ITEM NO. 10

CITY OF SANTA ROSA
DEPARTMENT OF COMMUNITY DEVELOPMENT
STAFF REPORT FOR PLANNING COMMISSION
OCTOBER 24, 2013

PROJECT TITLE

Elm Tree Station

APPLICANT

Jean Kapolchok

ADDRESS/LOCATION

874 North Wright Road

PROPERTY OWNER

Mangal Dhilon

ASSESSOR'S PARCEL NUMBER

035-063-001

FILE NUMBER

MJP12-005

PROJECT SITE ZONING

PD-0435 (Planned Development: Wright-Sebastopol Commercial District)

GENERAL PLAN DESIGNATION

Retail and Business Services

APPLICATION DATE

October 4, 2012

APPLICATION COMPLETION DATE

October 4, 2012

PROJECT PLANNER

Jessica Jones

RECOMMENDATION

Approval

PROPOSAL

Tentative Parcel Map to subdivide a 0.98 acre site into two parcels and a Conditional Use Permit to construct a fueling station and neighborhood market with extended hours (5 a.m. to midnight, seven days a week), a residential apartment above the market and a small retail building.

SUMMARY

The applicant is proposing to subdivide a 0.98 acre site into two parcels; one 31,143-square-foot lot and one 11,600-square-foot lot. The larger of the two parcels would be developed with a gasoline and electric charge fueling station and a 3,448-square-foot neighborhood market, with a 1-bedroom apartment above the market. The smaller parcel would be developed with a 432-square-foot general retail building, a picnic area and a bike path connecting to the Joe Rodota Trail. The proposal also includes extended hours (5 a.m. to midnight) for the fueling station and neighborhood market.

CITY OF SANTA ROSA
PLANNING COMMISSION

TO: PLANNING COMMISSION
SUBJECT: ELM TREE STATION
AGENDA ACTION: ADOPTION OF THREE RESOLUTIONS

ISSUE(S)

1. Should the Planning Commission adopt a Mitigated Negative Declaration for the Elm Tree Station project?

2. Should the Planning Commission approve a Tentative Map to subdivide a 0.98 acre site into one 31,143-square-foot lot and one 11,600-square-foot lot for the property located at 874 North Wright Road?

3. Should the Planning Commission approve a Conditional Use Permit to allow a gasoline and electric charge fueling station, mixed residential and commercial use and extended hours for the property located at 874 North Wright Road?

BACKGROUND

1. Surrounding Land Uses

   North: Highway 12 and Joe Rodota Trail
   South: Blue Star Gas (propane distribution business)
   East: Undeveloped, Medium Density Residential land
   West: North Wright Road and Pacific Supply Company (construction and equipment supplier)

2. Existing Land Use – Project Site

   The currently undeveloped, relatively flat project site is comprised of a single parcel totaling approximately 0.98 acres. Two topographic depressions on the east side of the project site and a man-made ditch all support seasonal wetlands. Vegetation on the site consists primarily of a mix of non-native annual grassland, seasonal wetland vegetation and ruderal (weedy) vegetation and ornamental plants. There are ten trees on site that were evaluated, including two Chinese Elms, two Valley Oaks, an Oregon Ash, a Mayten, a Monterey Pine and three White Poplars. The project site is located within the potential range of the California Tiger Salamander, and also provides suitable nesting habitats for the Red Shouldered and Red-Tailed Hawks, as well as the White-Tailed Kite.

3. Project History

On July 12, 2007 the Planning Commission reviewed a Conditional Use Permit for the construction of a service station with a car wash, neighborhood market and a drive-through restaurant on the subject site. In addition, because the Zoning Code does not allow service stations to be located adjacent to residential zoning districts or residential uses, the proposal also included a Zoning Code Text Amendment that would have amended the Code to allow such uses to be adjacent to each other, with the approval of a Conditional Use Permit.

At that time, the Commission determined that, the Zoning Code Text Amendment could not be supported because service stations are not an appropriate use adjacent to residential zoning districts or uses. Specifically, the Commission found that the project would introduce a significant amount of noise from the carwash and gas dispensers directly adjacent to a residential district, and would potentially introduce air quality issues from idling vehicles associated with the auto-oriented use. As a result, on July 26, 2007 the Planning Commission adopted resolutions denying, with prejudice, the Conditional Use Permit and Zoning Code Text Amendment. Pursuant to Zoning Code Section 20-54.080(C), by denying the application with prejudice, no further application for the denied request could be filed for the ensuing 12 months.

On October 12, 2011 a Neighborhood Meeting was held regarding the current project.

On October 4, 2012 the applicant submitted Conditional Use Permit and Tentative Map applications for the current project.

On August 5, 2013 a Notice of Application was sent to property owners within 400 feet of the subject property.

On September 9, 2013 an Initial Study and Mitigated Negative Declaration were posted at the County of Sonoma and the State Clearinghouse for a 30-day public review period. Public hearing notices were mailed to owners within 400 feet of the subject property, and a public hearing sign was posted on the project site.

4. Project Description

The proposed project includes a request to subdivide a 0.98 acre site into two parcels. Parcel 1 is proposed at 31,143 square-feet and would be developed with a gasoline and electric charge fueling station and a neighborhood market with an 806-square-foot, 1-bedroom apartment above. Parcel 2 is proposed at 11,600 square-feet and would be developed with a small, 432-square-foot retail building and park amenities, including a patio/trellis area, benches, picnic area and bike path. Access to Parcel 2 will be through an easement across Parcel 1,

which is outlined in the project conditions of approval.

The proposed neighborhood market will be approximately 3,448 square-feet in size, and will include outdoor patio seating. The market is intended to provide a variety of goods, including fresh fruit, vegetables, and flowers, as well as milk, juices, water, soft drinks, meats and packaged dinners. The market will also include a café area where coffee, baked goods, sandwiches and similar items can be purchased. The proposal does not include the sale of alcoholic beverages.

The upper floor of the market is proposed as an 806-square-foot, one-bedroom apartment, which the applicant has stated could be used by staff of the market and fueling station.

The fueling station includes six gasoline pumps and four electric charging stations. The canopy over the fueling pumps will include photovoltaic panels, as will the covered parking area at the east side of Parcel 1.

The market and fueling station are proposed to operate daily between 5:00 a.m. and midnight, seven days a week.

The small retail building on proposed Parcel 2 will be 432 square-feet in size, and, while the intended use is has not yet been determined, could be used for a food service use, such as coffee, ice cream or sandwich shop, or for a small retail establishment, such as a flower shop. Parcel 2 also will include park-like amenities, as noted above, including a bike path that would traverse the eastern and southern boundaries of the project site from the Joe Rodota Trail to North Wright Road.

A total of ten trees were evaluated on the project site based on their trunk diameter and location in relation to the proposed construction. Of the trees evaluated, eight are proposed for removal, four of which are protected trees and four of which are exempt pursuant to the Santa Rosa Tree Ordinance. The project is proposing to preserve and protect the two most significant trees on site, a 17.5-inch Valley Oak and a Chinese Elm, which has trunk diameters of 21.5-inches and 24-inches. The four protected trees that are proposed for removal include an Oregon Ash, a Mayten, a Chinese Elm, and a Valley Oak. New landscaping will be added along the perimeter of the site, as well as throughout proposed Parcel 2. Proposed landscaping includes a variety of, primarily low water usage shrubs, groundcover, vines, perennials and grasses. New landscaping will also include 19 trees, in a 24 or 36-inch size box; proposed tree types include one fruitless Olive, five Crape Myrtles, five Chanticleer Pears, and eight Valley Oaks.

The site will also include a new split-rail fence along the northern property line, adjacent to the Joe Rodota Trail, as well as a 4-foot tall screen panel fence along

the eastern property line.

A location for proposed public art has been identified on the site plan at the northeastern corner of proposed Parcel 2. The specific art piece will be determined at a later date.

There are two proposed driveways to the site off of North Wright Road. The southerly driveway will provide both ingress and egress, while the northerly driveway will provide egress only. The proposal provides for clear circulation for vehicles and fueling trucks, as well as vehicle clearance with the presence of a truck during fueling operations. Eighteen parking spaces are proposed, three of which will be covered, which meets the Zoning Code requirements for the project. The project also proposes eight bicycle parking spaces, including traditional bike racks and one bike locker, which is consistent with Zoning Code requirements. A parking agreement will be put into place to allow shared parking between Parcel 1 and Parcel 2.

Site lighting includes twelve LED can lights under the fueling canopy, and two under the covered parking area. Decorative wall mounted lights and recessed can down-lights will illuminate the front and eastern side of the market building, while landscaping up-lights will illuminate the back market walls that face the Joe Rodota Trail and the proposed monument sign adjacent to North Wright Road. Ten-foot tall cut-off pole lights will be located along the proposed bike path, and 42-inch tall bollard lights will be located on either side of the proposed outdoor dining area on the eastern side of the proposed market. All lighting will be designed and located to prevent light and glare on neighboring properties.

The project has been designed to incorporate temporary, pollution prevention and permanent storm water Best Management Practices to minimize the introduction of pollutants in downstream water bodies. Bioretention areas are proposed along the parking areas, and a pervious concrete gutter pan along the head of the parking areas and some drive aisles will allow storm water to filter into the bioretention areas and interact with the plants in the landscape strip. Building roof-top water will be collected, conveyed in pipes and allowed to enter the bioretention areas. In large storm events, when the bioretention areas are at capacity, water will run down the building gutters, collect in catch basins and then be piped to the City of Santa Rosa storm drain system.

ANALYSIS

1. General Plan

The following General Plan goals and policies are applicable to the project:

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 every day shopping, park and recreation facilities, and schools are within easy walking distance of most residents.

LUL-E-6 Allow residential or mixed use development in the Retail and Business Services or Office designations.

LUL-G Promote mixed use sites and centers.

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.

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

UD-A-12 Promote green building design and low impact development projects.

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.

UD-E-1 Provide for new open space opportunities throughout the city, especially in neighborhoods that have less access to open spaces.

This includes exploring potential for creek corridors, bicycle and pedestrian ways, as well as new public plazas, gathering places, and conservation areas.

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.

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.

T-L-6 Promote and facilitate the use of bicycles with other transportation modes.

T-L-8 Require new development to dedicate land and/or construct/install bicycle facilities, and provide bicycle parking as specified in the

Zoning Code, where a rough proportionality to demand from the project is established. Facilities such as showers and bicycle storage shall also be considered.

OSC-K Reduce energy use in existing and new commercial, industrial and public structures.

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.

OSC-K-5 Implement measures of the Climate Action Plan which increase energy efficiency, including retrofitting existing buildings and facilitating energy upgrades.

EV-C Promote new retail and higher density uses along the city's regional/ arterial corridors.

NS-H-2 Engage the community in preparing for climate change through the promotion of Climate Action Plan measures, distribution of information, and through local schools.

The project site is designated Retail and Business Services on the Santa Rosa General Plan 2035 land use diagram. This designation allows retail and service enterprises, offices, restaurants, and regional centers. The proposed gasoline and electric charge fueling station, neighborhood market, residence and general retail building are all consistent with this land use designation and would provide everyday shopping and commercial services within walking distance of the future residential neighborhood to the east, as well as to the existing businesses surrounding the site. The project will also attract a regional clientele due to its visible location adjacent to Highway 12, which will minimize traffic on City streets.

The attractive building design will enhance the visual quality of the Highway 12 entry into the City. Further, the proposal includes a connection through the site to the Joe Rodota Trail, as well as a picnic area and bicycle amenities, which will benefit trail users.

In addition to the six gasoline pumps, the fueling station will also include four electric charging stations, and the canopy over the fueling pumps will have photovoltaic panels, as will the covered parking area at the east side of Parcel 1. These project elements will help to reduce energy use on the site, and will promote alternatives to traditional fuel.

To ensure that new development complies with the City's Greenhouse Gas (GHG) reduction program, the Santa Rosa Climate Action Plan (SRCAP) contains a "New Development Checklist". The Checklist contains policies

allowing new development to incorporate measures for SRCAP compliance and to reduce potential GHG impacts to less than significant levels. The Checklist denotes 15 mandatory measures. If a project cannot meet one or more the mandatory measures, substitution of other measures described in the Checklist is permitted. As identified by the applicant on the attached New Development Checklist, the proposed project will incorporate 14 of the mandatory measures, plus six additional measures contained in the SRCAP.

2. Zoning

North:	Open Space Reserve (OSR)
South:	Planned Development (PD-0435: Wright-Sebastopol Commercial District)
East:	Multi-Family Residential (R-3-18)
West:	General Commercial (CG)

The subject property is located in the Planned Development (PD-0435: Wright-Sebastopol Commercial District) Zoning District. The Policy Statement for PD-0435 requires a Conditional Use Permit (CUP) for service stations and mixed use. The Zoning Code also requires a Minor Use Permit for extended hour retail sales (11:00pm to 6:00am). The project applicant is requesting two hours of extended operation, specifically between the hours of 5 a.m. and 6 a.m. and 11 p.m. and midnight. The Minor Use Permit for extended hour retail sales and the Conditional Use Permit for the service station and mixed use are bundled together for the Commission's consideration.

Proximity of the Service Station to Residentially Zoned Land:

Zoning Code Section 20-42.150, Service Stations, includes specific site requirements for service stations, including allowed proximity to residential. Specifically, Section 20-42.150(A)(2) states the following:

> "The site shall not adjoin an existing R-1, R-2 or R-3 zoning district or single-family or two-family residential use at the time the service station use is established, except a nonconforming single-family or two-family residential use, or a single-family or two-family residential use in a commercial zone."

The subject site adjoins a vacant property to the east that is zoned R-3-18 (multi-family residential). As such, pursuant to the above noted Zoning Code section, the proposed service station would not be allowed on the subject site. However, to address the location issue, the applicant is requesting approval of a Tentative Map that would subdivide the property into two parcels. Proposed Parcel 2 would separate Parcel 1, where the service station is proposed, from the residential land to the east. The result would be that the parcel containing the

service station would not adjoin the residentially zoning land, thereby conforming to the aforementioned Zoning Code section.

To further separate the fueling station use from the residential land, the applicant is proposing to develop a small general retail building on Parcel 2, which could be occupied by a food-service use or small retail establishment.

The Mitigated Negative Declaration that was prepared for the project did not identify any significant air quality impacts related to the proposed fueling station use. However, with regard to noise impacts, the document concluded that nighttime market deliveries, as well as daytime, evening and nighttime fuel deliveries could exceed the allowable noise levels at the adjacent residential property. To address the potential noise impacts, a mitigation measure was provided, and has been included in the conditions of the draft resolution of approval, that deliveries be limited to the hours of 7 a.m. and 7 p.m. only.

Based on the proposed buffer of Parcel 2 and the small retail building, as well as the findings and mitigation measures provided in the Mitigated Negative Declaration, staff finds that the gasoline and electric charge fueling station would be an appropriate use for the site.

Mixed Use:

As identified in the project description above, the proposal includes a one-bedroom apartment, which would be located above the neighborhood market on the same site as the fueling station. While the above-noted Code section does not allow service stations to adjoin a residential use, it does provide an exception when a residential use is in a commercial zone. Staff finds that this exception would apply to the proposed one-bedroom apartment.

Extended Retail Hours:

The applicant is requesting extended retail hours to allow the service station and neighborhood market to operate two additional hours outside of the traditional hours of 6 a.m. to 11 p.m. The additional hours would allow the establishment to open at 5 a.m. and close at midnight.

The Mitigated Negative Declaration did not identify the extended retail hours as a potentially significant impact. Rather, as noted above, the activities that were identified as potentially exceeding allowable noise levels include nighttime market deliveries and daytime, evening and nighttime fuel deliveries. The mitigation measures and proposed conditions of approval, limiting delivery hours to 7 a.m. and 7 p.m., would mitigate this impact to less than significant.

Given the aforementioned mitigation, the surrounding commercial uses, and the proposed buffer of Parcel 2 and the small retail building to the residential land to

the east, staff finds that the additional hours would not have a significant impact adjacent uses.

Development Standards:

The development regulations outlined in the Policy Statement for the PD zoning district do not include any specific requirements for lot coverage or setbacks; although they do require that front yard setbacks take into account ultimate roadway improvements for the area. Building height is limited to two stories. The project has been designed to meet the development standards of the Policy Statement, and has provided appropriate setbacks for the commercial development. Parking for both vehicles and bicycles is provided consistent with Zoning Code requirements.

With regard to the requested Tentative Map, the applicant is proposing to subdivide the 0.98 acre site into two lots, one at 31,143 square-feet and one at 11,600 square-feet. The Policy statement does not have any development requirements related to the minimum overall size or dimensions for lots.

3. Environmental Review

The Elm Tree Station Initial Study, dated August 26, 2013, was prepared to evaluate the environmental effects of the project. The Initial Study identified potential significant impacts in a variety of topic areas, including biological resources, air quality, geology/soils and noise. Mitigation was identified to reduce all potential impacts to less than significant. As a result, a Mitigated Negative Declaration was prepared and circulated for a 30-day public review from September 9, 2013 through October 8, 2013.

As of the writing of this report, no comments have been received regarding the Mitigated Negative Declaration.

4. Comments/Actions by Other Review Boards/Agencies

Design Review will be conducted by the Design Review Board following approval of the Conditional Use Permit and Tentative Map for the project.

5. Neighborhood Comments

On October 12, 2011 a Neighborhood Meeting was held. The only attendant at the Neighborhood Meeting was a representative from the Sonoma County Bicycle Coalition, who did not specify a position on the project.

On August 5, 2013 a Notice of Application was sent to property owners within 400 feet of the subject property. The only written correspondence received was a letter from Sonoma County Regional Parks, dated August 26, 2013, in which

they identify the need to obtain a license agreement from Regional Parks to construct the two Joe Rodota Trail connectors located on County property. As such, a condition of approval has been included in the draft resolution of approval. A copy of the letter is included in the "public correspondence" attachments to this report.

One phone call was received, in response to the Notice of Application, from an adjacent property owner who indicated support for the proposed project.

In response to the Public Hearing Notice, staff has received two letters and one e-mail, which are attached to this staff report. The correspondence identifies concerns regarding the project. The main issues are outlined below, along with staff's response to each:

- Development of the currently vacant site, which provides an open space buffer between the Blue Star Gas Company to the south and the Joe Rodota Trail to the north, will have a negative impact on the Trail.

  Staff Response:

  The project site is designated by the General Plan as Retail and Business Services, which allows retail and service enterprises, offices, restaurants, and regional centers; the proposed project is consistent with this land use designation. Further, as identified in the project description, the proposal includes park-like amenities, such as a patio/trellis area, benches, picnic area and new landscaping, as well as a bike path that will traverse the eastern and southern boundaries of the project site from the Joe Rodota Trail to North Wright Road.

- Increased traffic and impacts to pedestrians and bicyclists from automobiles entering and exiting the service station.

  Staff Response:

  A Traffic Impact Study was prepared for the project by Whitlock & Weinberger Transportation, Inc. (W-Trans), dated July 26, 2013. The Study states that the proposed project is expected to generate an average of 1,506 net new daily trips after deductions are made for the pass-by component, with 73 of these trips during the morning peak hour and 91 during the evening peak hour. The study intersections of State Route 12/Fulton Road and Sebastopol Road/South Wright Road are currently operating acceptably and, as identified in the Study, are expected to continue doing so upon the addition of project-generated traffic.

  The proposal includes a bike path that would traverse the eastern and southern boundaries of the project site, connecting the Joe Rodota Trail to

North Wright Road. The proposed connection will allow bicyclists and pedestrians a way to move from the Joe Rodota Trail to North Wright Road, without requiring them to cross the driveways for the service station and market.

6. Public Improvements/On-Site Improvements

The project was reviewed by the City's Transportation/Public Works/Engineering Development Services Department which has developed a number of conditions of approval related to parcel and easement dedications, driveway improvements, storm drainage and utilities. The conditions are memorialized in the Exhibit "A" dated August 22, 2013, which is attached in its entirety to this report and the draft resolution of approval.

7. Issues

Auto-Oriented Use:

As discussed in the Project History section of this report, in 2007, the Planning Commission reviewed a proposal on the subject site for the construction of a service station with a car wash, neighborhood market and a drive-through restaurant. At that time, the Commission determined that, the project could not be supported because service stations are not an appropriate use adjacent to residential zoning districts or uses. Specifically, the Commission found that the project would introduce a significant amount of noise from the carwash and gas dispensers directly adjacent to a residential district, and would potentially introduce air quality issues from idling vehicles associated with the auto-oriented use.

While the current proposal is for a service station, staff finds that the proposed project has addressed the previously identified concerns. Specifically, the current project does not include a carwash or drive-through, thereby minimizing the noise and potential air quality impacts related to those specific uses. In addition, the applicant has worked diligently to design the service station in a way that emphasizes the positive environmental aspects of the project, including the solar panels, electric vehicle charging stations and the Joe Rodota Trail connection, and associated bicycle and pedestrian amenities. Further, the Mitigated Negative Declaration for the project did not identify any significant impacts related to air quality with regard to the proposed service station use; the only potentially significant air quality impact identified relates to construction activities, which will be mitigated to a level of less than significant. The potentially significant noise impacts that were identified (as discussed in the Zoning section of this report, above) will be mitigated to a level of less than significant through project conditions related to delivery hours.

Neighborhood Market:

As identified in the project description, the proposed project includes a request to develop a neighborhood market for the site. It should be noted that the Policy Statement for the PD zoning district for this site specifically does not allow convenience markets. As a result, the applicant has provided a detailed description of the proposed market in the Proposal Statement (attached to this report), which outlines the specifics of the market use.

The applicant has described the market as follows:

> "As depicted on the floor plan, the market is designed for the sale of fresh fruit, vegetables, flowers and similar commodities within the market as well as outside by the entry. The coolers along the long wall of the market will be for items needing refrigeration such as milk, juices, soft drinks, water and those items needing to be frozen such as desserts, meats, vegetables, and packaged dinners. The market includes a café area where coffee, baked goods, sandwiches and similar items can be purchased or enjoyed at the outdoor or indoor seating areas of Lot 1 or outdoor areas of Lot 2."

The Zoning Code provides the following definitions for convenience market and grocery store:

> "**Convenience Store.** A type of general retail store which carries a range of merchandise oriented to convenience and/or travelers' shopping needs."
>
> "**Grocery Store.** A retail or wholesale store that primarily sells food, including canned and frozen foods, fresh fruits and vegetables, and fresh (raw) and prepared meats fish and poultry.
>
> Large stores are defined as 20,000 square-feet in size or greater. Also includes a grocery store use located within a larger format retail store where an area 20,000 square-feet in size or greater is primarily devoted to the sale of food.
>
> Small stores are defined as less than 20,000 square-feet in size. Also includes a grocery store use located within a larger format retail store where an area less than 20,000 square-feet in size is primarily devoted to the sale of food."

Based on the description of the proposed market, provided by the applicant, staff finds that the market falls within the definition of small grocery store, rather than convenience store. As a result, the proposed market is an allowed use in the PD zoning district.

