
(1) A proposed residential development of more than 500 dwelling units.
(2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space.

(3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.
(4) A proposed hotel or motel, or both, having more than 500 rooms.
(5) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.
(6) A mixed-use project that includes one or more of the projects specified in this subdivision.
(7) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500 dwelling unit project.
(b) If a public water system has fewer than 5,000 service connections, then "project" means any proposed residential, business, commercial, hotel or motel, or industrial development that would account for an increase of 10 percent or more in the number of the public water system's existing service connections, or a mixed-use project that would demand an amount of water equivalent to, or greater than, the amount of water required by residential development that would represent an increase of 10 percent or more in the number of the public water system's existing service connections.
(See also 14 Cal. Code Regs. § 15155, sub. (a)(1).)

The Project is entitled the North Santa Rosa Station Area Specific Plan. The City Community Development Department has determined that the Project is subject to the California Environmental Quality Act (CEQA). As shown in Table 1, it includes the following net increase or decrease of development when compared with the General Plan 2035:

Table 1 – Proposed Project Development

Category	Units	Square Feet
Detached residential	437	N/A
Attached residential	1,276	N/A
Office space	N/A	798,564
Retail/commercial	N/A	537,235
Light/general industrial	N/A	(33,963)
Public/institutional development	N/A	97,577
Warehouse	N/A	(22,676)
Park or public landscaped area	N/A	348,480
Total	**1,713**	**1,725,217**

Since the Project is subject to CEQA and includes development that meets or exceeds the criteria set forth in Water Code section 10912(a), it qualifies as a “project” and is subject to the requirements of SB 610.

1.2.2 Public Water System Identified

10910. (b) The city or county, at the time that it determines whether an environmental impact report, a negative declaration, or a mitigated negative declaration is required for any project subject to the California Environmental Quality Act pursuant to Section 21080.1 of the Public Resources Code, shall identify any water system that is, or may become as a result of supplying water to the project identified pursuant to this subdivision, a public water system, as defined in Section 10912, that may supply water for the project. If the city or county is not able to identify any public water system that may supply water for the project, the city or county shall prepare the water assessment required by this part after consulting with any entity serving domestic water supplies whose service area includes the project site, the local agency formation commission, and any public water system adjacent to the project site.

10912 (c) "Public water system" means a system for the provision of piped water to the public for human consumption that has 3000 or more service connections. A public water system includes all of the following:

(1) Any collection, treatment, storage, and distribution facility under control of the operator of the system which is used primarily in connection with the system.
(2) Any collection or pretreatment storage facility not under the control of the operator that is used primarily in connection with the system.
(3) Any person who treats water on behalf of one or more public water systems for the purpose of rendering it safe for human consumption.

The City of Santa Rosa Utilities Department operates the public water system that provides water supply to the Project area. The City also owns and operates the Subregional Water Reuse System (Subregional System), which provides recycled water to the City of Santa Rosa service area.

1.2.3 Requirement for Submittal of Assessment

10910. (g) (1) Subject to paragraph (2), the governing body of each public water system shall submit the assessment to the city or county not later than 90 days from the date on which the request was received. The governing body of each public water system, or the city or county if either is required to comply with this act pursuant to subdivision (b), shall approve the assessment prepared pursuant to this section at a regular or special meeting.
(2) Prior to the expiration of the 90-day period, if the public water system intends to request an extension of time to prepare and adopt the assessment, the public water system shall meet with the city or county to request an extension of time, which shall not exceed 30 days, to prepare and adopt the assessment.
(3) If the public water system fails to request an extension of time, or fails to submit the assessment notwithstanding the extension of time granted pursuant to paragraph (2), the city or county may seek a writ of mandamus to compel the governing body of the public water system to comply with the requirements of this part relating to the submission of the water supply assessment.

10910. (h) Notwithstanding any other provision of this part, if a project has been the subject of a water supply assessment that complies with the requirements of this part, no additional water supply assessment shall be required for subsequent projects that were part of a larger project for which a water supply assessment was completed and that has complied with the requirements of this part and for which the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has concluded that its water supplies are sufficient to meet the projected water demand associated with the proposed project, in addition to the existing and planned future uses, including, but not limited to, agricultural and industrial uses, unless one or more of the following changes occurs:
(1) Changes in the project that result in a substantial increase in water demand for the project.
(2) Changes in the circumstances or conditions substantially affecting the ability of the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), to provide a sufficient supply of water for the project.
(3) Significant new information becomes available which was not known and could not have been known at the time when the assessment was prepared.

The Project has not been the subject of a previous WSA, nor has it been part of a larger project for which a WSA was completed.

The City of Santa Rosa Community Development Department is the land use planning agency for the Project. The Community Development Department made a request of the City Utilities Department to prepare this WSA for the Project on November 9, 2011. On January 10, 2012, Utilities Department staff met with Community Development staff and confirmed a 30 day extension for the preparation and adoption of this WSA in accordance with Water Code Section 10910 (g)(2). This WSA was approved by Resolution of the Santa Rosa City Council on ____________________.

1.2.4 Project Description

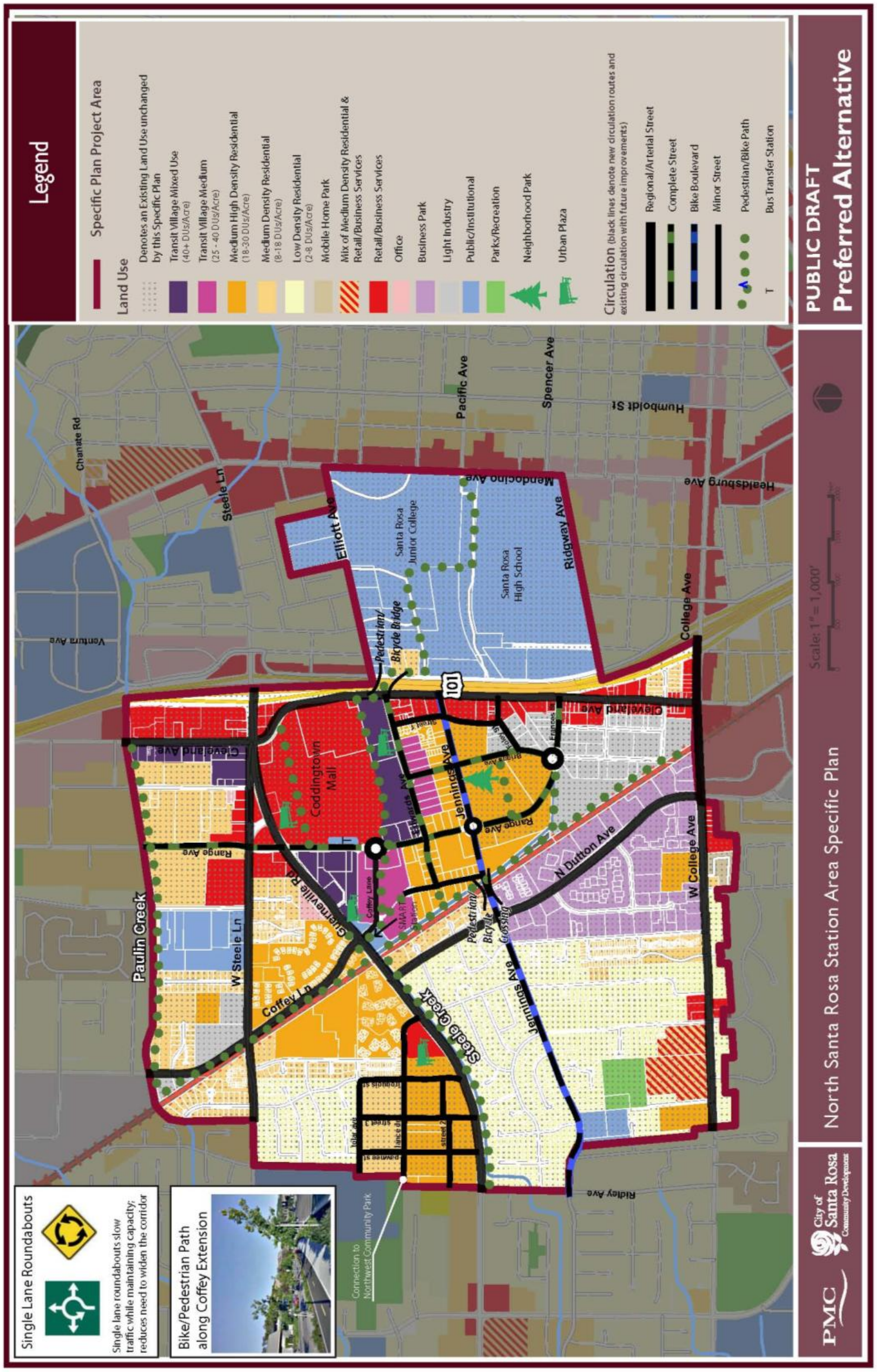
The Project will be described in full in the Project Draft Environmental Impact Report. A brief description of the Project, as provided by the Community Development Department, and a location map follows (see Figure 1).

The Project area is centered on an approximately one-half mile area around the proposed Sonoma Marin Area Rail Transit (SMART) northern station site on Guerneville Road (southeast corner of Guerneville Road and the railroad). The Plan area encompasses approximately 987 acres of land. The primary objective of the Specific Plan is to support future rail transit by increasing the number of residents and employees within walking distance of the SMART station by improving pedestrian, bicycle, auto and transit connections, increasing residential density, promoting economic development, and enhancing aesthetics and quality of life. The Specific Plan is intended to provide guidance for private development and public investment over the next twenty to twenty-five years.

As detailed in Section 1.2.1 of this WSA, the Project includes residential, office space, retail/commercial, public/institutional, and park or public landscaped area development. The Project also includes a reduction in the development of light/general industrial and warehouse when compared with the General Plan 2035. It is assumed that these uses would gradually develop over the course of a twenty to twenty-five year period. However, there are no program phases specifying when certain types of development would occur within that period, and the type and amount of development that would actually take place are subject to variation based on market demands, the regional economy, and other socio-economic factors.

The Project deals only with the change in development from the 2035 General Plan as a result of the proposed Project. Therefore, the Project water demand analyzed in this WSA is the increment of increased projected water demand from that described in the 2035 General Plan as a result of the Project.

Figure 1: Project area map



1.3 Urban Water Management Plan and Other Resources

10910 (c) (1) The city or county, at the time it makes the determination required under Section 21080.1 of the Public Resources Code, shall request each public water system identified pursuant to subdivision (b) to determine whether the projected water demand associated with a proposed project was included as part of the most recently adopted urban water management plan adopted pursuant to Part 2.6 (commencing with Section 10610).
(2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f), and (g).
(3) If the projected water demand associated with the proposed project was not accounted for in the most recently adopted urban water management plan, or the public water system has no urban water management plan, the water supply assessment for the project shall include a discussion with regard to whether the public water system's total projected water supplies available during normal, single dry, and multiple dry water years during a 20-year projection will meet the projected water demand associated with the proposed project, in addition to the public water system's existing and planned future uses, including agricultural and manufacturing uses.

In accordance with the California Urban Water Management Planning Act (Act), the City adopted its 2010 Urban Water Management Plan (City 2010 UWMP) on June 14, 2011. As required by the Act, the City 2010 UWMP includes projected water supplies required to meet future demands. Though the Act only required supply and demand projections through 2030, the City 2010 UWMP provides projections through 2035. Information from the City 2010 UWMP is the basis for the elements of this WSA addressing demands and supplies from all sources of water.

The City 2010 UWMP included demand projections through buildout of the City's current General Plan 2035. The demand projections in the City 2010 UWMP were based on an analysis performed by Maddaus Water Management included in Appendix C of the City 2010 UWMP. The demand projection for the Project is for development beyond the buildout horizon of the current General Plan 2035 and, therefore, was not accounted for in the City 2010 UWMP. The Project demand projection of 1,226 AFY was developed by City staff as described in Section 1.6.1 of this WSA. The City 2010 UWMP demand projection and the Project demand projection are the bases for the demand assessment in this WSA.

The City 2010 UWMP supply projections are the basis for the supply assessment in this WSA. The 2010 UWMP identified supply projections that exceed for the demand projections through buildout of the General Plan 2035. The supply projections for this WSA are based on the City 2010 UWMP, the Sonoma County Water Agency (SCWA) 2010 Urban Water Management Plan (SCWA 2010 UWMP), and the City's 2007 Santa Rosa Urban Reuse Project. The City 2010 UWMP supply projections reflect planning for the General Plan 2035 and include 750 AFY of recycled water, which is the first of four phases of the 2007 Santa Rosa Urban Reuse Project. The City 2007 Santa Rosa Urban Reuse Project supply projection includes three additional phases for up to an additional 2,250 AFY of recycled water, a total of 3,000 AFY of recycled water, which can be used to serve demands for this Project.

The City 2010 UWMP single and multiple dry year supply analysis, the SCWA 2010 UWMP and the City 2007 Santa Rosa Urban Reuse Project are the sources for the dry year evaluations of this WSA.

1.4 Existing Supplies

10910. (d) (1) The assessment required by this section shall include an identification of any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and a description of the quantities of water received in prior years by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), under the existing water supply entitlements, water rights, or water service contracts.

(2) An identification of existing water supply entitlements, water rights, or water service contracts held by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), shall be demonstrated by providing information related to all of the following:

(A) Written contracts or other proof of entitlement to an identified water supply.

(B) Copies of a capital outlay program for financing the delivery of a water supply that has been adopted by the public water system.

(C) Federal, state, and local permits for construction of necessary infrastructure associated with delivering the water supply.

(D) Any necessary regulatory approvals that are required in order to be able to convey or deliver the water supply.

1.4.1 Water Supply Overview

The City currently has three sources of existing water supply which serve the Project area: 29,100 AFY entitlement from SCWA; 2,300 AFY of groundwater from the City's wells; and approximately 410 AFY of recycled water from the City's Subregional System. In addition, the City has a very aggressive water conservation program which provides supply through reducing current demands and assuring that future water use is efficient.

Santa Rosa currently receives the majority of its potable water supply from SCWA under the provisions of the Restructured Agreement for Water Supply (Restructured Agreement), which was executed in June 2006; approximately 95% of water delivered by SCWA is from surface water sources, with the remainder from groundwater.

In addition to SCWA supply, the City has two groundwater wells that can provide up to 2,300 AFY to the City. Section 1.5.1.1 of this WSA describes potential additional groundwater supply.

The City is also the owner and operator of the Subregional System, which produces recycled water. The City has historically used approximately 350 AFY of recycled water for landscape irrigation and has up to 3,000 AFY of additional recycled supply available which can be developed to serve the Project area. Section 1.5.1.2 discusses development of this additional recycled water in detail.

The following discussion sections describe the existing supply sources: SCWA contractual entitlement, City groundwater, recycled water, and water conservation. Depending on the timing of Project development, supply for the Project will be met with existing supplies and any mix of the additional sources described in Section 1.5.

1.4.2 Existing Wholesale Water Supply – SCWA

The City receives its primary potable water supply from SCWA. SCWA is authorized to produce and deliver potable water for municipal and industrial purposes; prevent the waste or diminution of water supplies; control and conserve flood and storm waters to reduce potential damage to life and property; provide sanitary sewage services; and provide recreational services in connection with flood control and water conservation activities. SCWA operates under direction of a Board of Directors that consists of the Sonoma County Board of Supervisors.

SCWA delivers water, on a wholesale basis, to customers through its water transmission system. The primary water customers, collectively known as the water contractors, consist of the cities of Santa Rosa, Rohnert Park, Petaluma, Cotati, and Sonoma; the Town of Windsor; and the North Marin, and Valley of the Moon Water Districts. The responsibility for supplying water to the water contractors is entrusted to SCWA under the Restructured Agreement, which was executed in June 2006. SCWA also provides water on a wholesale basis to and/or has authorized the exercise of its water rights by additional water purveyors, including but not limited to Marin Municipal Water District; the Forestville Water District; and California-American, Lawndale Mutual, Penngrove, and Kenwood Water Companies.

SCWA's primary source of supply is the Russian River. SCWA manages water releases at Coyote Valley Dam, which creates Lake Mendocino on the East Fork Russian River, and Warm Springs Dam, which creates Lake Sonoma on Dry Creek (a tributary to the Russian River), to provide water supply and to maintain required minimum flows in the Russian River and Dry Creek. Flood control releases from Coyote Valley Dam are controlled by the United States Army Corps of Engineers (COE). Flows in the Russian River are augmented by Pacific Gas & Electric Company's (PG&E) Potter Valley Project, which diverts a portion of the Eel River flows to the East Fork of the Russian River. Water is collected from the Russian River at two sites, both located near Forestville, through three Ranney collectors at Wohler and three Ranney collectors at Mirabel. SCWA has constructed several infiltration ponds that surround the collectors. An inflatable dam on the Russian River raises the water level of the Russian River during periods of low flow, and diverts water through a dike into a system of ditches that supply the infiltration ponds that surround the Mirabel collectors. The backwater created by the dam also raises the upstream water level, which increases the rate of infiltration to the Wohler collectors. Permanent fish ladders provide fish passage around the dam when it is raised.

SCWA holds appropriative water rights to Russian River and Dry Creek water by virtue of an assignment to SCWA of Sonoma County's portion of the 1949 application to the State of California for the Coyote Valley Dam Project appropriative water rights, and SCWA's 1960 application for the Warm Springs Dam Project appropriative water rights. Four State Water Resources Control Board (State Water Board) permits[1] currently authorize the SCWA to store water in Lake Mendocino (up to 122,500 AF) and Lake Sonoma (up to 245,000 AF) and to divert

[1] SWRCB Permits Numbers 12947A, 12949, 12950, and 16596.

and redivert 180 cubic feet per second (cfs) of water from the Russian River, up to 75,000 AFY. The permits also establish minimum instream flow requirements for fish and wildlife protection and Russian River recreational considerations. These minimum instream flow requirements vary according to the hydrologic cycle (i.e., dry water years versus normal water years) defined by the State Water Board's Decision 1610. SCWA meets the various instream flow requirements set by Decision 1610 by making releases from Coyote Valley Dam and Warm Springs Dam. SCWA has applied to the State Water Board to increase the Agency's Russian River rediversion right from 75,000 AFY to 101,000 AFY. In addition, as required by the Biological Opinion, the SCWA has applied to the State Water Board to make changes to the minimum instream flow requirements of Decision 1610. The Biological Opinion requirements are discussed in Section 1.4.3.

SCWA also has three deep-water wells that provide water supply. They are located near the Laguna de Santa Rosa and feed directly into the Agency's Russian River-Cotati Intertie Pipeline. SCWA estimates the future production capacity of these wells at 2,300 AFY. Further discussion of SCWA groundwater is in Section 1.4.4.2.2 of this WSA.

The Restructured Agreement, which was executed in 2006, provides for the finance, construction, and operation of existing and new diversion facilities, transmission lines, storage tanks, booster pumps, conventional wells, and appurtenant facilities. The Restructured Agreement currently provides the contractual relationship between the SCWA and the City and includes specific rates of delivery and maximum amounts of water that the SCWA is obligated to supply to the City. The Restructured Agreement defines the City's entitlements as 29,100 AFY and an average of 40.0 mgd from Reach 1, 2 and 3a of the Intertie Aqueduct, 40.0 mgd from the Santa Rosa Aqueduct, 4.0 mgd from the Sonoma Aqueduct, or a maximum combined average total of 56.6 mgd for a one-month period from all aqueducts.

Though the City's existing supply from the SCWA is relatively reliable, the Restructured Agreement contains shortage provisions defined in Section 3.5 of that agreement. The shortage provisions are further defined in the Water Shortage Allocation Methodology (Shortage Methodology), which was adopted by the SCWA Board in April 2006.[2] The Restructured Agreement Section 3.5 provisions, and the Shortage Methodology, are designed to take the demand hardening associated with water conservation into account. The City implemented an aggressive water conservation program over the past 20 years and has one of the lowest per capita water uses among all SCWA customers. This is recognized by the Shortage Methodology, which encourages water conservation. Under the Shortage Methodology, if the SCWA surface water rights and Russian River supply remain limited to 75,000 AFY for some time, and the water contractors' total demands reach the SCWA's 75,000 AFY available supply, the City's allocation would still be 29,100 AFY, the City's full entitlement under the Restructured Agreement.[3]

[2] John O. Nelson Report, April 2006.
[3] Letter from Sonoma County Board of Supervisors, dated April 2006.

1.4.3 Conditions Which Could Affect SCWA Supply

The following conditions, discussed in detail below, could affect the City's long-term sustainable water supply available from SCWA:

- Threatened and Endangered Species - Biological Opinion:
- Future operation of the Potter Valley Project.

Threatened and Endangered Species – Biological Opinion. On October 31, 1996, the National Marine Fisheries Service (NMFS) published a final notice of determination listing Coho Salmon as threatened and under the federal Endangered Species Act (ESA) within the Central California Coast Evolutionarily Significant Unit (ESU), which includes the Russian River. On August 18, 1997, NMFS published a final notice of determination listing steelhead as threatened under the ESA within the Central California Coast ESU, also including the Russian River. On September 16, 1999, NMFS listed the California Coast ESU of Chinook Salmon as threatened.

In accordance with Section 7(a) (2) of the ESA, federal agencies must consult with the U.S. Fish and Wildlife Service (USFWS) and/or NMFS (depending on the species) to "insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat…." (50 CFR §402). The operation of Warm Springs and Coyote Valley dams and SCWA's rubber dam and fish screens all fall within the provisions of Section 7. Operation of facilities provided in SCWA's proposed WSTSP is also subject to Section 7 consultation.

In December 1997, the Corps of Engineers (COE), as the federal sponsor of the above two flood control and water supply projects, and SCWA, as the local sponsor, entered into a Memorandum of Understanding (MOU) with NMFS to begin the Section 7 consultation process. As part of the Section 7 consultation, a Biological Assessment was prepared to study the impact of current and potential future operations of facilities on the listed species in the Russian River. The final Biological Assessment was completed in September 2004.

As part of the Section 7 consultation process, the NMFS formed Biological Review Teams to conduct a status review of the three listed fish species by assembling the best available information on the condition of the fish species and quantifying risks faced by each ESU. Using the results of the status review, NMFS reevaluated the listing of the three fish species. On June 28, 2005, NMFS issued a final rule confirming the endangered status of the Coho Salmon and maintaining the threatened status of California Coast Chinook Salmon. On January 5, 2006, NMFS issued a final determination listing the steelhead as threatened[4].

[4] National Marine Fisheries Service, Southwest Region; "Biological Opinion for Water Supply, Flood Control Operations, and Channel Maintenance conducted by the U.S. Army Corps of Engineers, the Sonoma County Water Agency, and the Mendocino County Russian River Flood Control and Water Conservation Improvement District in the Russian River watershed;" September 24, 2008.

On September 24, 2008, NMFS issued the Biological Opinion. The Biological Opinion analyzed the impacts of the current operation of the Warm Springs and Coyote Valley Dams as well as other facilities operated by the COE, SCWA, and the Russian River Flood Control and Water Conservation Improvement District in the Russian River Watershed for the next fifteen years. The Biological Opinion determined that the continued operation of some aspects of the flood control and water supply operations will have substantial adverse effects on both the coho salmon and steelhead, but are not likely to effect the survival and recovery of the Chinook salmon in the Russian River. The three areas of most concern are the high summertime flows in the Russian River and Dry Creek, the high velocity of water in Dry Creek in the summer, and the current practice of breaching the sandbar at the estuary during the summer months.[5]

NMFS collaborated with the COE and SCWA to develop a Reasonable and Prudent Alternative (RPA), including eight Reasonable and Prudent Measures (RPMs), to implement over a 15 year timeframe to avoid jeopardy to the coho salmon and steelhead. The RPMs include the following: interim and permanent changes to the summertime flows in the Russian River and Dry Creek; changing the management of the Jenner estuary; restoring fish habitat along Dry Creek; conducting a feasibility study of constructing a pipeline to deliver water from Lake Sonoma to the mainstem of the Russian River; strengthening and expansion of the existing coho broodstock program; installation of a new back-up water supply pipeline to the Warm Springs Hatchery and construction of additional rearing facilities for the coho broodstock program; and monitoring of habitat and fish in the Russian River, Dry Creek, and the Jenner estuary. The Biological Opinion also provides an Incidental Take Statement for the taking of the coho, steelhead and Chinook that may occur due to the implementation of the continued operations of the flood control and water supply operations and the associated RPMs.

The Biological Opinion requires the following temporary and permanent changes to the minimum instream flows in the Russian River and Dry Creek:

<u>During Normal Years</u>

- Reduce the minimum flow requirement for the Russian River from the East Fork to Dry Creek from 185 cfs to 125 cfs between June 1 and August 31; and from 150 cfs to 125 cfs between September 1 and October 31.
- Reduce the minimum flow requirement for the Russian River between the mouth of Dry Creek and the mouth of the Russian River from 125 cfs to 70 cfs.
- Reduce the minimum flow requirement for Dry Creek from Warm Springs Dam to the Russian River from 80 cfs to 40 cfs from May 1 to October 31.

<u>During Dry Years:</u>

- Reduce the minimum flow requirement for the Russian River between the mouth of Dry Creek and the mouth of the Russian River from 85 cfs to 70 cfs.

5 Sonoma County Water Agency "The Biological Opinion: Frequently Asked Questions"

In September 2009, the Agency filed a petition with the State Water Board to permanently change the minimum instream flow requirements as outlined by the Biological Opinion. The petition is currently pending at the State Water Board and will not be acted on until the Agency has completed compliance with CEQA. Until the petition is acted upon by the State Water Board, the Agency will have to annually file a Temporary Urgency Change petition with the State Water Board to reduce the minimum instream flows during the months of May through October as required by the Biological Opinion.

The reduced flows required by the RPMs would provide enough water for the Agency to meet existing water demands. The RPMs provide for restoration of fish habitat in Dry Creek to allow for continued flows to meet the water demands of the Agency.[6] The habitat restoration in Dry Creek will provide for flows of 130 to 175 cfs in Dry Creek. The Agency and NMFS anticipate the Dry Creek habitat restoration work will be successful.[7] However, if it is not sufficiently effective, the Biological Opinion requires the Agency to explore other alternatives, including a bypass pipeline. The Agency released a draft feasibility study of a bypass pipeline in April 2011. As described in the Agency's 2010 Urban Water Management Plan, the Biological Opinion requires that a determination regarding the effectiveness of the Dry Creek habit restoration be made by 2018. If it is determined that a bypass pipeline is needed in 2018, it is anticipated that it could be operational by approximately 2025-2026.

SCWA and the COE are currently estimating that the habitat restoration, monitoring and studies will cost up to $100 million over the 15 year period. Funding may come from a variety of sources, including federal and state funds, tax revenues, and funding from water rates.

<u>Future Operation of the Potter Valley Project</u>. Diversions from the Eel River into the Russian River via Pacific Gas & Electric's (PG&E) Potter Valley Project (PVP) are regulated by a number of agencies including the Federal Energy Regulatory Commission (FERC), and NMFS. From 1908-1999, an estimated 160,000 AFY was diverted from the Eel River to the Russian River as a result of the operation of the PG&E PVP. The Eel River water is diverted through an inter-watershed tunnel to PG&E's hydroelectric facility in Potter Valley. Thereafter, the water flows down the east fork of the Russian River, is stored in Lake Mendocino, and is released to augment summer flows and maintain minimum instream flow requirements in the Russian River.

A new license issued by the FERC to PG&E for the PVP in 1983 required PG&E, in cooperation with the California Department of Fish and Game (CDFG), to carry out a 10-year fish monitoring study in cooperation with NMFS. After completion of the study, a proposed flow schedule reducing Eel River diversions to the Russian River by approximately 15 percent (in an effort to improve Eel River fisheries) was submitted to FERC. PG&E had been voluntarily implementing the recommended flow schedule since the summer of 1999. An Environmental Impact Statement (EIS) that presented the impacts of two proposed flow schedules was released in 1999. Since that time, other proposals have been submitted for FERC's consideration.

In April 1999, as an alternative to the PG&E/FERC proposal, the Department of Interior (DOI)/NMFS jointly submitted a flow proposal which would result in lower PVP imports to the Russian River. In May 2000, FERC issued its final EIS recommending the PG&E flow proposal with PVP Irrigation District modifications. In June 2004, FERC issued its final order on the flow regime based upon a Biological

[6] Sonoma County Water Agency "The Biological Opinion: Frequently Asked Questions."
[7] Source: Sonoma County Water Agency 2010 Urban Water Management Plan, Section 4.7.

Opinion for the PVP issued by NMFS. The FERC order supported an approximately 15 percent reduction in summer flows, and was close to the voluntary flow schedule that has been in place since the summer of 1999.

In August 2006, NMFS and CDFG filed concerns with FERC regarding PG&E's implementation of the flow regime. On October 16, 2006, PG&E sent a letter to FERC acknowledging three errors in the implementation of the flow regime and associated flow requirements of the Biological Opinion RPA. In response, PG&E has adjusted implementation of the flow regime.[8] This change has led to an approximately 33 percent reduction in summer flows through the PVP to the Russian River. PG&E's license to operate the PVP expires in 2022. Per the Agency's 2010 Urban Water Management, future Russian River supply availability is based upon the assumption that the PVP diversions permitted under the FERC license will continue.[9]

1.4.4 Groundwater

10910. (f) If a water supply for a proposed project includes groundwater, the following additional information shall be included in the water supply assessment:

(1) A review of any information contained in the urban water management plan relevant to the identified water supply for the proposed project.

(2) A description of any groundwater basin or basins from which the proposed project will be supplied. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current bulletin of the department that characterizes the condition of the groundwater basin, and a detailed description by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), of the efforts being undertaken in the basin or basins to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the amount and location of groundwater pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), for the past five years from any groundwater basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), from any basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.

(5) An analysis of the sufficiency of the groundwater from the basin or basins from which the proposed project will be supplied to meet the projected water demand associated with the proposed project.

A water supply assessment shall not be required to include the information required by this paragraph if the public water system determines, as part of the review required by paragraph (1), that the sufficiency of groundwater necessary to meet the initial and projected water demand associated with the project was addressed in the description and analysis required by paragraph (4) of subdivision (b) of Section 10631.

Because the water supply for the proposed Project includes groundwater, the following additional information is included in this WSA.

1.4.4.1 City Groundwater Resources

The City is located within the Santa Rosa Plain sub-basin of the Santa Rosa Valley Groundwater Basin, located at the confluence of the Santa Rosa, Bennett, and Rincon Valleys. Prior to the early 1960s, the City relied primarily on groundwater from this sub-basin for its water supply. In

[8] PG&E Letter to FERC, October 16, 2006.

[9] Source: Sonoma County Water Agency 2010 Urban Water Management Plan, Section 4.1.2.

the 1960s SCWA began supplying surface water to the City and other contractors. From the 1980s until 2007, the City relied solely on purchased surface water deliveries from SCWA to meet its water demands. In July 2005, the City received permission from the California Department of Public Health (DPH) to change the status of two of its groundwater wells, formerly permitted as standby emergency wells, to full-time active status. These wells are permitted for regular production of up to 2,300 AFY of potable supply, and the City began using them for water supply in 2007. Including these two production wells, the City maintains a total of six municipal groundwater wells within the Santa Rosa Plain Sub-basin.

1.4.4.1.1 Groundwater Basin Description

As shown on Figure 2, the City UGB overlies portions of two groundwater basins: the Santa Rosa Valley Groundwater Basin (specifically two of its sub-basins: the Santa Rosa Plain Sub-basin and the Rincon Valley Sub-basin) and the Kenwood Valley Groundwater Basin. Characteristics of these groundwater basins and sub-basins are provided in Table 2.

Table 2 – Characteristics of Groundwater Basin/Sub-basins Underlying the City of Santa Rosa Urban Boundary[1]

Groundwater Basin Name	Sub-basin Name	DWR Basin Number	Surface Area
Santa Rosa Valley Groundwater Basin[2]	Santa Rosa Plain Sub-basin	1-55.01	80,000 acres (125 square miles)
	Rincon Valley Sub-basin	1-55.03	5,600 acres (9 square miles)
Kenwood Valley Groundwater Basin	None	2-19	5,120 acres (8 square miles)

1. Source: Department of Water Resources Bulletin 118, Groundwater Basin Descriptions, updated February 27, 2004.
2. As shown on Figure 2, the Santa Rosa Valley Groundwater Basin also has a third sub-basin named the Healdsburg Area Sub-basin, located north of the City of Santa Rosa. However, because the City of Santa Rosa does not overlie any portion of the Healdsburg Area Sub-basin, it is not included here.

Although the City UGB overlies portions of the Rincon Valley Sub-basin and the Kenwood Valley Groundwater Basin, the City's groundwater supply is derived exclusively from the Santa Rosa Plain Sub-basin of the Santa Rosa Valley Groundwater Basin. The City does not derive any groundwater supply from the Rincon Valley Sub-basin or the Kenwood Valley Groundwater Basin. Hence, the focus of the following discussion will be on the Santa Rosa Plain Sub-basin. However, for completeness, brief descriptions of the Rincon Valley Sub-basin and the Kenwood Valley Groundwater Basin are also provided.

The following groundwater basin descriptions were derived from the California Department of Water Resources (DWR) Bulletin 118 (last updated in February 2004)[10], with additional information obtained from:

[10] California Department of Water Resources, Bulletin 118 California's Groundwater, Individual Groundwater Basin Description for

- Evaluation of Groundwater Resources in Sonoma County Volume 2: Santa Rosa Plain (DWR, 1982)
- Geologic Map of the Santa Rosa Quadrangle (CGS, 1999)

Santa Rosa Valley Groundwater Basin: The Santa Rosa Valley Groundwater Basin is one of the largest groundwater basins in DWR's North Coast Hydrologic Region and occupies a northwest-trending structural depression in the southern part of the Coast Ranges of Northern California in Sonoma County. This depression divides the Mendocino Range on the west from the Mayacamas and Sonoma Mountains on the east. The Santa Rosa Valley Groundwater Basin has three sub-basins: the Healdsburg Sub-basin, the Santa Rosa Plain Sub-basin, and the Rincon Valley Sub-basin. As shown on Figure 2, the City overlies a portion of the Santa Rosa Plain Sub-basin and the Rincon Valley Sub-basin.

Santa Rosa Plain and Rincon Valley Sub-basins: The Santa Rosa Plain Sub-basin (DWR Groundwater Basin Number 1-55.01) covers an area of 80,000 acres, or approximately 125 square miles. It is the largest sub-basin of the Santa Rosa Valley Groundwater Basin and is characterized by low relief with an average ground surface elevation of approximately 145 feet above mean sea level.

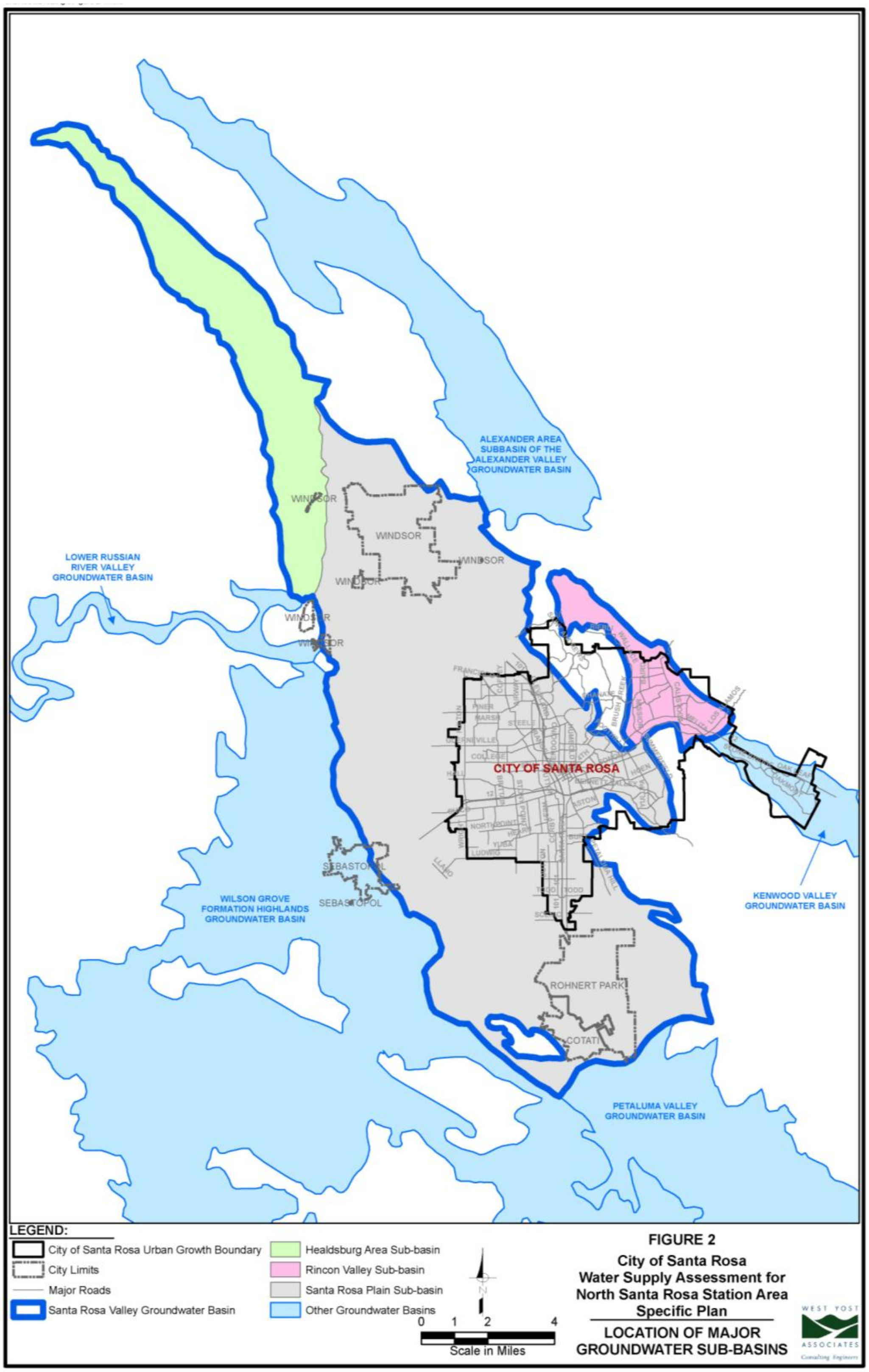
The Santa Rosa Plain Sub-basin is approximately 22 miles long and 0.2 miles wide at the northern end; approximately 9 miles wide through the Santa Rosa area; and about 6 miles wide at the south end of the plain near the City of Cotati. The Santa Rosa Plain Sub-basin is bounded on the northwest by the Russian River plain approximately one mile south of the City of Healdsburg and the Healdsburg Sub-basin. Mountains of the Mendocino Range flank the remaining western boundary. The southern end of the sub-basin is marked by a series of low hills, which form a drainage divide that separates the Santa Rosa Valley from the Petaluma Valley basin south of Cotati. The eastern sub-basin boundary is formed by the Sonoma Mountains south of Santa Rosa and the Mayacamas Mountains north of Santa Rosa.

The Santa Rosa Plain Sub-basin is drained principally by the Santa Rosa and Mark West Creeks that flow westward into the Laguna de Santa Rosa. The Laguna de Santa Rosa flows northward and discharges into the Russian River. Annual precipitation in the Santa Rosa Plain ranges from approximately 28 inches in the south to about 40 inches in the north.

The Rincon Valley Groundwater Sub-basin (DWR Groundwater Basin 1-55.03) occupies a small north to northwesterly trending structural trough located adjacent to the east side of the Santa Rosa Groundwater Sub-basin. Rincon Valley is approximately seven miles long, and has a width that varies from 0.5 to 2.5 miles. Rincon Valley encompasses an area of 5,600 acres, (approximately nine square miles) and is bounded by the Sonoma and Mayacamas Mountains, except to the southeast, where it is bounded by the Kenwood Valley Groundwater Basin, and on the southwest, where it is bounded by the Santa Rosa Plain Groundwater Sub-basin. Rincon Valley is drained by Brush Creek, a tributary of Santa Rosa Creek.

Santa Rosa Valley, Santa Rosa Plain Sub-basin, last update February 27, 2004.

Figure 2: Location of Major Groundwater Subbasins



The major geologic formations comprising the Santa Rosa Plain and Rincon Valley Groundwater Sub-basins are, from youngest to oldest, Younger Alluvium, Older Alluvium (alluvial fan deposits), the undifferentiated Glen Ellen, Huichica Formations and related continental deposits, the Sonoma Volcanics, the Wilson Grove (formerly Merced) Formation and the Petaluma Formation. The Tolay Volcanics may also be present in the subsurface. The groundwater sub-basins are floored by low permeability rocks of the Franciscan Formation. A description of each of these units and their hydrogeologic properties is provided in Table 3.

Kenwood Valley Groundwater Basin: The Kenwood Valley Groundwater Basin (DWR Basin Number 2-19) is located east of the Santa Rosa Valley and the City of Santa Rosa in Sonoma County and covers an area of approximately 5,120 acres, or approximately 8 square miles. Kenwood Valley occupies a portion of a small north to northwest-trending structural trough located to the southeast of the Rincon Valley Sub-basin. It is not an adjudicated groundwater basin. It has not been identified as an over-drafted basin and is not anticipated to become an over-drafted basin.

The Kenwood Valley Groundwater Basin is approximately 4 miles long along its eastern edge and varies in width from about 0.5 miles to 2 miles. The majority of the Kenwood Valley Groundwater Basin is bounded by the Napa-Sonoma Volcanic Highlands, except for the northwest side, where the Kenwood Valley is separated from the Rincon Valley Sub-basin by Santa Rosa Creek.

The Kenwood Valley Groundwater Basin is drained by the Santa Rosa and Sonoma Creeks. The principal water-bearing units in this groundwater basin are Alluvium and the Glen Ellen Formation (see descriptions above). This basin is tapped for domestic uses by the Kenwood Village Water Company for residents in the Kenwood area.

Neither sub-basin is adjudicated. Neither sub-basin has been identified as an overdrafted basin, nor is anticipated to become an overdrafted basin according to DWR Bulletin 118.

Table 3 – Summary of Geological Units in the Santa Rosa and Rincon Valley Groundwater Sub-basins[1]

Geological Unit	Map[2] Symbol	Lithology	Specific Yield	Comments
Younger Alluvium	Q	Interbedded layers of sand, silt, clay, and gravel	Variable (3-15%)	May contain objectionable levels of iron and manganese above secondary drinking water standards.
Older Alluvium (Alluvial Fan Deposits)	Qo	Fine sand, silt, and silty clay, coarse sand and gravel, with gravel more abundant near fan heads	Moderate to high (8-17%)	Lenses of very fine sand. Minor amounts of methane gas. May contain objectionable levels of iron and manganese above secondary drinking water standards.
Glen Ellen and Huichica Formations and related, undiffentiated continental deposits	QT	Cemented gravel, sand, silt and clay, local interbedded tuff	Low (3-7%)	Generally low yields unless a substantial thickness of coarse gravel and sand is penetrated. May contain objectionable levels of iron and manganese above secondary drinking water standards.
Sonoma Volcanics	Psv	Volcanic flows, agglomerates, and tuffs	Highly Variable (0-15%)	Variable yields. Some water has high boron content. Some waters thermal. Zones of hydrogen sulfide (H_2S). May occasionally exceed secondary drinking water standards for iron and manganese.
Wilson Grove (formerly Merced) Formation	Pwg	Mostly marine coarse-to-fine grained sandstone with minor amounts of clay. Sandstone is typically yellow, gray, or buff-white in surface exposures and distinctively blue in subsurface cuttings.	High (10-20%)	Lenses of very fine sand. Drillers' well logs generally describe this unit as blue sand, blue sandstone, cemented sand, or blue rock with some intervals of blue clay. Zones of high concentration of methane gas. May occasionally exceed secondary drinking water standards for iron and manganese. Water not as hard as other formations.
Petaluma Formation	Pp	Mostly non-marine clay and shale with minor amounts of sandstone	Low (3-7%)	Generally low yields. Yields may be higher for wells penetrating lenses of coarse material. Wilson Grove and Petaluma formations deposited at about the same time – driller's logs indicate alternating layers of blue sandstone and blue clay. Zones of hydrogen sulfide (H_2S). May contain objectionable levels of iron and manganese.
Tolay Volcanics	Ttv	Volcanic flows, tuffs, breccias and agglomerates	Unknown	Variable yields. Fair to good water producer regionally.
Franciscan Complex	KJf	Mélange, including chert, sandstone, shale, greenstone, and serpentinite.	Very low (<3%)	Low yields. Poor quality water in thermal and serpentinite areas. Good quality locally.

1. Based on Table I in DWR Bulletin 118-4, Evaluation of Ground Water Resources Sonoma County, Volume 2: Santa Rosa Plain (September 1982)
2. Geologic Map of the Santa Rosa Quadrangle; 1:250,000, California Geological Survey, 1999

1.4.4.1.2 Groundwater Quality

On the western side of the basin, sodium and bicarbonate are the dominant cation and anion components in water from all depths. Moving south along the western boundary, the shallow waters have magnesium and calcium as the dominant cation and in the deep zone (below 150 feet) sodium dominates. In the vicinity of Windsor, magnesium chloride water is present in the shallow aquifer to a depth of about 100 feet. In the Santa Rosa area, groundwater at all depths is characterized primarily by sodium and magnesium bicarbonate types. In the Rohnert Park vicinity, groundwater in the deep zone (below 150 feet) is characterized by sodium and calcium bicarbonate type water.[11]

According to a DWR study of the basin, few wells tested for water quality contained constituents over the recommended concentration for drinking water. Many wells produced water with aesthetic problems such as elevated concentrations of iron, manganese, or high hardness. Private well owners questioned about groundwater quality reported many complaints about the color and/or taste of the water. Although high iron, manganese, and hardness have been reported in groundwater for some portions of the Santa Rosa Plain Sub-basin, the overall quality of groundwater in the Santa Rosa Plain Sub-basin is good.[12]

Groundwater underlying the City's service area generally meets primary and secondary drinking water standards for municipal use. The City's Farmers Lane wells have historically exhibited slightly elevated concentrations of both iron and manganese, exceeding secondary drinking water standards. A treatment system for iron and manganese removal has been constructed at the site of the City's Farmers Lane wells to treat groundwater pumped from Farmers Lane Wells No. 1 and 2 before entering the City's distribution system.

1.4.4.1.3 Groundwater Level Trends

The evaluation of historical groundwater levels in this WSA provides a hydrologic assessment of the condition of the Santa Rosa Plain Sub-basin. Many of the wells evaluated for this WSA have groundwater level data available on either a semi-annual or monthly basis. However, in order to screen out normal seasonal groundwater level fluctuations, only the year-to-year springtime groundwater level measurements have been evaluated. These springtime groundwater level measurements are an indication of the basin's ability to "recover" on an annual basis following typical higher groundwater pumpage during the summer months and natural groundwater recharge during the rainy season. If springtime groundwater levels are stable from year to year, this indicates that annual groundwater pumpage is approximately equal to annual groundwater recharge. If springtime groundwater levels are increasing, this indicates that annual groundwater pumpage is less than annual groundwater recharge. Overall, stable or increasing

[11] California Department of Water Resources, Evaluation of Ground Water Resources in Sonoma County Volume 2: Santa Rosa Plain, DWR Bulletin 118-4, 1982.

[12] California Department of Water Resources, Bulletin 118 California's Groundwater, Individual Groundwater Basin Description for Santa Rosa Valley, Santa Rosa Plain Sub-basin, last update February 27, 2004.

springtime groundwater levels indicate that groundwater extraction is not exceeding recharge, and that the basin is in good condition and is not in overdraft. If springtime groundwater levels are decreasing, this indicates that annual groundwater recharge is less than annual groundwater pumpage. As defined above, long term pumping which exceeds the amount of water that recharges the basin may result in overdraft.

The DWR Bulletin 118 updated in February 2004 states that the Santa Rosa Plain Sub-basin "as a whole is about in balance, with increased groundwater levels in the northeast contrasting with decreased groundwater levels in the south." Review of spring groundwater levels in wells actively monitored by DWR generally supports these findings, in that a majority of the wells actively monitored by DWR located throughout the sub-basin have demonstrated either increasing or stable groundwater levels, indicating that the sub-basin is in balance and is not being over-drafted. An over-drafted groundwater basin would generally be characterized by groundwater levels that decline over a period of years and never fully recover, even in wet years. This is not the case for the Santa Rosa Plain Sub-basin. Also, all of the actively monitored wells in and around the vicinity of the City have demonstrated either stable or increasing spring groundwater levels.

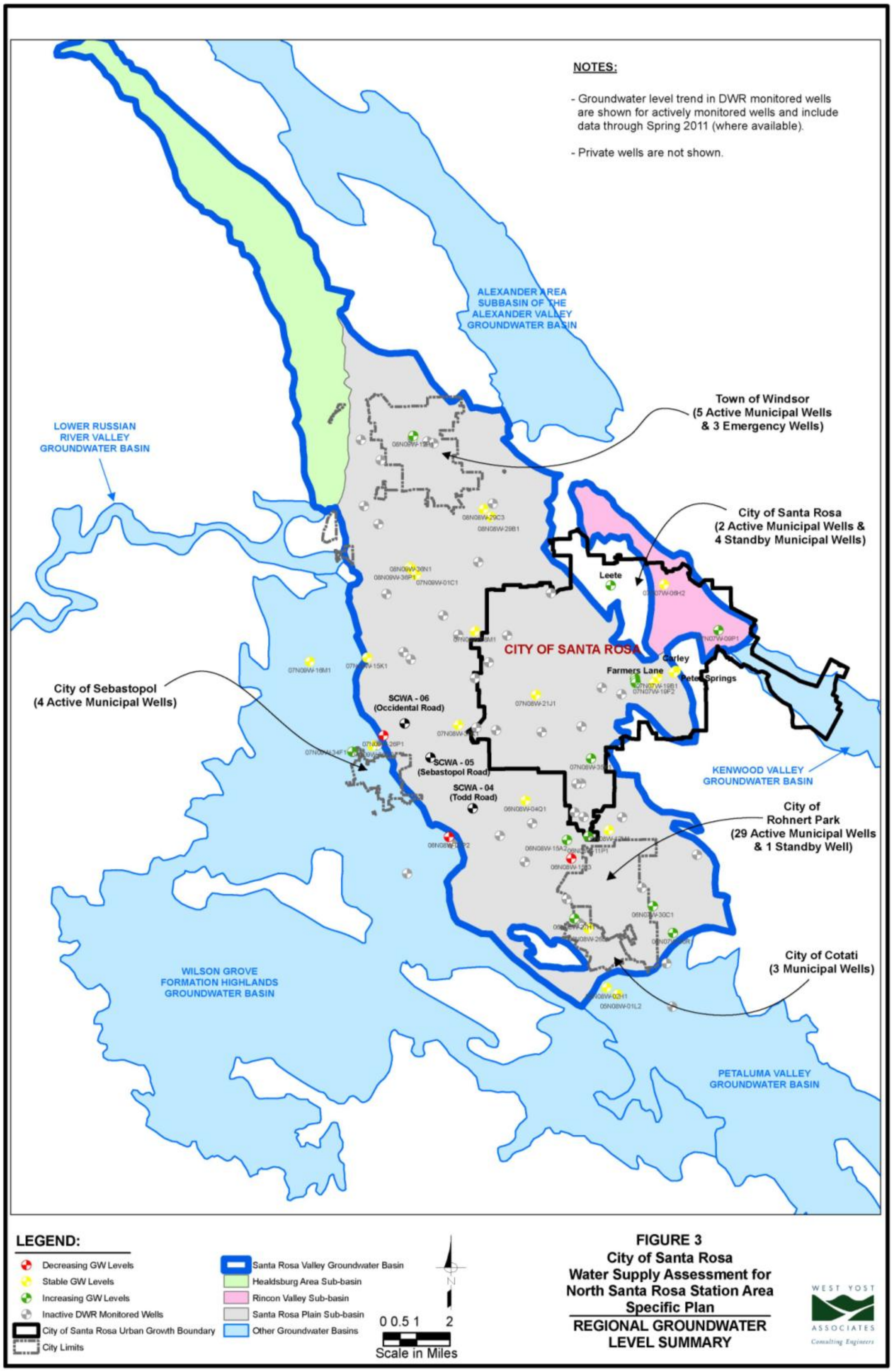
DWR has historically monitored groundwater levels in approximately 75 wells located within the Santa Rosa Plain Sub-basin and Rincon Valley Sub-basin. This data is available on DWR's on-line Water Data Library[13]. Of these 75 wells, 29 wells are currently actively monitored by DWR on either a semi-annual or monthly basis. Most of these wells have been monitored since 1989, while many have data extending back to the 1970's. One well, Well 06N/08W-15J3, located south of the City near Rohnert Park, has been monitored since 1950.

Figure 3 shows the locations of the DWR-monitored wells, as well as the locations of the City's wells, the Agency's wells and the approximate location and number of other municipal wells located within the Santa Rosa Plain Sub-basin. For the wells that are actively monitored by DWR, groundwater level trends are indicated on Figure 3 by color code. Wells shown in green have demonstrated increasing groundwater levels, wells shown in yellow have demonstrated stable groundwater levels, and wells shown in red have demonstrated declining water levels. As shown, most of the currently monitored wells located throughout the sub-basin have demonstrated either increasing or stable groundwater levels, indicating that the sub-basin is in balance and is not being overdrafted.

Only two of the actively monitored wells within the Santa Rosa Plain Sub-basin have had continuing decreasing groundwater levels. As explained further below, these decreases are considered to be localized and are not considered to be indicative of overall sub-basin conditions. As shown on Figure 3, these two wells are located on the western fringe of the sub-basin: Well 07N/09W-26P1 and Well 06N/08W-07P2. Well 07N/09W-26P1 has shown an overall gradual groundwater level decrease of about 10 feet since about 2000 (averaging about 1.0 feet per year), but has been relatively stable in the last five years. Water levels in Well 06N/08W-07P2 decreased by about 10 feet from 1989 to 2006; however, no data is available

[13] DWR Water Data Library http://wdl.water.ca.gov

Figure 3: Regional Groundwater Level Summary



after 2006 as the well has been destroyed. However, because both of these wells are located on the fringe of the sub-basin, these groundwater level declines are likely the result of localized conditions and are not considered to be indicative of groundwater conditions within the overall sub-basin. Two other wells located in the Rohnert Park area, Well 06N/07W-30C1 and Well 06N/08W-15J3, have experienced decreasing groundwater levels in the past. However, since about 2002, groundwater levels in these two wells have increased significantly. Well 06N/07W-30C1 has increased to its highest levels since the 1970s and Well 06N/08W-15J3 has increased to 1960s and 1970s levels, but is still about 20 feet lower than 1950s levels. These recent increases are possibly as a result of reduced municipal pumpage in the area by the City of Rohnert Park.

It should be noted that some of the actively monitored wells show a decline in water levels from 2007 to 2009. This is likely due to the dry hydrologic conditions that occurred in those years, and corresponding increase in groundwater pumpage by the domestic/rural water users, and municipal users due to a reduction in available supply from SCWA. These groundwater level decreases are considered to be indicative of the normal conjunctive use of the groundwater basin, and are representative of the dry year conditions which occurred from 2007 to 2009, and the natural hydrologic cycles that occur over time, and are not considered to be a concern. This natural cycle is further evidenced by the increase in groundwater levels in these wells in 2010 and 2011, likely as a result of wetter hydrologic conditions and additional supplies being available from SCWA in 2010 and 2011. Hydrographs of spring groundwater levels for the wells actively monitored by DWR are included in Appendix A.

Historical groundwater level data were also reviewed for the remaining DWR-monitored wells which are no longer monitored. Most of those wells also demonstrated either increasing or stable groundwater levels over their respective periods of record, while some had inconclusive data due to brief periods of record or sporadic data. Five other DWR-monitored wells, one located north of the City in the Windsor area, one located just north of the City, two located in the southern part of the City, and one located southwest of the City on the western fringe of the Santa Rosa Plain Sub-basin, demonstrated declining water level trends. As discussed above, the historical groundwater level declines in these wells are considered to be the result of localized groundwater pumpage and are not considered to be indicative of groundwater conditions in the overall sub-basin.

Groundwater trend data from the existing monitoring wells located throughout the sub-basin indicate that levels within the main portion of the sub-basin have generally remained constant or have slightly increased over time, indicating that the sub-basin is in balance and is not being over-drafted.[14] In addition, groundwater level data for the City's municipal wells was compared to historical data. For the City's Carley Well, Peters Spring Well, and Farmers Lane Wells No. 1, 2 and 3, historical groundwater levels from the 1940's and 1950's were compared to current groundwater levels. Although the available data is limited, the data indicate for each of these wells that groundwater levels have increased significantly from 14 to 94 feet below

[14] Source: City of Santa Rosa 2035 General Plan Water Supply Assessment, Section 2.4.4.1.3.

groundwater surface in the 1940's and 1950's to essentially artesian conditions (e.g., groundwater level at or above ground surface). Currently, the City's Farmers Lane Wells No. 1 and 2 and Leete Well are demonstrating artesian conditions and water surface elevations in the City's other wells are only a few feet below ground surface, indicating an abundance of groundwater in the portion of the sub-basin underlying the City. Hydrographs of groundwater levels for the City's municipal wells are included in Appendix B.

Review of hydrographs near the City's Farmers Lane wells shows that groundwater elevations have been high (within 10 to 30 feet of the ground surface) and stable since at least 1989, indicating that groundwater recharge is taking place and that additional groundwater yield from this area is possible. Groundwater level data collected from the Farmers Lane Wells after the 2007 to 2011 summer pumpage periods shows that water levels quickly recover to artesian conditions after the wells are turned off. The hydrographs indicate that groundwater elevations to the east of the Farmers Lane wells are significantly higher than the ground surface at the Farmers Lane wells, which provides additional explanation for the artesian conditions at the Farmers Lane wells.[15]

1.4.4.1.4 Groundwater Storage

Over the years, several estimates have been made of the groundwater storage capacity of the Santa Rosa Plain Sub-basin. These estimates range from 948,000 af to 4,313,000 af. A brief description of each estimate follows:

- The USGS estimated the gross groundwater storage capacity for this basin to be about 948,000 af based on the average specific yield of 7.8 percent for aquifer materials at depths of 10 to 200 feet.[16]
- The DWR performed a study of the area in 1982 and calculated the groundwater storage capacity for this basin to be 4,313,000 af. This calculation was made using the TRANSCAP computer program, assuming aquifer thicknesses ranged from 50 to over 1,000 feet with an average thickness of approximately 400 feet.[17]

Using the water level information for the spring of 1980 and the product of the TRANSCAP computer program, the volume of groundwater in storage was estimated to be 3,910,000 af.

1.4.4.1.5 Groundwater Budget

According to the DWR Bulletin 118, a groundwater model for the Santa Rosa Plain Sub-basin was prepared by the DWR in 1982. The 15-year period from 1960-61 through 1974-75 was selected as the study period for the Santa Rosa Plain Sub-basin because it contained a mixture

[15] Technical Memorandum, Evaluation of Potential Impacts Associated with Increased Groundwater Production from Farmers Lane Wells W4-1 and W4-2, prepared by West Yost & Associates, July 22, 2004.

[16] Cardwell, G.T., Geology and Ground Water in the Santa Rosa and Petaluma Valley Areas, Sonoma County, California, USGS Water Supply Paper 1427, 1958.

[17] California Department of Water Resources, Evaluation of Ground Water Resources in Sonoma County Volume 2: Santa Rosa Plain, DWR Bulletin 118-4, 1982.

of wet and dry years approximating long-term climatic conditions. Average annual natural recharge for the period 1960 to 1975 was estimated to be about 29,300 af. Average annual pumping during the same time period was estimated to be approximately 29,700 af, indicating that the annual natural recharge and the annual pumping within the sub-basin were essentially in balance.

With respect to the area in the vicinity of the City's Farmers Lane wells, it has been estimated that the annual groundwater recharge to the area from which the Farmers Lane wells extract groundwater is on the order of 2,500 AFY, using historical rainfall data and an estimate of the potential recharge area[18]. This quantity of recharge is larger than the maximum quantity of groundwater the City plans to pump from the Farmers Lane wells (2,300 AFY).

1.4.4.1.6 Groundwater Management

Several municipal water purveyors, including the City and private parties, use groundwater within the Santa Rosa Plain sub-basin. These municipal water purveyors and the County are working collectively to better understand and to ultimately try to manage the regional groundwater resources. As part of this joint effort, in 2005, the USGS, in partnership with the Agency, the cities of Santa Rosa, Rohnert Park, Cotati, and Sebastopol, the Town of Windsor, California American Water, and others, began a 5-year cooperative study. The objectives of this study are to: 1) Develop an updated assessment of the geohydrology, geochemistry and geology of the Santa Rosa Plain sub-basin; 2) Develop a groundwater flow model of the Santa Rosa Plain sub-basin; and 3) Evaluate the hydrogeologic impacts of alternative groundwater strategies for the Santa Rosa Plain sub-basin. The study is near completion and final results are scheduled to be released in spring 2012. The study results will be used by the Agency, City and other stakeholders to develop an AB3030 non-regulatory groundwater management plan for the Santa Rosa Plain sub-basin.

In 2009, the California legislature passed Senate Bill x7-6, requiring groundwater level monitoring for every groundwater basin and subbasin listed in DWR Bulletin 118. In response to the legislation, the California Statewide Groundwater Elevation Monitoring (CASGEM) Program was established. In December 2010, the SCWA and the Sonoma County Permit and Resources Management District (PRMD) notified the Department of Water Resources that they would be the Monitoring Entities for 13 of the 14 groundwater basins and subbasins located in Sonoma County. The City is working collaboratively with SCWA and PRMD to provide groundwater level data as required by CASGEM for monitoring wells within Santa Rosa's service area.

As noted above, the Santa Rosa Plain sub-basin is not adjudicated nor has it currently been identified as over-drafted or to become over-drafted by DWR.[19]

[18] Technical Memorandum, Evaluation of Potential Impacts Associated with Increased Groundwater Production from Farmers Lane Wells W4-1 and W4-2, prepared by West Yost & Associates, July 22, 2004.

[19] California Department of Water Resources, Evaluation of Ground Water Resources in Sonoma County Volume 2: Santa Rosa Plain, DWR Bulletin 118-4, 1982.

1.4.4.2 Existing Groundwater Supply

The City has a total of six municipal groundwater wells within the Santa Rosa Plain Sub-basin. These six wells are listed in Table 4 along with their current status. As shown in Table 4, two of the City's municipal wells are currently operated primarily to provide some landscape irrigation to an adjacent park and school landscaping, but are also available and approved by DPH for emergency potable use, on a standby status (Carley and Peters Spring Wells), two of the wells (Farmers Lane Wells No. 1 and 2) are on active status, one well is operated to provide minor amounts of landscape irrigation water supply only (Farmers Lane Well No. 3), and one well is used for emergency potable purposes only (Leete Well).

Table 4
City of Santa Rosa Municipal Groundwater Wells[1]

Well Name/Number	Well Status
Leete (W1)	Standby; used for emergency potable purposes only
Carley (W2-1)	Standby; used for emergency potable purposes and some landscape irrigation
Peters Spring (W2-2)	Standby; used for emergency potable purposes and some landscape irrigation
Farmers Lane (W4-1)	Active status[2]
Farmers Lane (W4-2)	Active status[2]
Farmers Lane (W4-3)	Not connected to City's potable water distribution system; used strictly for minor landscape irrigation purposes

[1] *The City also has two other municipal wells that are either out of service or inactive: Freeway Well (W3) is out of service due to groundwater contamination caused by others; Sharon Park Well (W6) is inactive due to severe sanding.*
[2] *Change in status approved by California Department of Public Health on July 20, 2005.*

In 2007, the City's Farmers Lane Wells No. 1 and 2 started providing supply to the City's potable water system to supplement supplies obtained from the Agency and to provide supply during high demand periods. Before the City obtained surface water supplies from the Agency, the Farmers Lane wells contributed a significant portion of the groundwater supplies required to meet the City's demands. Of the City's roughly 2,870 AFY of historical groundwater demand, it is estimated that the Farmers Lane Wells supplied about 1,720 AFY[20].

1.4.4.2.1 Overall Existing Groundwater Pumpage

There are a number of public entities that pump groundwater from municipal wells located within the Santa Rosa Plain Sub-basin. These agencies include SCWA, the City of Santa Rosa, the Town of Windsor, the City of Sebastopol, the City of Rohnert Park, the City of Cotati, California

[20] Technical Memorandum, Evaluation of Potential Impacts Associated with Increased Groundwater Production from Farmers Lane Wells W4-1 and W4-2, prepared by West Yost & Associates, July 22, 2004.

American Water, Penngrove Water Company and Sonoma State University. Table 5 lists the number of municipal wells operated by each agency. The approximate locations of these municipal wells are shown on Figure 3.

Table 5 – Municipal Wells Located in the Santa Rosa Plain Sub-basin

Agency	Number of Wells
Sonoma County Water Agency	Three (3) municipal wells
City of Santa Rosa	Six (6) municipal wells • Two active municipal wells (Farmers Lane Nos. 1 and 2) • One well is operated to provide minor amounts of landscape irrigation water supply only (Farmers Lane No. 3) • Two wells are used for some minor amounts of landscape irrigation and available for emergency purposes (Carley Well and Peters Spring Well) • One well is operated for emergency purposes only and remains on standby (Leete Well)
Town of Windsor	Five (5) active municipal wells and three (3) emergency wells[1]
City of Sebastopol	Four (4) active municipal wells[2]
City of Rohnert Park	Twenty-nine (29) active municipal wells and one (1) standby well[3]
City of Cotati	Three (3) municipal wells[4]
California American Water	Four (4) municipal wells[5]
Penngrove Water Company	One (1) municipal well[6]
Sonoma State University	Three (3) municipal wells[6]

1. Source: E-mail from Craig Scott (Senior Engineer, Town of Windsor) to Jennifer Burke (City of Santa Rosa), September 8, 2008.
2. Source: City of Sebastopol Water Production and Usage, and Wastewater Statistics for Annual Level of Service Report for Calendar Year 2010, February 15, 2011.
3. Source: City of Rohnert Park 2010 Urban Water Management Plan, prepared by Winzler & Kelly Consulting Engineers, adopted June 14, 2011.
4. Source: City of Cotati 2010 Urban Water Management Plan, prepared by Carollo Engineers, August 2011.
5. Source: Operations Plan for Groundwater Supply Wells in the Larkfield District, prepared for California American Water, prepared by Bookman-Edmonston, October 14, 2004.
6. Canon Manor West Subdivision Assessment District Groundwater Study, Figure 5, Todd Engineers, June 2004.

In addition to municipal pumpage, there are a number of private, commercial and agricultural wells located within the Santa Rosa Plain Sub-basin. The exact number and annual groundwater pumpage from these wells is unknown. As described in Section 1.4.4.1.6, the USGS, in partnership with SCWA, the cities of Santa Rosa, Rohnert Park, Cotati, and Sebastopol, the Town of Windsor, California American Water, and others, are looking to better quantify these values, as part of the 5-year cooperative study.

1.4.4.2.2 SCWA Existing Groundwater Pumpage

SCWA pumps groundwater from the Santa Rosa Plain Sub-basin to supplement its Russian River water supply. However, because these wells feed into SCWA's Cotati Aqueduct transmission system, which provides no supply to the City, little or no SCWA groundwater is actually delivered to the City by SCWA to meet the City's 29,100 AFY of contractual supply entitlement. Nevertheless, available data on SCWA's historical groundwater pumping is being included in this WSA as supplemental information.

SCWA's three groundwater wells are located along SCWA's Cotati Aqueduct at Todd Road (SCWA-04), Sebastopol Road (SCWA-05), and Occidental Road (SCWA-06), on the west side of the Santa Rosa Plain Sub-basin. The locations of these wells are shown on Figure 3. All three wells are drilled to depths greater than 1,000 feet.[21] SCWA does not have any wells within the Rincon Valley Sub-basin or the Kenwood Valley Groundwater Basin. Table 6 summarizes SCWA's groundwater pumpage quantities in the last five years, which up until 2006 represented an average of approximately 5.5 percent of the SCWA total annual transmission system delivery. As noted in the SCWA 2010 UWMP, beginning in 2009, the SCWA shifted the use of their wells to a seasonal and as-needed basis, which is reflected in the reduction in groundwater pumpage.[22]

Table 6 – Amount of Groundwater Pumped by the Sonoma County Water Agency in Past Five Years[1]

Basin/Sub-basin Name	Historical Groundwater Pumpage (AFY)				
	2006	2007	2008	2009	2010
Santa Rosa Valley Groundwater Basin: Santa Rosa Plain Sub-basin	3,711	2,240	3,922	264.	52
Santa Rosa Valley Groundwater Basin: Rincon Valley Sub-basin	SCWA does not pump any groundwater from this groundwater sub-basin				
Kenwood Valley Groundwater Basin	SCWA does not pump any groundwater from this groundwater basin				

1. Source: Sonoma County Water Agency 2010 Urban Water Management Plan, June 2011.

1.4.4.2.3 Existing Pumpage by Other Municipalities Within the Santa Rosa Plain Sub-Basin

City of Sebastopol: The City of Sebastopol currently has four (4) active municipal wells: Well #4, Well #6, Well #7 and Well #8.

As shown in Table 7, total groundwater pumpage by the City of Sebastopol over the last five years has ranged from 1,211 AFY in 2006 to 1,037 AFY in 2010, averaging about 1,166 AFY. Production in 2009 was lower than in previous years due to 2009 being the third year of a drought period and 2010 was lower than in previous years due to a wetter than average year and cool summer.

21 City of Santa Rosa, Utilities Department Memorandum, Southwest Area Projects Water Supply Assessment Clarification, March 10, 2006.

22 Sonoma County Water Agency, 2010 Urban Water Management Plan, June 2011.

Table 7 – City of Sebastopol Groundwater Pumpage Over Last Five Years[1]

Calendar Year	2006	2007	2008	2009	2010
Municipal Groundwater Production, AFY	1,211	1,204	1,264	1,111	1,037

1. Source: City of Sebastopol Water Production and Usage, and Wastewater Statistics for Annual Level of Service Report for Calendar Year 2010, February 15, 2011.

Springtime groundwater levels in the City of Sebastopol's wells have varied from year to year, but have been relatively stable since 1990.

City of Rohnert Park: The City of Rohnert Park has developed forty-two (42) groundwater wells, twenty-nine (29) of which are currently active[23].

As shown in Table 8, groundwater pumpage by the City of Rohnert Park is considerably less than the City of Rohnert Park's historical groundwater pumpage which averaged 3,900 AFY from 1980 to 1981, and 5,100 AFY from 1990 to 1997[24]. In 2003, the City of Rohnert Park began to reduce its use of groundwater as a source of supply to meet its water demands due to implementation of its General Plan commitments to secure a greater percentage of its potable supply from SCWA. In 2008 and 2009, Rohnert Park increased groundwater pumpage due to drought conditions.[25]

Table 8 – City of Rohnert Park Groundwater Pumpage Over Last Five Years[1]

Calendar Year	2006	2007	2008	2009	2010
Municipal Groundwater Production, AFY	348	933	1,078	2,102	1,582

1. Source: City of Rohnert Park, 2010 Urban Water Management Plan, June 2011.

Town of Windsor: The Town of Windsor (Town) currently has five (5) active wells and three (3) emergency wells. The five active wells are part of the Town's Russian River Well Field, from which production is governed by the Town's agreement with SCWA. Pumpage from these wells is based on SCWA's water rights, is considered to be part of the Town's SCWA supply, and is accounted for in the Restructured Agreement. The Town also has three "off-river" groundwater wells which pump from the Santa Rosa Plan Sub-basin. The Bluebird Well is a 400-foot deep well constructed in 1972. It had been placed on standby in the mid-1980s when the Russian River Well Field was developed, but was subsequently used as an off-river supply source to improve system reliability. However, in 2006, the Bluebird well once more was taken off-line due to arsenic issues. The Town also owns the Esposti Well and Keiser Park wells which are

23 Page 4-2 City of Rohnert Park 2010 Urban Water Management Plan, adopted June 14, 2011.
24 Page 3-29 City of Rohnert Park Final Water Supply Assessment, January 2004.
25 Page 4-19 City of Rohnert Park 2010 Urban Water Management Plan, adopted June 14, 2011.

primarily used for park irrigation, as well as serving as a backup or emergency source of potable water.

As shown in Table 9, groundwater pumpage by the Town of Windsor from the Santa Rosa Plain did not occur from 2006 through 2010 due to the constraints of the Bluebird well.

Table 9 – Town of Windsor Groundwater Pumpage Over Last Five Years[1]

Calendar Year	2006	2007	2008	2009	2010
Municipal Groundwater Production, AFY	0	0	0	0	0

1. Source: Town of Windsor, 2010 Urban Water Management Plan, June 2011.

City of Cotati: The City of Cotati currently has three (3) active wells. Prior to 1992, the City of Cotati used groundwater to supply more than half of its demands. Since 1995, the City of Cotati has obtained the majority of its water supply, on average 72 percent, from SCWA and the remaining amount is supplied by local groundwater.

As shown in Table 10, groundwater pumpage by the City of Cotati increased slightly in response in 2008 and 2009 due to drought conditions.

Table 10 – City of Cotati Groundwater Pumpage Over Last Five Years[1]

Calendar Year	2006	2007	2008	2009	2010
Municipal Groundwater Production, AFY	80	295	312	358	295

[1] Source: City of Cotati, 2010 Urban Water Management Plan, August 2011.

California American Water: The Larkfield District of California American Water currently has four groundwater wells. These wells, in addition to supplies from SCWA, are used to meet demands in the Larkfield District service area.

As shown in Table 11, groundwater pumpage by California American Water has decreased over the past five years, from almost 650 AFY in 2006 to just about 500 AFY in 2010.

Table 11 – California American Water Groundwater Pumpage Over Last Five Years[1]

Calendar Year	2006	2007	2008	2009	2010
Municipal Groundwater Production, AFY	642	677	749	691	497

[1] Source: Email communication from Anthony Lindstrom, California American Water, Larkfield District.

1.4.4.2.4 Existing City Municipal Groundwater Pumpage

The City has a total of six municipal groundwater wells within the Santa Rosa Plain Sub-basin. The locations of these wells are shown on Figure 3. These six wells are listed in Table 4 (See Section 1.4.4.2) along with their current status.