RECOMMENDATION

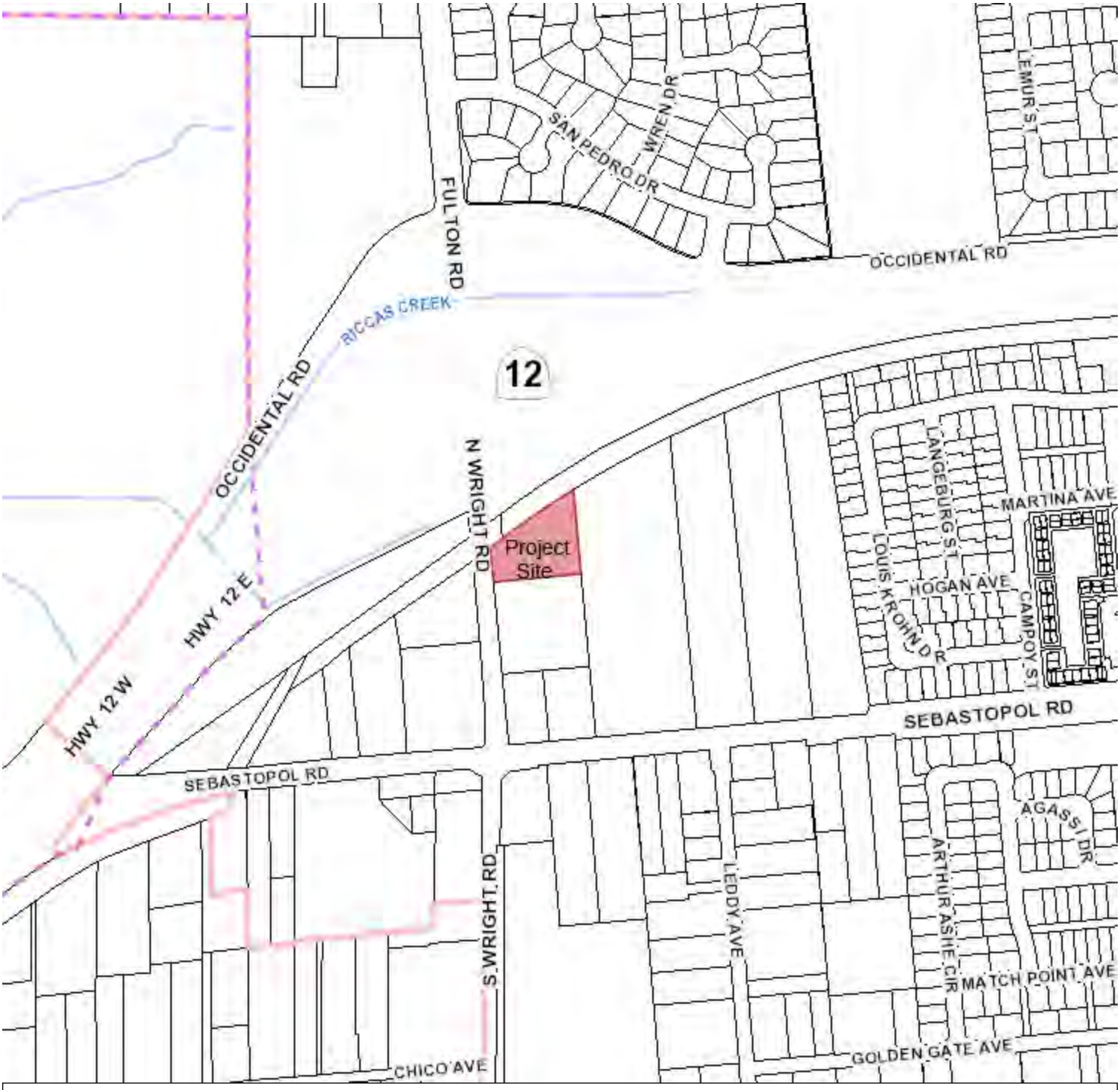
It is recommended by the Community Development Department that the Planning Commission adopt the Mitigated Negative Declaration for the Elm Tree Station project, and approve a Tentative Map to subdivide a 0.98 acre site into one 31,143-square-foot lot and one 11,600-square-foot lot and a Conditional Use Permit to allow a gasoline and electric charge fueling station, mixed residential and commercial use and extended hours for the property located at 874 North Wright Road.

Attachments:

- Location Map
- Disclosure Form
- Project Plans (Development Plan, Landscape Plan, Elevations and Tentative Map)
- Proposal Statement, dated June 21, 2013
- Design Concept Narrative
- PD-0435: Wright-Sebastopol Commercial District Policy Statement
- Initial Study/Mitigated Negative Declaration and Mitigation Monitoring and Report Program, dated August 26, 2013
- Traffic Impact Study for the Elm Tree Station Project, prepared by Whitlock & Weinberger Transportation, Inc., dated July 26, 2013
- Biological Resources Analysis – Elm Tree Station, prepared by Monk & Associates, Inc., dated November 6, 2012
- California Tiger Salamander Larval Survey Request – letter to U.S. Fish and Wildlife Service, prepared by Monk & Associates, Inc., dated February 21, 2011
- Request for Jurisdictional Determination –letter to U.S. Army Corps of Engineers, prepared by Monk & Associates, Inc., dated July 15, 2010
- Tree Preservation and Mitigation Report – 874 North Wright Road, prepared by Horticultural Associates, dated June 21, 2007
- Review of Elm Station Tree Preservation, letter to MacNair Landscape Architecture, prepared by Horticultural Associates, dated October 7, 2012
- A Cultural Resources Evaluation of the Elm Tree Station Project, prepared by Archaeological Resource Service, dated April 23, 2013
- Geotechnical Investigation Report – Elm Tree Station, prepared by Bauer Associates, dated October 16, 2012
- Climate Action Plan New Development Checklist, and Elm Tree Station Climate Action Plan Checklist Compliance Explanation, prepared by Tierney/Figueiredo Architects, dated June 20, 2013
- Standard Urban Storm Water Management Plan for Elm Tree Station, prepared by BKF Engineers, dated August 2012, revised February 2013 and July 29, 2013
- Hydrology Plan for Elm Tree Station, prepared by BKF Engineers, dated June 2013
- Environmental Noise Study, Elm Tree Station, prepared by Illingworth & Rodkin, Inc., dated May 16, 2013
- Public Correspondence

City of Santa Rosa
Information Technology - GIS

Elm Tree Station



874 North Wright Road
File No. MJP12-005

8/5/2013

Scale 1: 4,891

0 Miles 0.08

City of Santa Rosa
Community Development

www.srcity.org

DISCLOSURE FORM

Please Type or Print

File No.	Quad.
MNW 2012	SA
Related Files	
DEPARTMENT USE ONLY	

DISCLOSURE FORM

Project Title: Elm Tree Station 874 North Wright Road, Santa Rosa, CA
(Include site address)

Please provide the name of each individual, partnership, corporation, LLC, or trust who has an interest in the proposed land use action. Include the names of all applicants, developers, property owners, and each person or entity that holds an option on the property.

Individuals:	Indentify all individuals
Partnerships:	Identify all general and limited partners
Corporations:	Identify all shareholders owning 10% or more of the stock and all officers and directors (unless the corporation is listed on any major stock exchange, in which case only the identity of the exchange must be listed.
LLCs:	Identify all members, managers, partners, officers and directors.
Trusts:	Identify all trustees and beneficiaries.
Option Holders:	Identify all holders of options on the real property.

Full Name:	Address:
Mangal Dhillon	2743 Yulupa Ave., Santa Rosa, CA 95404

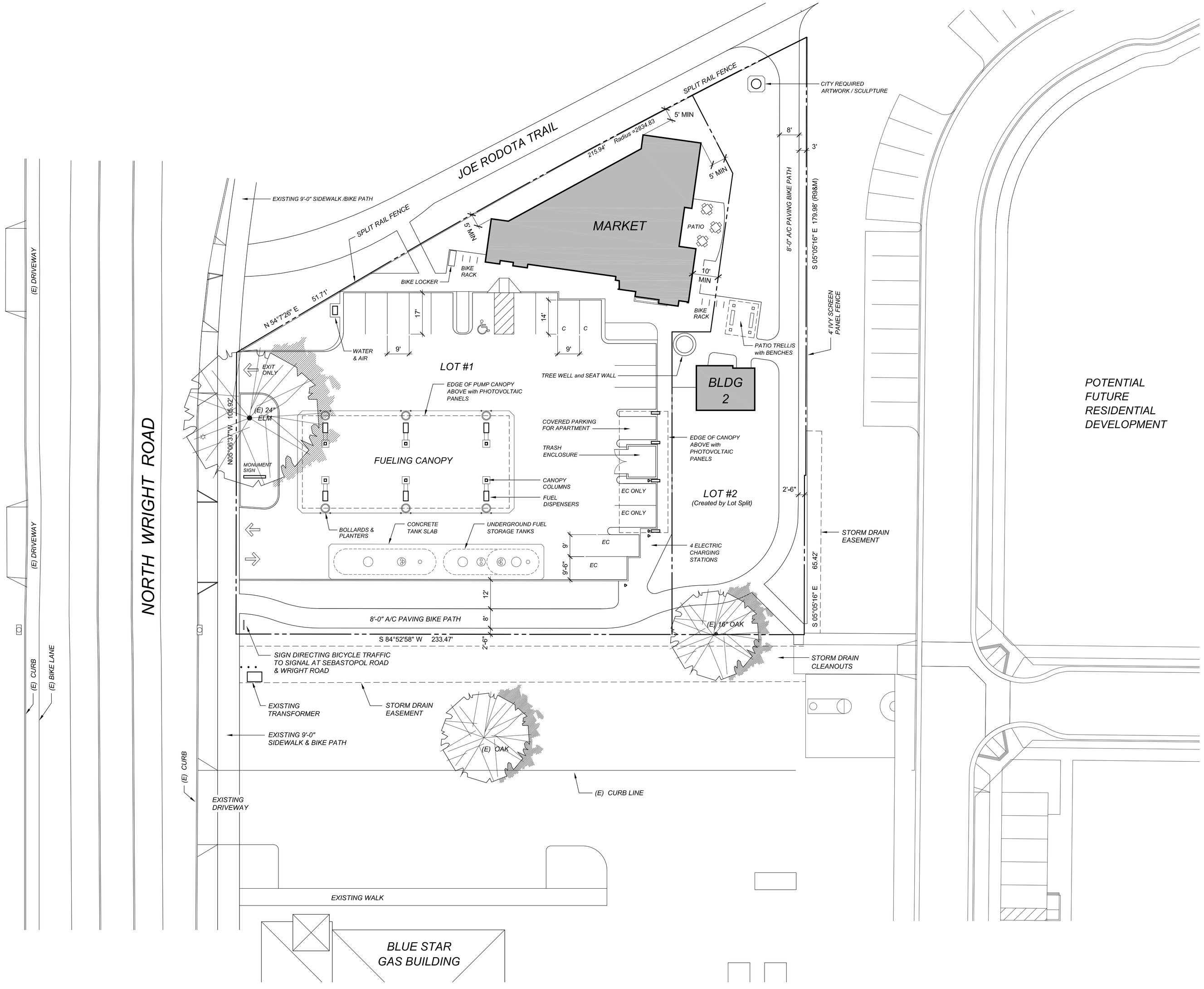
In addition, please identify the name of each civil engineer, architect, and consultant for the project.

Full Name:	Address:
J. Kapolchok & Associates	843 2nd Street, Santa Rosa, CA 95403
Randy Figueiredo	Tierney/Figueiredo: 817 Russell Ave. Santa Rosa, CA
Bonnie Diefendorf	BKF Engineers: 325 Tesconi Circle, Santa Rosa, CA

Additional names and addresses attached: ☐ Yes ☐ No

The above information shall be promptly updated by the applicant to reflect any change that occurs prior to final action.

I certify that the above information is true and correct: Mangal Dhillon (Applicant) 8/14/2012 (Date)



PROJECT DATA

ADDRESS:	874 NORTH WRIGHT ROAD
APN:	035-063-001
ZONING:	PD-0435

LOT SIZE:

LOT #1:	Approx. 0.73 ACRES
LOT #2:	Approx. 0.25 ACRES

MARKET:	3,448 S.F.
APARTMENT:	806 S.F.
BUILDING 2:	432 S.F.

BUILDING COVERAGE (LOT #1): 24.7%

(Building, Gas Pump Canopy, Trash Encl/Carport Canopy)

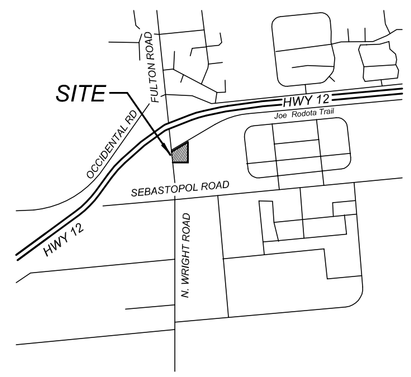
PARKING REQUIRED:

MARKET (Retail at 1:250 S.F.)	13.8
1-BEDROOM APARTMENT	1.5
BUILDING 2 (Retail at 1:250 S.F.)	1.7
	17.0
PARKING PROVIDED:	18.0

BICYCLE PARKING REQUIRED:

MARKET	1
1-BEDROOM APARTMENT	1
BUILDING 2	1
	3
BICYCLE PARKING PROVIDED:	8

VICINITY MAP



ELM TREE STATION

RETAIL MARKET and FUEL FACILITY

874 N. Wright Road Santa Rosa, California

DEVELOPMENT PLAN

SCALE: 1" = 20'-0"

0' 10' 20' 40'

NORTH

TIERNEY / FIGUEIREDO
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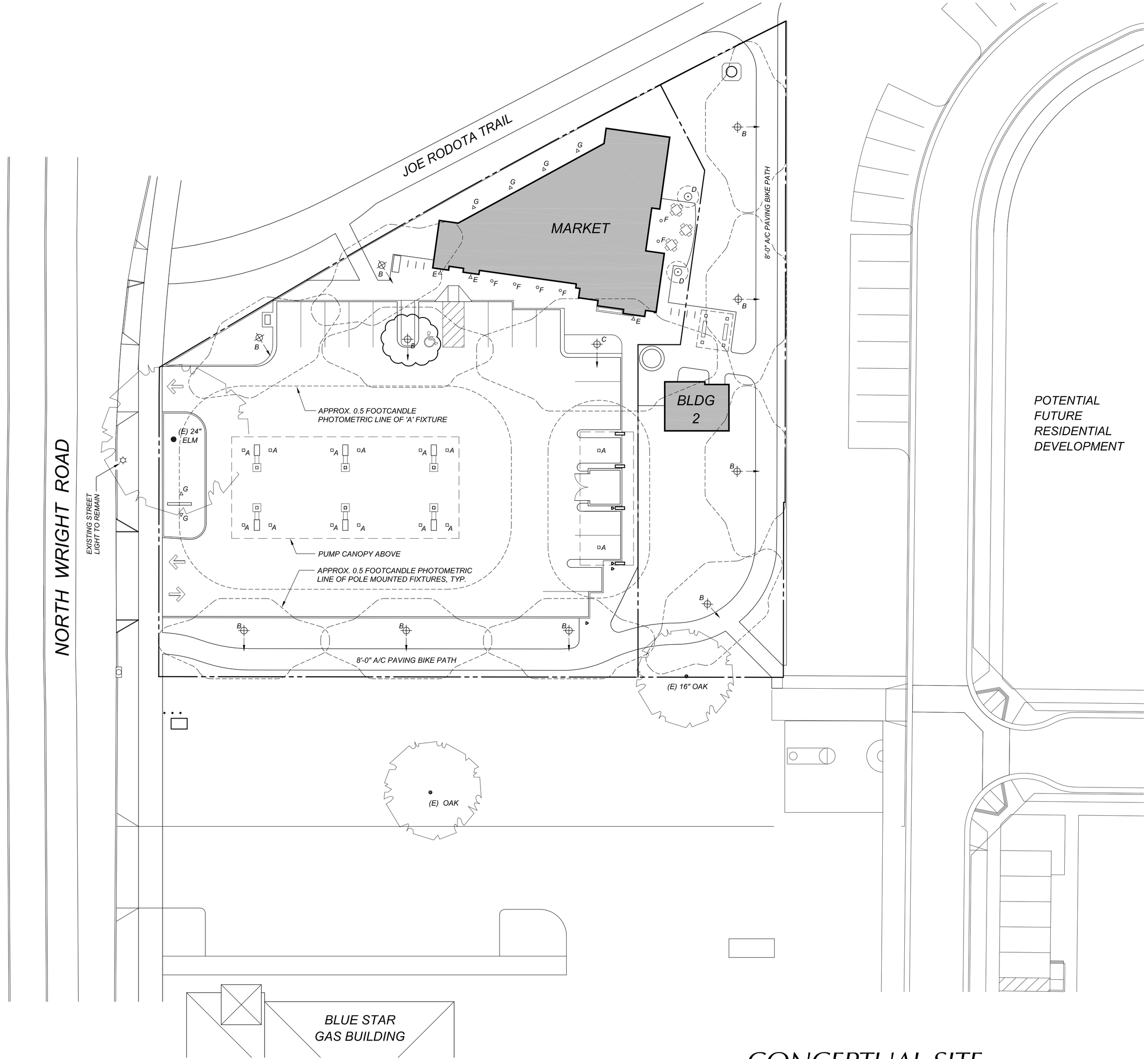
#0538 08/01/13



ELM TREE STATION

RETAIL MARKET and FUEL FACILITY

874 N. Wright Road Santa Rosa, California

CONCEPTUAL SITE LIGHTING PLAN

SCALE: 1" = 20'-0"

0' 10' 20' 40'

FIXTURE LEGEND

- □A — *RUUD betaLED THE EDGE CAN-EDG-PS-DM LED CANOPY LIGHT - PETROLEUM SYMMETRIC with 60 LIGHT EMITTING DIODES (LED), FULL CUTOFF and DARK SKY COMPLIANT (MOUNTED UNDER PUMP CANOPY)*
- ⌖B — *LITHONIA OMERO MRP 150 WATT METAL HALIDE CUT OFF FIXTURE with SR2 REFLECTOR AND 10' POLE*
- ⌖C — *LITHONIA OMERO MRP 150 WATT METAL HALIDE CUT OFF FIXTURE with SR2 REFLECTOR AND 12' POLE ON A 2' BASE*
- ⊙D — *LITHONIA KBR8-70M-R5-LV-TB-DWH, 42" HIGH x 8" ROUND BOLLARD with 70 WATT METAL HALIDE LAMP*
- △E — *DECORATIVE WALL MOUNTED GOOSE-NECK FIXTURES*
- ○F — *RECESSED CAN DOWNLIGHTS UNDER HORIZONTAL SOFFITS*
- ▽G — *UPLIGHTS IN LANDSCAPING TO ILLUMINATE BUILDING WALLS OR MONUMENT SIGN*

⌖B *LITHONIA OMERO MRP 150 WATT METAL HALIDE CUT OFF FIXTURE*

⌖C *LITHONIA OMERO MRP 150 WATT METAL HALIDE CUT OFF FIXTURE*

⊙D *LITHONIA KBR8 8" DIA. BOLLARD*

△E *WALL MOUNTED DECORATIVE GOOSENECK LIGHT FIXTURE*

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TREE REMOVAL MITIGATION

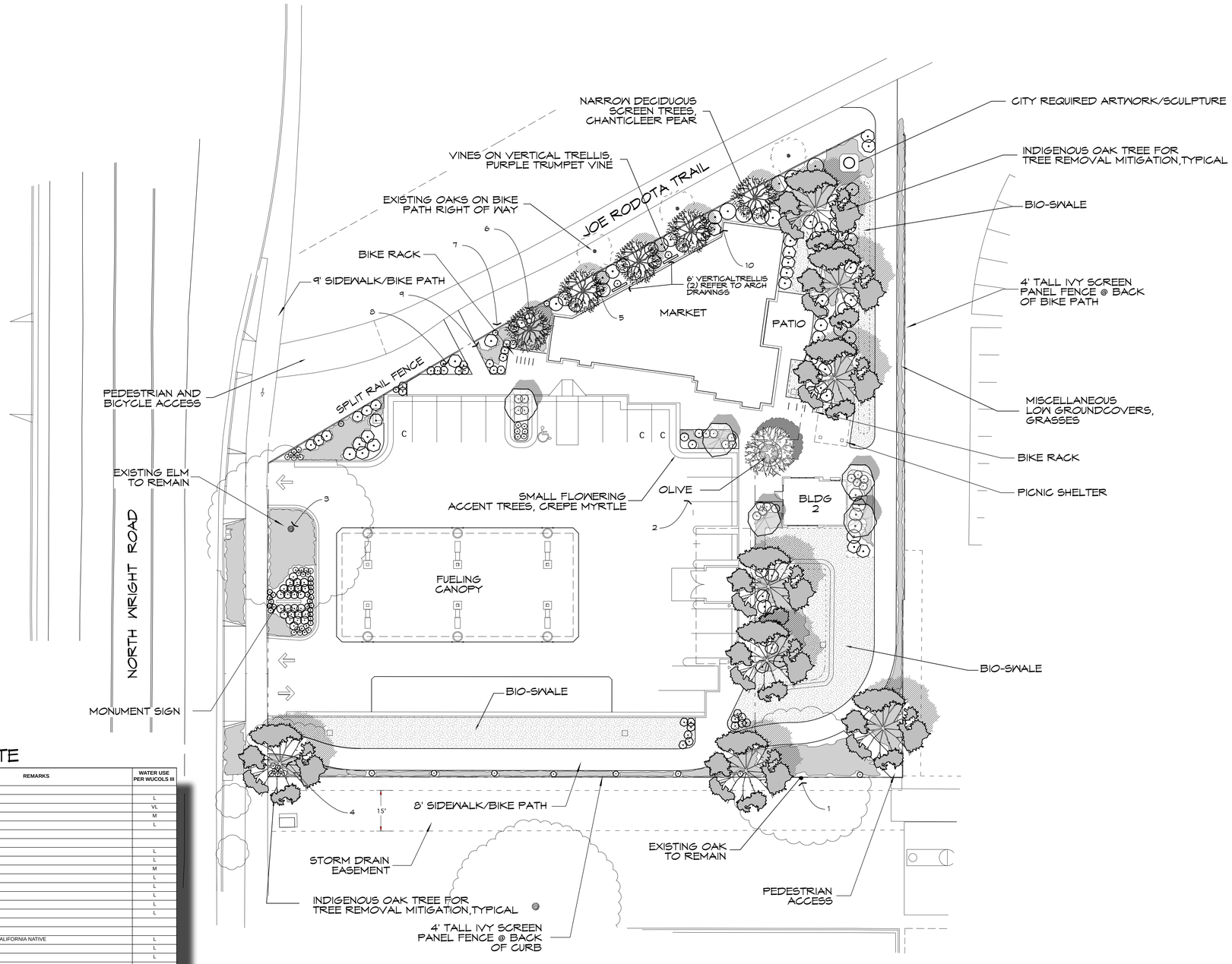
NO.	REMOVAL STATUS	TYPE	PROTECTED TREE	STATUS (SPECIES OR SIZE)	TRUNK D.B.H. IN INCHES	ARBOREAL VALUE (# OF #15 SIZE REPLACEMENT TREES)
1	To remain	Quercus lobata	Y	HERITAGE	17.5	0
2	Remove	Ulmus parvifolia	Y	MITIGATE	11,10.5,13,12.5,11	20
3	To remain	Ulmus parvifolia	Y	PROTECT	21.5, 24	0
4	Remove	Quercus lobata	Y	MITIGATE	4, 3.5 ,5, 5, 6, 4.5	10
5	Remove	Populus alba	Y	EXEMPT	6	0
6	Remove	Fraxinus latifolia	Y	MITIGATE	9.5	4
7	Remove	Populus alba	N	EXEMPT	32	0
8	Remove	Populus alba	Y	DEAD	35	0
9	Remove	Maytenus boaria	Y	MITIGATE	7.5	4
10	Remove	Pinus radiata	Y	EXEMPT	11"	0
				Total #15 Size Replacement Trees Required		**38**
				Proposed Total #24 Size Replacement Trees to be Planted in Lieu of #15 SizeTrees		**19**

- FOR EACH SIX INCHES OR FRACTION THEREOF OF THE DIAMETER OF A TREE WHICH WAS APPROVED FOR REMOVAL, TWO TREES OF THE SAME GENUS AND SPECIES AS THE REMOVED TREE (OR ANOTHER SPECIES, IF APPROVED BY THE DIRECTOR), EACH OF A MINIMUM 15-GALLON CONTAINER SIZE, SHALL BE PLANTED ON THE PROJECT SITE, PROVIDED HOWEVER, THAT AN INCREASED NUMBER OF SMALLER SIZE TREES OF THE SAME GENUS AND SPECIES MAY BE PLANTED IF APPROVED BY THE DIRECTOR, OR A FEWER NUMBER OF SUCH TREES OF A LARGER SIZE IF APPROVED BY THE DIRECTOR. THE VALUE CALCULATION IS BASED ON TREE DIAMETER AT BREAST HEIGHT WITH THE FOLLOWING ARBOREAL REPLACEMENT VALUES:

D.B.H.(INCHES)	#15 SIZE REPLACEMENT TREES
0 - 5	2
6 - 11	4
12 - 17	6
18 - 23	8
24 - 29	10
30 - 35	12
36 - 41	14
42 - 47	16
48 - 53	18
54 - 59	20

- MULTI-TRUNK TREES DBH SIZE IS CALCULATED BY ADDING THE TOTAL DBH OF ALL TRUNKS FOR A SINGULAR TRUNK SIZE CALCULATION

- ALL TREES PROPOSED FOR REMOVAL, SHALL BE MITIGATED IN ACCORDANCE WITH THE CITY OF SANTA ROSA TREE ORDINANCE, CHAPTER 17.24



TYPICAL PLANT PALETTE

SIZE	BOTANICAL NAME	COMMON NAME	REMARKS	WATER USE PER WUCOLS III
	TREES			
24	LAGERSTROEMIA x FAURIEI ' TUSCARORA'	TUSCARORA CRAPE MYRTLE	STANDARD	L
36"	OLEA EUROPAEA 'SWAN HILL'	FRUITLESS OLIVE	MULTI-TRUNK	VL
24	PYRUS CALLERYANA 'CHANTICLEER'	CHANTICLEER PEAR		M
24	QUERCUS LOBATA	VALLEY OAK	CALIFORNIA NATIVE	L
	SHRUBS			
5	ARCTOSTAPHYLOS D. 'HOWARD MCMINN'	VINE HILL MANZANITA	CALIFORNIA NATIVE	L
5	BERBERIS THUNBERGII 'CRIMSON PYGMY"	BARBERRY		L
5	CAMELLIA SASANQUA 'APPLE BLOSSOM'	CAMELLIA		M
5	CISTUS 'SUNSET'	ROCKROSE		L
5	LAVANDULA INTERMEDIA 'PHENOMENON'	LAVENDER		L
5	LOROPETALUM CHINENSE 'RAZZLEBERRI'	NCN		L
5	NANDINA DOMESTICA 'MOYES RED'	HEAVENLY BAMBOO		L
5	PHORMIUM TENAX 'JACK SPRATT"	NEW ZEALAND FLAX		L
	GROUNDCOVER			
1	ARCTOSTAPHYLOS 'EMERALD CARPET'	NCN	6' O.C. TRI. SPACING, CALIFORNIA NATIVE	L
1	COTONEASTER DAMMERI 'CORAL BEAUTY'	COTONEASTER	5' O.C. TRI. SPACING	L
1	ERIGERON KARVINSKIANUS	SANTA BARBARA DAISY	36" OC, TRI. SPACING	L
	VINES			
5	CLYTOSTOMA CALLISTEGOIDES	VIOLET TRUMPET VINE		M
5	FICUS PUMILA	CREEPING FIG	INFILL VINE FOR SOUNDWALL	M
1	HARDENBERGIA V. 'HAPPY WANDERER'	NCN	ALTERNATELY PLANTED ON FACE OF BLDG	M
	PERENNIALS			
1	ACHILLEA 'MOONSHINE'	WOOLY YARROW		L
1	SALVIA LEUCANTHA	MEXICAN BUSH SAGE		L
	GRASSES			
1	CALAMAGROSTIS ARUNDINACEA 'KARL FOERSTER'	FEATHER REED GRASS		L
1	PENNISETUM ALOPECUROIDES 'HAMEIN'	DWARF FOUNTAIN GRASS		L
	BIOSWALE			
SOD	BIO-FILTER GRASSES	"BIO-FILTRATION SOD"	AS PRODUCED BY DELTA BLUEGRASS (CALIFORNIA NATIVES)	L
	OTHER			
	MULCH: FIR BARK, 1/2" TO 1-1/2"			
	LINEAR ROOT BARRIER	ROOT SOLUTIONS	24" DEPTH; INSTALL WHERE TREE IS CLOSER THAN 5' TO EDGE	
	ALL LANDSCAPE AREAS TO BE IRRIGATED WITH A PERMANENT, AUTOMATIC SYSTEM.			

CONCEPTUAL LANDSCAPE PLAN

0 10 20 40

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REGISTERED LANDSCAPE ARCHITECT
DONALD G. MACNAIR
No. 2800
Exp. 8-31-15
STATE OF CALIFORNIA

MACNAIR
LANDSCAPE ARCHITECTURE
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KENWOOD, CA 95452
TEL (707) 833-2288
RLA #2800
don@macnairlandscapes.com

CONCEPTUAL LANDSCAPE PLAN

ELM TREE STATION
874 NORTH WRIGHT ROAD
SANTA ROSA, CA

DATE: 8/1/13
JOB: 12-20
SCALE: 1" = 20'
DRAWN: DM
SHEET

L-1

SHEET 1 OF 1

ELM TREE STATION

RETAIL MARKET and FUEL FACILITY

874 N. Wright Road *Santa Rosa, CA*

AERIAL MAP with NEIGHBORHOOD CONTEXT PHOTOGRAPH LOCATIONS

TIERNEY/FIGUEIREDO
817 RUSSELL AVE. SUITE H, SANTA ROSA, CA 95403
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#0538 05/20/13

VIEW #1
WEST VIEW at SOUTH OF SITE

VIEW #2
SOUTHEAST VIEW at SOUTH SIDE OF SITE

VIEW #3
WEST VIEW at NORTH EDGE OF SITE

VIEW #4
NORTHWEST VIEW at
NORTH END OF SITE

VIEW #5
NORTH WRIGHT RD. TOWARD
HIGHWAY 12 at JOE RODOTA TRAIL

VIEW #6
FROM HIGHWAY 12 / N. WRIGHT ROAD
INTERSECTION TOWARD SITE

ELM TREE STATION
RETAIL MARKET and FUEL FACILITY
874 N. Wright Road Santa Rosa, CA

NEIGHBORHOOD CONTEXT PHOTOGRAPHS

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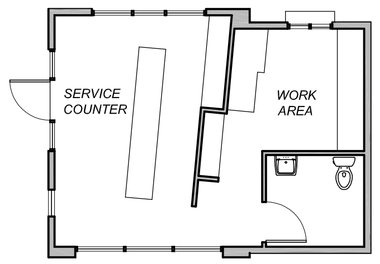
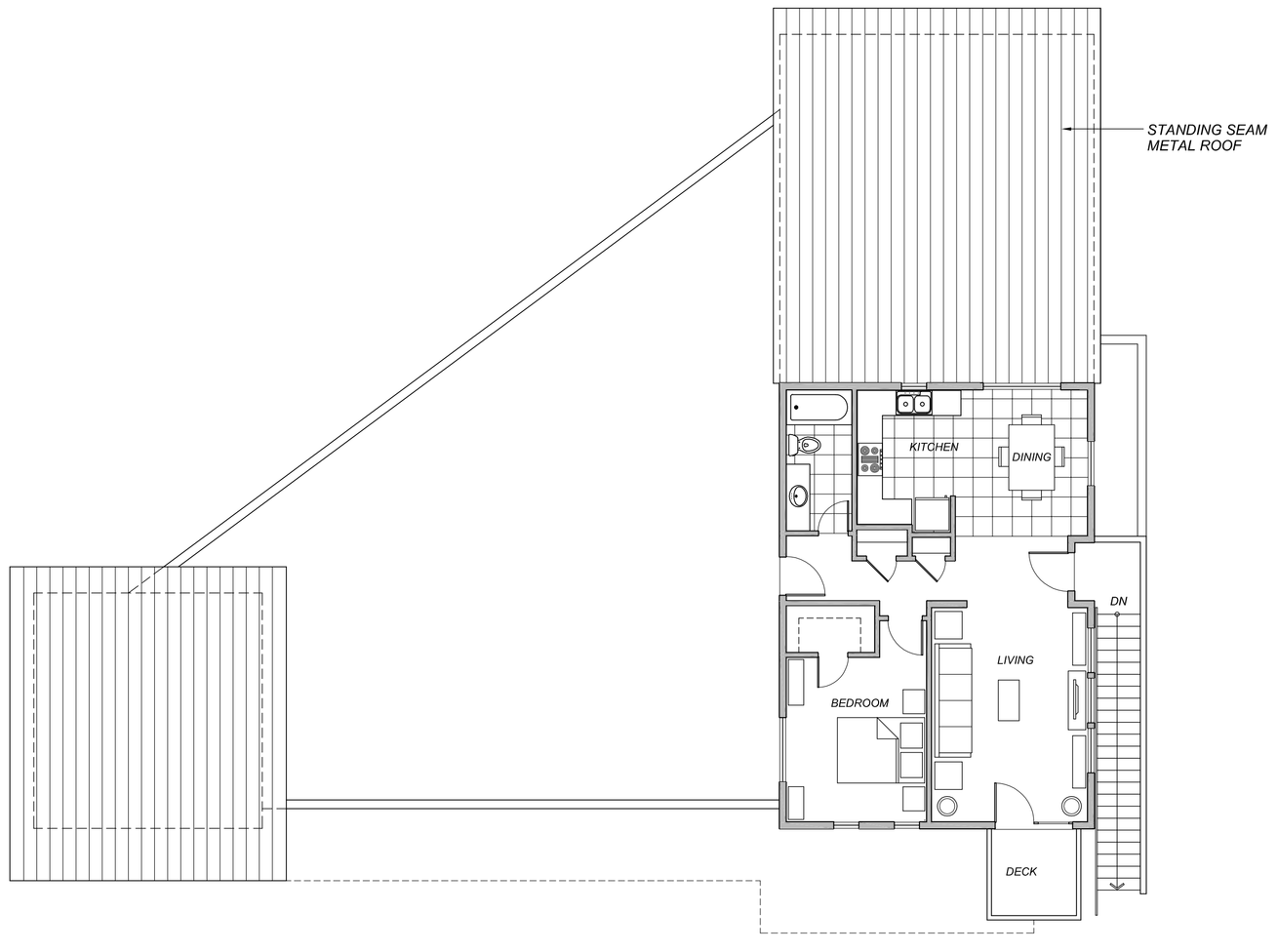
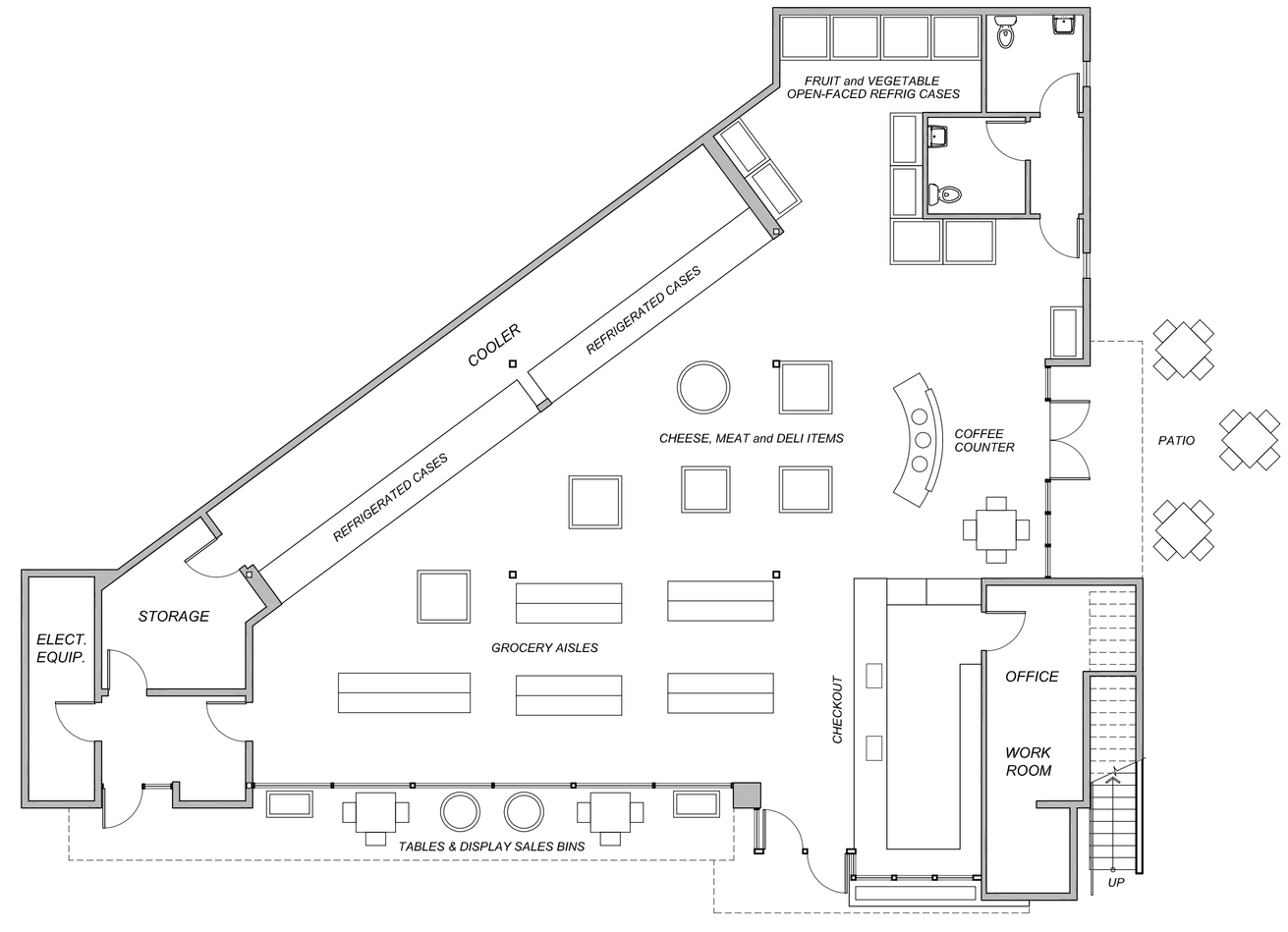
ARCHITECTS AIA



BUILDING 2
432 Square Feet



SECOND FLOOR
APARTMENT
806 Square Feet



FIRST FLOOR
MARKET
3448 Square Feet

ELM TREE STATION

RETAIL MARKET and FUEL FACILITY

874 N. Wright Road *Santa Rosa, CA*

CONCEPTUAL FLOOR PLANS
RETAIL MARKET and BUILDING 2

SCALE: 1/8" = 1'-0"

0' 8' 16'

NORTH

TIERNEY/FIGUEIREDO
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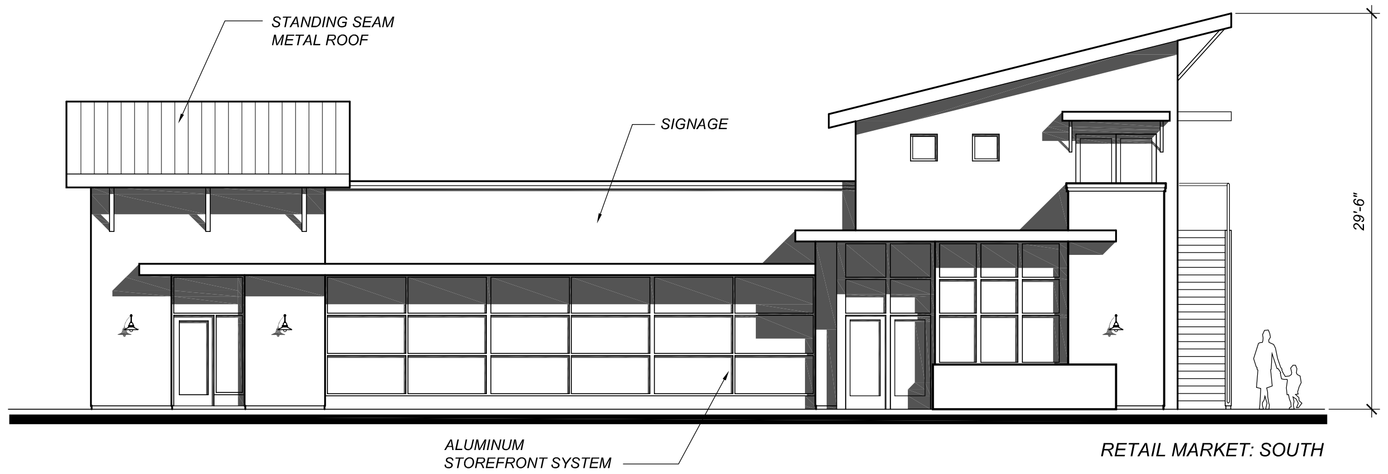
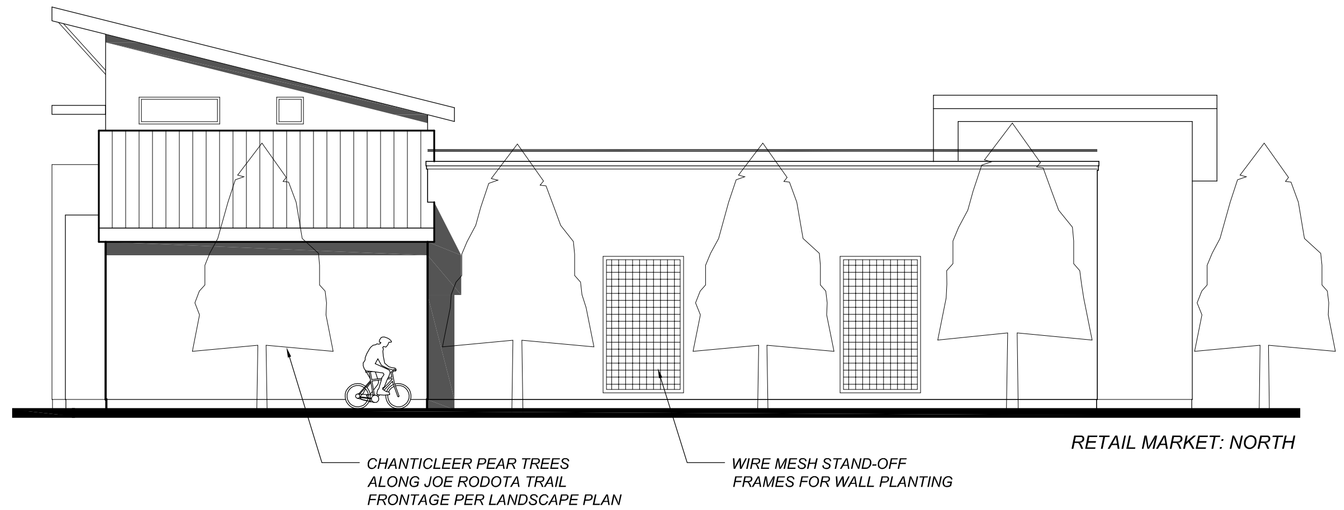
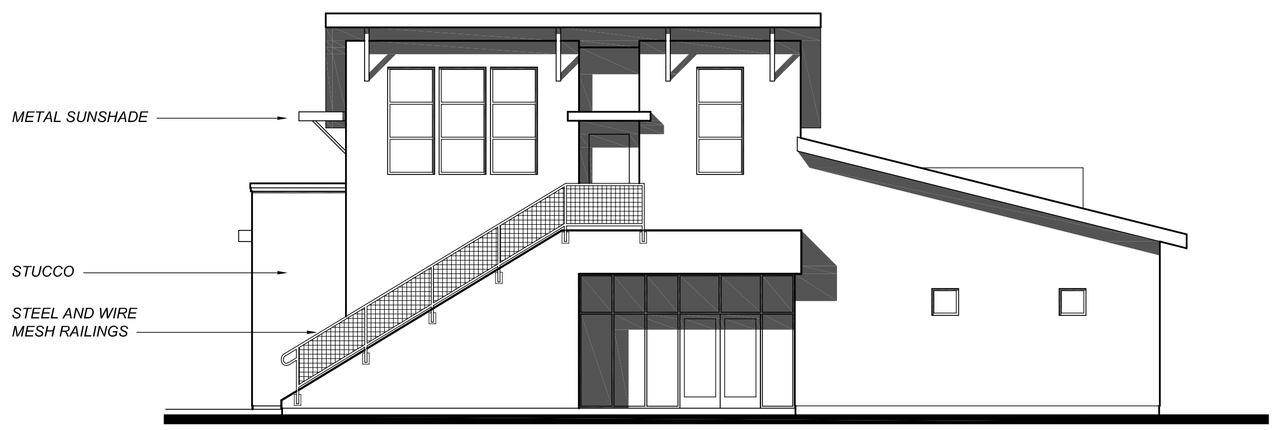


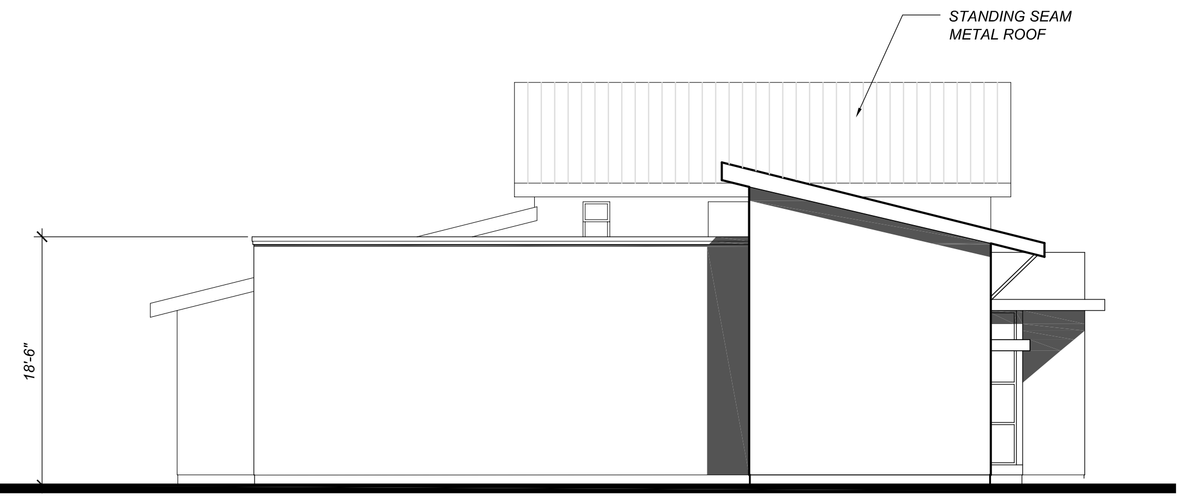
RETAIL MARKET: SOUTH



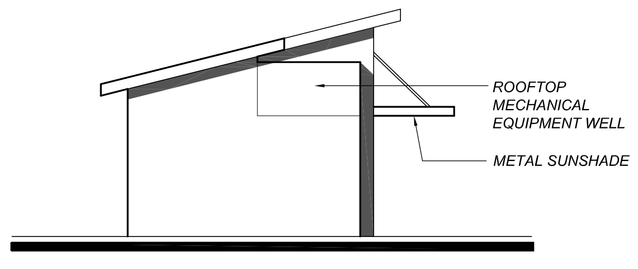
RETAIL MARKET: NORTH



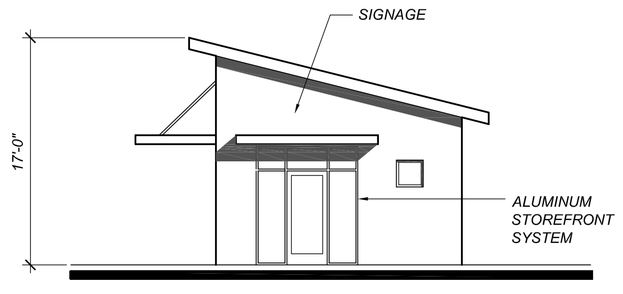
RETAIL MARKET: EAST



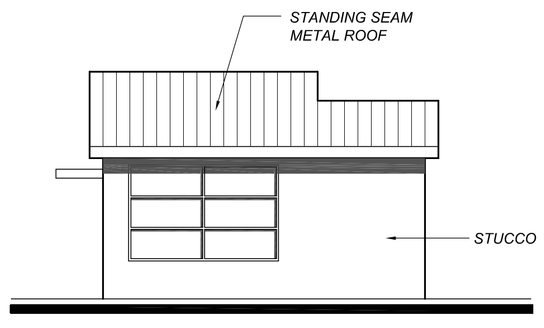
RETAIL MARKET: WEST



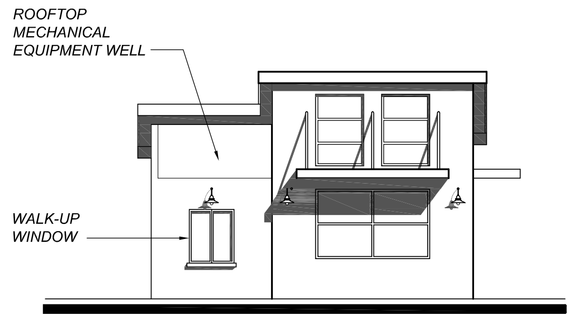
BUILDING 2: EAST



BUILDING 2: WEST



BUILDING 2: SOUTH



BUILDING 2: NORTH

ELM TREE STATION

RETAIL MARKET and FUEL FACILITY

874 N. Wright Road *Santa Rosa, CA*

CONCEPTUAL ELEVATIONS
RETAIL MARKET and BUILDING 2

SCALE: 1/8" = 1'-0"

0' 8' 16'

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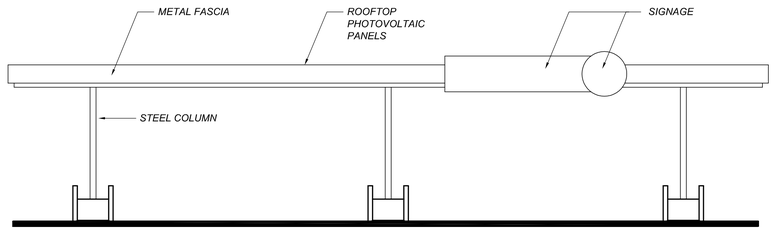
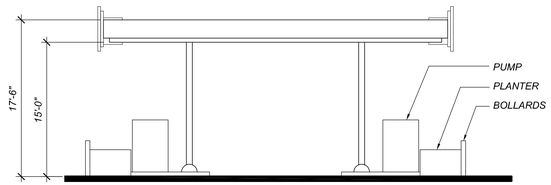
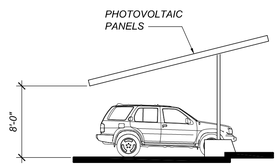


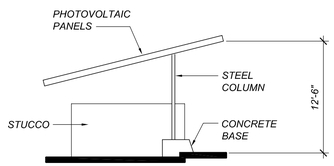
PUMP CANOPY: NORTH



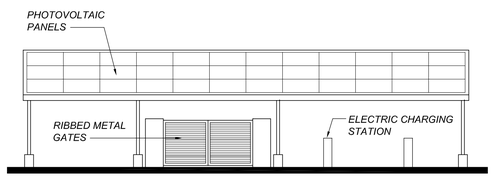
PUMP CANOPY: WEST



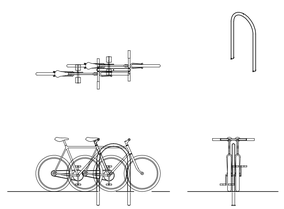
PV COVERED PARKING: WEST



TRASH ENCLOSURE: WEST

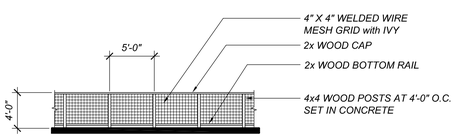


PV COVERED PARKING and TRASH ENCLOSURE: WEST

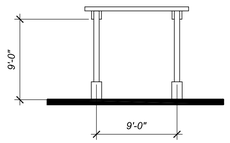


DERO "HOOP" BIKE RACK Not to scale

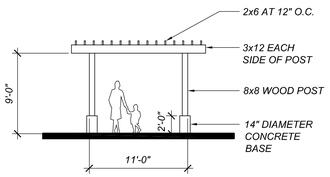
DERO FIBERGLASS BIKE LOCKER Not to scale



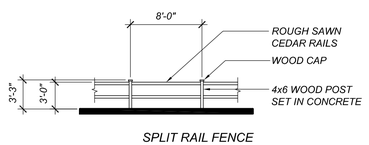
PANEL FENCE



TRELLIS: NORTH/SOUTH



TRELLIS: EAST/WEST



SPLIT RAIL FENCE

ELM TREE STATION

RETAIL MARKET and FUEL FACILITY

874 N. Wright Road *Santa Rosa, CA*

CONCEPTUAL ELEVATIONS: PUMP CANOPY, COVERED PARKING, TRELLIS, and TRASH ENCLOSURE

SCALE: 1/8" = 1'-0"

0' 8' 16'

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ARCHITECTS AIA

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#0538 05/20/13

NOTES:

THE PROPOSED DEVELOPMENT WILL BE IN CONFORMANCE WITH THE CITY OF SANTA ROSA ZONING CODE, GENERAL PLAN AND DESIGN & CONSTRUCTION STANDARDS OR AS MODIFIED BY THIS TENTATIVE MAP AND AS APPROVED BY THE REVIEWING AGENCY.