As shown in Table 4, two of the City's municipal wells are currently operated primarily to provide some landscape irrigation to an adjacent park and school landscaping, but are also available and approved by DPH for emergency potable use, on a standby status (Carley and Peters Spring Wells), two of the wells (Farmers Lane Wells No. 1 and 2) are on active status (DPH on July 20, 2005), one well is operated to provide minor amounts of landscape irrigation water supply only (Farmers Lane Well No. 3), and one well is used for emergency potable purposes only (Leete Well).

The Farmers Lane wells are located near the mouth of Bennett Valley on the east side of the Santa Rosa Plain Sub-basin. The major geologic formations underlying the vicinity of the Farmers Lane wells include the Younger Alluvium, the Older Alluvium, the Glen Ellen and Huichica Formations, the Sonoma Volcanics, the Wilson Grove Formation and the Petaluma Formation. The wells are located within a major regional fault zone comprised of the Rodgers Creek and Healdsburg fault zones. The wells are 800 and 1,000 feet deep and draw water from the deep aquifer which is predominantly Sonoma Volcanics. Water levels observed in the Farmers Lane wells have been in an artesian condition for several years. A groundwater treatment system has been constructed at the site of the Farmers Lane wells for iron and manganese removal and disinfection.

The City does not have any municipal wells within the Rincon Valley Sub-basin or the Kenwood Valley Groundwater Basin. Table 12 summarizes the City's municipal groundwater pumpage in the last five years.

Table 12 – Amount of Municipal Groundwater Pumped by the City of Santa Rosa in Past Five Years

Basin/Sub-basin Name	Historical Municipal Groundwater Pumpage (AFY)				
	2006	2007	2008	2009	2010
Santa Rosa Valley Groundwater Basin: Santa Rosa Plain Sub-basin[1]	0	832	1,501	1,350	897
Santa Rosa Valley Groundwater Basin: Rincon Valley Sub-basin	The City does not have any wells or pump any groundwater from this sub-basin				
Kenwood Valley Groundwater Basin	The City does not have any wells or pump any groundwater from this groundwater basin				

1. Source: Table 4-6, City of Santa Rosa 2010 Urban Water Management Plan, June 2011.

1.4.4.2.5 Projected SCWA Groundwater Pumpage

Table 13 shows the projected groundwater pumpage by SCWA. As shown, projected pumpage is expected to be 2,300 AFY in the future through 2035 from the Agency's three existing production wells, which do not materially provide supply to the City. There are currently no known plans for additional SCWA production wells within the Santa Rosa Plain Sub-basin or any new SCWA production wells within the Rincon Valley Sub-basin or Kenwood Valley Groundwater Basin.

Table 13 – Amount of Groundwater Projected to be Pumped by the Sonoma County Water Agency

Basin/Sub-basin Name	Projected Groundwater Pumpage (AFY)				
	2015	2020	2025	2030	2035
Santa Rosa Valley Groundwater Basin: Santa Rosa Plain Sub-basin[1]	2,300	2,300	2,300	2,300	2,300
Santa Rosa Valley Groundwater Basin: Rincon Valley Sub-basin	The Agency does not plan to install any wells or pump any groundwater from this sub-basin in the future				
Kenwood Valley Groundwater Basin	The Agency does not plan to install any wells or pump any groundwater from this basin in the future				

1. Source: Table 4-9, Sonoma County Water Agency 2010 Urban Water Management Plan, December 2011.

1.4.4.2.6 Projected City Municipal Groundwater Pumpage

The City's Farmers Lane Wells No. 1 and 2 have begun to provide supply to the City's potable water system to supplement supplies obtained from SCWA, and to provide supply during high demand periods. Before the City obtained surface water supplies from SCWA, the Farmers Lane wells contributed a significant portion of the groundwater supplies required to meet the City's demands. Of the City's roughly 2,870 AFY historical groundwater demand, it is estimated that the Farmers Lane Wells supplied about 1,720 AFY[26].

In the future, it is anticipated that the Farmers Lane wells may be operated as much as 40 to 60 percent of the time at a pumping rate of about 2,400 gpm, which would equate to an annual pumpage quantity of approximately 1,550 to 2,300 AFY. This projected pumpage quantity is less than the City's historical groundwater pumpage of 2,870 AFY. There are currently no plans for additional active City production wells within the Santa Rosa Plain Sub-basin or any new City production wells within the Rincon Valley Sub-basin or Kenwood Valley Groundwater Basin. The City is drilling test borings to gain a better understanding of the Santa Rosa Plain Sub-basin and in October 2011, the City embarked upon the development of a Groundwater Master Plan which will help shape the City's future groundwater development. Table 14 presents the current amount of groundwater projected to be pumped by the City.

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[26] Technical Memorandum, Evaluation of Potential Impacts Associated with Increased Groundwater Production from Farmers Lane Wells W4-1 and W4-2, prepared by West Yost & Associates, July 22, 2004.

Table 14 – Amount of Groundwater Projected to be Pumped by the City

Basin/Sub-basin Name	Projected Future Municipal Groundwater Pumpage (AFY)				
	2015	2020	2025	2030	2035
Santa Rosa Valley Groundwater Basin: Santa Rosa Plain Sub-basin[1]	2,300	2,300	2,300	2,300	2,300
Santa Rosa Valley Groundwater Basin: Rincon Valley Sub-basin	The City does not plan to pump groundwater from this sub-basin in the future				
Kenwood Valley Groundwater Basin	The City does not plan to pump groundwater from this basin in the future				

1. Source: Table 4-7, City of Santa Rosa 2010 Urban Water Management Plan, June 2011.

It should be noted that the City has a Mitigation and Monitoring Program in place for the Farmers Lane wells that includes monitoring of groundwater levels in the vicinity of the Farmers Lane wells and modified pumping rates if an adverse decline in groundwater levels and/or other adverse effects are detected.

The groundwater basin does not appear to have physical constraints for pumping if used as planned to provide supplemental and peaking capacity to the primary supply source provided by the SCWA, in addition to utilizing the groundwater basin as an emergency supply source. The long-term sustainable yield of the groundwater basin has not been specifically determined, and if new and existing groundwater wells were developed as a production source, additional study of the sustainable yield would need to be conducted.

1.4.4.3 Analysis of Sufficiency of Groundwater to meet Projected Water Demands Associated with the Project

Based on available information, this WSA finds that the City's existing groundwater supply of 2,300 AFY, in combination with the City's other supplies, is adequate and that no additional groundwater supply is needed to meet the projected demand of the Project. This finding is based on the following facts regarding the overall Santa Rosa Plain Sub-basin and the area of the sub-basin underlying the City:

- As stated in the DWR Bulletin 118 groundwater basin description of the Santa Rosa Plain Sub-basin, last updated in February 2004, the Santa Rosa Plain Sub-basin as a whole is about in balance.
- Review of groundwater levels in DWR monitored wells located throughout the Santa Rosa Plain Sub-basin and City of Santa Rosa wells indicates that most wells have had either increasing or stable groundwater levels for the last 17 to 29 years. These increasing or stable groundwater levels are a key indication that the Santa Rosa Plain Sub-basin is in a state of equilibrium (balanced condition), and that it is not in an overdraft condition.

- DWR monitored wells with historically decreasing groundwater levels, including two actively monitored wells and five historically monitored wells, primarily located southwest of the City near the western fringe of the Santa Rosa Plain Sub-basin, are likely indicative of localized groundwater pumping conditions and are not indicative of overall sub-basin conditions.
- Groundwater levels in DWR actively monitored wells in and adjacent to the City have been either increasing or stable for the last 17 to 29 years indicating that the portion of the Santa Rosa Plain Sub-basin underlying the City is in balance.
- Some DWR monitored wells have had slightly decreasing water levels in recent years (2007 to 2009). These declines in groundwater levels are indicative of the recent dry hydrologic conditions and recent SWRCB Order requiring the SCWA to reduce diversions from the Russian River in 2007 and 2009, thus requiring increased groundwater pumpage by private individuals and increased pumpage from some agencies to supplement their supplies from SCWA. These recent groundwater level decreases are considered to be indicative of the dry year conditions from 2007 to 2009, the natural hydrologic cycles that occur over time, and the corresponding conjunctive use of the groundwater basin, and are not considered to be a concern. This natural cycle is further evidenced by the increase in groundwater levels in these wells in 2010 and 2011, likely as a result of wetter hydrologic conditions and additional supplies being available from SCWA in 2010 and 2011.
- Pumpage by SCWA from the Santa Rosa Sub-basin over the past five years has ranged from about 50 to 3,900 AFY. Future pumpage by SCWA is anticipated to be about 2,300 AFY.
- In the years before the City began receiving surface water from SCWA, the City relied exclusively on groundwater to meet its water demands and historical municipal groundwater pumpage was estimated to be up to about 2,870 AFY. In 2007, the City began pumping the Farmers Lane wells to supplement supplies from SCWA, and to assist in meeting high demand periods. In the future, it is anticipated that the City's Farmers Lane wells may be operated as much as 40 to 60 percent of the time at a pumping rate of about 2,400 gpm, which would equate to an annual pumpage quantity of approximately 1,550 to 2,300 AFY. This projected municipal pumpage will be less than the City's maximum historical groundwater pumpage (2,870 AFY) and less that the estimated annual groundwater recharge in the area from which the Farmers Lane wells extract groundwater (2,500 AFY).

Based on these facts, the City's existing groundwater supply of 2,300 AFY, in combination with the City's other supplies, is considered to be adequate and that no additional groundwater supply is needed to meet the projected demand of the Project.

1.4.5 Recycled Water

The City's Subregional System is one of the largest recyclers of water in the world. The recycled water that leaves the treatment plant is high-quality, tertiary treated water that is approved for many reuse purposes, including irrigation of landscapes, agricultural crops, vineyards, playgrounds, golf courses, and public parks. Depending upon the amount of rainfall in any given year, between 90 and 100 percent of the Subregional System's wastewater is recycled for urban and agricultural irrigation and for the Geysers Recharge Project. The Subregional System's existing urban reuse program irrigates many schools, parks and businesses in Rohnert Park, including Sonoma State University. In the City, recycled water is used for landscape irrigation of businesses and parks, including Finley Park and A Place to Play sports complex. In 2010, approximately 6,000 acres of farmlands and vineyards were irrigated with recycled water for agricultural purposes. The irrigation system is supported by storage reservoirs that can hold over 1.7 billion gallons of water, which allows the system to meet peak, hot summer day irrigation requirements.

The Subregional System also supplies recycled water to the Geysers Recharge Project. The Geysers Recharge Project came into operation in 2003 and pumps, on average, 13 million gallons of recycled water per day to the Geysers steamfields in the Mayacamas Mountains. This geothermal operation injects the water through wells into the underground steamfield at depths of 4,000 to 11,000 feet, where it is heated to produce a clean, "dry" steam that is used to produce "clean" electricity for up to 100,000 households in the North Bay Area.

1.4.5.1 Historical and Existing Urban Recycled Water Use

The City's current and historical use of recycled water has been limited to areas within close proximity to the Subregional System's distribution network. The City has historically used up to approximately 350 AFY of recycled water for urban landscape irrigation. In 2001, the City undertook the Incremental Recycled Water Program (IRWP), which included plans for recycled water urban reuse efforts. The IRWP outlined a water recycling alternative that could replace the City's potable water sources (not including private groundwater supply sources) up to a maximum of 2,200 AFY upon implementation and 4,400 AFY by 2020 depending on wastewater disposal capacity need.

Table 15, based on City 2010 UWMP Table 4-14, illustrates existing and planned recycled water use for the City.

Table 15 – Existing and Planned Recycled Water Use in the City (AFY)[1]

User type	2010	2015	2020	2025	2030	2035
Landscape irrigation[2]	204	350	350	1,100	1,100	1,100
Total	204	350	350	1,100	1,100	1,100

1. Units are acre-feet per year.
2. Landscape irrigation includes irrigation at commercial facilities and golf courses.

In April 2005, the City began work on the City's Urban Reuse Project expansion conceptual plan, which analyzed several alternatives for expanded urban reuse within the City service area. In September 2006, the City Board of Public Utilities approved contracts for pre-design of a phased urban reuse project with ultimate service to the majority of the south and west portions of the City, and a total delivery of 3,000 AFY to sites which would otherwise be served by potable water. In December 2007, the City approved the Santa Rosa Urban Reuse Project which could serve up to 3,000 AFY of recycled water to current and future approved water uses, primarily landscape irrigation. The cost of implementing the 3,000 AFY Santa Rosa Urban Reuse Project is estimated to be a total of $152 million, in 2007 dollars. This project will be implemented in phases, as needed for water supply offset and wastewater disposal capacity. The phased nature of the urban reuse alternative allows City policymakers to develop this water supply source incrementally as more supply is needed, while continuing to evaluate other potentially more cost-effective water supply sources for future water supply needs.

The City selected Phase 1 West as the first phase of the project to be implemented. Phase 1 West is designed to provide up to 750 AFY of recycled water and the City initiated a small segment of this project in 2009. Section 1.5.1.3 discusses development of this additional recycled water in detail.

1.4.6 Stormwater Capture

The City's storm water requirements prioritize the use of infiltration-based landscape features for storm water treatment. Low Impact Development (LID) features utilize the natural cleaning properties of soil, plants, and microbial activity to breakdown pollutants and allow for storm water to recharge groundwater aquifers and maintain stream flow. These LID features are required on new developments that create 10,000 square feet or more of impervious surface. Any increase in the amount of volume of runoff off of a developed site (for a storm up to 0.92 inches) must be infiltrated back into the soil or stored and reused on site. Additionally, runoff from all paved areas and rooftops must be filtered through these landscaped features to remove pollutants. These policies help to hydraulically mimic the undeveloped condition which provides aquifer recharge, preserves stream flow, cleans storm water, and reduces demand on potable water for irrigation.

1.4.7 Water Conservation

The City has been and continues to be a leader in implementing innovative water conservation programs. Water conservation and demand management are an integral part of the City's water management strategy. Santa Rosa is committed to integrating water conservation into future supply and demand solutions for both the water system and the wastewater treatment/reuse system.

1.4.7.1 Historical and Existing Water Conservation

The City has been implementing water conservation programs since the 1976-1977 drought. In the early 1990's, the City further expanded the program with the creation and hiring of a full-time Water Conservation Coordinator. In 1998, the City became a signatory to the California

Urban Water Conservation Council (CUWCC) Memorandum of Understanding (MOU) Regarding Urban Water Conservation dated September 1997.

The City is committed to implementation of the CUWCC Best Management Practices (BMPs). The City has spent over $15 million on its water conservation programs, including replacement of approximately 50,000 toilets with ultra low-flow and high-efficiency toilets and implementation of innovative programs such as our Green Exchange irrigation upgrade and turf replacement program, rainwater rebate program, and graywater rebate program. As of June 2008, the City's water conservation implementation has resulted in water use savings of nearly 4,500 AFY, reducing the City's total water demand by approximately 15%[27]. In addition, the City was recognized by the Public Officials for Water and Environmental Reform (P.O.W.E.R) 2007 Water Conservation Scorecard as one of only two water retailers in the State of California that has successfully completed all 14 BMPs, as outlined in the 1998 CUWCC MOU, without an exemption.

To assist with water conservation implementation, the City has an aggressive, conservation-oriented water rate structure that encourages water conservation implementation. The City's water rate structure is designed to derive the overwhelming majority of water sales revenue from volumetric, as opposed to fixed, charges. Currently, the City receives approximately 81% of water sales revenue from volumetric charges and 19% from fixed charges, which is significantly higher than the CUWCC's BMP 11 Conservation Pricing requirement, which requires 70% of water sales revenue be derived from volumetric charges. The City has a tiered water rate structure for Single-Family Residential customers and a water budget-based tiered water rate structure for Dedicated Irrigation customers that targets outdoor water use. The Dedicated Irrigation rate structure is based on landscape measurements for each customer site and real-time evapotranspiration (ETo) data from the City's California Irrigation Management Information System (CIMIS) station.

In December 2008, the signatories to the CUWCC MOU approved an amendment that significantly changed the BMPs. The changes included moving away from the traditional 14 BMPs to grouping of BMPs by residential, commercial, institutional and industrial, and landscape program; creation of foundational BMPs that all CUWCC members must implement; and, in addition to standard coverage requirements, creation of both a flex track option and gallons per capita per day (gpcd) option for meeting coverage requirements. As part of the implementation of the BMPs, the City offers technical support, education, information and incentives to Single-Family Residential, Multi-Family Residential, Commercial, Industrial, and Institutional (CII) customers, and Dedicated Irrigation customers. Table 16 summarizes the City's implementation of the new CUWCC BMPs.

[27] Savings per CUWCC Coverage Calculator for FY07-08. In December 2008, the CUWCC significantly revised the CUWCC MOU and BMPs. The CUWCC has not completed developing the new reporting database for the new BMPs and, therefore, water conservation savings after FY07-08 are not yet available.

Table 16 - City Implementation of California Urban Water Conservation Council Best Management Practices

Best Management Practices (BMPs)		Description	Previous BMP	On Track	Implemented By
Foundational	1 – Utility Operations Programs	1.1 – Operations Practice			
		1.1.1 – Conservation Coordinator	12	Yes	Santa Rosa
		1.1.2 – Water Waste Prevention	13	Yes	Santa Rosa
		1.1.3 – Wholesale Agency Assistance	10	N/A	Agency
		1.2 - Water Loss Control	3	Yes	Santa Rosa
		1.3 - Metering with Commodity Rates	4	Yes	Santa Rosa
		1.4 - Conservation Pricing	11	Yes	Santa Rosa
	2 – Educational Programs	2.1 - Public Information Programs	7	Yes	Santa Rosa
		2.2 - School Education Programs	8	Yes	Agency
Programmatic	3 – Residential	3A.1 - Residential Assistance Program	1 & 2	Yes	Santa Rosa
		3A.2 - Landscape Water Survey	1	Yes	Santa Rosa
		3A.3 – High-Efficiency Clothes Washer	6	Yes	Santa Rosa
		3A.4 -WaterSense Specification toilets	14	Yes	Santa Rosa
		3A.5 - WaterSense Specification for Residential Development	N/A	Yes	Santa Rosa
	4 – Commercial, Industrial, Institutional	4A.1 - Implement measures on CII list **OR**	9/9A	Yes	Santa Rosa
		4A.2 - Flex Track implementation	9/9A	Yes	Santa Rosa
	5 – Landscape	5A.1 - Dedicated Irrigation Meters	5	Yes	Santa Rosa
		5A.2 - CII Accounts w/o meters or with Mixed Use Meters	5	Yes	Santa Rosa

1.5 Future Supplies

10911. (a) If, as a result of its assessment, the public water system concludes that its water supplies are, or will be, insufficient, the public water system shall provide to the city or county its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies. If the city or county, if either is required to comply with this part pursuant to subdivision (b), concludes as a result of its assessment, that water supplies are, or will be, insufficient, the city or county shall include in its water supply assessment its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies. Those plans may include, but are not limited to, information concerning all of the following:

(1) The estimated total costs, and the proposed method of financing the costs, associated with acquiring the additional water supplies.

(2) All federal, state, and local permits, approvals, or entitlements that are anticipated to be required in order to acquire and develop the additional water supplies.

(3) Based on the considerations set forth in paragraphs (1) and (2), the estimated timeframes within which the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), expects to be able to acquire additional water supplies.

Existing water supplies are projected to meet all demands through approximately 2027. Because existing supplies are not expected to be sufficient to provide all water supply for the Project, this WSA sets forth the measures being undertaken to acquire additional water supplies including the information required by Section 10911 above.

Additional supply beyond the Restructured Agreement entitlement of 29,100 AFY, local supply of 2,300 AFY and recycled supply of approximately 410 AFY will be needed to meet the demand evaluated in this WSA.

The following discussion sections describe the City's plans for acquiring the additional water supplies, setting forth the measures that are being undertaken to acquire and develop those water supplies, including, but not limited to, estimated costs, proposed methods of financing, information on permits and approvals necessary, and the estimated time frames to acquire the additional water supplies.

1.5.1 Additional Supply Overview

The City's additional water supply may be met by one or any combination of the following sources which are all under evaluation or development: a portion of the City's 3,000 AFY recycled water project, additional local groundwater, and/or more stringent water conservation measures.

Table 17, based on Table 4-1 of the City 2010 UWMP, illustrates the projected volumes of water available for use by the City, by source of supply through 2035. The category "Recycled Water" in the table describes the first two phases of the recycled water project for a total of 1,500 AFY of additional recycled water use, which is beyond what is identified in Table 4-1 of the City 2010 UWMP.

Table 17 - Existing and Additional Water Supplies

Water Supply Sources	2010	2015	2020	2025	2030	2035
Sonoma County Water Agency[1]	18,514[4]	25,343[4]	26,082[4]	26,835[4]	27,896[4]	29,041[4]
City produced groundwater[2]	902	2,300	2,300	2,300	2,300	2,300
Recycled water[3]	204	350	350	1,100	1,850	1,850
Future Water Conservation	0	1,110	1,581	1,883	2,164	2,437
Total	19,620	29,103	30,313	32,118	34,210	35,628

1. Water supplied from the Sonoma County Water Agency is based on current Restructured Agreement entitlement.
2. Based on Mitigated Negative Declaration. October 29, 2004. Farmers Lane Wells Conversion Project.
3. Recycled water projected is for urban reuse only (not agricultural) and represents the first three phases of the Urban Reuse Project, a total of 2,250 AFY.
4. 29,100 AFY is available from SCWA. These numbers are estimated actual use.

1.5.1.1 Additional Groundwater Supply

In March 1998, the City completed a Well Field Study identifying implementation steps to develop an additional 8.7 mgd of emergency potable groundwater supply. The City has initiated this Program, and potential, future emergency well sites are being identified and evaluated. In evaluating the sites for new emergency groundwater wells, the City is also considering the potential for additional production wells (in addition to other potential supply sources, such as recycled water) which may be necessary to supplement SCWA supplies and provide the City with adequate supplies to meet future demands. In October 2011, the City embarked upon the development of a Groundwater Master Plan which will help shape the City's future groundwater development.

Estimated Costs and Proposed Financing: Since the mid 1990's, the City has had an adopted Capital Improvement Program for the development of the City's groundwater resources.

Permits and Approvals Necessary: If additional production well sites are identified, appropriate CEQA documentation will need to be developed and adopted. Appropriate permits and approvals for production wells would need to be obtained from DPH.

Estimated Time Frame to Acquire Supplies: At this time, there are no projected timelines for development of additional production well sites. However, the City has already conducted exploratory drilling at seven locations and has initiated the development of a Groundwater Master Plan. A timeline for the development of additional production wells, if needed, will be prepared as part of the Groundwater Master Plan.

1.5.1.2 Additional Recycled Water Use

Because the City is the owner and operator of the Subregional System, the recycled water resources from the Subregional System are available within the City UGB to serve sites currently served by potable water.

In 2001, the City undertook the Incremental Recycled Water Program (IRWP), which includes plans for recycled water urban reuse efforts. The IRWP outlines a water recycling alternative that can replace the City's potable water sources (not including private groundwater supply sources) up to a maximum of 2,200 AFY upon implementation and 4,400 AFY by 2020, depending on wastewater disposal capacity need and the need to offset potable water demand.

In April 2005, the City began work on the City's Urban Reuse Project expansion conceptual plan, which analyzed several alternatives for expanded urban reuse within the City service area. In September 2006, the City Board of Public Utilities approved contracts for pre-design of a phased urban reuse project with ultimate service to the majority of the south and west portions of the City, and a total delivery of 3,000 AFY to sites which would otherwise be served by potable water.

In December 2007, the City approved the Santa Rosa Urban Reuse Project which could serve up to 3,000 AFY of recycled water to current and future approved water uses, primarily landscape irrigation. This project will be implemented in phases, as needed for water supply offset and wastewater disposal capacity. The phased nature of the urban reuse alternative allows City policymakers to develop this water supply source incrementally as more supply is needed, while continuing to evaluate other potentially more cost-effective water supply sources for future water supply needs.

The City selected Phase 1 West as the first phase of the project to be implemented. Phase 1 West is designed to provide up to 750 AFY of recycled water and the City initiated a segment of this project in 2009.

Estimated Costs and Proposed Financing: In the January 2007 Urban Reuse Feasibility Study, the cost of implementing the 3,000 AFY Urban Reuse project is estimated to be a total of $152 million, in 2007 dollars. The City has included funding for the project in the structure of the water and wastewater demand fees, for which a study was last performed in March 2007. The cost of implementing recycled water beyond the 3,000 AFY project has not yet been determined.

Permits and Approvals Necessary: All necessary components and approvals are in place for the 3,000 AFY Urban Reuse project. In November 2003 the IRWP program EIR was certified, and in March 2004 the Final Master Plan was adopted. The CEQA Checklist for the Urban Reuse project was approved by the City in December 2007. In September 2007, the City adopted a Recycled Water Ordinance, granting the City the authority to require new connections to the water system to use recycled water for appropriate uses. For recycled water beyond the 3,000 AFY project, the City would need to complete CEQA analysis at the project level.

Estimated Time Frame to Acquire Supplies: This project can be implemented in 4 phases from 2020 – 2035, each resulting in approximately 750 AFY of potable offset. The phased nature of the urban reuse alternative allows City policy makers to develop this water supply source incrementally as more supply is needed, while continuing to evaluate other potentially more cost effective water supply sources for future water supply needs.

1.5.1.3 Additional Water Conservation

Future conservation efforts will focus first on sustaining the savings already achieved by the programs described previously, and second on achieving additional savings from new and emerging technologies, such as irrigation efficiency upgrades, rainwater harvesting, and graywater reuse. Actual sustainable savings are continuously being analyzed as part of the City's implementation of these measures and as part of the CUWCC water savings calculations. The actual savings realized from these measures will be updated as implementation continues. Based on the Maddaus Water Management analysis included in Appendix C of the City's 2010 UWMP, it is anticipated that the City will achieve an additional sustainable savings of approximately 2,400 AFY by 2035.

Estimated Costs and Proposed Financing: Funding for ongoing conservation efforts is an integral component of the City budget. Annual funding includes approximately $600,000 per year to operate the Water Conservation Program. In addition, the City has a Capital Improvement Program to provide for the replacement of inefficient water using hardware with water conserving hardware. The on-going funding for the water conservation program is funded by water and wastewater demand fees as well as water and wastewater rates.

Permits and Approvals Necessary: Water Conservation program approval and direction is provided by the City's Board of Public Utilities. Changes to the City Code, if needed, are approved by the City Council. It is not anticipated that any further permits or approvals would be needed.

Estimated Time Frame to Acquire Supplies: The City expects to achieve additional sustainable savings of 2,400 AFY by 2035.

1.6 Demands

As discussed in Section 1.3 of this WSA, the City 2010 UWMP demand projection and the Project demand projection are the bases for the demand assessment in this WSA. The City 2010 UWMP included demand projections through buildout of the City's current General Plan 2035 and were based on an analysis performed by Maddaus Water Management, included in Appendix C of the City 2010 UWMP. The Project demand projection of 1,226 AFY was developed by City staff as described in Section 1.6.1 of this WSA.

Table 18 includes the historic and projected potable water use for the City's and is based on the City 2010 UWMP Table 3-9.

Table 18 - Santa Rosa Historical and Projected Water Demand (AFY)

Water Use	2005	2010	2015	2020	2025	2030	2035
Water use, under average weather conditions[1]	22,896	19,298	28,303	29,514	30,758	32,101	33,518
Project Demand [2]	0	0	234	525	817	1,109	1,226
Total Water Demand, under average weather conditions [3]	22,986	19,298	28,537	30,039	31,575	33,210	34,744

1. Projected demand as presented in the City 2010 UWMP.
2. Projected demand for Project assuming Project buildout in2031.
3. Includes projected demands from the City 2010 UWMP and the Project.

1.6.1 Projection of Demand for the Project

The water demand for the Project is projected to be a maximum of 1,226 AFY.

The projected water demand for the Project is determined by using Residential Equivalency Factors (REFs) consistent with the land use classifications of the Project and zoning code, and with those set forth in Code Section 10912 (a). These classifications are: residential (attached and detached), retail/commercial (shopping center/business establishment), office (commercial office buildings), light/general industrial (industrial park/processing plant/ manufacturing), public/institutional, warehouse, and park/public landscape.

Table 19 shows the number of REFs in each classification for the Project.

Table 19 – Residential Equivalency Factors (REF) for the Project

Land Use Category	Area per REF (SF)	Project Area (SF)	Residential Dwelling Units	Residential Equivalency Factors
Residential Detached	N/A	N/A	437	437
Residential Attached	N/A	N/A	1,276	855
Retail/commercial	1,000	537,235	N/A	537
Office space	500	798,564	N/A	1,597
Light/general Industrial	1,300	(33,963)	N/A	(26)
Public/Institutional development	500	97,577	N/A	195
Warehouse	1,300	(22,676)		(17)
Park/public landscaped areas	2,819	348,480	N/A	124
Total			1,292	3,702

The City's projected residential water use is 100,000 gallons per detached residential unit per year, based on the average of the last ten years of annual single-family residential water use. Attached residential water use includes minimal landscape irrigation and averages 2/3 of the detached residential water use. This is based on an analysis of the past ten years of actual detached and attached residential water use. The REFs for the non-residential use categories are based on land use categories and equivalent water use per Code section 10912(a).

Therefore, the annual water demand for the Project's developed area is 100,000 gallons per REF multiplied by 3,702 REFs for the Project, or a total of 370.2 million gallons per year (3,702 X 100,000 gallons), or approximately 1,136 AFY. The total demand for the Project must also include the system standard for unaccounted for water. Unaccounted for water is the difference between water produced and water sold. Unaccounted-for water includes metered and unmetered water use, such as water used for fire protection and training, water system flushing, sewer cleaning, construction, system leaks, as well as water used by unauthorized connections. Unaccounted-for water use can also result from meter inaccuracies. Based on the City 2010 UWMP, this factor is 7.9% for the Santa Rosa system. The addition of system unaccounted for water brings the total Project demand to 1,226 AFY.

1.7 Dry Year Analysis

Supplies for single and multiple dry years were fully analyzed in the City 2010 UWMP. Table 20, based on City 2010 UWMP Table 5-3 and SCWA 2010 UWMP table 4-17, lists the years on which the analysis was based.

Table 20 – Basis of Dry Year Analysis

Water Year Type	Base Year(s)
Normal Water Year	1962
Single-Dry Water Year	1977
Multiple-Dry Water Years	1988 – 1991

Table 21, based on City 2010 UWMP Table 5-6 and incorporating the Project water demand and an additional two phases of the recycled water project, for a total of 2,250 AFY of additional recycled water use by 2035, shows the City's demand and supplies in a single dry year. Table 22, based on City 2010 UWMP Table 5-7 and incorporating the Project water demand and an additional two phases of the recycled water project, for a total of 2,250 AFY of additional recycled water use by 2035, shows the City's demand and supplies in multiple dry years. As described in the SCWA 2010 UWMP, the SCWA's model projects a shortfall in supply during a single-dry year. The single-dry year reduction is estimated to be about 18 percent of normal demand by 2035.[28] As described in Section 1.4.2, allocation among the SCWA's Water Contractors, including the City, during dry year conditions is governed by the Allocation Methodology of Section 3.5 of the Restructured Agreement. Due to the City's extensive water conservation which is recognized by the Allocation Methodology, it is not likely that single-dry year conditions would reduce the volume of surface water available to the City. In addition, due to the short duration of a single-dry year and the artesian conditions of the City's Farmers Lane wells, it is not anticipated that groundwater supply would be impacted during a single-dry year. If a shortfall in supply occurs during a single-dry year, the City would enact the appropriate stage of the City's Water Shortage Plan as described in Appendix G of the City's 2010 UWMP.

Table 21 – Supply and Demand Comparison – single-dry year (AFY)

	2015	**2020**	**2025**	**2030**	**2035**
Supply totals	29,103	30,313	32,118	34,210	35,628
Demand totals	28,537	30,039	31,575	33,210	34,744
Difference	566	274	543	1,000	884
Difference as % of Supply	1.9%	0.9%	1.7%	2.9%	2.5%
Difference as % of Demand	2.0%	0.9%	1.7%	3.0%	2.5%

28 Source: Sonoma County Water Agency 2010 Urban Water Management Plan, Section 6.

Table 22 – Supply and Demand Comparison – multiple-dry year (AFY)

		2015	2020	2025	2030	2035
Multiple-dry year first year supply	**Supply totals**	29,103	30,313	32,118	34,210	35,628
	Demand totals	28,537	30,039	31,575	33,210	34,744
	Difference	566	274	543	1,000	884
	Difference as % of Supply	1.9%	0.9%	1.7%	2.9%	2.5%
	Difference as % of Demand	2.0%	0.9%	1.7%	3.0%	2.5%
Multiple-dry year second year supply	**Supply totals**	29,103	30,313	32,118	34,210	35,628
	Demand totals	28,537	30,039	31,575	33,210	34,744
	Difference	566	274	543	1,000	884
	Difference as % of Supply	1.9%	0.9%	1.7%	2.9%	2.5%
	Difference as % of Demand	2.0%	0.9%	1.7%	3.0%	2.5%
Multiple-dry year third year supply	**Supply totals**	29,103	30,313	32,118	34,210	35,628
	Demand totals	28,537	30,039	31,575	33,210	34,744
	Difference	566	274	543	1,000	884
	Difference as % of Supply	1.9%	0.9%	1.7%	2.9%	2.5%
	Difference as % of Demand	2.0%	0.9%	1.7%	3.0%	2.5%

1.8 Sufficiency Determination

1.8.1 Supply and Demand Comparison

Table 23 compares normal year supply with projected demand. Table 24 compares supply during a single-dry and a multiple dry year condition with projected demand. Based on this comparison, at no time during the twenty-year assessment period of this WSA is a shortage in supply anticipated during non-drought conditions.

As described in the SCWA 2010 UWMP, the SCWA's model projects a shortfall in supply during a single-dry year. The single-dry year reduction is estimated to be about 18 percent of normal demand by 2035.[29] As described in Section 1.4.2, allocation among the SCWA's Water Contractors, including the City, during dry year conditions is governed by the Allocation Methodology of Section 3.5 of the Restructured Agreement. Due to the City's extensive water conservation which is recognized by the Allocation Methodology, it is not likely that single-dry year conditions would reduce the volume of surface water available to the City. In addition,

[29] Source: Sonoma County Water Agency 2010 Urban Water Management Plan, Section 6.

due to the short duration of a single-dry year and the artesian conditions of the City's Farmers Lane wells, it is not anticipated that groundwater supply would be impacted during a single-dry year. If a shortfall in supply occurs during a single-dry year, the City would enact the appropriate stage of the City's Water Shortage Plan as described in Appendix G of the City's 2010 UWMP.

Table 23 – Santa Rosa Normal Year Supply and Demand (AFY)

Water Supply or Demand	2010	2015	2020	2025	2030	2035
Water Supply, Non-Drought Year	19,620	29,103	30,313	32,118	34,210	35,628
Water Demand	19,298	28,537	30,039	31,575	33,210	34,744

Table 24 – Santa Rosa Single and Multiple Dry Year(s) Supply and Demand (AFY)

Water Supply or Demand	2010	2015	2020	2025	2030	2035
Water Supply, Single and Multiple Dry Year(s)	19,620	29,103	30,313	32,118	34,210	35,628
Water Demand	19,298	28,537	30,039	31,575	33,210	34,744

1.8.2 Finding of Sufficiency

California Water Code:
10910 (c)(4) If the city or county is required to comply with this part pursuant to subdivision (b), the water supply assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project during normal, single dry, and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses.

The City has adequate projected water supplies, including existing and additional water supply, to meet existing demands and planned future demands plus the maximum anticipated demand associated with the Project.

The City's projected water supplies for the growth projected in the Project are met from a combination of sources. The primary source of existing supply is contractual entitlement from SCWA as defined in the Restructured Agreement. Supply is also provided from the City's groundwater sources and recycled water.

If all or part of the Project is developed after 2027, the demand may be met with existing SCWA supply, existing local groundwater supply sources, or existing recycled water sources; or it may be met with any one or a combination of any of the following additional water supply sources: the City's recycled water supplies as defined in the IRWP, further utilization of the City's groundwater resources, and increased conservation efforts.

1.9 Conclusion

California Water Code:
10911. (b) The city or county shall include the water supply assessment provided pursuant to Section 10910, and any information provided pursuant to subdivision (a), in any environmental document prepared for the project pursuant to Division 13 (commencing with Section 21000) of the Public Resources Code.
(c) The city or county may include in any environmental document an evaluation of any information included in that environmental document provided pursuant to subdivision (b). The city or county shall determine, based on the entire record, whether projected water supplies will be sufficient to satisfy the demands of the project, in addition to existing and planned future uses. If the city or county determines that water supplies will not be sufficient, the city or county shall include that determination in its findings for the project.

The City is the public water supplier under SB 610 for the Project.

The water demand for the Project is the increment of increased demand from General Plan 2035 to the Project. While the Project demand was not specifically included in the City 2010 UWMP, the demand for the project was calculated as described in Section 1.8.2. The Project demand projection was added to the City 2010 UWMP demand projection to determine the overall demand projection.

At this time, the City finds that based on the entire record of its existing and additional water supplies, projected water supplies will be sufficient to meet the present and future demand associated with the Project, in addition to existing and planned future uses.

This WSA is valid as of the date it is approved by the City Council. This WSA is applicable only to the project described in this assessment.

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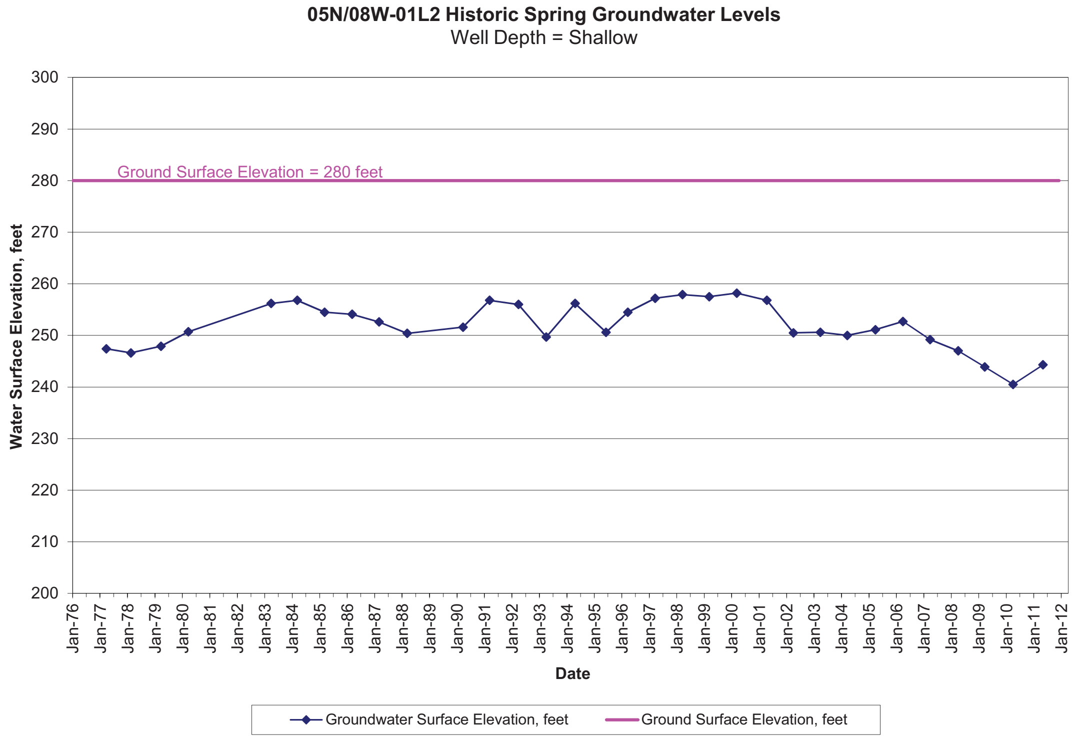
Appendix A

DWR Well Hydrographs



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Last Revised: January 3, 2012

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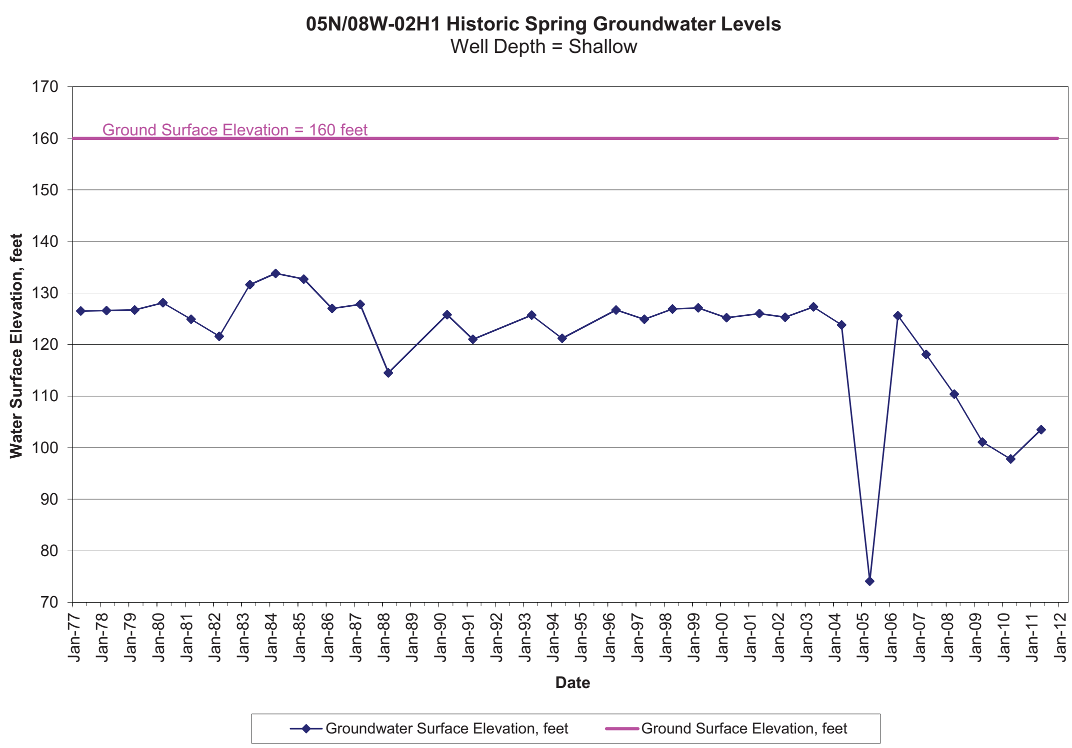

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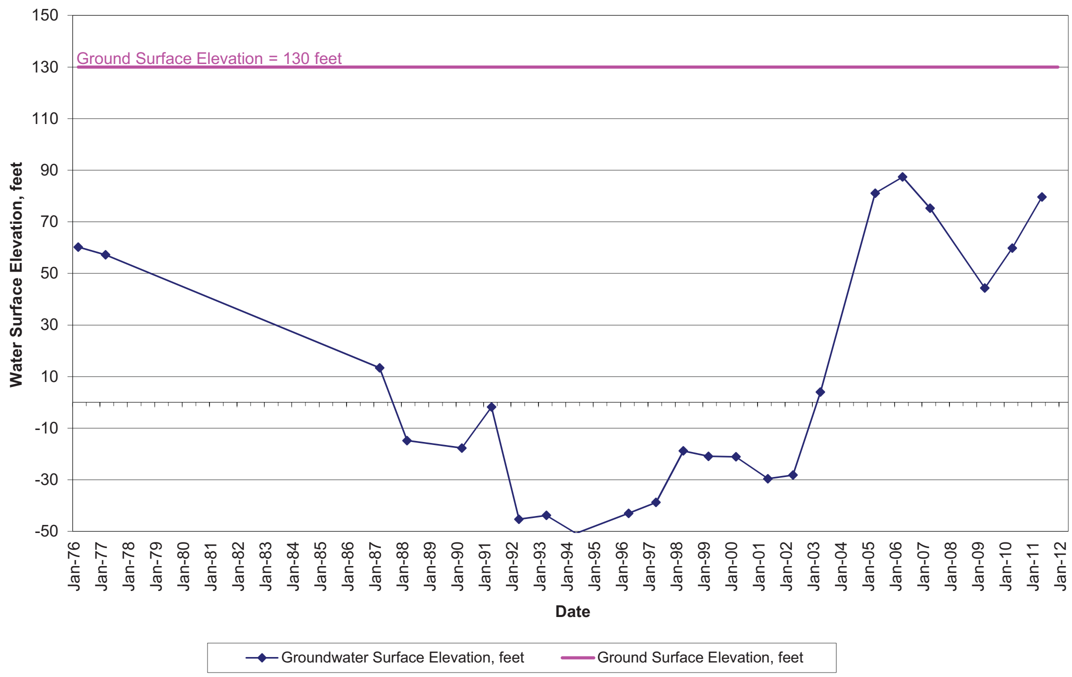

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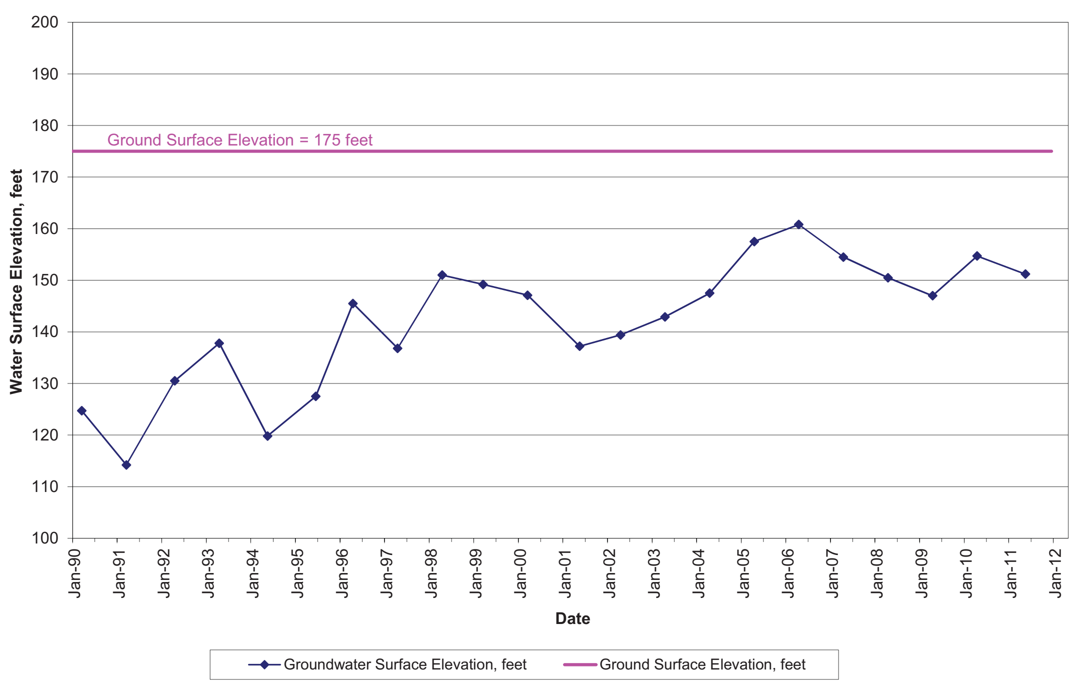

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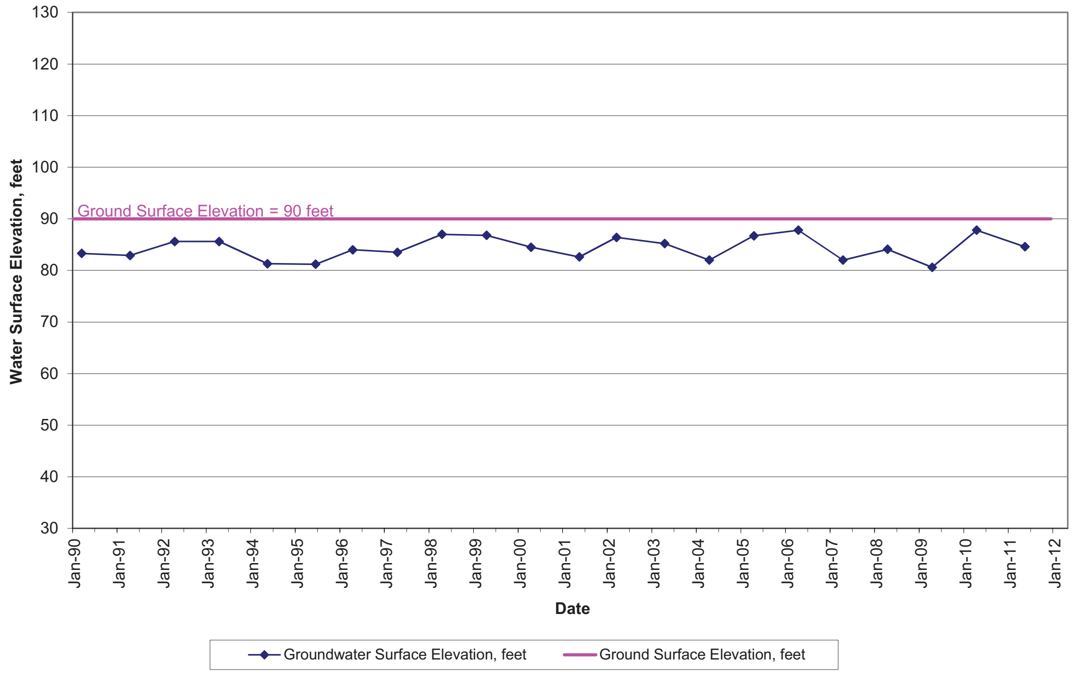

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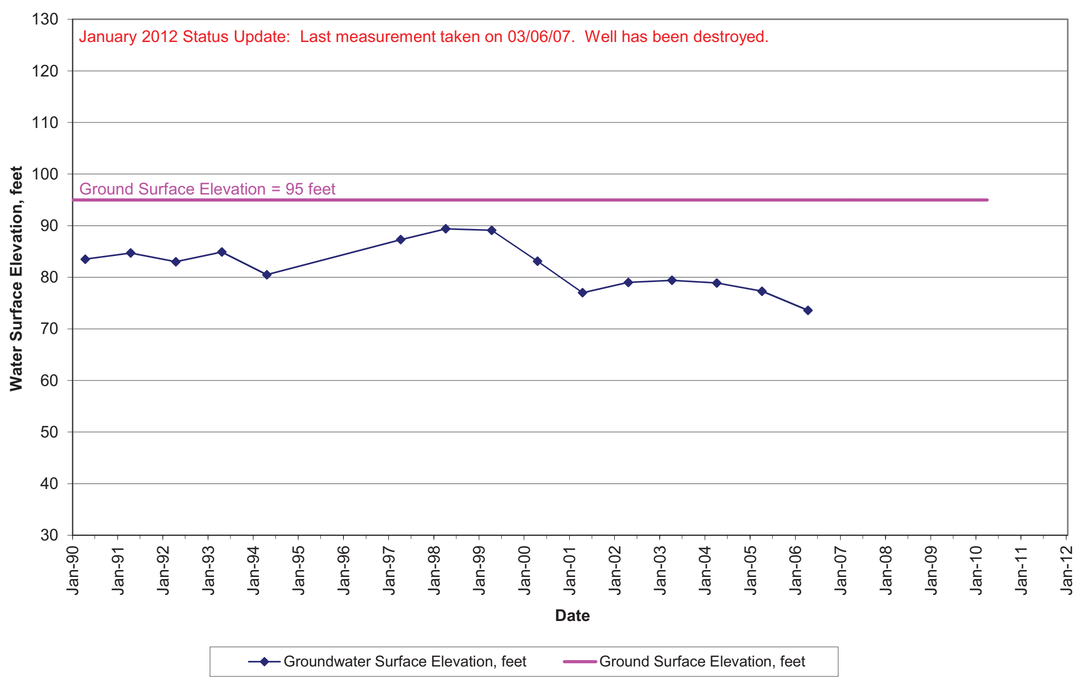

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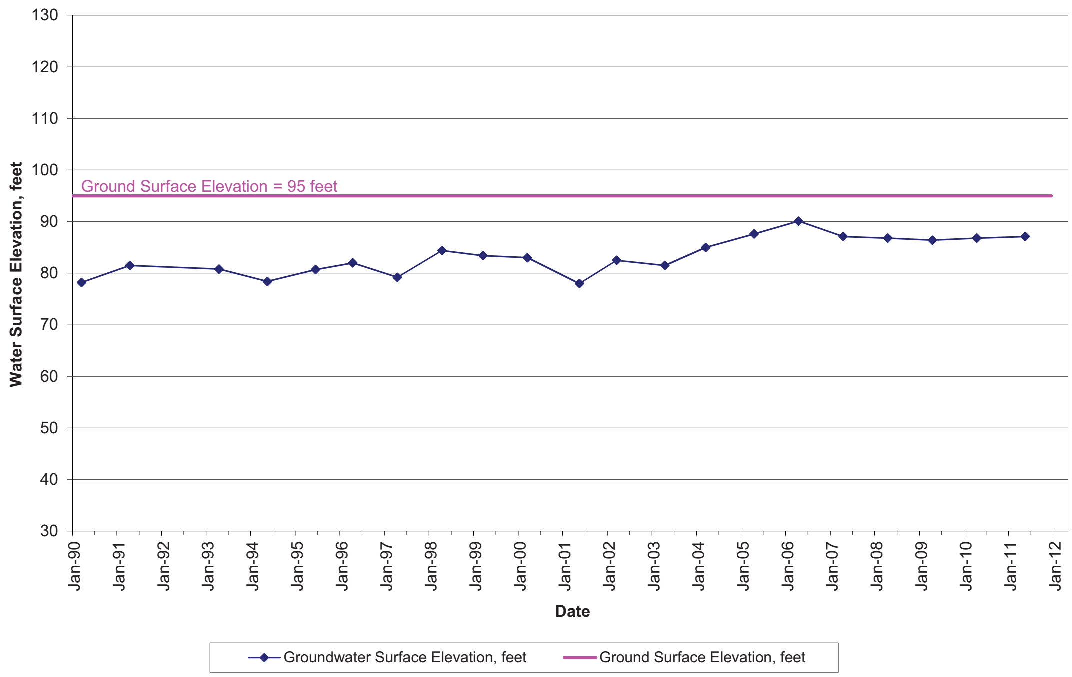

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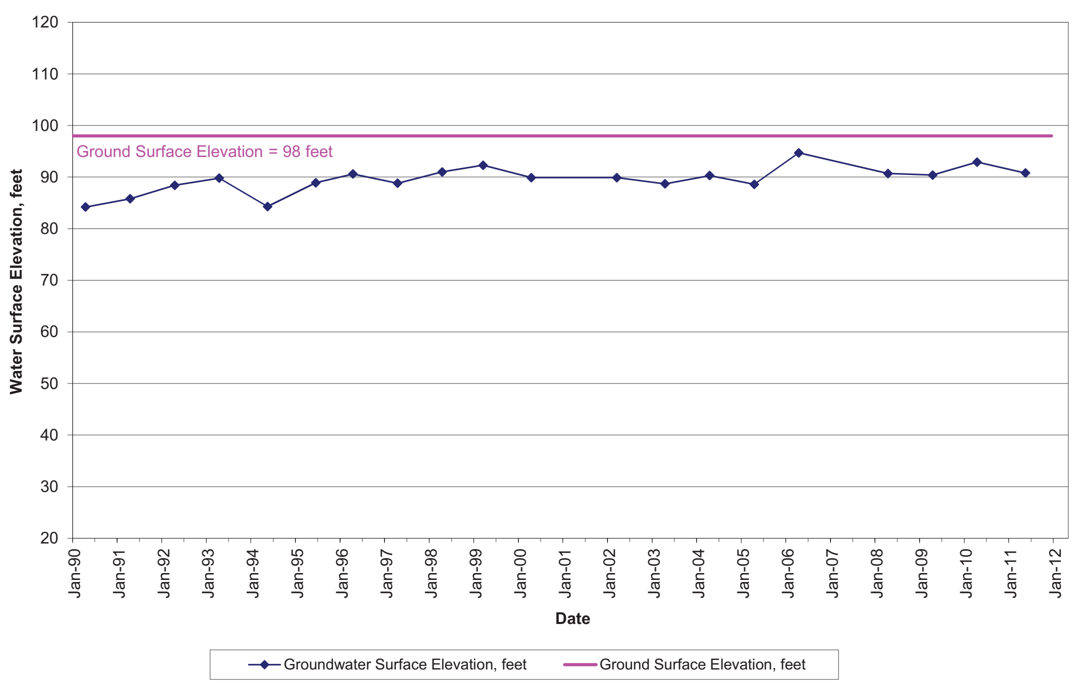

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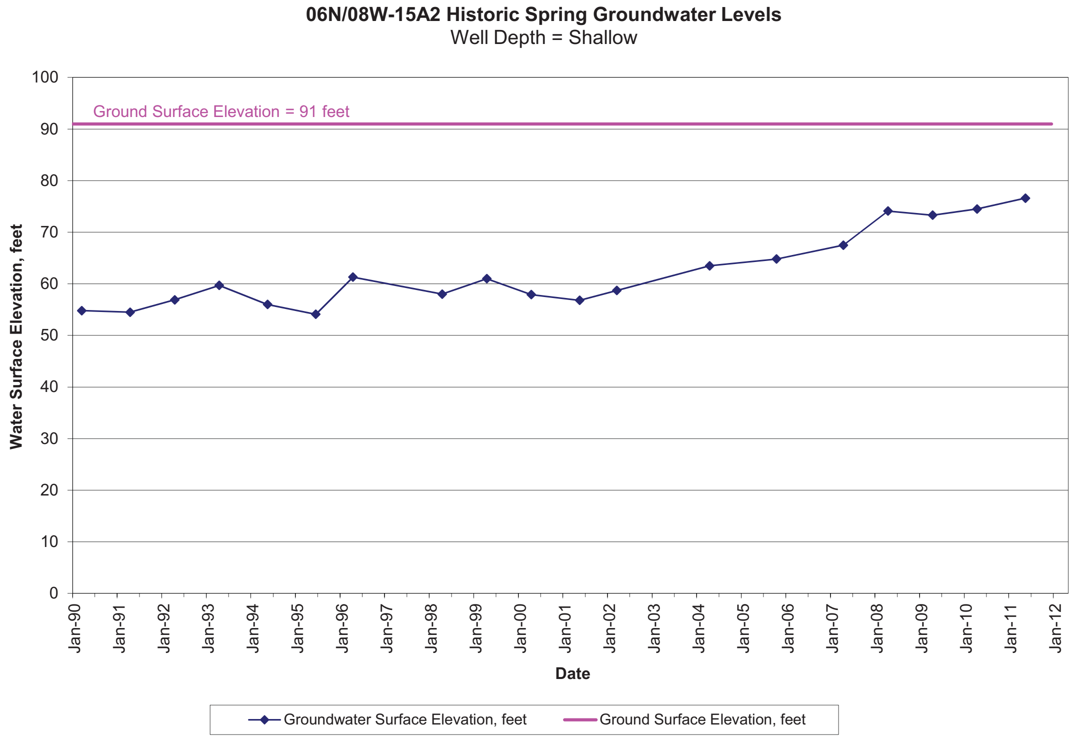

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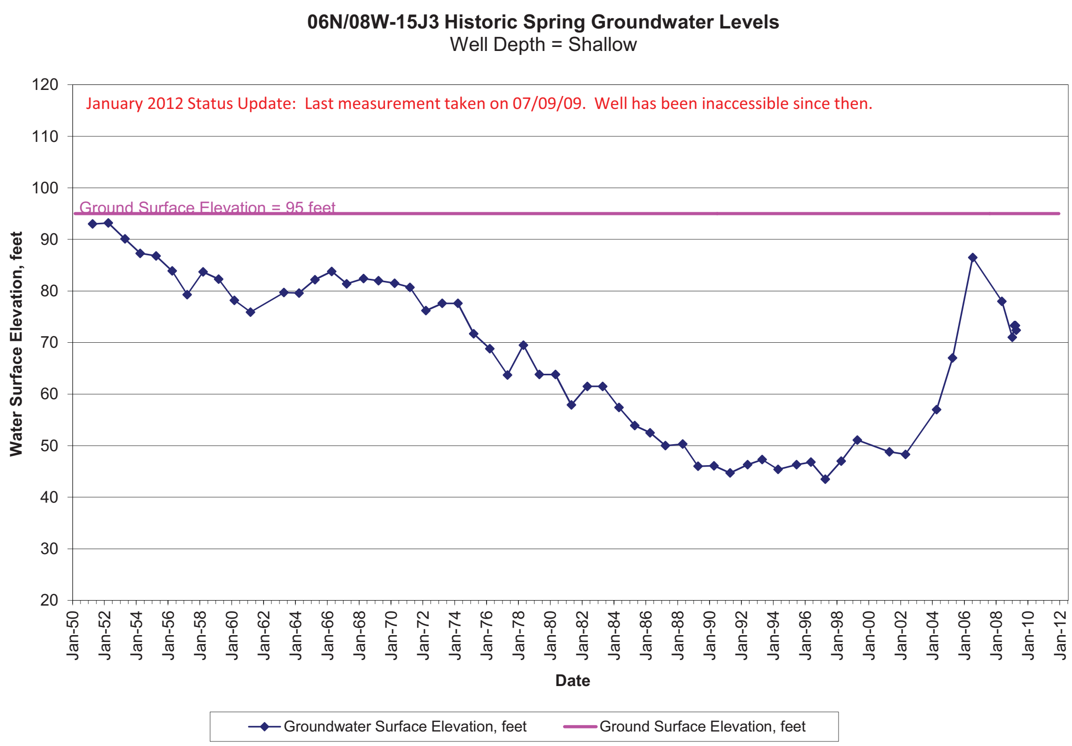

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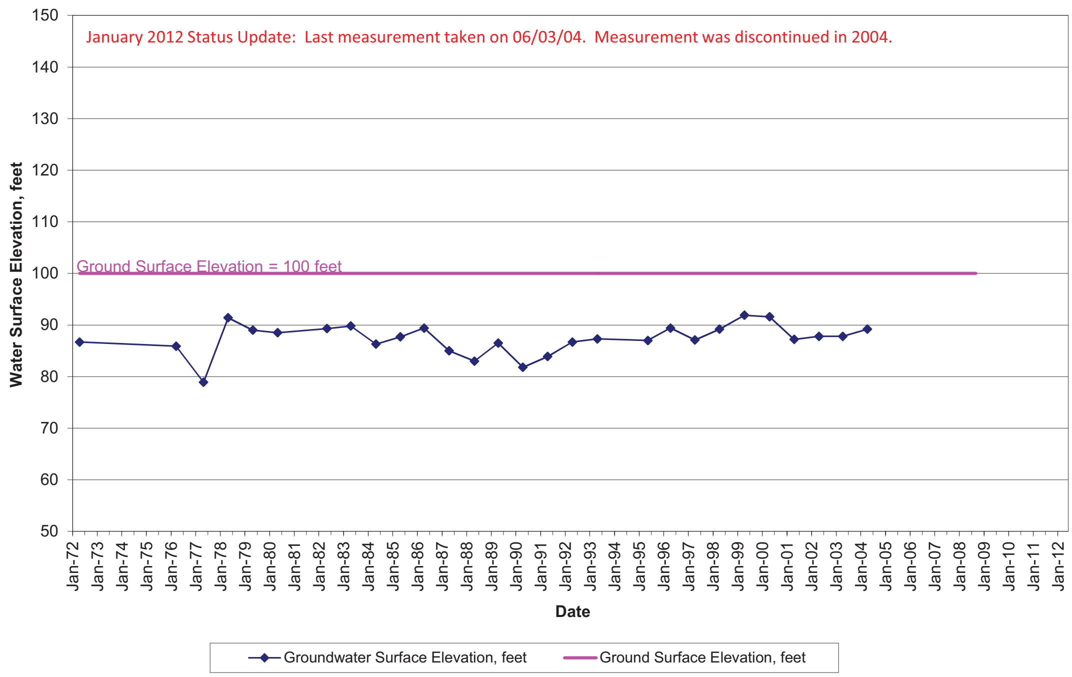

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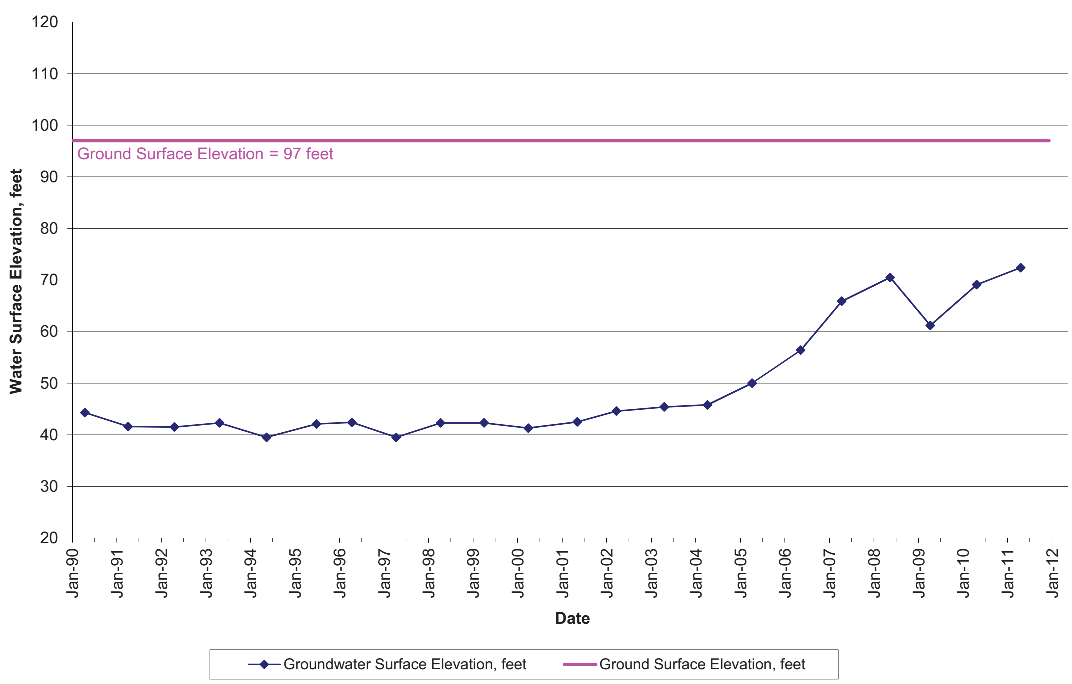

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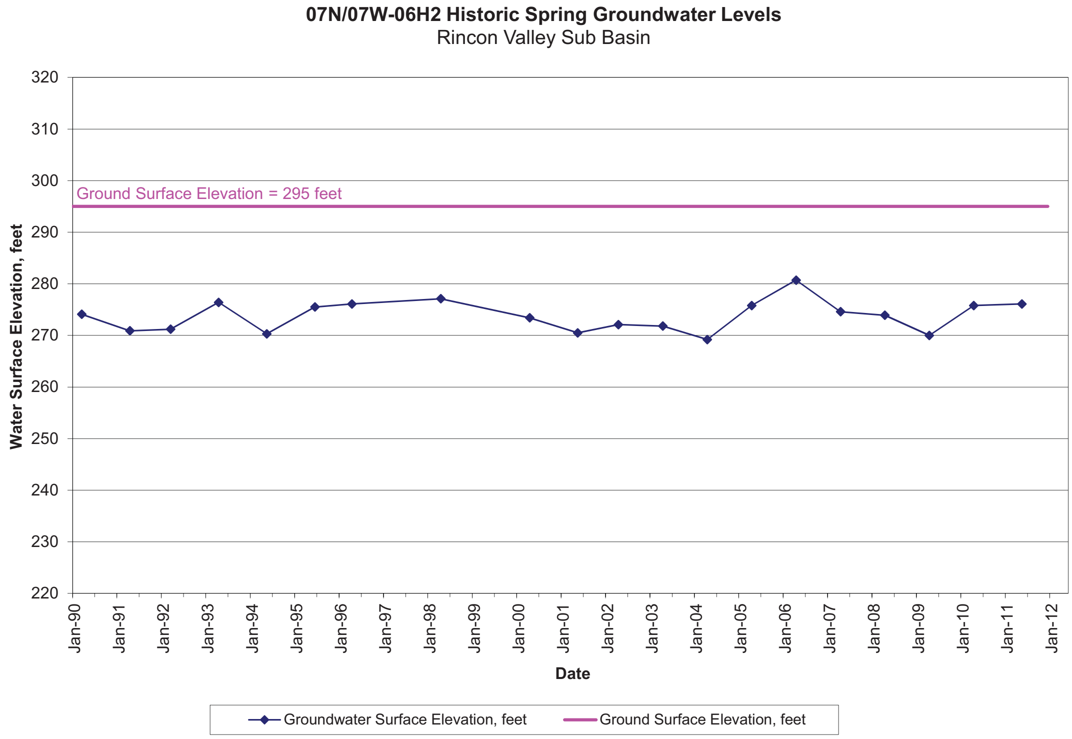

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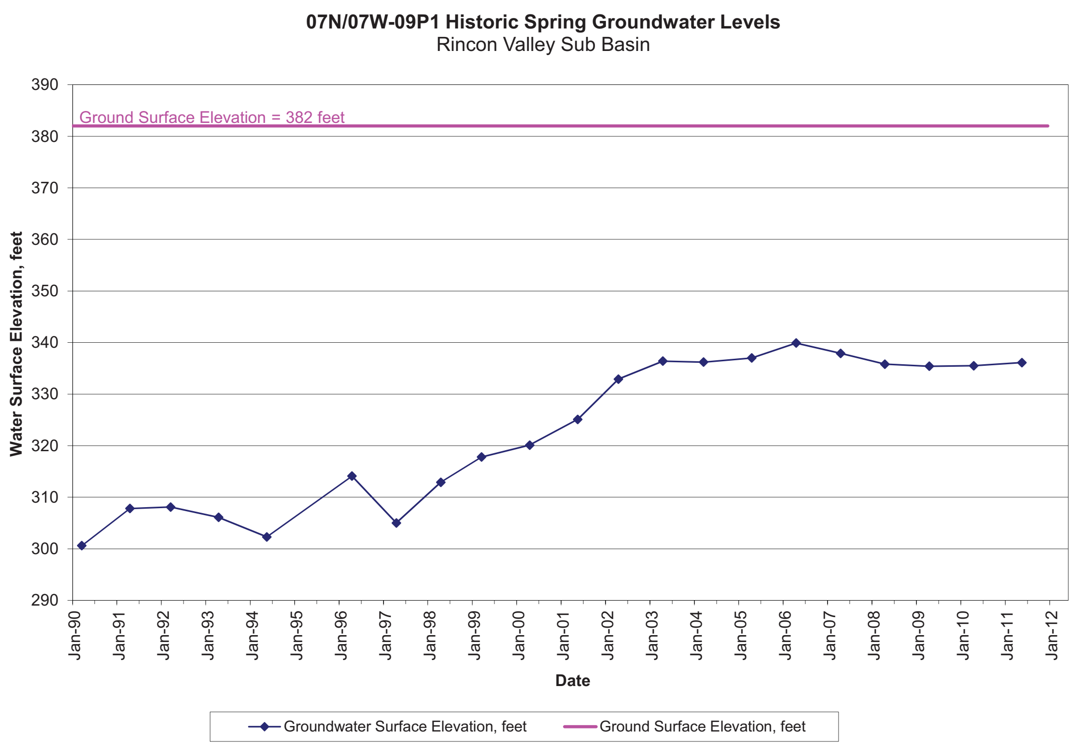

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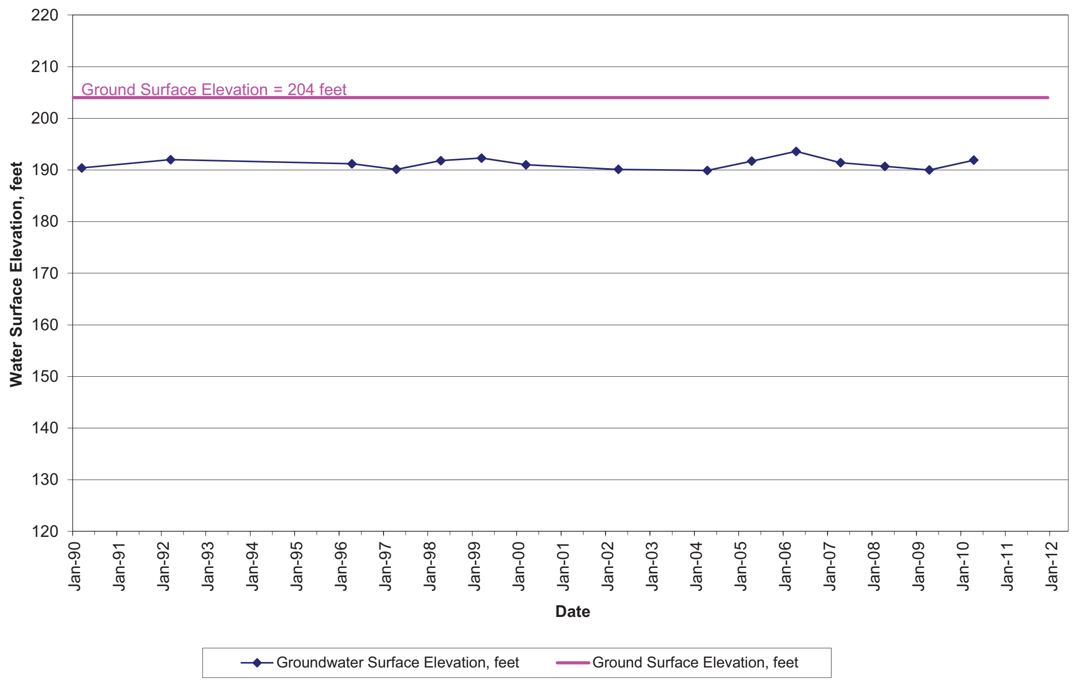
07N/07W-19B1 Historic Spring Groundwater Levels