WATER SUPPLY ---------- CITY OF SANTA ROSA

SEWAGE DISPOSAL ---------- CITY OF SANTA ROSA

PRESENT ZONING ---------- PD-0435

PROPOSED ZONING ---------- PD-0435

THERE ARE NO EXISTING BUILDINGS WITHIN 100 FEET OF THE PROJECT PROPERTY LINE.

THIS SUBDIVISION IS NOT WITHIN AN AREA DESIGNATED AS A HIGH FIRE SEVERITY ZONE.

GRADING

SOILS ON THIS SITE ARE NOT ANTICIPATED TO PROHIBIT THIS TYPE OF DEVELOPMENT.

THE ENGINEER AND DEVELOPER ARE NOT AWARE OF HAZARDOUS MATERIALS ON THIS SITE.

FEMA FLOOD MAPS REVEAL THAT THE SITE IS NOT SUBJECT TO INUNDATION.

PROVISIONS FOR EROSION CONTROL WILL BE INCORPORATED INTO THIS PROJECT.

UTILITIES

EXISTING SEWER AND WATER SERVICES WHICH WILL NOT BE USED WITH THESE SUBDIVISION IMPROVEMENTS WILL BE ABANDONED AT THE MAIN IN ACCORDANCE WITH THE CITY OF SANTA ROSA DESIGN AND CONSTRUCTION STANDARDS.

PROPOSED UTILITIES WILL BE PRIVATELY OWNED AND MAINTAINED UNLESS NOTED OTHERWISE ON THESE DRAWINGS.

UTILITIES WILL CONFORM WITH CITY OF SANTA ROSA DESIGN AND CONSTRUCTION STANDARDS.

ELECTRICAL SERVICE FOR THIS SUBDIVISION WILL BE UNDERGROUND.

GENERAL MAP INFORMATION

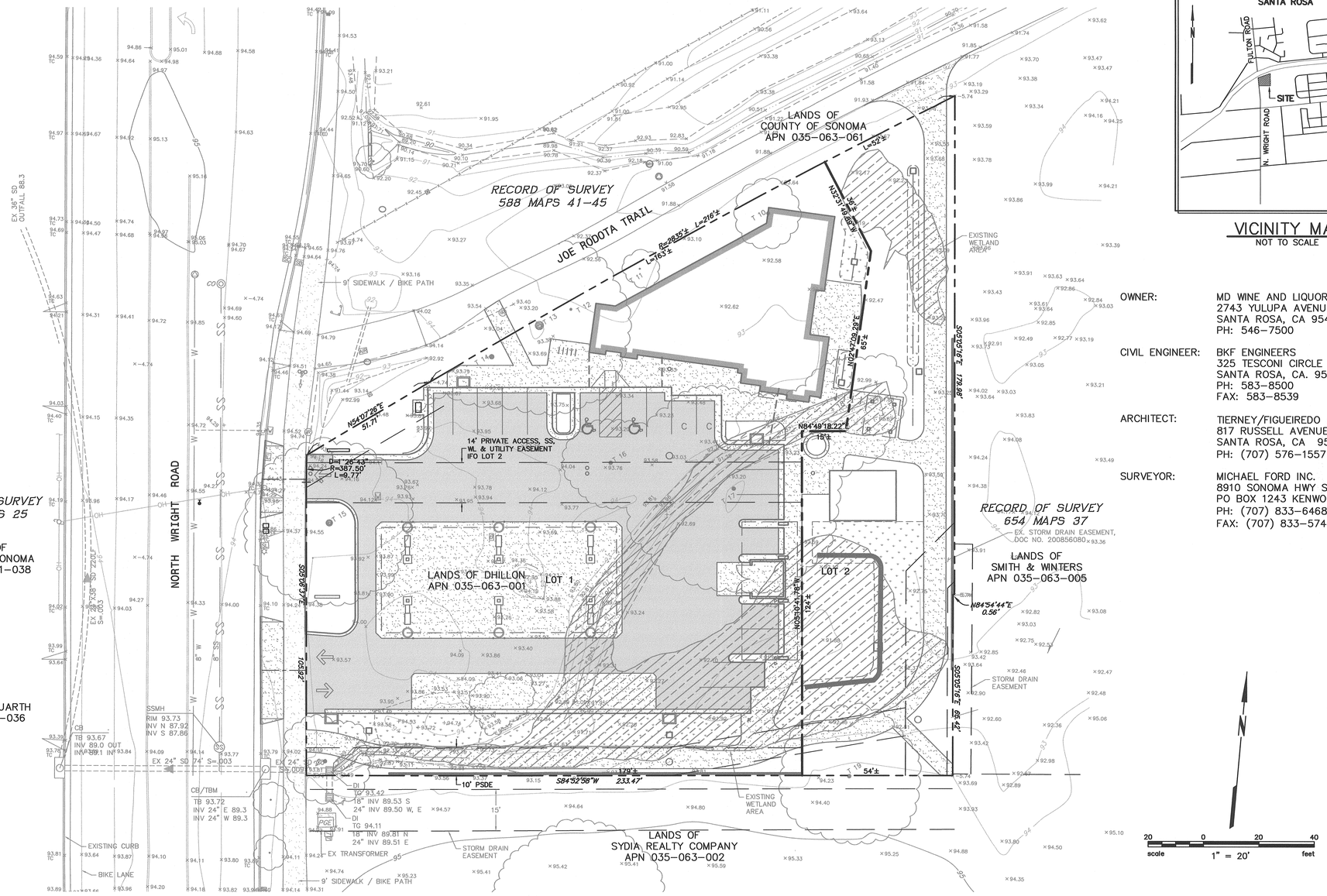
TOPOGRAPHIC INFORMATION SHOWN HEREON WAS MAPPED BY MICHAEL FORD INC. ON 5/23/05 AND 5/31/05.

DISTANCES AND ELEVATIONS ARE SHOWN IN FEET AND DECIMALS THEREOF.

BOUNDARY INFORMATION SHOWN HEREON WAS OBTAINED FROM PUBLIC RECORDS AND DOES NOT CONSTITUTE A FORMAL BOUNDARY DETERMINATION.

BASIS OF BEARINGS: N69°22'10"E BETWEEN FOUND IRON PIPES AS PER RECORD OF SURVEY FILED IN BOOK 654 OF MAPS, PAGE 37, SONOMA COUNTY RECORDS.

BENCHMARK: CATCH BASIN ALONG EASTERLY CURBLINE OF WRIGHT ROAD AS SHOWN ON THIS MAP PER CITY ENGINEER'S DWG. NO. 99-56. EL. 93.72



VICINITY MAP
NOT TO SCALE

OWNER: MD WINE AND LIQUOR
2743 YULUPA AVENUE
SANTA ROSA, CA 95404
PH: 546-7500

CIVIL ENGINEER: BKF ENGINEERS
325 TESCONI CIRCLE
SANTA ROSA, CA. 95401
PH: 583-8500
FAX: 583-8539

ARCHITECT: TIERNEY/FIGUEIREDO ARCHITECTS
817 RUSSELL AVENUE, SUITE H
SANTA ROSA, CA 95403
PH: (707) 576-1557

SURVEYOR: MICHAEL FORD INC.
8910 SONOMA HWY SUITE 12B
PO BOX 1243 KENWOOD, CA 95452
PH: (707) 833-6468
FAX: (707) 833-5744

SYMBOLS & LEGEND

EXISTING	PROPOSED	
BO		BLOW OFF VALVE
		WATER VALVE
		WATER VALVE ON CONCRETE PILLAR
IR		IRRIGATION VALVE
		HOSE BIB
		STREET LIGHT
		SIGN
		UTILITY POLE
		CATCH BASIN (CURB INLET)
		DRAIN INLET
		MANHOLE ON CONCRETE PILLAR
		MANHOLE
SS		SANITARY SEWER MANHOLE
CO		SANITARY SEWER CLEANOUT
		TREE SYMBOL & DRIP LINE
		PROPERTY LINE
		EASEMENT
		GRADE BREAK
		FLOW LINE
		WIRE FENCE
		FACE OF CURB
SIZE" SS	SIZE" SS	SANITARY SEWER
SIZE" SD	SIZE" SD-LENGTH'	STORM DRAIN
SIZE" W	SIZE" W	WATER
OH		OVERHEAD UTILITY LINE
		ASPHALT
		CONCRETE
INV		INVERT AT CLEANOUT

ABBREVIATIONS

±	MORE OR LESS	HC	HANDICAP
AB	AGGREGATE BASE	IFO	IN FAVOR OF
AC	ASPHALT CONCRETE	INV	INVERT-BOTTOM INSIDE OF PIPE
APN	ASSESSOR'S PARCEL NUMBER	IP	IRON PIPE
BFP	BACKFLOW PREVENTER	IR	IRRIGATION
BM	BENCHMARK	LP	LIGHT POLE
BLDG	BUILDING	MB	MAILBOX
BW	BACK OF WALK	MON	MONUMENT
CB	CATCH BASIN	OH	OVERHEAD
CL	CENTERLINE	PG&E	PACIFIC GAS & ELECTRIC
CONC	CONCRETE	PUE	PUBLIC UTILITY EASEMENT
CNTL	CONTROL	RWD	REDWOOD
DIA	DIAMETER	SS	SANITARY SEWER
DW	DRIVEWAY	SSCO	SANITARY SEWER CLEANOUT
DI	DROP INLET	SSMH	SANITARY SEWER MANHOLE
ECMH	ECCENTRIC MANHOLE	SD	STORM DRAIN
ESMT	EASEMENT	SDMH	STORM DRAIN MANHOLE
EP	EDGE OF PAVEMENT	SF	SQUARE FEET
E	ELECTRIC	STLT	STREET LIGHT
EX	EXISTING	TC	TOP FACE OF CURB
FND	FOUND	TB	TOP OF BOX
FH	FIRE HYDRANT	TG	TOP OF GRATE
FL	SURFACE FLOWLINE	UB	UTILITY BOX
G	GAS	UP	UTILITY POLE
GI	GRATE INLET	W	WATER
GUY	GUY ANCHOR	WL	WATER LINE
GV	GATE VALVE	WM	WATER METER
		WS	WATER SERVICE

	SQUARE FEET	ACRES
LOT 1	31,859	0.73
LOT 2	10,865	0.25
SMALLEST	10,865	0.25
LARGEST	31,859	0.73
AVERAGE	21,362	0.49

TENTATIVE MAP
FOR
ELM TREE STATION
874 NORTH WRIGHT ROAD
EXISTING CONDITIONS
2 COMMERCIAL LOTS

BEING A SUBDIVISION OF THE LANDS OF DHILLON DESCRIBED IN THAT GRANT DEED FILED UNDER DOCUMENT NO. 2006-105916, OFFICIAL RECORDS OF THE COUNTY OF SONOMA

874 NORTH WRIGHT ROAD
SANTA ROSA
APN 035-063-001
0.98 ACRES
JULY 2013

BKF
ENGINEERS / SURVEYORS / PLANNERS
325 TESCONI CIRCLE SANTA ROSA, CA 95401
(707) 583-8500 FAX: (707) 583-8539

GREGORY N. HURD C 61895

REGISTERED PROFESSIONAL ENGINEER
GREGORY N. HURD
No. C-61895
CIVIL
STATE OF CALIFORNIA
7-30-13

JOB NO. 20109009

Plot Jul 29, 2013 at 1:51pm
109009_TENT.dwg
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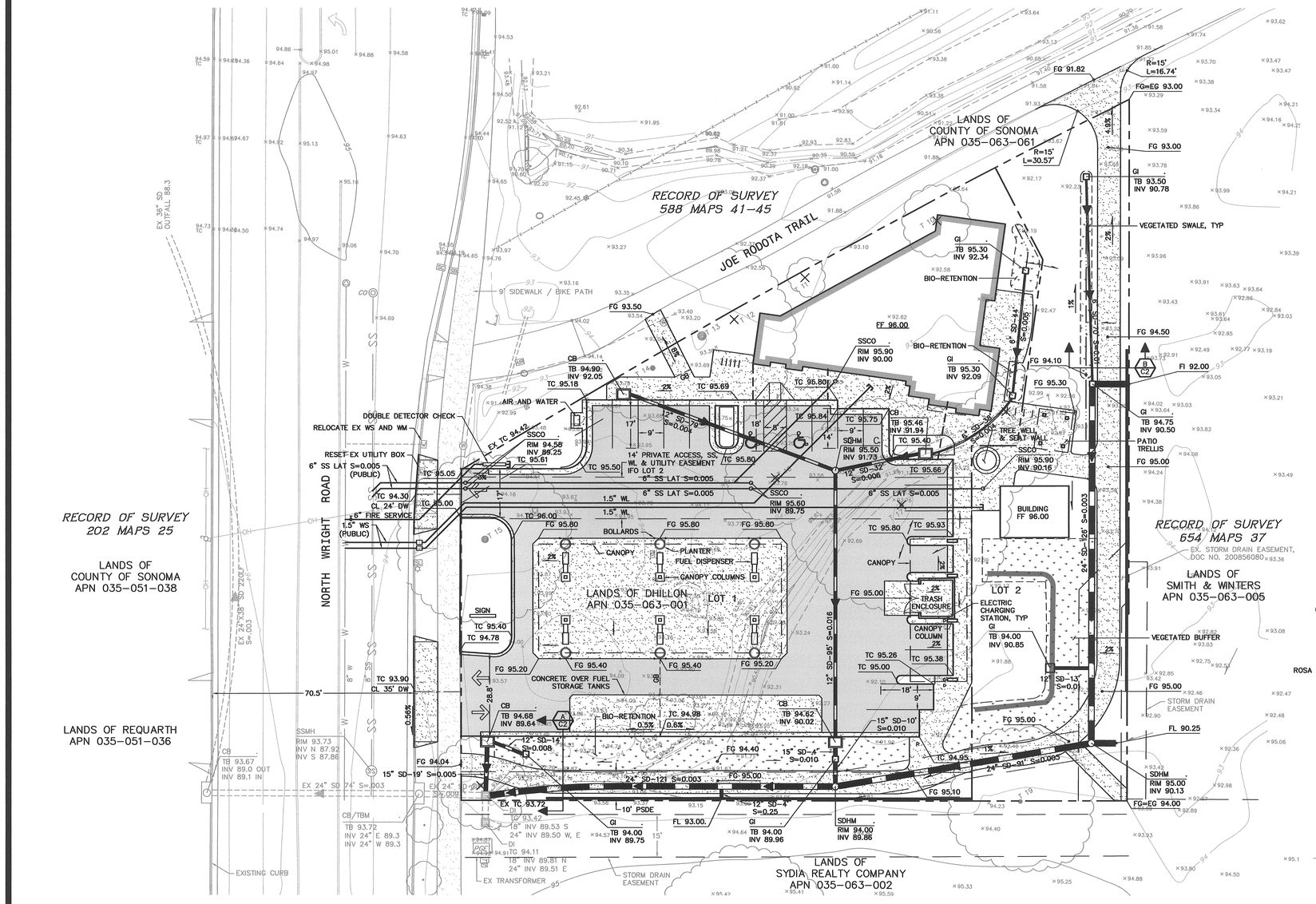
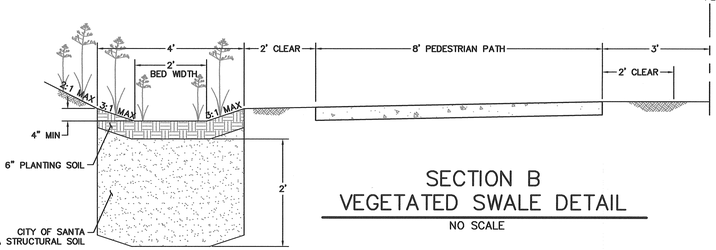
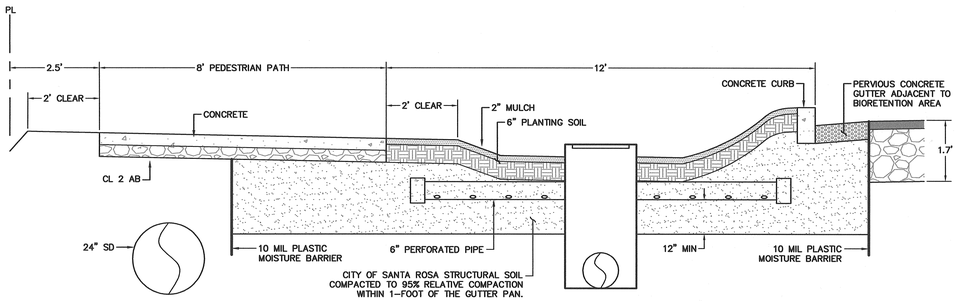
TREE TABLE			
NUMBER	SPECIES	TRUNCK DIAMETER (INCHES)	
10	PINE	14	REMOVE
11	UNKNOWN, 3 TRUNKS	6	REMOVE
12	OAK	10	REMOVE
13	BIRCH	36	RETAIN
14	BIRCH, 2 TRUNKS	20	RETAIN
15	ELM, 2 TRUNKS	24-28	RETAIN
16	REDWOOD	16	REMOVE
17	ELM, 4 TRUNKS	12-16	REMOVE
18	UNKNOWN, 3 TRUNKS	8-12	REMOVE
19	OAK	16	REMOVE
20	OAK CLUSTER	4-6	REMOVE



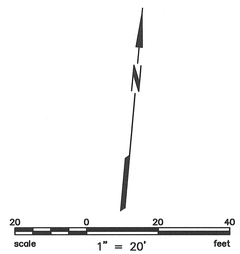


SECTION B
VEGETATED SWALE DETAIL
NO SCALE



SECTION A
BIORETENTION AREA
NO SCALE

NORTH WRIGHT ROAD
NO SCALE



TENTATIVE MAP
FOR
ELM TREE STATION
874 NORTH WRIGHT ROAD
GRADING AND UTILITY
2 COMMERCIAL LOTS

BEING A SUBDIVISION OF THE LANDS OF DHILLON DESCRIBED IN THAT GRANT DEED FILED UNDER DOCUMENT NO. 2006-105916, OFFICIAL RECORDS OF THE COUNTY OF SONOMA

874 NORTH WRIGHT ROAD
SANTA ROSA
APN 035-063-001
0.98 ACRES
JULY 2013

BkF
ENGINEERS / SURVEYORS / PLANNERS
325 TESCONI CIRCLE SANTA ROSA, CA 95401
(707) 583-8500 FAX (707) 583-8539

GREGORY N. HURD C 61895

REGISTERED PROFESSIONAL ENGINEER
GREGORY N. HURD
No. C-61895
CIVIL
STATE OF CALIFORNIA
7-30-13

JOB NO. 20109009

SHEET 2 OF 2

Plot: Jul 29, 2013 at 1:52pm
109009_TENT.dwg
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J. Kapolchok
+ Associates
Land Use Planning
Urban Design

Proposal Statement
Elm Tree Station

Minor Subdivision
Conditional Use Permit/Development Plan
Design Review
June 21, 2013

Applicant:	Mangal Dhillon
Agent:	Jean Kapolchok
Architect:	Tierney / Figueiredo
Engineer:	BKF Engineers
Location:	874 North Wright Road
APN:	035-063-001
Site Size:	.98 ac
General Plan:	Retail and Business Service
Zoning:	C-2 (CG)- PD 0435 (Policy Statement for Wright-Sebastopol Commercial District
Proposal:	Request: A Minor Subdivision of a .98 acre parcel creating an ±11,600 sq. ft. retail parcel and a ±31,143 sq. ft. retail parcel; a Use Permit/Development Plan for a gasoline and electric charge fueling station, a market with a 1 bedroom apartment, outdoor seating and extended hours of operation. Design Review.

PROJECT OBJECTIVES:

A. To provide for a well designed, integrated project consisting of gasoline and electric fueling station, a neighborhood market with a residential unit above and small retail parcel designed for "resting".

B. To provide for improved pedestrian and bicycle connections off the Joe Rodota trail and the future residential development to the east.

CITY OF SANTA ROSA
P.O. Box 1678
Santa Rosa CA 95402

JUN 25 2013

DEPARTMENT OF
COMMUNITY DEVELOPMENT

843 Second Street
Santa Rosa, CA 95404
TEL: 707.526.8939
FAX: 707.526.8985
eMAIL: jkapolchok@sbcglobal.net

C. To provide a destination for users of the Joe Rodota trail through the creation and development of a parcel designed as a resting place with "walk-up" retail.

D. To develop, to the extent feasible, a solar powered fueling station and market.

E. To provide conveniently located electric charging stations, which lie mid-point between the cities of Sebastopol and Santa Rosa.

F. To provide for a conveniently located neighborhood market.

PROJECT DESCRIPTION

SETTING

Location

The subject parcel is located at 874 North Wright Road on the east side of North Wright Road at the southeast intersection of North Wright Road and the Joe Rodota trail. State Highway 12 lies ±440 ft. to the north of the project site and Sebastopol Road is approximately 443 ft. south of the project site. Access is from North Wright Road.

Surrounding Land and Land Uses

As depicted below, the site is situated in a mixed-use area with the primary land use being heavy commercial/light industrial and the primary General Plan land use being Retail and Business Services. The Joe Rodota trail, CalTrans right-of-way and State Highway 12 lie to the north, an approved residential project (West Entry Planned Development) and NorCal Building Supply are to the east, Blue Star Gas is immediately to the south and North Wright Road and Pacific Supply Company are to the west.

PROJECT STATEMENT

Use:

The concept behind the Elm Tree Station is to provide a "green resting spot" mid-distance between the communities of Sebastopol and Santa Rosa. Available at the Elm Tree Station are electric charge and gasoline fueling station, a market having fresh vegetables, meats and cheeses, deli items, coffee, baked goods and outdoor patio seating. The Elm Tree Station also provides an improved "resting spot" with benches and tables, bicycle racks, a trellised patio and "walk-up retail". An alternate pedestrian/ bicycle path is provided along the rear of the back parcel (Lot 2) and the outer edge of the fueling station/market parcel (Lot 1). By so doing, any conflicts between pedestrians/bicyclists and the entering/exiting from Lot 1 are avoided.

The applicant for Elm Tree Station proposes to subdivide the .98-acre parcel into two parcels. Parcel 1, ±31,143 sq. ft. in size, is a retail parcel to be developed with a gasoline and electric charge fueling station and neighborhood market with a 1-bedroom apartment above. Parcel 2, ±11,600 sq. ft. in size, is a small retail park-like parcel, to be improved with patio/trellis area, benches/picnic area, bike rack, fence and a small retail building. Although the tenant is yet to be determined, the likely use of the

building is some form of food-service use, such as coffee, ice cream, sandwiches etc. Because the precise use is yet to be determined, all uses permitted within the zoning plus restaurant, café, coffee shop with outdoor seating is requested.

Applications necessary for the processing of the project are:

- Minor Subdivision: for the creation of the two lots
- Use Permit: for the fueling station, extended hours of operation and the apartment (caretakers) unit
- Minor Use Permit: for outdoor seating (both parcels)
- Design Review: Project as a whole.

Hours of Operation: The proposed extended hours of operation are:

Market: 5:00 am to midnight
Fueling/Charging station: 5:00 am to midnight

Number of Employees:
5 full-time and 3 part-time

GENERAL PLAN AND ZONING

ZONING/PLANNED DEVELOPMENT

Wright-Sebastopol Road Commercial District:

The subject property is zoned C2-PD as part of the Wright-Sebastopol Commercial District (PD-0435). This PD district allows service stations, by Use Permit but not convenience stores.

The project contains a ±3,600 sq. ft. market. Under the revised commercial zoning district ordinance (Ordinance No. 3987) such a market is considered a small grocery store. The defining characteristic of a small grocery store, as opposed to a convenience store, is that the store primarily sells food, including canned and frozen foods, fresh fruits and vegetables, fresh and prepared meats, fish and poultry.

As depicted on the floor plan, the market is designed for the sale of fresh fruits, vegetables, flowers and similar commodities within the market as well as outside by the entry. The coolers along the long wall of the market will be for items needing refrigeration such as milk, juices, soft drinks, water and those items needing to be frozen such as desserts, meats, vegetables, and packaged dinners. The market includes a café area where coffee, baked goods, sandwiches and similar items can be purchased or enjoyed at the outdoor or indoor seating areas of Lot 1 or outdoor areas of Lot 2.

Below are photographs of the refrigerated and cooler areas of a small market owned and operated by the applicant.


MVP
CLOVER
Milk
MILK


15
14

Consistency with Zoning Code §20-42.150 – Service Stations

The above referenced section of the city of Santa Rosa Zoning Code sets forth special standards for service stations. The project achieves consistency with the code as follows:

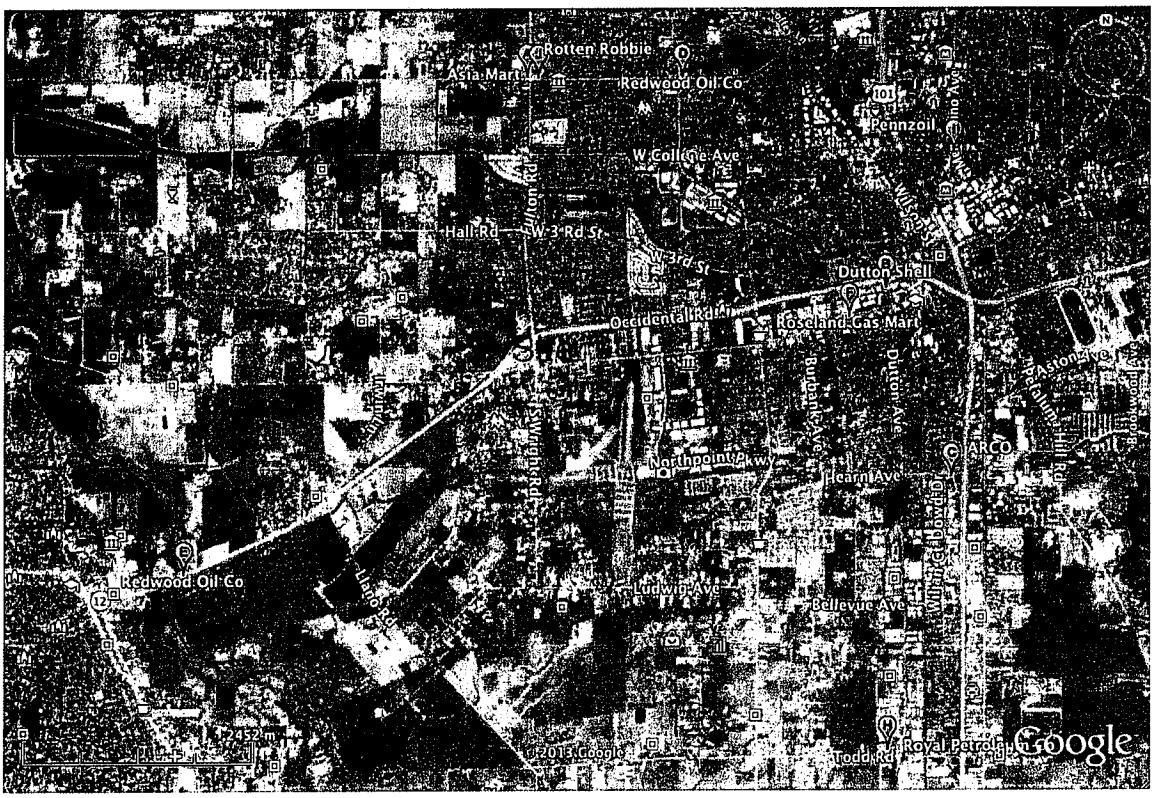
1. Site and area dimensions: Lot 1, the retail/service station parcel is ±31,859 sq. ft, has a ±105 ft. frontage along an arterial and is ±165 ft. wide at the mid-point.

2. Proximity to residential: A service station site cannot adjoin a residentially zoned or developed site. However, a service station use may adjoin a commercially zoned property and a service station may adjoin a commercially zoned property that is developed with a residential use. The vacant, residentially designated parcel to the east is separated from the service station/market parcel by a commercially zoned parcel.

   Residential use is permitted in a General Commercial (CG) zoning district with a Minor Use Permit (MUP).

   A ±805 sq. ft. residential apartment (caretakers unit) is proposed above the market. In the proposed project, the residential use is akin to a caretakers unit, that is, the occupant is fully aware of the commercial setting and will likely have some management responsibilities for the retail use.

3. Distance between service station sites: As shown below, there are no service stations in close proximity to the proposed Elm Tree Station. The closest station is a Chevron station on Stony Point Rd., ±1.5 miles to the east. The next closest station is Roseland Gas on Sebastopol Road, approximately 2.3 miles to the east.



Energy Efficiency

Although not mandated by the city's Climate Action Plan, the proposed project implements a number of the GHG Reduction Strategies. The project includes:

Conserves Energy and Improves Air Quality

- Four (4) electric charging stations.
- Photovoltaic panels on the rooftop of the fueling station canopy and the covered parking/trash enclosure structure.

Improves Public Health and Improves Mobility

- A bicycle pedestrian path off the Joe Rodota trail that provides alternative access to the site frontage thereby eliminating conflict between turning movements in and out of the facility and pedestrian/bicycle riders using the Joe Rodota trail.
- Pedestrian access from the trail and the future subdivision to the east to Elm Tree Station and the adjoining parcel.
- Provides a resting area and a small market as a destination or rest station for those using the trail.

Site Development

The site is .98 acres, designated Retail and Business Services in the city's General Plan, zone C2-PD (PD-0435) and situated in a predominately light

industrially developed area. The narrowest portion of the property is the site's frontage along North Wright Road. Ingress and egress is controlled by an existing 24"(dbh) elm tree that is to be retained. Blue Star Gas is the property's neighbor to the south; Pacific Supply Company, which supplies roofing, drywall, insulation and similar building products and equipment to the construction industry, is directly to the west; the Joe Rodota trail borders the site to the north and, the yet to be developed West Entry residential development is to the east.

Given this setting, a small parcel with sitting areas and bike racks was created along the property's eastern border to buffer the service station/retail uses from the future residential development as well as provide an alternative route (bicycle path), "rest station" and "walk-up" retail for the users of the Joe Rodota trail. The fueling station is forward thinking with the pumps being operated, to the maximum extent possible, by solar power and the inclusion of four (4) electric charging stations. A small market with a caretaker unit above, will provide groceries and offer fresh coffee, baked goods, sandwiches to enjoy on the patio areas of lots 1 and 2.

TIERNEY / FIGUEIREDO
TFA
ARCHITECTS AIA

817 Russell Avenue, Suite H
Santa Rosa, CA 95403
(707) 576-1557 info@tfrach.com

CITY OF SANTA ROSA
P.O. Box 1678
Santa Rosa CA 95402

JUN 25 2013

DEPARTMENT OF
COMMUNITY DEVELOPMENT

DESIGN CONCEPT NARRATIVE

ELM TREE STATION
874 N. WRIGHT ROAD
SANTA ROSA, CALIFORNIA

The proposed Elm Tree Station Retail Market and Fuel Facility project promotes superior design by having the following design goals:

1. Preserve the natural features of the site to the greatest extent possible.
2. Provide increased connectivity to existing transportation networks and enhance users' experience of existing networks.
3. Advance the City's alternative fuel goals.
4. Use sustainable energy sources and create a "green" transportation facility.
5. Integrate a variety of transportation types into one facility.
6. Provide a new model for the traditional gasoline service station by consolidating related uses and utilizing new energy technologies.

SITE DESIGN

The project consists of two parcels; the westerly 0.73 acre parcel fronts Wright Road. The adjacent 0.25 acre parcel to the east is to be developed with a small retail building intended to compliment the market use and the Joe Rodota Trail. This parcel will include an extension of the Joe Rodota Trail, providing a bicycle and pedestrian circulation route from the trail to North Wright Road without requiring crossing the projects driveway curb cuts onto North Wright Road. In addition the parcel will also contain bicycle racks and a covered picnic area for use by bicyclists, pedestrians, market users and drivers waiting for their automobiles to charge at the electric vehicle charging stations. This will create a "bicycle park" and, with its location between Santa Rosa and Sebastopol, this area will function as a natural rest stop for bicyclists using the Joe Rodota Trail.

The westerly parcel will be developed with a service station and grocery market. In addition to the gasoline fuel pumps, four electric vehicle charging stations, two of which are covered, will allow charging of electric vehicles and create another node in Santa Rosa's and Sonoma County's electric vehicle charging network. Two of these charging stations (the covered spaces) will be designated for electric vehicle parking only.

Care has been taken to preserve the large existing elm tree along the project's frontage as well as an existing oak tree. Bioswales on the southerly and easterly boundaries of the site provide storm water retention for the site. Those two property lines have low ivy covered fences. The trees being removed (poplars, pine, elm and one oak tree) are being mitigated with oak trees, primarily at the perimeter of the site. The north side of the market building will be screened with chanticleer pear trees and the picnic area on the eastern parcel will be surrounded by olive trees. The extension of the existing bike path, picnic area and new oak and olive trees will enhance the park-like setting on the eastern parcel.

The gasoline fuel pump canopy will have photovoltaic panels mounted on the roof. The trash enclosure, apartment parking space and two of the electric car charging stations will be covered by a sloping steel framed roof structure; this roof will also have photovoltaic panels.

With the facilities described above, Elm Tree Station is designed and intended to serve pedestrians, bicyclists, electric vehicles and traditional gasoline vehicles. This makes it a unique transportation center that meets many of the City's policy goals.

BUILDING DESIGN

The market building is wedge-shaped in plan form to conform to the vagaries of the site's shape and will contain a neighborhood market on the first floor and a one- bedroom apartment on the second floor; this second floor occurs only at the southeast corner of the building. The apartment is intended to be occupied by a market employee and has a southerly exposure which overlooks the service station and eastern parcel. This residential occupancy will help provide "eyes on the property" security for the project.

A patio area with seating has been created at the east side of the market facing onto the bicycle-pedestrian path through Lot #2. This patio opens is accessed through storefront doors in a glass facade adjacent to the interior coffee counter. It is also adjacent to the patio area on Lot #2 that is covered by a timber trellis. The sidewalk in front of the market also has small patio tables and chairs , as well as space for produce and flower displays.

Architecturally, the building consists of interconnected sloped and flat roof forms with dynamic, clean lines wrapped in a stucco exterior finish. A glazed storefront system is featured on the south "retail" elevation, while punched openings predominate on the other elevations. Steel horizontal sunshades extend out from the stucco facades and are complimented by the standing seam metal on the sloped roofs. Market signage will be placed over the steel sunshade above the storefront glazing as well as on the west side of the western tower form. Steel stair railings with metal mesh infill panels complete the building's contemporary aesthetic.

SONOMA
COUNTY
REGIONAL
PARKS

CARYL HART, Ph.D
DIRECTOR

2300
County Center Drive
Suite 120A
Santa Rosa
CA 95403
Tel: 707 565-2041
Fax: 707 579-8247
www.sonomacountyparks.org

August 26, 2013

Jessica Jones, City Planner
Department of Community Development
100 Santa Rosa Avenue, Room 3
Santa Rosa, Ca 95404

Re: Elm Tree Station
874 North Wright Road, Santa Rosa
File Number: MJP12-005

Dear Ms. Jones:

We have reviewed the Notice of Application for the development of a fuel station and neighborhood market with a 1-bedroom apartment. The project site is bordered by the Joe Rodota Trail on the north and west. With the exception of the Trail segment located on the sidewalk of North Wright Road, the Trail is operated and maintained by the Sonoma County Regional Parks Department. Directly below the Trail is a 36-inch diameter water main line that is operated and maintained by the Sonoma County Water Agency (SCWA). Please consult with SCWA staff, Scot Carpenter (547-1079), regarding any potential construction impacts to the water line.

Trail Bypass

The proposal includes the development of a new trail that would help mitigate traffic impacts to bicyclists and pedestrians using the Joe Rodota Trail by providing an alternate route that bypasses the two new vehicle driveways; thus, reducing the potential for accidents. Per the attached SCTA staff report dated July 23, 2013, please note that bicycle travel on the Joe Rodota Trail between 2002 and 2012 increased by 429%.

If the proposal is approved by the City, the applicant will need to obtain a license agreement from Regional Parks to construct the two trail connectors located on County property. The license agreement must be executed in advance prior to the start of construction. Please note the applicant will be responsible for all construction costs and fees. The County will only be responsible for maintaining improvements located on County property. The applicant will be responsible for the maintenance of all trail improvements located on private property for the life of the project.

When the construction plans are available, we will need to review and approve the layout, drainage, and signage as it relates to the Trail.

Traffic Report
Has a traffic report been prepared for this project? If yes, please provide a copy for our review.

Thank you for the opportunity to comment on the Notice of Application. If you have any questions, please contact me at 707-565-3348 or ken.tam@sonoma-county.org

Sincerely,

Kenneth Tam

Kenneth Tam
Park Planner II

Enclosure

c: Sonoma County Regional Parks: Bert Whitaker, Steve Ehret, Jim Piercy
Steven Schmitz, Sonoma County Transit, SCBPAC, CBPAC
Scot Carpenter, SCWA

SCTA
sonoma county transportation authority

490 MENDOCINO AVENUE, SUITE 206
SANTA ROSA, CA 95401
WWW.SCTAINFO.ORG (707) 565-5373

RCPA
regional climate protection authority

Staff Report

To: **Countywide Bicycle and Pedestrian Advisory Committee**

From: **Diane Dohm, Transportation Planner**

Item: **MTC 2012 Bicycle and Pedestrian Count Program**

Date: **July 23, 2013**

Issue:

What is the update on the 2012 bicycle and pedestrians counts from the Metropolitan Transportation Commission (MTC)?

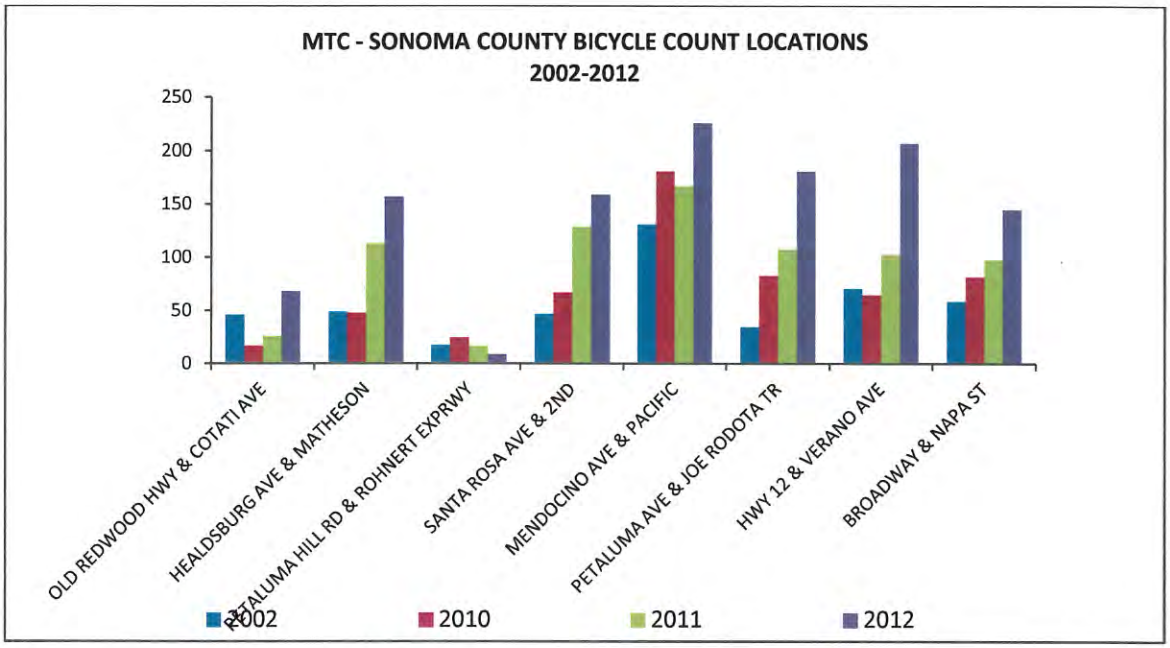
Background:

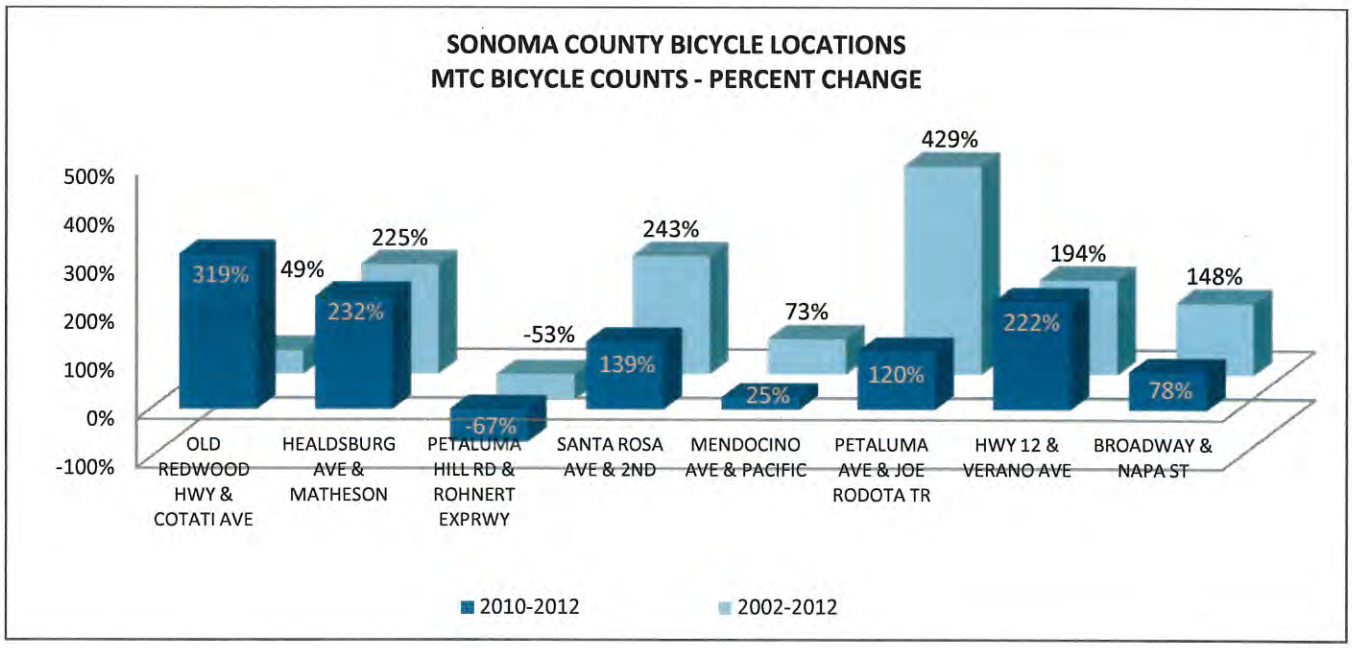
Each year the Metropolitan Transportation Commission (MTC) completes their bicycle and pedestrian counts for the nine county San Francisco Bay Area. The MTC does their counts each fall, and has eight count locations in Sonoma County:

County	LOCATION	CITY
Sonoma	OLD REDWOOD HWY & COTATI AVE	COTATI
Sonoma	HEALDSBURG AVE & MATHESON	HEALDSBURG
Sonoma	PETALUMA HILL RD & ROHNERT EXPRWY	ROHNERT PARK
Sonoma	SANTA ROSA AVE & 2ND	SANTA ROSA
Sonoma	MENDOCINO AVE & PACIFIC	SANTA ROSA
Sonoma	PETALUMA AVE & JOE RODOTA TRL	SEBASTOPOL
Sonoma	HWY 12 & VERANO AVE	SONOMA
Sonoma	BROADWAY & NAPA ST	SONOMA

The MTC bicycle and pedestrian count program compliments SCTA's bicycle and pedestrian count program, which is completed in the spring. The MTC has maintained counts at the same locations since 2002, which is the commencement of this program. This report will highlight the count numbers and percent change for each location in Sonoma County. Overall, all locations in Sonoma County are seeing increases in both bicycle and pedestrian counts except the location in Rohnert Park (Petaluma Hill Rd & Rohnert Park Expressway).

Graph 1 below demonstrates the bicycle counts at each location for 2002, 2010, 2011, and 2012. The baseline year is 2002 since that is the year of the first bicycle and pedestrian counts in this program. Graph 2 below demonstrates the percent change between 2010-2012 and 2002-2012 for bicycle counts in Sonoma County. The existence of bicycles is increasing at all locations except Rohnert Park, which has experienced a 53% decrease over the past 10 years. The Petaluma Avenue & Joe Rodota Trail location in Petaluma has experienced the greatest increase in bicycle travel between 2002 and 2012 with a 429% increase.