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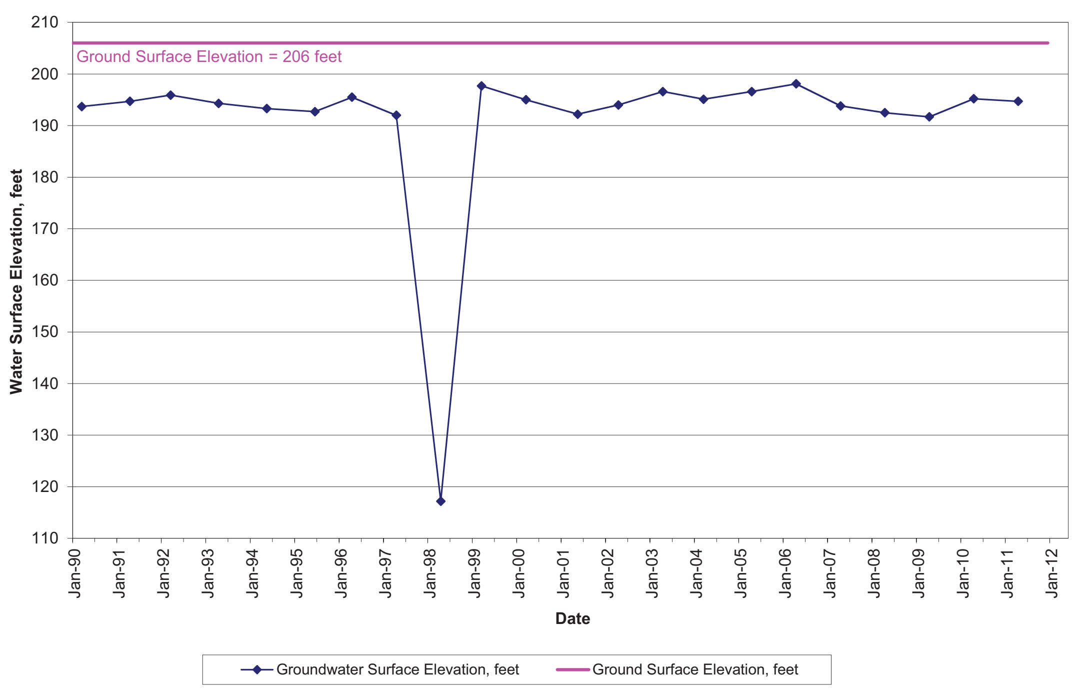

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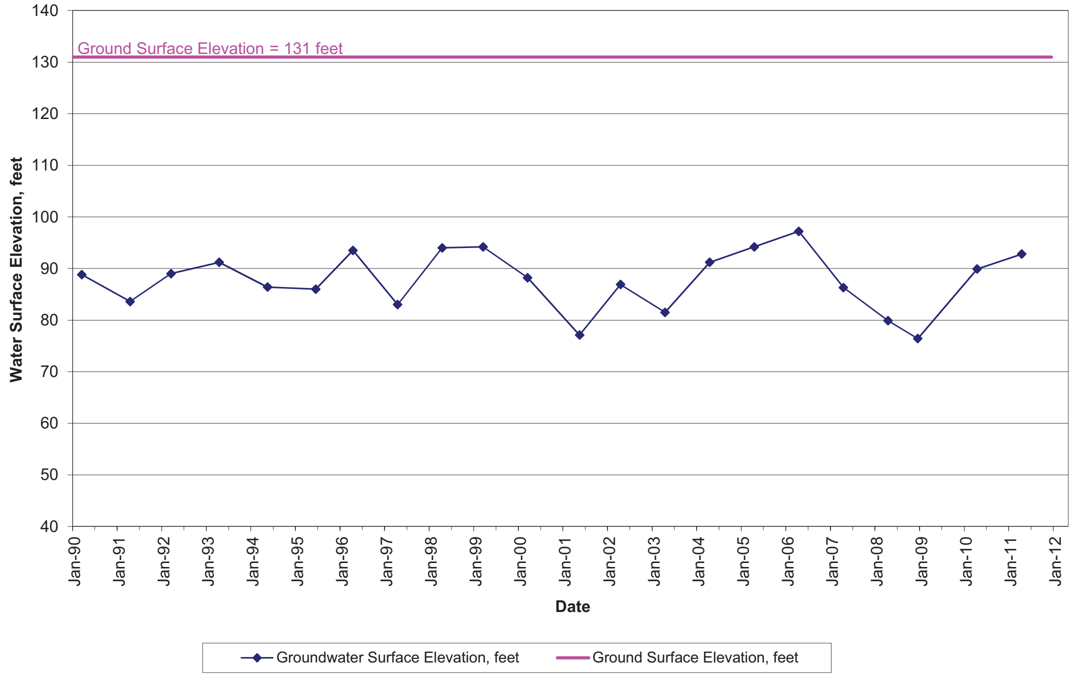
07N/08W-08M1 Historic Spring Groundwater Levels



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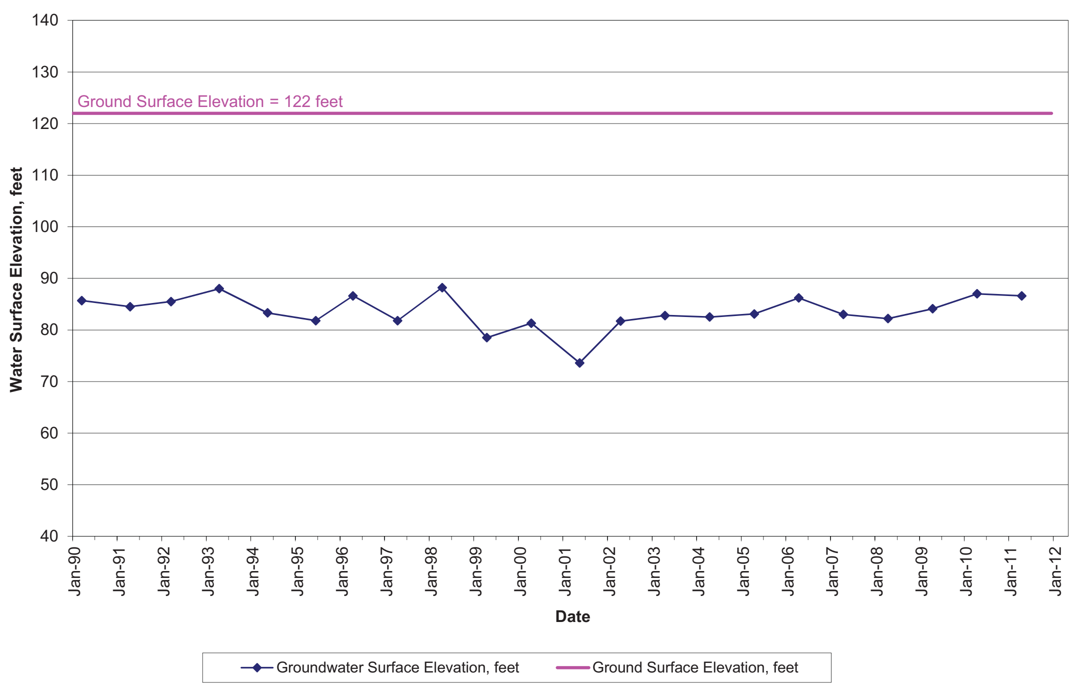
West Yost Associates

07N/08W-21J1 Historic Spring Groundwater Levels

Well Depth = Shallow/Intermediate



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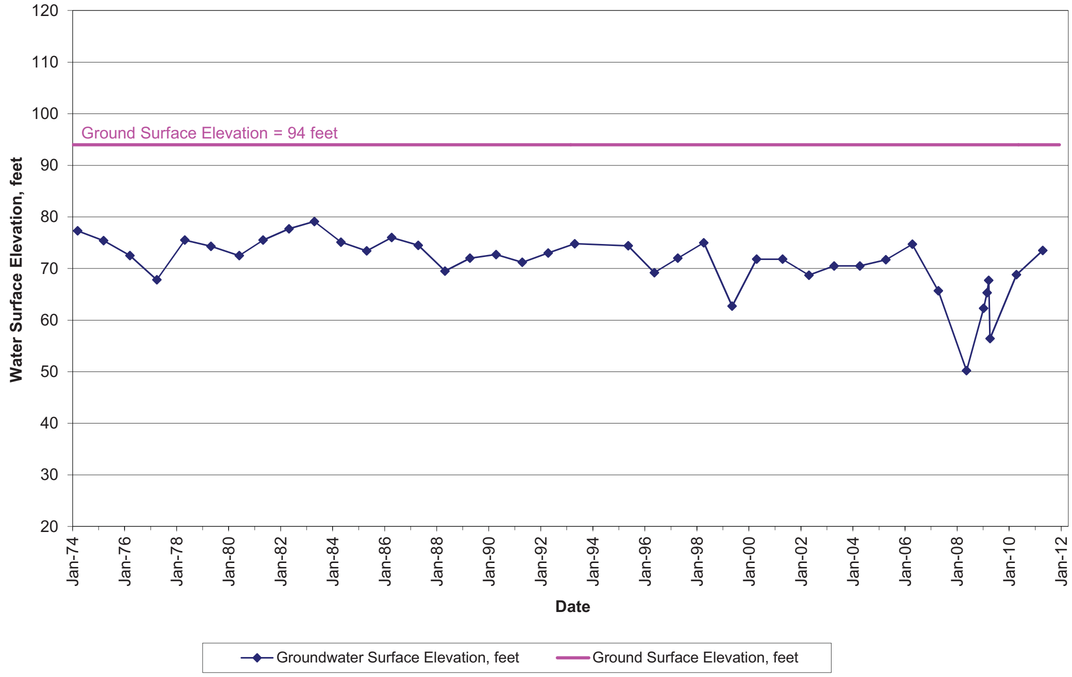
Spring GW Levels
Last Revised: January 3, 2012

West Yost Associates

07N/08W-30K1 Historic Spring Groundwater Levels

Well Depth = Shallow/Intermediate



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Spring GW Levels
Last Revised: January 3, 2012

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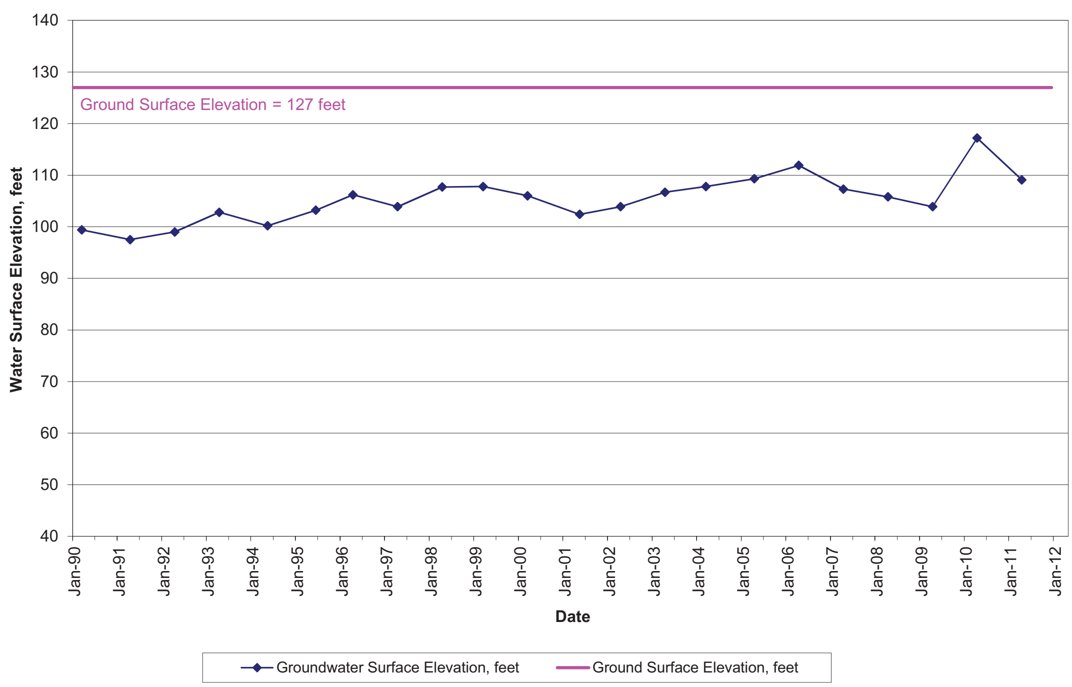
07N/08W-35K1 Historic Spring Groundwater Levels



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Last Revised: January 3, 2012

West Yost Associates

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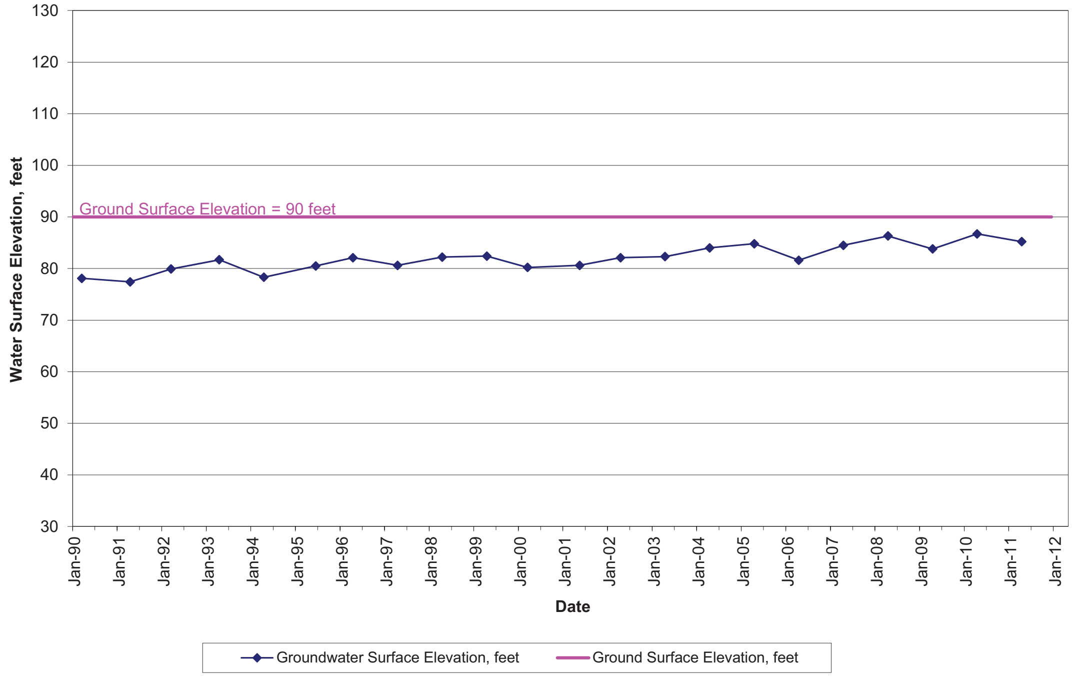

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Last Revised: January 3, 2012

West Yost Associates

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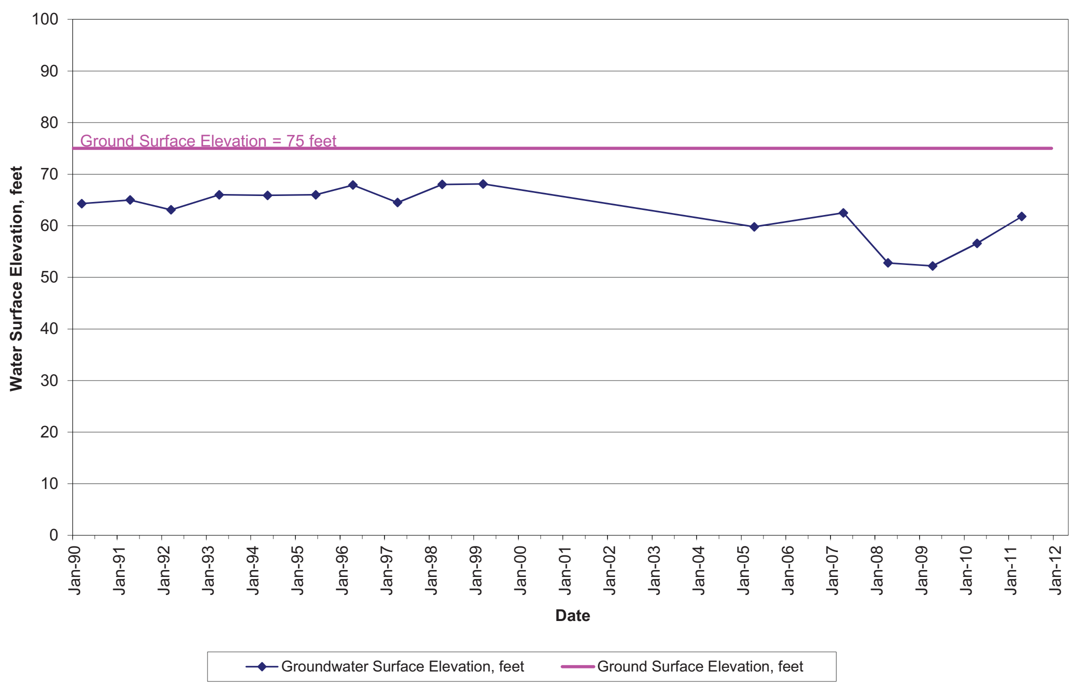

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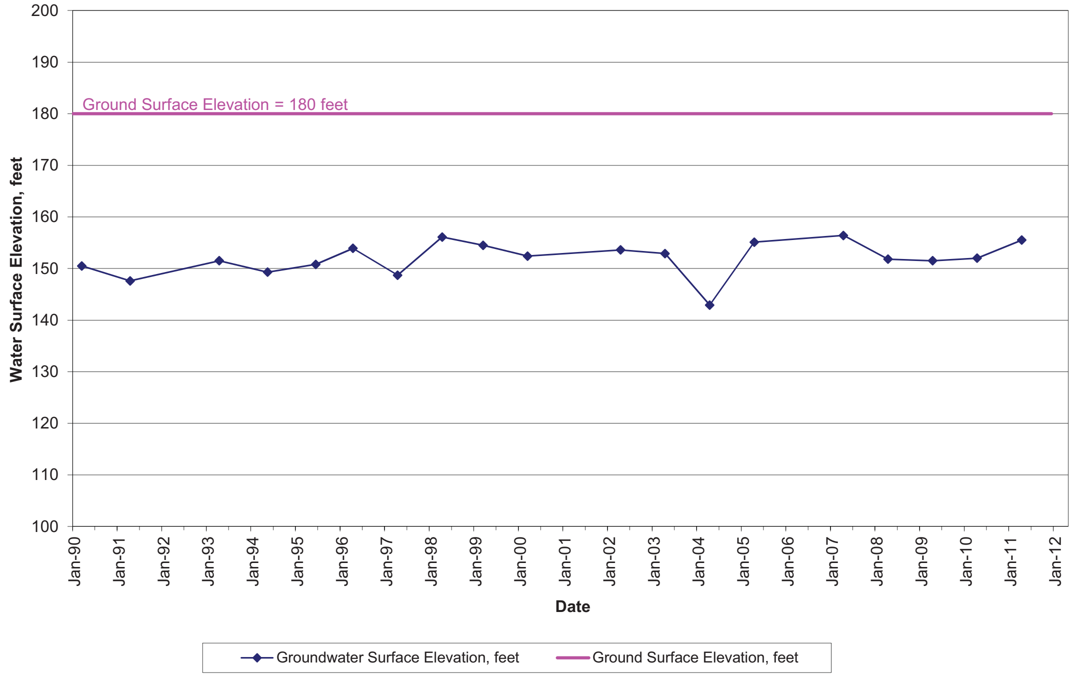
Spring GW Levels
Last Revised: January 3, 2012

West Yost Associates

07N/09W-16M1 Historic Spring Groundwater Levels



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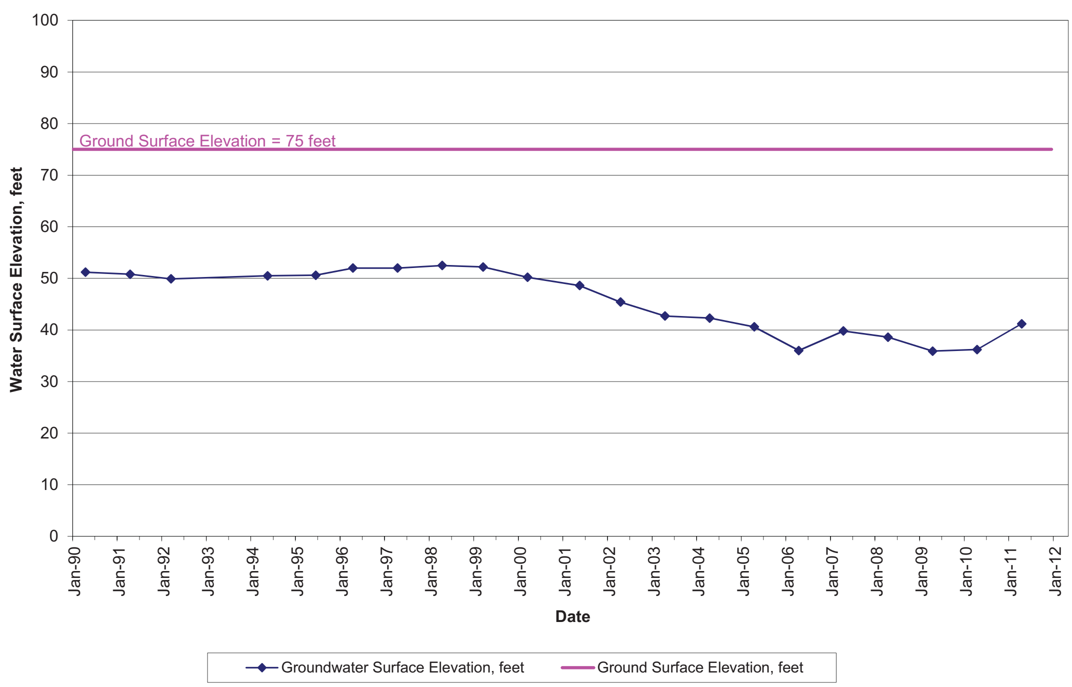
Spring GW Levels
Last Revised: January 3, 2012

West Yost Associates

07N/09W-26P1 Historic Spring Groundwater Levels



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Spring GW Levels
Last Revised: January 3, 2012

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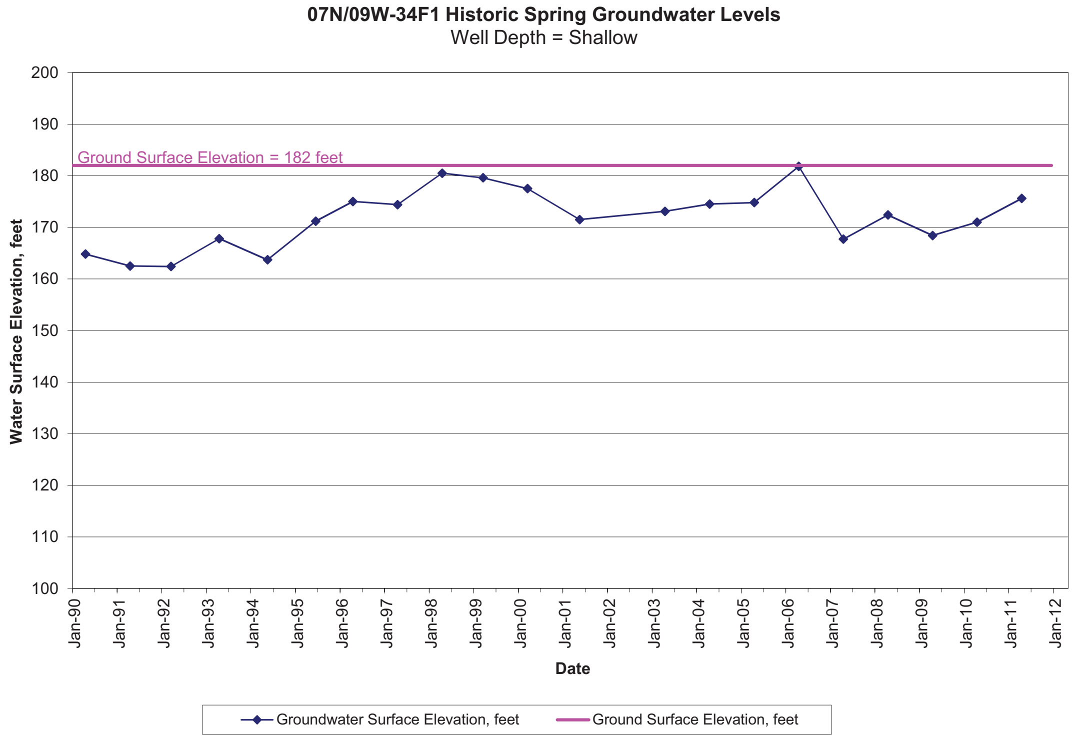

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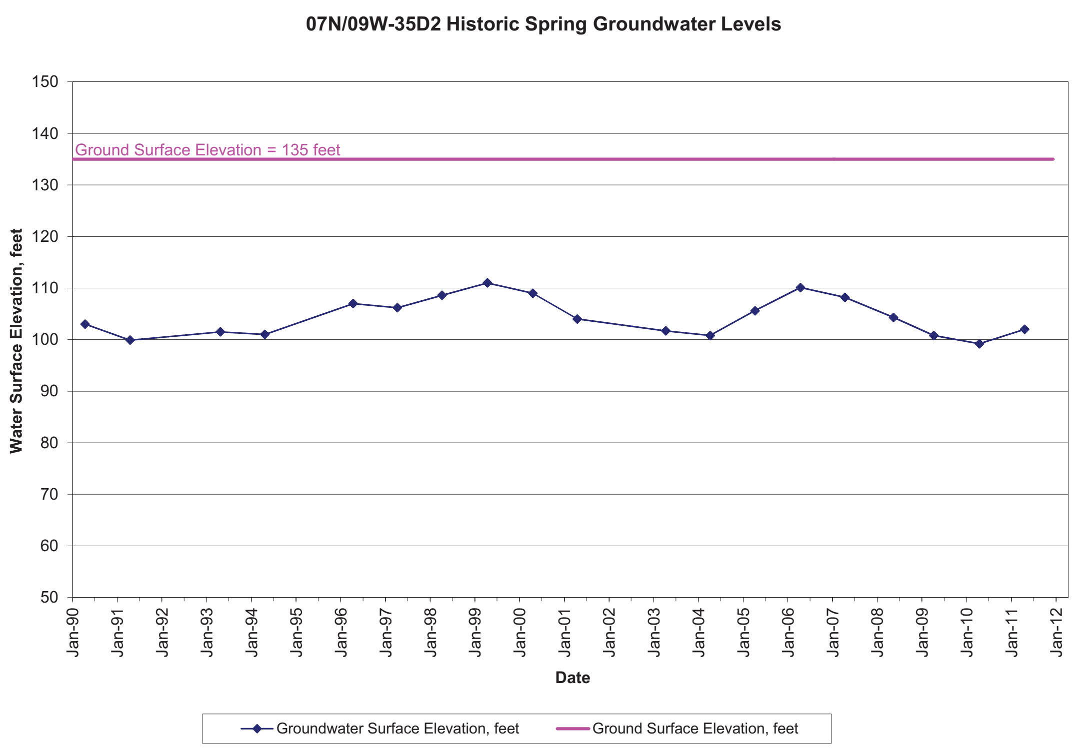
Spring GW Levels
Last Revised: January 3, 2012

West Yost Associates



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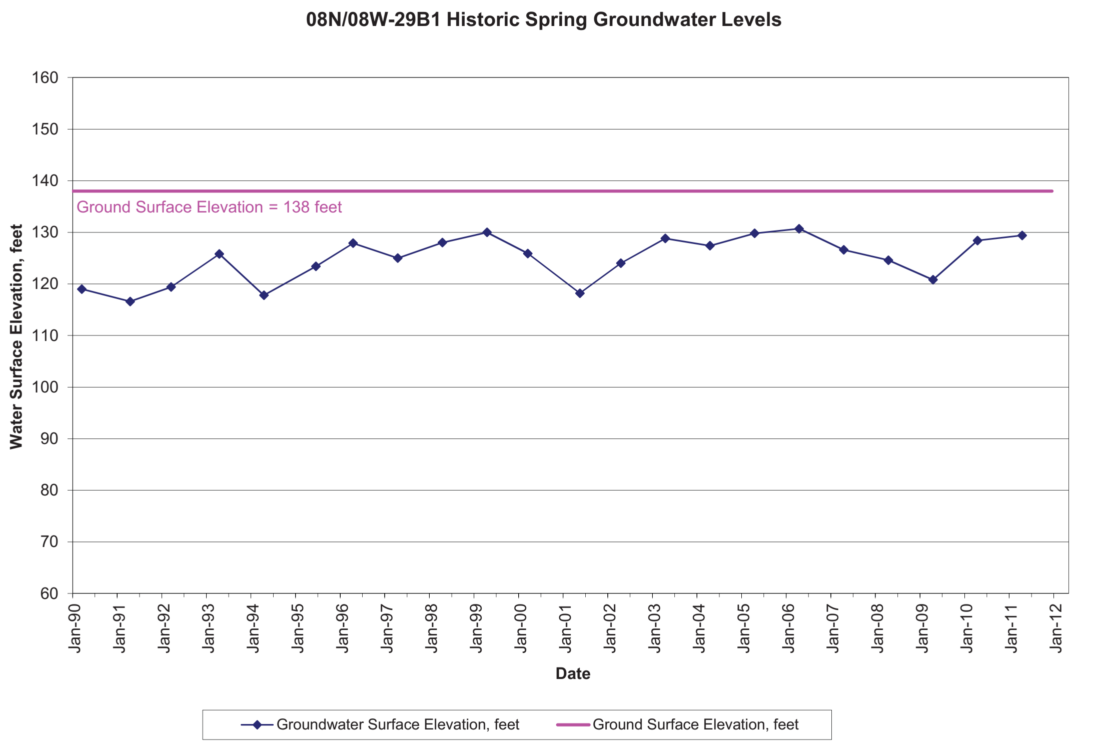
Spring GW Levels
Last Revised: January 3, 2012

West Yost Associates



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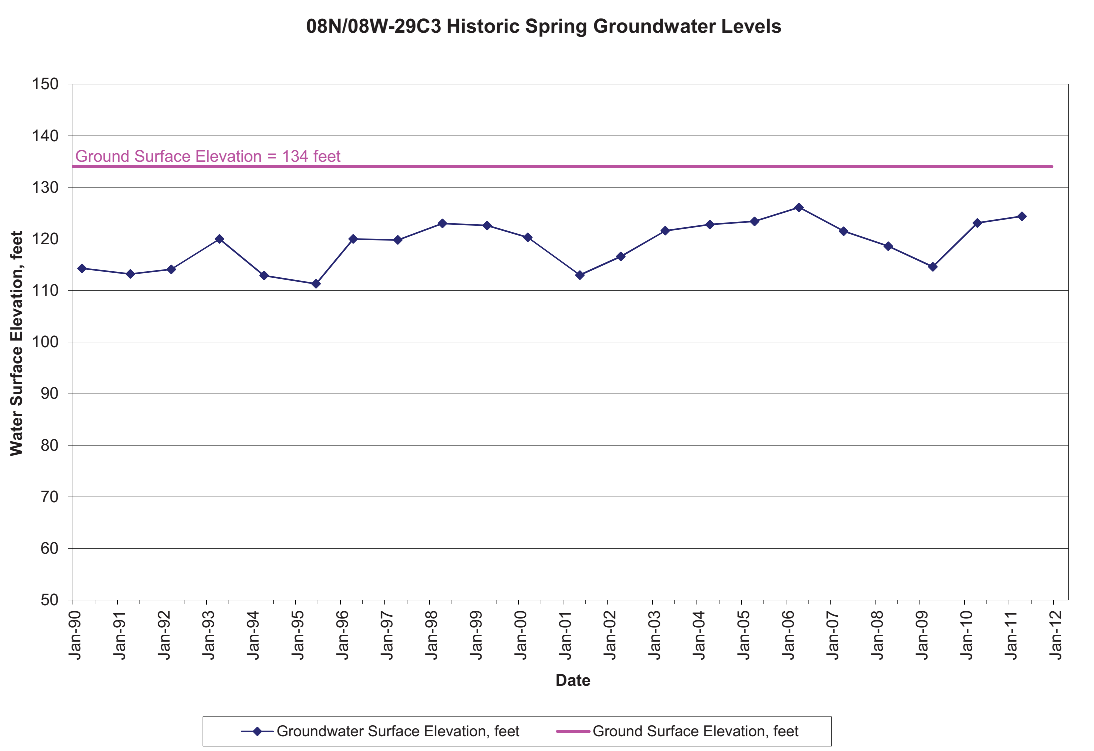
Last Revised: January 3, 2012

West Yost Associates



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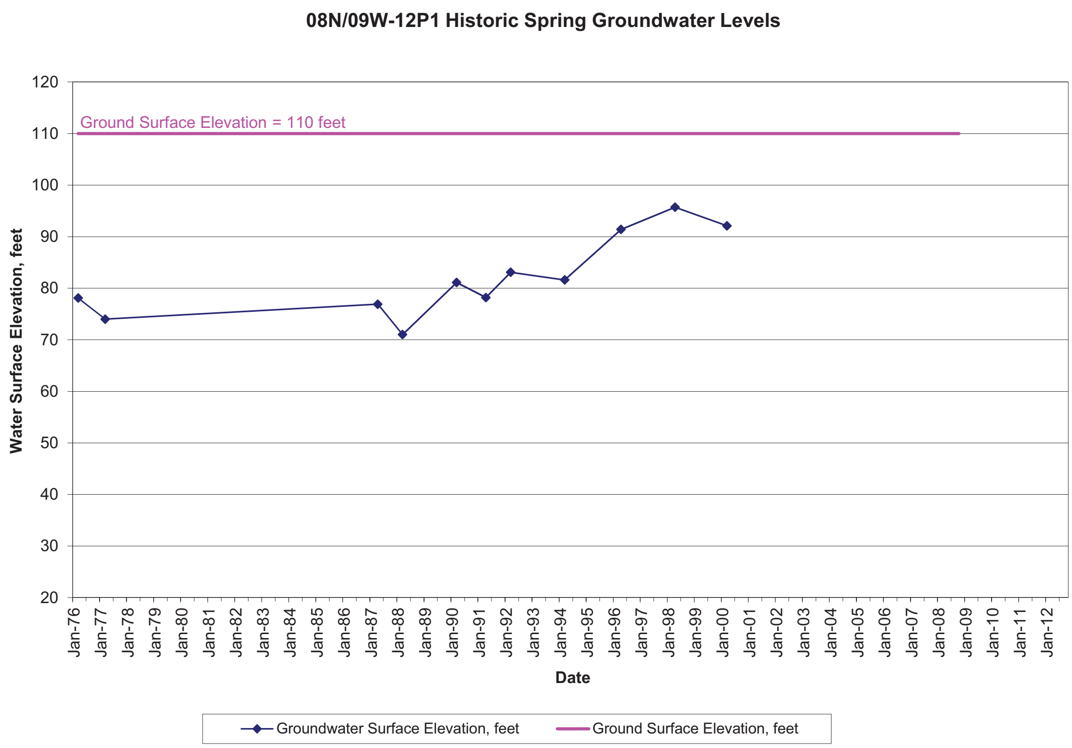
Last Revised: January 3, 2012

West Yost Associates



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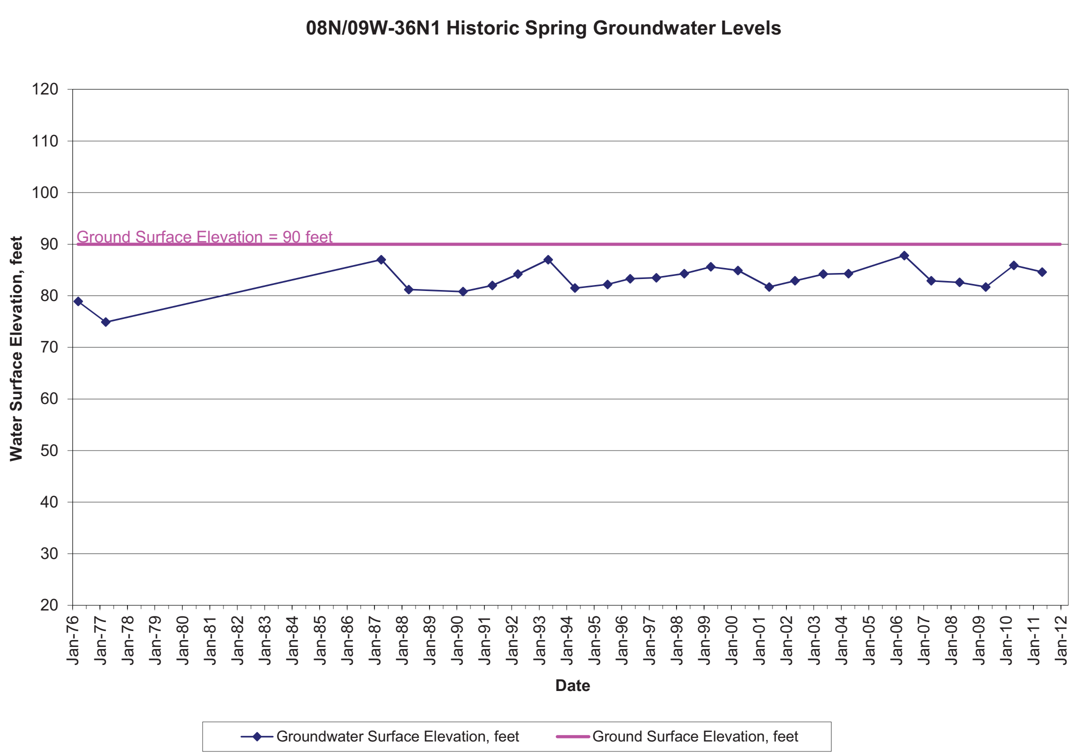
Spring GW Levels
Last Revised: January 3, 2012

West Yost Associates



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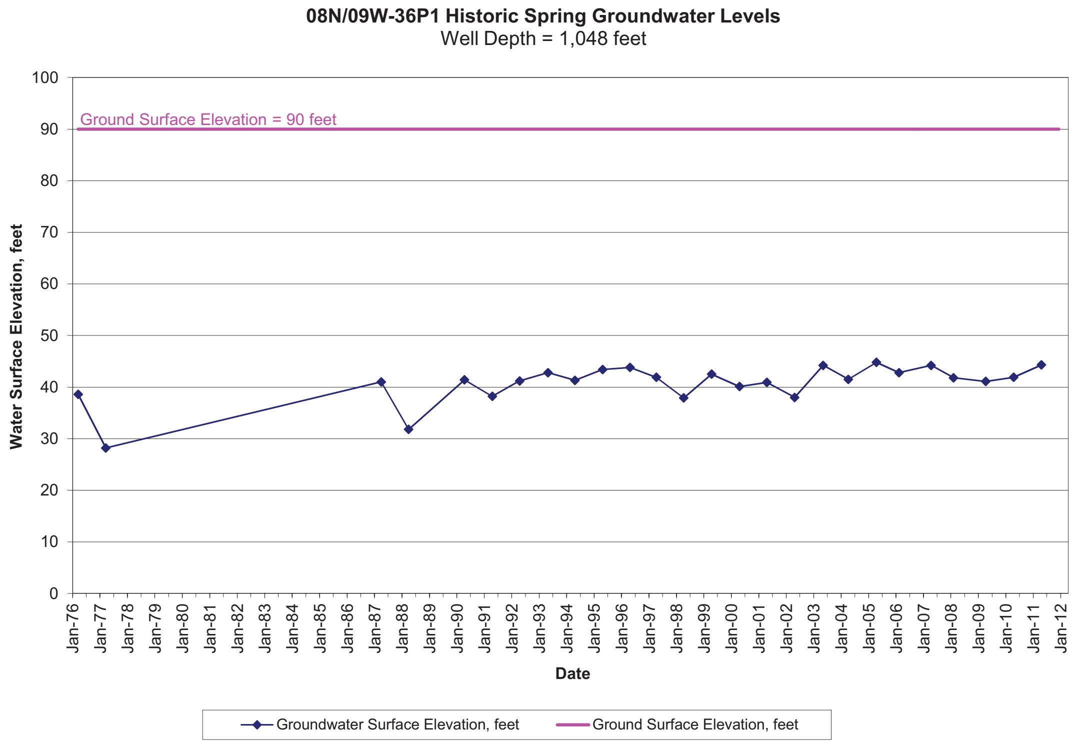
Spring GW Levels
Last Revised: January 3, 2012

West Yost Associates



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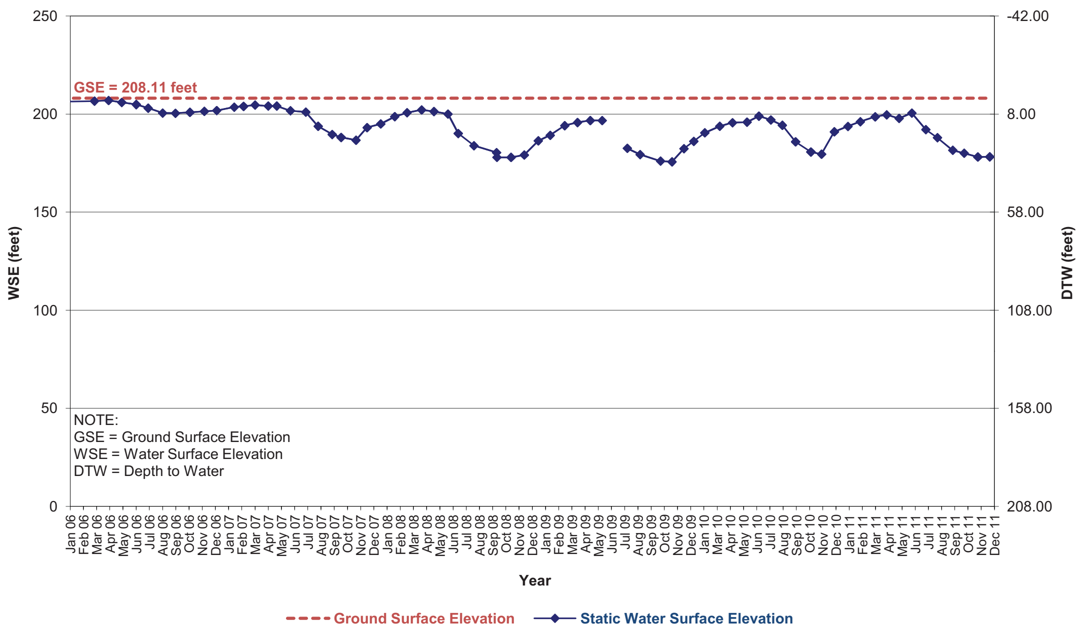
Spring GW Levels
Last Revised: January 3, 2012

West Yost Associates

Appendix B

City of Santa Rosa Well Hydrographs

City of Santa Rosa: Groundwater Level Monitoring
Carley Well [4910009-001]
State Well No: T7N/R7W-18R2



Last Revised: 01-10-2012
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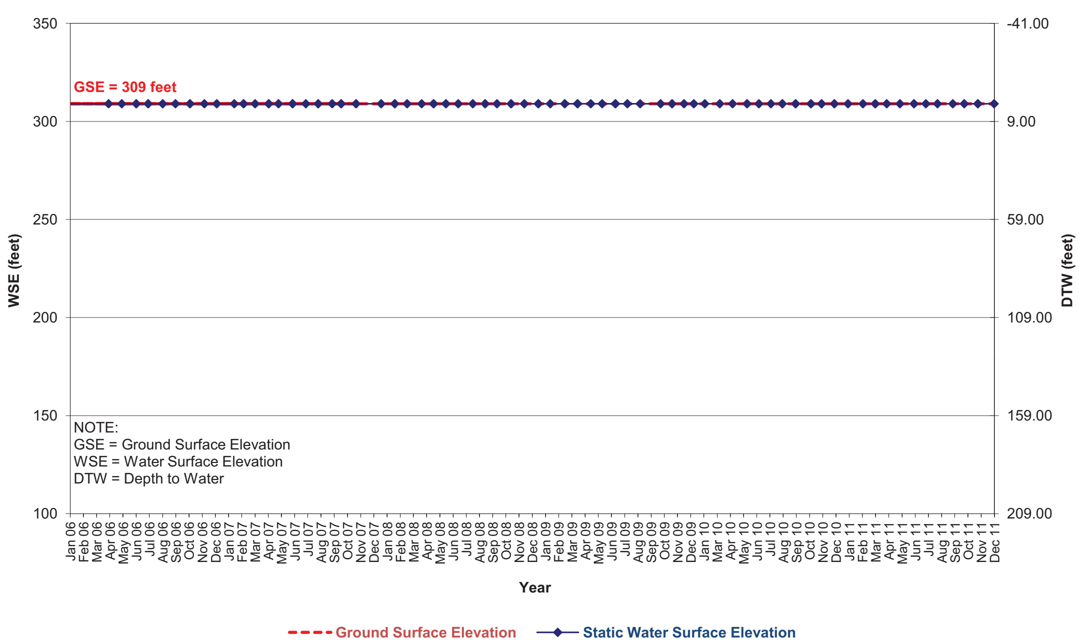
West Yost Associates

City of Santa Rosa: Groundwater Level Monitoring
Leete Well [4910009-004]
State Well No:



Last Revised: 01-10-2012
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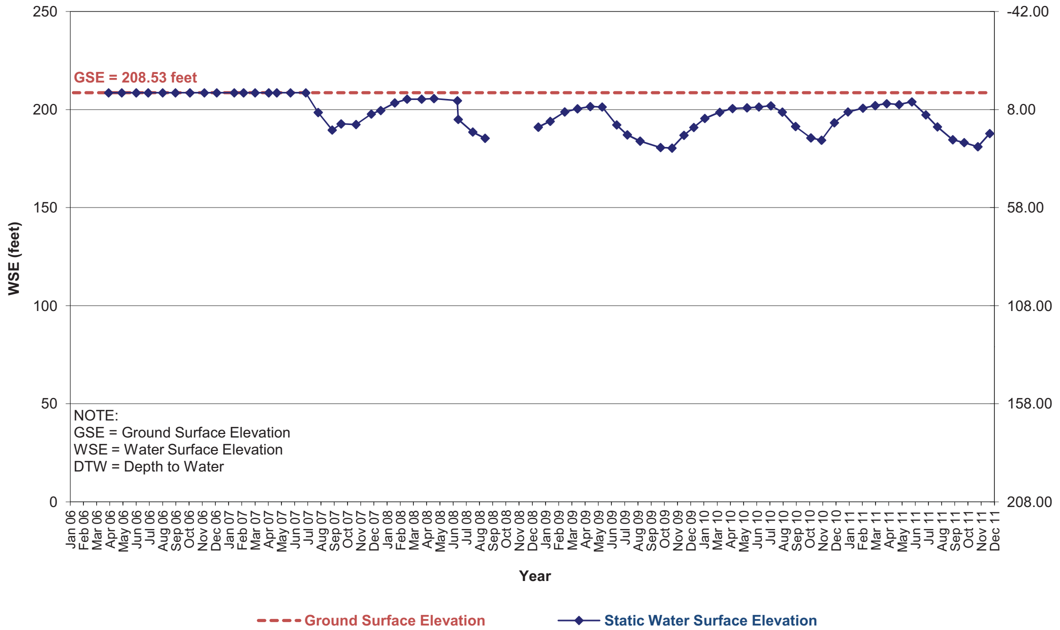
West Yost Associates

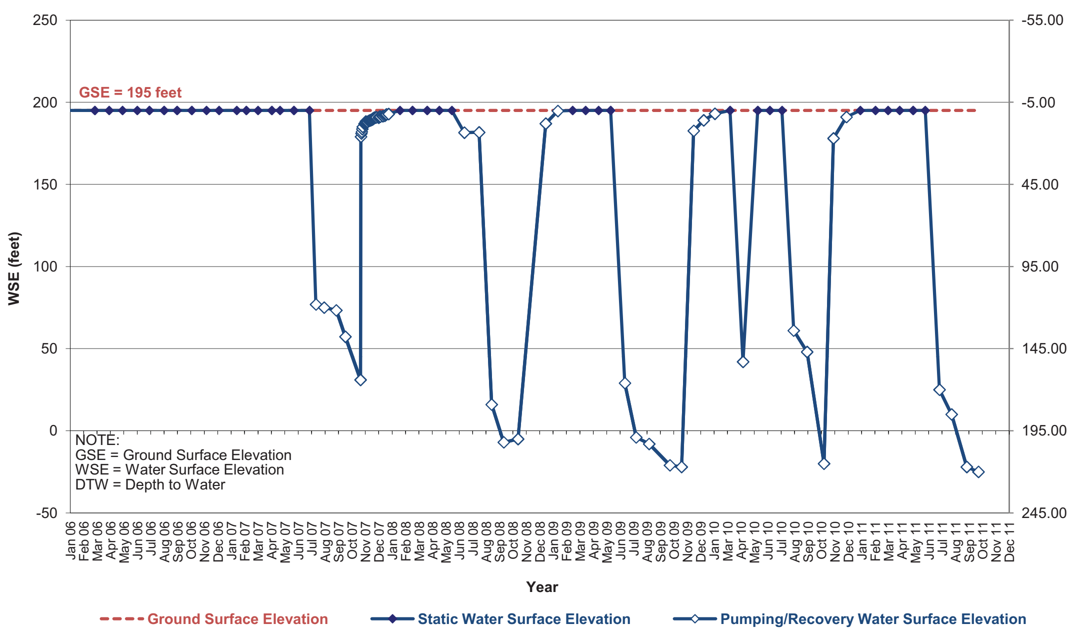
City of Santa Rosa: Groundwater Level Monitoring
Peter Springs Well [4910009-005]
State Well No: T7N/R7W-18R1



Last Revised: 01-10-2012
O:\C\405\02-06-19\E\GW Monitoring\SR_WaterLevel [C_PETER SPRINGS YR-MONTHLY]

West Yost Associates

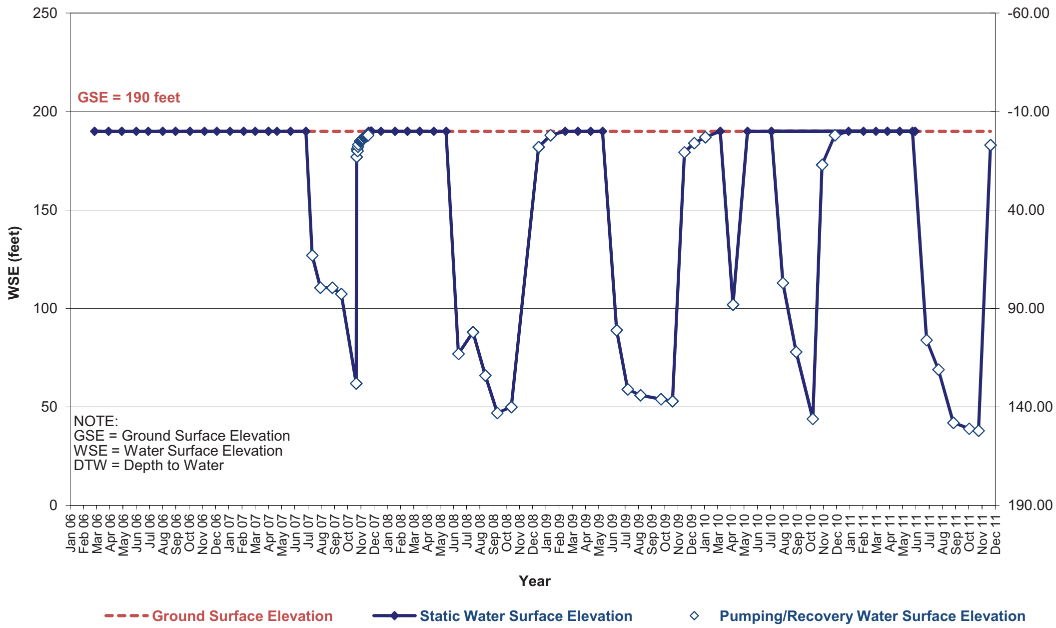
City of Santa Rosa: Groundwater Level Monitoring
Farmers Lane Well 01 [4910009-007]
State Well No: T7N/R8W-24R4



Last Revised: 01-10-2012
O:\C\405\02-06-19\E\GW Monitoring\SR_WaterLevel [C_FARMERS LANE 01 YR-MONTHLY]

West Yost Associates

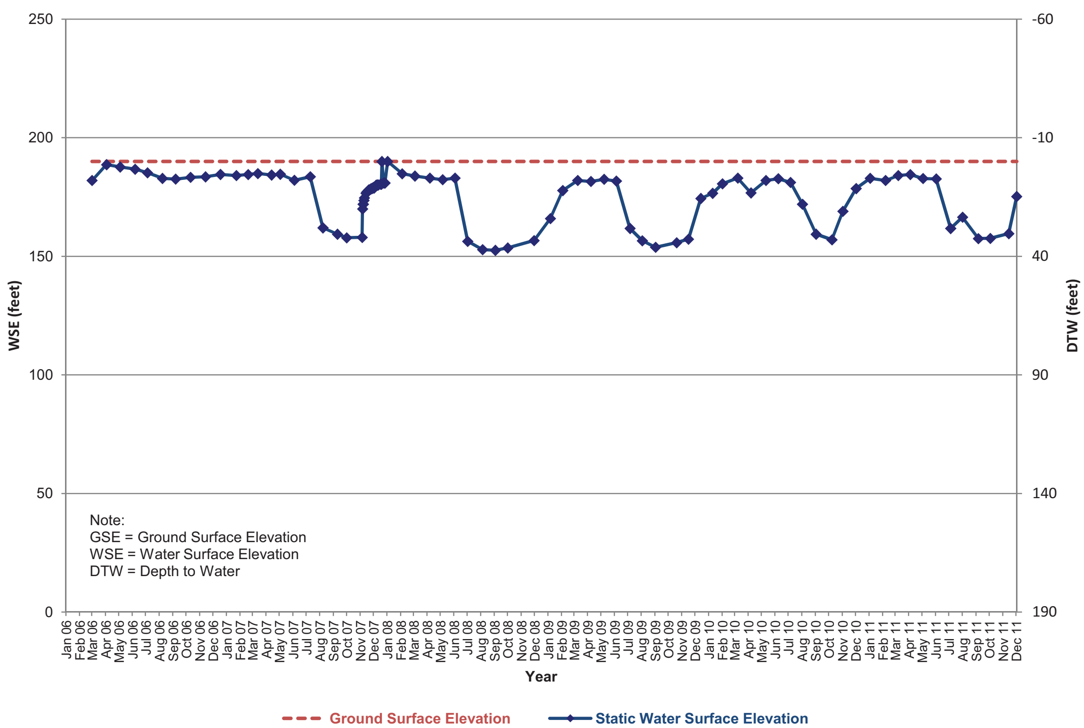
City of Santa Rosa: Groundwater Level Monitoring
Farmers Lane Well 02 [4910009-008]
State Well No: T7N/R8W-24R6



Last Revised: 01-10-2012
O:\C\405\02-06-19\E\GW Monitoring\SR_WaterLevel [C_FARMERS LAND 02 YR-MONTHLY]

West Yost Associates

City of Santa Rosa: Groundwater Level Monitoring
Farmers Lane Well 03 [4910009-009]
State Well No: T7N/R8W-24R5



Last Revised: 01-30-2012
O:\C\405\02-11-32\E\Farmers Lane 3

West Yost Associates

APPENDIX D2- HYDRAULIC ANALYSIS

WEST YOST ASSOCIATES
Consulting Engineers

REGISTERED PROFESSIONAL ENGINEER IRENE SUROSO 70771 EXP. 06-30-2013 CIVIL STATE OF CALIFORNIA

TECHNICAL MEMORANDUM

DATE:	February 23, 2012	Project No: 405-02-11-31
TO:	Danielle DuGre, P.E., City of Santa Rosa	
CC:	Steve Allen, P.E., City of Santa Rosa	
FROM:	Irene Suroso, P.E., R.C.E. #70771	
REVIEWED BY:	Gerry Nakano, P.E., R.C.E. #29524	
SUBJECT:	Hydraulic Analysis of the Proposed North Station Area Specific Plan, Santa Rosa	

This technical memorandum (TM) summarizes the findings and conclusions of West Yost Associates' (West Yost) technical evaluation of the hydraulic impacts of the proposed North Station Area Specific Plan (Project) on the City of Santa Rosa's (City) water system infrastructure. This hydraulic analyses of the proposed Project was conducted using the City's buildout water system hydraulic model, (developed and documented in the City's 2006 Water Master Plan), compared to the water system infrastructure sizing required due to the proposed land use changes defined by the Project.

INTRODUCTION

In December 2011, the City requested that West Yost provide hydraulic analyses to determine the adequacy of the City's water system to serve the proposed Project, and to identify and size any improvements to the existing City facilities ("bottlenecks" or constraints) necessary to serve the proposed Project. Based on discussions with City staff and other City consultants, the Project is to be hydraulically analyzed to provide the Project with adequate pressures, flow, and system flexibility, reliability and redundancy under a variety of water demand conditions, including fire flows.

The proposed Project area is bounded by West College Avenue on the south, Mendocino Avenue on the east, Paulin Creek (north of West Steele Lane) on the north and Ridley Avenue on the west. The proposed Project is located in the City's Aqueduct Pressure Zone. Figure 1 shows the location of the proposed Project.

The proposed Project will include a new Sonoma Marin Area Rail Transit (SMART) station that is located at the southeast corner of Guerneville Road and the railroad. The proposed Project will also include change of land uses from that in the City's General Plan, along with the development of vacant and underutilized sites in the area. Figure 2 presents the proposed transit station and new proposed land use types in the area.

Based on information provided to West Yost by the City's Planning Department, the total increase in water demand for the proposed Project is 1,136 acre feet per year (afa). This proposed total increase in water demand does not include unaccounted-for water use. The City's unaccounted-for water factor is 7.9 percent. Therefore, the total increase in water demand for the Project including the 7.9 percent of unaccounted-for water is 1,226 afa (1,136 afa plus 90 afa).

PLANNING/MODELING CRITERIA

The following planning/modeling criteria were used to analyze the Project's potential impact to the City's buildout water distribution system, and to determine whether the Project could be provided with adequate pressures and flows from the City's water system. These criteria were established based on the City's 2006 Water Master Plan.

- Any required pipelines added to the hydraulic model will be modeled with a roughness coefficient (C-factor) of 130 which is representative of an aged pipeline.
- Under normal system operations, typical system pressures shall be maintained above a minimum of 50 pounds per square inch (psi) in the pipeline main.
- Under peak hour conditions, the typical system pressures shall be maintained above a minimum of 40 psi in the pipeline main.
- Under maximum day plus fire flow condition, residual system pressures shall be maintained above a minimum of 20 psi in the pipeline main.
- An average day to maximum day demand peaking factor of 2.0 shall be used.
- An average day to peak hour demand factor of 3.5 shall be used.
- Maximum allowable head loss rate under any hydraulic condition
  - 10 feet/1,000 feet (ft/kft).
- Maximum allowable velocity
  - 7 feet per second (non-fire condition in distribution mains)
  - 10 feet per second (fire condition in distribution mains).
- Buildout hydraulic model of the City's water distribution system was used as the basis for evaluation and comparison of the hydraulic conditions with the proposed Project.

STORAGE CAPACITY EVALUATION

The City's Aqueduct Pressure Zone is served by the Sonoma County Water Agency (SCWA) Aqueduct System through a series of Pressure Reducing Aqueduct Station (PRA) valves from the SCWA transmission main. The City's Aqueduct Pressure Zone has two existing storage tanks located at the Proctor Reservoir site that are currently not in operation. The City also has four groundwater wells that can provide supply to the Aqueduct Pressure Zone during emergency events. With these supply sources, the storage capacity in the Aqueduct Pressure Zone was evaluated to determine whether the additional demand resulting from the land use changes within the proposed Project boundary will require an increase in the City's previously anticipated water storage requirements.

Table 1 summarizes the storage capacity within the City's Aqueduct Pressure Zone. As shown on Table 1, the City's storage capacity under the buildout demand condition with the land use changes in the proposed Project is still adequate to meet the City's Storage Planning Criteria.

Table 1. Summary of Storage Capacity Required under Buildout Demand Conditions within Proposed Project

Required Storage Capacity, MG				Available Storage Capacity[a], MG			
[1]	[2]	[3]	[4]=[1]+[2]+[3]	[5]	[6]	[7]=[5]+[6]	[8]=[7]-[4]
Operational[b]	Fire Flow[c]	Emergency[d]	Total	Reservoir Capacity[e]	Emergency Storage Credit[f]	Total	Storage Capacity Surplus, MG
9.16	1.05	18.32	28.53	24.60	5.18	29.78	1.25

(a) Assumes Proctor Tanks are not in service.
(b) Equals to 25 percent of maximum day demand (maximum day demand is 25,460 gpm).
(c) Equals to two fire flow events at 2,500 gpm fire for a 3 and 4 hour duration.
(d) Equals to 100 percent of average day demand (average day demand is 12,730 gpm).
(e) Assumes 40 percent of SCWA storage (40 percent times 61.5 MG equals to 24.6 MG) is available for the City's Aqueduct Pressure Zone storage.
(f) Available emergency groundwater supply includes Farmers Lane Wells No. 1 & 2, Peters Spring and Carley Wells (assume 24 hours production) is 5.18 MG
MG = million gallons
gpm = gallons per minute

HYDRAULIC ANALYSIS AND FINDINGS

The proposed Project is located in the City's Aqueduct Pressure Zone and there are 3 PRAs located within the proposed Project site which will provide supply. These PRAs include PRA 51 at Coffee Lane, PRA 52 at Jennings Avenue and PRA 53 at Carrillo Street. The existing pipeline diameters within the proposed Project boundary range from 6-inch to 14-inch diameter pipelines as shown on Figure 1.

The projected increased water demand of 1,136 afa for the proposed Project, provided by the City's Planning Department, plus 90 afa of unaccounted-for water totals 1,226 afa which was incorporated in the City's previous buildout demand scenario in the hydraulic model. West Yost then used the hydraulic model to simulate these increased demands caused by the proposed Project and evaluated the potential hydraulic impact of the Project's increased demands on the City's previously recommended buildout water system infrastructure sizing, under various hydraulic conditions as follows:

- Peak hour demand condition to determine whether a minimum 40 psi system pressure can be maintained in the main pipelines at the Project site;

- Maximum day demand condition concurrent with a fire flow demand to determine whether a minimum 20 psi residual system pressure can be maintained at the existing hydrants. The fire flow demand for each hydrant is determined based on the land use type (and required fire flow and duration dictated by the Fire Marshall from that land use type).

Peak Hour Demand Evaluation

Under peak hour demand conditions, the City's Aqueduct system serving the Project is adequate to provide the recommended minimum system pressure of 40 psi within the Project. System Pressure ranges from 49 to 64 psi.

Pipeline velocities within the proposed Project site are lower than the maximum allowable pipeline velocity of 7 fps. The pipeline head losses range from 0 to 7 ft/kft which are also less than the maximum allowable pipeline head loss.

Figure 3 presents simulated system pressures, and pipeline velocities and head losses within the proposed Project site under this peak hour demand condition with the proposed Project.

Maximum Day Demand plus Fire Flow Demand Evaluation

A hydraulic analysis was conducted under a maximum day plus fire flow demand condition with the proposed Project. This analysis was simulated to determine if the proposed Project could be served with adequate fire flow while maintaining a minimum required residual system pressure of 20 psi and maintaining a maximum allowable 10 fps pipeline velocity. Because of the planning level nature of the Project, and the lack of specific details and locations for the proposed buildings, West Yost selected existing key hydrants within the proposed Project for evaluation of the maximum day demand plus fire flow demand criteria. Figure 4 presents the location of the selected key hydraulic hydrants. These hydrants represent hydrants located furthest from the major transmission main, and at the transit village land use category which requires higher fire flow demands.

Table 2 presents the land use type categories and their fire flow demand requirement. Collectively, there are two fire flow requirements for the proposed Project site; 1) 1,500 gpm for low density residential land use areas, or 2) 2,500 gpm (for all other land use areas). Figure 4 presents the fire flow requirement at each selected key hydrant within the proposed Project site.

Table 2. Fire Flow Requirement based on Land Use Category	
Land Use Category	Fire Flow Requirement, gpm
Low Density Residential	1,500
Medium Density Residential	2,500
Medium High Density Residential	2,500
Transit Village Mixed Used	2,500
Transit Villate Medium	2,500
Mobile Home Park	2,500
Mixed Used (Medium Density Residential/Retail/Business Services	2,500
Retail/Business Services	2,500
Office	2,500
Business Park	2,500
Light Industrial	2,500
Public/Institutional	2,500

Based on our hydraulic modeling of the City's water system, available fire flows at buildout with the proposed Project are presented on Figure 5 and are tabulated on Table 3. As shown on Figure 5, there are 49 hydrants out of 123 selected hydrants (approximately 40 percent of selected hydrants) that could not meet the fire flow requirement based on the modified land uses of the proposed Project.

Fire flow deficiencies within the Project are a result of undersized pipelines and some dead-end pipelines. Most dead-end pipelines within the Project are to serve low density residential areas, and the fire flow requirement for these low density residential areas is 1,500 gpm. After further review of the dead-end areas, it was determined that no fire flow improvements are necessary because: 1) there is no potential for providing additional system looping to these dead-end areas; 2) there are nearby hydrants that can be used to supplement and assist in meeting the 1,500 fire flow demand requirement; and 3) many of these dead-end pipelines installed in these residential cul-de-sacs are only 6 inches in diameter and will automatically be upsized to an 8-inch pipeline when they reach the end of their useful life and must be replaced (which will increase fire flow).

To mitigate the identified fire flow deficiencies in the northeastern area of the Project site (which are the result of undersized pipelines and changed land use), a series of improvements are required. The existing pipelines in this northeastern area mainly consist of 6-inch and 8-inch diameter pipelines. The proposed land use categories for this area are the Transit Village and Medium High Density Residential categories that require a 2,500 gpm fire flow demand. Based on the hydraulic results, West Yost identified the following infrastructure improvements, which are illustrated on Figure 6:

- Improvement A includes upsizing 6-inch and 8-inch diameter pipelines along Range Avenue, from Jennings Avenue to West Steele Lane to 12-inch diameter pipelines;
- Improvement B includes upsizing an 8-inch diameter pipeline along Range Avenue, from West Steele Lane to Russell Avenue to a 12-inch diameter pipeline;

Table 3. Summary of Available Fire Flow at 20 psi System Residual Pressure during Maximum Day Demand Condition with Proposed Project[a]

Junction ID	Elevation, feet	Fire Flow Requirement	Available Fire Flow, gpm
J-A1-1015	137.4	2,500	2,926
J-A1-1017	138.2	2,500	3,000
J-A1-1020	131.1	2,500	3,761
J-A1-1022	129.5	2,500	3,842
J-A1-1024	127.0	2,500	2,808
J-A1-1025	127.5	2,500	861
J-A1-1026	124.0	2,500	3,201
J-A1-1027	125.1	2,500	2,659
J-A1-1030	123.5	2,500	2,868
J-A1-1032	122.0	1,500	3,480
J-A1-1049	135.9	2,500	2,765
J-A1-1158	122.0	2,500	3,409
J-A1-1160	122.3	2,500	2,116
J-A1-1164	120.0	1,500	3,972
J-A1-1166	121.0	2,500	2,178
J-A1-1170	118.0	1,500	3,357
J-A1-1176	118.3	1,500	2,747
J-A1-1180	116.0	1,500	2,282
J-A1-1190	119.0	2,500	869
J-A1-1198	118.5	2,500	874
J-A1-1432	123.0	2,500	4,482
J-A1-1440	123.8	2,500	1,567
J-A1-1444	135.5	2,500	3,306
J-A1-1445	136.9	2,500	1,667
J-A1-1451	130.5	2,500	1,567
J-A1-1460	135.0	2,500	1,567
J-A1-1909	125.0	2,500	2,572
J-A1-1916	125.0	2,500	881
J-A1-1920	125.0	2,500	2,068
J-A1-1926	131.3	2,500	1,567
J-A1-1928	131.0	2,500	2,922
J-A1-1932	129.2	2,500	2,605
J-A1-1934	130.0	2,500	1,707
J-A1-1935	130.0	2,500	2,014
J-A1-1938	129.5	2,500	1,362
J-A1-1944	129.0	2,500	1,567
J-A1-1946	135.1	2,500	1,713
J-A1-1950	135.0	2,500	1,567
J-A1-1952	134.5	2,500	1,567
J-A1-2584	125.0	1,500	2,284
J-A1-2589	126.8	2,500	3,001
J-A1-3010	134.0	2,500	3,212
J-A2-1311	134.0	2,500	2,323
J-A2-1314	128.8	2,500	6,407
J-A2-1316	127.1	2,500	6,155
J-A2-1322	120.2	2,500	6,280
J-A2-1561	136.5	2,500	6,059
J-A2-1564	142.7	2,500	2,227
J-A2-1566	143.5	1,500	1,518
J-A2-1570	143.0	2,500	2,022
J-A2-1572	141.5	2,500	880
J-A2-1574	139.6	2,500	1,909
J-A2-1576	139.6	2,500	3,063
J-A2-1578	137.6	2,500	1,869
J-A2-1582	133.2	2,500	6,342
J-A2-1585	134.3	2,500	1,536
J-A2-1588	143.0	2,500	3,925
J-A2-1589	144.4	2,500	2,924
J-A2-1592	142.0	1,500	1,030
J-A2-1594	135.6	2,500	1,608
J-A2-1599	134.7	2,500	1,630
J-A2-1601	138.7	2,500	2,817
J-A2-1602	135.6	2,500	2,104
J-A2-1603	143.3	2,500	2,420
J-A2-1604	135.7	2,500	2,085

Table 3. Summary of Available Fire Flow at 20 psi System Residual Pressure during Maximum Day Demand Condition with Proposed Project[(a)]

Junction ID	Elevation, feet	Fire Flow Requirement	Available Fire Flow, gpm
J-A2-1606	130.9	2,500	2,959
J-A2-1607	129.6	2,500	2,995
J-A2-1609	131.8	2,500	2,923
J-A2-1611	132.0	2,500	1,638
J-A2-1613	132.5	2,500	3,054
J-A2-1694	122.2	2,500	2,226
J-A2-1700	122.0	1,500	4,057
J-A2-1701	123.0	1,500	1,597
J-A2-1703	125.5	1,500	1,680
J-A2-1706	127.0	2,500	2,998
J-A2-1708	130.0	2,500	4,433
J-A2-1718	124.0	2,500	1,567
J-A2-1726	124.8	2,500	1,567
J-A2-1728	130.6	2,500	3,199
J-A2-1730	131.9	2,500	3,748
J-A2-1732	130.5	2,500	2,485
J-A2-1734	128.9	2,500	2,813
J-A2-1808	122.0	1,500	2,063
J-A2-1816	124.0	1,500	2,673
J-A2-1995	127.1	2,500	1,562
J-A2-2040	119.0	1,500	2,878
J-A2-2044	118.5	1,500	1,567
J-A2-2046	119.7	1,500	1,567
J-A2-2051	126.6	1,500	1,476
J-A2-2052	126.3	1,500	1,278
J-A2-2054	121.6	1,500	1,567
J-A2-2060	126.4	2,500	1,758
J-A2-2071	137.3	2,500	1,480
J-A2-2072	140.4	2,500	2,643
J-A2-2074	140.8	1,500	2,310
J-A2-2078	123.5	1,500	1,567
J-A2-2082	125.2	1,500	1,567
J-A2-2084	131.6	2,500	3,410
J-A2-2090	132.5	2,500	2,573
J-A2-2092	132.0	2,500	2,448
J-A2-2096	129.2	2,500	1,567
J-A2-2192	146.0	1,500	1,706
J-A2-2200	146.0	1,500	1,922
J-A2-2235	138.3	2,500	1,306
J-A4-1000	144.8	2,500	6,678
J-A4-1020	151.9	2,500	7,645
J-A4-1022	155.8	2,500	8,225
J-A4-1048	163.0	2,500	5,137
J-A4-1050	159.0	2,500	7,311
J-A4-1052	156.2	2,500	7,362
J-A4-1300	146.3	1,500	2,638
J-A4-1306	152.0	1,500	3,020
J-A4-1308	154.0	2,500	2,817
J-A4-1312	155.0	2,500	3,254
J-A4-1316	151.5	2,500	1,807
J-A4-1318	156.0	2,500	2,101
J-A4-1358	152.5	2,500	1,180
J-A4-1432	146.0	1,500	2,456
J-A4-1560	147.5	1,500	1,865
J-A4-1622	143.6	2,500	6,465
J-A4-1688	162.0	2,500	4,264
J-A4-1690	161.0	2,500	3,003
J-A4-1732	159.0	2,500	2,407

[(a)] Available fire flow results for selected hydrants were simulated on the water main.

- Improvement C includes upsizing a 6-inch diameter pipeline along State Farm Drive, from McBride Lane to Cleveland Avenue to an 8-inch diameter pipeline;
- Improvement D includes upsizing an 8-inch diameter pipeline along Cleveland Avenue, from West Steele Lane to State Farm Drive to a 12-inch diameter pipeline;
- Improvement E includes upsizing an 8-inch diameter pipeline along West Steele Lane, from Range Avenue to Illinois Street to a 12-inch diameter pipeline;
- Improvement F include upsizing a 6-inch diameter pipeline along Edwards Avenue, from Range Avenue to Cleveland Avenue to a 12-inch diameter pipeline, and connecting the new 12-inch diameter to the existing 14-inch diameter pipeline with a 12-inch diameter pipeline at the intersection of Cleveland Avenue and Edwards Avenue;
- Improvement G includes upsizing a 6-inch diameter pipeline located south of Guerneville Road, between Cleveland Avenue and Range Avenue to a 12-inch diameter pipeline;
- Improvement I includes upsizing a 6-inch diameter pipeline located north of West Steele Lane, between Range Avenue and McBride Lane to a 8-inch diameter pipeline;
- Improvement K includes constructing a new 12-inch diameter pipeline along Guerneville Road, between Coffey Lane and Westberry Drive;
- Improvement L includes upsizing a 6-inch and an 8-inch diameter pipeline located southeast of Guerneville Road, between Coffey Lane and Range Avenue with a 12-inch diameter pipeline;
- Improvement M includes upsizing a 6-inch diameter pipeline along Plata Court, between Roca Court and Dorado Court with an 8-inch diameter pipeline;
- Improvement N includes upsizing a 6-inch diameter pipeline along Plata Court, east of Dorado Court with an 8-inch diameter pipeline; and
- Improvement O includes replacing parallel 4-inch and 14-inch diameter pipelines along Jennings Avenue between Range Avenue and Cleveland Avenue with a single 12-inch diameter pipeline.