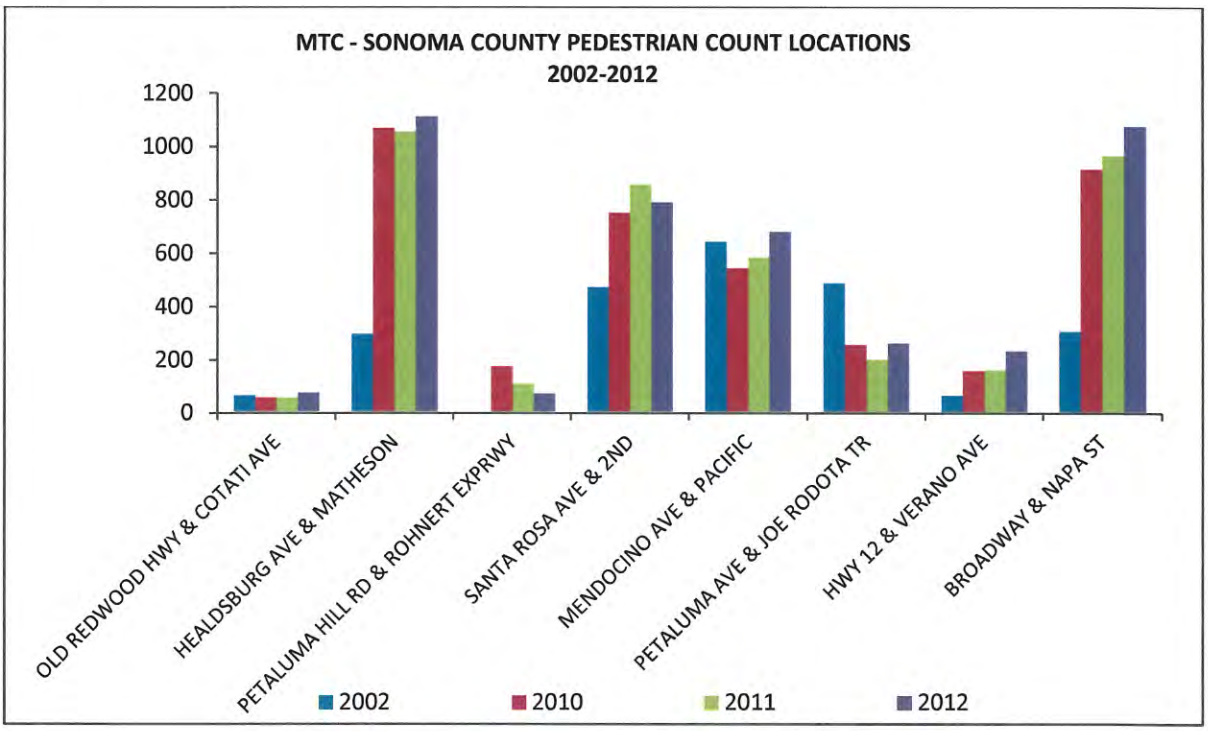




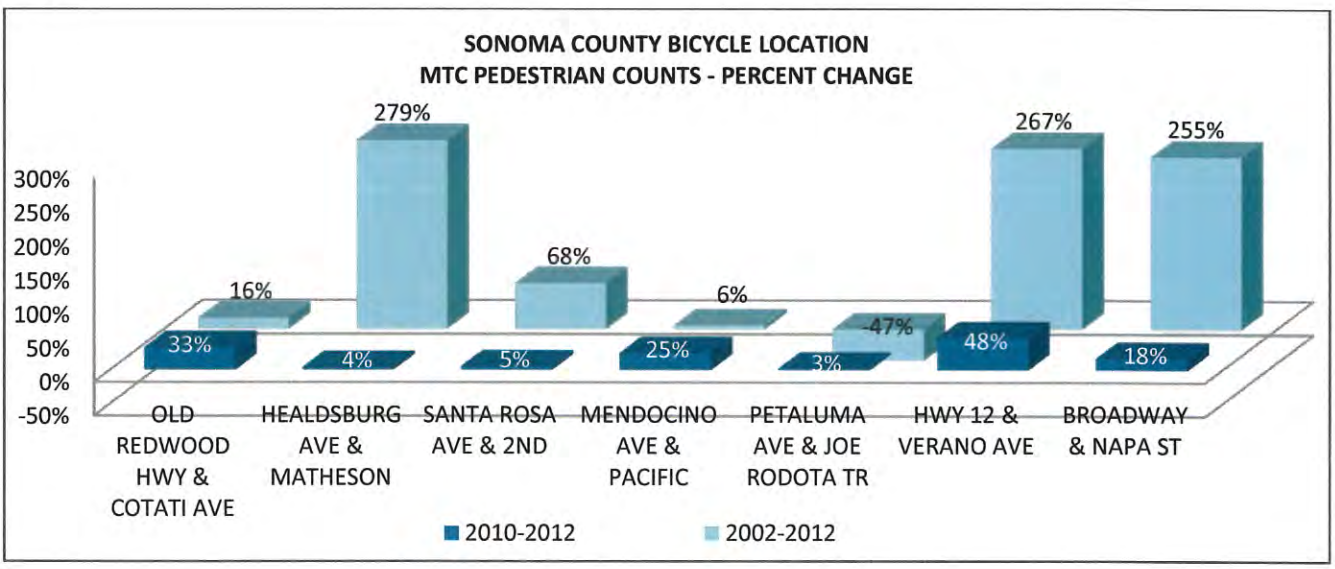
Graph 3 below demonstrates the pedestrian counts at each location for 2002, 2010, 2011, and 2012. The baseline year is 2002 since that is the year of the first bicycle and pedestrian counts in this program. Graph 4 below demonstrates the percent change between 2010-2012 and 2002-2012 for pedestrian counts in Sonoma County. The number of pedestrians at these locations is generally increasing, though the exact numbers vary year to year. Even though the bicycle numbers have increased greatly at the Petaluma Avenue & Joe Rodota Trail location, it has experienced a decrease of 47% in pedestrian activity. There are three locations that have experienced about the same growth

in pedestrian activity over the past decade: Healdsburg Ave & Matheson (279% increase), Hwy 12 & Verano Ave (267% increase), and Broadway & Napa St (255% increase). The Petaluma Hill Road & Rohnert Park Expressway location is not on graph 4 due to a likely counting error in 2002, which detailed only 2 pedestrians for this location. This location has been experiencing a decline in pedestrian activity – 172 pedestrians were counted in 2010, 109 counted in 2011, and 69 counted in 2012.

Graph 3



Graph 4



PD DISTRICT NO. 435

Location: Kon

Project Name: Wright-Sebastopol Commercial District

Policy Statement Dated: 1-10-95 (Attached) None

Conditional Use Permit Dated: _____ Attached None

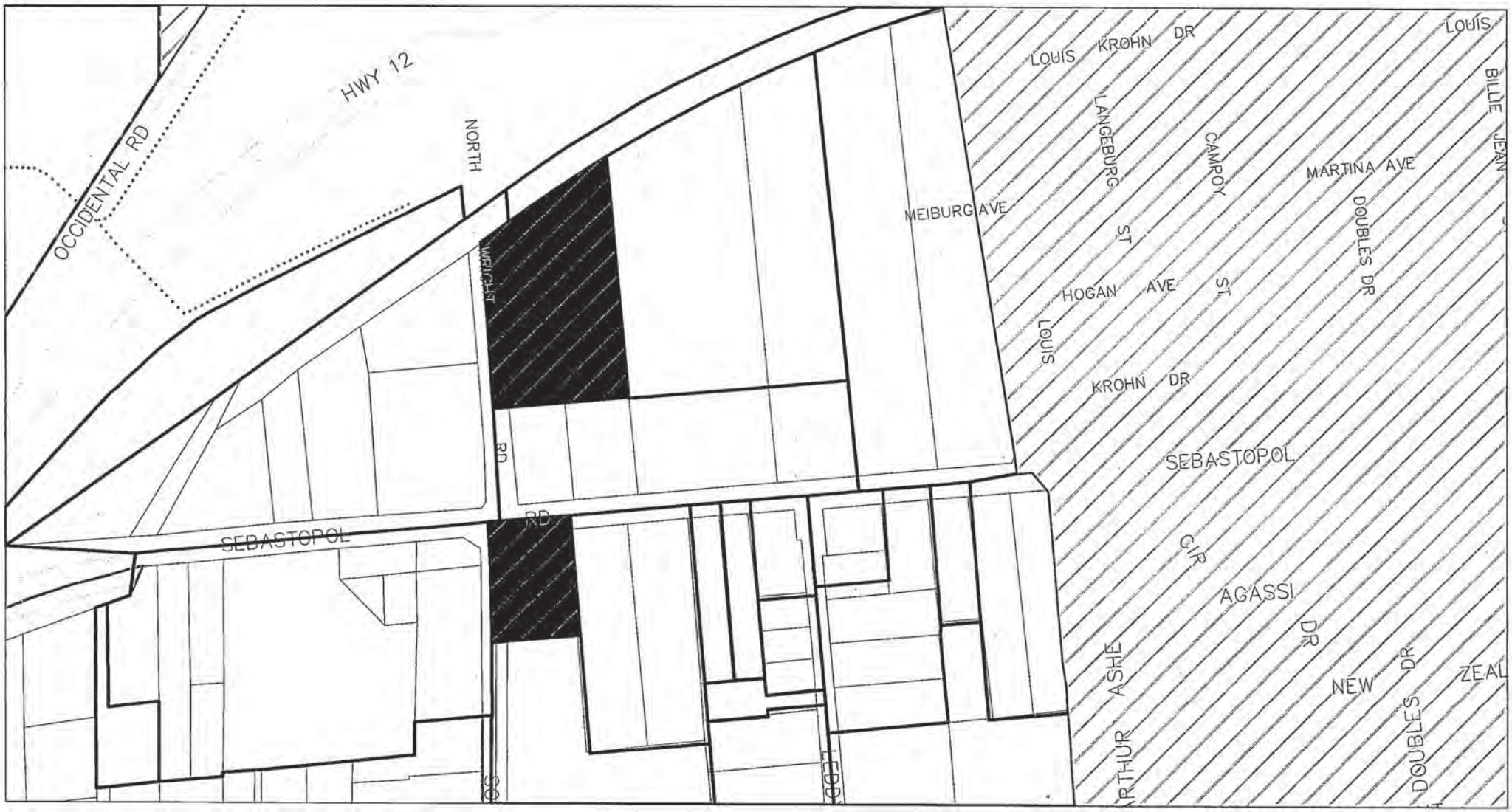
Development Plan Dated: _____ Attached None

General Notes:

Part of SWSR 2-94

Ordinance #3181

WRIGHT-SEBASTOPOL COMMERCIAL DISTRICT - PD #435



SW 2-94 – SEBASTOPOL ROAD
PREZONING CLASSIFICATIONS EXHIBIT "A"

- PC
- PB
- PM
- R-1-2/6
- R-1-6
- R-1-7.5
- R-1-9
- R-1-15
- RR-20
- RR-40
- R-2
- R-4
- C-2-PD

City of Santa Rosa
Department of Community Development

N

435

Policy Statement
Wright-Sebastopol Commercial District
January 10, 1995

Purpose:

The purpose of this C-2-PD (Wright-Sebastopol General Commercial - Planned Development) District is to establish uses consistent with the intent of the Southwest Area Plan thereby enhancing and complementing the viability of the development areas designated as "Neighborhood and/or Community Commons". This district also provides specialized design criteria in order to create a successful entry setting for the City.

Principle Permitted Uses:

A. Banks
B. Cafes, coffee shops
C. Professional offices
D. Restaurants
E. Retail shops or businesses conducted entirely within a building

Accessory Uses:

Other uses and structures customarily appurtenant or incidental to a principal permitted use on the same parcel, subject to applicable laws and intended solely for use by the occupants of a principal permitted use or uses. No accessory structure shall be constructed prior to the construction of the main building, nor on a lot separate from the main building.

Uses Permitted by Conditional Use Permit:

A. Clubs
B. Community care facilities as provided for in Sections 20-03.785-20-03.790 of the City Zoning Code
C. Drive-in facilities for banks or restaurants.
D. Health care facilities as provided for in Sections 20-03.785-20-03.790 of the City Zoning Code
E. Medical offices/clinics
F. Mixed uses, e.g. commercial, office or institutional combined with residential
G. Parking lots
H. Places of religious worship
I. Public buildings
J. Public utility structures
K. Residential uses
L. Second hand stores
M. Service stations
N. Veterinary clinics and animal hospitals

Prohibited Uses:

A. Auto sales
B. Convenience Markets
C. Outdoor sales establishments, excluding temporary Christmas Tree/Pumpkin Patch lots.

District Regulations:

A. Development Plan Required: Properties within this district will be required to submit a development plan for Design Review approval. The Development Plan must clearly identify setbacks, lot coverage, building, parking, and landscaping areas.

B. Minimum Lot area and dimensions: None.

C. Minimum yard setback requirements: Setbacks shall be identified on the development plan. Front yard setbacks must take into account ultimate roadway improvements for the area.

D. Maximum building height: Two stories (mezzanines included). Towers or other non-habitable spaces architectural features may extend above the two story limit if approved through Design Review.

E. Maximum area of lot that may be covered by structures: Lot coverage shall be identified on the development plan.

F. Parking: Parking shall be provided as required in Chapter 20-04 of the City Zoning Code.

G. Design Criteria: As the properties within this district are located in an area identified as a City entry and are along roads identified as "Landscaped Parkways & Street Corridors" the properties have an obligation to provide developments of a distinctive and high quality design. In addition to compliance with the City's Design Guidelines and the Community Design Policies of the Southwest Area Plan, the following criteria are also required for new development within this district:

Site Planning:

1. Driveway approaches shall be minimized within the district. Shared driveways shall be encouraged.

2. Parking lot facilities shall be interconnected among parcels within and where feasible adjacent the district.

3. Where feasible, buildings are encouraged to be located along the street frontage with parking to the rear.

Architecture:

4. An overall architectural uniqueness shall be provided for the district as a whole, including a superior design and quality building materials.

5. The use of architectural features such as pitched roof elements, towers, and variety in massing are encouraged.

6. Trademark or corporate architectural themes are prohibited.

ORDINANCE NO. 3181

AN ORDINANCE OF THE COUNCIL OF THE CITY OF SANTA ROSA PREZONING THE PARCELS INCLUDED WITHIN PROPOSED SOUTHWEST SANTA ROSA ANNEXATION NUMBER 2-94 - FILE NUMBER 94-0303-00

THE PEOPLE OF THE CITY OF SANTA ROSA DO ENACT AS FOLLOWS:

Section 1. The Council of the City of Santa Rosa finds, based on the evidence and records presented, that the prezoning classifications consisting of Planned Community (PC), Public Building (PB), General Commercial Planned Development (C-2-PD), Planned Industrial (PM), Single Family Residential (R-1-6, R-1-7.5, R-1-9, or R-1-15) Small Lot, Single Family Residential (R-1-2/6), Rural Residential (RR-40 or RR-20), Multiple Family Residential (R-2), and Residential/Professional Office (R-4) are appropriate for the properties identified in Section 2 and such classifications are consistent with the Santa Rosa General Plan (Southwest Area Plan) in that:

1. The annexation boundary is a logical extension of the City boundary because it is contiguous with the existing City limits and is within the urban boundary.

2. The property is situated within the Neighborhood Commons, Parks/Recreation, Residential-Low Density/Open Space, Residential-Low Density, Residential-Medium-Low Density, and Residential-Medium Density/Office, Business Park, Retail Business and Service, designations as shown on the Land Use Diagram of the City's Southwest Area Plan (General Plan), which designations permit parks, recreation, retail, service, light industrial, and office uses as well as residential development at various densities ranging from .025 to 18 dwelling units per acre.

3. That the proposed prezoning classifications (in particular the proposed Planned Community prezoning for Courtside Village) are consistent with the Southwest Area Plan in that they implement the policies of the plan, specifically the land use, circulation, and community service and facility goals, objectives, and policies identified in the Planning Commission staff report.

4. The proposed Rural Residential (RR-20 and RR-40) prezoning classifications are consistent with the Southwest Area Plan (Policy CSF-2.1.3) in that they implement mitigation measure 3.1.7-4 of the Southwest Area Plan Final Environmental Impact Report.

5. The proposed Single Family Residential (R-1-6, R-1-7.5, R-1-9, and R-1-15) prezoning classifications are consistent with the Southwest Area Plan (Policy CSF-2.1.3) in that they recognize existing single family uses and implement mitigation measure 3.1.7-4 of the Southwest Area Plan Final Environmental Impact Report.

6. That the proposed Residential/Professional Office (R-4) classification is consistent with the Residential Medium Density/Office land use designations of Southwest Area Plan and will implement the goals, objectives, and policies of said Plan.

7. That the proposed Multiple Family Residential (R-2) classification is consistent with the Residential Low Density land use designations of Southwest Area Plan and implement the goals, objectives, and policies of said Plan as well as recognize existing duplex units.

8. That the proposed Public Building (PB) classification is consistent with the Public/Institutional designation of the Southwest Area Plan and recognizes the existing Santa Rosa Christian School and possibilities for expanding the campus.

9. That the proposed Planned Industrial (PM) classification is consistent with the Business Park designation of the Southwest Area Plan and will implement the goals, objectives, and policies of said Plan.

10. The proposed Courtside Village Planned Community District will promote a distinctive project of the highest quality in that the proposed Development Plan and Policy Statement provides for new recreational amenities (tennis club, parks, bike trail access and improvements); the potential for a diverse mix of housing densities; and the potential for an accommodation of non-auto oriented modes of transportation (pedestrian walkways, bicycle paths, and transit stops).

11. Adequate City services can be provided for the proposed annexation as evidenced by the Plan for Providing Services prepared by the applicant for the Sonoma County Local Agency Formation Commission and reviewed by the City staff.

Section 2. All conditions required by law having been satisfied and all findings with relation thereto having been made, the "Zoning Map of the City of Santa Rosa" as described in Section 20-02.287 of the Santa Rosa City Code, is hereby amended so as to place the following prezoning classifications on the following identified properties (Graphically depicted on Exhibit "A" attached hereto):

Sonoma County Assessor's Parcels numbered 035-063-005 (that portion 204 feet to the rear of the front parcel line); 035-063-006, -007, -008, -018, -019, -020, -023, -028, -029, and -030; 035-091-015 and -017; 035-093-007; 035-102-003, -004, -011; 035-251-028, -029, -036, and -043 are prezoned to the City's RR-40 (Interim Rural Residential) District.

Sonoma County Assessor's Parcels numbered 035-063-022, -024, -026, and -027; 035-091-005, -006, -008, -009, and -023; 035-093-005, -006, -015, and -031; 035-102-012, -013, and -017; 035-251-025, -034, and -041 are prezoned to the City's RR-20 (Rural Residential) District.

Sonoma County Assessor's Parcels numbered 035-091-011, -014, and -027; 035-093-023, -024, and -025; 035-251-002, -030, and -044 are prezoned to the City's R-1-15 (Single-Family Residential) District.

Sonoma County Assessor's Parcels numbered 035-063-025; 035-091-002, -018, -019, -021, 035-093-011, -026, and -033; 035-251-003, -009, -014, -026, and -033 are prezoned to the City's R-1-9 (Single-Family Residential) District.

Sonoma County Assessor's Parcels numbered 035-091-020 and 035-251-040 are prezoned to the City's R-1-7.5 (Single-Family Residential) District.

Sonoma County Assessor's Parcels numbered 035-093-002, -003, -009, -010, -012, -013, and -021; 035-094-001; and 035-251-038, -039, and -045 are prezoned to the City's R-1-6 (Single-Family Residential) District.

Sonoma County Assessor's Parcels numbered 035-063-017 and -021; 035-091-016, -022 and -025; 035-094-002 and 035-251-032 are prezoned to the City's R-1-2/6 (Small Lot Single-Family Residential) District.

Sonoma County Assessor's Parcels numbered 035-093-017 and -018 are prezoned to the City's R-4 (Residential/Professional Office) District.

Sonoma County Assessor's Parcels numbered 035-093-016 and 035-251-013 are prezoned to the City's R-2 (Multiple Family [Duplex] Residential) District.

Sonoma County Assessor's Parcels numbered 035-063-009 through -016 and 035-091-026 and 035-102-009, -010, -015, -016, -020, -021, -023, -025, and -026 are prezoned to the City's PC (Planned Community) District.

Sonoma County Assessor's Parcels numbered 035-063-001 through -004; 035-093-035; and the southern 204 feet of parcel 035-063-005 are prezoned to the City's C-2-PD (General Commercial-Planned Development) District.

Sonoma County Assessor's Parcels numbered 035-063-031, -032, -035, -036, -037, and -038; 035-251-017 through -023 and -037 are prezoned to the City's PM (Planned Industrial) District.

Sonoma County Assessor's Parcels numbered 035-093-036, -037, and -038 are prezoned to the City's PB (Public Building) District.

Section 3. In accordance with the provisions of Section 20-02.287 of the Santa Rosa City Code, the prezoning classifications set forth in Section 2 of this ordinance shall become the zoning classification of each parcel of real property therein identified upon the completion of the parcel's annexation to the City of Santa Rosa.

Section 4. This ordinance shall take effect on the 31st day following its adoption.

IN COUNCIL DULY PASSED AND ADOPTED this 28th day of March, 1995.

AYES: (5) Mayor Pedgrift; Councilmembers Berto, Condron, Wiggins and Wright

NOES: (0)

ABSENT: (0)

ABSTAIN: (0)

APPROVED: James Pedgrift
Mayor

ATTEST: Gaele Petersen
Assistant City Clerk

APPROVED AS TO FORM:

RGC
City Attorney

City of Santa Rosa
Community Development

Elm Tree Station

874 North Wright Road, Santa Rosa, CA (Sonoma County)
Assessor's Parcel No. 035-063-001

Initial Study/Mitigated Negative Declaration

Lead Agency:

City of Santa Rosa
Community Development Department
100 Santa Rosa Avenue, Rm. 3
Santa Rosa, CA 95404

Contact: Jessica Jones, Senior Planner

Date: August 26, 2013

City of Santa Rosa
Community Development

DATE: August 26, 2013

TO: Public Agencies, Organizations and Interested Parties

FROM: Jessica Jones, Senior Planner

SUBJECT: **NOTICE OF PUBLIC REVIEW AND INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION**

Pursuant to the State of California Public Resources Code and the "Guidelines for Implementation of the California Environmental Quality Act of 1970" as amended to date, this is to advise you that the Department of Community Development of the City of Santa Rosa has prepared an Initial Study on the following project:

Project Name:

Elm Tree Station

Location:

874 North Wright Road, Santa Rosa, Sonoma County, California, APN: 035-063-001.

Property Description:

The currently undeveloped project area is comprised of a single parcel totaling approximately 0.98 acres. The site is bordered to the north by the Joe Rodota Trail and Highway 12, to the south by a propane distribution business, to the west by North Wright Road and a construction product and equipment supplier, and to the east by undeveloped residential land.

Topography of the project site varies from previously graded level areas to nearly level undulating terrain, bisected by a man-made ditch that appears to dip to a lower elevation at the southeast corner of the project site. Elevations range from 89.76 to 94.57 feet above sea level, with the highest point occurring at the site of a former home at the northwestern corner of the project site, and the lowest point at the centerline of the man-made ditch.

Two topographic depressions on the east side of the project site and the man-made ditch all support seasonal wetlands. Vegetation on the site consists primarily of a mix of non-native annual grassland, seasonal wetland vegetation and ruderal (weedy) vegetation and ornamental plants. There are ten trees on site including Chinese Elm, Valley Oak, Oregon Ash, Mayten, Monterey Pine and White Poplar. The project site is located within the potential range of the California Tiger Salamander, and also provides suitable nesting habitats for the Red Shouldered and Red-Tailed Hawks, as well as the White-Tailed Kite.

The project site is designated as Retail and Business Services by the General Plan, and is zoned Planned Development (PD-0435: Wright-Sebastopol Commercial District).

Project Description:

Overall Site Improvements

The proposed project includes a request to subdivide the 0.98 acre site into two parcels. Parcel 1 is proposed at 31,143 square-feet in size and would be developed with a gasoline and electric charge fueling station and a neighborhood market with a 1-bedroom apartment above. Parcel 2 is proposed at 11,600 square-feet and would be developed with a small retail building and park amenities, including a patio/trellis area, benches and picnic area and bike path.

The proposed neighborhood market would be approximately 3,448 square-feet in size, and will include outdoor patio seating. The upper floor of the market is proposed as an 806-square-foot, one-bedroom apartment, which the applicant has stated would potentially be used by staff of the market and gas station.

The fueling station includes six pumps and four electric charging stations. The canopy over the fueling pumps will include photovoltaic panels, as will the covered parking area at the east side of Parcel 1.

The small retail building on proposed Parcel 2 would be 432 square-feet in size, and, while the intended use is has not yet been determined, would potentially be used for a food service use. Parcel 2 also would include park-like amenities, as noted above, including a bike path that would traverse the eastern and southern boundaries of the project site from the Joe Rodota Trail to North Wright Road.

Two existing trees, a Valley Oak and a Chinese Elm, will be retained, and new landscaping will be added along the perimeter of the site, as well as throughout proposed Parcel 2. Proposed landscaping includes a variety of, primarily low water usage, trees, shrubs, groundcover, vines, perennials and grasses. The site will also include a new split-rail fence along the northern property line, adjacent to the Joe Rodota Trail, as well as a 4-foot tall screen panel fence along the eastern property line.

There are two proposed driveways to the site off of North Wright Road. The southerly driveway will provide both ingress and egress, while the northerly driveway will provide egress only. The proposal provides for clear circulation for vehicles and fueling trucks, as well as vehicle clearance with the presence of a truck during fueling operations. Eighteen parking spaces are proposed, three of which will be covered, which meets the Zoning Code requirements for the project. The project also proposes eight bicycle parking spaces, including traditional bike racks and one bike locker, which is consistent with Zoning Code requirements.

Site lighting includes twelve LED can lights under the fueling canopy, and two under the covered parking area. Decorative wall mounted lights and recessed can down-lights will illuminate the front and eastern side of the market building, while landscaping up-lights will illuminate the back market walls that face the Joe Rodota Trail and the proposed monument sign adjacent to North Wright Road. Ten-foot tall cut-off pole lights will be located along the proposed bike path, and 42-inch tall bollard lights will be located on either side of the proposed outdoor dining area on the eastern side of the proposed market. All lighting will be designed and located to prevent light and glare on neighboring properties.

The project has been designed to incorporate temporary, pollution prevention and permanent storm water Best Management Practices to minimize the introduction of pollutants in downstream water bodies. Bioretention areas are proposed along the parking areas, and a pervious concrete gutter pan along the head of the parking areas and some drive aisles will allow storm water to filter into the bioretntion areas and interact with the plants in the landscape strip. Building roof-top water will be collected, conveyed in pipes and allowed to enter the bioretntion areas. In large storm events, when the bioretention areas are at capacity, water will run down the building gutters, collect in catch basins and then be piped to the City of Santa Rosa storm drain system.

Santa Rosa Climate Action Plan Compliance (CAP)

The Elm Tree Station project incorporates all of the following policy measures contained in the CAP (listed by CAP policy), these include the following:

Policy 1.1.1 – Comply with CAL Green Tier 1 Standards: Construction documents will be designed to comply with State Energy requirements for Title 24, City of Santa Rosa's Cal Green requirements and CAL Green Tier 1 Standards.

Policy 1.3.1 – Install real-time energy monitors to track energy use: The project will install a "Smart Meter" system to provide real-time monitoring of energy usage.

Policy 1.4.2 – Comply with the City's Tree Preservation Ordinance (Santa Rosa Code Section 17-24.020): Existing trees have been preserved to the greatest extent possible and mitigation trees are proposed on site for those trees that are proposed for removal.

Policy 1.4.3 – Provide public and private trees incompliance with the Zoning Code: New trees and plantings associated with development of the Elm Tree Station project shown on the Conceptual Landscape Plan will be installed in compliance with the Santa Rosa Zoning Code and Santa Rosa Design Review Landscape Standards for planting private and public trees.

Policy 1.5 – Install new sidewalks and paving with high solar reflectivity materials: The project includes light colored concrete and light colored paving seal coat.

Policy 2.1.3 – Pre-wire and pre-plumb for solar thermal or PV systems: The project will include both a photovoltaic system and pre-wiring for potential future additional PV system(s).

Policy 3.2.2 – Improve non-vehicular network to promote walking, biking: The project includes a bicycle and pedestrian path that ties into the Joe Rodota Trail. In addition, the project also includes seating and bicycle racks to serve and support Joe Rodota Trail users.

Policy 3.2.3 – Support mixed-use, higher-density development near services: The project is mixed use in nature (it combines a retail market, a residential unit and automobile/pedestrian/bicycle uses).

Policy 3.6.1 – Install calming features to improve ped/bike experience: The project has seating areas, patios and a market that improve the pedestrian/bicyclist experience.

Policy 4.1.1 – Implement the Bicycle and Pedestrian Master Plan: The project's pedestrian/bicycle path and amenities for users (see Policy 3.6.1 above) support the Bicycle and Pedestrian Master Plan.

Policy 4.1.2 – Install bicycle parking consistent with regulations: Proposed Parcels 1 and 2 both have bicycle parking for the two buildings and the Joe Rodota Trail users, consistent with the Zoning Code requirements.

Policy 4.5.1 – Include facilities for employees that promote telecommuting: The proposed residential unit is intended to be occupied by an employee of the market.

Policy 5.1.2 – Install electric vehicle charging equipment: The service station on proposed Parcel 1 includes four electrical vehicle charging stations, two of which are covered and dedicated to electric vehicle use only.

Policy 6.1.3 – Increase diversion of construction waste: A construction waste management plan will be created in compliance with CalGreen Tier 1 Standards.

Policy 7.1.1 – Reduce potable water for outdoor landscaping: As shown on the landscape plan, lower water usage landscaping will be installed to reduce potable water usage.

Policy 7.1.3 – Use water meters which track real-time water use: The project will have water meters with real-time usage tracking, assuming that the City of Santa Rosa has this capacity at the time of construction.

Policy 9.1.3 – Install low water use landscapes: Low water use native plants will be used to landscape the site. Plant materials and locations are shown on the project landscape plans.

Policy 9.2.1 – Minimize construction equipment idling time to 5 minutes or less: Construction procedures complying with the Climate Action Plan new development checklist will be noted in the project specifications and construction documents.

Policy 9.2.2 – Maintain construction equipment per manufacturer's specifications: Construction procedures complying with the Climate Action Plan new development checklist will be noted in the project specifications and construction documents.

Policy 9.2.3 – Limit Green House Gas (GHG) construction equipment by using electrified equipment or alternate fuels: Construction procedures complying with the Climate Action Plan new development checklist will be noted in the project specifications and construction documents.

Required Entitlements/Permits

In addition to the requisite building and/or encroachment permits, Tentative Map, Conditional Use Permit and Design Review approvals are required for the proposed project.

Environmental Issues:

The proposed project would not result in potentially significant impacts. The Initial Study/Mitigated Negative Declaration document has been prepared in consultation with local, and state responsible and trustee agencies and in accordance with Section 15063 of the California Environmental Quality Act (CEQA). Furthermore, the Initial Study/Mitigated Negative Declaration will serve as the environmental compliance document required under CEQA for any subsequent phases of the project and for permits/approvals required by a responsible agency.

A thirty-day (30-day) public review period shall commence on **September 9, 2013**. Written comments must be sent to the City of Santa Rosa, Community Development Department, Planning Division, 100 Santa Rosa Avenue, Room 3, Santa Rosa CA 95404 **by October 8, 2013.** The City of Santa Rosa Planning Commission will hold a public hearing on the Initial Study/Mitigated Negative Declaration and project merits on **October 10, 2013 in the Santa Rosa City Council Chambers at City Hall (address listed above). Correspondence and comments can be delivered to Jessica Jones, project planner, phone: (707) 543-3410, email: jjones@srcity.org**

ENVIRONMENTAL CHECKLIST

1. Project Title:	Elm Tree Station
2. Lead Agency Name & Address:	City of Santa Rosa Community Development Department Planning Division 100 Santa Rosa Avenue Santa Rosa, California 95404
3. Contact Person & Phone Number:	Jessica Jones, Senior Planner Phone number: (707) 543-3410 Email: jjones@srcity.org
4. Project Location:	The site is located in the City of Santa Rosa, Sonoma County, California at 874 North Wright Road, Assessor's Parcel Nos. 035-063-001.
5. Project Sponsor's Name & Address:	Project Sponsor Mangal Dhilon 2743 Yulupa Avenue Santa Rosa, CA 95405 Sponsor's Representative Jean Kapolchok J. Kapolchok & Associates 843 2nd Street Santa Rosa, CA 95404
6. General Plan Designation:	Retail and Business Services
7. Zoning:	Planned Development (PD-0435: Wright-Sebastopol Commercial District)

8. Description of Project: (Describe the whole action involved, included but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach separate sheets if necessary.)

Overall Site Improvements

The proposed project includes a request to subdivide the 0.98 acre site into two parcels. Parcel 1 is proposed at 31,143 square-feet in size and would be developed with a gasoline and electric charge fueling station and a neighborhood market with a 1-bedroom apartment above. Parcel 2 is proposed at 11,600 square-feet and would be developed with a small retail building and park amenities, including a patio/trellis area, benches and picnic area and bike path.

The proposed neighborhood market would be approximately 3,448 square-feet in size, and will include outdoor patio seating. The upper floor of the market is proposed as an 806-square-foot, one-bedroom apartment, which the applicant has stated would potentially be used by staff of the market and gas station.

The fueling station includes six pumps and four electric charging stations. The canopy over the fueling pumps will include photovoltaic panels, as will the covered parking area at the east side of Parcel 1.

The small retail building on proposed Parcel 2 would be 432 square-feet in size, and, while the intended use is has not yet been determined, would potentially be used for a food service use. Parcel 2 also would include park-like amenities, as noted above, including a bike path that would traverse the eastern and southern boundaries of the project site from the Joe Rodota Trail to North Wright Road.

Two existing trees, a Valley Oak and a Chinese Elm, will be retained, and new landscaping will be added along the perimeter of the site, as well as throughout proposed Parcel 2. Proposed landscaping includes a variety of, primarily low water usage, trees, shrubs, groundcover, vines, perennials and grasses. The site will also include a new split-rail fence along the northern property line, adjacent to the Joe Rodota Trail, as well as a 4-foot tall screen panel fence along the eastern property line.

There are two proposed driveways to the site off of North Wright Road. The southerly driveway will provide both ingress and egress, while the northerly driveway will provide egress only. The proposal provides for clear circulation for vehicles and fueling trucks, as well as vehicle clearance with the presence of a truck during fueling operations. Eighteen parking spaces are proposed, three of which will be covered, which meets the Zoning Code requirements for the project. The project also proposes eight bicycle parking spaces, including traditional bike racks and one bike locker, which is consistent with Zoning Code requirements.

Site lighting includes twelve LED can lights under the fueling canopy, and two under the covered parking area. Decorative wall mounted lights and recessed can down-lights will illuminate the front and eastern side of the market building, while landscaping up-lights will illuminate the back market walls that face the Joe Rodota Trail and the proposed monument sign adjacent to North Wright Road. Ten-foot tall cut-off pole lights will be located along the proposed bike path, and 42-inch tall bollard lights will be located on either side of the proposed outdoor dining area on the eastern side of the proposed market. All lighting will be designed and located to prevent light and glare on neighboring properties.

The project has been designed to incorporate temporary, pollution prevention and permanent storm water Best Management Practices to minimize the introduction of pollutants in downstream water bodies. Bioretention areas are proposed along the parking areas, and a pervious concrete gutter pan along the head of the parking areas and some drive aisles will allow storm water to filter into the bioretntion areas and interact with the plants in the landscape strip. Building roof-top water will be collected, conveyed in pipes and allowed to enter the bioretntion areas. In large storm events, when the bioretention areas are at capacity, water will run down the building gutters, collect in catch basins and then be piped to the City of Santa Rosa storm drain system.

Santa Rosa Climate Action Plan Compliance (CAP)

The Elm Tree Station project incorporates all of the following policy measures contained in the CAP (listed by CAP policy), these include the following:

Policy 1.1.1 – Comply with CAL Green Tier 1 Standards: Construction documents will be designed to comply with State Energy requirements for Title 24, City of Santa Rosa's Cal Green requirements and CAL Green Tier 1 Standards.

Policy 1.3.1 – Install real-time energy monitors to track energy use: The project will install a "Smart Meter" system to provide real-time monitoring of energy usage.

Policy 1.4.2 – Comply with the City's Tree Preservation Ordinance (Santa Rosa Code Section 17-24.020): Existing trees have been preserved to the greatest extent possible and mitigation trees are proposed on site for those trees that are proposed for removal.

Policy 1.4.3 – Provide public and private trees incompliance with the Zoning Code: New trees and plantings associated with development of the Elm Tree Station project shown on the Conceptual Landscape Plan will be installed in compliance with the Santa Rosa Zoning Code and Santa Rosa Design Review Landscape Standards for planting private and public trees.

Policy 1.5 – Install new sidewalks and paving with high solar reflectivity materials: The project includes light colored concrete and light colored paving seal coat.

Policy 2.1.3 – Pre-wire and pre-plumb for solar thermal or PV systems: The project will include both a photovoltaic system and pre-wiring for potential future additional PV system(s).

Policy 3.2.2 – Improve non-vehicular network to promote walking, biking: The project includes a bicycle and pedestrian path that ties into the Joe Rodota Trail. In addition, the project also includes seating and bicycle racks to serve and support Joe Rodota Trail users.

Policy 3.2.3 – Support mixed-use, higher-density development near services: The project is mixed use in nature (it combines a retail market, a residential unit and automobile/pedestrian/bicycle uses).

Policy 3.6.1 – Install calming features to improve ped/bike experience: The project has seating areas, patios and a market that improve the pedestrian/bicyclist experience.

Policy 4.1.1 – Implement the Bicycle and Pedestrian Master Plan: The project's pedestrian/bicycle path and amenities for users (see Policy 3.6.1 above) support the Bicycle and Pedestrian Master Plan.

Policy 4.1.2 – Install bicycle parking consistent with regulations: Proposed Parcels 1 and 2 both have bicycle parking for the two buildings and the Joe Rodota Trail users, consistent with the Zoning Code requirements.

Policy 4.5.1 – Include facilities for employees that promote telecommuting: The proposed residential unit is intended to be occupied by an employee of the market.

Policy 5.1.2 – Install electric vehicle charging equipment: The service station on proposed Parcel 1 includes four electrical vehicle charging stations, two of which are covered and dedicated to electric vehicle use only.

Policy 6.1.3 – Increase diversion of construction waste: A construction waste management plan will be created in compliance with CalGreen Tier 1 Standards.

Policy 7.1.1 – Reduce potable water for outdoor landscaping: As shown on the landscape plan, lower water usage landscaping will be installed to reduce potable water usage.

Policy 7.1.3 – Use water meters which track real-time water use: The project will have water meters with real-time usage tracking, assuming that the City of Santa Rosa has this capacity at the time of construction.

Policy 9.1.3 – Install low water use landscapes: Low water use native plants will be used to landscape the site. Plant materials and locations are shown on the project landscape plans.

Policy 9.2.1 – Minimize construction equipment idling time to 5 minutes or less: Construction procedures complying with the Climate Action Plan new development checklist will be noted in the project specifications and construction documents.

Policy 9.2.2 – Maintain construction equipment per manufacturer's specifications: Construction procedures complying with the Climate Action Plan new development checklist will be noted in the project specifications and construction documents.

Policy 9.2.3 – Limit Green House Gas (GHG) construction equipment by using electrified equipment or alternate fuels: Construction procedures complying with the Climate Action Plan new development checklist will be noted in the project specifications and construction documents.

Required Entitlements/Permits

In addition to the requisite building and/or encroachment permits, Tentative Map, Conditional Use Permit and Design Review approvals are required for the proposed project.

9. Surrounding Land Uses and Setting: (Briefly describe the projects surroundings)

The currently undeveloped project area is comprised of a single parcel totaling approximately 0.98 acres. The site is bordered to the north by the Joe Rodota Trail and Highway 12, to the south by a propane distribution business, to the west by North Wright Road and a construction product and equipment supplier, and to the east by undeveloped residential land.

Topography of the project site varies from previously graded level areas to nearly level undulating terrain, bisected by a man-made ditch that appears to dip to a lower elevation at the southeast corner of the project site. Elevations range from 89.76 to 94.57 feet above sea level, with the highest point occurring at the site of a former home at the northwestern corner of the project site, and the lowest point at the centerline of the man-made ditch.

Two topographic depressions on the east side of the project site and the man-made ditch all support seasonal wetlands. Vegetation on the site consists primarily of a mix of non-native annual grassland, seasonal wetland vegetation and ruderal (weedy) vegetation and ornamental plants. There are ten trees on site including Chinese Elm, Valley Oak, Oregon Ash, Mayten, Monterey Pine and White Poplar. The project site is located within the potential range of the California Tiger Salamander, and also provides suitable nesting habitats for the Red Shouldered and Red-Tailed Hawks, as well as the White-Tailed Kite.

The project site is designated as Retail and Business Services by the General Plan, and is zoned Planned Development (PD-0435: Wright-Sebastopol Commercial District).

10. Other Public Agencies Whose Approval Is Required: (e.g., permits, financing approval, or participation agreement.)

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture Resources	☒ Air Quality
☒ Biological Resources	☐ Cultural Resources	☒ Geology /Soils
☐ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials	☐ Hydrology / Water Quality
☐ Land Use / Planning	☐ Mineral Resources	☒ Noise
☐ Population / Housing	☐ Public Services	☐ Recreation
☐ Transportation / Traffic	☐ Utilities / Service Systems	☐ Mandatory Findings Of Significance

DETERMINATION

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at lest one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an EARLIER EIR or NEGATIVE DECLARATION pursuant to applicable legal standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____ _____

Signature Date

Jessica Jones, Senior Planner

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact
I. AESTHETICS				
Would the project:				
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c. Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Discussion:

I.(a) No Impact.

The site is not located on a street that is designated as a Scenic Road in the Santa Rosa 2020 General Plan. Because the subject site is relatively flat, surrounded by light industrial and commercial uses to the south and west, Highway 12 to the north and a vacant residential site to the east that will likely be developed with multi-family residential, and is not on a main street, there will be no impact to scenic vistas.

I.(b) No Impact.

There are no waterways, or historic buildings located on the site, therefore there will be no impact to existing scenic resources.

I.(c) Less-Than-Significant Impact.

The proposed project meets the objectives of the City's Design Review Guidelines. The project, as described herein, is not anticipated to substantially degrade the existing visual character or quality of the site and its surroundings as it will introduce a commercial fueling station, market, with an apartment unit for a potential employee, and small retail building that is in keeping with the generally with the mixed commercial/industrial and residential nature of the surroundings. The proposal offers a sensitive interface with the Joe Rodota Trail at the north of the property, and is designed to preserve a two of the more significant existing heritage trees on site.

I.(d) Less-Than-Significant Impact.

The City of Santa Rosa Design Guidelines for Retail Centers and Commercial Districts require that all outdoor lighting fixtures be limited to a maximum height of 16 feet in parking lots. In addition, the City of Santa Rosa Zoning Code (Code) Section 20-30.080 requires that lighting fixtures be shielded or recessed to reduce light bleed to adjoining properties, and that each light fixture be directed downward and away from adjoining properties and public rights-of-way, so that no on-site light fixture directly illuminates an area off the site. With these requirements in place, the proposed project will not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Standard Measures:

- Design Review is required for the project. Design Review will be obtained prior to issuance of a building permit.
- A standard condition of approval regarding exterior lighting requirements will be placed on the project.
- Conformance review shall occur at the building permit stage.

Recommended Mitigation Measures:

No mitigation required.

Sources:

- City of Santa Rosa Design Guidelines, September 2002
- City of Santa Rosa Zoning Code, 2006

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact

II. AGRICULTURE AND FOREST RESOURCES

(In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.) Would the project:

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c. Conflict with existing zoning for, or cause rezoning of, forest land (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))?	☐	☐	☐	☒
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	☒

Discussion:

II.(a-e) No Impact.

There are no important Federal or State farmlands identified within the City limits of the City of Santa Rosa. The project site is not under a Williamson Act contract, nor would the project create a conflict to agricultural uses since none occur in the area. The Santa Rosa 2035 General Plan does not identify any Agricultural land within the Urban Growth Boundary (UGB). This project is within the UGB and therefore will cause no impact to conversion of agricultural lands or result in the loss of forest land.

Standard Measures:

None.

Recommended Mitigation Measures:

No mitigation required.

Sources:

- City of Santa Rosa's Geographic Information System Database
- City of Santa Rosa General Plan 2035, adopted November 3, 2009, and Final EIR, certified November 3, 2009

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact
III. AIR QUALITY				
Would the project: (*Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.)*				
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☒	☐	☐
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐
c. Result in a cumulatively considerable net increase any criteria pollutant for which the project region is non – attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☒	☐	☐
d. Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
e. Create objectionable odors affecting a substantial number of people?	☐	☒	☐	☐

Discussion:

III.(a-e). Less than Significant with Mitigation Incorporation.

Vehicle Trips

A Traffic Impact Study, dated July 26, 2013, was prepared by Whitlock & Weinberger Transportation, Inc. (W-Trans). The report indicates that the proposed Elm Tree Station project is anticipated to generate an average of 1,506 vehicle trips per day. This includes 73 vehicle trips during the a.m. peak hour and 91 vehicle trips during the p.m. peak hour. Some portion of traffic associated with the commercial uses would be drawn from existing traffic on nearby streets. These vehicle trips are not considered "new", but are instead comprised of drivers who are already driving on the adjacent street and choose to make an interim stop. These trips are referred to as "pass-by". The percentage of these pass-by trips was based on information provided by the Institute of Transportation Engineers (ITE) in the *Trip Generation Manual*, 9th Edition, 2012. The pass-by data presented by ITE is in the range of 48 to 87 percent of total trips. To ensure a conservative analysis, a pass-by rate at the lower end of the range of published data of 50 percent was applied to this analysis.

Based on the Bay Area Air Quality Management District's thresholds of significance, projects that generate fewer than 2,000 vehicle trips per day are not considered major air pollutant contributors and do not require a technical air quality study. As such, the project is expected to have a less-than-significant impact relative to air quality impacts related to vehicle usage.

Construction Impacts

The project would generate temporary air pollutant emissions during construction activities. The short-term air quality impacts during construction would be associated primarily with an increase in suspended particulates (dust). Construction activities, including site clearing and soil disturbance, could generate dust emissions and locally elevated levels of particulates (i.e., PM10) downwind of construction activities. This increase in dust could result in potentially significant short-term impacts on nearby residential uses. The BAAQMD provides feasible control measures for construction emissions of PM10. The potentially significant air quality impacts would be reduced to a less-than-significant level with the mitigation presented below.

This project would use typical construction equipment such as trucks and bulldozers. This type of equipment can generate temporary emissions of ozone precursors (i.e., nitrogen oxides and volatile organic compounds). These emissions are accommodated in the emission inventory of the state and federally required air plans and would not have a significant impact on the attainment and maintenance of ozone standards. In addition, toxic air contaminants (TACs), such as diesel exhaust, are emitted from various construction vehicles and equipment. The project would require limited construction activities and would not emit substantial TACs.

Standard Measures:

None.

Recommended Mitigation Measures:

AQ-1 The Applicant shall implement air quality protection measures recommended by the BAAQMD, including but not limited to those listed below, to reduce diesel particulate matter and $PM_{2.5}$ from construction operations to ensure that short-term health impacts are avoided:

a. Water all active construction grading areas at least twice daily and more often during windy periods.

b. Cover all hauling trucks or maintain at least two feet of freeboard.

c. Pave, apply water at least twice daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas.

d. Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas. Sweep streets daily (with water sweepers) if visible soil material is deposited onto adjacent roads.

e. Enclose, cover, water twice daily, or apply (non-toxic) soil binders to exposed stockpiles.

f. Limit traffic speeds on any unpaved roads to 15 mph.

g. Suspend construction activities that cause visible dust plumes that extend beyond the construction site.

h. A Disturbance Coordinator will be assigned to the Project at least for the full duration of demolition activities, grading, excavation, and building construction. This coordinator will ensure that all air quality mitigation measures are enforced. In addition, the Disturbance Coordinator will respond to complaints from the public regarding air quality issues (e.g., dust and odors) in a timely manner. The contact information for this Coordinator will be posted in plain view at the

Project site. The Coordinator will also be responsible for notifying adjacent properties of the demolition schedules.

i. Opacity is an indicator of exhaust particulate emissions from off-road diesel powered equipment. The Disturbance Coordinator shall ensure that emissions from all construction diesel powered equipment used on the Project site do not exceed 40 percent opacity for more than three minutes in any one hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately. Any equipment emitting dark smoke 3 minutes after start up is in violation of this measure.

j. Properly tune and maintain equipment in accordance with manufacturer specifications.

k. Reduce combustion emissions during construction as required in the California Air Resources Board Off-Road Diesel Rule. The "no idling" rule for in-use off-road diesel-fueled vehicles limits idling for such vehicles to no more than five minutes. Signs shall be clearly posted at the construction sites indicating the idle times for construction-related equipment shall be minimized and noting that no diesel equipment shall idle for more than five minutes. Idling necessary to accomplish work for which a vehicle was designed (such as operating a crane) are exempt from the rule (see rule for additional exemptions).

l. During renovation and demolition activities, removal or disturbance of any materials containing asbestos, lead paint or other hazardous pollutants will be conducted in accordance with BAAQMD rules and regulations or other regulatory requirements.

Sources:

- City of Santa Rosa General Plan 2035, adopted November 3, 2009, and Final EIR, certified November 3, 2009
- Traffic Impact Study for the Elm Tree Station Project, prepared by Whitlock & Weinberger Transportation, Inc., dated July 26, 2013

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES				
Would the project:				
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☒	☐	☐

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact
c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☒	☐	☐

Discussion:

IV.(a, b, d, f) Less than Significant with Mitigation Incorporation.