These improvements would provide a key backbone system within the Project site, and are tabulated on Table 4.

Table 4. Recommended Pipeline Improvements

ID	Description	Existing Diameter	Recommended Diameter	Length, feet
Improvement A	Range Avenue, from Jennings Avenue to West Steele Lane	6-inch and 8-inch	12-inch	2,583
Improvement B	Range Avenue, from West Steele Lane to Russell Avenue	8-inch	12-inch	3,387
Improvement C	State Farm Drive, from McBride Lane to Cleveland Avenue	6-inch	8-inch	515
Improvement D	Cleveland Avenue, from West Steele Lane to State Farm Drive	8-inch	12-inch	2,335
Improvement E	West Steele Lane, from Range Avenue to Illinois Street	8-inch	12-inch	2,313
Improvement F	Edwards Avenue, from Range Avenue to Cleveland Avenue	6-inch	12-inch	1,698
	At intersection of Cleveland Avenue and Elliot Avenue	NA	12-inch	71
Improvement G	South of Guerneville Road, between Cleveland Avenue and Range Avenue	6-inch	12-inch	931
Improvement H	Along Cleveland Avenue, from Frances Street to Ridgeway Avenue	4-inch and 6-inch	12-inch	1,948
Improvement I	North of West Steele Lane, between Range Avenue and McBride Lane	6-inch	8-inch	911
Improvement J	Along Eardley Avenue, between West College Avenue and Tammy Way	6-inch	8-inch	769
Improvement K	Along Guerneville Road, between Coffey Lane and Westberry Drive	NA	12-inch	713
Improvement L	Southeast of Guerneville Road, between Coffey Lane and Range Avenue	6-inch and 8-inch	12-inch	1,233
Improvement M	Along Plata Court, between Roca Court and Dorado Court	6-inch	8-inch	165
Improvement N	Along Plata Court, east of Dorado Court	6-inch	8-inch	1,039
Improvement O	Along Jennings Avenue, between Range Avenue and Cleveland Avenue	4-inch and 14-inch	12-inch	1,541
			Total Length, feet	**22,153**

Figure 5 also shows fire flow deficiencies in the southern area of the Project site which require improvements. The land uses in this area are Medium Density Residential, Business Park and Light Industrial categories which require a 2,500 fire flow demand. Based on hydraulic results, West Yost identified the following infrastructure improvements, which are also illustrated on Figure 6:

- Improvement H includes upsizing a 4-inch diameter pipeline along Cleveland Avenue, between Frances Street and Ridgeway Avenue with a 12-inch diameter pipeline, upsizing a 6-inch diameter pipeline along Cleveland Avenue, between Frances Street and Jennings Avenue with a 12-inch diameter pipeline and connecting the new 12-inch diameter to the existing 14-inch diameter with a 12-inch diameter pipeline at Jennings Avenue and Cleveland Avenue; and
- Improvement J includes upsizing a 6-inch diameter pipeline along Eardley Avenue, between West College Avenue and Tammy Way with an 8-inch diameter pipeline.

The details of these improvements are also tabulated on Table 4.

With these pipeline improvements incorporated in the hydraulic model, West Yost reran with Proposed Project scenario. Available fire flow results with the recommended system improvements are listed on Table 5 and presented on Figure 7. As shown on Figure 7, most selected hydrants located within the proposed Transit Village land use category are now adequate to meet the 2,500 gpm fire flow requirement. Hydraulic results with the incorporated improvements also indicated there are still 36 hydrants within the Project site that cannot meet the minimum fire flow requirement. For many of these hydrants, there are nearby hydrants (within 300 feet) that can be used to supplement the available hydrant flow then West Yost re-simulated the fire flow analysis to verify that the required fire flow could be met by the combined flow of two adjacent fire hydrants. Hydraulic results indicated that the fire flow provided by two hydrants that are located within 300 feet or less of each other is adequate to meet the fire flow requirement. Figure 7 identifies the location of the 23 hydrants where the fire flow requirement will be met from two hydrants. Therefore, no improvements are required in these areas.

The remaining 13 hydrants that could not meet the fire flow requirement are located on the dead-end areas (cul-de-sacs), and these low density residential areas are typically served by a 6-inch diameter pipeline. As previously discussed, the City has adopted an 8-inch pipeline as its minimum pipeline diameter, so when these existing 6-inch diameter pipelines reach the end of their useful lives, they will be upsized and replaced with an 8-inch diameter pipeline, resolving this fire flow issue.

Table 5. Summary of Available Fire Flow at 20 psi System Residual Pressure During Maximum Day Demand Condition with Proposed Project and System Improvements[(a)]

Junction ID	Elevation, feet	Fire Flow Requirement	Available Fire Flow, gpm
J-A1-1015	137.4	2,500	5,626
J-A1-1017	138.2	2,500	6,249
J-A1-1020	131.1	2,500	3,803
J-A1-1022	129.5	2,500	3,719
J-A1-1024	127.0	2,500	2,671
J-A1-1025	127.5	2,500	861
J-A1-1026	124.0	2,500	3,575
J-A1-1027	125.1	2,500	2,640
J-A1-1030	123.5	2,500	2,981
J-A1-1032	122.0	1,500	3,402
J-A1-1049	135.9	2,500	5,638
J-A1-1158	122.0	2,500	4,055
J-A1-1160	122.3	2,500	1,923
J-A1-1164	120.0	1,500	4,330
J-A1-1166	121.0	2,500	1,580
J-A1-1170	118.0	1,500	3,521
J-A1-1176	118.3	1,500	2,697
J-A1-1180	116.0	1,500	2,246
J-A1-1190	119.0	2,500	869
J-A1-1198	118.5	2,500	874
J-A1-1432	123.0	2,500	4,772
J-A1-1440	123.8	2,500	1,567
J-A1-1444	135.5	2,500	7,391
J-A1-1445	136.9	2,500	2,679
J-A1-1451	130.5	2,500	1,567
J-A1-1460	135.0	2,500	1,567
J-A1-1909	125.0	2,500	5,575
J-A1-1916	125.0	2,500	881
J-A1-1920	125.0	2,500	3,055
J-A1-1926	131.3	2,500	1,567
J-A1-1928	131.0	2,500	2,893
J-A1-1932	129.2	2,500	2,597
J-A1-1934	130.0	2,500	2,923
J-A1-1935	130.0	2,500	2,412
J-A1-1938	129.5	2,500	1,355
J-A1-1944	129.0	2,500	1,567
J-A1-1946	135.1	2,500	1,629
J-A1-1950	135.0	2,500	1,567
J-A1-1952	134.5	2,500	1,567
J-A1-2584	125.0	1,500	2,065
J-A1-2589	126.8	2,500	3,130
J-A1-3010	134.0	2,500	3,353
J-A2-1311	134.0	2,500	2,118
J-A2-1314	128.8	2,500	6,634
J-A2-1316	127.1	2,500	6,162
J-A2-1322	120.2	2,500	6,410
J-A2-1561	136.5	2,500	5,965
J-A2-1564	142.7	2,500	6,548
J-A2-1566	143.5	1,500	6,630
J-A2-1570	143.0	2,500	5,514
J-A2-1572	141.5	2,500	1,226
J-A2-1574	139.6	2,500	2,965
J-A2-1576	139.6	2,500	2,572
J-A2-1578	137.6	2,500	1,993
J-A2-1582	133.2	2,500	6,911
J-A2-1585	134.3	2,500	1,478
J-A2-1588	143.0	2,500	3,619
J-A2-1589	144.4	2,500	3,167
J-A2-1592	142.0	1,500	944
J-A2-1594	135.6	2,500	4,311
J-A2-1599	134.7	2,500	6,476
J-A2-1601	138.7	2,500	2,649
J-A2-1602	135.6	2,500	8,780
J-A2-1603	143.3	2,500	2,487
J-A2-1604	135.7	2,500	6,770
J-A2-1606	130.9	2,500	3,178
J-A2-1607	129.6	2,500	2,950

Table 5. Summary of Available Fire Flow at 20 psi System Residual Pressure During Maximum Day Demand Condition with Proposed Project and System Improvements[a]

Junction ID	Elevation, feet	Fire Flow Requirement	Available Fire Flow, gpm
J-A2-1609	131.8	2,500	3,072
J-A2-1611	132.0	2,500	6,394
J-A2-1613	132.5	2,500	5,979
J-A2-1694	122.2	2,500	2,242
J-A2-1700	122.0	1,500	4,077
J-A2-1701	123.0	1,500	1,593
J-A2-1703	125.5	1,500	1,682
J-A2-1706	127.0	2,500	3,256
J-A2-1708	130.0	2,500	4,865
J-A2-1718	124.0	2,500	1,567
J-A2-1726	124.8	2,500	1,567
J-A2-1728	130.6	2,500	3,027
J-A2-1730	131.9	2,500	3,843
J-A2-1732	130.5	2,500	2,554
J-A2-1734	128.9	2,500	2,841
J-A2-1808	122.0	1,500	2,067
J-A2-1816	124.0	1,500	3,349
J-A2-1995	127.1	2,500	1,689
J-A2-2040	119.0	1,500	2,850
J-A2-2044	118.5	1,500	1,567
J-A2-2046	119.7	1,500	1,567
J-A2-2051	126.6	1,500	1,670
J-A2-2052	126.3	1,500	1,397
J-A2-2054	121.6	1,500	1,567
J-A2-2060	126.4	2,500	2,121
J-A2-2071	137.3	2,500	5,905
J-A2-2072	140.4	2,500	7,044
J-A2-2074	140.8	1,500	2,768
J-A2-2078	123.5	1,500	1,567
J-A2-2082	125.2	1,500	1,567
J-A2-2084	131.6	2,500	3,402
J-A2-2090	132.5	2,500	2,392
J-A2-2092	132.0	2,500	2,448
J-A2-2096	129.2	2,500	1,567
J-A2-2192	146.0	1,500	1,940
J-A2-2200	146.0	1,500	2,440
J-A2-2235	138.3	2,500	5,673
J-A4-1000	144.8	2,500	7,082
J-A4-1020	151.9	2,500	8,227
J-A4-1022	155.8	2,500	7,881
J-A4-1048	163.0	2,500	5,292
J-A4-1050	159.0	2,500	7,428
J-A4-1052	156.2	2,500	7,216
J-A4-1300	146.3	1,500	2,697
J-A4-1306	152.0	1,500	3,041
J-A4-1308	154.0	2,500	2,819
J-A4-1312	155.0	2,500	3,272
J-A4-1316	151.5	2,500	1,806
J-A4-1318	156.0	2,500	2,100
J-A4-1358	152.5	2,500	1,180
J-A4-1432	146.0	1,500	2,456
J-A4-1560	147.5	1,500	1,864
J-A4-1622	143.6	2,500	6,564
J-A4-1688	162.0	2,500	3,462
J-A4-1690	161.0	2,500	2,762
J-A4-1732	159.0	2,500	2,507

[a] Available fire flow results for selected hydrants were simulated on the water main.

CONCLUSIONS

The results of our hydraulic analyses of the impact of the proposed Project on the City's planned water system are summarized below. Based on this evaluation, the maximum day plus fire flow demand condition was generally found to be the critical demand condition in sizing the water system infrastructure.

Hydraulic results indicate that 40 percent of selected hydrants could not meet the required fire flow demand while maintaining a minimum 20 psi system residual pressure and a maximum 10 fps pipeline velocity. Fire flow deficiencies were observed on dead-end pipeline and undersized pipelines. No pipeline improvements are recommended on the dead-end pipelines because 1) there are no potential system looping opportunities; 2) there is a nearby hydrant that could be used to supplement fire flow needs, and 3) many of the dead-end pipelines are installed in residential cul-de-sacs, and are only 6 inches in diameter, and will be upsized to an 8-inch diameter pipeline when they reach the end of their useful life.

To meet fire flow requirement within the Project site, several pipeline improvements are required, and these improvements are:

- Improvement A: Upsizing 2,056 feet of 6-inch diameter pipeline along Range Avenue, from Jennings Avenue to West Steele Lane to a 12-inch diameter pipeline;
- Improvement A: Upsizing 527 feet of 8-inch diameter pipeline along Range Avenue, from Jennings Avenue to West Steele Lane to a 12-inch diameter pipeline;
- Improvement B: Upsizing 3,387 feet of 8-inch diameter pipeline along Range Avenue, from West Steele Lane to Russell Avenue to a 12-inch diameter pipeline;
- Improvement C: Upsizing 515 feet of 6-inch diameter pipeline along State Farm Drive, from McBride Lane to Cleveland Avenue to an 8-inch diameter pipeline;
- Improvement D: Upsizing 2,335 feet of 8-inch diameter pipeline along Cleveland Avenue, from West Steele Lane to State Farm Drive to a 12-inch diameter pipeline;
- Improvement E: Upsizing 2,313 feet of 8-inch diameter pipeline along West Steele Lane, from Range Avenue to Illinois Street to a 12-inch diameter pipeline;
- Improvement F: Upsizing 1,698 feet of 6-inch diameter pipeline along Edwards Avenue, from Range Avenue to Cleveland Avenue to a 12-inch diameter pipeline and connecting the new 12-inch diameter pipeline on Edward Avenue to the existing 14-inch diameter pipeline with a 71 feet of 12-inch diameter pipeline at the intersection of Cleveland Avenue and Edwards Avenue;
- Improvement G: Upsizing 931 feet of 6-inch diameter pipeline located south of Guerneville Road, between Cleveland Avenue and Range Avenue to a 12-inch diameter pipeline;

- Improvement H: Upsizing 544 feet of 4-inch diameter pipeline along Cleveland Avenue, between Frances Street and Ridgeway Avenue with a 12-inch diameter pipeline, upsizing 1,389 feet of 6-inch diameter pipeline along Cleveland, between Frances Street and Jennings Avenue and connecting the new 12-inch diameter pipeline on Cleveland Avenue to the existing 14-inch diameter pipeline with a 15 feet of 12-inch diameter pipeline at the intersection of Cleveland Avenue and Jennings Avenue;
- Improvement I: Upsizing 911 feet of 6-inch diameter pipeline located north of West Steele Lane, between Range Avenue and McBride Lane to a 8-inch diameter pipeline;
- Improvement J: Upsizing 769 feet of 6-inch diameter pipeline along Eardley Avenue, between West College Avenue and Tammy Way with an 8-inch diameter pipeline
- Improvement K: Installing 713 feet of a new 12-inch diameter pipeline along Guerneville Road, between Coffey Lane and Westberry Drive;
- Improvement L: Upsizing 953 feet of 6-inch diameter pipeline and 280 feet of 8-inch diameter pipeline located southeast of Guerneville Road, between Coffey Lane and Range Avenue with a 12-inch diameter pipeline;
- Improvement M: Upsizing 165 feet of 6-inch diameter pipeline along Plata Court, between Roca Court and Dorado Court with an 8-inch diameter pipeline;
- Improvement N: Upsizing 1,039 feet of 6-inch diameter pipeline along Plata Court, east of Dorado Court with an 8-inch diameter pipeline; and
- Improvement O: Replacing 1,541 feet of parallel 4-inch and 14-inch diameter pipelines along Jennings Avenue between Range Avenue and Cleveland Avenue with a single 12-inch diameter pipeline.

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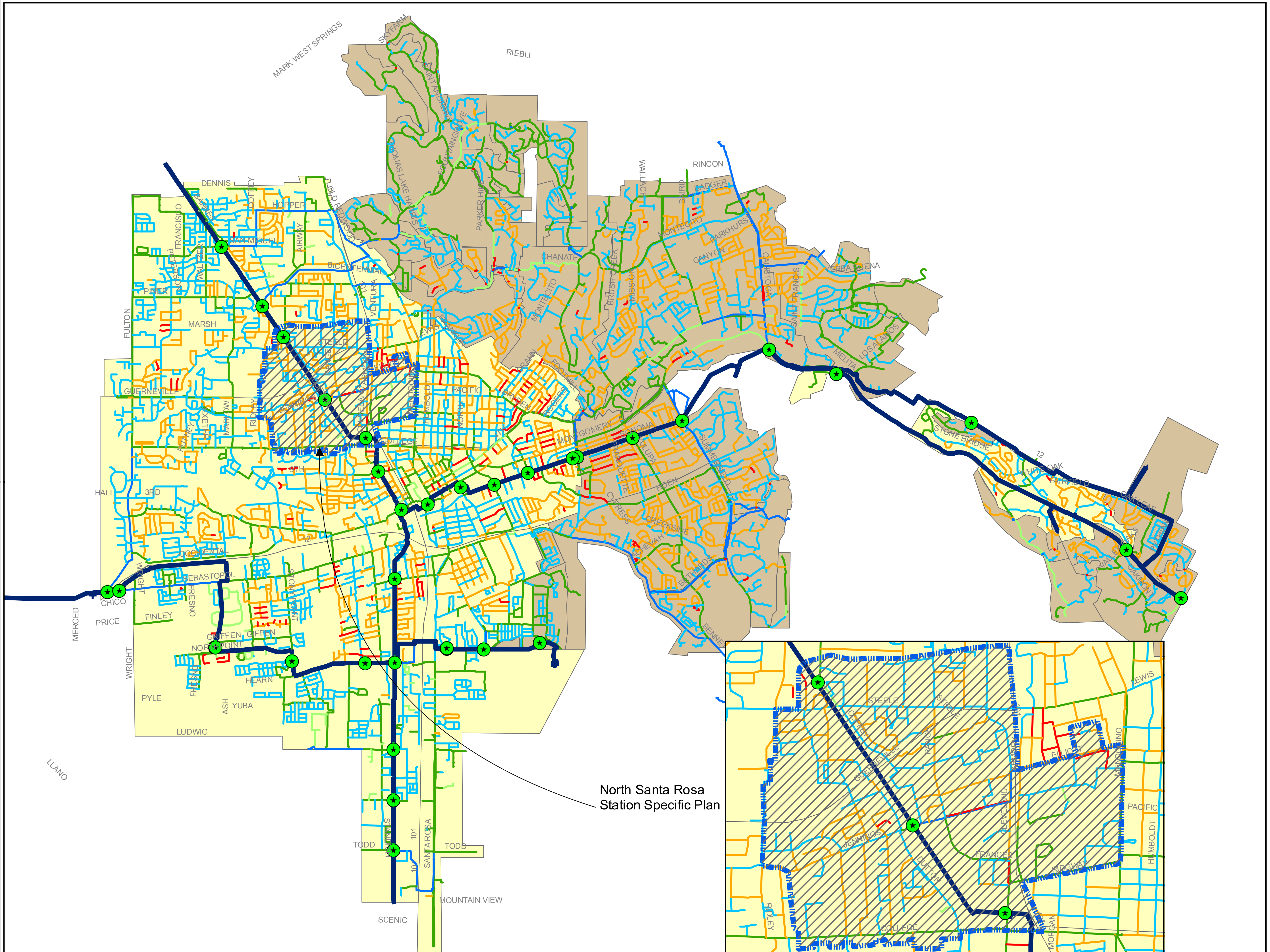

FIGURE 1

City of Santa Rosa
North Santa Rosa Station Area
Specific Plan

PROPOSED PROJECT LOCATION

N

0 2,500 5,000
Scale in Feet

LEGEND

North Station Specific Plan Area Boundary

City Existing Pipeline Diameter

- Less than or equal to 4-inch
- 6-inch
- 8-inch
- 10-inch
- 12-inch
- Greater than 12-inch
- SCWA Aqueduct Pipeline
- Aqueduct Pressure Zone
- Hillside Pressure Zone
- SCWA Turnout

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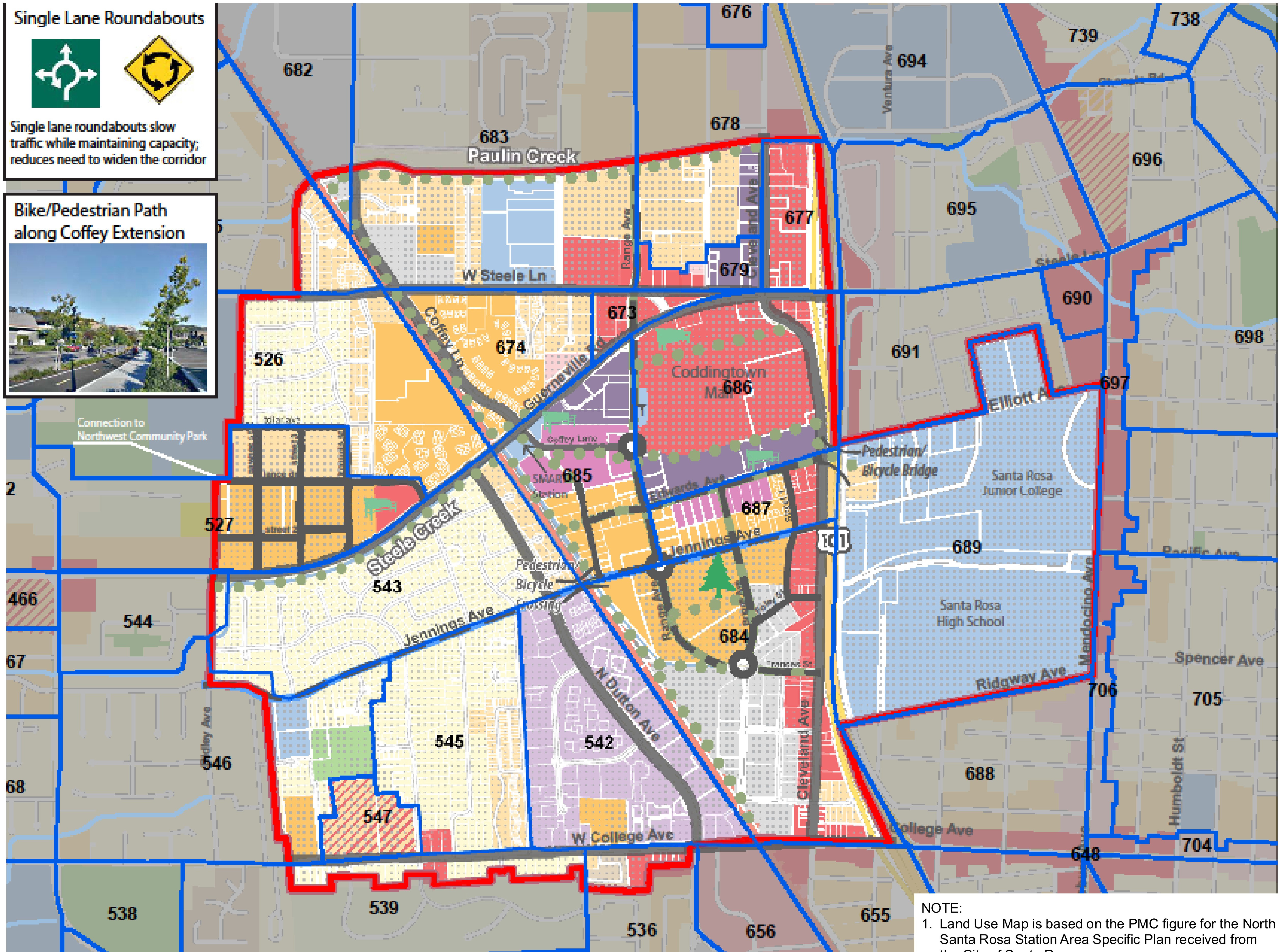
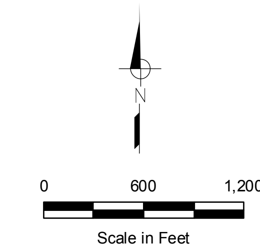
FIGURE 2

**City of Santa Rosa
Station Area Specific Plan**

PROPOSED PROJECT LAND USE



NOTE:
1. Land Use Map is based on the PMC figure for the North Santa Rosa Station Area Specific Plan received from the City of Santa Rosa.



LEGEND:

Station Are Boundary

Land Use

- Business Park
- Light Industry
- Low Residential
- Med Residential
- Med-High Residential
- Mobile Home Park
- Office
- Parks/Recreation
- Public/Institutional
- Retail and Business Service
- Retail/Med Residential
- Transit Village Mixed Use (40+ DUs/Acre)
- Transit Village Medium (25-40 DUs/Acre)
- Existing General Plan Land Use

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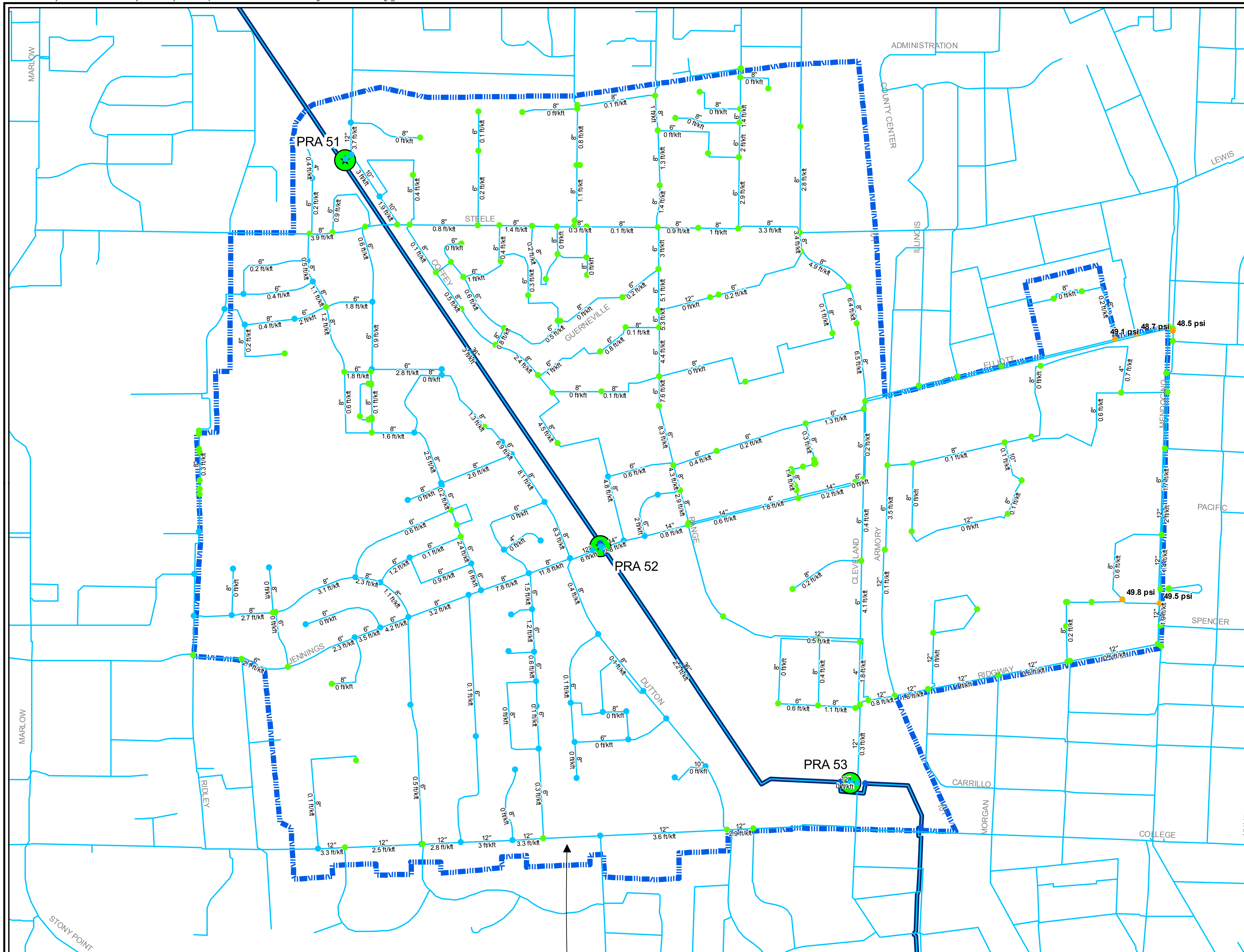

FIGURE 3

City of Santa Rosa
North Santa Rosa Station Area Specific Plan

BUILDOUT PEAK HOUR HYDRAULIC RESULTS WITH PROPOSED PROJECT

LEGEND

- North Station Specific Plan Area Boundary
- SCWA Aqueduct Pipeline
- SCWA Turnout

System Pressure (psi)

- Pressure < 40 psi
- 40 psi ≤ Pressure < 50 psi
- 50 psi ≤ Pressure < 60 psi
- 60 psi ≤ Pressure < 80 psi
- Pressure ≥ 80 psi

Velocity (feet per second)

- Velocity < 7 fps
- Velocity ≥ 7 fps

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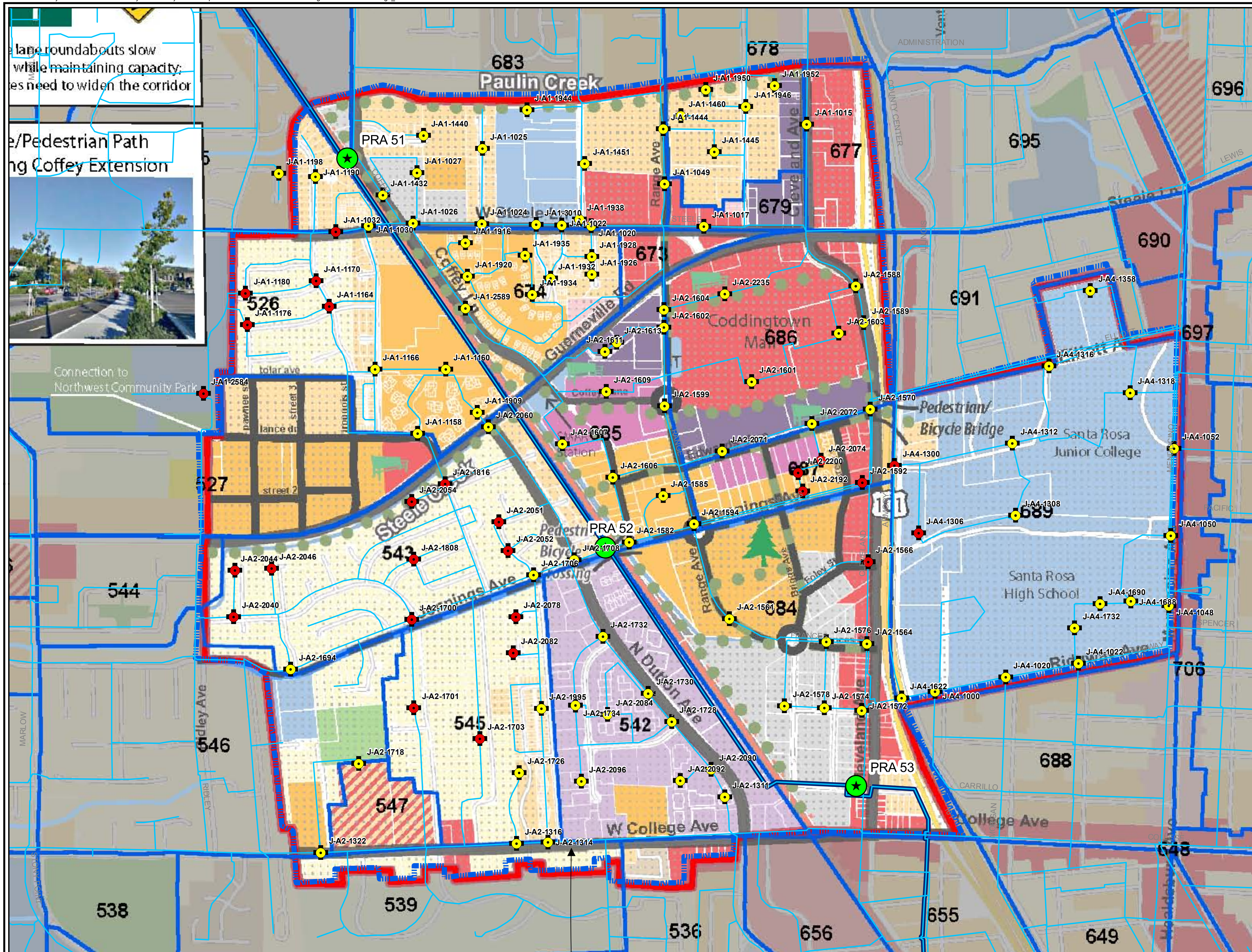

FIGURE 4

City of Santa Rosa
North Santa Rosa Station Area
Specific Plan

SELECTED NODES FOR FIRE FLOW SIMULATION

0 400 800
Scale in Feet

LEGEND

Selected Hydrant

- Fire Flow Requirement 1500 gpm
- Fire Flow Requirement 2500 gpm
- North Station Specific Plan Area Boundary
- SCWA Aqueduct Pipeline
- SCWA Turnout

CITY OF SANTA ROSA

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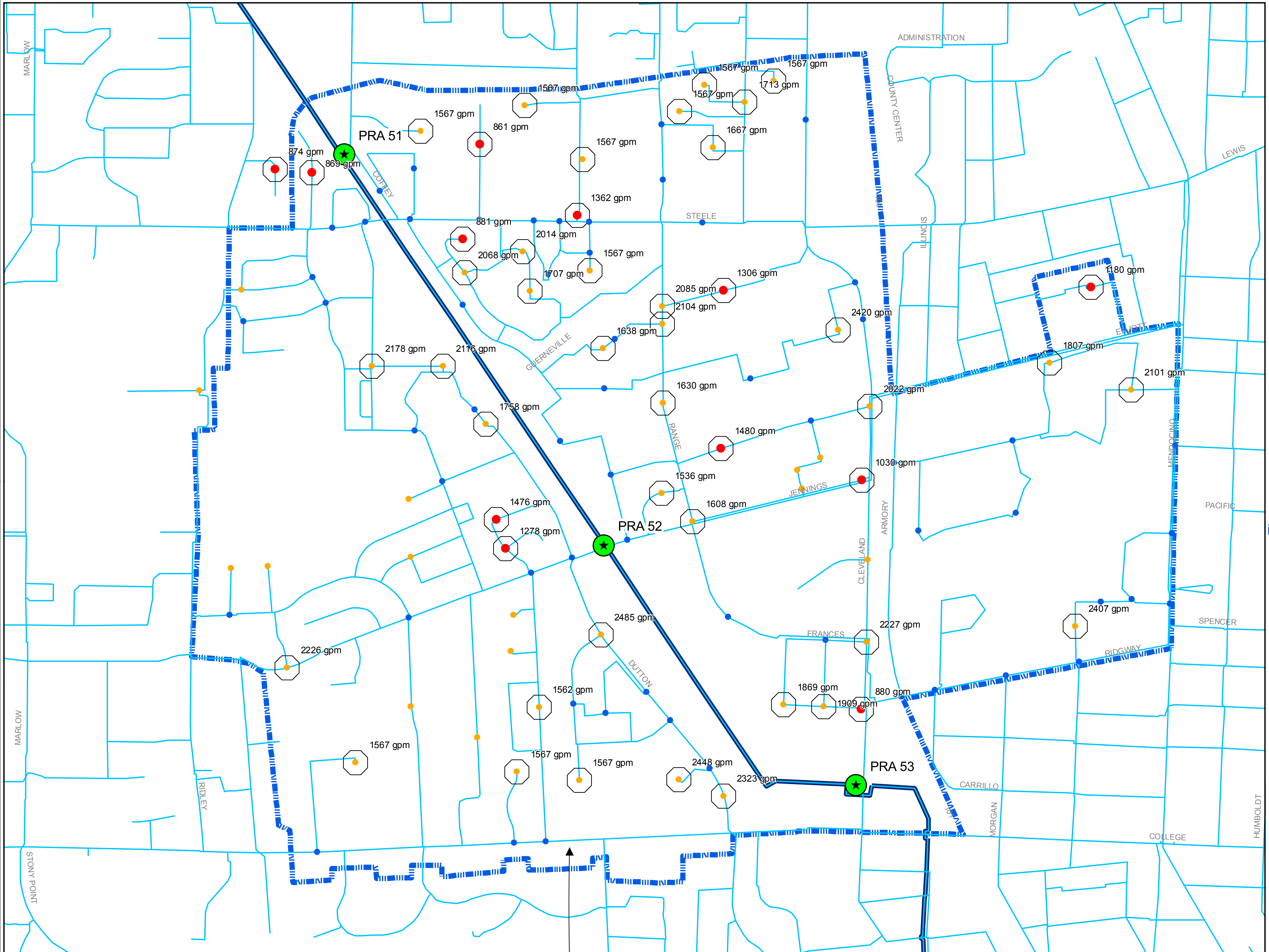

FIGURE 5

City of Santa Rosa
North Santa Rosa Station Area
Specific Plan

AVAILABLE FIRE FLOW DURING MAXIMUM DAY DEMAND

N

0 400 800

Scale in Feet

LEGEND

Available Fire Flow at 20 psi Residual

- Flow < 1500 gpm
- 1500 gpm ≤ Flow ≤ 2,500 gpm
- Flow > 2500 gpm
- Failed to Meet Fire Flow Requirement
- North Station Specific Plan Area Boundary
- SCWA Aqueduct Pipeline
- SCWA Turnout

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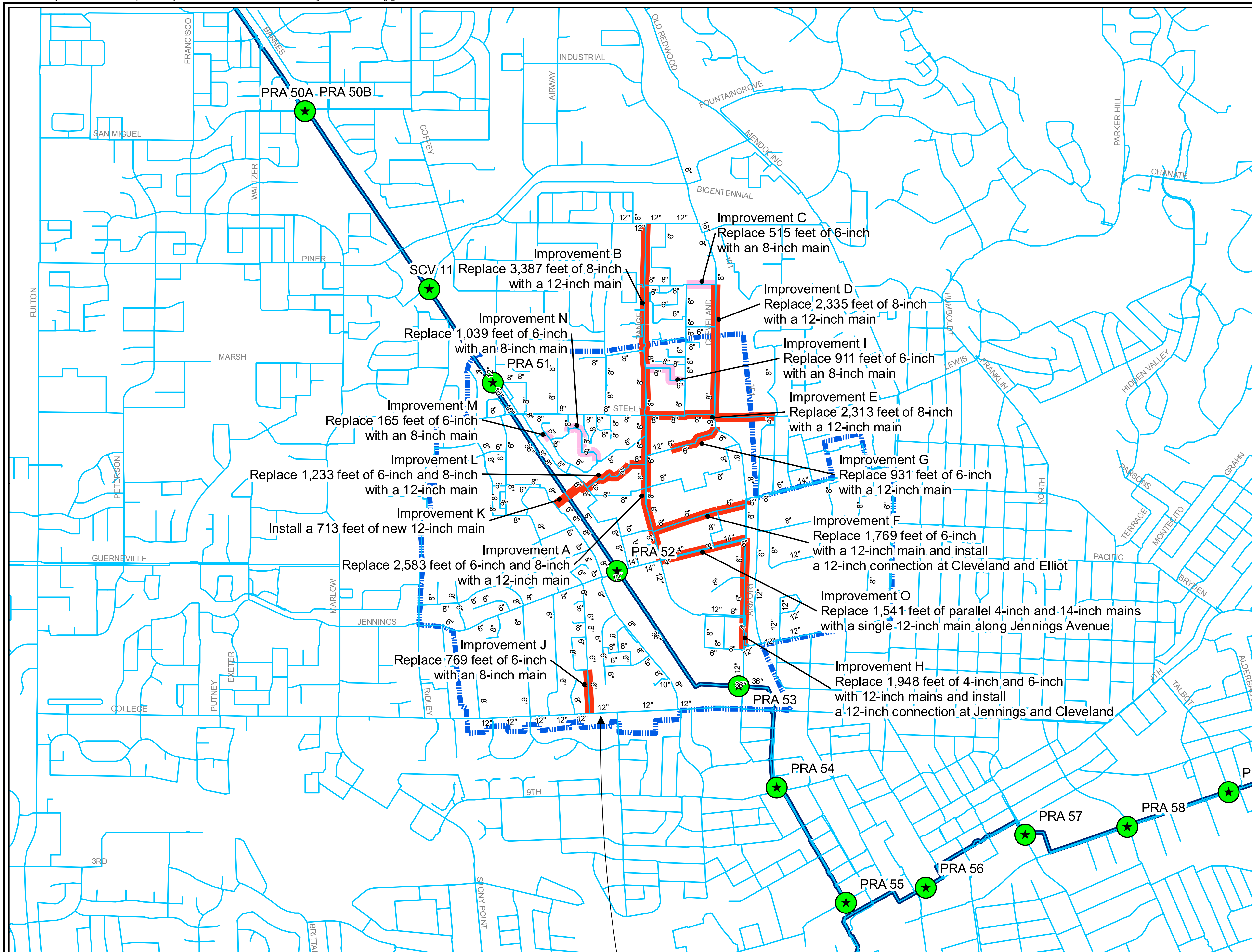

FIGURE 6

City of Santa Rosa
North Santa Rosa Station Area
Specific Plan

RECOMMENDED IMPROVEMENTS

N

0 500 1,000
Scale in Feet

LEGEND

North Station Specific Plan Area Boundary

Pipeline Improvements

- New 8-inch Main
- New 12-inch Main
- SCWA Aqueduct Pipeline
- SCWA Turnout

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Consulting Engineers

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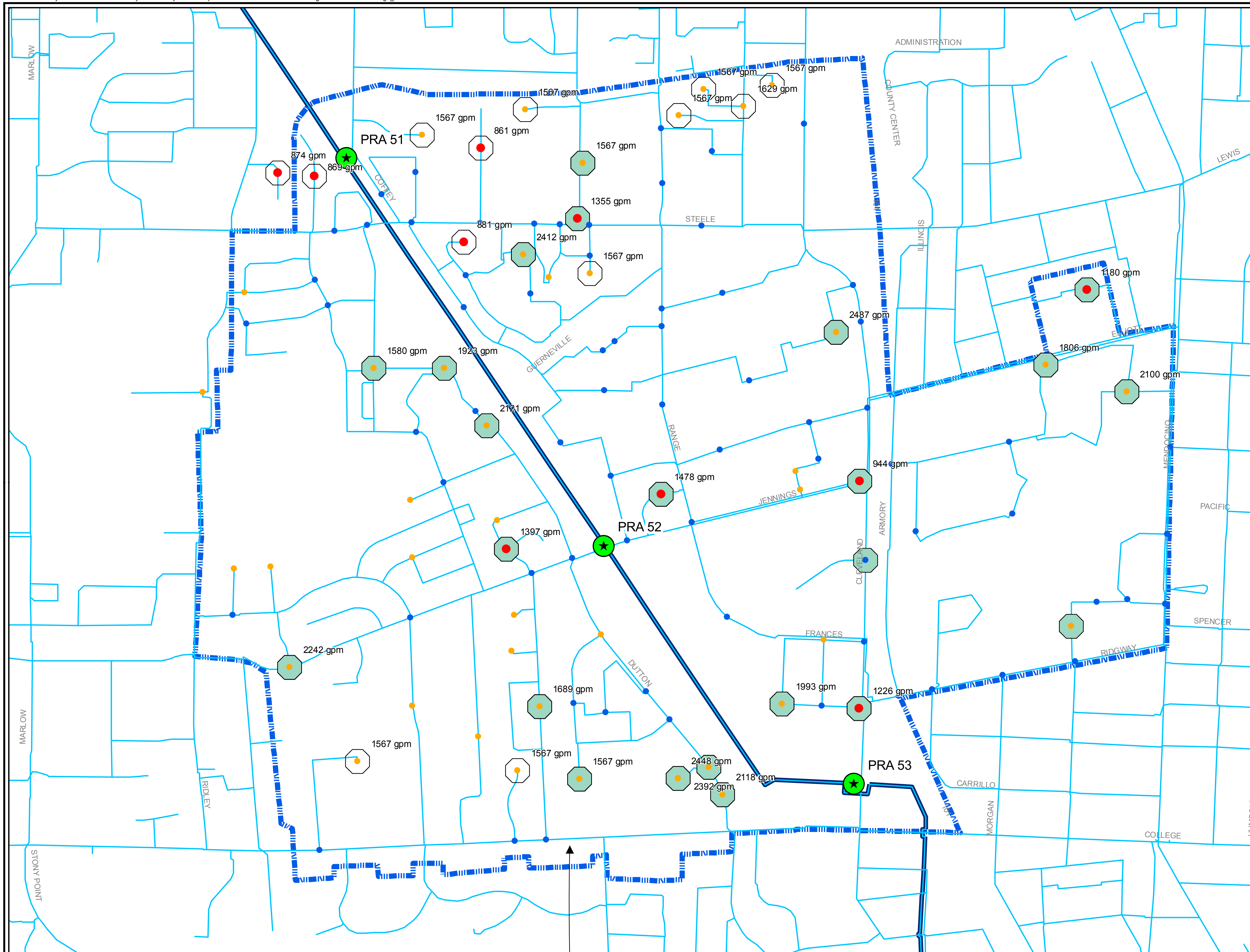

FIGURE 7

City of Santa Rosa
North Santa Rosa Station Area
Specific Plan

AVAILABLE FIRE FLOW DURING MAXIMUM DAY DEMAND WITH IMPROVEMENTS

N

0 400 800
Scale in Feet

LEGEND

Available Fire Flow at 20 psi Residual

- Flow < 1500 gpm
- 1500 gpm ≤ Flow ≤ 2,500 gpm
- Flow > 2500 gpm
- Two Hydrants Used for Fire Flow
- Failed to Meet Fire Flow Requirement
- North Station Specific Plan Area Boundary
- SCWA Aqueduct Pipeline
- SCWA Turnout

CITY OF SANTA ROSA

WEST YOST ASSOCIATES
Consulting Engineers

APPENDIX D3- INFRASTRUCTURE REPORT

Coastland

Civil Engineering - Construction Management - Building Dept. Services

CITY OF SANTA ROSA
NORTH STATION AREA SPECIFIC PLAN

INFRASTRUCTURE REPORT

March 28, 2012

Prepared by:

REGISTERED PROFESSIONAL ENGINEER
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EXP. 6/30/12
CIVIL
STATE OF CALIFORNIA

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EXECUTIVE SUMMARY

The North Santa Rosa Station is one of fourteen stations being planned by the Sonoma-Marin Area Rail Transit (SMART) for a commuter rail service along the Northwest Pacific railroad. Recognizing the opportunity to transition the area into a more transit-oriented community, the City of Santa Rosa (City) has embarked upon a Specific Plan for the North Santa Rosa Station Area (Area), focusing on the area approximately one-half mile around the future transit station. This study will identify the baseline (or existing) infrastructure within the Area and improvements needed to transition the Area into a transit oriented community. Specifically the following utilities within the Area were evaluated:

- Water
- Wastewater
- Storm Drainage
- Cable
- Telecommunication
- Electricity
- Natural Gas

Based on the preferred land use alternative, water demand increase will be approximately 1.14 million gallons per average day at build-out of the alternative. This increase triggers significant water and wastewater improvements, which are identified in the following two tables.

TABLE ES-1: WATER SYSTEM IMPROVEMENTS AND PLANNING LEVEL ESTIMATES OF CONSTRUCTION COST

Improvement ID	Location	Cost
Improvement A	Range Avenue, from Jennings Avenue to West Steele Lane	$827,000
Improvement B	Range Avenue, from West Steele Lane to Russell Avenue	$1,084,000
Improvement C	State Farm Drive, from McBride Lane to Cleveland Avenue	$137,000
Improvement D	Cleveland Avenue, from West Steele Lane to State Farm Drive	$748,000
Improvement E	West Steele Lane, from Range Avenue to Illinois Street	$741,000
Improvement F	Edwards Avenue, from Range Avenue to Cleveland Avenue and tie-in at intersection of Edwards Avenue and Cleveland Avenue/ Elliot Avenue	$567,000
Improvement G	South of Guerneville Road, between Cleveland Avenue and Range Avenue	$298,000
Improvement H	Cleveland Avenue, from Frances Street to Ridgeway Avenue and tie-in at Jennings Avenue and Cleveland Avenue	$624,000
Improvement I	North of West Steele Lane, between Range Avenue and McBride Lane	$242,000
Improvement J	Eardley Avenue, between West College Avenue and Tammy Way	$204,000
Improvement K	Guerneville Road, between Coffey Lane and Westberry Drive	$229,000
Improvement L	Coffey Lane Extension, between end of existing Coffey Lane to Range Avenue	$395,000

Improvement ID	Location	Cost
Improvement M	Plata Court, between Roca Court and Dorado Court	$44,000
Improvement N	Plata Court, east of Dorado Court	$276,000
Improvement O	Jennings Avenue, between Range Avenue and Cleveland Avenue	$494,000
Improvement P	Pawnee Street extension, from end to Guerneville Road	$440,000
Improvement Q	Iroquois Street extension, from end to Guerneville Road	$212,000
Improvement R	New Street 3, from end to Guerneville Road	$426,000
Improvement S	Lance Drive extension, from Ridley Avenue to Iroquois Street	$394,000
Improvement T	New Street 2, from Ridley Avenue to proposed Iroquois Street extension	$392,000
Improvement U	Briggs Avenue extension, from Edwards Avenue to Range Avenue/Frances Street	$549,000
Improvement V	New Street 1, from Edwards Avenue to Foley Street	$400,000
	Water Improvements Grand Total:	$9,723,000

TABLE ES-2: WASTEWATER SYSTEM IMPROVEMENTS AND PLANNING LEVEL ESTIMATES OF CONSTRUCTION COST

Improvement ID	Location	Cost
Improvement 1	Cleveland Avenue, from II2705MH017 to II2710MH062	$111,000
Improvement 2	Cleveland Avenue, from II2705MH066 to II2705MH017	$871,000
Improvement 3	New Coffey Lane extension, from II2709MH73 to Range Avenue	$367,000
Improvement 4	RR tracks, from II2709MH070 to II2709MH073	$155,000
Improvement 5	Edwards Avenue, from Range Avenue to II2710MH057	$411,000
Improvement 6	Jennings Avenue, from Range Avenue to II2710MH072	$85,000
Improvement 7	From II2709MH075 to II2710MH055	$84,000
Improvement 8	Pawnee Street extension, from end to Guerneville Road	$372,000
Improvement 9	Iroquois Street extension, from end to Guerneville Road	$179,000
Improvement 10	New Street 3, from end to Guerneville Road	$360,000
Improvement 11	Lance Drive extension, from end to Guerneville Road	$333,000
Improvement 12	New Street 2, from end to proposed Iroquois Street extension	$331,000
Improvement 13	Briggs Avenue extension, from Range Avenue/Frances Street to Coffey Lane extension	$464,000
Improvement 14	New Street 1, from Foley Street to Edwards Avenue	$338,000
	Wastewater Improvements Grand Total:	$4,461,000

City policies require that new projects implement non-structural treatment alternatives to reduce the volume of storm water runoff and improve storm water quality. These would include living roofs, structural soil, infiltration, rainwater harvesting, vegetated buffer strips and swales, rain gardens, constructed wetlands, pervious pavement, and impervious area disconnection. As such, large scale improvements to the storm drainage system are not anticipated. Localized improvements that may be required will be provided by the applicant on a project-specific basis.

Dry utility providers (AT&T, Comcast, and PG&E) indicated that infrastructure improvements will be needed to adequately serve the Area at build-out. These improvements would be determined on a project-specific basis and required to be constructed by the applicant or utility provider. As such, no cost should be borne by the City. Refer to Section 5 for further details.

SECTION 1. BACKGROUND

This section provides a general purpose and need for this Infrastructure Needs Technical Analysis Report and a brief description of the boundary of the Area.

a. Purpose and Need

The North Santa Rosa Station is one of fourteen stations being planned by the Sonoma-Marin Area Rail Transit (SMART) for a commuter rail service. Recognizing the opportunity to transition the area into a more transit-oriented community, the City has embarked upon a Specific Plan for the Area, focusing on the area approximately one-half mile around the future transit station. An infrastructure needs assessment is vital in order to support this type of community conversion. This Infrastructure Needs Assessment will evaluate both wet (water, sewer, and storm drain) and dry (power, natural gas, and telecommunication) utilities needed to provide for an orderly development transition plan for this Area. This study will identify the baseline (or existing) infrastructure within the Area and improvements needed to transition the Area into a transit oriented community.

b. Site Description

Currently, the Area is primarily residential, with significant pockets of commercial and industrial interspersed. The largest commercial entity is the Coddingtown Mall, located generally in the northeastern portion of the Area. The Charles M. Schulz museum is located in the northeastern portion of the Area. The primary uses in the southeastern portion of the Area are industrial & business park.

With the exception of Santa Rosa High School and Santa Rosa Junior College located east of Highway 101, the Area is located west of Highway 101 and generally bounded by Paulin Creek to the north, Highway 101 to the east, College Avenue to the south, and several roads on the west side (Manhattan Way south of Jennings Avenue, Ridley Avenue between Jennings Avenue and the Northwest Community Park, the eastern edge of the Northwest Community Park, and slightly east of Apache Street). A majority of the Area is developed; however a few large vacant parcels remain.

For the purposes of this study, the Area is further divided into 24 different Traffic Analysis Zones (TAZ) areas.

SECTION 2. WATER SYSTEM

As described in Section 1, a majority of the Area is developed and utilities to serve the existing residents and businesses are present. This section will briefly discuss the existing water system and proposed water system improvements for the Area.

Based on the draft specific plan, about one-third of the Area will be redeveloped to achieve a more transit oriented community. The area to be redeveloped in the vicinity of Coddingtown Mall and the proposed SMART transit station, although there are pockets of areas to be redeveloped in the southeastern portion of the Area.

a. Existing System

The Sonoma County Water Agency (SCWA) serves as the water service wholesaler and the City serves as the water service retailer within the Area. As the wholesaler, SCWA provides water to the City at three turn-outs in the Area. Water enters the City's distribution system at these turn-outs, and the City is responsible for operation and maintenance of the distribution system. Water services are off the City's distribution system.

The existing water system in the Area south of the Coddingtown Mall consists primarily of 6 inch and 8 inch Asbestos Cement (AC) pipe with some newer polyvinyl chloride (PVC) pipe. The Area at the west end of Guerneville Road is bordered on the east and west sides by 8 inch AC pipe mainline; there is also an 8 inch polyvinyl chloride PVC main in Pawnee Street which dead ends at the north side of the unincorporated area. The Area is within one pressure zone.

Figure 1 provides a general overview of the City's water system for the Area.

b. Estimation of Water Demand Increase

Overall, the estimated water demand increase for the Area is approximately 1.14 million gallons per average day (mgd). Table 1 presents the water demand increases by TAZ area. Significant assumptions used for the calculation are:

- 2.54 persons per household
- Usage per person: 122 gallons per day (gpd)
- Single- and multi-family residential units have same daily water consumption
- Office conversion: 500 square feet per equivalent dwelling unit (SF/EDU)
- Strip commercial conversion: 1,000 SF/EDU
- Shopping center conversion: 1,000 SF/EDU
- Recreation conversion: 2,819 SF/EDU
- Institutional conversion: 500 SF/EDU
- Warehouse conversion: 1,300 SF/EDU
- Commercial and retail are identical for purposes of residential equivalency factor (REF) per SF
- Warehouse and industrial are identical for purposes of REF per SF

REFs are used to convert non-residential uses to an equal residential equivalency, as this allows for more straight-forward calculations of demands and impacts.

According to the City, which prepared the Water Supply Assessment for the project, the City will have sufficient water supply to serve build-out of the draft plan.

c. Summary of Improvements

The City contracted with West Yost Associates (WYA) to conduct hydraulic models of the Area based on the estimated water demand increases. Included as Attachment A is the Hydraulic Analysis of the Proposed North Station Area Specific Plan, Santa Rosa Tech Memo (Tech Memo), dated February 2012. The Tech Memo discusses the results of two different hydraulic models prepared for the Area:

- Peak hour evaluation
- Maximum day demand with fire flow evaluation

Furthermore, the analysis also included a Storage capacity evaluation. The WYA report utilized the following assumptions in conducting the evaluations:

- Proctor Tanks are not in service.
- Operational demands equals to 25 percent of maximum day demand (maximum day demand is 25,460 gallons per minute [gpm]).
- Fire flow demand equals to two fire flow events at 2,500 gpm fire for a 3 and 4 hour duration.
- Emergency demand equals to 100 percent of average day demand (average day demand is 12,730 gpm).
- 40 percent of SCWA storage (40 percent times 61.5 million gallons [MG] equals to 24.6 MG) is available for the City's Aqueduct Pressure Zone storage.
- Available emergency groundwater supply is 5.18 MG, which includes Farmers Lane Wells No. 1 & 2, Peters Spring and Carley Wells (at 24 hours of production).
- Any required pipelines added to the hydraulic model will be modeled with a roughness coefficient (C-factor) of 130, which is representative of an aged pipeline.
- Under normal system operations, typical system pressures shall be maintained above a minimum of 50 pounds per square inch (psi) in the pipeline main.
- Under peak hour conditions, the typical system pressures shall be maintained above a minimum of 40 psi in the pipeline main.
- Under maximum day plus fire flow condition, residual system pressures shall be maintained above a minimum of 20 psi in the pipeline main.
- An average day to maximum day demand peaking factor of 2.0 shall be used.
- An average day to peak hour demand factor of 3.5 shall be used.
- Maximum allowable head loss rate under any hydraulic condition: 10 feet/1,000 feet.
- Maximum allowable velocity: 7 feet per second (non-fire condition in distribution mains) and 10 feet per second (fire condition in distribution mains).
- Build-out hydraulic model of the City’s water distribution system was used as the basis for evaluation and comparison of the hydraulic conditions with the proposed Project.

The Tech Memo indicated that existing storage was adequate and no new storage was required in accordance with City standards.

Furthermore, all existing mains were adequately sized under the peak hour evaluation. However, under the maximum day demand with fire flow evaluation, the Tech Memo indicates that significant water infrastructure improvements are needed at build-out of the draft plan. Overall, a total of 4.19 miles of new water mains will be needed, to provide for more intense development and sufficient fire flow rates. Below is a breakdown of length by pipe diameter:

- 8”: 0.64 mile
- 12”: 3.55 miles

The Tech Memo did not take into account new water mains that would likely be required where new roads are proposed per the draft plan. City standards require new 8” water mains underneath new roads in residential areas and 12” water mains underneath new roads in non-residential areas. The assumption was made that 12” water mains would be constructed concurrently with new roads given the greater density and fire flow requirements in the areas of change. These improvements are in addition to those identified in the Tech Memo, and are in undeveloped or underdeveloped areas. Taking this into account increases total length to 5.86 miles of new mains, by the following breakdown:

- 8”: 0.64 mile
- 12”: 5.22 miles

Other improvements that will be needed include fire hydrants (in accordance with City Standards) spaced every 300’ (maximum) in non-residential areas and 500’ (maximum) in low-density residential areas, and valves on every leg of a tee or cross. New service laterals will need to be installed from the new main to the existing meter box.

Table 2 presents a summary of the water system improvements needed by TAZ area. Figure 2 provides a general overview of the City’s needed water system improvements for the Area.

This analysis assumes that the demand from the undeveloped parcels in TAZ 527 were included in the City’s hydraulic model for the 2035 General Plan buildout.

The hydraulic model provided by the City indicates that no new connections into the SCWA transmission system are needed.

d. Estimated Costs of Improvements

Based on the above summary of needed water improvements, planning level estimates of probable construction costs were prepared. These planning level estimates are based on the following general assumptions:

- Cover over top of main in accordance with Section VIII of the City Water Design Standards;
- Sand bedding 6” below bottom of main to 12” above main;

- Trench width of 8” beyond each side of the pipe;
- Road section of 4” asphaltic concrete (AC) over 12” Aggregate Base (AB);
- Excavated material is suitable for backfill between sand zone and AB; and
- PVC water mains.

Furthermore, recent bid information for City water main improvement projects was evaluated. Per linear foot costs for 8” water mains and 12” water mains were estimated at $265 and $320, respectively. This includes a multiplier of 1.35 to reflect costs associated with engineering, environmental, construction management, and contingency. This per linear foot costs includes other ancillary costs, such as valves, fire hydrants (with valves), tie-ins, and re-connections for services.

Based on the improvements identified in the Tech Memo, a total investment of approximately $6.9M (rounded to the next highest one-hundred thousand dollars) is needed.

- 8”: $0.9M
- 12”: $6.0M

In addition to the improvements identified in the Tech Memo, new water main facilities will likely be required when new roads are built. Overall, an investment of approximately $9.7M in water infrastructure is needed at build-out of the selected alternative. Below is a cost by pipe diameter:

- 8”: $0.9M
- 12”: $8.8M

Table 2 presents a summary of the water infrastructure planning level estimates of probable construction costs by TAZ area. Please note that these costs reflect water mains only. These costs are reflective of current costs and no escalation factor is included. According to the City, which prepared the Water Supply Assessment for the project, the City will have water supply to serve build-out of the draft plan. Water treatment plant expansion may or may not be needed.

SECTION 3. WASTEWATER SYSTEM

As described in Section 1, a majority of the Area is developed and utilities to serve the existing residents and businesses are present. This section will briefly discuss the existing wastewater system and proposed wastewater system improvements for the Area.

a. Existing System

The City serves as the wastewater provider within the Area. As such, the City is responsible for operation and maintenance of the collection system. Wastewater is collected from individual services into the City’s collection system.

The existing wastewater collection system in the Area consists primarily of 6 inch AC Pipe and 8 inch PVC pipe in Edwards, Jennings and Range Avenues flowing to a 12 inch PVC pipe running north along the railroad from Jennings Avenue to Guerneville Road. The flows are then routed to a 30 inch Reinforced Concrete Pipe (RCP) Trunk Main in Northcoast Street. The 30 inch Trunk Main runs south through the unincorporated site at the west end of Guerneville Road and then turns west onto Guerneville Road. In addition to the Trunk Main, there is also an 8 inch AC pipe Collector Main present in the unincorporated area.

Figure 3 provides a general overview of the City's wastewater system for the Area.

b. Summary of Improvements

The City modeled and identified wastewater main improvements for the Area based on the water demand increases discussed in Section 2. A total of seven mains are required to be upsized at build-out of the selected alternative. Overall, a total of 1.32 miles of new wastewater mains will be needed. Below is a breakdown of length by pipe diameter:

- 8": 0.07 mile
- 12": 1.16 miles
- 15": 0.09 mile

Included as Attachment B is supporting documentation provided by the City regarding needed wastewater improvements.

The improvements identified by the City did not take into account new wastewater mains that would likely be required where new roads are proposed per the draft plan. City standards require new 8" wastewater mains underneath new roads in residential areas and 10" wastewater mains underneath new roads in non-residential areas. The assumption was made that 10" wastewater mains would be constructed given the greater density in the areas of change. These improvements are in addition to those identified in the Tech Memo, and are in undeveloped or underdeveloped areas. Taking this into account increases total length to 3.42 miles of new mains, by the following breakdown:

- 8": 0.07 mile
- 10": 1.66 miles
- 12": 1.16 miles
- 15": 0.09 mile

Other improvements include manholes (in accordance with City Standards) spaced every 300'. New sewer laterals will need to be installed from the new main to the back of walk.

Table 3 presents a summary of the wastewater system improvements needed by TAZ area. Figure 4 provides a general overview of the City's needed wastewater system improvements for the Area.

c. Estimated Costs of Improvements

Based on the above summary of needed wastewater improvements, planning level estimates of probable construction costs were prepared. These planning level estimates are based on the following general assumptions:

- Minimum cover over top of main is 36” in accordance with Section IX of the Wastewater Design Standards (an average depth of 6’) was used for these estimates);
- Minimum slope of 0.005 feet/foot in accordance with Section VIII of the Wastewater Design Standards;
- Sand bedding 6” below bottom of main to 12” above main;
- Trench width of 12” beyond each side of the pipe;
- Road section of 4” AC over 12” AB;
- Excavated material is suitable for backfill between sand zone and AB; and
- PVC wastewater mains; and
- All mains with existing or proposed roads

Furthermore, recent bid information for City wastewater main improvement projects was evaluated and feedback from a local contractor that has completed numerous projects within the City was obtained. Per linear foot costs for 8” wastewater mains, 10” wastewater mains, 12” wastewater mains, and 15” wastewater mains were estimated at $281, $270, $297, and $324, respectively. This includes a multiplier of 1.35 to reflect costs associated with engineering, environmental, construction management, and contingency. This per linear foot costs includes other ancillary costs, such as re-connections for services.

Based on the improvements identified in the City’s model, an investment of approximately $2.1M (rounded to the next highest one-hundred thousand dollars) is needed.

- 8”: $0.1M
- 12”: $1.8M
- 15”: $0.2M

In addition to the improvements identified in the City’s Memo, new wastewater mains will likely be required when new roads are built. Overall, a total investment of approximately $4.5M in wastewater infrastructure is needed at build-out of the selected alternative. Below is a cost by pipe diameter:

- 8”: $0.1M
- 10”: $2.4M
- 12”: $1.8M
- 15”: $0.2M

Table 3 presents a summary of the wastewater infrastructure planning level estimates of probable construction costs by TAZ area. These costs are reflective of current costs and no escalation factor is included. Please note that these costs reflect wastewater mains only, and do not reflect costs associated with expanding existing wastewater treatment plants and effluent disposal systems.

SECTION 4. STORM DRAINAGE SYSTEM

As described in Section 1, a majority of the Area is developed and utilities to serve the existing residents and businesses are present. This section will briefly discuss the existing storm drainage system and proposed storm drainage system improvements for the Area.

a. Existing System

The City provides storm drainage collection within the Area and is responsible for operation and maintenance of the collection system. SCWA provides stream maintenance of Paulin Creek and Steele Creek within the Area.

The Area drains primarily to Steele Creek, which runs north-south along the railroad between Frances Street and Guerneville Road, then runs west along Guerneville Road to Ridley Avenue where it turns south and departs from the Area limits. The existing storm drain systems in the Area consist of 15 to 54 inch diameter storm drain pipes in Cleveland Avenue, Edwards Avenue, Jennings Avenue, Frances Street, Steele Lane and Guerneville Road with multiple outfalls into Steele Creek. The City has indicated that there is one location of poor drainage in the existing system between the Railroad and Coffey Lane immediately north of West Steele Lane. The land at this location drains poorly and drainage can likely be improved by re-grading the existing ditch and lowering the storm drain inlet in this area.

Figure 5 provides a general overview of the City's storm drainage system for the Area.

b. Storm Drainage Requirements

The City's storm water permit with the State Water Quality Control Board regulates both storm water and non-storm water discharges into the Santa Rosa municipal storm drain system with the intent to reduce storm water pollution, protect the water quality of creeks and waterways, and continue to promote groundwater recharge. With the new National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit issued by the Regional Water Quality Control Board (RWQCB), the Area development will need to comply with Low Impact Development (LID) design strategies and best management practices (BMPs) selection criteria to control runoff quality and quantity. These requirements will need to be handled on an area-wide (integrated basis) or individually on each parcel as development or re-development occurs. LID aims to mimic the existing hydraulic function of the undeveloped site by capturing, treating, and infiltrating storm water as close to the source as possible and using small scale landscape-based features located throughout the project site, reducing the volume of storm water runoff and improving storm water quality. LID practices consist of such measures as living roofs, structural soil, infiltration, rainwater harvesting, vegetated buffer strips and swales, rain gardens, constructed wetlands, pervious pavement, and impervious area disconnection. The proposed "Complete Street" corridors are an example of this type of development.

The guidelines require that new developments create no net increase in runoff from existing conditions for all new capital improvement program and development projects meeting the following criteria, based on the City of Santa Rosa and Sonoma County Storm Water Low Impact

Technical Design Manual, dated August 2011 (http://ci.santa-rosa.ca.us/ doclib/ Documents/ LID_manual2.pdf):

- All development that creates or replaces a combined total of 1 acre or more of impervious surface
- Streets, roads, highways, and freeways projects creating or replacing 10,000 square feet or more of new impervious surface. This class includes all surfaces used for transportation of pedestrians, bicycles, and motorized vehicles.
- All development that includes four or more dwelling units.
- Industrial parks, commercial strip malls, retail gasoline outlets, restaurants, or automotive service facilities creating or replacing 10,000 square feet or more of impervious surface. Parking lots, 25 or more spaces or 10,000 sf not associated with other projects.
- Parking lots with 25 or more spaces or 10,000 sf not associated with other projects.

It is assumed that these non-structural improvements will be maximized, but may not fully capture all runoff and that storm drainage improvements may be needed inside areas that are currently undeveloped, such TAZ 527 and the central eastern portion of TAZ 684. Localized improvements that may be required with be provided by the applicant on a project-specific basis. However, large scale improvements to the storm drainage system are not anticipated.

c. One-Hundred Year Flood Plain

The Area does not lie within a Special Flood Hazard Area per FEMA Flood Insurance Rate Mapping (awaiting confirmation from City Transportation and Public Works Department as the map for this area was not published by FEMA).

SECTION 5. CABLE & TELECOMMUNICATION SYSTEMS

As described in Section 1, a majority of the Area is developed and utilities to serve the existing residents and businesses are present. This section will briefly discuss the existing cable and telecommunication systems and discussions with Comcast and AT&T staff regarding improvements for the Area.

a. Existing System

AT&T and Comcast provide telecommunication, cable television, and internet services. Utility infrastructure in the Area is located both above ground on utility poles and below ground.

b. Summary of Improvements

Coastland contacted AT&T and Comcast representatives to ascertain the improvements needed due to build-out of the Area. AT&T and Comcast indicated that infrastructure improvements will be needed to adequately serve the Area at build-out. These improvements would be determined on a project-specific basis and required to be constructed by the applicant or utility provider. In conjunction with development, it may be desirable to underground some of the existing overhead facilities to improve the aesthetics and reliability of the utilities.

The following is a summary of conversations with AT&T and Comcast representatives:

AT&T

Coastland discussed the preferred alternative with Steve Ellison of AT&T. In general, AT&T does not foresee any significant costs to the City. AT&T will be able to serve all improvements. Developers will be responsible for the costs associated with any improvements, with specifics of the improvement and cost to be determined on a case by case basis. AT&T is under a franchise agreement with the City so any costs associated with utility vault adjustments or relocations due to sewer/water/roadway improvements will likely be borne by AT&T. As a side note, any improvements to AT&T facilities are required to be underground for beautification purposes.

Comcast

Coastland discussed the preferred alternative with Paul Alabona, Engineering Supervisor, with CableCom of California, Inc., a contractor for Comcast. Existing infrastructure in place now may be enough for some expansion of certain areas, but not all of the expansion. Comcast will have to deploy more fiber, fiber nodes, and coax cables as build-out of the Area takes place. Comcast will approach the expansion on a case by case basis, dependant upon the needs and requests of property owners. For example, Comcast may not be required to feed all of the expansion and certain commercial buildings may not want Comcast to service their facilities.

SECTION 6. GAS & ELECTRIC SYSTEMS

As described in Section 1, a majority of the Area is developed and utilities to serve the existing residents and businesses are present. This section will briefly discuss the existing electric and natural gas systems and discussions with PG&E staff regarding improvements for the Area.

a. Existing System

PG&E provides electric and natural gas services. Electrical infrastructure in the Area is located above ground on utility poles as well as below ground. Natural gas pipelines are below ground.

b. Summary of Improvements

Coastland contacted PG&E representatives (Mike Miller) to ascertain the improvements needed due to build-out of the Area. In general, responses indicated that information generated to date will provide for a broad description of improvements needed to serve the Area at build-out, but the current level of information is insufficient to ascertain specific improvements needed. According to PG&E, improvements are typically identified on a project-level and not planning-level basis and no further information can be provided at this time. In conjunction with development, it may be desirable to underground some of the existing overhead facilities to improve the aesthetics and reliability of the utilities.

SECTION 7. FINDINGS AND RECOMMENDATIONS

The water demand increases will trigger the need for significant water and wastewater improvements, as existing facilities will be undersized at build-out. The needed improvements are identified below:

WATER SYSTEM IMPROVEMENTS

Improvement ID	Location	Existing/ Proposed Sizes
Improvement A	Range Avenue, from Jennings Avenue to West Steele Lane	6” & 8”/12”
Improvement B	Range Avenue, from West Steele Lane to Russell Avenue	8”/12”
Improvement C	State Farm Drive, from McBride Lane to Cleveland Avenue	6”/8”
Improvement D	Cleveland Avenue, from West Steele Lane to State Farm Drive	8”/12”
Improvement E	West Steele Lane, from Range Avenue to Illinois Street	8”/12”
Improvement F	Edwards Avenue, from Range Avenue to Cleveland Avenue and tie-in at intersection of Edwards Avenue and Cleveland Avenue/ Elliot Avenue	6”/12”
Improvement G	South of Guerneville Road, between Cleveland Avenue and Range Avenue	6”/12”
Improvement H	Cleveland Avenue, from Frances Street to Ridgeway Avenue and tie-in at Jennings Avenue and Cleveland Avenue	4” & 6”/12”
Improvement I	North of West Steele Lane, between Range Avenue and McBride Lane	6”/8”
Improvement J	Eardley Avenue, between West College Avenue and Tammy Way	6”/8”
Improvement K	Guerneville Road, between Coffey Lane and Westberry Drive	NA/12”
Improvement L	Coffey Lane Extension, between end of existing Coffey Lane to Range Avenue	6” & 8”/12”
Improvement M	Plata Court, between Roca Court and Dorado Court	6”/8”
Improvement N	Plata Court, east of Dorado Court	6”/8”
Improvement O	Jennings Avenue, between Range Avenue and Cleveland Avenue	4” & 14”/12”
Improvement P	Pawnee Street extension, from end to Guerneville Road	NA/12”
Improvement Q	Iroquois Street extension, from end to Guerneville Road	NA/12”
Improvement R	New Street 3, from end to Guerneville Road	NA/12”
Improvement S	Lance Drive extension, from Ridley Avenue to Iroquois Street	NA/12”
Improvement T	New Street 2, from Ridley Avenue to proposed Iroquois Street extension	NA/12”
Improvement U	Briggs Avenue extension, from Edwards Avenue to Range Avenue/Frances Street	NA/12”
Improvement V	New Street 1, from Edwards Avenue to Foley Street	NA/12”

WASTEWATER SYSTEM IMPROVEMENTS

Improvement ID	Location	Existing & Proposed Sizes
Improvement 1	Cleveland Avenue, from II2705MH017 to II2710MH062	6”/8”
Improvement 2	Cleveland Avenue, from II2705MH066 to II2705MH017	6” & 8”/12”
Improvement 3	New Coffey Lane extension, from II2709MH73 to Range Avenue	8”/12”
Improvement 4	RR tracks, from II2709MH070 to II2709MH073	12”/15”
Improvement 5	Edwards Avenue, from Range Avenue to II2710MH057	8”/12”
Improvement 6	Jennings Avenue, from Range Avenue to II2710MH072	6”/12”
Improvement 7	From II2709MH075 to II2710MH055	10”/12”
Improvement 8	Pawnee Street extension, from end to Guerneville Road	NA/10”
Improvement 9	Iroquois Street extension, from end to Guerneville Road	NA/10”
Improvement 10	New Street 3, from end to Guerneville Road	NA/10”
Improvement 11	Lance Drive extension, from end to Guerneville Road	NA/10”
Improvement 12	New Street 2, from end to proposed Iroquois Street extension	NA/10”
Improvement 13	Briggs Avenue extension, from Range Avenue/Frances Street to Coffey Lane extension	NA/10”
Improvement 14	New Street 1, from Foley Street to Edwards Avenue	NA/10”

City policies require that new projects construct non-structural treatment alternatives to reduce the volume of storm water runoff and improve storm water quality. These would include living roofs, structural soil, infiltration, rainwater harvesting, vegetated buffer strips and swales, rain gardens, constructed wetlands, pervious pavement, and impervious area disconnection. As such, large scale improvements to the storm drainage system are not anticipated. Localized improvements that may be required will be provided by the applicant on a project-specific basis.

Dry utility providers (AT&T, Comcast, and PG&E) indicated that infrastructure improvements will be needed to adequately serve the Area at build-out. These improvements would be determined on a project-specific basis and required to be constructed by the applicant or utility provider. As such, no cost should be borne by the City.

Table 1. Water Demand Increases by TAZ Area
City of Santa Rosa North Station Area Specific Plan
Infrastructure Needs Technical Analysis Report

TAZ Area	Average Day Water Demand (gpd)
526	64,500
527	4,400
674	51,700
678	94,800
679	145,800
683	36,800
684	11,900
685	255,600
686	369,400
687	101,500
Total	1,136,400

Notes & Assumptions
EDU = equivalent dwelling unit
gpd = gallons per day
REF = residential equivalency factor
SF = square foot
2.54 persons per household
Usage per person: 122 gpd
Single- and multi-family residential units have same daily water consumption
Office conversion: 500 SF/EDU
Commercial and retail identical for purposes of REF per SF
Strip commercial conversion: 1,000 SF/EDU
Shopping center conversion: 1,000 SF/EDU
Rec conversion means 2,819 SF (or 0.065 acre) uses 1 EDU of water
Institutional conversion: 500 SF/EDU
Warehouse and industrial identical for purposes of REF per SF
Warehouse conversion: 1,300 SF/EDU

Table 2. Water System Improvements and Planning Level Estimates of Construction Cost

City of Santa Rosa North Station Area Specific Plan

Infrastructure Needs Technical Analysis Report

Project ID	TAZ Area	Location	Existing Diameter (in)	Recommended Diameter (in)	Length (ft)	Cost
REQUIRED WATER IMPROVEMENTS						
Improvement A	685/686/687	Range Avenue, from Jennings Avenue to West Steele Lane	6 & 8	12	2,583	$827,000
Improvement B	OSPA	Range Avenue, from West Steele Lane to Russell Avenue	8	12	3,387	$1,084,000
Improvement C	OSPA	State Farm Drive, from McBride Lane to Cleveland Avenue	6	8	515	$137,000
Improvement D	OSPA/677/678/679	Cleveland Avenue, from West Steele Lane to State Farm Drive	8	12	2,335	$748,000
Improvement E	OSPA/673/677/679/686	West Steele Lane, from Range Avenue to Illinois Street	8	12	2,313	$741,000
Improvement F	686/687	Edwards Avenue, from Range Avenue to Cleveland Avenue and tie-in at intersection of Edwards Avenue and Cleveland Avenue/Elliot Avenue	6 NA	12 12	1,698 71	$544,000 $23,000
Improvement G	686	South of Guerneville Road, between Cleveland Avenue and Range Avenue	6	12	931	$298,000
Improvement H	684	Cleveland Avenue, from Frances Street to Ridgeway Avenue and tie-in at Jennings Avenue and Cleveland Avenue	4 & 6	12	1,948	$624,000
Improvement I	678	North of West Steele Lane, between Range Avenue and McBride Lane	6	8	911	$242,000
Improvement J	542	Eardley Avenue, between West College Avenue and Tammy Way	6	8	769	$204,000
Improvement K	526/543/674/685	Guerneville Road, between Coffey Lane and Westberry Drive	NA	12	713	$229,000
Improvement L[a]	673/674/685	Coffey Lane extension between end of existing Coffey Lane to Range Avenue	6 & 8	12	1,233	$395,000
Improvement M	674	Plata Court, between Roca Court and Dorado Court	6	8	165	$44,000
Improvement N	674	Plata Court, east of Dorado Court	6	8	1,039	$276,000
Improvement O	684/687	Jennings Avenue, between Range Avenue and Cleveland Avenue	4 & 14	12	1,541	$494,000
				Required Water Improvements Subtotal		**$6,910,000**

OTHER WATER IMPROVEMENTS						
Improvement P	527	Pawnee Street extension, from end to Guerneville Road	NA	12	1,375	$440,000
Improvement Q	527	Iroquois Street extension, from end to Guerneville Road	NA	12	660	$212,000
Improvement R	527	New Street 3, from end to Guerneville Road	NA	12	1,330	$426,000
Improvement S	527	Lance Drive extension, from Ridley Avenue to Iroquois Street	NA	12	1,230	$394,000
Improvement T	527	New Street 2, from Ridley Avenue to proposed Iroquois Street extension	NA	12	1,225	$392,000

Table 2. Water System Improvements and Planning Level Estimates of Construction Cost

City of Santa Rosa North Station Area Specific Plan

Infrastructure Needs Technical Analysis Report

Project ID	TAZ Area	Location	Existing Diameter (in)	Recommended Diameter (in)	Length (ft)	Cost
OTHER WATER IMPROVEMENTS (con't)						
Improvement U	684/687	Briggs Avenue extension, from Edwards Avenue to Range Avenue/Frances Street	NA	12	1,715	$549,000
Improvement V	684/687	New Street 1, from Edwards Avenue to Foley Street	NA	12	1,250	$400,000
				Other Water Improvements Subtotal		**$2,813,000**
				WATER IMPROVEMENTS GRAND TOTAL		**$9,723,000**

Notes

ID = identification

in = inches

ft = feet

OSPA = Outside Specific Plan Area

NA = Not applicable

All cost estimates rounded up to the next highest thousand dollars

a - The location of this main differs from the WYA report at the direction of City staff.

Table 3. Wastewater System Improvements and Planning Level Estimates of Construction Cost
City of Santa Rosa North Station Area Specific Plan
Infrastructure Needs Technical Analysis Report

Project ID	TAZ Area	Location	Existing Diameter (in)	Recommended Diameter (in)	Length (ft)	Cost
REQUIRED WASTEWATER IMPROVEMENTS						
Improvement 1	677/679/686	Cleveland Avenue, from II2705MH017 to II2710MH062	6	8	393	$111,000
Improvement 2	OSPA/677/678/679	Cleveland Avenue, from II2705MH066 to II2705MH017	6 & 8	12	2,930	$871,000
Improvement 3	685	New Coffey Lane extension, from II2709MH73 to Range Avenue	8	12	1,233	$367,000
Improvement 4	674/685	RR tracks, from II2709MH070 to II2709MH073	12	15	478	$155,000
Improvement 5	687	Edwards Avenue, from Range Avenue to II2710MH057	8	12	1,381	$411,000
Improvement 6	684/687	Jennings Avenue, from Range Avenue to II2710MH072	6	12	285	$85,000
Improvement 7	685	From II2709MH075 to II2710MH055	10	12	282	$84,000
				Required Wastewater Improvements Subtotal		**$2,084,000**
OTHER WASTEWATER IMPROVEMENTS						
Improvement 8	527	Pawnee Street extension, from end to Guerneville Road	NA	10	1,375	$372,000
Improvement 9	527	Iroquois Street extension, from end to Guerneville Road	NA	10	660	$179,000
Improvement 10	527	New Street 3, from end to Guerneville Road	NA	10	1,330	$360,000
Improvement 11	527	Lance Drive extension, from Ridley Avenue to Iriquois Street	NA	10	1,230	$333,000
Improvement 12	527	New Street 2, from Ridley Avenue to proposed Iroquois Street extension	NA	10	1,225	$331,000
Improvement 13	684/687	Briggs Avenue extension, from Edwards Avenue to Range Avenue/Frances Street	NA	10	1,715	$464,000
Improvement 14	684/687	New Street 1, from Edwards Avenue to Foley Street	NA	10	1,250	$338,000
				Other Wastewater Improvements Subtotal		**$2,377,000**
				WASTEWATER IMPROVEMENTS GRAND TOTAL		**$4,461,000**

Notes
ID = identification
in = inches
ft = feet
OSPA = Outside Specific Plan Area
NA = Not applicable
All cost estimates rounded up to the next highest thousand dollars
Manhole IDs are based on City nomenclature

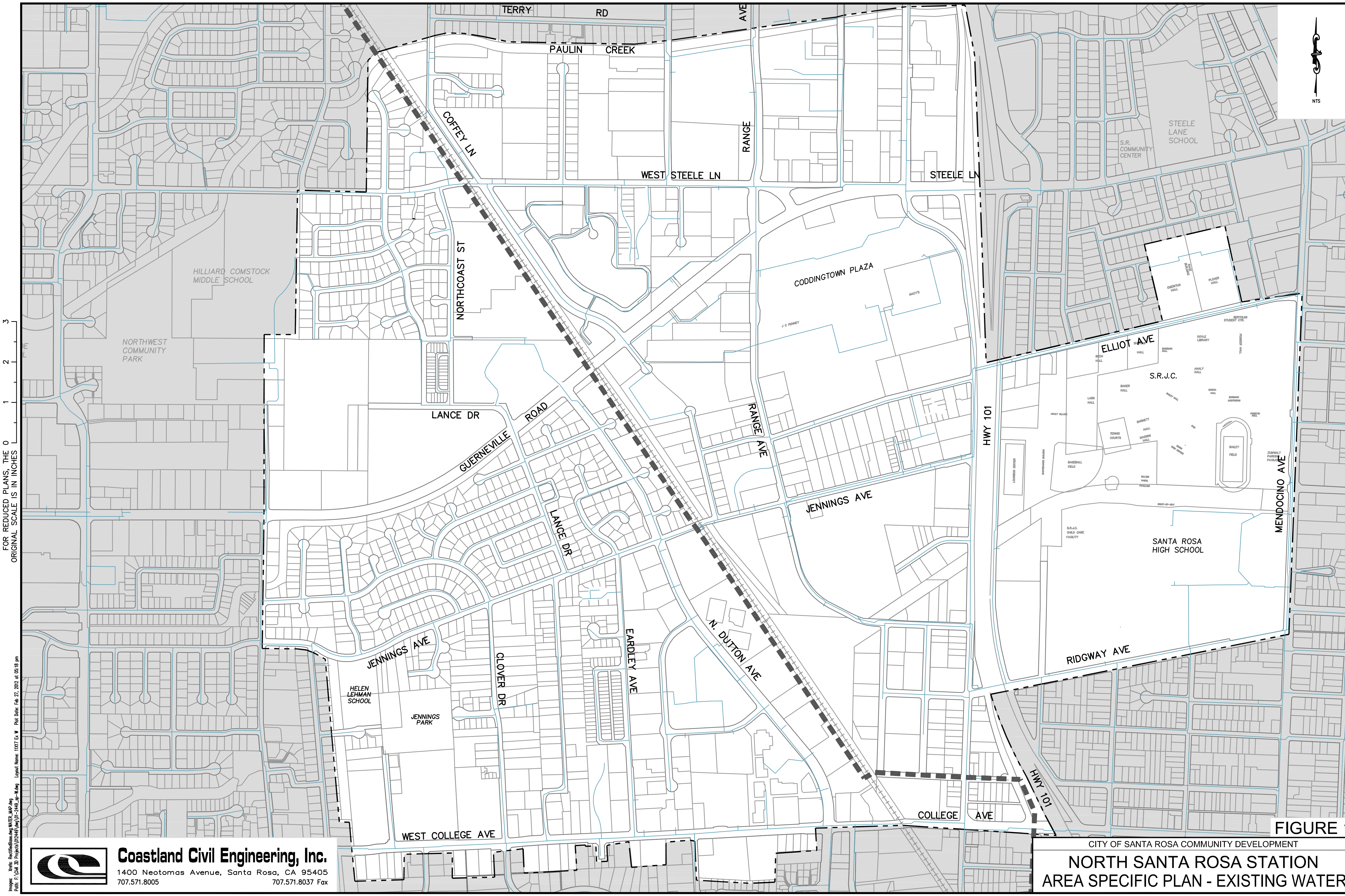


FIGURE 1

Coastland Civil Engineering, Inc.
1400 Neotomas Avenue, Santa Rosa, CA 95405
707.571.8005 707.571.8037 Fax

CITY OF SANTA ROSA COMMUNITY DEVELOPMENT
NORTH SANTA ROSA STATION
AREA SPECIFIC PLAN - EXISTING WATER

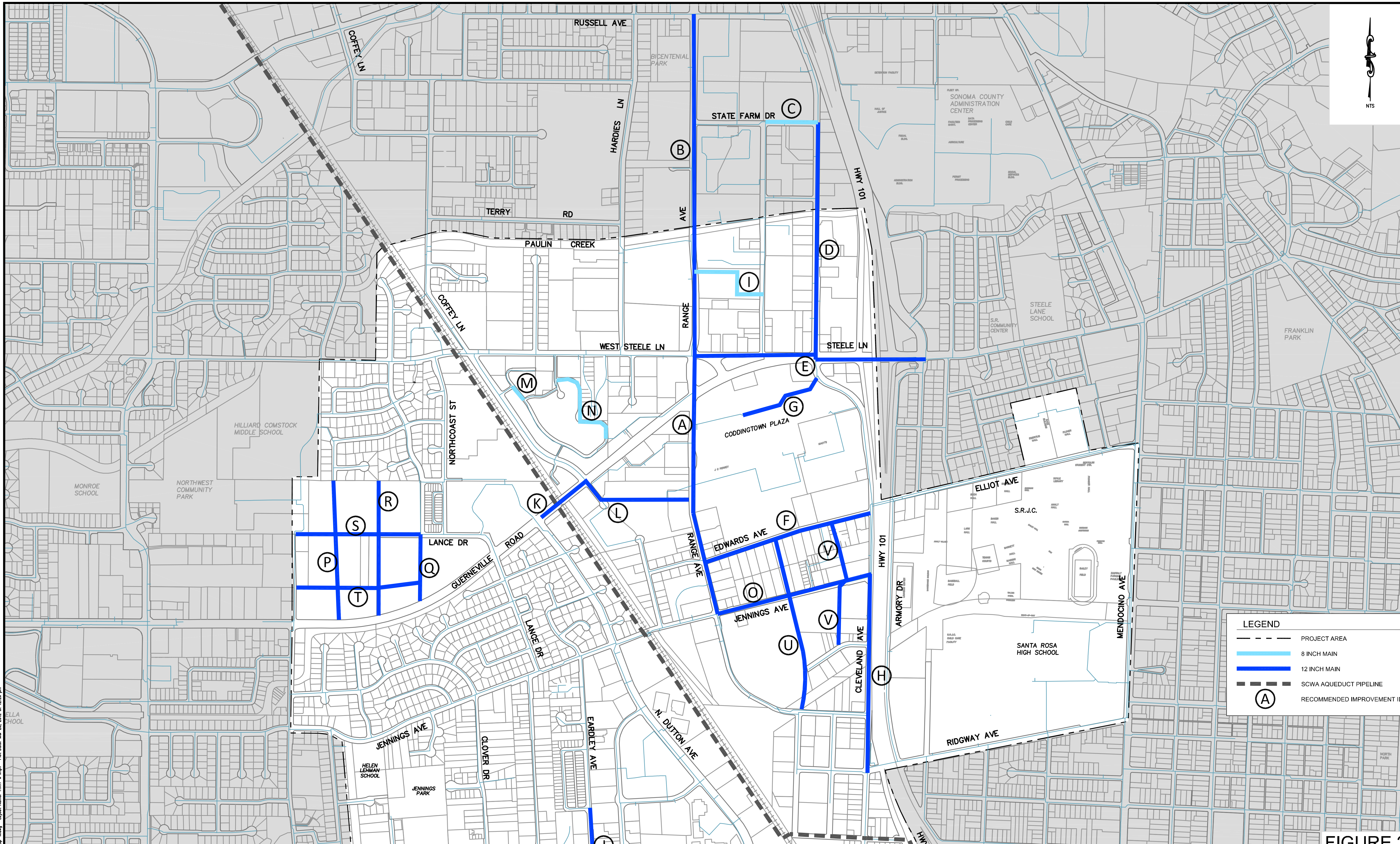


FIGURE 2

CITY OF SANTA ROSA COMMUNITY DEVELOPMENT

NORTH SANTA ROSA STATION AREA SPECIFIC PLAN - RECOMMENDED WATER SYSTEM IMPROVEMENTS

Coastland Civil Engineering, Inc.
1400 Neotomas Avenue, Santa Rosa, CA 95405
707.571.8005 707.571.8037 Fax

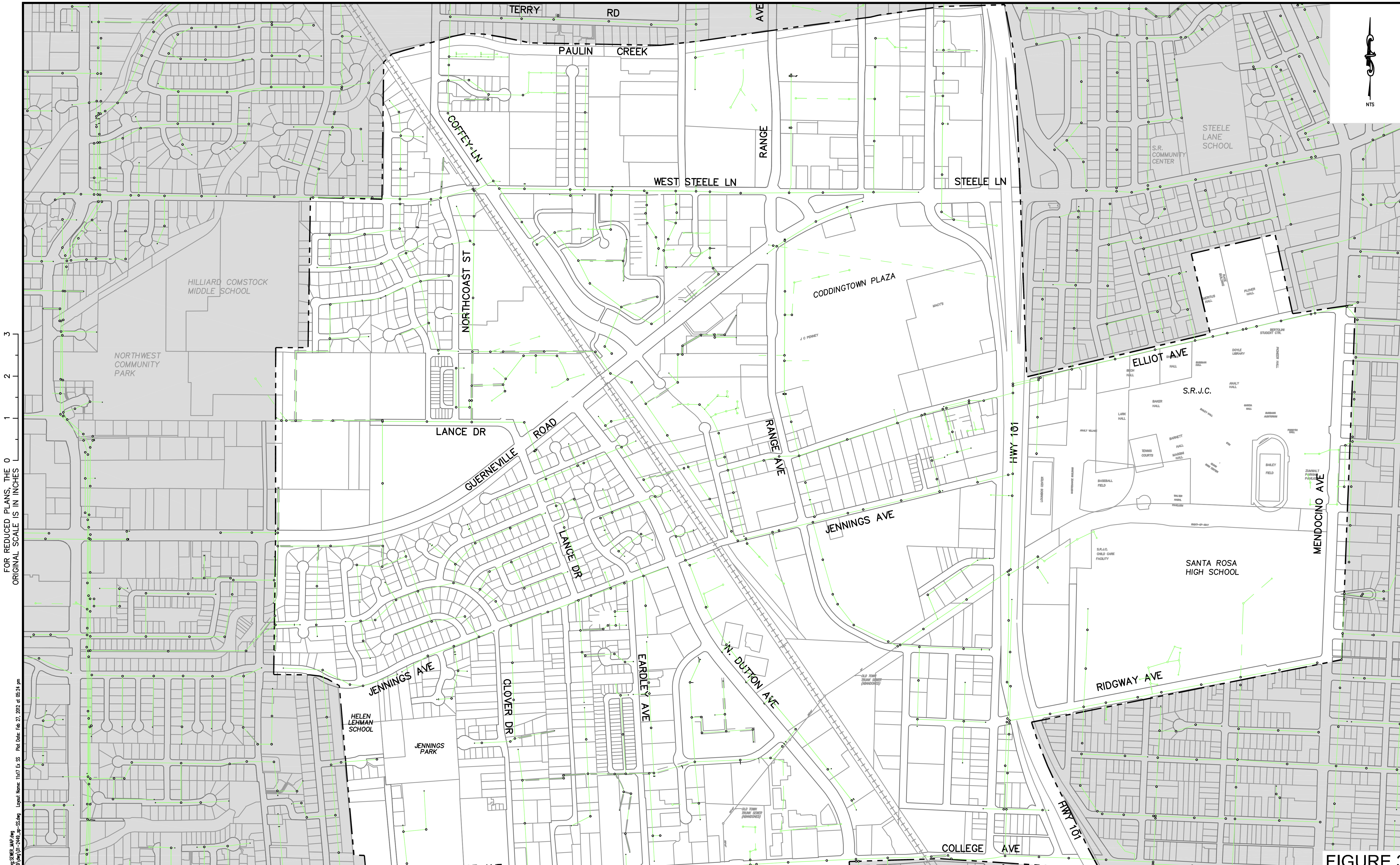


FIGURE 3

Coastland Civil Engineering, Inc.
1400 Neotomas Avenue, Santa Rosa, CA 95405
707.571.8005 707.571.8037 Fax

CITY OF SANTA ROSA COMMUNITY DEVELOPMENT

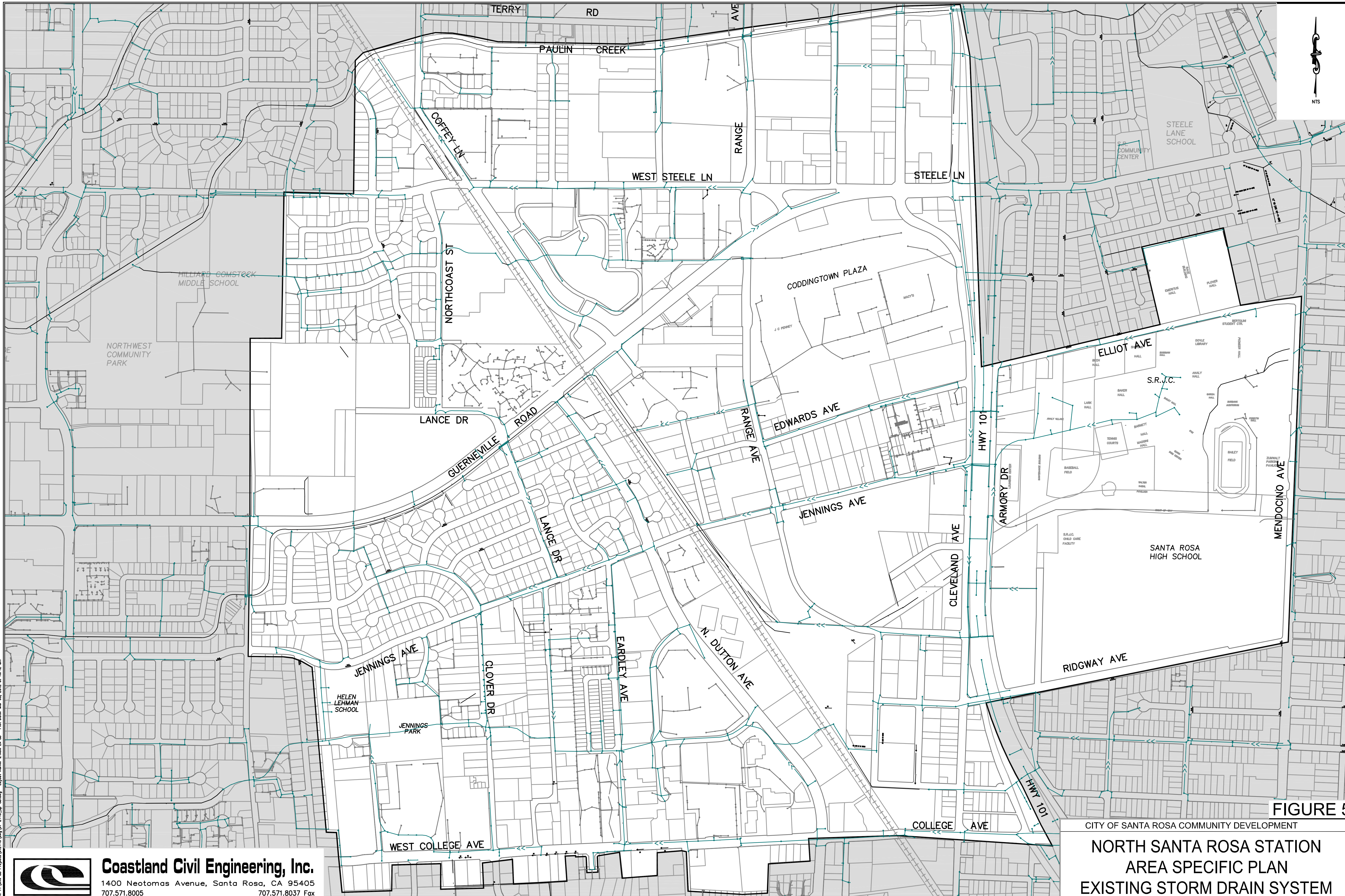
NORTH SANTA ROSA STATION

AREA SPECIFIC PLAN - EXIST. WASTEWATER

FIGURE 4

CITY OF SANTA ROSA COMMUNITY DEVELOPMENT

NORTH SANTA ROSA STATION AREA SPECIFIC PLAN - RECOMMENDED WASTE WATER SYSTEM IMPROVEMENTS



Coastland Civil Engineering, Inc.
1400 Neotomas Avenue, Santa Rosa, CA 95405
707.571.8005 707.571.8037 Fax

FIGURE 5

CITY OF SANTA ROSA COMMUNITY DEVELOPMENT

NORTH SANTA ROSA STATION AREA SPECIFIC PLAN
EXISTING STORM DRAIN SYSTEM

See Appendix D2 for the Hydraulic Analysis (Attachment A of this report).

John Griffin

From:	Dugre, Danielle [DDugre@srcity.org]
Sent:	Monday, February 13, 2012 9:19 AM
To:	John Griffin; Mark Obergfell
Cc:	Jones, Jessica
Subject:	To Coastland 02132012.pptx
Attachments:	To Coastland 02132012.pptx

John, Mark;

As noted last week, the profile for the Coddingtown by-pass still showed the 10". The new 25 year "profile B" shows the 10" replaced with a 12" and the inverted alignment removed.

John Griffin

From: Dugre, Danielle [DDugre@srcity.org]
Sent: Wednesday, February 08, 2012 5:36 PM
To: John Griffin; Mark Obergfell
Cc: Jones, Jessica; Mowery, Paul
Subject: RE: sewer model
Attachments: To Coastland 02082012.pptx

I did not attached the file. Here you are. One additional item:
7. Sewer main II2709MH075 to II2710MH055 shall be upsized from 10" to 12" diameter (one 282' lg main segment choke point). Profile still shows 10".

Danielle A. DuGré | Associate Civil Engineer
Utilities Department Engineering Services |69 Stony Circle | Santa Rosa, CA 95401
Tel. (707) 543-4231 | Fax (707) 543-4281 | ddugre@srcity.org

City of Santa Rosa

From: Dugre, Danielle
Sent: Wednesday, February 08, 2012 4:06 PM
To: 'John Griffin'; 'Mark Obergfell'
Cc: Jones, Jessica; Mowery, Paul
Subject: FW: sewer model

I have reviewed the sewer model and offer the following trunk evaluation:

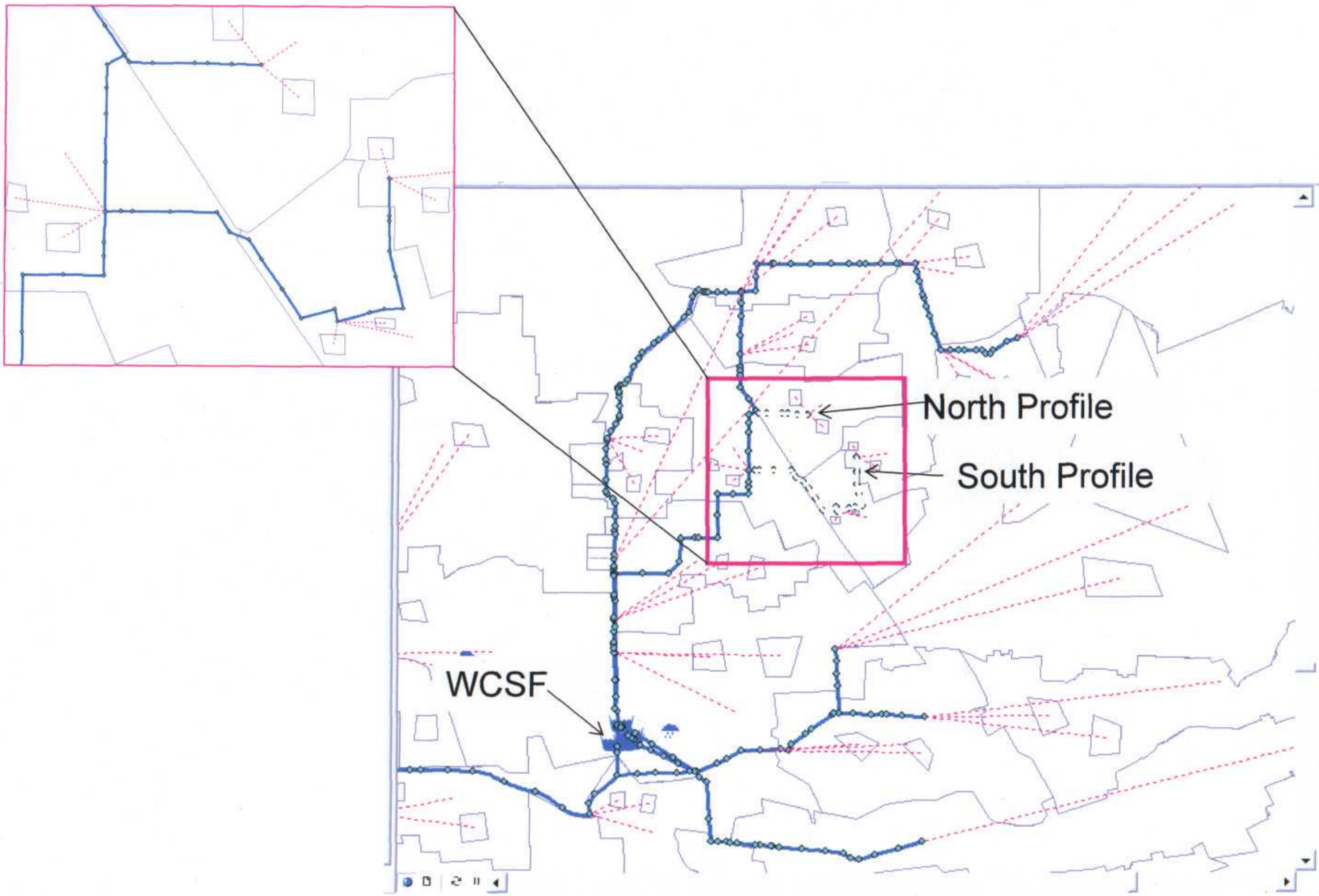
1. Sewer mains II2710MH062 to II2705MH017 on Cleveland Avenue shall be upsized from 6" to 8" diameter to conform to City Standards (~393')
2. Sewer mains from II2705MH017 to II2705MH065 on Cleveland Avenue shall be upsized from either 6" or 8" to 12" diameter (~2930')
3. As it is difficult to establish where flows will be directed in the densification, a backbone of 12" should be installed in the future Coffey Lane extension. From II2709MH73 to the southerly point of the existing Herbert Lane, then easterly to Range Avenue in the new Coffey Lane. See the attached file for illustration.
4. 3 sewer main segments from II2709MH070 to II2709MH073 shall be upsized from 12" to 15" diameter
5. Coastland shall size local sewer main for the new density tributary area on Edwards Avenue from Range Avenue easterly to manhole II2710MH057
6. Sewer main II2710 MH080 to II2710MH072 shall be upsized from 6" to 12" diameter

Let me know if you have any questions regarding this information. Thanks, d

Danielle A. DuGré | Associate Civil Engineer
Utilities Department Engineering Services |69 Stony Circle | Santa Rosa, CA 95401
Tel. (707) 543-4231 | Fax (707) 543-4281 | ddugre@srcity.org

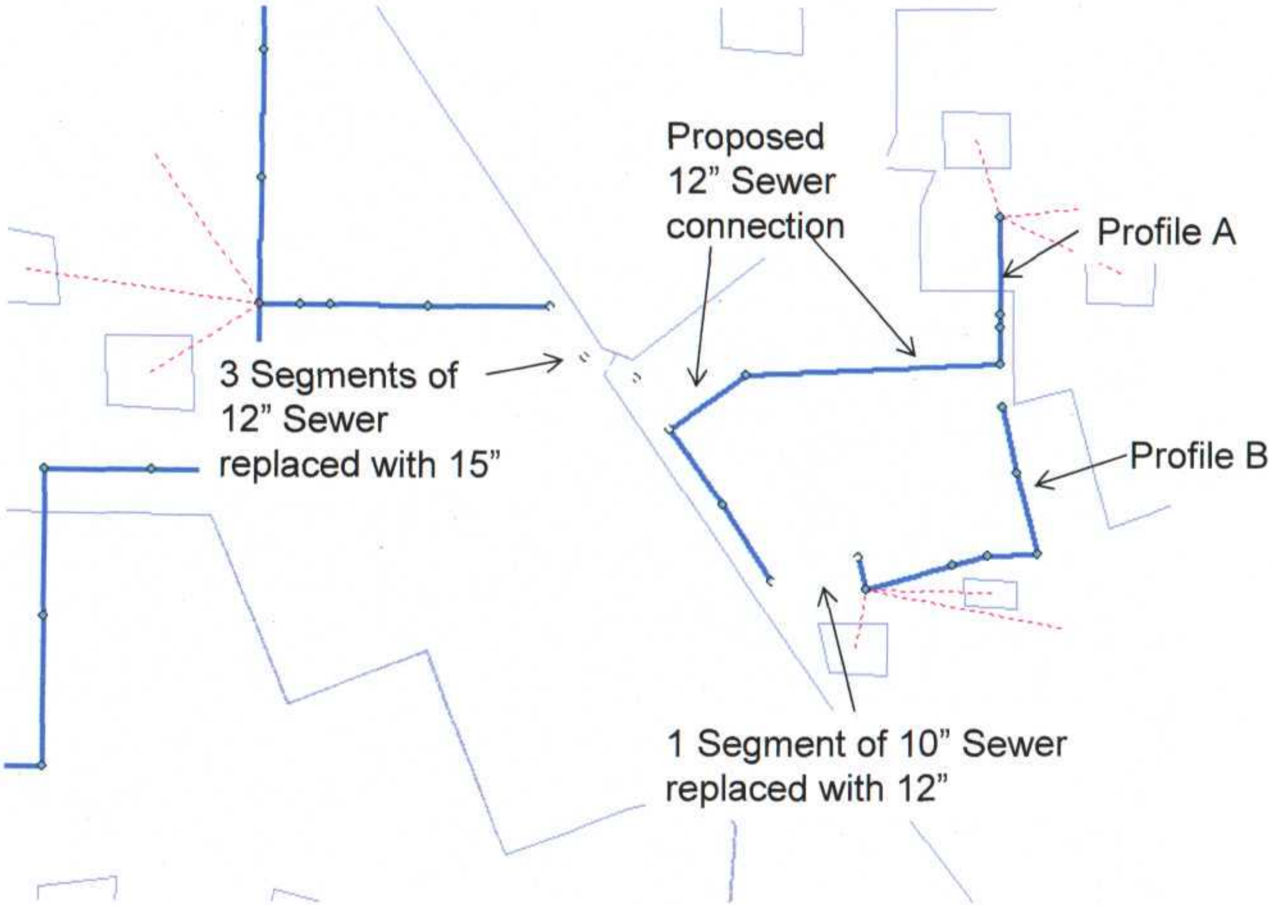
City of Santa Rosa

North Station Area Model Extensions



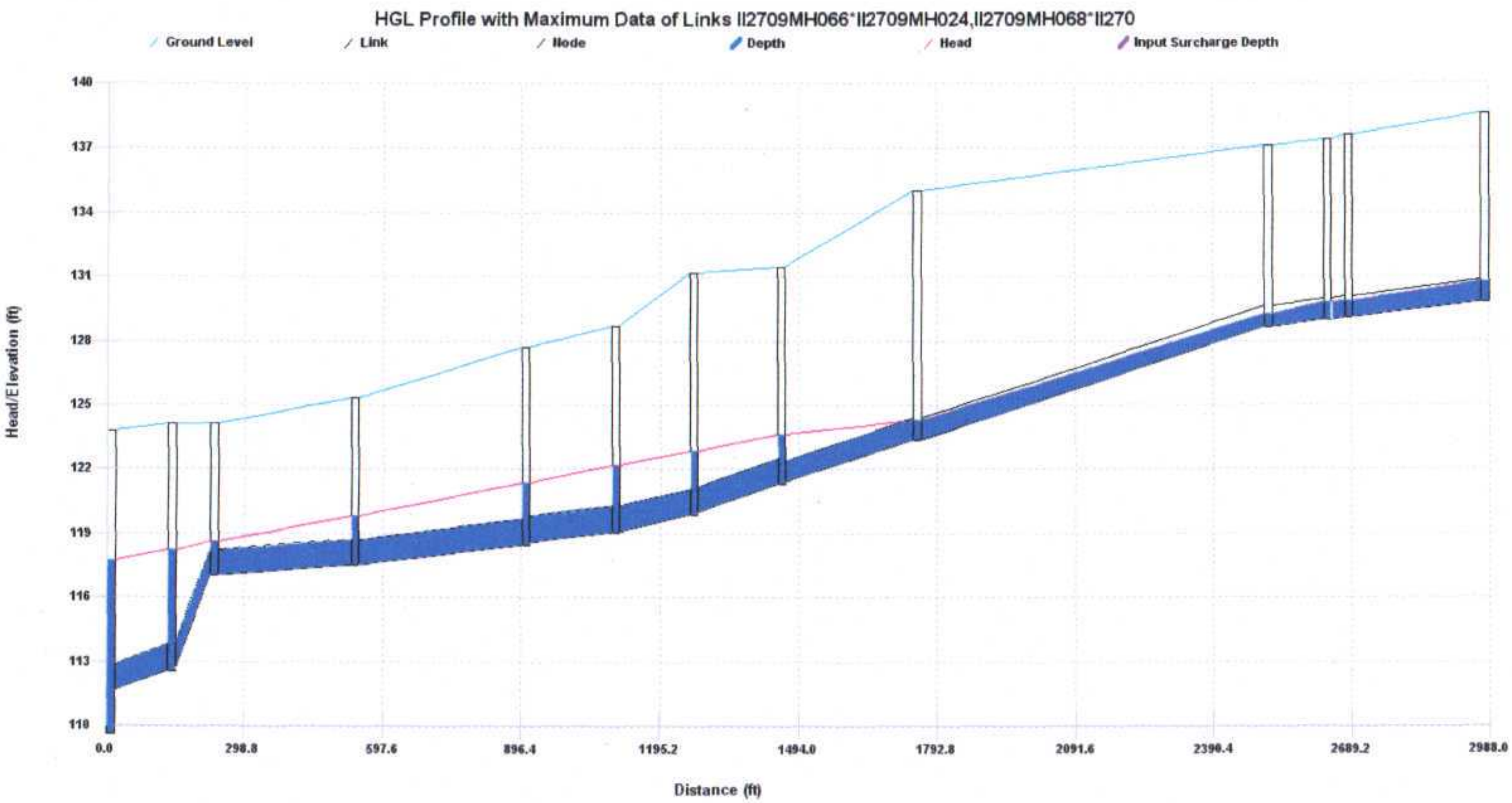
North Station Area South Profile Proposed 12" Connection

3 Pipe Segments of 15" Improvements DS of Manhole 73 and 1 Segment of 12" Improvement US



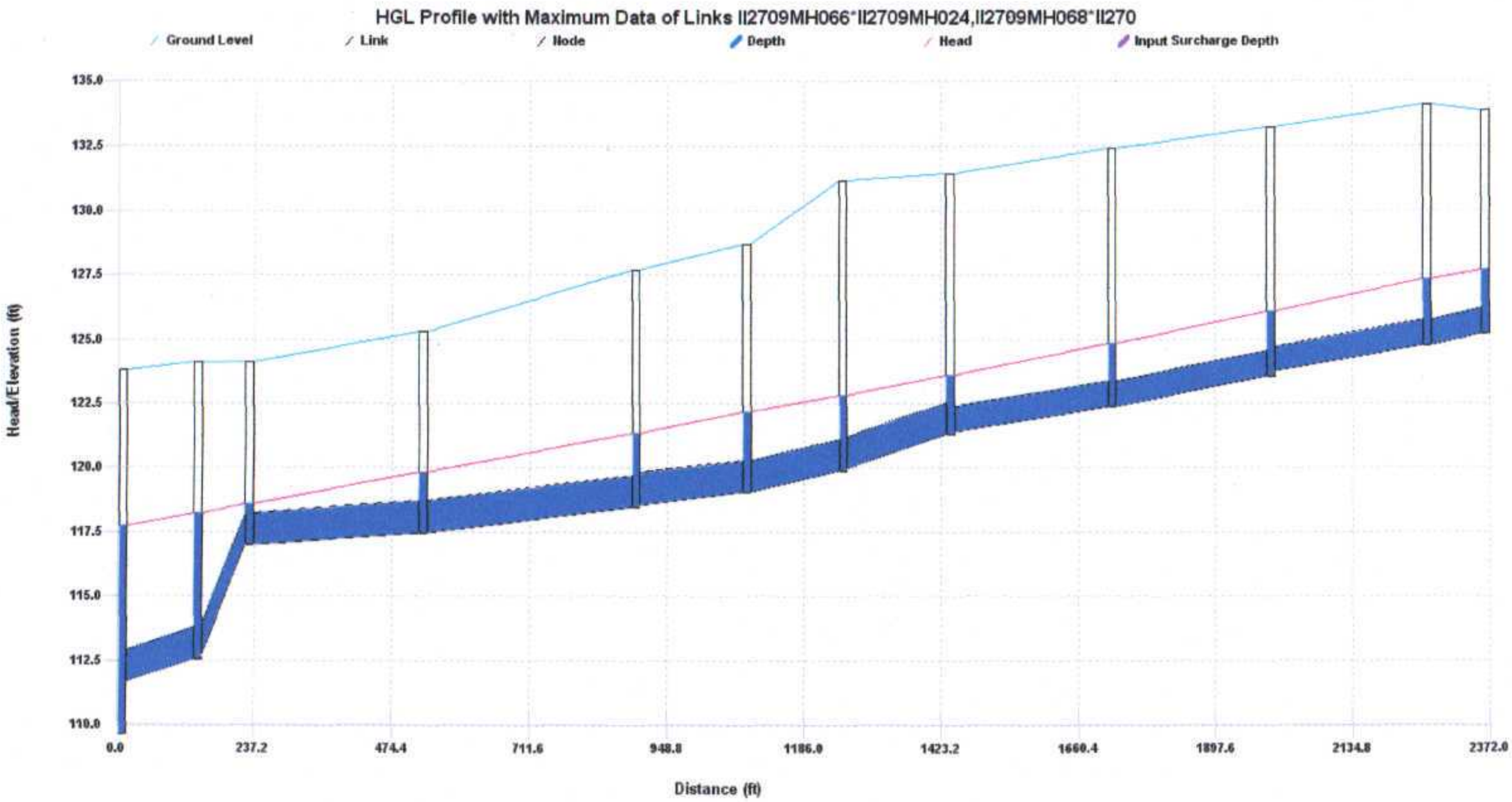
25 Year 2030SP (1.01cfs Change) Max HGL South Profile A

15" Sewers DS of Connection at Manhole 73 & 1 Segment of 12" Improvement US



25 Year 2030SP (1.01cfs Change) Max HGL South Profile B

3 Pipe Segments of 15" Improvements DS of Manhole 73 and 1 Segment of 12" Improvement US



APPENDIX E- TRAFFIC MODELING

Appendix A

Collision Rate Calculations

SEGMENT COLLISION RATE CALCULATIONS

City of Santa Rosa

Location: Guerneville Road-Steele Lane - Lance Drive to US 101 North Ramps

ADT: 29,300

Number of Collisions: 239
Number of Injuries: 90
Number of Fatalities: 1
Start Date: January 1, 2004
End Date: December 31, 2009
Number of Years: 6

Highway Type: DIVIDED 4 LANES
Area: Urban
Design Speed: <=45

Segment Length: 0.9 miles
Direction: EAST/WEST

$$\frac{\text{NUMBER OF COLLISIONS x 1 MILLION}}{\text{ADT x 365 DAYS PER YEAR x SEGMENT LENGTH x NUMBER OF YEARS}}$$

$$\frac{239 \times 1{,}000{,}000}{29{,}300 \times 365 \times 0.85 \times 6}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Segment	**4.38 c/mvm**	**0.4%**	**37.7%**
Statewide Average*	**3.35 c/mvm**	**0.5%**	**42.3%**

ADT = average daily traffic volume
c/mvm = collisions per million vehicle miles
* *2007 Collision Data on California State Highways* , Caltrans

Location: West College Avenue - Clover Drive to US 101 North Ramps

ADT: 31,400

Number of Collisions: 153
Number of Injuries: 71
Number of Fatalities: 0
Start Date: January 1, 2004
End Date: December 31, 2009
Number of Years: 6

Highway Type: UNDIVIDED 4 LANES
Area: Urban
Design Speed: <=45

Segment Length: 0.9 miles
Direction: EAST/WEST

$$\frac{\text{NUMBER OF COLLISIONS x 1 MILLION}}{\text{ADT x 365 DAYS PER YEAR x SEGMENT LENGTH x NUMBER OF YEARS}}$$

$$\frac{153 \times 1{,}000{,}000}{31{,}400 \times 365 \times 0.85 \times 6}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Segment	**2.62 c/mvm**	**0.0%**	**46.4%**
Statewide Average*	**4.95 c/mvm**	**0.4%**	**39.4%**

ADT = average daily traffic volume
c/mvm = collisions per million vehicle miles
* *2007 Collision Data on California State Highways* , Caltrans

SEGMENT COLLISION RATE CALCULATIONS

City of Santa Rosa

Location: Dutton Avenue - Guerneville Road to West College Avenue

ADT: 15,000

Number of Collisions: 66
Number of Injuries: 40
Number of Fatalities: 0
Start Date: January 1, 2004
End Date: December 31, 2009
Number of Years: 6

Highway Type: DIVIDED 4 LANES
Area: Urban
Design Speed: <=45

Segment Length: 0.8 miles
Direction: NORTH/SOUTH

$$\frac{\text{NUMBER OF COLLISIONS x 1 MILLION}}{\text{ADT x 365 DAYS PER YEAR x SEGMENT LENGTH x NUMBER OF YEARS}}$$

$$\frac{66 \quad x \quad 1{,}000{,}000}{15{,}000 \quad x \quad 365 \quad x \quad 0.8 \quad x \quad 6}$$

	Collision Rate		Fatality Rate	Injury Rate
Study Segment	**2.51**	**c/mvm**	**0.0%**	**60.6%**
Statewide Average*	**3.35**	**c/mvm**	**0.5%**	**42.3%**

ADT = average daily traffic volume
c/mvm = collisions per million vehicle miles
* *2007 Collision Data on California State Highways* , Caltrans

Location: Range Avenue-Frances Street - Paulin Creek to Cleveland Avenue

ADT: 9,100

Number of Collisions: 84
Number of Injuries: 49
Number of Fatalities: 0
Start Date: January 1, 2004
End Date: December 31, 2009
Number of Years: 6

Highway Type: DIVIDED 4 LANES
Area: Urban
Design Speed: <=45

Segment Length: 1.1 miles
Direction: NORTH/SOUTH

$$\frac{\text{NUMBER OF COLLISIONS x 1 MILLION}}{\text{ADT x 365 DAYS PER YEAR x SEGMENT LENGTH x NUMBER OF YEARS}}$$

$$\frac{84 \quad x \quad 1{,}000{,}000}{9{,}100 \quad x \quad 365 \quad x \quad 1.1 \quad x \quad 6}$$

	Collision Rate		Fatality Rate	Injury Rate
Study Segment	**3.83**	**c/mvm**	**0.0%**	**58.3%**
Statewide Average*	**3.35**	**c/mvm**	**0.5%**	**42.3%**

ADT = average daily traffic volume
c/mvm = collisions per million vehicle miles
* *2007 Collision Data on California State Highways* , Caltrans

SEGMENT COLLISION RATE CALCULATIONS

City of Santa Rosa

Location: Cleveland Avenue - Paulin Creek to West College Avenue

ADT: 15,000

Number of Collisions: 143
Number of Injuries: 70
Number of Fatalities: 2
Start Date: January 1, 2004
End Date: December 31, 2009
Number of Years: 6

Highway Type: DIVIDED 4 LANES
Area: Urban
Design Speed: <=45

Segment Length: 1.3 miles
Direction: NORTH/SOUTH

$$\frac{\text{NUMBER OF COLLISIONS x 1 MILLION}}{\text{ADT x 365 DAYS PER YEAR x SEGMENT LENGTH x NUMBER OF YEARS}}$$

$$\frac{143 \times 1{,}000{,}000}{15{,}000 \times 365 \times 1.25 \times 6}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Segment	**3.48 c/mvm**	**1.4%**	**49.0%**
Statewide Average*	**3.35 c/mvm**	**0.5%**	**42.3%**

ADT = average daily traffic volume
c/mvm = collisions per million vehicle miles
* *2007 Collision Data on California State Highways* , Caltrans

Location: Coffey Lane - Paulin Creek to Guerneville Road

ADT: 5,200

Number of Collisions: 36
Number of Injuries: 20
Number of Fatalities: 0
Start Date: January 1, 2004
End Date: December 31, 2009
Number of Years: 6

Highway Type: CONVENTIONAL 2 LANES OR LESS
Area: Urban
Design Speed: <=45

Segment Length: 0.6 miles
Direction: NORTH/SOUTH

$$\frac{\text{NUMBER OF COLLISIONS x 1 MILLION}}{\text{ADT x 365 DAYS PER YEAR x SEGMENT LENGTH x NUMBER OF YEARS}}$$

$$\frac{36 \times 1{,}000{,}000}{5{,}200 \times 365 \times 0.6 \times 6}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Segment	**5.27 c/mvm**	**0.0%**	**55.6%**
Statewide Average*	**3.05 c/mvm**	**0.4%**	**40.5%**

ADT = average daily traffic volume
c/mvm = collisions per million vehicle miles
* *2007 Collision Data on California State Highways* , Caltrans

SEGMENT COLLISION RATE CALCULATIONS
City of Santa Rosa

Location: West Steele Lane - Comstock Middle School to Guerneville Road

ADT: 9,000

Number of Collisions: 95
Number of Injuries: 58
Number of Fatalities: 0
Start Date: January 1, 2004
End Date: December 31, 2009
Number of Years: 6

Highway Type: CONVENTIONAL 2 LANES OR LESS
Area: Urban
Design Speed: <=45

Segment Length: 1.0 miles
Direction: EAST/WEST

$$\frac{\text{NUMBER OF COLLISIONS x 1 MILLION}}{\text{ADT x 365 DAYS PER YEAR x SEGMENT LENGTH x NUMBER OF YEARS}}$$

$$\frac{95 \times 1{,}000{,}000}{9{,}000 \times 365 \times 1 \times 6}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Segment	**4.82 c/mvm**	**0.0%**	**61.1%**
Statewide Average*	**3.05 c/mvm**	**0.4%**	**40.5%**

ADT = average daily traffic volume
c/mvm = collisions per million vehicle miles
* *2007 Collision Data on California State Highways* , Caltrans

Location: Jennings Avenue - Ridley Avenue to SMART

ADT: 2,200

Number of Collisions: 19
Number of Injuries: 9
Number of Fatalities: 0
Start Date: January 1, 2004
End Date: December 31, 2009
Number of Years: 6

Highway Type: CONVENTIONAL 2 LANES OR LESS
Area: Urban
Design Speed: <=45

Segment Length: 0.7 miles
Direction: EAST/WEST

$$\frac{\text{NUMBER OF COLLISIONS x 1 MILLION}}{\text{ADT x 365 DAYS PER YEAR x SEGMENT LENGTH x NUMBER OF YEARS}}$$

$$\frac{19 \times 1{,}000{,}000}{2{,}200 \times 365 \times 0.7 \times 6}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Segment	**5.63 c/mvm**	**0.0%**	**47.4%**
Statewide Average*	**3.05 c/mvm**	**0.4%**	**40.5%**

ADT = average daily traffic volume
c/mvm = collisions per million vehicle miles
* *2007 Collision Data on California State Highways* , Caltrans

SEGMENT COLLISION RATE CALCULATIONS
City of Santa Rosa

Location: Jennings Avenue - SMART to Cleveland Avenue

ADT: 850

Number of Collisions: 9
Number of Injuries: 5
Number of Fatalities: 0
Start Date: January 1, 2004
End Date: December 31, 2009
Number of Years: 6

Highway Type: CONVENTIONAL 2 LANES OR LESS
Area: Urban
Design Speed: <=45

Segment Length: 0.4 miles
Direction: NORTH/SOUTH

$$\frac{\text{NUMBER OF COLLISIONS x 1 MILLION}}{\text{ADT x 365 DAYS PER YEAR x SEGMENT LENGTH x NUMBER OF YEARS}}$$

$$\frac{9 \times 1{,}000{,}000}{850 \times 365 \times 0.4 \times 6}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Segment	**12.09 c/mvm**	**0.0%**	**55.6%**
Statewide Average*	**3.05 c/mvm**	**0.4%**	**40.5%**

ADT = average daily traffic volume
c/mvm = collisions per million vehicle miles
* *2007 Collision Data on California State Highways* , Caltrans

Appendix B

Multimodal Level of Service Calculations

Scenarios Comparison Report

Street: Guerneville Road-Steele Lane Limits: Marlow Road to Mendocino Avenue
Direction: EB Observer: Data collected on:

		Eastbound Existing			Westbound Existing		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	B	B	n/a	B	B
Marlow Road	Transit	n/a	B	B	n/a	A	A
to	Bike	A	C	D	D	F	E
Ridley Avenue	Ped	A	C	C	B	C	C
Segment #2	Auto	n/a	B	B	n/a	D	D
Ridley Avenue	Transit	n/a	A	A	n/a	D	D
to	Bike	A	C	C	C	D	E
North Dutton Avenue	Ped	A	D	B	A	C	D
Segment #3	Auto	n/a	C	C	n/a	F	F
North Dutton Avenue	Transit	n/a	C	C	n/a	E	E
to	Bike	B	B	C	C	C	D
Coffey Lane	Ped	A	C	D	A	B	C
Segment #4	Auto	n/a	B	B	n/a	C	C
Coffey Lane	Transit	n/a	A	A	n/a	D	D
to	Bike	A	A	C	E	D	E
Range Avenue	Ped	B	C	D	B	B	D
Segment #5	Auto	n/a	C	C	n/a	B	B
Range Avenue	Transit	n/a	C	C	n/a	D	D
to	Bike	C	B	C	D	E	E
Coddingtown Mall	Ped	B	B	C	B	C	D
Segment #6	Auto	n/a	B	B	n/a	C	C
Coddingtown Mall	Transit	n/a	D	D	n/a	C	C
to	Bike	D	E	E	C	B	C
Cleveland Avenue	Ped	B	C	D	B	B	C
Segment #7	Auto	n/a	C	C	n/a	B	B
Cleveland Avenue	Transit	n/a	D	D	n/a	A	A
to	Bike	D	E	E	B	C	D
US 101 South Ramps	Ped	A	B	C	A	C	D
Segment #8	Auto	n/a	E	E	n/a	C	C
US 101 South Ramps	Transit	n/a	E	E	n/a	E	E
to	Bike	C	C	C	B	C	C
US 101 North Ramps	Ped	A	B	C	A	C	D
Segment #9	Auto	n/a	D	D	n/a	B	B
US 101 North Ramps	Transit	n/a	D	D	n/a	B	B
to	Bike	B	B	C	A	C	D
County Center Drive-Illinois Avenue	Ped	B	B	C	A	C	D
Segment #10	Auto	n/a	B	B	n/a	B	B
County Center Drive-Illinois Avenue	Transit	n/a	B	B	n/a	B	B
to	Bike	D	F	E	B	C	D
Mendocino Avenue	Ped	B	C	C	B	D	D
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.58 - C			0.54 - C		
	Transit	2.36 - B			2.35 - B		
	Bike	3.90 - D			4.03 - D		
	Ped	3.22 - C			3.54 - D		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: Guerneville Road-Steele Lane Limits: Marlow Road to Mendocino Avenue
Direction: EB Observer: Data collected on:

		Eastbound Future Base			Westbound Future Base		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	B	B	n/a	B	B
Marlow Road	Transit	n/a	B	B	n/a	A	A
to	Bike	A	C	D	C	D	D
Ridley Avenue	Ped	A	C	D	B	C	D
Segment #2	Auto	n/a	B	B	n/a	D	D
Ridley Avenue	Transit	n/a	A	A	n/a	D	D
to	Bike	A	C	C	B	A	D
North Dutton Avenue	Ped	A	C	D	A	C	D
Segment #3	Auto	n/a	C	C	n/a	E	E
North Dutton Avenue	Transit	n/a	C	C	n/a	E	E
to	Bike	B	B	C	B	A	C
Coffey Lane	Ped	A	C	D	A	B	C
Segment #4	Auto	n/a	B	B	n/a	D	D
Coffey Lane	Transit	n/a	A	A	n/a	D	D
to	Bike	A	A	C	D	B	D
Range Avenue	Ped	B	C	D	B	B	D
Segment #5	Auto	n/a	C	C	n/a	B	B
Range Avenue	Transit	n/a	C	C	n/a	D	D
to	Bike	C	B	C	B	B	D
Coddingtown Mall	Ped	B	B	D	B	B	D
Segment #6	Auto	n/a	B	B	n/a	C	C
Coddingtown Mall	Transit	n/a	D	D	n/a	C	C
to	Bike	C	C	D	C	B	C
Cleveland Avenue	Ped	B	B	D	B	B	D
Segment #7	Auto	n/a	C	C	n/a	B	B
Cleveland Avenue	Transit	n/a	D	D	n/a	A	A
to	Bike	C	C	D	B	C	D
US 101 South Ramps	Ped	A	B	C	A	C	D
Segment #8	Auto	n/a	D	D	n/a	C	C
US 101 South Ramps	Transit	n/a	E	E	n/a	E	E
to	Bike	A	A	C	B	C	D
US 101 North Ramps	Ped	A	B	C	A	D	D
Segment #9	Auto	n/a	D	D	n/a	B	B
US 101 North Ramps	Transit	n/a	D	D	n/a	B	B
to	Bike	A	A	C	A	C	D
County Center Drive-Illinois Avenue	Ped	B	B	C	A	C	D
Segment #10	Auto	n/a	B	B	n/a	B	B
County Center Drive-Illinois Avenue	Transit	n/a	B	B	n/a	B	B
to	Bike	B	D	D	B	C	D
Mendocino Avenue	Ped	B	C	D	B	C	D
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.53 - C			0.50 - D		
	Transit	2.33 - B			2.36 - B		
	Bike	3.69 - D			3.85 - D		
	Ped	3.60 - D			3.67 - D		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: Guerneville Road-Steele Lane Limits: Marlow Road to Mendocino Avenue
Direction: EB Observer: Data collected on:

		Eastbound Preferred Plan Conditions			Westbound Preferred Plan Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	B	B	n/a	B	B
Marlow Road	Transit	n/a	B	B	n/a	A	A
to	Bike	B	C	D	C	D	D
Ridley Avenue	Ped	A	C	D	B	C	D
Segment #2	Auto	n/a	B	B	n/a	D	D
Ridley Avenue	Transit	n/a	A	A	n/a	D	D
to	Bike	A	C	C	B	A	D
North Dutton Avenue	Ped	A	C	D	A	C	D
Segment #3	Auto	n/a	C	C	n/a	F	F
North Dutton Avenue	Transit	n/a	B	B	n/a	E	E
to	Bike	B	C	C	B	A	C
Coffey Lane	Ped	A	C	D	A	C	D
Segment #4	Auto	n/a	B	B	n/a	E	E
Coffey Lane	Transit	n/a	A	A	n/a	D	D
to	Bike	A	A	D	E	C	E
Range Avenue	Ped	B	C	D	B	C	D
Segment #5	Auto	n/a	D	D	n/a	B	B
Range Avenue	Transit	n/a	C	C	n/a	D	D
to	Bike	C	B	D	C	B	D
Coddingtown Mall	Ped	B	C	D	B	C	D
Segment #6	Auto	n/a	C	C	n/a	D	D
Coddingtown Mall	Transit	n/a	D	D	n/a	C	C
to	Bike	D	C	D	C	B	D
Cleveland Avenue	Ped	B	C	D	B	C	D
Segment #7	Auto	n/a	D	D	n/a	B	B
Cleveland Avenue	Transit	n/a	D	D	n/a	A	A
to	Bike	D	C	D	C	C	D
US 101 South Ramps	Ped	A	C	D	A	D	D
Segment #8	Auto	n/a	F	F	n/a	C	C
US 101 South Ramps	Transit	n/a	E	E	n/a	E	E
to	Bike	B	A	C	C	C	D
US 101 North Ramps	Ped	A	C	C	A	D	D
Segment #9	Auto	n/a	D	D	n/a	B	B
US 101 North Ramps	Transit	n/a	D	D	n/a	B	B
to	Bike	A	A	C	B	C	D
County Center Drive-Illinois Avenue	Ped	B	B	C	A	D	D
Segment #10	Auto	n/a	B	B	n/a	B	B
County Center Drive-Illinois Avenue	Transit	n/a	B	B	n/a	B	B
to	Bike	C	D	D	B	C	D
Mendocino Avenue	Ped	B	C	D	B	C	D
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.49 - D			0.42 - D		
	Transit	2.32 - B			2.33 - B		
	Bike	3.76 - D			3.90 - D		
	Ped	3.72 - D			3.76 - D		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Results Summary

Street: West College Avenue Limits: Marlow Road - Stony Point Road to Mendocino Avenue
Direction: EB Observer: Data collected on:

PM Peak Hour - Existing Conditions
North Santa Rosa Station Area Plan
City of Santa Rosa

		Intersection		Link		Segment	
		Score	LOS	Score	LOS	Score	LOS
Segment #1	Auto	n/a	n/a	64.0%	C	64.0%	C
Marlow Road - Stony Point Road	Transit	n/a	n/a	2.10	B	2.10	B
to	Bike	3.26	C	4.92	E	4.58	E
Clover Drive	Ped	1.73	A	2.77	C	2.78	C
Segment #2	Auto	n/a	n/a	68.1%	B	68.1%	B
Clover Drive	Transit	n/a	n/a	2.98	C	2.98	C
to	Bike	3.44	C	5.07	F	4.77	E
North Dutton Avenue	Ped	2.32	B	4.48	E	4.25	D
Segment #3	Auto	n/a	n/a	36.7%	E	36.7%	E
North Dutton Avenue	Transit	n/a	n/a	3.85	D	3.85	D
to	Bike	2.78	C	4.70	E	4.33	E
Cleveland Avenue	Ped	1.96	A	3.07	C	3.00	C
Segment #4	Auto	n/a	n/a	28.2%	F	28.2%	F
Cleveland Avenue	Transit	n/a	n/a	5.03	F	5.03	F
to	Bike	2.91	C	3.91	D	4.42	E
US 101 South Ramps	Ped	1.73	A	3.31	C	3.65	D
Segment #5	Auto	n/a	n/a	25.9%	F	25.9%	F
US 101 South Ramps	Transit	n/a	n/a	5.09	F	5.09	F
to	Bike	2.53	B	2.95	C	3.46	C
US 101 North Ramps	Ped	1.96	A	2.39	B	3.36	C
Segment #6	Auto	n/a	n/a	46.4%	D	46.4%	D
US 101 North Ramps	Transit	n/a	n/a	4.98	E	4.98	E
to	Bike	3.28	C	3.80	D	4.46	E
Morgan Street	Ped	1.96	A	3.21	C	3.67	D
Segment #7	Auto	n/a	n/a	48.2%	D	48.2%	D
Morgan Street	Transit	n/a	n/a	2.33	B	2.33	B
to	Bike	3.16	C	4.36	E	5.16	F
Mendocino Avenue	Ped	2.66	B	3.08	C	3.81	D
Using HCM 2010 Methodologies							

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Results Summary

Street: West College Ave Limits: Mendocino Avenue to Marlow Road - Stony Point Road
Direction: WB Observer: TDH Data collected on: 1/31/11

PM Peak Hour - Existing Conditions
North Santa Rosa Station Area Plan
City of Santa Rosa

		Intersection		Link		Segment	
		Score	LOS	Score	LOS	Score	LOS
Segment #1	Auto	n/a	n/a	53.5%	C	53.5%	C
Mendocino Avenue	Transit	n/a	n/a	2.28	B	2.28	B
to	Bike	2.25	B	4.49	E	4.34	E
Morgan Street	Ped	1.96	A	2.97	C	3.58	D
Segment #2	Auto	n/a	n/a	46.3%	D	46.3%	D
Morgan Street	Transit	n/a	n/a	5.19	F	5.19	F
to	Bike	3.26	C	3.76	D	4.48	E
US 101 NB	Ped	1.73	A	2.94	C	3.51	D
Segment #3	Auto	n/a	n/a	58.2%	C	58.2%	C
US 101 NB	Transit	n/a	n/a	5.11	F	5.11	F
to	Bike	4.06	D	3.37	C	4.03	D
US 101 SB	Ped	1.96	A	2.53	B	3.41	C
Segment #4	Auto	n/a	n/a	44.1%	D	44.1%	D
US 101 SB	Transit	n/a	n/a	4.97	E	4.97	E
to	Bike	3.07	C	4.00	D	4.47	E
Cleveland Avenue	Ped	2.15	B	2.88	C	3.59	D
Segment #5	Auto	n/a	n/a	39.6%	E	39.6%	E
Cleveland Avenue	Transit	n/a	n/a	3.81	D	3.81	D
to	Bike	3.08	C	4.60	E	4.38	E
North Dutton Avenue	Ped	2.32	B	2.77	C	2.99	C
Segment #6	Auto	n/a	n/a	65.6%	C	65.6%	C
North Dutton Avenue	Transit	n/a	n/a	2.76	C	2.76	C
to	Bike	3.17	C	5.12	F	4.70	E
Clover Drive	Ped	1.73	A	3.03	C	3.05	C
Segment #7	Auto	n/a	n/a	66.4%	C	66.4%	C
Clover Drive	Transit	n/a	n/a	2.15	B	2.15	B
to	Bike	3.09	C	5.01	F	4.33	E
Marlow Road - Stony Point Road	Ped	2.32	B	3.06	C	2.85	C
Using HCM 2010 Methodologies							

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Scenarios Comparison Report

Street: West College Ave Limits: Marlow Road - Stony Point Road to Mendocino Avenue
Direction: EB Observer: TDH Data collected on: 1/31/11

		Future Base EB			Future Base WB		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	B	B	n/a	B	B
Marlow Road - Stony Point Road	Transit	n/a	B	B	n/a	B	B
to	Bike	A	C	C	A	A	C
Clover Drive	Ped	A	B	C	A	C	D
Segment #2	Auto	n/a	B	B	n/a	D	D
Clover Drive	Transit	n/a	D	D	n/a	F	F
to	Bike	A	C	C	B	A	C
Link Lane	Ped	A	B	C	A	B	C
Segment #3	Auto	n/a	B	B	n/a	D	D
Link Lane	Transit	n/a	E	E	n/a	F	F
to	Bike	B	C	D	A	A	B
North Dutton Avenue	Ped	B	B	D	A	B	C
Segment #4	Auto	n/a	B	B	n/a	C	C
North Dutton Avenue	Transit	n/a	D	D	n/a	E	E
to	Bike	B	C	C	B	A	C
Cleveland Avenue	Ped	B	C	D	B	B	C
Segment #5	Auto	n/a	C	C	n/a	B	B
Cleveland Avenue	Transit	n/a	F	F	n/a	D	D
to	Bike	C	B	C	B	C	C
US 101 SB	Ped	A	C	D	B	C	D
Segment #6	Auto	n/a	C	C	n/a	B	B
US 101 SB	Transit	n/a	F	F	n/a	E	E
to	Bike	A	A	C	B	D	C
US 101 NB	Ped	A	B	C	A	C	C
Segment #7	Auto	n/a	E	E	n/a	B	B
US 101 NB	Transit	n/a	F	F	n/a	D	D
to	Bike	B	B	C	B	D	D
Morgan Street	Ped	A	C	D	A	C	D
Segment #8	Auto	n/a	B	B	n/a	B	B
Morgan Street	Transit	n/a	B	B	n/a	B	B
to	Bike	A	B	C	B	C	C
Mendocino Avenue	Ped	B	C	D	B	C	C
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.42 - D			0.47 - D		
	Transit	3.16 - C			3.14 - C		
	Bike	3.41 - C			3.38 - C		
	Ped	3.49 - C			3.50 - D		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: West College Ave Limits: Marlow Road - Stony Point Road to Mendocino Avenue
Direction: EB Observer: TDH Data collected on: 1/31/11

		Preferred Plan EB			Preferred Plan WB		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	B	B	n/a	C	C
Marlow Road - Stony Point Road	Transit	n/a	B	B	n/a	B	B
to	Bike	A	C	C	A	A	C
Clover Drive	Ped	A	B	C	A	C	D
Segment #2	Auto	n/a	B	B	n/a	D	D
Clover Drive	Transit	n/a	D	D	n/a	E	E
to	Bike	B	C	C	B	A	C
Link Lane	Ped	A	B	C	A	B	C
Segment #3	Auto	n/a	B	B	n/a	D	D
Link Lane	Transit	n/a	D	D	n/a	E	E
to	Bike	B	C	D	A	A	B
North Dutton Avenue	Ped	B	B	D	A	B	C
Segment #4	Auto	n/a	B	B	n/a	C	C
North Dutton Avenue	Transit	n/a	D	D	n/a	E	E
to	Bike	B	C	C	B	A	C
Cleveland Avenue	Ped	B	C	D	B	B	D
Segment #5	Auto	n/a	C	C	n/a	B	B
Cleveland Avenue	Transit	n/a	E	E	n/a	C	C
to	Bike	C	B	C	B	C	C
US 101 SB	Ped	A	D	D	B	C	D
Segment #6	Auto	n/a	C	C	n/a	B	B
US 101 SB	Transit	n/a	E	E	n/a	D	D
to	Bike	A	A	C	B	D	D
US 101 NB	Ped	A	B	C	A	C	C
Segment #7	Auto	n/a	E	E	n/a	B	B
US 101 NB	Transit	n/a	E	E	n/a	D	D
to	Bike	B	B	C	B	D	D
Morgan Street	Ped	A	C	D	A	C	D
Segment #8	Auto	n/a	B	B	n/a	B	B
Morgan Street	Transit	n/a	B	B	n/a	B	B
to	Bike	A	B	C	B	C	C
Mendocino Avenue	Ped	B	C	D	B	C	D
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.41 - D			0.44 - D		
	Transit	3.03 - C			3.01 - C		
	Bike	3.42 - C			3.40 - C		
	Ped	3.53 - D			3.55 - D		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: North Dutton Avenue Limits: West College Avenue to Guerneville Road
Direction: NB Observer: Data collected on:

		Exisiting Conditions			Future Base Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	B	B	n/a	B	B
West College Avenue	Transit	n/a	C	C	n/a	C	C
to	Bike	A	C	D	A	C	D
Jennings Avenue	Ped	A	B	C	A	B	C
Segment #2	Auto	n/a	B	B	n/a	B	B
Jennings Avenue	Transit	n/a	D	D	n/a	D	D
to	Bike	C	B	D	C	B	D
Guerneville Road	Ped	B	B	D	B	B	D
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.72 - B			0.69 - B		
	Transit	3.17 - C			3.14 - C		
	Bike	4.12 - D			4.08 - D		
	Ped	3.20 - C			3.13 - C		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: North Dutton Avenue Limits: West College Avenue to Guerneville Road
Direction: NB Observer: Data collected on:

		Future Base Conditions			Preferred Plan Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	B	B	n/a	B	B
West College Avenue	Transit	n/a	C	C	n/a	B	B
to	Bike	A	C	D	A	A	D
Jennings Avenue	Ped	A	B	C	A	C	C
Segment #2	Auto	n/a	B	B	n/a	B	B
Jennings Avenue	Transit	n/a	D	D	n/a	B	B
to	Bike	C	B	D	C	A	D
Guerneville Road	Ped	B	B	D	B	C	D
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.69 - B			0.59 - C		
	Transit	3.14 - C			2.20 - B		
	Bike	4.08 - D			3.94 - D		
	Ped	3.13 - C			3.23 - C		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: North Dutton Avenue Limits: Guerneville Road to West College Avenue
Direction: SB Observer: Data collected on:

		Existing Conditions			Future Base Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	B	B	n/a	B	B
Guerneville Road	Transit	n/a	D	D	n/a	D	D
to	Bike	A	C	D	A	D	D
Jennings Avenue	Ped	A	B	C	A	B	C
Segment #2	Auto	n/a	B	B	n/a	B	B
Jennings Avenue	Transit	n/a	C	C	n/a	C	C
to	Bike	B	C	D	B	C	D
West College Avenue	Ped	B	B	D	B	C	D
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.86 - A			0.85 - B		
	Transit	3.14 - C			3.16 - C		
	Bike	3.93 - D			3.95 - D		
	Ped	3.26 - C			3.33 - C		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: North Dutton Avenue Limits: Guerneville Road to West College Avenue
Direction: SB Observer: Data collected on:

		Future Base Conditions			Preferred Plan Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	B	B	n/a	B	B
Guerneville Road	Transit	n/a	D	D	n/a	B	B
to	Bike	A	D	D	A	B	D
Jennings Avenue	Ped	A	B	C	A	B	C
Segment #2	Auto	n/a	B	B	n/a	B	B
Jennings Avenue	Transit	n/a	C	C	n/a	B	B
to	Bike	B	C	D	A	A	D
West College Avenue	Ped	B	C	D	B	C	D
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.85 - B			0.72 - B		
	Transit	3.16 - C			2.19 - B		
	Bike	3.95 - D			3.77 - D		
	Ped	3.33 - C			3.33 - C		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: Range Avenue-Frances Street Limits: Cleveland Avenue to Paulin Creek
Direction: NB Observer: Data collected on:

		Existing Conditions NB			Existing Conditions SB		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	C	C	n/a	C	C
Cleveland Avenue	Transit	n/a	D	D	n/a	B	B
to	Bike	A	C	D	A	C	D
Briggs Avenue	Ped	A	B	A	A	B	C
Segment #2	Auto	n/a	B	B	n/a	C	C
Briggs Avenue	Transit	n/a	D	D	n/a	E	E
to	Bike	A	E	D	D	D	E
Jennings Avenue	Ped	A	D	B	B	B	C
Segment #3	Auto	n/a	C	C	n/a	B	B
Jennings Avenue	Transit	n/a	E	E	n/a	A	A
to	Bike	A	D	D	A	E	D
Edwards Avenue	Ped	A	A	A	A	B	B
Segment #4	Auto	n/a	B	B	n/a	C	C
Edwards Avenue	Transit	n/a	B	B	n/a	D	D
to	Bike	D	E	E	A	E	E
Guerneville Road	Ped	B	B	B	A	B	A
Segment #5	Auto	n/a	C	C	n/a	B	B
Guerneville Road	Transit	n/a	D	D	n/a	C	C
to	Bike	B	D	D	A	C	D
West Steele Lane	Ped	A	B	C	A	B	A
Segment #6	Auto	n/a	C	C	n/a	C	C
West Steele Lane	Transit	n/a	A	A	n/a	F	F
to	Bike	A	C	D	B	D	D
Paulin Creek	Ped	A	B	C	A	C	C
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.68 - B			0.50 - C		
	Transit	3.04 - C			3.28 - C		
	Bike	4.12 - D			3.97 - D		
	Ped	2.43 - B			2.51 - B		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: Range Avenue-Frances Street Limits: Cleveland Avenue to Paulin Creek
Direction: NB Observer: Data collected on:

		Future Base Conditions NB			Future Base Conditions SB		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	C	C	n/a	C	C
Cleveland Avenue	Transit	n/a	D	D	n/a	B	B
to	Bike	A	A	C	A	C	D
Briggs Avenue	Ped	A	A	B	A	B	C
Segment #2	Auto	n/a	B	B	n/a	C	C
Briggs Avenue	Transit	n/a	C	C	n/a	E	E
to	Bike	A	C	D	C	B	D
Jennings Avenue	Ped	A	B	A	B	B	C
Segment #3	Auto	n/a	C	C	n/a	B	B
Jennings Avenue	Transit	n/a	E	E	n/a	A	A
to	Bike	A	C	D	A	C	D
Edwards Avenue	Ped	A	A	B	A	B	B
Segment #4	Auto	n/a	B	B	n/a	C	C
Edwards Avenue	Transit	n/a	B	B	n/a	D	D
to	Bike	C	C	D	A	C	D
Guerneville Road	Ped	B	B	B	A	B	B
Segment #5	Auto	n/a	C	C	n/a	B	B
Guerneville Road	Transit	n/a	D	D	n/a	C	C
to	Bike	A	B	D	A	C	D
West Steele Lane	Ped	A	B	C	A	B	A
Segment #6	Auto	n/a	C	C	n/a	C	C
West Steele Lane	Transit	n/a	A	A	n/a	F	F
to	Bike	A	C	D	A	A	D
Paulin Creek	Ped	A	B	C	A	A	B
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.59 - C			0.52 - C		
	Transit	2.97 - C			3.26 - C		
	Bike	3.74 - D			3.69 - D		
	Ped	2.46 - B			2.51 - B		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: Range Avenue-Frances Street Limits: Cleveland Avenue to Paulin Creek
Direction: NB Observer: Data collected on:

		Preferred Plan Conditions NB			Preferred Plan Conditions SB		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	C	C	n/a	C	C
Cleveland Avenue	Transit	n/a	D	D	n/a	B	B
to	Bike	A	A	C	A	C	D
Briggs Avenue	Ped	A	A	B	A	B	C
Segment #2	Auto	n/a	B	B	n/a	C	C
Briggs Avenue	Transit	n/a	C	C	n/a	D	D
to	Bike	A	B	C	C	B	D
Jennings Avenue	Ped	A	B	A	B	A	C
Segment #3	Auto	n/a	C	C	n/a	B	B
Jennings Avenue	Transit	n/a	E	E	n/a	A	A
to	Bike	A	A	D	A	E	D
Edwards Avenue	Ped	A	B	B	A	A	B
Segment #4	Auto	n/a	B	B	n/a	D	D
Edwards Avenue	Transit	n/a	B	B	n/a	D	D
to	Bike	B	A	D	A	E	E
Guerneville Road	Ped	B	B	C	A	A	B
Segment #5	Auto	n/a	C	C	n/a	B	B
Guerneville Road	Transit	n/a	D	D	n/a	C	C
to	Bike	A	B	D	A	E	D
West Steele Lane	Ped	A	B	C	A	A	A
Segment #6	Auto	n/a	C	C	n/a	C	C
West Steele Lane	Transit	n/a	A	A	n/a	F	F
to	Bike	A	C	D	A	D	D
Paulin Creek	Ped	A	B	C	A	A	C
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.47 - D			0.49 - D		
	Transit	2.95 - C			3.16 - C		
	Bike	3.60 - D			4.00 - D		
	Ped	2.65 - B			2.56 - B		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: Cleveland Avenue Limits: West College Avenue to Paulin Creek
Direction: NB Observer: Data collected on:

		Existing Conditions			Future Base Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	B	B	n/a	B	B
West College Avenue	Transit	n/a	C	C	n/a	C	C
to	Bike	D	F	E	C	D	D
Frances Street	Ped	A	C	D	A	D	D
Segment #2	Auto	n/a	B	B	n/a	B	B
Frances Street	Transit	n/a	C	C	n/a	C	C
to	Bike	C	F	D	B	C	C
Coddingtown Driveway	Ped	A	E	D	A	D	D
Segment #3	Auto	n/a	B	B	n/a	B	B
Coddingtown Driveway	Transit	n/a	D	D	n/a	D	D
to	Bike	F	E	F	E	B	E
Guerneville Road-Steele Lane	Ped	B	D	D	B	C	D
Segment #4	Auto	n/a	B	B	n/a	B	B
Guerneville Road-Steele Lane	Transit	n/a	C	C	n/a	C	C
to	Bike	A	E	E	A	C	D
Paulin Creek	Ped	A	B	C	A	C	C
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.75 - B			0.68 - B		
	Transit	3.47 - C			3.45 - C		
	Bike	4.59 - E			3.92 - D		
	Ped	3.78 - D			3.73 - D		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: Cleveland Avenue Limits: West College Avenue to Paulin Creek
Direction: NB Observer: Data collected on:

		Future Base Conditions			**Preferred Plan Conditions**		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	B	B	n/a	B	B
West College Avenue	Transit	n/a	C	C	n/a	D	D
to	Bike	C	D	D	C	D	D
Frances Street	Ped	A	D	D	A	D	D
Segment #2	Auto	n/a	B	B	n/a	B	B
Frances Street	Transit	n/a	C	C	n/a	C	C
to	Bike	B	C	C	B	D	D
Coddingtown Driveway	Ped	A	D	D	A	E	D
Segment #3	Auto	n/a	B	B	n/a	B	B
Coddingtown Driveway	Transit	n/a	D	D	n/a	D	D
to	Bike	E	B	E	E	B	F
Guerneville Road-Steele Lane	Ped	B	C	D	B	D	D
Segment #4	Auto	n/a	B	B	n/a	B	B
Guerneville Road-Steele Lane	Transit	n/a	C	C	n/a	C	C
to	Bike	A	C	D	A	C	D
Paulin Creek	Ped	A	C	C	A	C	C
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.68 - B			0.65 - C		
	Transit	3.45 - C			3.49 - C		
	Bike	3.92 - D			3.99 - D		
	Ped	3.73 - D			3.82 - D		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: Cleveland Avenue Limits: Paulin Creek to West College Avenue
Direction: SB Observer: Data collected on:

		Existing Conditions			Future Base Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	B	B	n/a	B	B
Paulin Creek	Transit	n/a	C	C	n/a	C	C
to	Bike	C	C	E	C	C	E
Guerneville Road-Steele Lane	Ped	B	C	D	B	C	D
Segment #2	Auto	n/a	C	C	n/a	C	C
Guerneville Road-Steele Lane	Transit	n/a	C	C	n/a	D	D
to	Bike	B	B	D	B	B	D
Coddingtown	Ped	A	B	C	A	C	C
Segment #3	Auto	n/a	B	B	n/a	B	B
Coddingtown	Transit	n/a	C	C	n/a	C	C
to	Bike	B	D	D	B	D	D
Frances Street	Ped	A	C	D	A	C	D
Segment #4	Auto	n/a	B	B	n/a	B	B
Frances Street	Transit	n/a	C	C	n/a	C	C
to	Bike	D	D	D	D	D	E
West College Avenue	Ped	B	C	D	B	D	D
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.54 - C			0.49 - D		
	Transit	3.36 - C			3.39 - C		
	Bike	4.13 - D			4.20 - D		
	Ped	3.64 - D			3.70 - D		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: Cleveland Avenue Limits: Paulin Creek to West College Avenue
Direction: SB Observer: Data collected on:

		Future Base Conditions			Preferred Plan Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	B	B	n/a	B	B
Paulin Creek	Transit	n/a	C	C	n/a	C	C
to	Bike	C	C	E	B	C	E
Guerneville Road-Steele Lane	Ped	B	C	D	B	B	D
Segment #2	Auto	n/a	C	C	n/a	C	C
Guerneville Road-Steele Lane	Transit	n/a	D	D	n/a	C	C
to	Bike	B	B	D	A	B	D
Coddingtown	Ped	A	C	C	A	B	C
Segment #3	Auto	n/a	B	B	n/a	B	B
Coddingtown	Transit	n/a	C	C	n/a	C	C
to	Bike	B	D	D	B	C	D
Frances Street	Ped	A	C	D	A	C	D
Segment #4	Auto	n/a	B	B	n/a	B	B
Frances Street	Transit	n/a	C	C	n/a	C	C
to	Bike	D	D	E	C	D	D
West College Avenue	Ped	B	D	D	B	C	D
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.49 - D			0.51 - C		
	Transit	3.39 - C			3.36 - C		
	Bike	4.20 - D			4.06 - D		
	Ped	3.70 - D			3.63 - D		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: Coffey Lane Limits: Guerneville Road to Paulin Creek
Direction: NB Observer: Data collected on:

		Existing Conditions			Future Base Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	B	B	n/a	B	B
Guerneville Road	Transit	n/a	B	B	n/a	B	B
to	Bike	A	B	C	A	B	C
West Steele Lane	Ped	A	B	C	A	B	C
Segment #2	Auto	n/a	C	C	n/a	C	C
West Steele Lane	Transit	n/a	C	C	n/a	C	C
to	Bike	A	C	D	A	C	D
Paulin Creek	Ped	A	B	B	A	B	B
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.59 - C			0.58 - C		
	Transit	2.92 - C			2.95 - C		
	Bike	3.52 - D			3.55 - D		
	Ped	2.63 - B			3.03 - C		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: Coffey Lane Limits: Guerneville Road to Paulin Creek
Direction: NB Observer: Data collected on:

		Future Base Conditions			Preferred Plan Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	B	B	n/a	B	B
Guerneville Road	Transit	n/a	B	B	n/a	B	B
to	Bike	A	B	C	A	B	C
West Steele Lane	Ped	A	B	C	A	B	C
Segment #2	Auto	n/a	C	C	n/a	C	C
West Steele Lane	Transit	n/a	C	C	n/a	C	C
to	Bike	A	C	D	A	C	D
Paulin Creek	Ped	A	B	B	A	C	B
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.58 - C			0.67 - B		
	Transit	2.95 - C			2.55 - B		
	Bike	3.55 - D			3.55 - D		
	Ped	3.03 - C			3.07 - C		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: Coffey Lane Limits: Paulin Creek to Guerneville Road
Direction: SB Observer: Data collected on:

		Existing Conditions			Future Base Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	B	B	n/a	B	B
Paulin Creek	Transit	n/a	C	C	n/a	C	C
to	Bike	B	B	C	A	B	C
West Steele Lane	Ped	A	D	B	A	C	B
Segment #2	Auto	n/a	B	B	n/a	B	B
West Steele Lane	Transit	n/a	C	C	n/a	C	C
to	Bike	A	B	C	A	B	C
Guerneville Road	Ped	A	D	B	A	D	B
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.69 - B			0.59 - C		
	Transit	3.13 - C			3.11 - C		
	Bike	3.26 - C			3.25 - C		
	Ped	2.36 - B			2.33 - B		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: Coffey Lane Limits: Paulin Creek to Guerneville Road
Direction: SB Observer: Data collected on:

		Future Base Conditions			Preferred Plan Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	B	B	n/a	B	B
Paulin Creek	Transit	n/a	C	C	n/a	C	C
to	Bike	A	B	C	B	B	C
West Steele Lane	Ped	A	C	B	A	D	B
Segment #2	Auto	n/a	B	B	n/a	B	B
West Steele Lane	Transit	n/a	C	C	n/a	B	B
to	Bike	A	B	C	A	B	C
Guerneville Road	Ped	A	D	B	A	D	B
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.59 - C			0.58 - C		
	Transit	3.11 - C			2.73 - B		
	Bike	3.25 - C			3.27 - C		
	Ped	2.33 - B			2.37 - B		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: West Steele Lane Limits: Marlow Road to Range Avenue
Direction: EB Observer: Data collected on:

		Existing Conditions			Future Base Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	B	B	n/a	B	B
Marlow Road	Transit	n/a	D	D	n/a	D	D
to	Bike	B	E	E	B	E	E
Comstock Middle School	Ped	A	B	B	A	B	B
Segment #2	Auto	n/a	B	B	n/a	B	B
Comstock Middle School	Transit	n/a	B	B	n/a	B	B
to	Bike	A	B	D	A	B	D
Coffey Lane	Ped	B	B	C	B	B	C
Segment #3	Auto	n/a	B	B	n/a	B	B
Coffey Lane	Transit	n/a	B	B	n/a	C	C
to	Bike	B	B	D	B	B	D
Range Avenue	Ped	B	B	C	B	B	C
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.62 - C			0.65 - C		
	Transit	3.09 - C			3.10 - C		
	Bike	4.00 - D			4.01 - D		
	Ped	2.98 - C			3.08 - C		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: West Steele Lane Limits: Marlow Road to Range Avenue
Direction: EB Observer: Data collected on:

		Future Base Conditions			Preferred Plan Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	B	B	n/a	B	B
Marlow Road	Transit	n/a	D	D	n/a	D	D
to	Bike	B	E	E	B	E	E
Comstock Middle School	Ped	A	B	B	A	B	B
Segment #2	Auto	n/a	B	B	n/a	B	B
Comstock Middle School	Transit	n/a	B	B	n/a	B	B
to	Bike	A	B	D	A	B	D
Coffey Lane	Ped	B	B	C	B	B	C
Segment #3	Auto	n/a	B	B	n/a	B	B
Coffey Lane	Transit	n/a	C	C	n/a	B	B
to	Bike	B	B	D	B	B	D
Range Avenue	Ped	B	B	C	B	B	C
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.65 - C			0.60 - C		
	Transit	3.10 - C			2.99 - C		
	Bike	4.01 - D			4.05 - D		
	Ped	3.08 - C			3.16 - C		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: West Steele Lane Limits: Range Avenue to Marlow Road
Direction: WB Observer: Data collected on:

		Existing Conditions			Future Base Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	B	B	n/a	B	B
Range Avenue	Transit	n/a	C	C	n/a	C	C
to	Bike	B	D	D	B	D	D
Coffey Lane	Ped	A	C	C	A	C	C
Segment #2	Auto	n/a	B	B	n/a	B	B
Coffey Lane	Transit	n/a	C	C	n/a	C	C
to	Bike	A	B	D	A	B	D
Comstock Middle School	Ped	A	B	C	A	B	C
Segment #3	Auto	n/a	B	B	n/a	B	B
Comstock Middle School	Transit	n/a	D	D	n/a	D	D
to	Bike	B	C	D	B	C	D
Marlow Road	Ped	B	B	B	B	B	C
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.65 - C			0.59 - C		
	Transit	3.13 - C			3.14 - C		
	Bike	4.02 - D			4.03 - D		
	Ped	3.06 - C			3.21 - C		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

Scenarios Comparison Report

Street: West Steele Lane Limits: Range Avenue to Marlow Road
Direction: WB Observer: Data collected on:

		Future Base Conditions			Preferred Plan Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	B	B	n/a	B	B
Range Avenue	Transit	n/a	C	C	n/a	B	B
to	Bike	B	D	D	B	D	D
Coffey Lane	Ped	A	C	C	A	B	C
Segment #2	Auto	n/a	B	B	n/a	B	B
Coffey Lane	Transit	n/a	C	C	n/a	C	C
to	Bike	A	B	D	A	B	D
Comstock Middle School	Ped	A	B	C	A	C	D
Segment #3	Auto	n/a	B	B	n/a	B	B
Comstock Middle School	Transit	n/a	D	D	n/a	D	D
to	Bike	B	C	D	B	C	D
Marlow Road	Ped	B	B	C	B	B	C
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.59 - C			0.63 - C		
	Transit	3.14 - C			3.03 - C		
	Bike	4.03 - D			4.05 - D		
	Ped	3.21 - C			3.32 - C		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: Jennings Avenue Limits: Ridley Avenue to North Dutton Avenue
Direction: EB Observer: Data collected on:

		Existing Conditions			Future Base Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	B	B	n/a	B	B
Ridley Avenue	Transit	n/a	C	C	n/a	C	C
to	Bike	A	B	D	A	B	D
Clover Drive	Ped	A	A	A	A	A	A
Segment #2	Auto	n/a	C	C	n/a	C	C
Clover Drive	Transit	n/a	C	C	n/a	C	C
to	Bike	A	B	D	A	A	C
North Dutton Avenue	Ped	A	C	B	A	A	A
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.59 - C			0.59 - C		
	Transit	3.11 - C			3.04 - C		
	Bike	3.75 - D			3.35 - C		
	Ped	1.82 - A			1.69 - A		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: Jennings Avenue Limits: Ridley Avenue to North Dutton Avenue
Direction: EB Observer: Data collected on:

		Future Base Conditions			Preferred Plan Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	B	B	n/a	B	B
Ridley Avenue	Transit	n/a	C	C	n/a	C	C
to	Bike	A	B	D	A	C	D
Clover Drive	Ped	A	A	A	A	A	A
Segment #2	Auto	n/a	C	C	n/a	C	C
Clover Drive	Transit	n/a	C	C	n/a	C	C
to	Bike	A	A	C	A	A	C
North Dutton Avenue	Ped	A	A	A	A	A	A
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.59 - C			0.59 - C		
	Transit	3.04 - C			3.05 - C		
	Bike	3.35 - C			3.45 - C		
	Ped	1.69 - A			1.71 - A		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: Jennings Avenue Limits: North Dutton Avenue to Ridley Avenue
Direction: WB Observer: Data collected on:

		Existing Conditions			Future Base Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	C	C	n/a	C	C
North Dutton Avenue	Transit	n/a	C	C	n/a	C	C
to	Bike	A	A	D	A	A	D
Clover Drive	Ped	A	A	A	A	A	A
Segment #2	Auto	n/a	B	B	n/a	B	B
Clover Drive	Transit	n/a	C	C	n/a	C	C
to	Bike	A	B	D	A	C	D
Ridley Avenue	Ped	A	A	A	A	A	A
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.59 - C			0.59 - C		
	Transit	3.05 - C			3.05 - C		
	Bike	3.76 - D			3.76 - D		
	Ped	1.71 - A			1.72 - A		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: Jennings Avenue Limits: North Dutton Avenue to Ridley Avenue
Direction: WB Observer: Data collected on:

		Future Base Conditions			Preferred Plan Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	C	C	n/a	C	C
North Dutton Avenue	Transit	n/a	C	C	n/a	C	C
to	Bike	A	A	D	A	A	D
Clover Drive	Ped	A	A	A	A	A	A
Segment #2	Auto	n/a	B	B	n/a	B	B
Clover Drive	Transit	n/a	C	C	n/a	C	C
to	Bike	A	C	D	A	C	D
Ridley Avenue	Ped	A	A	A	A	A	A
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.59 - C			0.59 - C		
	Transit	3.05 - C			3.06 - C		
	Bike	3.76 - D			3.77 - D		
	Ped	1.72 - A			1.72 - A		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: Jennings Avenue Limits: Herbert Street to Cleveland Avenue
Direction: EB Observer: Data collected on:

		Existing Conditions			Future Base Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	D	D	n/a	D	D
Herbert Street	Transit	n/a	F	F	n/a	F	F
to	Bike	A	B	D	A	C	D
Range Avenue	Ped	A	A	A	A	A	A
Segment #2	Auto	n/a	C	C	n/a	C	C
Range Avenue	Transit	n/a	F	F	n/a	F	F
to	Bike	C	D	E	C	D	E
Cleveland Avenue	Ped	A	B	B	A	A	B
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.62 - C			0.62 - C		
	Transit	6.27 - F			6.24 - F		
	Bike	4.20 - D			4.23 - D		
	Ped	2.00 - A			1.94 - A		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: Jennings Avenue Limits: Herbert Street to Cleveland Avenue
Direction: EB Observer: Data collected on:

		Future Base Conditions			Preferred Plan Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	D	D	n/a	D	D
Herbert Street	Transit	n/a	F	F	n/a	F	F
to	Bike	A	C	D	A	A	D
Range Avenue	Ped	A	A	A	A	A	A
Segment #2	Auto	n/a	C	C	n/a	C	C
Range Avenue	Transit	n/a	F	F	n/a	F	F
to	Bike	C	D	E	B	E	E
Cleveland Avenue	Ped	A	A	B	A	A	B
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.62 - C			0.62 - C		
	Transit	6.24 - F			6.25 - F		
	Bike	4.23 - D			4.16 - D		
	Ped	1.94 - A			1.97 - A		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: Jennings Avenue Limits: Cleveland Avenue to Herbert Street
Direction: WB Observer: Data collected on:

		Existing Conditions			Future Base Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	C	C	n/a	C	C
Cleveland Avenue	Transit	n/a	F	F	n/a	F	F
to	Bike	A	C	D	A	C	D
Range Avenue	Ped	A	A	A	A	A	A
Segment #2	Auto	n/a	D	D	n/a	D	D
Range Avenue	Transit	n/a	F	F	n/a	F	F
to	Bike	A	C	D	A	C	D
Herbert Street	Ped	A	A	A	A	A	A
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.62 - C			0.62 - C		
	Transit	6.26 - F			6.21 - F		
	Bike	3.96 - D			3.98 - D		
	Ped	1.73 - A			1.64 - A		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Scenarios Comparison Report

Street: Jennings Avenue Limits: Cleveland Avenue to Herbert Street
Direction: WB Observer: Data collected on:

		Future Base Conditions			Preferred Plan Conditions		
		Intrsctn LOS	Link LOS	Segmnt LOS	Intrsctn LOS	Link LOS	Segmnt LOS
Segment #1	Auto	n/a	C	C	n/a	C	C
Cleveland Avenue	Transit	n/a	F	F	n/a	F	F
to	Bike	A	C	D	A	C	D
Range Avenue	Ped	A	A	A	A	A	A
Segment #2	Auto	n/a	D	D	n/a	D	D
Range Avenue	Transit	n/a	F	F	n/a	F	F
to	Bike	A	C	D	A	C	D
Herbert Street	Ped	A	A	A	A	A	A
		Facility Score - LOS			Facility Score - LOS		
Facility	Auto	0.62 - C			0.62 - C		
	Transit	6.21 - F			6.22 - F		
	Bike	3.98 - D			3.96 - D		
	Ped	1.64 - A			1.73 - A		
		Using HCM 2010 Methodologies			Using HCM 2010 Methodologies		

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Appendix C

Freeway Mainline Calculations

BASIC FREEWAY SEGMENTS WORKSHEET

General Information			Site Information	
Analyst	*TDH*		Highway/Direction of Travel	*US 101 Northbound*
Agency or Company	*W-Trans*		From/To	*Downtown SR to College Ave*
Date Performed	*12/4/2011*		Jurisdiction	*City of Santa Rosa/Caltrans*
Analysis Time Period	*PM Peak Hour*		Analysis Year	*Existing Conditions*
Project Description	*North Santa Rosa Station Area Plan*			
Oper.(LOS)		Des.(N)		Planning Data

Flow Inputs				
Volume, V	*4134*	veh/h	Peak-Hour Factor, PHF	*1.00*
AADT		veh/day	%Trucks and Buses, P_T	*5*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.976*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft			
Rt-Side Lat. Clearance	*6.0*	ft	f_{LW}	*0.0*	mph
Number of Lanes, N	*2*		f_{LC}	*0.0*	mph
Total Ramp Density, TRD	*1.20*	ramps/mi	TRD Adjustment	*3.8*	mph
FFS (measured)		mph	FFS	*71.6*	mph
Base free-flow Speed, BFFS	*75.4*	mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
			Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2119*	pc/h/ln	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	*60.2*	mph	S	mph
D = v_p / S	*35.2*	pc/mi/ln	D = v_p / S	pc/mi/ln
LOS	*E*		Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information			Site Information	
Analyst	*TDH*		Highway/Direction of Travel	*US 101 Southbound*
Agency or Company	*W-Trans*		From/To	*Downtown SR to College Ave*
Date Performed	*12/4/2011*		Jurisdiction	*City of Santa Rosa/Caltrans*
Analysis Time Period	*PM Peak Hour*		Analysis Year	*Existing Conditions*
Project Description	*North Santa Rosa Station Area Plan*			
Oper.(LOS)		Des.(N)		Planning Data

Flow Inputs				
Volume, V	*3846*	veh/h	Peak-Hour Factor, PHF	*1.00*
AADT		veh/day	%Trucks and Buses, P_T	*5*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.976*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft			
Rt-Side Lat. Clearance	*6.0*	ft	f_{LW}	*0.0*	mph
Number of Lanes, N	*3*		f_{LC}	*0.0*	mph
Total Ramp Density, TRD	*1.20*	ramps/mi	TRD Adjustment	*3.8*	mph
FFS (measured)		mph	FFS	*71.6*	mph
Base free-flow Speed, BFFS	*75.4*	mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
			Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1314*	pc/h/ln	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	*69.8*	mph	S	mph
D = v_p / S	*18.8*	pc/mi/ln	D = v_p / S	pc/mi/ln
LOS	*C*		Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information			Site Information		
Analyst	*TDH*		Highway/Direction of Travel	*US 101 Northbound*	
Agency or Company	*W-Trans*		From/To	*College Ave to Steele Lane*	
Date Performed	*12/4/2011*		Jurisdiction	*City of Santa Rosa/Caltrans*	
Analysis Time Period	*PM Peak Hour*		Analysis Year	*Existing Conditions*	
Project Description	*North Santa Rosa Station Area Plan*				
Oper.(LOS)		Des.(N)		Planning Data	
Flow Inputs					
Volume, V	*3925*	veh/h	Peak-Hour Factor, PHF	*1.00*	
AADT		veh/day	%Trucks and Buses, P_T	*5*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*	
Calculate Flow Adjustments					
f_p	*1.00*		E_R	*1.2*	
E_T	*1.5*		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.976*	
Speed Inputs			**Calc Speed Adj and FFS**		
Lane Width	*12.0*	ft			
Rt-Side Lat. Clearance	*6.0*	ft	f_{LW}	*0.0*	mph
Number of Lanes, N	*2*		f_{LC}	*0.0*	mph
Total Ramp Density, TRD	*1.20*	ramps/mi	TRD Adjustment	*3.8*	mph
FFS (measured)		mph	FFS	*71.6*	mph
Base free-flow Speed, BFFS	*75.4*	mph			
LOS and Performance Measures			**Design (N)**		
Operational (LOS)			Design (N)		
			Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2012*	pc/h/ln	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S	*62.4*	mph	S		mph
D = v_p / S	*32.3*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*D*		Required Number of Lanes, N		
Glossary			**Factor Location**		
N - Number of lanes	S - Speed		E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8	
V - Hourly volume	D - Density		E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9	
v_p - Flow rate	FFS - Free-flow speed		f_p - Page 11-18	TRD - Page 11-11	
LOS - Level of service	BFFS - Base free-flow speed		LOS, S, FFS, v_p - Exhibits 11-2, 11-3		
DDHV - Directional design hour volume					

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information			Site Information		
Analyst	*TDH*		Highway/Direction of Travel	*US 101 Southbound*	
Agency or Company	*W-Trans*		From/To	*College Ave to Steele Lane*	
Date Performed	*12/4/2011*		Jurisdiction	*City of Santa Rosa/Caltrans*	
Analysis Time Period	*PM Peak Hour*		Analysis Year	*Existing Conditions*	
Project Description	*North Santa Rosa Station Area Plan*				
Oper.(LOS)		Des.(N)		Planning Data	
Flow Inputs					
Volume, V	*3523*	veh/h	Peak-Hour Factor, PHF	*1.00*	
AADT		veh/day	%Trucks and Buses, P_T	*5*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*	
Calculate Flow Adjustments					
f_p	*1.00*		E_R	*1.2*	
E_T	*1.5*		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.976*	
Speed Inputs			**Calc Speed Adj and FFS**		
Lane Width	*12.0*	ft			
Rt-Side Lat. Clearance	*6.0*	ft	f_{LW}	*0.0*	mph
Number of Lanes, N	*2*		f_{LC}	*0.0*	mph
Total Ramp Density, TRD	*1.20*	ramps/mi	TRD Adjustment	*3.8*	mph
FFS (measured)		mph	FFS	*71.6*	mph
Base free-flow Speed, BFFS	*75.4*	mph			
LOS and Performance Measures			**Design (N)**		
Operational (LOS)			Design (N)		
			Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1806*	pc/h/ln	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S	*65.7*	mph	S		mph
D = v_p / S	*27.5*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*D*		Required Number of Lanes, N		
Glossary			**Factor Location**		
N - Number of lanes	S - Speed		E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8	
V - Hourly volume	D - Density		E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9	
v_p - Flow rate	FFS - Free-flow speed		f_p - Page 11-18	TRD - Page 11-11	
LOS - Level of service	BFFS - Base free-flow speed		LOS, S, FFS, v_p - Exhibits 11-2, 11-3		
DDHV - Directional design hour volume					

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information			Site Information		
Analyst	*TDH*		Highway/Direction of Travel	*US 101 Northbound*	
Agency or Company	*W-Trans*		From/To	*Steele Ln to Bicentennial Way*	
Date Performed	*12/4/2011*		Jurisdiction	*City of Santa Rosa/Caltrans*	
Analysis Time Period	*PM Peak Hour*		Analysis Year	*Existing Conditions*	

Project Description *North Santa Rosa Station Area Plan*

Oper.(LOS) Des.(N) Planning Data

Flow Inputs					
Volume, V	*3673*	veh/h	Peak-Hour Factor, PHF	*1.00*	
AADT		veh/day	%Trucks and Buses, P_T	*5*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*	

Calculate Flow Adjustments				
f_p	*1.00*	E_R	*1.2*	
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.976*	

Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft			
Rt-Side Lat. Clearance	*6.0*	ft	f_{LW}	*0.0*	mph
Number of Lanes, N	*2*		f_{LC}	*0.0*	mph
Total Ramp Density, TRD	*1.20*	ramps/mi	TRD Adjustment	*3.8*	mph
FFS (measured)		mph	FFS	*71.6*	mph
Base free-flow Speed, BFFS	*75.4*	mph			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
			Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1882*	pc/h/ln	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S	*64.6*	mph	S		mph
D = v_p / S	*29.1*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*D*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information			Site Information		
Analyst	*TDH*		Highway/Direction of Travel	*US 101 Southbound*	
Agency or Company	*W-Trans*		From/To	*Steele Ln to Bicentennial Way*	
Date Performed	*12/4/2011*		Jurisdiction	*City of Santa Rosa/Caltrans*	
Analysis Time Period	*PM Peak Hour*		Analysis Year	*Existing Conditions*	

Project Description *North Santa Rosa Station Area Plan*

Oper.(LOS) Des.(N) Planning Data

Flow Inputs					
Volume, V	*2863*	veh/h	Peak-Hour Factor, PHF	*1.00*	
AADT		veh/day	%Trucks and Buses, P_T	*5*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*	

Calculate Flow Adjustments				
f_p	*1.00*	E_R	*1.2*	
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.976*	

Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft			
Rt-Side Lat. Clearance	*6.0*	ft	f_{LW}	*0.0*	mph
Number of Lanes, N	*2*		f_{LC}	*0.0*	mph
Total Ramp Density, TRD	*1.20*	ramps/mi	TRD Adjustment	*3.8*	mph
FFS (measured)		mph	FFS	*71.6*	mph
Base free-flow Speed, BFFS	*75.4*	mph			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
			Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1467*	pc/h/ln	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S	*69.2*	mph	S		mph
D = v_p / S	*21.2*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*C*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information			Site Information		
Analyst	*TDH*		Highway/Direction of Travel	*US 101 Northbound*	
Agency or Company	*W-Trans*		From/To	*Downtown SR to College Ave*	
Date Performed	*12/4/2011*		Jurisdiction	*City of Santa Rosa/Caltrans*	
Analysis Time Period	*PM Peak Hour*		Analysis Year	*Future Conditions*	
Project Description	*North Santa Rosa Station Area Plan*				
Oper.(LOS)		Des.(N)		Planning Data	

Flow Inputs					
Volume, V	*4397*	veh/h	Peak-Hour Factor, PHF	*1.00*	
AADT		veh/day	%Trucks and Buses, P_T	*5*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*	

Calculate Flow Adjustments				
f_p	*1.00*		E_R	*1.2*
E_T	*1.5*		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.976*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft			
Rt-Side Lat. Clearance	*6.0*	ft	f_{LW}	*0.0*	mph
Number of Lanes, N	*2*		f_{LC}	*0.0*	mph
Total Ramp Density, TRD	*1.20*	ramps/mi	TRD Adjustment	*3.8*	mph
FFS (measured)		mph	FFS	*71.6*	mph
Base free-flow Speed, BFFS	*75.4*	mph			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
			Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2253*	pc/h/ln	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S	*57.1*	mph	S		mph
D = v_p / S	*39.4*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*E*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information			Site Information		
Analyst	*TDH*		Highway/Direction of Travel	*US 101 Southbound*	
Agency or Company	*W-Trans*		From/To	*Downtown SR to College Ave*	
Date Performed	*12/4/2011*		Jurisdiction	*City of Santa Rosa/Caltrans*	
Analysis Time Period	*PM Peak Hour*		Analysis Year	*Future Conditions*	
Project Description	*North Santa Rosa Station Area Plan*				
☑ Oper.(LOS)		☐ Des.(N)		☐ Planning Data	

Flow Inputs					
Volume, V	*4488*	veh/h	Peak-Hour Factor, PHF	*1.00*	
AADT		veh/day	%Trucks and Buses, P_T	*5*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*	

Calculate Flow Adjustments				
f_p	*1.00*		E_R	*1.2*
E_T	*1.5*		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.976*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft			
Rt-Side Lat. Clearance	*6.0*	ft	f_{LW}	*0.0*	mph
Number of Lanes, N	*3*		f_{LC}	*0.0*	mph
Total Ramp Density, TRD	*1.20*	ramps/mi	TRD Adjustment	*3.8*	mph
FFS (measured)		mph	FFS	*71.6*	mph
Base free-flow Speed, BFFS	*75.4*	mph			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
			Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1533*	pc/h/ln	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S	*68.7*	mph	S		mph
D = v_p / S	*22.3*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*C*		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information			Site Information		
Analyst	TDH		Highway/Direction of Travel	US 101 Northbound	
Agency or Company	W-Trans		From/To	College Ave to Steele Lane	
Date Performed	12/4/2011		Jurisdiction	City of Santa Rosa/Caltrans	
Analysis Time Period	PM Peak Hour		Analysis Year	Future Conditions	
Project Description	North Santa Rosa Station Area Plan				
Oper.(LOS)			Des.(N)	Planning Data	

Flow Inputs					
Volume, V	4143	veh/h	Peak-Hour Factor, PHF	1.00	
AADT		veh/day	%Trucks and Buses, P_T	5	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi	

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft			
Rt-Side Lat. Clearance	6.0	ft	f_{LW}	0.0	mph
Number of Lanes, N	2		f_{LC}	0.0	mph
Total Ramp Density, TRD	1.20	ramps/mi	TRD Adjustment	3.8	mph
FFS (measured)		mph	FFS	71.6	mph
Base free-flow Speed, BFFS	75.4	mph			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
			Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	2123	pc/h/ln	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S	60.1	mph	S		mph
D = v_p / S	35.3	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	E		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information			Site Information		
Analyst	TDH		Highway/Direction of Travel	US 101 Southbound	
Agency or Company	W-Trans		From/To	College Ave to Steele Lane	
Date Performed	12/4/2011		Jurisdiction	City of Santa Rosa/Caltrans	
Analysis Time Period	PM Peak Hour		Analysis Year	Future Conditions	
Project Description	North Santa Rosa Station Area Plan				
Oper.(LOS)			Des.(N)	Planning Data	

Flow Inputs					
Volume, V	4122	veh/h	Peak-Hour Factor, PHF	1.00	
AADT		veh/day	%Trucks and Buses, P_T	5	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi	

Calculate Flow Adjustments			
f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.976

Speed Inputs			Calc Speed Adj and FFS		
Lane Width	12.0	ft			
Rt-Side Lat. Clearance	6.0	ft	f_{LW}	0.0	mph
Number of Lanes, N	2		f_{LC}	0.0	mph
Total Ramp Density, TRD	1.20	ramps/mi	TRD Adjustment	3.8	mph
FFS (measured)		mph	FFS	71.6	mph
Base free-flow Speed, BFFS	75.4	mph			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
			Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	2113	pc/h/ln	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S	60.3	mph	S		mph
D = v_p / S	35.0	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	E		Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*TDH*	Highway/Direction of Travel	*US 101 Northbound*
Agency or Company	*W-Trans*	From/To	*Steele Ln to Bicentennial Way*
Date Performed	*12/4/2011*	Jurisdiction	*City of Santa Rosa/Caltrans*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Future Conditions*

Project Description *North Santa Rosa Station Area Plan*

Oper.(LOS) Des.(N) Planning Data

Flow Inputs				
Volume, V	*3988*	veh/h	Peak-Hour Factor, PHF	*1.00*
AADT		veh/day	%Trucks and Buses, P_T	*5*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.976*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft			
Rt-Side Lat. Clearance	*6.0*	ft	f_{LW}	*0.0*	mph
Number of Lanes, N	*2*		f_{LC}	*0.0*	mph
Total Ramp Density, TRD	*1.20*	ramps/mi	TRD Adjustment	*3.8*	mph
FFS (measured)		mph	FFS	*71.6*	mph
Base free-flow Speed, BFFS	*75.4*	mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
			Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2044*	pc/h/ln	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	*61.7*	mph	S	mph
D = v_p / S	*33.1*	pc/mi/ln	D = v_p / S	pc/mi/ln
LOS	*D*		Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*TDH*	Highway/Direction of Travel	*US 101 Southbound*
Agency or Company	*W-Trans*	From/To	*Steele Ln to Bicentennial Way*
Date Performed	*12/4/2011*	Jurisdiction	*City of Santa Rosa/Caltrans*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Future Conditions*

Project Description *North Santa Rosa Station Area Plan*

Oper.(LOS) Des.(N) Planning Data

Flow Inputs				
Volume, V	*3689*	veh/h	Peak-Hour Factor, PHF	*1.00*
AADT		veh/day	%Trucks and Buses, P_T	*5*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.976*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft			
Rt-Side Lat. Clearance	*6.0*	ft	f_{LW}	*0.0*	mph
Number of Lanes, N	*2*		f_{LC}	*0.0*	mph
Total Ramp Density, TRD	*1.20*	ramps/mi	TRD Adjustment	*3.8*	mph
FFS (measured)		mph	FFS	*71.6*	mph
Base free-flow Speed, BFFS	*75.4*	mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
			Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1891*	pc/h/ln	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	*64.5*	mph	S	mph
D = v_p / S	*29.3*	pc/mi/ln	D = v_p / S	pc/mi/ln
LOS	*D*		Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information			Site Information		
Analyst	*TDH*		Highway/Direction of Travel	*US 101 Northbound*	
Agency or Company	*W-Trans*		From/To	*Downtown SR to College Ave*	
Date Performed	*12/4/2011*		Jurisdiction	*City of Santa Rosa/Caltrans*	
Analysis Time Period	*PM Peak Hour*		Analysis Year	*Preferred Plan Conditions*	
Project Description	*North Santa Rosa Station Area Plan*				
Oper.(LOS)			Des.(N)		Planning Data

Flow Inputs					
Volume, V	*4717*	veh/h	Peak-Hour Factor, PHF	*1.00*	
AADT		veh/day	%Trucks and Buses, P_T	*5*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*	

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.976*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft			
Rt-Side Lat. Clearance	*6.0*	ft	f_{LW}	*0.0*	mph
Number of Lanes, N	*2*		f_{LC}	*0.0*	mph
Total Ramp Density, TRD	*1.20*	ramps/mi	TRD Adjustment	*3.8*	mph
FFS (measured)		mph	FFS	*71.6*	mph
Base free-flow Speed, BFFS	*75.4*	mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
			Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2417*	pc/h/ln	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	*52.8*	mph	S	mph
D = v_p / S	*45.8*	pc/mi/ln	D = v_p / S	pc/mi/ln
LOS	*F*		Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information			Site Information		
Analyst	*TDH*		Highway/Direction of Travel	*US 101 Southbound*	
Agency or Company	*W-Trans*		From/To	*Downtown SR to College Ave*	
Date Performed	*12/4/2011*		Jurisdiction	*City of Santa Rosa/Caltrans*	
Analysis Time Period	*PM Peak Hour*		Analysis Year	*Preferred Plan Conditions*	
Project Description	*North Santa Rosa Station Area Plan*				
☑ Oper.(LOS)			☐ Des.(N)		☐ Planning Data

Flow Inputs					
Volume, V	*4854*	veh/h	Peak-Hour Factor, PHF	*1.00*	
AADT		veh/day	%Trucks and Buses, P_T	*5*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*	

Calculate Flow Adjustments			
f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.976*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft			
Rt-Side Lat. Clearance	*6.0*	ft	f_{LW}	*0.0*	mph
Number of Lanes, N	*3*		f_{LC}	*0.0*	mph
Total Ramp Density, TRD	*1.20*	ramps/mi	TRD Adjustment	*3.8*	mph
FFS (measured)		mph	FFS	*71.6*	mph
Base free-flow Speed, BFFS	*75.4*	mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
			Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1658*	pc/h/ln	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	*67.6*	mph	S	mph
D = v_p / S	*24.5*	pc/mi/ln	D = v_p / S	pc/mi/ln
LOS	*C*		Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*TDH*	Highway/Direction of Travel	*US 101 Northbound*
Agency or Company	*W-Trans*	From/To	*College Ave to Steele Lane*
Date Performed	*12/4/2011*	Jurisdiction	*City of Santa Rosa/Caltrans*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Preferred Plan Conditions*
Project Description	*North Santa Rosa Station Area Plan*		

Oper.(LOS) Des.(N) Planning Data

Flow Inputs

Volume, V	*4405*	veh/h	Peak-Hour Factor, PHF	*1.00*
AADT		veh/day	%Trucks and Buses, P_T	*5*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.976*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft			
Rt-Side Lat. Clearance	*6.0*	ft	f_{LW}	*0.0*	mph
Number of Lanes, N	*2*		f_{LC}	*0.0*	mph
Total Ramp Density, TRD	*1.20*	ramps/mi	TRD Adjustment	*3.8*	mph
FFS (measured)		mph	FFS	*71.6*	mph
Base free-flow Speed, BFFS	*75.4*	mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
			Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2258*	pc/h/ln	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	*57.0*	mph	S	mph
D = v_p / S	*39.6*	pc/mi/ln	D = v_p / S	pc/mi/ln
LOS	*E*		Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*TDH*	Highway/Direction of Travel	*US 101 Southbound*
Agency or Company	*W-Trans*	From/To	*College Ave to Steele Lane*
Date Performed	*12/4/2011*	Jurisdiction	*City of Santa Rosa/Caltrans*
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Preferred Plan Conditions*
Project Description	*North Santa Rosa Station Area Plan*		

Oper.(LOS) Des.(N) Planning Data

Flow Inputs

Volume, V	*4451*	veh/h	Peak-Hour Factor, PHF	*1.00*
AADT		veh/day	%Trucks and Buses, P_T	*5*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.976*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width	*12.0*	ft			
Rt-Side Lat. Clearance	*6.0*	ft	f_{LW}	*0.0*	mph
Number of Lanes, N	*2*		f_{LC}	*0.0*	mph
Total Ramp Density, TRD	*1.20*	ramps/mi	TRD Adjustment	*3.8*	mph
FFS (measured)		mph	FFS	*71.6*	mph
Base free-flow Speed, BFFS	*75.4*	mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
			Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2281*	pc/h/ln	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	*56.4*	mph	S	mph
D = v_p / S	*40.4*	pc/mi/ln	D = v_p / S	pc/mi/ln
LOS	*E*		Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information			Site Information		
Analyst	*TDH*		Highway/Direction of Travel	*US 101 Northbound*	
Agency or Company	*W-Trans*		From/To	*Steele Ln to Bicentennial Way*	
Date Performed	*12/4/2011*		Jurisdiction	*City of Santa Rosa/Caltrans*	
Analysis Time Period	*PM Peak Hour*		Analysis Year	*Preferred Plan Conditions*	
Project Description	*North Santa Rosa Station Area Plan*				
Oper.(LOS)			Des.(N)	Planning Data	
Flow Inputs					
Volume, V	*4258*	veh/h	Peak-Hour Factor, PHF	*1.00*	
AADT		veh/day	%Trucks and Buses, P_T	*5*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*	
Calculate Flow Adjustments					
f_p	*1.00*		E_R	*1.2*	
E_T	*1.5*		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.976*	
Speed Inputs			**Calc Speed Adj and FFS**		
Lane Width	*12.0*	ft			
Rt-Side Lat. Clearance	*6.0*	ft	f_{LW}	*0.0*	mph
Number of Lanes, N	*2*		f_{LC}	*0.0*	mph
Total Ramp Density, TRD	*1.20*	ramps/mi	TRD Adjustment	*3.8*	mph
FFS (measured)		mph	FFS	*71.6*	mph
Base free-flow Speed, BFFS	*75.4*	mph			
LOS and Performance Measures			**Design (N)**		
Operational (LOS)			Design (N)		
			Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2182*	pc/h/ln	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S	*58.8*	mph	S		mph
D = v_p / S	*37.1*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*E*		Required Number of Lanes, N		
Glossary			**Factor Location**		
N - Number of lanes	S - Speed		E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8	
V - Hourly volume	D - Density		E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9	
v_p - Flow rate	FFS - Free-flow speed		f_p - Page 11-18	TRD - Page 11-11	
LOS - Level of service	BFFS - Base free-flow speed		LOS, S, FFS, v_p - Exhibits 11-2, 11-3		
DDHV - Directional design hour volume					

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information			Site Information		
Analyst	*TDH*		Highway/Direction of Travel	*US 101 Southbound*	
Agency or Company	*W-Trans*		From/To	*Steele Ln to Bicentennial Way*	
Date Performed	*12/4/2011*		Jurisdiction	*City of Santa Rosa/Caltrans*	
Analysis Time Period	*PM Peak Hour*		Analysis Year	*Preferred Plan Conditions*	
Project Description	*North Santa Rosa Station Area Plan*				
Oper.(LOS)			Des.(N)	Planning Data	
Flow Inputs					
Volume, V	*3923*	veh/h	Peak-Hour Factor, PHF	*1.00*	
AADT		veh/day	%Trucks and Buses, P_T	*5*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*	
Calculate Flow Adjustments					
f_p	*1.00*		E_R	*1.2*	
E_T	*1.5*		$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.976*	
Speed Inputs			**Calc Speed Adj and FFS**		
Lane Width	*12.0*	ft			
Rt-Side Lat. Clearance	*6.0*	ft	f_{LW}	*0.0*	mph
Number of Lanes, N	*2*		f_{LC}	*0.0*	mph
Total Ramp Density, TRD	*1.20*	ramps/mi	TRD Adjustment	*3.8*	mph
FFS (measured)		mph	FFS	*71.6*	mph
Base free-flow Speed, BFFS	*75.4*	mph			
LOS and Performance Measures			**Design (N)**		
Operational (LOS)			Design (N)		
			Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2011*	pc/h/ln	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S	*62.4*	mph	S		mph
D = v_p / S	*32.2*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*D*		Required Number of Lanes, N		
Glossary			**Factor Location**		
N - Number of lanes	S - Speed		E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8	
V - Hourly volume	D - Density		E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9	
v_p - Flow rate	FFS - Free-flow speed		f_p - Page 11-18	TRD - Page 11-11	
LOS - Level of service	BFFS - Base free-flow speed		LOS, S, FFS, v_p - Exhibits 11-2, 11-3		
DDHV - Directional design hour volume					

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Appendix D

Freeway Queuing and Intersection Levels of Service Calculations

HCM Signalized Intersection Capacity Analysis

9: Hwy 101 S & Steele Lane #1

12/5/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1135	458	313	1215	0	0	0	0	321	1	253
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	11	11	12	12	12	13	13	12
Grade (%)		2%			2%			2%			2%	
Total Lost time (s)		4.4	4.4	4.4	4.4					4.4	4.4	4.4
Lane Util. Factor		0.91	1.00	0.97	0.95					0.95	0.95	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		4867	1567	3285	3387					1720	1725	1567
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4867	1567	3285	3387					1720	1725	1567
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1135	458	313	1215	0	0	0	0	321	1	253
RTOR Reduction (vph)	0	0	180	0	0	0	0	0	0	0	0	76
Lane Group Flow (vph)	0	1135	278	313	1215	0	0	0	0	160	162	177
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type		NA	Prot	Prot	NA					Split	NA	Perm
Protected Phases		2	2	1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		73.5	73.5	16.3	93.5					19.1	19.1	19.1
Effective Green, g (s)		72.8	72.8	15.6	92.8					18.4	18.4	18.4
Actuated g/C Ratio		0.61	0.61	0.13	0.77					0.15	0.15	0.15
Clearance Time (s)		3.7	3.7	3.7	3.7					3.7	3.7	3.7
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		2953	951	427	2619					264	265	240
v/s Ratio Prot		0.23	0.18	c0.10	c0.36					0.09	0.09	
v/s Ratio Perm												c0.11
v/c Ratio		0.38	0.29	0.73	0.46					0.61	0.61	0.74
Uniform Delay, d1		12.1	11.3	50.2	4.8					47.4	47.5	48.5
Progression Factor		0.32	0.33	1.16	0.28					1.00	1.00	1.00
Incremental Delay, d2		0.3	0.6	5.5	0.5					3.9	4.1	11.2
Delay (s)		4.2	4.4	63.7	1.8					51.3	51.6	59.6
Level of Service		A	A	E	A					D	D	E
Approach Delay (s)		4.2			14.5			0.0			55.1	
Approach LOS		A			B			A			E	

Intersection Summary			
HCM Average Control Delay	16.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.8
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

10: Hwy 101N & Steele Lane #1

12/5/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	286	1142	0	0	1118	327	395	0	270	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	11	16	13	13	12	12	12	12
Grade (%)		2%			2%			2%			2%	
Total Lost time (s)	4.4	4.4			4.4		4.4	4.4	4.4			
Lane Util. Factor	0.97	0.95			0.91		0.95	0.91	0.95			
Frt	1.00	1.00			0.97		1.00	0.96	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.96	1.00			
Satd. Flow (prot)	3285	3387			4701		1720	1605	1489			
Flt Permitted	0.95	1.00			1.00		0.95	0.96	1.00			
Satd. Flow (perm)	3285	3387			4701		1720	1605	1489			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	286	1142	0	0	1118	327	395	0	270	0	0	0
RTOR Reduction (vph)	0	0	0	0	39	0	0	12	86	0	0	0
Lane Group Flow (vph)	286	1142	0	0	1406	0	229	216	122	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA			NA		Split	NA	Prot			
Protected Phases	5	2			6		8	8	8			
Permitted Phases												
Actuated Green, G (s)	20.3	87.0			63.0		25.6	25.6	25.6			
Effective Green, g (s)	19.6	86.3			62.3		24.9	24.9	24.9			
Actuated g/C Ratio	0.16	0.72			0.52		0.21	0.21	0.21			
Clearance Time (s)	3.7	3.7			3.7		3.7	3.7	3.7			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	537	2436			2441		357	333	309			
v/s Ratio Prot	c0.09	0.34			c0.30		0.13	c0.13	0.08			
v/s Ratio Perm												
v/c Ratio	0.53	0.47			0.58		0.64	0.65	0.40			
Uniform Delay, d1	46.0	7.1			19.8		43.5	43.5	41.1			
Progression Factor	1.28	0.61			0.98		1.00	1.00	1.00			
Incremental Delay, d2	1.0	0.6			0.9		3.9	4.3	0.8			
Delay (s)	59.8	5.0			20.3		47.4	47.9	41.9			
Level of Service	E	A			C		D	D	D			
Approach Delay (s)		16.0			20.3			45.8			0.0	
Approach LOS		B			C			D			A	

Intersection Summary			
HCM Average Control Delay	23.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.2
Intersection Capacity Utilization	91.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

19: U.S.101 South & College Avenue #2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	857	458	473	841	0	0	0	0	112	2	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	13	12	12	12	12	14	14	14
Total Lost time (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Util. Factor		0.95	1.00	0.97	0.95					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.94	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		3539	1488	3204	3657					1793	1801	1689
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		3539	1488	3204	3657					1793	1801	1689
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	857	458	473	841	0	0	0	0	112	2	90
RTOR Reduction (vph)	0	0	134	0	0	0	0	0	0	0	0	83
Lane Group Flow (vph)	0	857	324	473	841	0	0	0	0	57	57	7
Confl. Peds. (#/hr)			15			15						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases			2									4
Actuated Green, G (s)		78.5	78.5	22.0	103.5					9.5	9.5	9.5
Effective Green, g (s)		79.5	79.5	22.0	104.5					9.5	9.5	9.5
Actuated g/C Ratio		0.66	0.66	0.18	0.87					0.08	0.08	0.08
Clearance Time (s)		4.0	4.0	3.0	4.0					3.0	3.0	3.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		2345	986	587	3185					142	143	134
v/s Ratio Prot		c0.24		c0.15	0.23					c0.03	0.03	
v/s Ratio Perm			0.22									0.00
v/c Ratio		0.37	0.33	0.81	0.26					0.40	0.40	0.05
Uniform Delay, d1		9.0	8.7	47.0	1.3					52.5	52.5	51.1
Progression Factor		0.64	1.49	0.48	1.41					1.00	1.00	1.00
Incremental Delay, d2		0.4	0.7	5.6	0.2					1.9	1.8	0.2
Delay (s)		6.1	13.8	28.0	2.0					54.4	54.4	51.3
Level of Service		A	B	C	A					D	D	D
Approach Delay (s)		8.8			11.4			0.0			53.0	
Approach LOS		A			B			A			D	

Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

20: U.S.101 North & College Avenue #2

12/5/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	152	832	0	0	992	259	319	1	499	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	13	14	14	14	12	12	12
Total Lost time (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Util. Factor	1.00	0.95			0.95		0.95	0.91	0.95			
Frpb, ped/bikes	1.00	1.00			0.99		1.00	1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00			
Frt	1.00	1.00			0.97		1.00	0.87	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.99	1.00			
Satd. Flow (prot)	1770	3539			3502		1793	1561	1604			
Flt Permitted	0.95	1.00			1.00		0.95	0.99	1.00			
Satd. Flow (perm)	1770	3539			3502		1793	1561	1604			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	152	832	0	0	992	259	319	1	499	0	0	0
RTOR Reduction (vph)	0	0	0	0	21	0	0	158	158	0	0	0
Lane Group Flow (vph)	152	832	0	0	1230	0	287	110	106	0	0	0
Confl. Peds. (#/hr)			15			15						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA			NA		Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases									8			
Actuated Green, G (s)	28.6	85.6			54.0		27.4	27.4	27.4			
Effective Green, g (s)	28.6	86.6			55.0		27.4	27.4	27.4			
Actuated g/C Ratio	0.24	0.72			0.46		0.23	0.23	0.23			
Clearance Time (s)	3.0	4.0			4.0		3.0	3.0	3.0			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	422	2554			1605		409	356	366			
v/s Ratio Prot	c0.09	0.24			c0.35		c0.16	0.07				
v/s Ratio Perm									0.07			
v/c Ratio	0.36	0.33			0.77		0.70	0.31	0.29			
Uniform Delay, d1	38.1	6.1			27.1		42.5	38.4	38.3			
Progression Factor	0.73	0.60			0.24		1.00	1.00	1.00			
Incremental Delay, d2	0.5	0.3			2.9		5.4	0.5	0.4			
Delay (s)	28.2	4.0			9.4		47.9	38.9	38.7			
Level of Service	C	A			A		D	D	D			
Approach Delay (s)		7.7			9.4			42.0			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM Average Control Delay	17.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 9: Hwy 101 S & Steele Lane #1

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	R	L	L	T	T	L	LT	R
Maximum Queue (ft)	74	73	81	122	164	159	94	73	158	212	138
Average Queue (ft)	27	40	40	57	126	119	41	36	118	131	101
95th Queue (ft)	81	97	94	178	186	169	104	82	176	235	161
Link Distance (ft)		360	360	360	216	216	216	216		1067	
Upstream Blk Time (%)					0						
Queuing Penalty (veh)					0						
Storage Bay Dist (ft)	150								680		40
Storage Blk Time (%)										46	29
Queuing Penalty (veh)										189	93

Intersection: 10: Hwy 101N & Steele Lane #1

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	T	T	TR	L	LR	R
Maximum Queue (ft)	111	112	156	171	190	217	212	186	203	154
Average Queue (ft)	90	85	102	104	121	198	198	131	151	100
95th Queue (ft)	127	131	178	188	223	222	223	202	222	165
Link Distance (ft)	216	216	216	216	195	195	195	1096	1096	
Upstream Blk Time (%)				0	2	9	19			
Queuing Penalty (veh)				1	11	43	90			
Storage Bay Dist (ft)										230
Storage Blk Time (%)									0	
Queuing Penalty (veh)									1	

Intersection: 19: U.S.101 South & College Avenue #2

Movement	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	R	L	L	T	T	L	LT	R
Maximum Queue (ft)	180	322	226	238	225	54	76	61	116	54
Average Queue (ft)	86	168	100	155	96	15	31	31	76	34
95th Queue (ft)	198	399	258	265	228	61	89	82	141	66
Link Distance (ft)	467	467		227	227	227	227		977	977
Upstream Blk Time (%)		1		7	0					
Queuing Penalty (veh)		5		21	1					
Storage Bay Dist (ft)			170					340		
Storage Blk Time (%)		10	1							
Queuing Penalty (veh)		44	4							

Intersection: 20: U.S.101 North & College Avenue #2

Movement	EB	EB	EB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	TR	L	LTR	R
Maximum Queue (ft)	126	162	244	128	111	173	230	148
Average Queue (ft)	67	76	172	84	55	105	166	87
95th Queue (ft)	152	264	304	171	142	191	255	152
Link Distance (ft)	227	227	227	128	128	802	802	
Upstream Blk Time (%)		1	11	13	7			
Queuing Penalty (veh)		3	36	83	45			
Storage Bay Dist (ft)								250
Storage Blk Time (%)							1	
Queuing Penalty (veh)							2	

Zone Summary

Zone wide Queuing Penalty: 672

HCM Signalized Intersection Capacity Analysis
9: Hwy 101 S & Steele Lane #1

12/5/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1341	459	433	1648	0	0	0	0	457	1	304
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	11	11	12	12	12	13	13	12
Grade (%)		2%			2%			2%			2%	
Total Lost time (s)		4.4	4.4	4.4	4.4					4.4	4.4	4.4
Lane Util. Factor		0.91	1.00	0.97	0.95					0.95	0.95	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		4867	1567	3285	3387					1720	1724	1567
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		4867	1567	3285	3387					1720	1724	1567
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1341	459	433	1648	0	0	0	0	457	1	304
RTOR Reduction (vph)	0	0	226	0	0	0	0	0	0	0	0	25
Lane Group Flow (vph)	0	1341	233	433	1648	0	0	0	0	228	230	279
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type		NA	Prot	Prot	NA					Split	NA	Perm
Protected Phases		2	2	1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		61.6	61.6	20.2	85.5					27.1	27.1	27.1
Effective Green, g (s)		60.9	60.9	19.5	84.8					26.4	26.4	26.4
Actuated g/C Ratio		0.51	0.51	0.16	0.71					0.22	0.22	0.22
Clearance Time (s)		3.7	3.7	3.7	3.7					3.7	3.7	3.7
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		2470	795	534	2393					378	379	345
v/s Ratio Prot		0.28	0.15	c0.13	c0.49					0.13	0.13	
v/s Ratio Perm												c0.18
v/c Ratio		0.54	0.29	0.81	0.69					0.60	0.61	0.81
Uniform Delay, d1		20.1	17.1	48.5	10.1					42.1	42.1	44.4
Progression Factor		0.45	0.66	1.39	0.31					1.00	1.00	1.00
Incremental Delay, d2		0.6	0.6	4.9	0.9					2.7	2.7	13.0
Delay (s)		9.5	11.8	72.1	4.1					44.8	44.9	57.4
Level of Service		A	B	E	A					D	D	E
Approach Delay (s)		10.1			18.2			0.0			49.9	
Approach LOS		B			B			A			D	

Intersection Summary			
HCM Average Control Delay	20.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.8
Intersection Capacity Utilization	112.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
10: Hwy 101N & Steele Lane #1

12/5/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	423	1375	0	0	1537	512	544	0	344	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	11	16	13	13	12	12	12	12
Grade (%)		2%			2%			2%			2%	
Total Lost time (s)	4.4	4.4			4.4		4.4	4.4	4.4			
Lane Util. Factor	0.97	0.95			0.91		0.95	0.91	0.95			
Frt	1.00	1.00			0.96		1.00	0.97	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.96	1.00			
Satd. Flow (prot)	3285	3387			4684		1720	1615	1489			
Flt Permitted	0.95	1.00			1.00		0.95	0.96	1.00			
Satd. Flow (perm)	3285	3387			4684		1720	1615	1489			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	423	1375	0	0	1537	512	544	0	344	0	0	0
RTOR Reduction (vph)	0	0	0	0	49	0	0	8	57	0	0	0
Lane Group Flow (vph)	423	1375	0	0	2000	0	305	296	222	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA			NA		Split	NA	Prot			
Protected Phases	5	2			6		8	8	8			
Permitted Phases												
Actuated Green, G (s)	20.3	84.0			60.0		28.6	28.6	28.6			
Effective Green, g (s)	19.6	83.3			59.3		27.9	27.9	27.9			
Actuated g/C Ratio	0.16	0.69			0.49		0.23	0.23	0.23			
Clearance Time (s)	3.7	3.7			3.7		3.7	3.7	3.7			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	537	2351			2315		400	375	346			
v/s Ratio Prot	c0.13	0.41			c0.43		0.18	c0.18	0.15			
v/s Ratio Perm												
v/c Ratio	0.79	0.58			0.86		0.76	0.79	0.64			
Uniform Delay, d1	48.2	9.4			26.8		43.0	43.3	41.5			
Progression Factor	1.03	0.22			0.71		1.00	1.00	1.00			
Incremental Delay, d2	6.5	0.9			3.9		8.4	10.5	4.0			
Delay (s)	56.1	3.0			23.0		51.3	53.8	45.6			
Level of Service	E	A			C		D	D	D			
Approach Delay (s)		15.5			23.0			50.4			0.0	
Approach LOS		B			C			D			A	

Intersection Summary			
HCM Average Control Delay	25.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.2
Intersection Capacity Utilization	112.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	922	650	602	1038	0	0	0	0	154	3	155
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	13	12	12	12	12	14	14	14
Total Lost time (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Util. Factor		0.91	1.00	0.97	0.91					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.94	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5085	1488	3204	5255					1793	1801	1689
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5085	1488	3204	5255					1793	1801	1689
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	922	650	602	1038	0	0	0	0	154	3	155
RTOR Reduction (vph)	0	0	132	0	0	0	0	0	0	0	0	141
Lane Group Flow (vph)	0	922	518	602	1038	0	0	0	0	79	78	14
Confl. Peds. (#/hr)			15			15						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases			2									4
Actuated Green, G (s)		73.2	73.2	26.3	102.5					10.5	10.5	10.5
Effective Green, g (s)		74.2	74.2	26.3	103.5					10.5	10.5	10.5
Actuated g/C Ratio		0.62	0.62	0.22	0.86					0.09	0.09	0.09
Clearance Time (s)		4.0	4.0	3.0	4.0					3.0	3.0	3.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		3144	920	702	4532					157	158	148
v/s Ratio Prot		0.18		c0.19	0.20					c0.04	0.04	
v/s Ratio Perm			c0.35									0.01
v/c Ratio		0.29	0.56	0.86	0.23					0.50	0.49	0.09
Uniform Delay, d1		10.7	13.4	45.0	1.4					52.3	52.2	50.4
Progression Factor		0.46	0.76	0.68	0.76					1.00	1.00	1.00
Incremental Delay, d2		0.2	1.8	7.4	0.1					2.5	2.4	0.3
Delay (s)		5.0	12.0	38.1	1.2					54.8	54.6	50.6
Level of Service		A	B	D	A					D	D	D
Approach Delay (s)		7.9			14.7			0.0			52.7	
Approach LOS		A			B			A			D	

Intersection Summary			
HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	232	844	0	0	1161	392	479	2	640	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	13	14	14	14	12	12	12
Total Lost time (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Util. Factor	0.97	0.95			0.91		0.95	0.91	0.95			
Frpb, ped/bikes	1.00	1.00			0.99		1.00	1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00			
Frt	1.00	1.00			0.96		1.00	0.89	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.99	1.00			
Satd. Flow (prot)	3433	3539			4984		1793	1583	1604			
Flt Permitted	0.95	1.00			1.00		0.95	0.99	1.00			
Satd. Flow (perm)	3433	3539			4984		1793	1583	1604			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	232	844	0	0	1161	392	479	2	640	0	0	0
RTOR Reduction (vph)	0	0	0	0	52	0	0	104	104	0	0	0
Lane Group Flow (vph)	232	844	0	0	1501	0	393	266	254	0	0	0
Confl. Peds. (#/hr)			15			15						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA			NA		Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases									8			
Actuated Green, G (s)	22.7	75.0			49.3		38.0	38.0	38.0			
Effective Green, g (s)	22.7	76.0			50.3		38.0	38.0	38.0			
Actuated g/C Ratio	0.19	0.63			0.42		0.32	0.32	0.32			
Clearance Time (s)	3.0	4.0			4.0		3.0	3.0	3.0			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	649	2241			2089		568	501	508			
v/s Ratio Prot	0.07	c0.24			c0.30		c0.22	0.17				
v/s Ratio Perm									0.16			
v/c Ratio	0.36	0.38			0.72		0.69	0.53	0.50			
Uniform Delay, d1	42.3	10.6			29.0		35.9	33.7	33.3			
Progression Factor	0.81	0.89			0.24		1.00	1.00	1.00			
Incremental Delay, d2	0.3	0.5			1.3		3.6	1.1	0.8			
Delay (s)	34.5	9.9			8.3		39.5	34.8	34.1			
Level of Service	C	A			A		D	C	C			
Approach Delay (s)		15.2			8.3			36.2			0.0	
Approach LOS		B			A			D			A	

Intersection Summary			
HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	73.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 9: Hwy 101 S & Steele Lane #1

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	R	L	L	T	T	L	LT	R
Maximum Queue (ft)	139	164	160	164	179	180	133	130	222	310	140
Average Queue (ft)	81	106	108	89	139	137	72	73	154	212	129
95th Queue (ft)	167	194	194	191	198	196	162	143	251	342	162
Link Distance (ft)		360	360	360	216	216	216	216		1067	
Upstream Blk Time (%)					1	1	0				
Queuing Penalty (veh)					7	8	1				
Storage Bay Dist (ft)	150								680		40
Storage Blk Time (%)	0	2								46	47
Queuing Penalty (veh)	2	9								247	214

Intersection: 10: Hwy 101N & Steele Lane #1

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	T	T	TR	L	LR	R
Maximum Queue (ft)	190	195	225	231	178	205	207	265	280	233
Average Queue (ft)	146	146	169	192	119	179	201	212	228	144
95th Queue (ft)	200	204	295	296	201	234	208	283	295	250
Link Distance (ft)	216	216	216	216	195	195	195	1096	1096	
Upstream Blk Time (%)	0	1	2	6	1	9	25			
Queuing Penalty (veh)	0	3	10	25	8	60	168			
Storage Bay Dist (ft)										230
Storage Blk Time (%)									9	1
Queuing Penalty (veh)									15	6

Intersection: 19: U.S.101 South & College Avenue #2

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	R	L	L	T	T	T	L	LT	R
Maximum Queue (ft)	91	132	253	210	242	220	44	49	95	77	247	87
Average Queue (ft)	37	43	118	83	207	155	24	27	42	43	170	56
95th Queue (ft)	102	206	295	228	283	264	65	68	187	173	339	91
Link Distance (ft)		461	461		212	212	212	212	212		962	962
Upstream Blk Time (%)		1	0		22	1						
Queuing Penalty (veh)		7	0		72	2						
Storage Bay Dist (ft)	150			365						340		
Storage Blk Time (%)	0	2	0								6	
Queuing Penalty (veh)	0	7	3								5	

Intersection: 20: U.S.101 North & College Avenue #2

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	T	T	TR	L	LTR	R
Maximum Queue (ft)	77	86	64	236	135	78	128	450	587	337
Average Queue (ft)	32	41	15	209	121	41	69	269	354	242
95th Queue (ft)	86	95	97	256	172	111	158	606	671	378
Link Distance (ft)	212	212	212	212	129	129	129	807	807	
Upstream Blk Time (%)				16	24	0	2	0	1	
Queuing Penalty (veh)				44	122	2	10	0	0	
Storage Bay Dist (ft)										250
Storage Blk Time (%)									28	18
Queuing Penalty (veh)									91	100

Zone Summary

Zone wide Queuing Penalty: 1248

HCM Signalized Intersection Capacity Analysis
9: Hwy 101 S & Steele Lane #1

12/5/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1932	864	433	2188	0	0	0	0	457	1	589
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	12	11	11	11	12	12	12	13	13	12
Grade (%)		2%			2%			2%			2%	
Total Lost time (s)		4.4	4.4	4.4	4.4					4.4	4.4	4.4
Lane Util. Factor		0.91	1.00	0.97	0.95					0.95	0.91	0.95
Frt		1.00	0.85	1.00	1.00					1.00	0.89	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.99	1.00
Satd. Flow (prot)		4867	1567	3285	3387					1720	1523	1489
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.99	1.00
Satd. Flow (perm)		4867	1567	3285	3387					1720	1523	1489
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1932	864	433	2188	0	0	0	0	457	1	589
RTOR Reduction (vph)	0	0	324	0	0	0	0	0	0	0	11	11
Lane Group Flow (vph)	0	1932	540	433	2188	0	0	0	0	366	334	325
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type		NA	Prot	Prot	NA					Split	NA	Perm
Protected Phases		2	2	1	6					4	4	
Permitted Phases												4
Actuated Green, G (s)		61.5	61.5	18.9	84.1					28.5	28.5	28.5
Effective Green, g (s)		60.8	60.8	18.2	83.4					27.8	27.8	27.8
Actuated g/C Ratio		0.51	0.51	0.15	0.70					0.23	0.23	0.23
Clearance Time (s)		3.7	3.7	3.7	3.7					3.7	3.7	3.7
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		2466	794	498	2354					398	353	345
v/s Ratio Prot		0.40	0.34	0.13	c0.65					0.21	c0.22	
v/s Ratio Perm												0.22
v/c Ratio		0.78	0.68	0.87	0.93					0.92	0.95	0.94
Uniform Delay, d1		24.2	22.3	49.7	15.8					45.0	45.4	45.3
Progression Factor		0.59	0.54	1.38	0.17					1.00	1.00	1.00
Incremental Delay, d2		0.8	1.5	6.3	3.1					25.8	33.9	33.7
Delay (s)		15.2	13.6	74.7	5.8					70.8	79.3	79.0
Level of Service		B	B	E	A					E	E	E
Approach Delay (s)		14.7			17.2			0.0			76.2	
Approach LOS		B			B			A			E	

Intersection Summary			
HCM Average Control Delay	25.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.8
Intersection Capacity Utilization	144.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
10: Hwy 101N & Steele Lane #1

12/5/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	782	1607	0	0	1729	512	891	0	344	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	11	11	12	11	11	13	13	12	12	12	12
Grade (%)		2%			2%			2%			2%	
Total Lost time (s)	4.4	4.4			4.4	4.4	4.4	4.4	4.4			
Lane Util. Factor	0.97	0.95			0.91	1.00	0.95	0.91	0.95			
Frt	1.00	1.00			1.00	0.85	1.00	0.99	0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95	0.96	1.00			
Satd. Flow (prot)	3285	3387			4867	1515	1720	1639	1489			
Flt Permitted	0.95	1.00			1.00	1.00	0.95	0.96	1.00			
Satd. Flow (perm)	3285	3387			4867	1515	1720	1639	1489			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	782	1607	0	0	1729	512	891	0	344	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	121	0	2	27	0	0	0
Lane Group Flow (vph)	782	1607	0	0	1729	391	463	460	283	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA			NA	Perm	Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases						6			8			
Actuated Green, G (s)	29.3	78.3			45.3	45.3	34.3	34.3	34.3			
Effective Green, g (s)	28.6	77.6			44.6	44.6	33.6	33.6	33.6			
Actuated g/C Ratio	0.24	0.65			0.37	0.37	0.28	0.28	0.28			
Clearance Time (s)	3.7	3.7			3.7	3.7	3.7	3.7	3.7			
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0	3.0			
Lane Grp Cap (vph)	783	2190			1809	563	482	459	417			
v/s Ratio Prot	c0.24	0.47			c0.36		0.27	c0.28				
v/s Ratio Perm						0.26			0.19			
v/c Ratio	1.00	0.73			0.96	0.69	0.96	1.00	0.68			
Uniform Delay, d1	45.7	14.3			36.7	31.9	42.5	43.2	38.4			
Progression Factor	0.95	0.49			0.89	0.77	1.00	1.00	1.00			
Incremental Delay, d2	25.0	1.3			11.0	5.5	31.0	42.5	4.3			
Delay (s)	68.3	8.2			43.7	30.0	73.5	85.7	42.7			
Level of Service	E	A			D	C	E	F	D			
Approach Delay (s)		27.9			40.6			70.3			0.0	
Approach LOS		C			D			E			A	

Intersection Summary			
HCM Average Control Delay	41.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.2
Intersection Capacity Utilization	144.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
19: U.S.101 South & College Avenue #2

12/5/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	1031	748	602	1286	0	0	0	0	189	3	172
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	10	13	12	12	12	12	14	14	14
Total Lost time (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Util. Factor		0.91	1.00	0.97	0.91					0.95	0.95	1.00
Frpb, ped/bikes		1.00	0.94	1.00	1.00					1.00	1.00	1.00
Flpb, ped/bikes		1.00	1.00	1.00	1.00					1.00	1.00	1.00
Frt		1.00	0.85	1.00	1.00					1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (prot)		5085	1488	3204	5255					1793	1800	1689
Flt Permitted		1.00	1.00	0.95	1.00					0.95	0.95	1.00
Satd. Flow (perm)		5085	1488	3204	5255					1793	1800	1689
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1031	748	602	1286	0	0	0	0	189	3	172
RTOR Reduction (vph)	0	0	127	0	0	0	0	0	0	0	0	129
Lane Group Flow (vph)	0	1031	621	602	1286	0	0	0	0	96	96	43
Confl. Peds. (#/hr)			15			15						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type		NA	Perm	Prot	NA					Split	NA	Perm
Protected Phases		2		1	6					4	4	
Permitted Phases			2									4
Actuated Green, G (s)		73.5	73.5	25.8	102.3					10.7	10.7	10.7
Effective Green, g (s)		74.5	74.5	25.8	103.3					10.7	10.7	10.7
Actuated g/C Ratio		0.62	0.62	0.22	0.86					0.09	0.09	0.09
Clearance Time (s)		4.0	4.0	3.0	4.0					3.0	3.0	3.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0	3.0	3.0
Lane Grp Cap (vph)		3157	924	689	4524					160	161	151
v/s Ratio Prot		0.20		c0.19	0.24					c0.05	0.05	
v/s Ratio Perm			c0.42									0.03
v/c Ratio		0.33	0.67	0.87	0.28					0.60	0.60	0.28
Uniform Delay, d1		10.8	14.8	45.5	1.5					52.6	52.6	51.1
Progression Factor		0.35	0.48	0.89	0.85					1.00	1.00	1.00
Incremental Delay, d2		0.1	2.1	7.9	0.1					5.9	5.8	1.0
Delay (s)		4.0	9.2	48.3	1.4					58.5	58.4	52.1
Level of Service		A	A	D	A					E	E	D
Approach Delay (s)		6.2			16.4			0.0			55.5	
Approach LOS		A			B			A			E	

Intersection Summary			
HCM Average Control Delay	15.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
20: U.S.101 North & College Avenue #2

12/5/2011

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	240	980	0	0	1290	425	598	2	640	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	12	12	12	13	13	14	14	14	12	12	12
Total Lost time (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Util. Factor	0.97	0.95			0.91		0.95	0.91	0.95			
Frpb, ped/bikes	1.00	1.00			0.99		1.00	1.00	1.00			
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00			
Frt	1.00	1.00			0.96		1.00	0.91	0.85			
Flt Protected	0.95	1.00			1.00		0.95	0.98	1.00			
Satd. Flow (prot)	3433	3539			4989		1793	1615	1604			
Flt Permitted	0.95	1.00			1.00		0.95	0.98	1.00			
Satd. Flow (perm)	3433	3539			4989		1793	1615	1604			
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	240	980	0	0	1290	425	598	2	640	0	0	0
RTOR Reduction (vph)	0	0	0	0	50	0	0	45	73	0	0	0
Lane Group Flow (vph)	240	980	0	0	1665	0	431	367	324	0	0	0
Confl. Peds. (#/hr)			15			15						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Prot	NA			NA		Split	NA	Perm			
Protected Phases	5	2			6		8	8				
Permitted Phases									8			
Actuated Green, G (s)	18.9	73.0			51.1		40.0	40.0	40.0			
Effective Green, g (s)	18.9	74.0			52.1		40.0	40.0	40.0			
Actuated g/C Ratio	0.16	0.62			0.43		0.33	0.33	0.33			
Clearance Time (s)	3.0	4.0			4.0		3.0	3.0	3.0			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			
Lane Grp Cap (vph)	541	2182			2166		598	538	535			
v/s Ratio Prot	0.07	c0.28			c0.33		c0.24	0.23				
v/s Ratio Perm									0.20			
v/c Ratio	0.44	0.45			0.77		0.72	0.68	0.60			
Uniform Delay, d1	45.8	12.2			28.8		35.1	34.5	33.4			
Progression Factor	0.83	0.90			0.31		1.00	1.00	1.00			
Incremental Delay, d2	0.6	0.6			1.4		4.3	3.5	1.9			
Delay (s)	38.7	11.6			10.3		39.4	38.1	35.3			
Level of Service	D	B			B		D	D	D			
Approach Delay (s)		16.9			10.3			37.6			0.0	
Approach LOS		B			B			D			A	

Intersection Summary			
HCM Average Control Delay	20.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	6.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Intersection: 9: Hwy 101 S & Steele Lane #1

Movement	EB	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	R	L	L	T	T	L	LTR	R
Maximum Queue (ft)	209	352	329	349	160	154	235	248	306	366	292
Average Queue (ft)	184	222	154	250	129	124	176	185	222	285	228
95th Queue (ft)	248	426	343	382	177	163	313	331	327	400	329
Link Distance (ft)		355	355	355	216	216	216	216		1067	
Upstream Blk Time (%)		6	1	3			8	8			
Queuing Penalty (veh)		53	8	28			55	54			
Storage Bay Dist (ft)	150								680		250
Storage Blk Time (%)	26	2								15	3
Queuing Penalty (veh)	170	14								78	21

Intersection: 10: Hwy 101N & Steele Lane #1

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	T	T	T	R	L	LR	R
Maximum Queue (ft)	226	242	219	238	232	224	232	160	650	696	313
Average Queue (ft)	201	211	170	182	136	206	212	147	479	492	184
95th Queue (ft)	249	259	262	288	261	228	235	196	773	829	344
Link Distance (ft)	216	216	216	216	195	195	195		1096	1096	
Upstream Blk Time (%)	7	9	3	4	3	44	44				
Queuing Penalty (veh)	44	53	20	25	21	326	327				
Storage Bay Dist (ft)								100			230
Storage Blk Time (%)							56	15		43	7
Queuing Penalty (veh)							287	89		75	41

Intersection: 19: U.S.101 South & College Avenue #2

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	SB	SB	SB
Directions Served	T	T	T	R	L	L	T	T	T	L	LT	R
Maximum Queue (ft)	59	41	271	114	241	221	77	61	158	159	309	95
Average Queue (ft)	22	16	134	43	206	170	36	38	68	52	205	61
95th Queue (ft)	63	49	290	124	268	257	83	72	184	182	402	111
Link Distance (ft)		461	461		212	212	212	212	212		962	962
Upstream Blk Time (%)					26	2						
Queuing Penalty (veh)					98	8						
Storage Bay Dist (ft)	150			365						340		
Storage Blk Time (%)			0								7	
Queuing Penalty (veh)			2								7	

Intersection: 20: U.S.101 North & College Avenue #2

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB
Directions Served	L	L	T	T	T	T	TR	L	LTR	R
Maximum Queue (ft)	71	71	153	244	141	112	100	405	430	222
Average Queue (ft)	35	40	59	185	131	59	65	271	301	166
95th Queue (ft)	77	81	241	279	165	131	130	578	619	346
Link Distance (ft)	212	212	212	212	129	129	129	807	807	
Upstream Blk Time (%)			2	15	36	1	2	1	1	
Queuing Penalty (veh)			5	47	204	4	9	0	0	
Storage Bay Dist (ft)										250
Storage Blk Time (%)									18	8
Queuing Penalty (veh)									59	49

Zone Summary

Zone wide Queuing Penalty: 2279

Appendix E

Trip Reduction Rate Calculations

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Santa Rosa North Station Area Plan	**Organization:**	City of Santa Rosa
Project Location:		**Performed By:**	W-Trans
Scenario Description:	Preferred Plan - Core Plan Area	**Date:**	
Analysis Year:	Full Land Use	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710		711.711	1060	180	880
Retail	814 & 820		1351.608	4674	2456	2218
Restaurant				0		
Cinema/Entertainment				0		
Residential	210 & 220		2412	1574	1019	555
Hotel				0		
All Other Land Uses[2]				0		
Total				7308	3655	3653

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.09	2%	3%	1.09	2%	3%
Retail	1.30	2%	3%	1.30	2%	3%
Restaurant	1.30	2%	3%	1.30	2%	3%
Cinema/Entertainment	1.30	2%	3%	1.30	2%	3%
Residential	1.39	2%	3%	1.39	2%	3%
Hotel	1.18	2%	3%	1.18	2%	3%
All Other Land Uses[2]	1.39	2%	3%	1.39	2%	3%

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1320	1320		1320	
Retail					1320	
Restaurant					1320	
Cinema/Entertainment					1320	
Residential		1320	1320			
Hotel					1320	

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		127	0	0	16	0
Retail	58		0	0	625	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	31	212	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	9,418	4,805	4,613
Internal Capture Percentage	23%	22%	23%
External Vehicle-Trips[3]	5,379	2,704	2,675
External Transit-Trips[4]	146	75	71
External Non-Motorized Trips[4]	232	119	113

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	45%	15%
Retail	11%	24%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	45%	32%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

NCHRP 8-51 Internal Trip Capture Estimation Tool			
Project Name:	Santa Rosa North Station Area Plan	**Organization:**	City of Santa Rosa
Project Location:		**Performed By:**	W-Trans
Scenario Description:	Preferred Plan - North Plan Area	**Date:**	
Analysis Year:	Full Land Use	**Checked By:**	
Analysis Period:	**PM Street Peak Hour**	**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)			Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units	Total	Entering	Exiting
Office	710		283.824	423	72	351
Retail	814 & 820		168.156	456	301	155
Restaurant				0		
Cinema/Entertainment				0		
Residential	210 & 220		689	428	278	150
Hotel				0		
All Other Land Uses[2]				0		
Total				1307	651	656

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips			Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized	Veh. Occ.	% Transit	% Non-Motorized
Office	1.09	2%	3%	1.09	2%	3%
Retail	1.30	2%	3%	1.30	2%	3%
Restaurant	1.30	2%	3%	1.30	2%	3%
Cinema/Entertainment	1.30	2%	3%	1.30	2%	3%
Residential	1.39	2%	3%	1.39	2%	3%
Hotel	1.18	2%	3%	1.18	2%	3%
All Other Land Uses[2]	1.39	2%	3%	1.39	2%	3%

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1320	1320		1320	
Retail					1320	
Restaurant					1320	
Cinema/Entertainment					1320	
Residential		1320	1320			
Hotel					1320	

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		21	0	0	6	0
Retail	4		0	0	44	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	8	26	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	1,649	855	794
Internal Capture Percentage	13%	13%	14%
External Vehicle-Trips[3]	1,079	538	541
External Transit-Trips[4]	29	15	14
External Non-Motorized Trips[4]	46	24	22

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	15%	7%
Retail	12%	24%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	13%	16%
Hotel	N/A	N/A

[1]Land Use Codes (LUCs) from *Trip Generation Informational Report*, published by the Institute of Transportation Engineers.

[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator

[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P

[4]Person-Trips

*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

NCHRP 8-51 Internal Trip Capture Estimation Tool

Project Name:	Santa Rosa North Station Area Plan		**Organization:**	City of Santa Rosa
Project Location:			**Performed By:**	W-Trans
Scenario Description:	Preferred Plan - Outer Ring Plan Area		**Date:**	
Analysis Year:	Full Land Use		**Checked By:**	
Analysis Period:	**PM Street Peak Hour**		**Date:**	

Table 1-P: Base Vehicle-Trip Generation Estimates (Single-Use Site Estimate)

Land Use	Development Data (*For Information Only*)				Estimated Vehicle-Trips		
	ITE LUCs[1]	Quantity	Units		Total	Entering	Exiting
Office	710		6.157		9	2	7
Retail	814 & 820		135.163		274	156	118
Restaurant					0		
Cinema/Entertainment					0		
Residential	210 & 220		1430		1027	661	366
Hotel					0		
All Other Land Uses[2]					0		
Total					1310	819	491

Table 2-P: Mode Split and Vehicle Occupancy Estimates

Land Use	Entering Trips				Exiting Trips		
	Veh. Occ.	% Transit	% Non-Motorized		Veh. Occ.	% Transit	% Non-Motorized
Office	1.09	2%	3%		1.09	2%	3%
Retail	1.30	2%	3%		1.30	2%	3%
Restaurant	1.30	2%	3%		1.30	2%	3%
Cinema/Entertainment	1.30	2%	3%		1.30	2%	3%
Residential	1.39	2%	3%		1.39	2%	3%
Hotel	1.18	2%	3%		1.18	2%	3%
All Other Land Uses[2]	1.39	2%	3%		1.39	2%	3%

Table 3-P: Average Land Use Interchange Distances (Feet Walking Distance)

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1320	1320		1320	
Retail					1320	
Restaurant					1320	
Cinema/Entertainment					1320	
Residential		1320	1320			
Hotel					1320	

Table 4-P: Internal Person-Trip Origin-Destination Matrix*

Origin (From)	Destination (To)					
	Office	Retail	Restaurant	Cinema/Entertainment	Residential	Hotel
Office		1	0	0	0	0
Retail	0		0	0	33	0
Restaurant	0	0		0	0	0
Cinema/Entertainment	0	0	0		0	0
Residential	1	13	0	0		0
Hotel	0	0	0	0	0	

Table 5-P: Computations Summary

	Total	Entering	Exiting
All Person-Trips	1,794	1,124	670
Internal Capture Percentage	5%	4%	7%
External Vehicle-Trips[3]	1,174	743	431
External Transit-Trips[4]	34	22	12
External Non-Motorized Trips[4]	54	34	20

Table 6-P: Internal Trip Capture Percentages by Land Use

Land Use	Entering Trips	Exiting Trips
Office	50%	13%
Retail	7%	22%
Restaurant	N/A	N/A
Cinema/Entertainment	N/A	N/A
Residential	4%	3%
Hotel	N/A	N/A

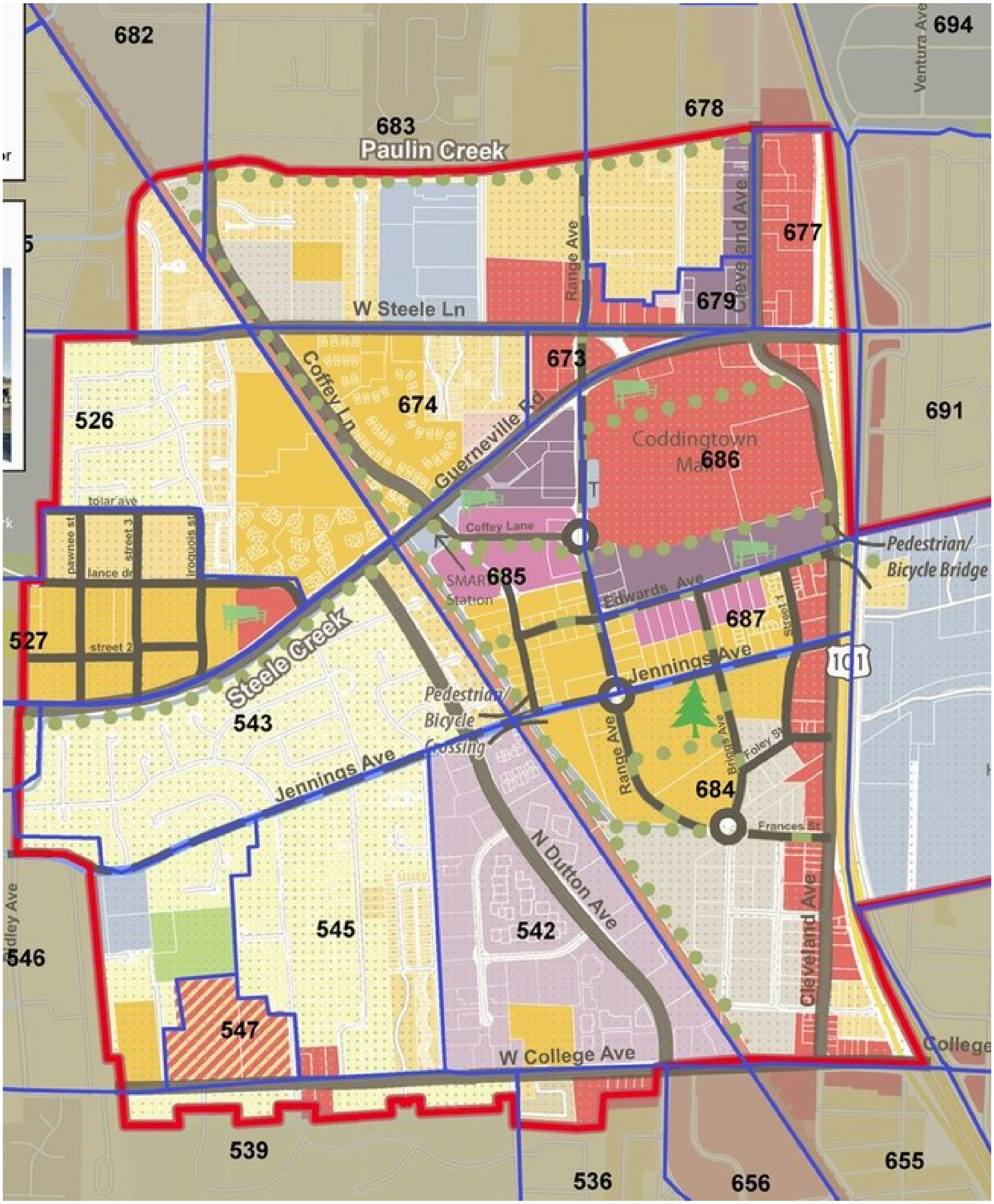
[1]Land Use Codes (LUCs) from *Trip Generation Informational Report* , published by the Institute of Transportation Engineers.
[2]Total estimate for all other land uses at mixed-use development site-not subject to internal trip capture computations in this estimator
[3]Vehicle-trips computed using the mode split and vehicle occupancy values provided in Table 2-P
[4]Person-Trips
*Indicates computation that has been rounded to the nearest whole number.

Estimation Tool Developed by the Texas Transportation Institute

Appendix F

Trip Generation Information

Traffic Analysis Zone (TAZ) Map



North Santa Rosa Station Area Plan - Specific Plan Growth Only
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Trip Generation — 8th Edition

Number of Units	Units	Land Use Number	Land Use No./Type	Trip Rate per Unit	Number of Trips	PM PEAK In %	In Rate	In Trips	Out %	Out Rate	Out Trips	Weekday Trip Rate per Unit	Total Trips
TAZ 684 - North													
Residential													
-11	units	210	Single Family Housing (Attached/Detached)	1.01	-11	63	0.64	-7	37	0.37	-4	9.57	-105
-3	units	220	Apartment	0.62	-2	65	0.40	-1	35	0.22	-1	6.65	-20
			SUBTOTAL		-13			-8			-5		-125
		-23.0%	*MIXED USE / TOD REDUCTION*		*0*			*0*			*0*		*0*
			TOTAL - Residential		**-13**			**-8**			**-5**		**-125**
Non-Residential with Trip Reductions													
38.547	ksf	814	Specialty Retail	2.71	104	66	1.79	69	34	0.92	35	44.32	1708
4.8455	ksf	710	General Office Building	1.49	7	17	0.25	1	83	1.24	6	11.01	53
	ksf	820	Shopping Center	3.73	0	49	1.83	0	51	1.90	0	42.94	0
			SUBTOTAL		111			70			41		1761
		-23.0%	*MIXED USE / TOD REDUCTION*		*-25*			*-16*			*-9*		*-405*
			TOTAL - Non Residential with Trip Reductions		**86**			**54**			**32**		**1356**
Non-Residential without Trip Reductions													
	parking	SANDAG	SMART Station	0.30	0	30	0.09	0	70	0.21	0	2.00	0
-2.526	ksf	Inst	Institutional (from SCTA model)	0.91	-2	15	0.14	0	85	0.77	-2	6.48	-16
	ksf	150	Warehousing	0.32	0	25	0.08	0	75	0.24	0	3.56	0
	ksf	130	Industrial Park	0.86	0	21	0.18	0	79	0.68	0	6.96	0
			TOTAL - Non-Residential without Trip Reductions		-2			0			-2		-16
			TOTAL		**71**			**46**			**25**		**1215**
TAZ 684 - South													
Residential													
	units	210	Single Family Housing (Attached/Detached)	1.01	0	63	0.64	0	37	0.37	0	9.57	0
	units	220	Apartment	0.62	0	65	0.40	0	35	0.22	0	6.65	0
			SUBTOTAL		0			0			0		0
		-23.0%	*MIXED USE / TOD REDUCTION*		*0*			*0*			*0*		*0*
			TOTAL - Residential		**0**			**0**			**0**		**0**
Non-Residential with Trip Reductions													
38.547	ksf	814	Specialty Retail	2.71	104	66	1.79	69	34	0.92	35	44.32	1708
4.8455	ksf	710	General Office Building	1.49	7	17	0.25	1	83	1.24	6	11.01	53
	ksf	820	Shopping Center	3.73	0	49	1.83	0	51	1.90	0	42.94	0
			SUBTOTAL		111			70			41		1761
		-23.0%	*MIXED USE / TOD REDUCTION*		*-25*			*-16*			*-9*		*-405*
			TOTAL - Non Residential with Trip Reductions		**86**			**54**			**32**		**1356**
Non-Residential without Trip Reductions													
	parking	SANDAG	SMART Station	0.30	0	30	0.09	0	70	0.21	0	2.00	0
	ksf	Inst	Institutional (from SCTA model)	0.91	0	15	0.14	0	85	0.77	0	6.48	0
-22.676	ksf	150	Warehousing	0.32	-7	25	0.08	-2	75	0.24	-5	3.56	-81
-29.739	ksf	130	Industrial Park	0.86	-26	21	0.18	-5	79	0.68	-21	6.96	-207
			TOTAL - Non-Residential without Trip Reductions		-33			-7			-26		-288
			TOTAL		**53**			**47**			**6**		**1068**

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Number of Units	Units	Land Use Number	Land Use No./Type	Trip Rate per Unit	Number of Trips	PM PEAK In %	In Rate	In Trips	Out %	Out Rate	Out Trips	Weekday Trip Rate per Unit	Total Trips
TAZ 685													
Residential													
103	units	210	Single Family Housing (Attached/Detached)	1.01	104	63	0.64	66	37	0.37	38	9.57	986
199	units	220	Apartment	0.62	123	65	0.40	80	35	0.22	43	6.65	1323
			SUBTOTAL		227			146			81		2309
		-23.0%	*MIXED USE / TOD REDUCTION*		*-53*			*-34*			*-19*		*-531*
			TOTAL - Residential		**174**			**112**			**62**		**1778**
Non-Residential with Trip Reductions													
113.204	ksf	814	Specialty Retail	2.71	307	66	1.79	202	34	0.92	105	44.32	5017
189.587	ksf	710	General Office Building	1.49	282	17	0.25	48	83	1.24	234	11.01	2087
	ksf	820	Shopping Center	3.73	0	49	1.83	0	51	1.90	0	42.94	0
			SUBTOTAL		589			250			339		7104
		-23.0%	*MIXED USE / TOD REDUCTION*		*-136*			*-58*			*-78*		*-1634*
			TOTAL - Non Residential with Trip Reductions		**453**			**192**			**261**		**5470**
Non-Residential without Trip Reductions													
350	parking	SANDAG	SMART Station	0.30	105	30	0.09	32	70	0.21	73	2.00	700
14.902	ksf	Inst	Institutional (from SCTA model)	0.91	14	15	0.14	2	85	0.77	12	6.48	97
	ksf	150	Warehousing	0.32	0	25	0.08	0	75	0.24	0	3.56	0
	ksf	130	Industrial Park	0.86	0	21	0.18	0	79	0.68	0	6.96	0
			TOTAL - Non-Residential without Trip Reductions		119			34			85		797
			TOTAL		**746**			**338**			**408**		**8045**
TAZ 686													
Residential													
0	units	210	Single Family Housing (Attached/Detached)	1.01	0	63	0.64	0	37	0.37	0	9.57	0
274	units	220	Apartment	0.62	170	65	0.40	110	35	0.22	60	6.65	1822
			SUBTOTAL		170			110			60		1822
		-23.0%	*MIXED USE / TOD REDUCTION*		*-39*			*-25*			*-14*		*-419*
			TOTAL - Residential		**131**			**85**			**46**		**1403**
Non-Residential with Trip Reductions													
-70.977	ksf	814	Specialty Retail	2.71	-192	66	1.79	-127	34	0.92	-65	44.32	-3146
397.489	ksf	710	General Office Building	1.49	592	17	0.25	101	83	1.24	491	11.01	4376
193.624	ksf	820	Shopping Center	3.73	722	49	1.83	354	51	1.90	368	42.94	8314
			SUBTOTAL		1122			328			794		9544
		-23.0%	*MIXED USE / TOD REDUCTION*		*-258*			*-75*			*-183*		*-2195*
			TOTAL - Non Residential with Trip Reductions		**864**			**253**			**611**		**7349**
Non-Residential without Trip Reductions													
	parking	SANDAG	SMART Station	0.30	0	30	0.09	0	70	0.21	0	2.00	0
	ksf	Inst	Institutional (from SCTA model)	0.91	0	15	0.14	0	85	0.77	0	6.48	0
	ksf	150	Warehousing	0.32	0	25	0.08	0	75	0.24	0	3.56	0
	ksf	130	Industrial Park	0.86	0	21	0.18	0	79	0.68	0	6.96	0
			TOTAL - Non-Residential without Trip Reductions		0			0			0		0
			TOTAL		**995**			**338**			**657**		**8752**

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Trip Generation 8th Edition

Number of Units	Units	Land Use Number	Land Use No./Type	Trip Rate per Unit	Number of Trips	PM PEAK In %	In Rate	In Trips	Out %	Out Rate	Out Trips	Weekday Trip Rate per Unit	Total Trips
TAZ 687													
Residential													
21	units	210	Single Family Housing (Attached/Detached)	1.01	21	63	0.64	13	37	0.37	8	9.57	201
257	units	220	Apartment	0.62	159	65	0.40	104	35	0.22	55	6.65	1709
			SUBTOTAL		180			117			63		1910
		-23.0%	*MIXED USE / TOD REDUCTION*		*-41*			*-27*			*-14*		*-439*
			TOTAL - Residential		**139**			**90**			**49**		**1471**
Non-Residential with Trip Reductions													
65.527	ksf	814	Specialty Retail	2.71	178	66	1.79	117	34	0.92	61	44.32	2904
-8.174	ksf	710	General Office Building	1.49	-12	17	0.25	-2	83	1.24	-10	11.01	-90
	ksf	820	Shopping Center	3.73	0	49	1.83	0	51	1.90	0	42.94	0
			SUBTOTAL		166			115			51		2814
		-23.0%	*MIXED USE / TOD REDUCTION*		*-38*			*-26*			*-12*		*-647*
			TOTAL - Non Residential with Trip Reductions		**128**			**89**			**39**		**2167**
Non-Residential without Trip Reductions													
	parking	SANDAG	SMART Station	0.30	0	30	0.09	0	70	0.21	0	2.00	0
	ksf	Inst	Institutional (from SCTA model)	0.91	0	15	0.14	0	85	0.77	0	6.48	0
	ksf	150	Warehousing	0.32	0	25	0.08	0	75	0.24	0	3.56	0
	ksf	130	Industrial Park	0.86	0	21	0.18	0	79	0.68	0	6.96	0
			TOTAL - Non-Residential without Trip Reductions		0			0			0		0
			TOTAL		**267**			**179**			**88**		**3638**
Area Summary													
Residential													
113	units	210	Single Family Housing (Attached/Detached)	1.01	114	63	0.64	72	37	0.37	42	9.57	1081
727	units	220	Apartment	0.62	450	65	0.40	293	35	0.22	157	6.65	4835
			SUBTOTAL		564			365			199		5916
		-23.0%	*MIXED USE / TOD REDUCTION*		*-133*			*-86*			*-47*		*-1389*
			TOTAL - Residential		**431**			**279**			**152**		**4527**
Non-Residential with Trip Reductions													
184.848	ksf	814	Specialty Retail	2.71	501	66	1.79	330	34	0.92	171	44.32	8192
588.593	ksf	710	General Office Building	1.49	876	17	0.25	149	83	1.24	727	11.01	6480
193.624	ksf	820	Shopping Center	3.73	722	49	1.83	354	51	1.90	368	42.94	8314
			SUBTOTAL		2099			833			1266		22986
		-23.0%	*MIXED USE / TOD REDUCTION*		*-483*			*-192*			*-291*		*-5286*
			TOTAL - Non Residential with Trip Reductions		**1616**			**641**			**975**		**17700**
Non-Residential without Trip Reductions													
350	parking	SANDAG	SMART Station	0.30	105	30	0.09	32	70	0.21	73	2.00	700
12.376	ksf	Inst	Institutional (from SCTA model)	0.91	12	15	0.14	2	85	0.77	10	6.48	80
-22.676	ksf	150	Warehousing	0.32	-7	25	0.08	-2	75	0.24	-5	3.56	-81
-29.739	ksf	130	Industrial Park	0.86	-26	21	0.18	-5	79	0.68	-21	6.96	-207
			TOTAL - Non-Residential without Trip Reductions		84			27			57		492
			TOTAL		**2131**			**947**			**1184**		**22719**

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Number of Units	Units	Land Use Number	Land Use No./Type	Trip Rate per Unit	Number of Trips	PM PEAK In %	In Rate	In Trips	Out %	Out Rate	Out Trips	Weekday Trip Rate per Unit	Total Trips
TAZ 678													
Residential													
	units	210	Single Family Housing (Attached/Detached)	1.01	0	63	0.64	0	37	0.37	0	9.57	0
93	units	220	Apartment	0.62	58	65	0.40	37	35	0.22	21	6.65	618
			SUBTOTAL		58			37			21		618
		-13.0%	*MIXED USE / TOD REDUCTION*		*-8*			*-5*			*-3*		*-80*
			TOTAL - Residential		**50**			**32**			**18**		**538**
Non-Residential with Trip Reductions													
45.65	ksf	814	Specialty Retail	2.71	124	66	1.79	82	34	0.92	42	44.32	2023
83.576	ksf	710	General Office Building	1.49	125	17	0.25	21	83	1.24	104	11.01	920
	ksf	820	Shopping Center	3.73	0	49	1.83	0	51	1.90	0	42.94	0
			SUBTOTAL		249			103			146		2943
		-13.0%	*MIXED USE / TOD REDUCTION*		*-32*			*-13*			*-19*		*-383*
			TOTAL - Non Residential with Trip Reductions		**217**			**90**			**127**		**2560**
Non-Residential without Trip Reductions													
	parking	SANDAG	SMART Station	0.30	0	30	0.09	0	70	0.21	0	2.00	0
	ksf	Inst	Institutional (from SCTA model)	0.91	0	15	0.14	0	85	0.77	0	6.48	0
	ksf	150	Warehousing	0.32	0	25	0.08	0	75	0.24	0	3.56	0
	ksf	130	Industrial Park	0.86	0	21	0.18	0	79	0.68	0	6.96	0
			TOTAL - Non-Residential without Trip Reductions		0			0			0		0
			TOTAL		**267**			**122**			**145**		**3098**

Number of Units	Units	Land Use Number	Land Use No./Type	Trip Rate per Unit	Number of Trips	PM PEAK In %	In Rate	In Trips	Out %	Out Rate	Out Trips	Weekday Trip Rate per Unit	Total Trips
TAZ 679													
Residential													
-3	units	210	Single Family Housing (Attached/Detached)	1.01	-3	63	0.64	-2	37	0.37	-1	9.57	-29
119	units	220	Apartment	0.62	74	65	0.40	48	35	0.22	26	6.65	791
			SUBTOTAL		71			46			25		762
		-13.0%	*MIXED USE / TOD REDUCTION*		*-9*			*-6*			*-3*		*-99*
			TOTAL - Residential		**62**			**40**			**22**		**663**
Non-Residential with Trip Reductions													
80.921	ksf	814	Specialty Retail	2.71	219	66	1.79	145	34	0.92	74	44.32	3586
139.897	ksf	710	General Office Building	1.49	208	17	0.25	35	83	1.24	173	11.01	1540
-6.6	ksf	820	Shopping Center	3.73	-25	49	1.83	-12	51	1.90	-13	42.94	-283
			SUBTOTAL		402			168			234		4843
		-13.0%	*MIXED USE / TOD REDUCTION*		*-52*			*-22*			*-30*		*-630*
			TOTAL - Non Residential with Trip Reductions		**350**			**146**			**204**		**4213**
Non-Residential without Trip Reductions													
	parking	SANDAG	SMART Station	0.30	0	30	0.09	0	70	0.21	0	2.00	0
	ksf	Inst	Institutional (from SCTA model)	0.91	0	15	0.14	0	85	0.77	0	6.48	0
	ksf	150	Warehousing	0.32	0	25	0.08	0	75	0.24	0	3.56	0
	ksf	130	Industrial Park	0.86	0	21	0.18	0	79	0.68	0	6.96	0
			TOTAL - Non-Residential without Trip Reductions		0			0			0		0
			TOTAL		**412**			**186**			**226**		**4876**

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Number of Units	Units	Land Use Number	Land Use No./Type	Trip Rate per Unit	Number of Trips	PM PEAK In %	In Rate	In Trips	Out %	Out Rate	Out Trips	Weekday Trip Rate per Unit	Total Trips
Area Summary													
Residential													
-3	units	210	Single Family Housing (Attached/Detached)	1.01	-3	63	0.64	-2	37	0.37	-1	9.57	-29
212	units	220	Apartment	0.62	132	65	0.40	85	35	0.22	47	6.65	1410
			SUBTOTAL		129			83			46		1381
		-13.0%	*MIXED USE / TOD REDUCTION*		*-17*			*-11*			*-6*		*-179*
			TOTAL - Residential		**112**			**72**			**40**		**1202**
Non-Residential with Trip Reductions													
126.571	ksf	814	Specialty Retail	2.71	343	66	1.79	227	34	0.92	116	44.32	5610
223.473	ksf	710	General Office Building	1.49	333	17	0.25	56	83	1.24	277	11.01	2460
-6.6	ksf	820	Shopping Center	3.73	-25	49	1.83	-12	51	1.90	-13	42.94	-283
			SUBTOTAL		651			271			380		7787
		-13.0%	*MIXED USE / TOD REDUCTION*		*-84*			*-35*			*-49*		*-1013*
			TOTAL - Non Residential with Trip Reductions		**567**			**236**			**331**		**6774**
Non-Residential without Trip Reductions													
0	parking	SANDAG	SMART Station	0.30	0	30	0.09	0	70	0.21	0	2.00	0
0	ksf	Inst	Institutional (from SCTA model)	0.91	0	15	0.14	0	85	0.77	0	6.48	0
0	ksf	150	Warehousing	0.32	0	25	0.08	0	75	0.24	0	3.56	0
0	ksf	130	Industrial Park	0.86	0	21	0.18	0	79	0.68	0	6.96	0
			TOTAL - Non-Residential without Trip Reductions		0			0			0		0
			TOTAL		**679**			**308**			**371**		**7976**

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Outer Ring Plan Area

Trip Generation 8th Edition

Number of Units	Units	Land Use Number	Land Use No./Type	Trip Rate per Unit	Number of Trips	PM PEAK In %	In Rate	In Trips	Out %	Out Rate	Out Trips	Weekday Trip Rate per Unit	Total Trips
TAZ 674													
Residential													
-72	units	210	Single Family Housing (Attached/Detached)	1.01	-73	63	0.64	-46	37	0.37	-27	9.57	-689
258	units	220	Apartment	0.62	160	65	0.40	104	35	0.22	56	6.65	1716
			SUBTOTAL		87			58			29		1027
		-5.0%	*MIXED USE / TOD REDUCTION*		*-4*			*-3*			*-1*		*-51*
			TOTAL - Residential		**83**			**55**			**28**		**976**
Non-Residential with Trip Reductions													
	ksf	814	Specialty Retail	2.71	0	66	1.79	0	34	0.92	0	44.32	0
-9.63	ksf	710	General Office Building	1.49	-14	17	0.25	-2	83	1.24	-12	11.01	-106
	ksf	820	Shopping Center	3.73	0	49	1.83	0	51	1.90	0	42.94	0
			SUBTOTAL		-14			-2			-12		-106
		-5.0%	*MIXED USE / TOD REDUCTION*		*0*			*0*			*0*		*0*
			TOTAL - Non Residential with Trip Reductions		**-14**			**-2**			**-12**		**-106**
Non-Residential without Trip Reductions													
	parking	SANDAG	SMART Station	0.30	0	30	0.09	0	70	0.21	0	2.00	0
	ksf	Inst	Institutional (from SCTA model)	0.91	0	15	0.14	0	85	0.77	0	6.48	0
	ksf	150	Warehousing	0.32	0	25	0.08	0	75	0.24	0	3.56	0
	ksf	130	Industrial Park	0.86	0	21	0.18	0	79	0.68	0	6.96	0
			TOTAL - Non-Residential without Trip Reductions		0			0			0		0
			TOTAL		**69**			**53**			**16**		**870**

Number of Units	Units	Land Use Number	Land Use No./Type	Trip Rate per Unit	Number of Trips	PM PEAK In %	In Rate	In Trips	Out %	Out Rate	Out Trips	Weekday Trip Rate per Unit	Total Trips
TAZ 526													
Residential													
46	units	210	Single Family Housing (Attached/Detached)	1.01	46	63	0.64	29	37	0.37	17	9.57	440
162	units	220	Apartment	0.62	100	65	0.40	65	35	0.22	35	6.65	1077
			SUBTOTAL		146			94			52		1517
		-5.0%	*MIXED USE / TOD REDUCTION*		*-8*			*-5*			*-3*		*-76*
			TOTAL - Residential		**138**			**89**			**49**		**1441**
Non-Residential with Trip Reductions													
	ksf	814	Specialty Retail	2.71	0	66	1.79	0	34	0.92	0	44.32	0
	ksf	710	General Office Building	1.49	0	17	0.25	0	83	1.24	0	11.01	0
	ksf	820	Shopping Center	3.73	0	49	1.83	0	51	1.90	0	42.94	0
			SUBTOTAL		0			0			0		0
		-5.0%	*MIXED USE / TOD REDUCTION*		*0*			*0*			*0*		*0*
			TOTAL - Non Residential with Trip Reductions		**0**			**0**			**0**		**0**
Non-Residential without Trip Reductions													
	parking	SANDAG	SMART Station	0.30	0	30	0.09	0	70	0.21	0	2.00	0
	ksf	Inst	Institutional (from SCTA model)	0.91	0	15	0.14	0	85	0.77	0	6.48	0
	ksf	150	Warehousing	0.32	0	25	0.08	0	75	0.24	0	3.56	0
	ksf	130	Industrial Park	0.86	0	21	0.18	0	79	0.68	0	6.96	0
			TOTAL - Non-Residential without Trip Reductions		0			0			0		0
			TOTAL		**138**			**89**			**49**		**1441**

North Santa Rosa Station Area Plan - Specific Plan Growth Only
Outer Ring Plan Area

Trip Generation 8th Edition

Number of Units	Units	Land Use Number	Land Use No./Type	Trip Rate per Unit	Number of Trips	PM PEAK In %	In Rate	In Trips	Out %	Out Rate	Out Trips	Weekday Trip Rate per Unit	Total Trips
TAZ 527													
Residential													
341	units	210	Single Family Housing (Attached/Detached)	1.01	344	63	0.64	217	37	0.37	127	9.57	3263
-9	units	220	Apartment	0.62	-6	65	0.40	-4	35	0.22	-2	6.65	-60
			SUBTOTAL		338			213			125		3203
		-5.0%	*MIXED USE / TOD REDUCTION*		*-17*			*-11*			*-6*		*-160*
			TOTAL - Residential		**321**			**202**			**119**		**3043**
Non-Residential with Trip Reductions													
38.791	ksf	814	Specialty Retail	2.71	105	66	1.79	69	34	0.92	36	44.32	1719
6.157	ksf	710	General Office Building	1.49	9	17	0.25	2	83	1.24	7	11.01	68
	ksf	820	Shopping Center	3.73	0	49	1.83	0	51	1.90	0	42.94	0
			SUBTOTAL		114			71			43		1787
		-5.0%	*MIXED USE / TOD REDUCTION*		*-6*			*-4*			*-2*		*-89*
			TOTAL - Non Residential with Trip Reductions		**108**			**67**			**41**		**1698**
Non-Residential without Trip Reductions													
	parking	SANDAG	SMART Station	0.30	0	30	0.09	0	70	0.21	0	2.00	0
-30	ksf	Inst	Institutional (from SCTA model)	0.91	-27	15	0.14	-4	85	0.77	-23	6.48	-194
	ksf	150	Warehousing	0.32	0	25	0.08	0	75	0.24	0	3.56	0
-4.224	ksf	130	Industrial Park	0.86	-4	21	0.18	-1	79	0.68	-3	6.96	-29
			TOTAL - Non-Residential without Trip Reductions		-31			-5			-26		-223
			TOTAL		**398**			**264**			**134**		**4518**

Number of Units	Units	Land Use Number	Land Use No./Type	Trip Rate per Unit	Number of Trips	PM PEAK In %	In Rate	In Trips	Out %	Out Rate	Out Trips	Weekday Trip Rate per Unit	Total Trips
TAZ 683													
Residential													
13	units	210	Single Family Housing (Attached/Detached)	1.01	13	63	0.64	8	37	0.37	5	9.57	124
-74	units	220	Apartment	0.62	-46	65	0.40	-30	35	0.22	-16	6.65	-492
			SUBTOTAL		-33			-22			-11		-368
		-5.0%	*MIXED USE / TOD REDUCTION*		*0*			*0*			*0*		*0*
			TOTAL - Residential		**-33**			**-22**			**-11**		**-368**
Non-Residential with Trip Reductions													
	ksf	814	Specialty Retail	2.71	0	66	1.79	0	34	0.92	0	44.32	0
-10.03	ksf	710	General Office Building	1.49	-15	17	0.25	-3	83	1.24	-12	11.01	-110
	ksf	820	Shopping Center	3.73	0	49	1.83	0	51	1.90	0	42.94	0
			SUBTOTAL		-15			-3			-12		-110
		-5.0%	*MIXED USE / TOD REDUCTION*		*0*			*0*			*0*		*0*
			TOTAL - Non Residential with Trip Reductions		**-15**			**-3**			**-12**		**-110**
Non-Residential without Trip Reductions													
	parking	SANDAG	SMART Station	0.30	0	30	0.09	0	70	0.21	0	2.00	0
115.201	ksf	Inst	Institutional (from SCTA model)	0.91	105	15	0.14	16	85	0.77	89	6.48	747
	ksf	150	Warehousing	0.32	0	25	0.08	0	75	0.24	0	3.56	0
	ksf	130	Industrial Park	0.86	0	21	0.18	0	79	0.68	0	6.96	0
			TOTAL - Non-Residential without Trip Reductions		105			16			89		747
			TOTAL		**57**			**-9**			**66**		**269**

North Santa Rosa Station Area Plan - Specific Plan Growth Only
Outer Ring Plan Area

Trip Generation 8th Edition

Number of Units	Units	Land Use Number	Land Use No./Type	PM PEAK Trip Rate per Unit	Number of Trips	In %	In Rate	In Trips	Out %	Out Rate	Out Trips	Weekday Trip Rate per Unit	Total Trips
Area Summary													
Residential													
328	units	210	Single Family Housing (Attached/Detached)	1.01	330	63	0.64	208	37	0.37	122	9.57	3139
337	units	220	Apartment	0.62	208	65	0.40	135	35	0.22	73	6.65	2241
			SUBTOTAL		538			343			195		5380
		-5.0%	*MIXED USE / TOD REDUCTION*		*-29*			*-19*			*-10*		*-287*
			TOTAL - Residential		**509**			**324**			**185**		**5093**
Non-Residential with Trip Reductions													
38.791	ksf	814	Specialty Retail	2.71	105	66	1.79	69	34	0.92	36	44.32	1719
-13.503	ksf	710	General Office Building	1.49	-20	17	0.25	-3	83	1.24	-17	11.01	-149
0	ksf	820	Shopping Center	3.73	0	49	1.83	0	51	1.90	0	42.94	0
			SUBTOTAL		85			66			19		1570
		-5.0%	*MIXED USE / TOD REDUCTION*		*-6*			*-4*			*-2*		*-89*
			TOTAL - Non Residential with Trip Reductions		**79**			**62**			**17**		**1481**
Non-Residential without Trip Reductions													
0	parking	SANDAG	SMART Station	0.30	0	30	0.09	0	70	0.21	0	2.00	0
85.201	ksf	Inst	Institutional (from SCTA model)	0.91	78	15	0.14	12	85	0.77	66	6.48	552
0	ksf	150	Warehousing	0.32	0	25	0.08	0	75	0.24	0	3.56	0
-4.224	ksf	130	Industrial Park	0.86	-4	21	0.18	-1	79	0.68	-3	6.96	-29
			TOTAL - Non-Residential without Trip Reductions		74			11			63		523
			TOTAL		**662**			**397**			**265**		**7097**

North Santa Rosa Station Area Plan - Specific Plan Growth Only
Entire Plan Area

Trip Generation 8th Edition

Number of Units	Units	Land Use Number	Land Use No./Type	Trip Rate per Unit	Number of Trips	PM PEAK In %	In Rate	In Trips	Out %	Out Rate	Out Trips	Weekday Trip Rate per Unit	Total Trips
Total Land Use													
Residential													
438	units	210	Single Family Housing (Attached/Detached)	1.01	441	63	0.64	278	37	0.37	163	9.57	4192
1276	units	220	Apartment	0.62	790	65	0.40	513	35	0.22	277	6.65	8485
			SUBTOTAL		1231			791			440		12677
		Varies	*MIXED USE / TOD REDUCTION*		*-179*			*-116*			*-63*		*-1855*
			TOTAL - Residential		**1052**			**675**			**377**		**10822**
Non-Residential with Trip Reductions													
350.21	ksf	814	Specialty Retail	2.71	949	66	1.79	626	34	0.92	323	44.32	15521
798.563	ksf	710	General Office Building	1.49	1189	17	0.25	202	83	1.24	987	11.01	8792
187.024	ksf	820	Shopping Center	3.73	697	49	1.83	342	51	1.90	355	42.94	8031
			SUBTOTAL		2835			1170			1665		32344
		Varies	*MIXED USE / TOD REDUCTION*		*-573*			*-231*			*-342*		*-6388*
			TOTAL - Non Residential with Trip Reductions		**2262**			**939**			**1323**		**25956**
Non-Residential without Trip Reductions													
350	parking	SANDAG	SMART Station	0.30	105	30	0.09	32	70	0.21	73	2.00	700
97.577	ksf	Inst	Institutional (from SCTA model)	0.91	90	15	0.14	14	85	0.77	76	6.48	632
-22.676	ksf	150	Warehousing	0.32	-7	25	0.08	-2	75	0.24	-5	3.56	-81
-33.963	ksf	130	Industrial Park	0.86	-30	21	0.18	-6	79	0.68	-24	6.96	-236
			TOTAL - Non-Residential without Trip Reductions		158			38			120		1015
			TOTAL		**3472**			**1652**			**1820**		**37793**

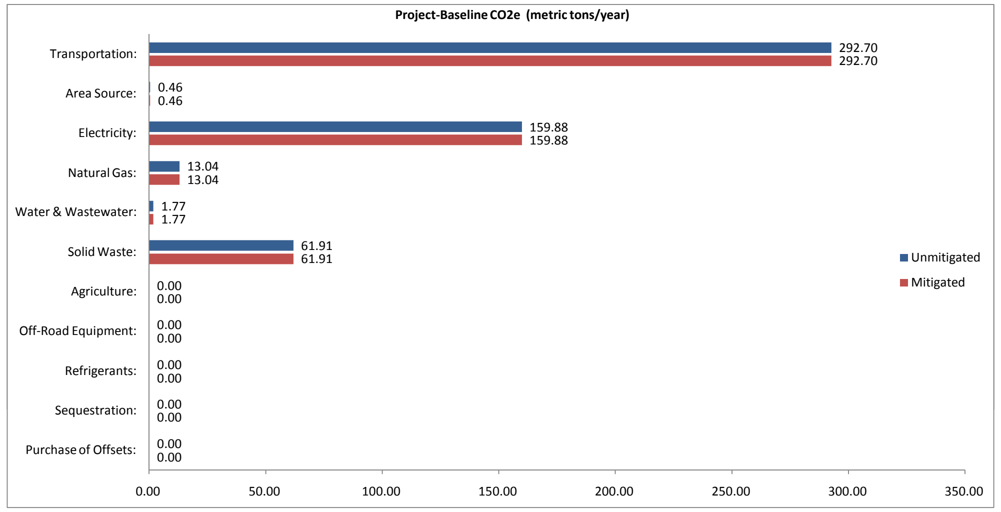
APPENDIX F- CLIMATE CHANGE MODELING AND RECOMMENDED ACTIONS

Summary Results

Project Name: North Santa Rosa Station Specific Plan - Removed Land Uses
Project and Baseline Years: 2035 N/A

Results	Unmitigated Project-Baseline CO2e (metric tons/year)	Mitigated Project-Baseline CO2e (metric tons/year)
Transportation:	292.70	292.70
Area Source:	0.46	0.46
Electricity:	159.88	159.88
Natural Gas:	13.04	13.04
Water & Wastewater:	1.77	1.77
Solid Waste:	61.91	61.91
Agriculture:	0.00	0.00
Off-Road Equipment:	0.00	0.00
Refrigerants:	0.00	0.00
Sequestration:	N/A	0.00
Purchase of Offsets:	N/A	0.00
Total:	529.75	529.75

Baseline is currently: **OFF**
Baseline Project Name:
Go to Settings Tab to Turn On Baseline



Detailed Results

Unmitigated	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				292.70	55.25%
Area Source:	0.46	0.00	0.00	0.46	0.09%
Electricity:	159.62	0.00	0.00	159.88	30.18%
Natural Gas:	13.01	0.00	0.00	13.04	2.46%
Water & Wastewater:	1.76	0.00	0.00	1.77	0.33%
Solid Waste:	0.43	2.93	N/A	61.91	11.69%
Agriculture:	0.00	0.00	0.00	0.00	0.00%
Off-Road Equipment:	0.00	0.00	0.00	0.00	0.00%
Refrigerants:	N/A	N/A	N/A	0.00	0.00%
Sequestration:	N/A	N/A	N/A	N/A	N/A
Purchase of Offsets:	N/A	N/A	N/A	N/A	N/A
Total:				529.75	100.00%

Baseline	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				0.00	N/A
Area Source:	0.00	0.00	0.00	0.00	N/A
Electricity:	0.00	0.00	0.00	0.00	N/A
Natural Gas:	0.00	0.00	0.00	0.00	N/A
Water & Wastewater:	0.00	0.00	0.00	0.00	N/A
Solid Waste:	0.00	0.00	N/A	0.00	N/A
Agriculture:	0.00	0.00	0.00	0.00	N/A
Off-Road Equipment:	0.00	0.00	0.00	0.00	N/A
Refrigerants:	N/A	N/A	N/A	0.00	N/A
Sequestration:	N/A	N/A	N/A	N/A	N/A
Purchase of Offsets:	N/A	N/A	N/A	N/A	N/A
Total:				0.00	0.00%

* Several adjustments were made to transportation emissions after they have been imported from URBEMIS.
After importing from URBEMIS, CO2 emissions are converted to metric tons and then adjusted to account for the "Pavley"
regulation. Then, CO2 is converted to CO2e by multiplying by 100/95 to account for the contribution of other GHGs (CH4, N2O, and HFCs [from leaking air conditioners]).
Finally, CO2e is adjusted to account for th low carbon fuels rule.

Mitigated	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				292.70	55.25%
Area Source:	0.46	0.00	0.00	0.46	0.09%
Electricity:	159.62	0.00	0.00	159.88	30.18%
Natural Gas:	13.01	0.00	0.00	13.04	2.46%
Water & Wastewater:	1.76	0.00	0.00	1.77	0.33%
Solid Waste:	0.43	2.93	N/A	61.91	11.69%
Agriculture:	0.00	0.00	0.00	0.00	0.00%
Off-Road Equipment:	0.00	0.00	0.00	0.00	0.00%
Refrigerants:	N/A	N/A	N/A	0.00	0.00%
Sequestration:	N/A	N/A	N/A	0.00	0.00%
Purchase of Offsets:	N/A	N/A	N/A	0.00	0.00%
Total:				529.75	100.00%

Mitigation Measures Selected:

Transportation: Go to the following tab: Transp. Detail Mit for a list of the transportation mitigation measures selected (in URBEMIS)

Electricity: The following mitigation measure(s) have been selected to reduce electricity emissions.

Natural Gas: The following mitigation measure(s) have been selected to reduce natural gas emissions.

Water and Wastewater: The following mitigation measure(s) have been selected to reduce water and wastewater emissions.

Solid Waste: The following mitigation measure has been selected to reduce solid waste related GHG emissions.

Ag: No existing mitigation measures available.

Off-Road Equipment: No existing mitigation measures available.

Refrigerants: The following mitigation measure has ben selected to reduce refrigerant emissions:

Carbon Sequestration: Project does not include carbon sequestration through tree planting.

Emission Offsets/Credits: Project does not include purchase of emission offsets/credits.

Transportation

Baseline is Currently: OFF

Unmitigated Transportation	Target Year: 2035	2011	
	Project	Baseline	Project-Baseline
Operational Emissions from URBEMIS (CO_2 tons/year):	436.08	0.00	
Metric Ton Adjustment (CO_2 metric tons/year):	395.72	0.00	
Pavley Regulation Adjustment (CO_2 metric tons/year):	299.64	0.00	
US EPA Adjustment (CO_2e metric tons/year):	315.41	0.00	
Low Carbon Fuels Rule Adjustment (CO_2e metric tons/year)	292.70	0.00	
Total (CO_2e metric tons/year):			**292.70**

Mitigated Transportation	Target Year: 2035	2011	
	Project	Baseline	Project-Baseline
Operational Vehicles from URBEMIS (CO_2 tons/year):	436.08	0.00	
Metric Ton Adjustment (CO_2 metric tons/year):	395.72	0.00	
Pavley Regulation Adjustment (CO_2 metric tons/year):	299.64	0.00	
US EPA Adjustment (CO_2e metric tons/year):	315.41	0.00	
Low Carbon Fuels Adjustment (CO_2e metric tons/year):	292.70	0.00	
Total (CO_2e metric tons/year):			**292.70**

The BGM User's Manual describes in detail each step used to convert URBEMIS's transportation CO_2 emissions to total CO_2e.
These steps include converting from English to Metric units, adjusting for the Pavley Rule, converting CO_2 to CO_2e, and adjusting for the Low Carbon Fuels Rule.

Reference

U.S. EPA assumption that GHG emissions from other pollutants - CH4, N20, and hydrofluorcarbons (HFCs) from leaking air conditioners account for 5 percent of emissions from vehicles, after accounting for global warming potential of each GHG.

Jump to the Following Transportation Related Tabs:
[Transportation Detail for Operational Mitigation]
[Land Use Detail]

	Don't Need to Adjust this amt	Unadjusted Amount Affected by Pavley	Adjusted	Adusted	Adusted	Adusted	Adjusted
	Not Affected by Pavley	LDA/ LDT1/ LDT2/ MDV	LDA	LDT1	LDT2	MDV	4 totaled
Pavley Calculations - Project Unmitigated	61.45	334.27	112.96	35.71	60.76	28.75	238.19
Pavley Calculations - Baseline Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pavley Calculations - Project Mitigated	61.45	334.27	112.96	35.71	60.76	28.75	238.19
Pavley Calculations - Baseline Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pavley Adjustment

												12.00	13.00	14.00	15.00	16.00	
Year	% LDA CO2 Emissions	% LDT1 CO2 Emissions	% LDT2 CO2 Emissions	% MDV CO2 Emissions	% LDA/LDT1/LDT2/MDV	% everything else	% CO2 Reduction - LDA	% CO2 Reduction - LDT1	% CO2 Reduction - LDT2	% CO2 Reduction MDV	LDA						
2009	41.59%	12.33%	19.61%	9.71%	83.26%	16.74%	0.00%	0.00%	0.07%	0.08%	0.0000	0.0000	0.0006	0.0007	0.0013	Step 1 - Figure out year
2010	41.72%	12.39%	19.54%	9.61%	83.26%	16.74%	0.35%	0.25%	0.45%	0.48%	0.0020	0.0022	0.0036	0.0044	0.0122	Step 2- Emissions from HDVs, etc. do not change
2011	41.83%	12.45%	19.50%	9.50%	83.27%	16.73%	1.75%	1.34%	1.31%	1.29%	0.0102	0.0117	0.0106	0.0117	0.0442	Step 3 - Adjust emissions from LDA's, etc. individually
2012	41.89%	12.50%	19.47%	9.40%	83.27%	16.73%	4.07%	3.27%	2.60%	2.44%	0.0237	0.0286	0.0209	0.0221	0.0953	Step 4 - Add Step 2 and Step 3 emissions
2013	41.94%	12.56%	19.46%	9.32%	83.28%	16.72%	6.31%	5.26%	3.88%	3.61%	0.0366	0.0460	0.0313	0.0328	0.1466	
2014	41.98%	12.62%	19.46%	9.27%	83.33%	16.67%	8.48%	7.26%	5.17%	4.83%	0.0492	0.0634	0.0416	0.0438	0.1980	
2015	42.00%	12.67%	19.47%	9.24%	83.38%	16.62%	10.74%	9.38%	6.54%	6.17%	0.0623	0.0819	0.0527	0.0560	0.2529	
2016	42.05%	12.76%	19.50%	9.23%	83.54%	16.46%	12.96%	11.56%	7.94%	7.54%	0.0751	0.1008	0.0639	0.0684	0.3082	
2017	42.02%	12.81%	19.51%	9.21%	83.55%	16.45%	15.03%	13.58%	9.27%	8.88%	0.0871	0.1184	0.0746	0.0806	0.3608	
2018	41.98%	12.84%	19.52%	9.21%	83.55%	16.45%	16.94%	15.43%	10.54%	10.16%	0.0983	0.1345	0.0848	0.0923	0.4099	
2019	41.95%	12.87%	19.53%	9.21%	83.57%	16.43%	18.72%	17.13%	11.74%	11.40%	0.1087	0.1492	0.0945	0.1035	0.4559	
2020	41.92%	12.89%	19.55%	9.22%	83.59%	16.41%	20.37%	18.69%	12.89%	12.59%	0.1183	0.1628	0.1037	0.1143	0.4990	
2025	41.92%	12.96%	19.67%	9.28%	83.82%	16.18%	26.87%	24.86%	17.60%	17.42%	0.1560	0.2164	0.1414	0.1581	0.6719	
2030	42.15%	13.03%	19.76%	9.32%	84.26%	15.74%	30.60%	28.71%	20.63%	20.47%	0.1770	0.2497	0.1655	0.1856	0.7779	
2035	42.21%	13.11%	19.80%	9.35%	84.47%	15.53%	32.38%	31.17%	22.43%	22.29%	0.1871	0.2708	0.1799	0.2021	0.8400	
2040	42.24%	13.14%	19.90%	9.44%	84.72%	15.28%	33.27%	32.61%	23.60%	23.53%	0.1922	0.2832	0.1890	0.2131	0.8775	

Low Carbon Fuels Standards

Year	% Reduction Gasoline and Diesel Fuel	% Reduction Tank to Wheels	
2010	0.00	0.00	Source:
2011	0.25	0.18	Final Regulation Order
2012	0.50	0.36	Subchapter 10. Climate Change
2013	1.00	0.72	Article 4. Regulations to Achieve Greenhouse Gas Reductions
2014	1.50	1.08	Subarticle 7. Low Carbon Fuel Standard
2015	2.50	1.80	Section 95482. Average Carbon Intensity Requirements for Gasoline and Diesel
2016	3.50	2.52	
2017	5.00	3.60	
2018	6.50	4.68	
2019	8.00	5.76	
2020	10.00	7.20	
2021	10.00	7.20	
2022	10.00	7.20	
2023	10.00	7.20	
2024	10.00	7.20	
2025	10.00	7.20	
2026	10.00	7.20	
2027	10.00	7.20	
2028	10.00	7.20	
2029	10.00	7.20	
2030	10.00	7.20	
2031	10.00	7.20	
2032	10.00	7.20	
2033	10.00	7.20	
2034	10.00	7.20	
2035	10.00	7.20	
2036	10.00	7.20	
2037	10.00	7.20	
2038	10.00	7.20	
2039	10.00	7.20	
2040	10.00	7.20	

Area Source

Baseline is currently: OFF

Unmitigated Area Source

	Project	Baseline	Project-Baseline
Landscaping Emissions from URBEMIS (CO_2 metric tons/year):	0.463	0.000	
Hearth Emissions from URBEMIS (CO_2 metric tons/year):	0.000	0.000	
Wood Burning Fireplaces (N_2O metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (N_2O metric tons/year):	0.000	0.000	
Wood Burning Stoves (CH_4 metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (CH_4 metric tons/year):	0.000	0.000	
Total (CO_2e metric tons/year):	0.463	0.000	
Total (CO_2e metric tons/year):			**0.463**

Mitigated Area Source

	Project	Baseline	Project-Baseline
Landscaping Emissions from URBEMIS (CO_2 metric tons/year):	0.463	0.000	
Hearth Emissions from URBEMIS (CO_2 metric tons/year):	0.000	0.000	
Wood Burning Fireplaces (N_2O metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (N_2O metric tons/year):	0.000	0.000	
Wood Burning Stoves (CH_4 metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (CH_4 metric tons/year):	0.000	0.000	
Total (CO_2e metric tons/year):	0.463	0.000	
Total (CO_2e metric tons/year):			**0.463**

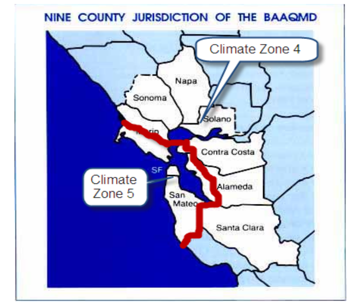
The URBEMIS area source calculations include five separate categories: 1) natural gas fuel combustion, 2) hearth fuel combustion, 3) landscape maintenance equipment, 4) consumer products, and 5) architectural coatings. This Area Source tab imports CO_2 emissions calculated by URBEMIS for hearths and landscape maintenance equipment only. BGM then calculates N_2O and CH_4 emissions for woodstoves and fireplaces and uses the resulting emissions to calculate CO_2e. The consumer products and architectural coatings categories within URBEMIS do not generate GHG emissions and, consequently, are not used by BGM. Also, URBEMIS' estimate of CO_2 from natural gas fuel combustion is not used by BGM. Instead, BGM calculates natural gas use and the resulting CO_2 emissions in the Electricity and Natural Gas tab.

Electricity and Natural Gas

Baseline is currently: OFF

Unmitigated Electricity	Project	Baseline	Project-Baseline
CO2 metric tons/year CO2:	159.623	0.000	
CH4 metric tons/year CH4:	0.001	0.000	
N2O metric tons/year:	0.001	0.000	
CO2e metric tons/year:	159.879	0.000	
CO2e metric tons/year:			159.88

Mitigated Electricity	Project	Baseline	Project-Baseline
CO2 metric tons/year CO2:	159.623	0.000	
CH4 metric tons/year CH4:	0.001	0.000	
N2O metric tons/year:	0.001	0.000	
CO2e metric tons/year:	159.879	0.000	
CO2e metric tons/year:			159.88



Unmitigated Natural Gas	Project	Baseline	Project-Baseline
CO2 metric tons/year:	13.01	0.000	
CH4 metric tons/year:	0.00	0.000	
N2O metric tons/year:	0.00	0.000	
CO2e metric tons/year:	13.04	0.000	
CO2e metric tons/year:			13.04

Mitigated Natural Gas	Project	Baseline	Project-Baseline
CO2 metric tons/year:	13.010	0.000	
CH4 metric tons/year:	0.001	0.000	
N2O metric tons/year:	0.000	0.000	
CO2e metric tons/year:	13.043	0.000	
CO2e metric tons/year:			13.04

*** Select Mitigation Measures on the Mitigation Tab ===> Mitigation

For detailed climate zone map see:
http://capabilities.itron.com/CeusWeb/FCZMap.aspx

Project Climate Zone Location: Zone 4 / Zone 5 (selected)

Clear All User Overrides

PROJECT Residential:

	Number of units (from URBEMIS)	Estimated Electricity Use/Year (kwh/ residence)	Total Residential Electricity Use (mwh /year)	User Override of Residential Electricity Use (mwh/year)	CO2 (metric tons/year)	CH4 (metric tons/yr)	N20 (metric tons/yr)	Estimated Natural Gas Use (MMBtu/residence/year)	Estimated Natural Gas use (MM Btu/year)	User Override of Natural Gas Use (MM Btu/year)	CO2 (metric tons/yr)	CH4 (metric tons/yr)	N2O (metric tons/yr)	Elec Use	Gas Use	
Single Family Residential	0.000	6,047.000	0.000		0.000	0.0000	0.0000	49.600	0.000		0.000	0.000	0.000	0.00	0.00	Residential Energy Use from California Statewide Residential Appliance Saturation Study, Tables 2-9, 2-13,2-15,2-4,2-5,2-23,2-24
Multi Family Residential	0.000	3,685.000	0.000		0.000	0.0000	0.0000	22.500	0.000		0.000	0.000	0.000	0.00	0.00	See also Executive Summary for Natural Gas Use by Building Age

PROJECT Nonresidential:

Land Use Type	Square Footage (1,000) from URBEMIS	Estimated Electricty Use/Year (Megawatt-hours)	User Override of Electricity Use/Year (Megawatt-hours)	CO2 (metric tons/yr)	CH4 (metric tons/yr)	N2O (metric tons/yr)	Estimated Natural Gas Use/Year (MM Btu)	User Override of Natural Gas Use (MM Btu/Year)	CO2 (metric tons/yr)	CH4 (metric tons/yr)	N2O (metric tons/yr)	Elect Use	Gas Use
Day-Care Center	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Elementary School	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Junior High School	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
High School	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Junior College	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
University/College	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Library	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Place of Worship	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
City Park	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Racquet Club	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Racquetball/Health	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Quality Restaurant	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
High Turnover/Sit-Down Restaurant	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Fast Food w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Fast Food w/o Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Hotel	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Motel	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Free-Standing Discount Store	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Free-Standing Discount Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Discount Club	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Regional Shopping Center	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Electronic Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Home Improvement Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Strip Mall	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Hardware/Paint Store	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Supermarket	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Convenience Market	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Convenience Market w/gas pumps	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Gasoline Service Station	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Bank w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
General Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Office Park	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Government Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Government Civic Center	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Pharmacy w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Pharmacy w/o Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Medical Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Hospital	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Warehouse	22.70	175.07		63.91	0.0005	0.0003	98.34		5.21	0.00049	0.00001	175.07	98.34
General Light Industry	34.00	262.21		95.72	0.0008	0.0004	147.29		7.80	0.00074	0.00001	262.21	147.29
General Heavy Industry	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Industrial Park	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Manufacturing	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00

Elect Use	Gas Use	
437.28	245.64	Unmitigated
437.28	245.64	Mitigated
437.28	245.64	Mitigated %

User Provided Blank Land Use Data: Project Data

Land Use Name	Electricity Use/Year (MWH/Year)	Natural Gas Use/Year (MM Btu/Year)	Electricity CO2 (metric tons/yr)	Electricity CH4 (metric tons/yr)	Electricity N2O (metric tons/yr)	Gas CO2 (metric tons/yr)	Gas CH4 (metric tons/yr)	Gas N2O (metric tons/yr)
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000

BASELINE Residential:

	Number of units (from URBEMIS)	Estimated Electricity Use/Year (kwh/ residence)	Total Residential Electricity Use (mwh /year)	User Override of Residential Electricity Use (mwh/year)	CO2 (metric tons/year)	CH4 (metric tons/yr)	N20 (metric tons/yr)	Estimated Natural Gas Use (MMBtu/residence/year)	Estimated Natural Gas use (MM Btu/year)	User Override of Natural Gas Use (MM Btu/year)	CO2 (metric tons/yr)	CH4 (metric tons/yr)	N2O (metric tons/yr)
Single Family Residential	0.000	6,047.000	0.000		0.000	0.0000	0.0000	49.600	0.000		0.000	0.000	0.000
Multi Family Residential	0.000	3,685.000	0.000		0.000	0.0000	0.0000	22.500	0.000		0.000	0.000	0.000

BASELINE Nonresidential:

Land Use Type	Square Footage (1,000) from URBEMIS	Estimated Electricty Use/Year (Megawatt-hours)	User Override of Electricity Use/Year (Megawatt-hours)	CO2 (metric tons/yr)	CH4 (metric tons/yr)	N2O (metric tons/yr)	Estimated Natural Gas Use/Year (MM Btu)	User Override of Natural Gas Use (MM Btu/Year)	CO2 (metric tons/yr)	CH4 (metric tons/yr)	N2O (metric tons/yr)
Day-Care Center	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Elementary School	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Junior High School	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
High School	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Junior College	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
University/College	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Library	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Place of Worship	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
City Park	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Racquet Club	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Racquetball/Health	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Quality Restaurant	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
High Turnover/Sit-Down Restaurant	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Fast Food w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Fast Food w/o Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Hotel	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Motel	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000

User Provided Blank Land Use Data: Baseline Data

Land Use Name	Electricity Use/Year (MWH/Year)	Natural Gas Use/Year (MM Btu/Year)	Electricity CO2 (metric tons/yr)	Electricity CH4 (metric tons/yr)	Electricity N2O (metric tons/yr)	Gas CO2 (metric tons/yr)	Gas CH4 (metric tons/yr)	Gas N2O (metric tons/yr)
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000

Free-Standing Discount Store	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Free-Standing Discount Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Discount Club	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Regional Shopping Center	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Electronic Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Home Improvement Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Strip Mall	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Hardware/Paint Store	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Supermarket	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Convenience Market	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Convenience Market w/gas pumps	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Gasoline Service Station	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Bank w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
General Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Office Park	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Government Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Government Civic Center	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Pharmacy w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Pharmacy w/o Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Medical Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Hospital	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Warehouse	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
General Light Industry	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
General Heavy Industry	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Industrial Park	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Manufacturing	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000

			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000

Greenhouse Gas Emission Factors

	CO2	CH4	N2O	
Electricity	804.54	0.0067	0.0037	
Units	lbs CO2/mwh	lbs CH4/mwh	lbs N20/MWH	Source: Climate Action Registry General Reporting Protocol, Version 3.1, January, 2009.
Natural Gas	53.06	0.005	0.0001	
Units	CO2 (kg CO2/MMBtu)	CH4 (kg/MMBtu)	N2O(kg/MMBtu)	Source: Climate Action Registry General Reporting Protocol, Version 3.1, January, 2009.

Summary	Climate Zone 4 Summary		Climate Zone 5 Summary	
	Electric (kwh/sf)	Natural Gas (MM Btu/sf)	Electric (kwh/sf)	Natural Gas (MM Btu/sf)
All Commercial	13.64	0.02949	13.19	0.03169
Small Office (<30,000 sf)	17.37	0.00975	14.49	0.02999
Large Office (>= 30,000 sf)	23.51	0.02639	15.25	0.02328
Restaurant	35.97	0.21255	31.41	0.17108
Retail	12.82	0.00301	12.65	0.00551
Food Store	44.34	0.02577	40.26	0.04135
Refrigerated Warehouse	10.12	0.00388	24.86	0.01869
Unrefrigerated Warehouse	4.26	0.00440	4.56	0.00169
School	6.65	0.02271	5.51	0.01958
College	9.75	0.02754	12.70	0.04185
Health	23.03	0.11871	18.40	0.11073
Lodging	9.33	0.04695	10.03	0.03915
Miscellaneous	9.81	0.02965	8.98	0.02724
All Offices	21.35	0.02052	15.14	0.02426
All Warehouses	5.82	0.00426	7.71	0.00433

Water and Wastewater

Baseline is currently: OFF

	Unmitigated Water and Wastewater		
	Project	**Baseline**	**Project-Baseline**
CO2 metric tons/year:	1.7624	0.0000	
CH4 metric tons/year:	0.0000	0.0000	
N20 metric tons/year:	0.0000	0.0000	
CO2e metric tons/year:	1.7652	0.0000	
CO2e metric tons/year:			**1.77**

	Mitigated Water and Wastewater		
	Project	**Baseline**	**Project-Baseline**
CO2 metric tons/year:	1.7624	0.0000	
CH4 metric tons/year:	0.0000	0.0000	
N20 metric tons/year:	0.0000	0.0000	
CO2e metric tons/year:	1.7652	0.0000	
CO2e metric tons/year:			**1.77**

Clear All User Overrides

***** Select Mitigation Measures on the Mitigation Tab ===>** Mitigation

	User Override of Model Estimates (af/yr)	Model Estimate (af/yr)	Total Gallons/year	Indoor Gallons/Year	Outdoor Gallons/year	Mitigated Indoor Gallons/Year	Mitigated Outdoor Gallons/year	Total Mitigated kwh/year
Baseline Water Demand		0.00	0	0.00	0.00	0.00	0.00	
Project Water Demand		3.18	1,034,775	631,212.75	403,562.25	631,212.75	403,562.25	
Net Increase in Water Demand		3.18	1,034,775	631,212.75	403,562.25	631,212.75	403,562.25	
						3415.49	1412.47	4,827.96

Houshold Size	
Single Family	Multi-family
2.94	2.65

Land Use Type	Square feet per employee		
1	Warehouse	1,700.00	
2	Public Assembly	1,300.00	
3	Lodging	1,300.00	
4	Food Sales	1,000.00	
5	Retail and Service	900.00	
6	Education	766.00	Energy Information Administration Special Topics 1995 Building Activities Other, Square feet per employee.
7	Public Order and Safety	750.00	http://www.eia.doe.gov/emeu/consumptionbriefs/cbecs/pbawebsite/office/office_howmanyempl.htm
8	Food Service	600.00	
9	Other	550.00	
10	Health Care	500.00	
11	Office	400.00	

PROJECT	
% indoor water use	0.610
% outdoor water use	0.390
Total	1.00

BASELINE	
% indoor water use	0.000
% outdoor water use	0.000
Total	0.00

Project Water Demand - Indoor	3415.49	kwh/year
Project Water Demand - Outdoor	1412.47	kwh/year
Total	4827.96	kwh/year

Baseline Demand - Indoor	0.00	kwh/year
Baseline Demand - Outdoor	0.00	kwh/year
Total	0.00	kwh/year

Greenhouse Gas Emission Factors	CO2	CH4	N2O
Electricity	804.54	0.0067	0.0037
Units	#/mwh	#/mwh	#/mwh

from California Climate Action Registry, 2009

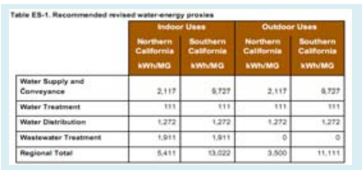


Table ES-1. Recommended revised water-energy proxies

	Indoor Uses		Outdoor Uses	
	Northern California kWh/MG	Southern California kWh/MG	Northern California kWh/MG	Southern California kWh/MG
Water Supply and Conveyance	2,117	9,727	2,117	9,727
Water Treatment	111	111	111	111
Water Distribution	1,272	1,272	1,272	1,272
Wastewater Treatment	1,911	1,911	0	0
Regional Total	5,411	13,022	3,500	11,111

from Navigant, 2006

Gallons Per Acre Foot:	325,900.00

Indoor vs. Outdoor Water Use			
	Indoor	Outdoor	Total
2001	0.64	0.36	1.00
2002	0.64	0.36	1.00
2003	0.64	0.36	1.00
2004	0.64	0.36	1.00
2005	0.64	0.36	1.00
2006	0.63	0.37	1.00
2007	0.63	0.37	1.00
2008	0.63	0.37	1.00
2009	0.63	0.37	1.00
2010	0.63	0.37	1.00
2011	0.63	0.37	1.00
2012	0.63	0.37	1.00
2013	0.63	0.37	1.00
2014	0.63	0.37	1.00
2015	0.63	0.37	1.00
2016	0.62	0.38	1.00
2017	0.62	0.38	1.00
2018	0.62	0.38	1.00
2019	0.62	0.38	1.00
2020	0.62	0.38	1.00
2021	0.62	0.38	1.00
2022	0.62	0.38	1.00
2023	0.62	0.38	1.00
2024	0.62	0.38	1.00
2025	0.62	0.38	1.00
2026	0.61	0.39	1.00
2027	0.61	0.39	1.00
2028	0.61	0.39	1.00
2029	0.61	0.39	1.00
2030	0.61	0.39	1.00

	Water Use		
Year	Single Family (gallons a day/ capita)	Multi-family (gallons a day/ capita)	Non-Res (gallons a day/ employee)
2001	108.00	75.00	86.00
2002	107.79	74.72	85.97
2003	107.59	74.45	85.93
2004	107.38	74.17	85.90
2005	107.17	73.90	85.86
2006	106.97	73.62	85.83
2007	106.76	73.34	85.79
2008	106.55	73.07	85.76
2009	106.34	72.79	85.72
2010	106.14	72.52	85.69
2011	105.93	72.24	85.66
2012	105.72	71.97	85.62
2013	105.52	71.69	85.59
2014	105.31	71.41	85.55
2015	105.10	71.14	85.52
2016	104.90	70.86	85.48
2017	104.69	70.59	85.45
2018	104.48	70.31	85.41
2019	104.28	70.03	85.38
2020	104.07	69.76	85.34
2021	103.86	69.48	85.31
2022	103.66	69.21	85.28
2023	103.45	68.93	85.24
2024	103.24	68.66	85.21
2025	103.03	68.38	85.17
2026	102.83	68.10	85.14
2027	102.62	67.83	85.10
2028	102.41	67.55	85.07
2029	102.21	67.28	85.03
2030	102.00	67.00	85.00

Source:

San Francisco PUC Wholesale Customer Water Demand Projections Technical Report, Prepared by URS Corporation and Maddaeus Water Management, November 2004. Tables 3-2 and 5-2

	From URBEMIS: Project Data		
	Land Use Residential	Units	Projected Water Use (gallons/yr)
	Single Family Residential	0.00	0.00
	Multi-family Residential	0.00	0.00
LU Type	Land Use Nonresidential	Square Feet	Projected Water Use (gallons/yr)
6	Day-Care Center	0.00	0.00
6	Elementary School	0.00	0.00
6	Junior High School	0.00	0.00
6	High School	0.00	0.00
6	Junior College	0.00	0.00
6	University/College	0.00	0.00
6	Library	0.00	0.00
9	Place of Worship	0.00	0.00
2	City Park	0.00	0.00
5	Racquet Club	0.00	0.00
5	Racquetball/Health	0.00	0.00
8	Quality Restaurant	0.00	0.00
8	High Turnover/Sit-Down Restaurant	0.00	0.00
8	Fast Food w/Drive Through	0.00	0.00
8	Fast Food w/o Drive Through	0.00	0.00
3	Hotel	0.00	0.00
3	Motel	0.00	0.00
5	Free-Standing Discount Store	0.00	0.00
5	Free-Standing Discount Superstore	0.00	0.00
5	Discount Club	0.00	0.00
5	Regional Shopping Center	0.00	0.00
5	Electronic Superstore	0.00	0.00
5	Home Improvement Superstore	0.00	0.00
5	Strip Mall	0.00	0.00
5	Hardware/Paint Store	0.00	0.00
4	Supermarket	0.00	0.00
4	Convenience Market	0.00	0.00
4	Convenience Market w/gas pumps	0.00	0.00
9	Gasoline Service Station	0.00	0.00
5	Bank w/Drive Through	0.00	0.00
11	General Office Building	0.00	0.00
11	Office Park	0.00	0.00
11	Government Office Building	0.00	0.00
11	Government Civic Center	0.00	0.00
5	Pharmacy w/Drive Through	0.00	0.00
5	Pharmacy w/o Drive Through	0.00	0.00
10	Medical Office Building	0.00	0.00
10	Hospital	0.00	0.00
1	Warehouse	22.70	414,275.00
1	General Light Industry	34.00	620,500.00
1	General Heavy Industry	0.00	0.00
1	Industrial Park	0.00	0.00
1	Manufacturing	0.00	0.00
			1,034,775.00

	From URBEMIS: Baseline Data		
	Land Use Residential	Units	Projected Water use (gallons/yr)
	Single Family Residential	0.00	0.00
	Multi-family Residential	0.00	0.00
LU Type	Land Use Nonresidential	Square Feet	Projected Water use (gallons/yr)
6	Day-Care Center	0.00	0.00
6	Elementary School	0.00	0.00
6	Junior High School	0.00	0.00
6	High School	0.00	0.00
6	Junior College	0.00	0.00
6	University/College	0.00	0.00
6	Library	0.00	0.00
9	Place of Worship	0.00	0.00
2	City Park	0.00	0.00
5	Racquet Club	0.00	0.00
5	Racquetball/Health	0.00	0.00
8	Quality Restaurant	0.00	0.00
8	High Turnover/Sit-Down Restaurant	0.00	0.00
8	Fast Food w/Drive Through	0.00	0.00
8	Fast Food w/o Drive Through	0.00	0.00
3	Hotel	0.00	0.00
3	Motel	0.00	0.00
5	Free-Standing Discount Store	0.00	0.00
5	Free-Standing Discount Superstore	0.00	0.00
5	Discount Club	0.00	0.00
5	Regional Shopping Center	0.00	0.00
5	Electronic Superstore	0.00	0.00
5	Home Improvement Superstore	0.00	0.00
5	Strip Mall	0.00	0.00
5	Hardware/Paint Store	0.00	0.00
4	Supermarket	0.00	0.00
4	Convenience Market	0.00	0.00
4	Convenience Market w/gas pumps	0.00	0.00
9	Gasoline Service Station	0.00	0.00
5	Bank w/Drive Through	0.00	0.00
11	General Office Building	0.00	0.00
11	Office Park	0.00	0.00
11	Government Office Building	0.00	0.00
11	Government Civic Center	0.00	0.00
5	Pharmacy w/Drive Through	0.00	0.00
5	Pharmacy w/o Drive Through	0.00	0.00
10	Medical Office Building	0.00	0.00
10	Hospital	0.00	0.00
1	Warehouse	0.00	0.00
1	General Light Industry	0.00	0.00
1	General Heavy Industry	0.00	0.00
1	Industrial Park	0.00	0.00
1	Manufacturing	0.00	0.00
			0.00

User Provided Blank Land Use Data: Project Data	
Land Use Name	**Projected Water Use (gallons/yr)**

User Provided Blank Land Use Data: Baseline Data	
Land Use Name	**Projected Water Use (gallons/yr)**

-

Solid Waste

Baseline is currently: OFF

	Unmitigated Solid Waste		
	Project	Baseline	Project - Baseline
Truck Haul CO2 (metric tons/year):	0.43	0.00	
Truck Haul CH4 (metric tons/year):	0.0000	0.0000	
Truck Haul CO2e (metric tons/year):	0.43	0.00	
Landfill Offgasing (CO2e metric tons/year):	61.48	0.00	
Total Solid Waste (CO2e metric tons/year):	61.91	0.00	
Total Solid Waste (CO2e metric tons/year):			61.91

	Mitigated Solid Waste		
	Project	Baseline	Project - Baseline
Truck Haul CO2 (metric tons/year):	0.43	0.00	
Truck Haul CH4 (metric tons/year):	0.0000	0.0000	
Truck Haul CO2e (metric tons/year):	0.43	0.00	
Landfill Offgasing (CO2e metric tons/year):	61.48	0.00	
Total Solid Waste (CO2e metric tons/year):	61.91	0.00	
Total Solid Waste (CO2e metric tons/year):			61.91

***** Select Mitigation Measures on the Mitigation Tab ===>** Mitigation

Project Landfill disposal option: Select 1 of 3 options
- ○ Landfilling only
- ◉ Landfilling with Flaring to Burn Methane
- ○ Landfilling with Energy Recovery

Baseline Landfill disposal option: Select 1 of 3 options
- ○ Landfilling only
- ◉ Landfilling with Flaring to Burn Methane
- ○ Landfilling with Energy Recovery

Clear All User Overrides

Project	Defaults	User Override
Average Round Trip Truck Haul Distance (miles):	40.00	
Solid Waste Truck Capacity (tons):	15.00	
Round Trips/Year:	6.40	
Miles per Year:	256.15	

Baseline	Defaults	User Override
Avg Round Trip Truck Haul Distance (miles):	40.00	
Solid Waste Truck Capacity (tons):	15.00	
Round Trips/Year:	0.00	
Miles per Year:	0.00	

PROJECT Residential Land Use (From URBEMIS)	Units	Estimated Solid Waste Generation Rate (tons/residence/yr)	Estimated Solid Waste Generation/Year (tons)	User Override of Solid Waste Generated/Year (tons)	CO2e (metric tons/year)	Solid Waste Generated/Year (tons)
Single Family Residential	0.00	2.23	0.00		0.00	0.00
Multi-Family Residential	0.00	1.17	0.00		0.00	0.00
PROJECT Nonresidential Land Use (From URBEMIS)	Square Footage (1,000) from URBEMIS	Estimated Solid Waste Generation Rate (tons/sf/yr)	Estimated Solid Waste Generation/Year (tons)	User Override of Solid Waste Generated/Year (tons)	CO2 (metric tons/yr)	
Day-Care Center	0.00	0.0013	0.00		0.00	0.00
Elementary School	0.00	0.0013	0.00		0.00	0.00
Junior High School	0.00	0.0013	0.00		0.00	0.00
High School	0.00	0.0013	0.00		0.00	0.00
Junior College	0.00	0.0013	0.00		0.00	0.00
University/College	0.00	0.0013	0.00		0.00	0.00
Library	0.00	0.0013	0.00		0.00	0.00
Place of Worship	0.00	0.0013	0.00		0.00	0.00
City Park	0.00	0.0000	0.00		0.00	0.00
Racquet Club	0.00	0.0057	0.00		0.00	0.00
Racquetball/Health	0.00	0.0057	0.00		0.00	0.00
Quality Restaurant	0.00	0.0009	0.00		0.00	0.00
High Turnover/Sit-Down Restaurant	0.00	0.0009	0.00		0.00	0.00
Fast Food w/Drive Through	0.00	0.0009	0.00		0.00	0.00
Fast Food w/o Drive Through	0.00	0.0009	0.00		0.00	0.00
Hotel	0.00	0.0108	0.00		0.00	0.00
Motel	0.00	0.0108	0.00		0.00	0.00
Free-Standing Discount Store	0.00	0.0046	0.00		0.00	0.00
Free-Standing Discount Superstore	0.00	0.0046	0.00		0.00	0.00
Discount Club	0.00	0.0046	0.00		0.00	0.00
Regional Shopping Center	0.00	0.0046	0.00		0.00	0.00
Electronic Superstore	0.00	0.0046	0.00		0.00	0.00
Home Improvement Superstore	0.00	0.0046	0.00		0.00	0.00
Strip Mall	0.00	0.0024	0.00		0.00	0.00
Hardware/Paint Store	0.00	0.0024	0.00		0.00	0.00
Supermarket	0.00	0.0057	0.00		0.00	0.00
Convenience Market	0.00	0.0024	0.00		0.00	0.00
Convenience Market w/gas pumps	0.00	0.0024	0.00		0.00	0.00
Gasoline Service Station	0.00	0.0024	0.00		0.00	0.00
Bank w/Drive Through	0.00	0.0108	0.00		0.00	0.00
General Office Building	0.00	0.0108	0.00		0.00	0.00
Office Park	0.00	0.0108	0.00		0.00	0.00
Government Office Building	0.00	0.0108	0.00		0.00	0.00
Government Civic Center	0.00	0.0108	0.00		0.00	0.00
Pharmacy w/Drive Through	0.00	0.0024	0.00		0.00	0.00
Pharmacy w/o Drive Through	0.00	0.0024	0.00		0.00	0.00
Medical Office Building	0.00	0.0108	0.00		0.00	0.00
Hospital	0.00	0.0108	0.00		0.00	0.00
Warehouse	22.70	0.0026	58.83		37.65	58.83
General Light Industry	34.00	0.0011	37.23		23.83	37.23
General Heavy Industry	0.00	0.0011	0.00		0.00	0.00
Industrial Park	0.00	0.0011	0.00		0.00	0.00
Manufacturing	0.00	0.0026	0.00		0.00	0.00
			96.06		61.48	96.06

User Provided Blank Land Use Data: Project Data

Land Use Name	**Solid Waste Generation/Year (tons)**	**CO2e (metric tons/year)**
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
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		0.00
		0.00

BASELINE Residential Land Use (From URBEMIS)	Units	Estimated Solid Waste Generation Rate (tons/residence/yr)	Estimated Solid Waste Generation/Year (tons)	User Override of Solid Waste Generated/Year (tons)	CO2e (metric tons/year)	Solid Waste Generated/Year (tons)
Single Family Residential	0.00	2.23	0.00		0.00	0.00
Multi-Family Residential	0.00	1.17	0.00		0.00	0.00
BASELINE Nonresidential Land Use (From URBEMIS)	Square Footage (1,000) from URBEMIS	Estimated Solid Waste Generation Rate (tons/sf/yr)	Estimated Solid Waste Generation/Year (tons)	User Override of Solid Waste Generated/Year (tons)	CO2 (metric tons/yr)	
Day-Care Center	0.00	0.0013	0.00		0.00	0.00
Elementary School	0.00	0.0013	0.00		0.00	0.00
Junior High School	0.00	0.0013	0.00		0.00	0.00
High School	0.00	0.0013	0.00		0.00	0.00
Junior College	0.00	0.0013	0.00		0.00	0.00
University/College	0.00	0.0013	0.00		0.00	0.00
Library	0.00	0.0013	0.00		0.00	0.00
Place of Worship	0.00	0.0013	0.00		0.00	0.00
City Park	0.00	0.0000	0.00		0.00	0.00
Racquet Club	0.00	0.0057	0.00		0.00	0.00
Racquetball/Health	0.00	0.0057	0.00		0.00	0.00
Quality Restaurant	0.00	0.0009	0.00		0.00	0.00
High Turnover/Sit-Down Restaurant	0.00	0.0009	0.00		0.00	0.00
Fast Food w/Drive Through	0.00	0.0009	0.00		0.00	0.00
Fast Food w/o Drive Through	0.00	0.0009	0.00		0.00	0.00
Hotel	0.00	0.0108	0.00		0.00	0.00
Motel	0.00	0.0108	0.00		0.00	0.00
Free-Standing Discount Store	0.00	0.0046	0.00		0.00	0.00
Free-Standing Discount Superstore	0.00	0.0046	0.00		0.00	0.00
Discount Club	0.00	0.0046	0.00		0.00	0.00
Regional Shopping Center	0.00	0.0046	0.00		0.00	0.00
Electronic Superstore	0.00	0.0046	0.00		0.00	0.00
Home Improvement Superstore	0.00	0.0046	0.00		0.00	0.00
Strip Mall	0.00	0.0024	0.00		0.00	0.00
Hardware/Paint Store	0.00	0.0024	0.00		0.00	0.00
Supermarket	0.00	0.0057	0.00		0.00	0.00
Convenience Market	0.00	0.0024	0.00		0.00	0.00
Convenience Market w/gas pumps	0.00	0.0024	0.00		0.00	0.00
Gasoline Service Station	0.00	0.0024	0.00		0.00	0.00
Bank w/Drive Through	0.00	0.0108	0.00		0.00	0.00
General Office Building	0.00	0.0108	0.00		0.00	0.00
Office Park	0.00	0.0108	0.00		0.00	0.00
Government Office Building	0.00	0.0108	0.00		0.00	0.00
Government Civic Center	0.00	0.0108	0.00		0.00	0.00
Pharmacy w/Drive Through	0.00	0.0024	0.00		0.00	0.00
Pharmacy w/o Drive Through	0.00	0.0024	0.00		0.00	0.00
Medical Office Building	0.00	0.0108	0.00		0.00	0.00
Hospital	0.00	0.0108	0.00		0.00	0.00
Warehouse	0.00	0.0026	0.00		0.00	0.00
General Light Industry	0.00	0.0011	0.00		0.00	0.00
General Heavy Industry	0.00	0.0011	0.00		0.00	0.00
Industrial Park	0.00	0.0011	0.00		0.00	0.00
Manufacturing	0.00	0.0026	0.00		0.00	0.00
					0.00	0.00

User Provided Blank Land Use Data: Baseline Data

Land Use Name	**Solid Waste Generation/Year (tons)**	**CO2e (metric tons/year)**
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
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		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00

WARM Emission Factors			
	Landfilling, No Recovery	Landfilling w/Flaring	Landfilling w/Energy Recovery
Mixed Solid Waste	3.10	0.64	0.30
Emissions (from EMFAC2007, 35 mph for Heavy-Heavy Duty Trucks			
Year	CO2 (grams/mile)	CH4 (grams/mile)	
2005	1,723.50	0.06	
2006	1,733.00	0.06	
2007	1,740.80	0.06	
2008	1,748.40	0.05	
2009	1,755.80	0.05	
2010	1,763.00	0.05	
2011	1,769.30	0.04	
2012	1,775.00	0.04	
2013	1,780.40	0.04	
2014	1,785.10	0.03	
2015	1,789.20	0.03	
2016	1,792.90	0.03	
2017	1,796.20	0.03	
2018	1,799.00	0.02	
2019	1,801.60	0.02	
2020	1,803.60	0.02	
2025	1,809.70	0.02	
2030	1,812.10	0.01	
2035	1,813.40	0.01	
2040	1,813.80	0.01	

Low Carbon Fuels Standards			
Year	% Reduction Gasoline and Diesel Fuel	% Reduction Tank to Wheels	
2010	0.00	0.00	Source:
2011	0.25	0.18	Final Regulation Order
2012	0.50	0.36	Subchapter 10. Climate Change
2013	1.00	0.72	Article 4. Regulations to Achieve Greenhouse Gas Reductions
2014	1.50	1.08	Subarticle 7. Low Carbon Fuel Standard
2015	2.50	1.80	Section 95482. Average Carbon Intensity Requirements for Gasoline and Diesel
2016	3.50	2.52	
2017	5.00	3.60	
2018	6.50	4.68	
2019	8.00	5.76	
2020	10.00	7.20	
2021	10.00	7.20	
2022	10.00	7.20	
2023	10.00	7.20	
2024	10.00	7.20	
2025	10.00	7.20	
2026	10.00	7.20	
2027	10.00	7.20	
2028	10.00	7.20	
2029	10.00	7.20	
2030	10.00	7.20	
2031	10.00	7.20	
2032	10.00	7.20	
2033	10.00	7.20	
2034	10.00	7.20	
2035	10.00	7.20	
2036	10.00	7.20	
2037	10.00	7.20	
2038	10.00	7.20	
2039	10.00	7.20	
2040	10.00	7.20	

Transportation

Land Use Detail

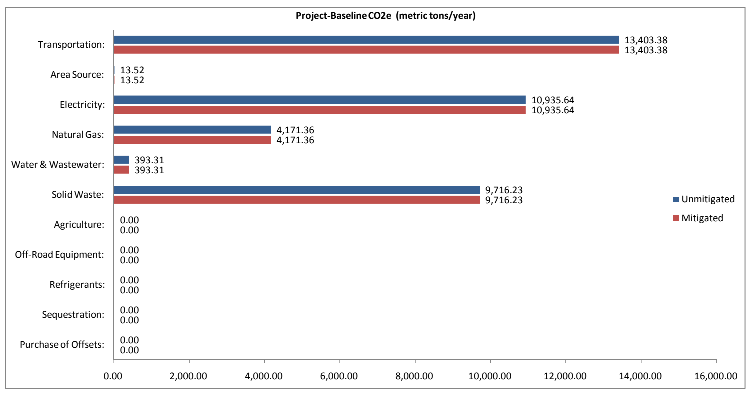
Land Use Description	Units	UnitType	Acreage	Trip Rate Unmitigated	Total Trips Unmitigated	Total VMT Unmitigated	Trip Rate Mitigated	Total Trips Mitigated	Total VMT Mitigated
Warehouse	22.7	1000 sq ft		3.56	80.81	597.44	0	0	0
General light industry	34	1000 sq ft		6.96	236.64	1993.69	0	0	0

Summary Results

Project Name: North Santa Rosa Station Specific Plan
Project and Baseline Years: 2035 N/A

Results	Unmitigated Project-Baseline CO2e (metric tons/year)	Mitigated Project-Baseline CO2e (metric tons/year)
Transportation:	13,403.38	13,403.38
Area Source:	13.52	13.52
Electricity:	10,935.64	10,935.64
Natural Gas:	4,171.36	4,171.36
Water & Wastewater:	393.31	393.31
Solid Waste:	9,716.23	9,716.23
Agriculture:	0.00	0.00
Off-Road Equipment:	0.00	0.00
Refrigerants:	0.00	0.00
Sequestration:	N/A	0.00
Purchase of Offsets:	N/A	0.00
Total:	38,633.43	38,633.43

Baseline is currently: **OFF**
Baseline Project Name:
Go to Settings Tab to Turn On Baseline



Detailed Results

Unmitigated	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				13,403.38	34.69%
Area Source:	10.13	0.01	0.01	13.52	0.03%
Electricity:	10,918.17	0.09	0.05	10,935.64	28.31%
Natural Gas:	4,160.69	0.39	0.01	4,171.36	10.80%
Water & Wastewater:	392.68	0.00	0.00	393.31	1.02%
Solid Waste:	67.61	459.46	N/A	9,716.23	25.15%
Agriculture:	0.00	0.00	0.00	0.00	0.00%
Off-Road Equipment:	0.00	0.00	0.00	0.00	0.00%
Refrigerants:	N/A	N/A	N/A	0.00	0.00%
Sequestration:	N/A	N/A	N/A	N/A	N/A
Purchase of Offsets:	N/A	N/A	N/A	N/A	N/A
Total:				38,633.43	100.00%

Baseline	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				0.00	N/A
Area Source:	0.00	0.00	0.00	0.00	N/A
Electricity:	0.00	0.00	0.00	0.00	N/A
Natural Gas:	0.00	0.00	0.00	0.00	N/A
Water & Wastewater:	0.00	0.00	0.00	0.00	N/A
Solid Waste:	0.00	0.00	N/A	0.00	N/A
Agriculture:	0.00	0.00	0.00	0.00	N/A
Off-Road Equipment:	0.00	0.00	0.00	0.00	N/A
Refrigerants:	N/A	N/A	N/A	0.00	N/A
Sequestration:	N/A	N/A	N/A	N/A	N/A
Purchase of Offsets:	N/A	N/A	N/A	N/A	N/A
Total:				0.00	0.00%

* Several adjustments were made to transportation emissions after they have been imported from URBEMIS.
After importing from URBEMIS, CO2 emissions are converted to metric tons and then adjusted to account for the "Pavley" regulation. Then, CO2 is converted to CO2e by multiplying by 100/95 to account for the contribution of other GHGs (CH4, N2O, and HFCs [from leaking air conditioners]).
Finally, CO2e is adjusted to account for th low carbon fuels rule.

Mitigated	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				13,403.38	34.69%
Area Source:	10.13	0.01	0.00	13.52	0.03%
Electricity:	10,918.17	0.09	0.05	10,935.64	28.31%
Natural Gas:	4,160.69	0.39	0.01	4,171.36	10.80%
Water & Wastewater:	392.68	0.00	0.00	393.31	1.02%
Solid Waste:	67.61	459.46	N/A	9,716.23	25.15%
Agriculture:	0.00	0.00	0.00	0.00	0.00%
Off-Road Equipment:	0.00	0.00	0.00	0.00	0.00%
Refrigerants:	N/A	N/A	N/A	0.00	0.00%
Sequestration:	N/A	N/A	N/A	0.00	0.00%
Purchase of Offsets:	N/A	N/A	N/A	0.00	0.00%
Total:				38,633.43	100.00%

Mitigation Measures Selected:

Transportation: Go to the following tab: Transp. Detail Mit for a list of the transportation mitigation measures selected (in URBEMIS)

Electricity: The following mitigation measure(s) have been selected to reduce electricity emissions.

Natural Gas: The following mitigation measure(s) have been selected to reduce natural gas emissions.

Water and Wastewater: The following mitigation measure(s) have been selected to reduce water and wastewater emissions.

Solid Waste: The following mitigation measure has been selected to reduce solid waste related GHG emissions.

Ag: No existing mitigation measures available.

Off-Road Equipment: No existing mitigation measures available.

Refrigerants: The following mitigation measure has ben selected to reduce refrigerant emissions:

Carbon Sequestration: Project does not include carbon sequestration through tree planting.

Emission Offsets/Credits: Project does not include purchase of emission offsets/credits.

Transportation

Baseline is Currently: OFF

	Target Year:	2035	2011	
Unmitigated Transportation				
		Project	**Baseline**	**Project-Baseline**
	Operational Emissions from URBEMIS (CO2 tons/year):	19,969.27	0.00	
	Metric Ton Adjustment (CO2 metric tons/year):	18,120.93	0.00	
	Pavley Regulation Adjustment (CO2 metric tons/year):	13,721.13	0.00	
	US EPA Adjustment (CO2e metric tons/year):	14,443.29	0.00	
	Low Carbon Fuels Rule Adjustment (CO2e metric tons/year)	13,403.38	0.00	
	Total (CO2e metric tons/year):			**13,403.38**

	Target Year:	2035	2011	
Mitigated Transportation				
		Project	**Baseline**	**Project-Baseline**
	Operational Vehicles from URBEMIS (CO2 tons/year):	19,969.27	0.00	
	Metric Ton Adjustment (CO2 metric tons/year):	18,120.93	0.00	
	Pavley Regulation Adjustment (CO2 metric tons/year):	13,721.13	0.00	
	US EPA Adjustment (CO2e metric tons/year):	14,443.29	0.00	
	Low Carbon Fuels Adjustment (CO2e metric tons/year):	13,403.38	0.00	
	Total (CO2e metric tons/year):			**13,403.38**

The BGM User's Manual describes in detail each step used to convert URBEMIS's transportation CO2 emissions to total CO2e.
These steps include converting from English to Metric units, adjusting for the Pavley Rule, converting CO2 to CO2e, and adjusting for the Low Carbon Fuels Rule.

Reference

U.S. EPA assumption that GHG emissions from other pollutants - CH4, N20, and hydrofluorcarbons (HFCs) from leaking air conditioners account for 5 percent of emissions from vehicles, after accounting for global warming potential of each GHG.

Jump to the Following Transportation Related Tabs:

Transportation Detail for Operational Mitigation
Land Use Detail

	Don't Need to Adjust this amt	Unadjusted Amount Affected by Pavley	Adjusted	Adusted	Adusted	Adusted	Adjusted
	Not Affected by Pavley	LDA/ LDT1/ LDT2/ MDV	LDA	LDT1	LDT2	MDV	4 totaled
Pavley Calculations - Project Unmitigated	2,814.00	15,306.94	5,172.93	1,635.38	2,782.49	1,316.34	10,907.13
Pavley Calculations - Baseline Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pavley Calculations - Project Mitigated	2,814.00	15,306.94	5,172.93	1,635.38	2,782.49	1,316.34	10,907.13
Pavley Calculations - Baseline Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pavley Adjustment

											12.00	13.00	14.00	15.00	16.00	
Year	% LDA CO2 Emissions	% LDT1 CO2 Emissions	% LDT2 CO2 Emissions	% MDV CO2 Emissions	% LDA/LDT1/LDT2/MDV	% everything else	% CO2 Reduction - LDA	% CO2 Reduction - LDT1	% CO2 Reduction - LDT2	% CO2 Reduction MDV	LDA					
2009	41.59%	12.33%	19.61%	9.71%	83.26%	16.74%	0.00%	0.00%	0.07%	0.08%	0.0000	0.0000	0.0006	0.0007	0.0013	Step 1 - Figure out year
2010	41.72%	12.39%	19.54%	9.61%	83.26%	16.74%	0.35%	0.25%	0.45%	0.48%	0.0020	0.0022	0.0036	0.0044	0.0122	Step 2- Emissions from HDVs, etc. do not change
2011	41.83%	12.45%	19.50%	9.50%	83.27%	16.73%	1.75%	1.34%	1.31%	1.29%	0.0102	0.0117	0.0106	0.0117	0.0442	Step 3 - Adjust emissions from LDA's, etc. individually
2012	41.89%	12.50%	19.47%	9.40%	83.27%	16.73%	4.07%	3.27%	2.60%	2.44%	0.0237	0.0286	0.0209	0.0221	0.0953	Step 4 - Add Step 2 and Step 3 emissions
2013	41.94%	12.56%	19.46%	9.32%	83.28%	16.72%	6.31%	5.26%	3.88%	3.61%	0.0366	0.0460	0.0313	0.0328	0.1466	
2014	41.98%	12.62%	19.46%	9.27%	83.33%	16.67%	8.48%	7.26%	5.17%	4.83%	0.0492	0.0634	0.0416	0.0438	0.1980	
2015	42.00%	12.67%	19.47%	9.24%	83.38%	16.62%	10.74%	9.38%	6.54%	6.17%	0.0623	0.0819	0.0527	0.0560	0.2529	
2016	42.05%	12.76%	19.50%	9.23%	83.54%	16.46%	12.96%	11.56%	7.94%	7.54%	0.0751	0.1008	0.0639	0.0684	0.3082	
2017	42.02%	12.81%	19.51%	9.21%	83.55%	16.45%	15.03%	13.58%	9.27%	8.88%	0.0871	0.1184	0.0746	0.0806	0.3608	
2018	41.98%	12.84%	19.52%	9.21%	83.55%	16.45%	16.94%	15.43%	10.54%	10.16%	0.0983	0.1345	0.0848	0.0923	0.4099	
2019	41.95%	12.87%	19.53%	9.21%	83.57%	16.43%	18.72%	17.13%	11.74%	11.40%	0.1087	0.1492	0.0945	0.1035	0.4559	
2020	41.92%	12.89%	19.55%	9.22%	83.59%	16.41%	20.37%	18.69%	12.89%	12.59%	0.1183	0.1628	0.1037	0.1143	0.4990	
2025	41.92%	12.96%	19.67%	9.28%	83.82%	16.18%	26.87%	24.86%	17.60%	17.42%	0.1560	0.2164	0.1414	0.1581	0.6719	
2030	42.15%	13.03%	19.76%	9.32%	84.26%	15.74%	30.60%	28.71%	20.63%	20.47%	0.1770	0.2497	0.1655	0.1856	0.7779	
2035	42.21%	13.11%	19.80%	9.35%	84.47%	15.53%	32.38%	31.17%	22.43%	22.29%	0.1871	0.2708	0.1799	0.2021	0.8400	
2040	42.24%	13.14%	19.90%	9.44%	84.72%	15.28%	33.27%	32.61%	23.60%	23.53%	0.1922	0.2832	0.1890	0.2131	0.8775	

Low Carbon Fuels Standards

Year	% Reduction Gasoline and Diesel Fuel	% Reduction Tank to Wheels	
2010	0.00	0.00	Source:
2011	0.25	0.18	Final Regulation Order
2012	0.50	0.36	Subchapter 10. Climate Change
2013	1.00	0.72	Article 4. Regulations to Achieve Greenhouse Gas Reductions
2014	1.50	1.08	Subarticle 7. Low Carbon Fuel Standard
2015	2.50	1.80	Section 95482. Average Carbon Intensity Requirements for Gasoline and Diesel
2016	3.50	2.52	
2017	5.00	3.60	
2018	6.50	4.68	
2019	8.00	5.76	
2020	10.00	7.20	
2021	10.00	7.20	
2022	10.00	7.20	
2023	10.00	7.20	
2024	10.00	7.20	
2025	10.00	7.20	
2026	10.00	7.20	
2027	10.00	7.20	
2028	10.00	7.20	
2029	10.00	7.20	
2030	10.00	7.20	
2031	10.00	7.20	
2032	10.00	7.20	
2033	10.00	7.20	
2034	10.00	7.20	
2035	10.00	7.20	
2036	10.00	7.20	
2037	10.00	7.20	
2038	10.00	7.20	
2039	10.00	7.20	
2040	10.00	7.20	

Area Source

Baseline is currently: OFF

Unmitigated Area Source

	Project	Baseline	Project-Baseline
Landscaping Emissions from URBEMIS (CO2 metric tons/year):	3.938	0.000	
Hearth Emissions from URBEMIS (CO2 metric tons/year):	6.189	0.000	
Wood Burning Fireplaces (N2O metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (N2O metric tons/year):	0.010	0.000	
Wood Burning Stoves (CH4 metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (CH4 metric tons/year):	0.011	0.000	
Total (CO2e metric tons/year):	13.518	0.000	
Total (CO2e metric tons/year):			**13.518**

Mitigated Area Source

	Project	Baseline	Project-Baseline
Landscaping Emissions from URBEMIS (CO2 metric tons/year):	3.938	0.000	
Hearth Emissions from URBEMIS (CO2 metric tons/year):	6.189	0.000	
Wood Burning Fireplaces (N2O metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (N2O metric tons/year):	0.010	0.000	
Wood Burning Stoves (CH4 metric tons/year):	0.000	0.000	
Natural Gas Fireplaces (CH4 metric tons/year):	0.011	0.000	
Total (CO2e metric tons/year):	13.518	0.000	
Total (CO2e metric tons/year):			**13.518**

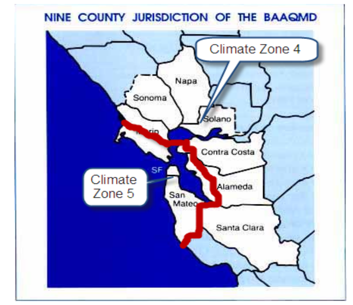
The URBEMIS area source calculations include five separate categories: 1) natural gas fuel combustion, 2) hearth fuel combustion, 3) landscape maintenance equipment, 4) consumer products, and 5) architectural coatings. This Area Source tab imports CO2 emissions calculated by URBEMIS for hearths and landscape maintenance equipment only. BGM then calculates N2O and CH4 emissions for woodstoves and fireplaces and uses the resulting emissions to calculate CO2e. The consumer products and architectural coatings categories within URBEMIS do not generate GHG emissions and, consequently, are not used by BGM. Also, URBEMIS' estimate of CO2 from natural gas fuel combustion is not used by BGM. Instead, BGM calculates natural gas use and the resulting CO2 emissions in the Electricity and Natural Gas tab.

Electricity and Natural Gas

Baseline is currently: OFF

	Unmitigated Electricity		
	Project	Baseline	Project-Baseline
CO2 metric tons/year CO2:	10,918.169	0.000	
CH4 metric tons/year CH4:	0.091	0.000	
N2O metric tons/year:	0.050	0.000	
CO2e metric tons/year:	10,935.644	0.000	
CO2e metric tons/year:			10,935.64

	Mitigated Electricity		
	Project	Baseline	Project-Baseline
CO2 metric tons/year CO2:	10,918.169	0.000	
CH4 metric tons/year CH4:	0.091	0.000	
N2O metric tons/year:	0.050	0.000	
CO2e metric tons/year:	10,935.644	0.000	
CO2e metric tons/year:			10,935.64



	Unmitigated Natural Gas		
	Project	Baseline	Project-Baseline
CO2 metric tons/year:	4160.69	0.000	
CH4 metric tons/year:	0.39	0.000	
N2O metric tons/year:	0.01	0.000	
CO2e metric tons/year:	4171.36	0.000	
CO2e metric tons/year:			4,171.36

	Mitigated Natural Gas		
	Project	Baseline	Project-Baseline
CO2 metric tons/year:	4160.692	0.000	
CH4 metric tons/year:	0.392	0.000	
N2O metric tons/year:	0.008	0.000	
CO2e metric tons/year:	4171.357	0.000	
CO2e metric tons/year:			4,171.36

*** Select Mitigation Measures on the Mitigation Tab ===> Mitigation

For detailed climate zone map see:
http://capabilities.itron.com/CeusWeb/FCZMap.aspx

Project Climate Zone Location: ○ Zone 4 ◉ Zone 5

Clear All User Overrides

PROJECT Residential:

	Number of units (from URBEMIS)	Estimated Electricity Use/Year (kwh/ residence)	Total Residential Electricity Use (mwh /year)	User Override of Residential Electricity Use (mwh/year)	CO2 (metric tons/year)	CH4 (metric tons/yr)	N20 (metric tons/yr)	Estimated Natural Gas Use (MMBtu/residence/year)	Estimated Natural Gas use (MM Btu/year)	User Override of Natural Gas Use (MM Btu/year)	CO2 (metric tons/yr)	CH4 (metric tons/yr)	N2O (metric tons/yr)	Elec Use	Gas Use
Single Family Residential	438.000	6,047.000	2,648.586		966.830	0.0081	0.0044	49.600	21,724.800		1,150.626	0.108	0.002	2,648.59	21,724.80
Multi Family Residential	1,276.000	3,685.000	4,702.060		1,716.423	0.0143	0.0079	22.500	28,710.000		1,520.588	0.143	0.003	4,702.06	28,710.00

Residential Energy Use from California Statewide Residential Appliance Saturation Study, Tables 2-9, 2-13,2-15,2-4,2-5,2-23,2-24
See also Executive Summary for Natural Gas Use by Building Age

PROJECT Nonresidential:

Land Use Type	Square Footage (1,000) from URBEMIS	Estimated Electricty Use/Year (Megawatt-hours)	User Override of Electricity Use/Year (Megawatt-hours)	CO2 (metric tons/yr)	CH4 (metric tons/yr)	N2O (metric tons/yr)	Estimated Natural Gas Use/Year (MM Btu)	User Override of Natural Gas Use (MM Btu/Year)	CO2 (metric tons/yr)	CH4 (metric tons/yr)	N2O (metric tons/yr)	Elect Use	Gas Use
Day-Care Center	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Elementary School	97.60	537.33		196.15	0.0016	0.0009	1,910.98		101.21	0.00954	0.00019	537.33	1,910.98
Junior High School	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
High School	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Junior College	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
University/College	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Library	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Place of Worship	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
City Park	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Racquet Club	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Racquetball/Health	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Quality Restaurant	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
High Turnover/Sit-Down Restaurant	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Fast Food w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Fast Food w/o Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Hotel	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Motel	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Free-Standing Discount Store	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Free-Standing Discount Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Discount Club	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Regional Shopping Center	187.00	2,365.16		863.37	0.0072	0.0040	1,030.80		54.60	0.00514	0.00010	2,365.16	1,030.80
Electronic Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Home Improvement Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Strip Mall	350.20	4,429.30		1,616.86	0.0135	0.0074	1,930.41		102.24	0.00963	0.00019	4,429.30	1,930.41
Hardware/Paint Store	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Supermarket	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Convenience Market	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Convenience Market w/gas pumps	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Gasoline Service Station	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Bank w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
General Office Building	998.60	15,227.38		5,558.54	0.0463	0.0256	23,250.43		1,231.43	0.11604	0.00232	15,227.38	23,250.43
Office Park	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Government Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Government Civic Center	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Pharmacy w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Pharmacy w/o Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Medical Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Hospital	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Warehouse	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
General Light Industry	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
General Heavy Industry	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Industrial Park	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00
Manufacturing	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000	0.00	0.00

Elect Use	Gas Use	
29,909.82	78,557.43	Unmitigated
29,909.82	78,557.43	Mitigated
29,909.82	78,557.43	Mitigated %

User Provided Blank Land Use Data: Project Data

Land Use Name	Electricity Use/Year (MWH/Year)	Natural Gas Use/Year (MM Btu/Year)	Electricity CO2 (metric tons/yr)	Electricity CH4 (metric tons/yr)	Electricity N2O (metric tons/yr)	Gas CO2 (metric tons/yr)	Gas CH4 (metric tons/yr)	Gas N2O (metric tons/yr)
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000

BASELINE Residential:

	Number of units (from URBEMIS)	Estimated Electricity Use/Year (kwh/ residence)	Total Residential Electricity Use (mwh /year)	User Override of Residential Electricity Use (mwh/year)	CO2 (metric tons/year)	CH4 (metric tons/yr)	N20 (metric tons/yr)	Estimated Natural Gas Use (MMBtu/residence/year)	Estimated Natural Gas use (MM Btu/year)	User Override of Natural Gas Use (MM Btu/year)	CO2 (metric tons/yr)	CH4 (metric tons/yr)	N2O (metric tons/yr)
Single Family Residential	0.000	6,047.000	0.000		0.000	0.0000	0.0000	49.600	0.000		0.000	0.000	0.000
Multi Family Residential	0.000	3,685.000	0.000		0.000	0.0000	0.0000	22.500	0.000		0.000	0.000	0.000

BASELINE Nonresidential:

Land Use Type	Square Footage (1,000) from URBEMIS	Estimated Electricty Use/Year (Megawatt-hours)	User Override of Electricity Use/Year (Megawatt-hours)	CO2 (metric tons/yr)	CH4 (metric tons/yr)	N2O (metric tons/yr)	Estimated Natural Gas Use/Year (MM Btu)	User Override of Natural Gas Use (MM Btu/Year)	CO2 (metric tons/yr)	CH4 (metric tons/yr)	N2O (metric tons/yr)
Day-Care Center	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Elementary School	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Junior High School	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
High School	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Junior College	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
University/College	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Library	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Place of Worship	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
City Park	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Racquet Club	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Racquetball/Health	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Quality Restaurant	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
High Turnover/Sit-Down Restaurant	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Fast Food w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Fast Food w/o Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Hotel	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000
Motel	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000

User Provided Blank Land Use Data: Baseline Data

Land Use Name	Electricity Use/Year (MWH/Year)	Natural Gas Use/Year (MM Btu/Year)	Electricity CO2 (metric tons/yr)	Electricity CH4 (metric tons/yr)	Electricity N2O (metric tons/yr)	Gas CO2 (metric tons/yr)	Gas CH4 (metric tons/yr)	Gas N2O (metric tons/yr)
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000
			0.00	0.00000	0.00000	0.00	0.00000	0.00000

Free-Standing Discount Store	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
Free-Standing Discount Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
Discount Club	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
Regional Shopping Center	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
Electronic Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
Home Improvement Superstore	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
Strip Mall	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
Hardware/Paint Store	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
Supermarket	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
Convenience Market	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
Convenience Market w/gas pumps	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
Gasoline Service Station	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
Bank w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
General Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
Office Park	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
Government Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
Government Civic Center	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
Pharmacy w/Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
Pharmacy w/o Drive Through	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
Medical Office Building	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
Hospital	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
Warehouse	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
General Light Industry	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
General Heavy Industry	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
Industrial Park	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000
Manufacturing	0.00	0.00		0.00	0.0000	0.0000	0.00		0.00	0.00000	0.00000				0.00	0.00000	0.00000	0.00	0.00000	0.00000

Greenhouse Gas Emission Factors

	CO2	CH4	N2O	
Electricity	804.54	0.0067	0.0037	
Units	lbs CO2/mwh	lbs CH4/mwh	lbs N20/MWH	Source: Climate Action Registry General Reporting Protocol, Version 3.1, January, 2009.
Natural Gas	53.06	0.005	0.0001	
Units	CO2 (kg CO2/MMBtu)	CH4 (kg/MMBtu)	N2O(kg/MMBtu)	Source: Climate Action Registry General Reporting Protocol, Version 3.1, January, 2009.

Summary	Climate Zone 4 Summary		Climate Zone 5 Summary	
	Electric (kwh/sf)	Natural Gas (MM Btu/sf)	Electric (kwh/sf)	Natural Gas (MM Btu/sf)
All Commercial	13.64	0.02949	13.19	0.03169
Small Office (<30,000 sf)	17.37	0.00975	14.49	0.02999
Large Office (>= 30,000 sf)	23.51	0.02639	15.25	0.02328
Restaurant	35.97	0.21255	31.41	0.17108
Retail	12.82	0.00301	12.65	0.00551
Food Store	44.34	0.02577	40.26	0.04135
Refrigerated Warehouse	10.12	0.00388	24.86	0.01869
Unrefrigerated Warehouse	4.26	0.00440	4.56	0.00169
School	6.65	0.02271	5.51	0.01958
College	9.75	0.02754	12.70	0.04185
Health	23.03	0.11871	18.40	0.11073
Lodging	9.33	0.04695	10.03	0.03915
Miscellaneous	9.81	0.02965	8.98	0.02724
All Offices	21.35	0.02052	15.14	0.02426
All Warehouses	5.82	0.00426	7.71	0.00433

Water and Wastewater

Baseline is currently: OFF

	Unmitigated Water and Wastewater		
	Project	Baseline	Project-Baseline
CO2 metric tons/year:	392.6780	0.0000	
CH4 metric tons/year:	0.0033	0.0000	
N20 metric tons/year:	0.0018	0.0000	
CO2e metric tons/year:	393.3065	0.0000	
CO2e metric tons/year:			393.31

	Mitigated Water and Wastewater		
	Project	Baseline	Project-Baseline
CO2 metric tons/year:	392.6780	0.0000	
CH4 metric tons/year:	0.0033	0.0000	
N20 metric tons/year:	0.0018	0.0000	
CO2e metric tons/year:	393.3065	0.0000	
CO2e metric tons/year:			393.31

Clear All User Overrides

*** Select Mitigation Measures on the Mitigation Tab ===> Mitigation

	User Override of Model Estimates (af/yr)	Model Estimate (af/yr)	Total Gallons/year	Indoor Gallons/Year	Outdoor Gallons/year	Mitigated Indoor Gallons/Year	Mitigated Outdoor Gallons/year	Total Mitigated kwh/year
Baseline Water Demand		0.00	0	0.00	0.00	0.00	0.00	
Project Water Demand		707.45	230,559,398	140,641,232.60	89,918,165.11	140,641,232.60	89,918,165.11	
Net Increase in Water Demand		707.45	230,559,398	140,641,232.60	89,918,165.11	140,641,232.60	89,918,165.11	
						761009.71	314713.58	1,075,723.29

Houshold Size	
Single Family	Multi-family
2.94	2.65

Land Use Type	Square feet per employee	
1	Warehouse	1,700.00
2	Public Assembly	1,300.00
3	Lodging	1,300.00
4	Food Sales	1,000.00
5	Retail and Service	900.00
6	Education	766.00
7	Public Order and Safety	750.00
8	Food Service	600.00
9	Other	550.00
10	Health Care	500.00
11	Office	400.00

Energy Information Administration Special Topics 1995 Building Activities Other, Square feet per employee.
http://www.eia.doe.gov/emeu/consumptionbriefs/cbecs/pbawebsite/office/office_howmanyempl.htm

PROJECT	
% indoor water use	0.610
% outdoor water use	0.390
Total	1.00

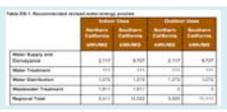
BASELINE	
% indoor water use	0.000
% outdoor water use	0.000
Total	0.00

Project Water Demand - Indoor	761009.71	kwh/year
Project Water Demand - Outdoor	314713.58	kwh/year
Total	1075723.29	kwh/year

Baseline Demand - Indoor	0.00	kwh/year
Baseline Demand - Outdoor	0.00	kwh/year
Total	0.00	kwh/year

Greenhouse Gas Emission Factors	CO2	CH4	N2O
Electricity	804.54	0.0067	0.0037
Units	#/mwh	#/mwh	#/mwh

from California Climate Action Registry, 2009



from Navigant, 2006

Gallons Per Acre Foot:	325,900.00

	Indoor vs. Outdoor Water Use		
	Indoor	Outdoor	Total
2001	0.64	0.36	1.00
2002	0.64	0.36	1.00
2003	0.64	0.36	1.00
2004	0.64	0.36	1.00
2005	0.64	0.36	1.00
2006	0.63	0.37	1.00
2007	0.63	0.37	1.00
2008	0.63	0.37	1.00
2009	0.63	0.37	1.00
2010	0.63	0.37	1.00
2011	0.63	0.37	1.00
2012	0.63	0.37	1.00
2013	0.63	0.37	1.00
2014	0.63	0.37	1.00
2015	0.63	0.37	1.00
2016	0.62	0.38	1.00
2017	0.62	0.38	1.00
2018	0.62	0.38	1.00
2019	0.62	0.38	1.00
2020	0.62	0.38	1.00
2021	0.62	0.38	1.00
2022	0.62	0.38	1.00
2023	0.62	0.38	1.00
2024	0.62	0.38	1.00
2025	0.62	0.38	1.00
2026	0.61	0.39	1.00
2027	0.61	0.39	1.00
2028	0.61	0.39	1.00
2029	0.61	0.39	1.00
2030	0.61	0.39	1.00

	Water Use		
Year	Single Family (gallons a day/ capita)	Multi-family (gallons a day/ capita)	Non-Res (gallons a day/ employee)
2001	108.00	75.00	86.00
2002	107.79	74.72	85.97
2003	107.59	74.45	85.93
2004	107.38	74.17	85.90
2005	107.17	73.90	85.86
2006	106.97	73.62	85.83
2007	106.76	73.34	85.79
2008	106.55	73.07	85.76
2009	106.34	72.79	85.72
2010	106.14	72.52	85.69
2011	105.93	72.24	85.66
2012	105.72	71.97	85.62
2013	105.52	71.69	85.59
2014	105.31	71.41	85.55
2015	105.10	71.14	85.52
2016	104.90	70.86	85.48
2017	104.69	70.59	85.45
2018	104.48	70.31	85.41
2019	104.28	70.03	85.38
2020	104.07	69.76	85.34
2021	103.86	69.48	85.31
2022	103.66	69.21	85.28
2023	103.45	68.93	85.24
2024	103.24	68.66	85.21
2025	103.03	68.38	85.17
2026	102.83	68.10	85.14
2027	102.62	67.83	85.10
2028	102.41	67.55	85.07
2029	102.21	67.28	85.03
2030	102.00	67.00	85.00

Source:

San Francisco PUC Wholesale Customer Water Demand Projections Technical Report, Prepared by URS Corporation and Maddaeus Water Management, November 2004. Tables 3-2 and 5-2

	From URBEMIS: Project Data		
	Land Use Residential	Units	Projected Water Use (gallons/yr)
	Single Family Residential	438.00	47,941,815.60
	Multi-family Residential	1,276.00	82,692,137.00
LU Type	Land Use Nonresidential	Square Feet	Projected Water Use (gallons/yr)
6	Day-Care Center	0.00	0.00
6	Elementary School	97.60	3,953,054.83
6	Junior High School	0.00	0.00
6	High School	0.00	0.00
6	Junior College	0.00	0.00
6	University/College	0.00	0.00
6	Library	0.00	0.00
9	Place of Worship	0.00	0.00
2	City Park	0.00	0.00
5	Racquet Club	0.00	0.00
5	Racquetball/Health	0.00	0.00
8	Quality Restaurant	0.00	0.00
8	High Turnover/Sit-Down Restaurant	0.00	0.00
8	Fast Food w/Drive Through	0.00	0.00
8	Fast Food w/o Drive Through	0.00	0.00
3	Hotel	0.00	0.00
3	Motel	0.00	0.00
5	Free-Standing Discount Store	0.00	0.00
5	Free-Standing Discount Superstore	0.00	0.00
5	Discount Club	0.00	0.00
5	Regional Shopping Center	187.00	6,446,305.56
5	Electronic Superstore	0.00	0.00
5	Home Improvement Superstore	0.00	0.00
5	Strip Mall	350.20	12,072,172.22
5	Hardware/Paint Store	0.00	0.00
4	Supermarket	0.00	0.00
4	Convenience Market	0.00	0.00
4	Convenience Market w/gas pumps	0.00	0.00
9	Gasoline Service Station	0.00	0.00
5	Bank w/Drive Through	0.00	0.00
11	General Office Building	998.60	77,453,912.50
11	Office Park	0.00	0.00
11	Government Office Building	0.00	0.00
11	Government Civic Center	0.00	0.00
5	Pharmacy w/Drive Through	0.00	0.00
5	Pharmacy w/o Drive Through	0.00	0.00
10	Medical Office Building	0.00	0.00
10	Hospital	0.00	0.00
1	Warehouse	0.00	0.00
1	General Light Industry	0.00	0.00
1	General Heavy Industry	0.00	0.00
1	Industrial Park	0.00	0.00
1	Manufacturing	0.00	0.00
			230,559,397.71

User Provided Blank Land Use Data: Project Data	
Land Use Name	Projected Water Use (gallons/yr)

	From URBEMIS: Baseline Data		
	Land Use Residential	Units	Projected Water use (gallons/yr)
	Single Family Residential	0.00	0.00
	Multi-family Residential	0.00	0.00
LU Type	Land Use Nonresidential	Square Feet	Projected Water use (gallons/yr)
6	Day-Care Center	0.00	0.00
6	Elementary School	0.00	0.00
6	Junior High School	0.00	0.00
6	High School	0.00	0.00
6	Junior College	0.00	0.00
6	University/College	0.00	0.00
6	Library	0.00	0.00
9	Place of Worship	0.00	0.00
2	City Park	0.00	0.00
5	Racquet Club	0.00	0.00
5	Racquetball/Health	0.00	0.00
8	Quality Restaurant	0.00	0.00
8	High Turnover/Sit-Down Restaurant	0.00	0.00
8	Fast Food w/Drive Through	0.00	0.00
8	Fast Food w/o Drive Through	0.00	0.00
3	Hotel	0.00	0.00
3	Motel	0.00	0.00
5	Free-Standing Discount Store	0.00	0.00
5	Free-Standing Discount Superstore	0.00	0.00
5	Discount Club	0.00	0.00
5	Regional Shopping Center	0.00	0.00
5	Electronic Superstore	0.00	0.00
5	Home Improvement Superstore	0.00	0.00
5	Strip Mall	0.00	0.00
5	Hardware/Paint Store	0.00	0.00
4	Supermarket	0.00	0.00
4	Convenience Market	0.00	0.00
4	Convenience Market w/gas pumps	0.00	0.00
9	Gasoline Service Station	0.00	0.00
5	Bank w/Drive Through	0.00	0.00
11	General Office Building	0.00	0.00
11	Office Park	0.00	0.00
11	Government Office Building	0.00	0.00
11	Government Civic Center	0.00	0.00
5	Pharmacy w/Drive Through	0.00	0.00
5	Pharmacy w/o Drive Through	0.00	0.00
10	Medical Office Building	0.00	0.00
10	Hospital	0.00	0.00
1	Warehouse	0.00	0.00
1	General Light Industry	0.00	0.00
1	General Heavy Industry	0.00	0.00
1	Industrial Park	0.00	0.00
1	Manufacturing	0.00	0.00
			0.00

User Provided Blank Land Use Data: Baseline Data	
Land Use Name	Projected Water Use (gallons/yr)

-

Solid Waste

Baseline is currently: OFF

	Unmitigated Solid Waste		
	Project	Baseline	Project - Baseline
Truck Haul CO2 (metric tons/year):	67.61	0.00	
Truck Haul CH4 (metric tons/year):	0.0004	0.0000	
Truck Haul CO2e (metric tons/year):	67.62	0.00	
Landfill Offgasing (CO2e metric tons/year):	9,648.61	0.00	
Total Solid Waste (CO2e metric tons/year):	9,716.23	0.00	
Total Solid Waste (CO2e metric tons/year):			9,716.23

	Mitigated Solid Waste		
	Project	Baseline	Project - Baseline
Truck Haul CO2 (metric tons/year):	67.61	0.00	
Truck Haul CH4 (metric tons/year):	0.0004	0.0000	
Truck Haul CO2e (metric tons/year):	67.62	0.00	
Landfill Offgasing (CO2e metric tons/year):	9,648.61	0.00	
Total Solid Waste (CO2e metric tons/year):	9,716.23	0.00	
Total Solid Waste (CO2e metric tons/year):			9,716.23

*** Select Mitigation Measures on the Mitigation Tab ===> Mitigation

Project Landfill disposal option: Select 1 of 3 options
- ○ Landfilling only
- ◉ Landfilling with Flaring to Burn Methane
- ○ Landfilling with Energy Recovery

Baseline Landfill disposal option: Select 1 of 3 options
- ○ Landfilling only
- ◉ Landfilling with Flaring to Burn Methane
- ○ Landfilling with Energy Recovery

Clear All User Overrides

Project	Defaults	User Override
Average Round Trip Truck Haul Distance (miles):	40.00	
Solid Waste Truck Capacity (tons):	15.00	
Round Trips/Year:	1,005.06	
Miles per Year:	40,202.54	

Baseline	Defaults	User Override
Avg Round Trip Truck Haul Distance (miles):	40.00	
Solid Waste Truck Capacity (tons):	15.00	
Round Trips/Year:	0.00	
Miles per Year:	0.00	

PROJECT Residential Land Use (From URBEMIS)	Units	Estimated Solid Waste Generation Rate (tons/residence/yr)	Estimated Solid Waste Generation/Year (tons)	User Override of Solid Waste Generated/Year (tons)	CO2e (metric tons/year)	Solid Waste Generated/Year (tons)
Single Family Residential	438.00	2.23	977.61		625.67	977.61
Multi-Family Residential	1,276.00	1.17	1,492.92		955.47	1,492.92
PROJECT Nonresidential Land Use (From URBEMIS)	Square Footage (1,000) from URBEMIS	Estimated Solid Waste Generation Rate (tons/sf/yr)	Estimated Solid Waste Generation/Year (tons)	User Override of Solid Waste Generated/Year (tons)	CO2 (metric tons/yr)	
Day-Care Center	0.00	0.0013	0.00		0.00	0.00
Elementary School	97.60	0.0013	126.88		81.20	126.88
Junior High School	0.00	0.0013	0.00		0.00	0.00
High School	0.00	0.0013	0.00		0.00	0.00
Junior College	0.00	0.0013	0.00		0.00	0.00
University/College	0.00	0.0013	0.00		0.00	0.00
Library	0.00	0.0013	0.00		0.00	0.00
Place of Worship	0.00	0.0013	0.00		0.00	0.00
City Park	0.00	0.0000	0.00		0.00	0.00
Racquet Club	0.00	0.0057	0.00		0.00	0.00
Racquetball/Health	0.00	0.0057	0.00		0.00	0.00
Quality Restaurant	0.00	0.0009	0.00		0.00	0.00
High Turnover/Sit-Down Restaurant	0.00	0.0009	0.00		0.00	0.00
Fast Food w/Drive Through	0.00	0.0009	0.00		0.00	0.00
Fast Food w/o Drive Through	0.00	0.0009	0.00		0.00	0.00
Hotel	0.00	0.0108	0.00		0.00	0.00
Motel	0.00	0.0108	0.00		0.00	0.00
Free-Standing Discount Store	0.00	0.0046	0.00		0.00	0.00
Free-Standing Discount Superstore	0.00	0.0046	0.00		0.00	0.00
Discount Club	0.00	0.0046	0.00		0.00	0.00
Regional Shopping Center	187.00	0.0046	853.19		546.04	853.19
Electronic Superstore	0.00	0.0046	0.00		0.00	0.00
Home Improvement Superstore	0.00	0.0046	0.00		0.00	0.00
Strip Mall	350.20	0.0024	840.48		537.91	840.48
Hardware/Paint Store	0.00	0.0024	0.00		0.00	0.00
Supermarket	0.00	0.0057	0.00		0.00	0.00
Convenience Market	0.00	0.0024	0.00		0.00	0.00
Convenience Market w/gas pumps	0.00	0.0024	0.00		0.00	0.00
Gasoline Service Station	0.00	0.0024	0.00		0.00	0.00
Bank w/Drive Through	0.00	0.0108	0.00		0.00	0.00
General Office Building	998.60	0.0108	10,784.88		6,902.32	10,784.88
Office Park	0.00	0.0108	0.00		0.00	0.00
Government Office Building	0.00	0.0108	0.00		0.00	0.00
Government Civic Center	0.00	0.0108	0.00		0.00	0.00
Pharmacy w/Drive Through	0.00	0.0024	0.00		0.00	0.00
Pharmacy w/o Drive Through	0.00	0.0024	0.00		0.00	0.00
Medical Office Building	0.00	0.0108	0.00		0.00	0.00
Hospital	0.00	0.0108	0.00		0.00	0.00
Warehouse	0.00	0.0026	0.00		0.00	0.00
General Light Industry	0.00	0.0011	0.00		0.00	0.00
General Heavy Industry	0.00	0.0011	0.00		0.00	0.00
Industrial Park	0.00	0.0011	0.00		0.00	0.00
Manufacturing	0.00	0.0026	0.00		0.00	0.00
			15,075.95		9,648.61	15,075.95

User Provided Blank Land Use Data: Project Data

Land Use Name	Solid Waste Generation/Year (tons)	CO2e (metric tons/year)
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
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		0.00

BASELINE Residential Land Use (From URBEMIS)	Units	Estimated Solid Waste Generation Rate (tons/residence/yr)	Estimated Solid Waste Generation/Year (tons)	User Override of Solid Waste Generated/Year (tons)	CO2e (metric tons/year)	Solid Waste Generated/Year (tons)
Single Family Residential	0.00	2.23	0.00		0.00	0.00
Multi-Family Residential	0.00	1.17	0.00		0.00	0.00
BASELINE Nonresidential Land Use (From URBEMIS)	Square Footage (1,000) from URBEMIS	Estimated Solid Waste Generation Rate (tons/sf/yr)	Estimated Solid Waste Generation/Year (tons)	User Override of Solid Waste Generated/Year (tons)	CO2 (metric tons/yr)	
Day-Care Center	0.00	0.0013	0.00		0.00	0.00
Elementary School	0.00	0.0013	0.00		0.00	0.00
Junior High School	0.00	0.0013	0.00		0.00	0.00
High School	0.00	0.0013	0.00		0.00	0.00
Junior College	0.00	0.0013	0.00		0.00	0.00
University/College	0.00	0.0013	0.00		0.00	0.00
Library	0.00	0.0013	0.00		0.00	0.00
Place of Worship	0.00	0.0013	0.00		0.00	0.00
City Park	0.00	0.0000	0.00		0.00	0.00
Racquet Club	0.00	0.0057	0.00		0.00	0.00
Racquetball/Health	0.00	0.0057	0.00		0.00	0.00
Quality Restaurant	0.00	0.0009	0.00		0.00	0.00
High Turnover/Sit-Down Restaurant	0.00	0.0009	0.00		0.00	0.00
Fast Food w/Drive Through	0.00	0.0009	0.00		0.00	0.00
Fast Food w/o Drive Through	0.00	0.0009	0.00		0.00	0.00
Hotel	0.00	0.0108	0.00		0.00	0.00
Motel	0.00	0.0108	0.00		0.00	0.00
Free-Standing Discount Store	0.00	0.0046	0.00		0.00	0.00
Free-Standing Discount Superstore	0.00	0.0046	0.00		0.00	0.00
Discount Club	0.00	0.0046	0.00		0.00	0.00
Regional Shopping Center	0.00	0.0046	0.00		0.00	0.00
Electronic Superstore	0.00	0.0046	0.00		0.00	0.00
Home Improvement Superstore	0.00	0.0046	0.00		0.00	0.00
Strip Mall	0.00	0.0024	0.00		0.00	0.00
Hardware/Paint Store	0.00	0.0024	0.00		0.00	0.00
Supermarket	0.00	0.0057	0.00		0.00	0.00
Convenience Market	0.00	0.0024	0.00		0.00	0.00
Convenience Market w/gas pumps	0.00	0.0024	0.00		0.00	0.00
Gasoline Service Station	0.00	0.0024	0.00		0.00	0.00
Bank w/Drive Through	0.00	0.0108	0.00		0.00	0.00
General Office Building	0.00	0.0108	0.00		0.00	0.00
Office Park	0.00	0.0108	0.00		0.00	0.00
Government Office Building	0.00	0.0108	0.00		0.00	0.00
Government Civic Center	0.00	0.0108	0.00		0.00	0.00
Pharmacy w/Drive Through	0.00	0.0024	0.00		0.00	0.00
Pharmacy w/o Drive Through	0.00	0.0024	0.00		0.00	0.00
Medical Office Building	0.00	0.0108	0.00		0.00	0.00
Hospital	0.00	0.0108	0.00		0.00	0.00
Warehouse	0.00	0.0026	0.00		0.00	0.00
General Light Industry	0.00	0.0011	0.00		0.00	0.00
General Heavy Industry	0.00	0.0011	0.00		0.00	0.00
Industrial Park	0.00	0.0011	0.00		0.00	0.00
Manufacturing	0.00	0.0026	0.00		0.00	0.00
					0.00	0.00

User Provided Blank Land Use Data: Baseline Data

Land Use Name	Solid Waste Generation/Year (tons)	CO2e (metric tons/year)
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
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WARM Emission Factors			
	Landfilling, No Recovery	Landfilling w/Flaring	Landfilling w/Energy Recovery
Mixed Solid Waste	3.10	0.64	0.30
Emissions (from EMFAC2007, 35 mph for Heavy-Heavy Duty Trucks			
Year	CO2 (grams/mile)	CH4 (grams/mile)	
2005	1,723.50	0.06	
2006	1,733.00	0.06	
2007	1,740.80	0.06	
2008	1,748.40	0.05	
2009	1,755.80	0.05	
2010	1,763.00	0.05	
2011	1,769.30	0.04	
2012	1,775.00	0.04	
2013	1,780.40	0.04	
2014	1,785.10	0.03	
2015	1,789.20	0.03	
2016	1,792.90	0.03	
2017	1,796.20	0.03	
2018	1,799.00	0.02	
2019	1,801.60	0.02	
2020	1,803.60	0.02	
2025	1,809.70	0.02	
2030	1,812.10	0.01	
2035	1,813.40	0.01	
2040	1,813.80	0.01	

Low Carbon Fuels Standards			
Year	% Reduction Gasoline and Diesel Fuel	% Reduction Tank to Wheels	
2010	0.00	0.00	Source:
2011	0.25	0.18	Final Regulation Order
2012	0.50	0.36	Subchapter 10. Climate Change
2013	1.00	0.72	Article 4. Regulations to Achieve Greenhouse Gas Reductions
2014	1.50	1.08	Subarticle 7. Low Carbon Fuel Standard
2015	2.50	1.80	Section 95482. Average Carbon Intensity Requirements for Gasoline and Diesel
2016	3.50	2.52	
2017	5.00	3.60	
2018	6.50	4.68	
2019	8.00	5.76	
2020	10.00	7.20	
2021	10.00	7.20	
2022	10.00	7.20	
2023	10.00	7.20	
2024	10.00	7.20	
2025	10.00	7.20	
2026	10.00	7.20	
2027	10.00	7.20	
2028	10.00	7.20	
2029	10.00	7.20	
2030	10.00	7.20	
2031	10.00	7.20	
2032	10.00	7.20	
2033	10.00	7.20	
2034	10.00	7.20	
2035	10.00	7.20	
2036	10.00	7.20	
2037	10.00	7.20	
2038	10.00	7.20	
2039	10.00	7.20	
2040	10.00	7.20	

Transportation

Land Use Detail

Land Use Description	Units	UnitType	Acreage	Trip Rate Unmitigated	Total Trips Unmitigated	Total VMT Unmitigated	Trip Rate Mitigated	Total Trips Mitigated	Total VMT Mitigated
Single family housing	438	dwelling units	146	7.87	3447.06	9589.72	0	0	0
Apartments mid rise	1276	dwelling units	33.58	5.47	6979.72	19417.58	0	0	0
Elementary school	97.6	1000 sq ft		5.32	519.23	1495.39	0	0	0
Regnl shop. center	187	1000 sq ft		35.31	6602.97	19135.41	0	0	0
Strip mall	350.2	1000 sq ft		36.44	12761.29	36982.21	0	0	0
General office building	998.6	1000 sq ft		9.05	9037.33	25891.95	0	0	0
SMART Station	350	1000 sq ft		1.64	574	1663.45	0	0	0

RECOMMENDED ACTIONS OF CLIMATE CHANGE SCOPING PLAN

Measure Number	Measure Description
Transportation	
T-1	Pavley I and II – Light Duty Vehicle Greenhouse Gas Standards
T-2	Low Carbon Fuel Standard (Discrete Early Action)
T-3	Regional Transportation-Related Greenhouse Gas Targets
T-4	Vehicle Efficiency Measures
T-5	Ship Electrification at Ports (Discrete Early Action)
T-6	Goods Movement Efficiency Measures. • Ship Electrification at Ports • System-Wide Efficiency Improvements
T-7	Heavy-Duty Vehicle Greenhouse Gas Emission Reduction Measure – Aerodynamic Efficiency (Discrete Early Action)
T-8	Medium- and Heavy-Duty Vehicle Hybridization
T-9	High Speed Rail
Electricity and Natural Gas	
E-1	Energy Efficiency (32,000 GWh of Reduced Demand) • Increased Utility Energy Efficiency Programs • More Stringent Building & Appliance Standards Additional Efficiency and Conservation Programs
E-2	Increase Combined Heat and Power Use by 30,000 GWh (Net reductions include avoided transmission line loss)
E-3	Renewables Portfolio Standard (33% by 2020)
E-4	Million Solar Roofs (including California Solar Initiative, New Solar Homes Partnership and solar programs of publicly owned utilities) • Target of 3000 MW Total Installation by 2020
CR-1	Energy Efficiency (800 Million Therms Reduced Consumptions) • Utility Energy Efficiency Programs • Building and Appliance Standards • Additional Efficiency and Conservation Programs
CR-2	Solar Water Heating (AB 1470 goal)
Green Buildings	
GB-1	Green Buildings
Water	
W-1	Water Use Efficiency
W-2	Water Recycling
W-3	Water System Energy Efficiency
W-4	Reuse Urban Runoff
W-5	Increase Renewable Energy Production
W-6	Public Goods Charge (Water)
Industry	
I-1	Energy Efficiency and Co-Benefits Audits for Large Industrial Sources
I-2	Oil and Gas Extraction GHG Emission Reduction
I-3	GHG Leak Reduction from Oil and Gas Transmission

I-4	Refinery Flare Recovery Process Improvements
I-5	Removal of Methane Exemption from Existing Refinery Regulations
Recycling and Waste Management	
RW-1	Landfill Methane Control (Discrete Early Action)
RW-2	Additional Reductions in Landfill Methane • Increase the Efficiency of Landfill Methane Capture
RW-3	High Recycling/Zero Waste • Commercial Recycling • Increase Production and Markets for Compost • Anaerobic Digestion • Extended Producer Responsibility • Environmentally Preferable Purchasing
Forests	
F-1	Sustainable Forest Target
High Global Warming Potential (GWP) Gases	
H-1	Motor Vehicle Air Conditioning Systems: Reduction of Refrigerant Emissions from Non-Professional Services (Discrete Early Action)
H-2	SF_6 Limits in Non-Utility and Non-Semiconductor Applications (Discrete Early Action)
H-3	Reduction of Perfluorocarbons in Semiconductor Manufacturing (Discrete Early Action)
H-4	Limit High GWP Use in Consumer Products Discrete Early Action (Adopted June 2008)
H-5	High GWP Reductions from Mobile Sources • Low GWP Refrigerants for New Motor Vehicle Air Conditioning Systems • Air Conditioner Refrigerant Leak Test During Vehicle Smog Check • Refrigerant Recovery from Decommissioned Refrigerated Shipping Containers • Enforcement of Federal Ban on Refrigerant Release during Servicing or Dismantling of Motor Vehicle Air Conditioning Systems
H-6	High GWP Reductions from Stationary Sources • High GWP Stationary Equipment Refrigerant Management Program: - Refrigerant Tracking/Reporting/Repair Deposit Program - Specifications for Commercial and Industrial Refrigeration Systems • Foam Recovery and Destruction Program • SF Leak Reduction and Recycling in Electrical Applications • Alternative Suppressants in Fire Protection Systems • Residential Refrigeration Early Retirement Program
H-7	Mitigation Fee on High GWP Gases
Agriculture	
A-1	Methane Capture at Large Dairies

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