The 0.98 acre site, which is currently undeveloped, at one time was the site of a former residential home, and now includes ornamental trees, shrubs and a pit in the location of a removed septic tank. A man-made ditch starts in the central eastern portion of the project site, runs diagonally through the site, and terminates at a stormdrain inlet structure on the west side, alongside North Wright Road. Project site vegetation is characterized as ruderal (weedy) and ornamental vegetation, non-native annual grassland and seasonal wetland.

A Biological Resources Analysis (Analysis), dated November 6, 2012, was prepared for the project by Monk & Associates, Inc. The Analysis provides a description of existing biological resources on the project site and identifies potentially significant impacts that could occur to sensitive biological resources, including common plant and animal species, special-status plants and animals and waters of the United States, from the development of the proposed project.

Potential Special-Status Plants on the Project Site:

According to the California Native Plant Society Inventory and the California Department of Fish and Game's Natural Diversity Database, a total of 62 special-status plant species are known to occur in the region of the project site. However, as discussed in the Analysis, the project site's ruderal and non-native, annual grassland with two small seasonal wetlands provides suitable habitat for only 14 of these 62 special-status plant species. None of the 14 special-status plant species were found on the site by Monk & Associates, Inc. during their investigation. However, the Analysis identified three species, including Sonoma Sunshine, Burke's Goldfields

and Sebastopol Meadowfoam, that could be potentially impacts. Specifically, although none of the aforementioned species were observed on the site after two years of appropriately timed surveys, according to the U.S. Fish and Wildlife Service's Santa Rosa Plain Conservation Strategy, any impact to potentially suitable seasonal wetland habitat for all three species would be significant. The mitigation measures identified below address these impacts.

Potential Special-Status Animals on the Project Site:

According to the Analysis, no special-status animals have ever been mapped on the project site. Field surveys, including aquatic dip-netting surveys, were conducted by Monk & Associates, Inc. in March, April, May and June of 2010 and 2011. No special-status animal species were observed on the project site during those studies. However, according to the California Department of Fish and Game's Natural Diversity Database, a total of six special-status animal species are known to occur within five miles of the project site. Of the six species, due to habitat requirements, only one, the California Tiger Salamander, has the potential to occur on the project site.

The project site is within the boundaries of the U.S. Fish and Wildlife Services' designated Critical Habitat of the Sonoma County "Distinct Population Segment" of the California Tiger Salamander (CTS). According to the Analysis, there are 20 reported occurrences of CTS within two miles of the project site, and six separate breeding areas are located within 1.5 miles of the project site. However, the closest breeding site occurs north of Highway 12, a major geographic barrier to CTS movements. The nearest recorded CTS occurrence to the project site that is not separated by physical barriers is approximately 2,000 feet east of the project site, in what was native grassland containing swales, but that is now partially developed.

During Monk & Associates, Inc.'s 2011 spring larval surveys, no CTS were found on the project site. According to the Analysis, the project site does not provide suitable breeding habitat for CTS, hence, no impacts to breeding or larval development habitat are expected from the proposed project. Accordingly, no salvage of CTS will be necessary prior to development of the project site.

According to the Analysis, no adult CTS occurrences have been documented within 500 feet of the project site. However, in accordance with the "Programmatic Biological Opinion of U.S. Army Corps of Engineers Permitted Projects that May Affect California Tiger Salamander and Three Endangered Plant Species on the Santa Rosa Plain (1998)", for projects that are greater than 500 feet and within 2,200 feet of a known breeding site, CTS are required to be mitigated at a 2:1 ratio. Because there are no existing improvements on site, the entire 0.98 acre parcel is considered to provide upland over-summering habitat for CTS. Finally, the Analysis discusses that the project site is located in an area of the Santa Rosa Plain that has been designated in the Final Santa Rosa Plain Conservation Strategy as "potential for presence of CTS and listed plants". As a result, impacts to the CTS from the proposed development are considered potentially significant. However, following a meeting between Monk & Associates, Inc., the U.S. Fish and Wildlife Service and California Department of Fish and Game, the applicant has agreed to purchase 1.96 acres of mitigation credits from a U.S. Fish and Wildlife Service approved mitigation bank. The mitigation measures identified below address the aforementioned impacts.

Additionally, based on Monk & Associates, Inc.'s experience, it is expected that raptors (birds of prey) and passerine (perching birds) could nest in the mature ornamental and native trees on or adjacent to the project site, those species include the Red Shouldered Hawk, Red-Tailed Hawk and White-Tailed Kite. The project site also provides suitable foraging habitat for these particular species. As a result, until nesting surveys are conducted that confirm or negate these species' presence on the project site, nesting impacts from the proposed project are considered potentially significant. Per the Analysis, preconstruction nesting surveys will be conducted before tree removal and earth-moving activities commence on the project site. If nesting of any of the aforementioned species are found on or adjacent to the project site, a buffer will be established until the young have fledged. The mitigation measures identified below address these impacts.

IV.(c) Less than Significant with Mitigation Incorporation.

According to the Biological Resources Analysis (Analysis), dated November 6, 2012, prepared by Monk & Associates, Inc., a preliminary wetland delineation was conducted on the project site on March 16, 2010, using the U.S. Army Corps of Engineers' (Corps) 1 987 "Wetlands Delineation Manual" in conjunction with the regional supplement for the Arid West Region. Subsequently, on September 22, 2010, the Corps field verified the extent of their jurisdiction on the project site pursuant to Section 404 of the Clean Water Act. The Corps confirmed a total of 0.22 acres of waters of the U.S. on the project site. The Analysis identifies that the waters of the U.S. on the site consist of low-quality seasonal wetlands within a man-made ditch, two topographical depressions and a channel leading to a culvert on the southwestern corner of the project site. Construction of the proposed project will result in impacts to all Corps jurisdictional areas.

As stated in the Analysis, The Corps' mapped jurisdictional area would be regulated by the Regional Water Quality Control Board (RWQCB) pursuant to the Porter-Cologne Water Quality Control Act. Since any "threat" to water quality could conceivably be regulated pursuant to the Porter-Cologne Water Quality Control Act, care will be required when constructing the proposed project to be sure that adequate pre- and post-construction Best Management Practices are incorporated into the project implementation plans.

Pursuant to the Analysis, on February 17, 2011, Monk & Associates, Inc. met with the RWQCB's North Coast office and with the Corps to discuss the project. Both the RWQCB and the Corps agreed that impacts to waters of the U.S. and State could be mitigated using a Corps and RWQCB approved wetland conservation bank. The applicant has agreed to purchase 0.45 acres of mitigation credits from the Horn Avenue Mitigation Bank. The mitigation measures identified below address the aforementioned impacts.

IV.(e) Less than Significant with Mitigation Incorporation.

A total of ten trees were evaluated by Horticultural Associates based on their trunk diameter and location in relation to the proposed construction. The ten trees include two Valley Oaks, a Chinese Elm, three White Poplars, an Oregon Ash, a Mayten, and a Monterey Pine. Of the trees evaluated, eight are proposed for removal, four of which are protected trees and four of which are exempt pursuant to the Santa Rosa Tree Ordinance. According to the Tree Preservation and Mitigation Report prepared by Horticultural Associates, dated June 21, 2007, and a follow-up letter from Horticultural Associates, dated October 7, 2012, the project is proposing to preserve and protect the two most significant trees on site, a 17.5-inch Valley Oak and a Chinese Elm, which has trunk diameters of 21.5-inches and 24-inches. The four protected trees that are proposed for removal are a 9.5-inch Oregon Ash, a 7.5-inch Mayten, an 11-inch + 10.5-inch + 13-inch + 12.5-inch + 11-inch Chinese Elm, and a 4-inch + 3.5-inch + 5-inch + 5-inch + 6-inch + 4.5-inch Valley Oak. The mitigation measures identified below address these impacts.

Standard Measures:

None.

Recommended Mitigation Measures:

BR-1 **Nesting Raptors** – In order to avoid impacts to nesting raptors, a nesting survey shall be conducted 30 days prior to commencing with tree removal or construction work if this work would commence between February 1st and August 31st. The raptor nesting surveys shall include examination of all trees within 300 feet of the entire project site (if access is readily available to offsite areas), not just trees slated for removal.

If nesting raptors are identified during the surveys, the dripline of the nest tree must be fenced with orange construction fencing (provided the tree is on the project site), and a 300-foot radius around the

nest tree must be staked with bright orange lath or other suitable staking. If the tree is adjacent to the project site, then the buffer shall be demarcated per above where the buffer occurs on the project site. The size of the buffer may be altered if a qualified raptor biologist conducts behavioral observations and determines the nesting raptors are well acclimated to disturbance. If this occurs, the raptor biologist shall prescribe a modified buffer that allows sufficient room to prevent undue disturbance/harassment to the nesting raptors. No construction or earth-moving activity shall occur within the established buffer until it is determined by a qualified raptor biologist that the young have fledged (that is, left the nest) and have attained sufficient flight skills to avoid project construction zones. This typically occurs by August 1st. This date may be earlier than August 1st, or later, and would have to be determined by a qualified raptor biologist.

BR-2 **Nesting Passerine Birds** – If tree removal or site disturbance would occur between February 1st and August 31st, a nesting survey shall be conducted on the project site prior to the disturbance. The nesting surveys should be completed 15 days prior to commencing with the work. If nesting passerine birds are identified nesting on or near the project site, a 75-foot radius around the nest must be staked with bright orange spray painted lath or construction fencing. If an active nest is found offsite, the portion of the buffer that is onsite must be staked. No construction or earth-moving activity shall occur within this 75-foot staked buffer until it is determined by a qualified ornithologist that the young have fledged (that is, left the nest) and have attained sufficient flight skills to avoid project construction zones.

Typically, most birds in the region of the project site area expected to complete nesting by August 1st. However, in the region many species can complete nesting by mid-June to mid-July. Regardless, nesting buffers should be maintained until August 1st unless a qualified ornithologist determines that young have fledged and are independent of their nests at an earlier date. If buffers are removed prior to August 1st, the qualified biologist conducting the nesting surveys shall prepare a report that provides details about the nesting outcome and the removal of buffers. This report shall be submitted to the City of Santa Rosa Community Development Department prior to the time that buffers are removed if the date is before August 1st.

BR-3 **Waters of the United States and/or State** – The applicant is proposing to mitigate impacts to 0.22 acres (9,623 square-feet) of U.S. Army Corps of Engineers and Regional Water Quality Control Board jurisdictional seasonal wetlands via purchase of mitigation credits from the Horn Avenue Mitigation Bank. Wetlands on the project were mostly created by the former resident as a "sink" collecting surface runoff from the surface area for the private residence relatively recently removed from the site. Wetland vegetation does not consist of vernal pool species, rather is mostly comprised of low value, non-native wetland plant species. As such the proposed impacted wetlands have low functions and services (i.e., they are low quality wetlands). Thus mitigation at a 2:1 ratio (i.e., for each tenth of an acre of impact, compensation shall consist of 2tenths of an acre of mitigation credits) from a qualified mitigation bank is appropriate. Since mitigation credits must be purchased at a minimum of 0.05-acre increments, and since the project will impact 0.22 acres of seasonal wetland, 0.45 acres of mitigation credits shall be purchased from the Horn Mitigation Bank, a qualified wetlands mitigation bank. An agreement with the Horn Mitigation Bank to purchase theses mitigation credits was signed by the applicant on March 12, 2012. Mitigation credits shall be purchased prior to issuance of a building permit. Proof of purchase of the credits shall be provided to the City of Santa Rosa's Community Development Department, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service and the California Department of Fish and Game.

BR-4 **California Tiger Salamander** – In accordance with the "Programmatic Biological Opinion of U.S. Army Corps of Engineers Permitted Projects that May Affect California Tiger Salamander and Three Endangered Plan Species on the Santa Rosa Plain (Programmatic BO)", the applicant will mitigate impacts to 0.98 acres of California Tiger Salamander habitat with the purchase of 1.96 acres of

mitigation credits from a U.S. Fish and Wildlife Service approved mitigation bank. To meet this mitigation requirement, the applicant has agreed to purchase 0.33 acres of combined Sebastopol Meadowfoam (*Limnanthes vinculans*) and California Tiger Salamander (CTS) mitigation credit from the Swift/Turner Conservation Bank. The remaining 1.63 acres of CTS mitigation credits have been purchased from Hale Wetland mitigation and the Hazel Mitigation Bank. An agreement with the Hale and Hazel Mitigation Banks and the Swift/Turner Conservation Bank to purchase these mitigation credits was signed by the applicant on March 12, 2012. CTS and rare plant mitigation credits shall be purchased prior to issuance of a building permit. Proof of purchase of the credits shall be provided to the City of Santa Rosa's Community Development Department, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and California Department of Fish and Game.

BR-5 **Suitable Habitat for Special-Status Plants** – Prior to issuance of a building permit, impacts to suitable habitat for Sonoma sunshine, Burke's goldfields and Sebastopol meadowfoam are required to be mitigated with 1:1 occupied or established habitat (any combination) and 0.5:1 of established habitat. The mitigation land is to be preserved and managed in perpetuity. The proposed project would result in impacts to 0.22 acres of seasonal wetland. Per the Programmatic Biological Opinion, it would be considered "suitable habitat" for listed vernal pool plant species. Thus, the applicant shall mitigate impacts to 0.22 acres of seasonal wetland/endangered plant habitat by purchasing 0.33 acres of credit from a U.S. Fish and Wildlife Services approved mitigation bank (1.5:1 ratio). An agreement with the Swift/Turner Conservation Bank to purchase 0.33 acres of Sebastopol meadowfoam mitigation credits was signed by the applicant on March 12, 2012. Mitigation credits shall be purchased prior to issuance of a building permit. Proof of purchase of the credits shall be provided to the City of Santa Rosa's Community Development Department, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and California Department of Fish and Game.

BR-6 **Loss of Protected or Heritage Trees** – In accordance with Santa Rosa City Code, Chapter 17-24, the alteration, removal or relocation, of heritage, protected, or street trees and shall comply with the mitigation ratio requirements for tree removal mandated by the City Code. The total trunk diameter of heritage trees to be removed is 103 inches. Per the requirements of the City Code, the total trunk diameter is divided by 6 and multiplied by 2 to determine the total number of trees required as mitigation. A total of 35 trees are therefore required to be planted as mitigation. A fee of $100 per replacement tree may be paid to the City of Santa Rosa's Tree Mitigation Fund prior to the removal of the trees in-lieu of planting replacement trees onsite.

The project developer shall comply with all grading, landscaping and pruning provisions contained in the Tree Preservation and Mitigation Report prepared by Horticultural Associates, dated June 21, 2007, consistent with requirements of the City's Tree Ordinance. This shall include, but not be limited to the following:

a. Install temporary protective fencing at the edge of illustrated dripline or the edge of approved construction prior to grading on the site. Maintain fencing in place for duration of construction.

b. Maintain existing grade within the fenced portion of the dripline. Route drainage swales and underground work outside the dripline where possible.

c. Place a 4-inch layer of chipped bark mulch over the soil surface within the fenced dripline prior to installing temporary fencing. Suitable bark must contain bark "fines". Maintain this layer of mulch throughout construction.

d. Prune to clean and raise the canopy, and reduce end weight, per International Society of Arboriculture pruning standards.

Sources:

- Biological Resources Analysis – Elm Tree Station, prepared by Monk & Associates, Inc., dated November 6, 2012
- California Tiger Salamander Larval Survey Request – 874 North Wright Road, letter to U.S. Fish and Wildlife Service, prepared by Monk & Associates, Inc., dated February 21, 2011
- Request for Jurisdictional Determination – 874 North Wright Road, letter to U.S. Army Corps of Engineers, prepared by Monk & Associates, Inc., dated July 15, 2010
- Tree Preservation and Mitigation Report – 874 North Wright Road, prepared by Horticultural Associates, dated June 21, 2007
- Review of Elm Station Tree Preservation, letter to MacNair Landscape Architecture, prepared by Horticultural Associates, dated October 7, 2012

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact
V. CULTURAL RESOURCES				
Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☒	☐
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐
d. Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐
e. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒

Discussion:

V.(a-e) Less than Significant Impact.

A Cultural Resources Evaluation of the subject property was prepared by Archeological Resource Service, dated April 23, 2013. The evaluation concludes that there is no evidence of prehistoric cultural material during surface inspection and the previous buildings, which have been removed, was likely constructed sometime between 1954 and 1968. While the structures would have been greater than 45 years of age, they did not appear to be potentially significant historic resources under the California Register of Historic Resources criteria. Because no potentially significant cultural resources were identified within the project area, no specific mitigation is warranted at this time. However, standard measures are provided in the unlikely event that any buried archeological resources are discovered during excavation.

There are no known unique geological or paleontological features on the project site.

Standard Measures:

- If cultural resources are discovered during the project construction (inadvertent discoveries), all work in the area of the find shall cease and a qualified archaeologist and representatives of the appropriate tribe shall be retained by the project sponsor to investigate the find and make recommendations as to treatment and mitigation of any impacts to those resources.

- If human remains are encountered, California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin. Further, pursuant to California Public Resources Code Section 5097.98(b) remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission shall be contacted within a reasonable timeframe. Subsequently, the Native American Heritage Commission shall identify the "most likely descendant." The most likely descendant shall then make recommendations, and engage in consultations concerning the treatment of the remains as provided in Public Resources Code 5097.98.

- If human remains are encountered, California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin. Further, pursuant to California Public Resources Code Section 5097.98(b) remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission shall be contacted within a reasonable timeframe. Subsequently, the Native American Heritage Commission shall identify the "most likely descendant." The most likely descendant shall then make recommendations, and engage in consultations concerning the treatment of the remains as provided in Public Resources Code 5097.98.

Recommended Mitigation Measures:

No mitigation required.

Sources:

- City of Santa Rosa General Plan 2035, adopted November 3, 2009, and Final EIR, certified November 3, 2009
- A Cultural Resources Evaluation of the Elm Tree Station Project, prepared by Archaeological Resource Service, dated April 23, 2013

Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact

VI. GEOLOGY AND SOILS

Would the project:

a. Expose people or structures to potential substantial adverse effects, including the risk

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact
of loss, injury, or death involving:				
i) 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? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c. 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?	☐	☐	☒	☐
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☒	☐	☐
e. 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?	☐	☐	☐	☒

Discussion:

VI.(a-c) Less-than-Significant Impact.

Santa Rosa is located within a seismically active area of California. The City is subject to geological hazards primarily related to earthquakes due to the presence of active faults. Most notably the City has a designated Alquist Priolo Fault Zone extending through the City's downtown area, the fault zone is designated over the faults known as Roger's Creek Fault and the Healdsburg Fault. The City is also susceptible to the movement of the Bay Area's other active faults including the San Andreas Fault.

The Geotechnical Investigation Report, prepared by Bauer Associates, dated October 16, 2012, states that the published geologic maps do not indicate active faults on the site, therefore the risk of fault rupture during earthquakes is considered to be low. Further, Bauer Associates did not observe soils considered prone to liquefaction or densification below the weak surface soils.

Although the project site is not located within the Alquist Priolo Fault Zone, or within the limits of the Rodgers Creek Fault, any development will require the application of City and California Building code (CBC) construction standards to address all potential impacts related to possible area seismic activity, making impacts from geologic hazards less than significant. The CBC requires earthquake resistant design and construction which reduces earthquake damages and loses.

Application of City standards and Title 24/California Code of Regulations in effect at the time of a development application will address potential impacts related to possible area seismic activity.

VI.(d) Less than Significant with Mitigation Incorporation.

According to the Geotechnical Investigation Report, prepared by Bauer Associates, dated October 16, 2012, the primary geotechnical concerns related to the property and the proposed project are the presence of variable density old fills and weak surface soils, and the presence of highly expansive soils. The Report concludes that the existing surface materials are unsuitable for support of fills, foundations and concrete slabs in their present condition.

The Report explains that suitable foundation support can be achieved by upgrading weak/porous surface soils in building areas by removal and recompaction for their full depth. Further, the risk of future structural damage by shrinking and swelling of the expansive clays should be mitigated by covering the expansive soils with a 30-inch thick confining and moisture protecting blanket of non-expansive fill (where expansive soils are encountered within 30 inches of subgrade). The mitigation measure identified below address these impacts.

VI.(e) No Impact.

The project would connect to the existing wastewater system and would not need septic tanks or an alternative wastewater disposal system.

Standard Measures:

None.

Recommended Mitigation Measures:

GS-1 All recommendations outlined in the Geotechnical Investigation Report for Elm Tree Station Retail Market and Fuel Facility, prepared by Bauer Associates, dated October 16, 2012, shall be adhered to.

Sources:

- City of Santa Rosa General Plan 2035, adopted November 3, 2009, and Final EIR, certified November 3, 2009
- Geotechnical Investigation Report – Elm Tree Station, prepared by Bauer Associates, dated October 16, 2012

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact

VII. GREENHOUSE GAS EMISSIONS

Would the project:

a. Generate Greenhouse Gas Emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b. Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Discussion:

VII.(a-b). Less-than-Significant Impact.

Climate change refers to any significant change in measures of climate, such as average temperature, precipitation, or wind patterns over a period of time. Climate change may result from natural factors, natural processes, and human activities that change the composition of the atmosphere and alter the surface and features of the land. Significant changes in global climate patterns have recently been associated with global warming, an average increase in the temperature of the atmosphere near the Earth's surface, attributed to accumulation of Greenhouse Gas (GHG) emissions in the atmosphere. Greenhouse gases trap heat in the atmosphere, which in turn heats the surface of the Earth. Some GHGs occur naturally and are emitted to the atmosphere through natural processes, while others are created and emitted solely through human activities. The emission of GHGs through the combustion of fossil fuels (i.e., fuels containing carbon) in conjunction with other human activities, appears to be closely associated with global warming. State law defines GHG to include the following: carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (Health and Safety Code, section 38505(g).) The most common GHG that results from human activity is carbon dioxide, followed by methane and nitrous oxide.

Assembly Bill 32 (AB 32), the California Global Warming Solutions Act of 2006, recognizes that California is the source of substantial amounts of GHG emissions. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems. In order to avert these consequences, AB 32 establishes a state goal of reducing GHG emissions to 1990 levels by the year 2035 (a reduction of approximately 25 percent from forecast emission levels) with further reductions to follow.

On December 4, 2001, the Santa Rosa City Council adopted a resolution to become a member of Cities for Climate Protection (CCP), a project of the International Council on Local Environmental Initiatives. On August 2, 2005 the City adopted Resolution 26341 which committed the City of Santa Rosa (City) to reduce the City's municipal (i.e., city government) greenhouse gas emissions by 20 percent below 2000 levels by 2010 and committed to help facilitate the community-wide greenhouse gas reduction target of 25% from 1990 levels by 2015 (City of Santa Rosa 2005). In October 2008, the nine Sonoma County cities and the County with the help of the Climate Protection Campaign (CPC) incorporated the greenhouse gas reduction goals into the Sonoma County Community Climate Action Plan (CAP).

In June 2008 the City prepared a report, *Greenhouse Gas Emissions Related to Water and Wastewater Services: Baseline, Reduction Strategies, and Recommendations*. This report investigates various greenhouse gas reduction strategies that the Utilities Department could implement in support of the City's municipal greenhouse gas reduction target. Of Santa Rosa's greenhouse gas emissions, the Utilities Department operations represent the largest share (46%). For the year 2005, greenhouse gas emissions from the entire wastewater sector was estimated at 9,513 tons of CO_2 equivalent per year. Of which, the pumping of wastewater (i.e. lift stations) was estimated at 60 tons of CO_2 equivalent per year or less than 1% of all emissions from wastewater. One strategy from the report to reduce these emissions is to improve pump efficiency.1

In June 2012 the City approved the Santa Rosa Climate Action Plan (SRCAP) The SRCAP identifies a need to reduce emissions by a total of 558,090 tons (or 25%) below business-as-usual levels projected for 2020 to meet the established greenhouse gas reduction goals. The SRCAP includes recommendations for reducing emissions in the building, transportation, agriculture, forestry, and solid waste sectors and includes recommendations to reduce the City's reliance on the electrical grid by implementing renewable energy projects. The SRCAP measures, policies and projects to reduce community wide GHGs are aligned with the goals and policies of the Santa Rosa General Plan Open Space and Conservation Element.

To ensure that new development complies with the City's GHG reduction program, the SRCAP contains a "New Development Checklist". The Checklist contains policies allowing new development to incorporate measures for SRCAP compliance and to reduce potential GHG impacts to less than significant levels. The Checklist denotes 15 mandatory measures. If a project cannot meet one or more the mandatory measures, substitution of other measures described in the Checklist is permitted.

The Elm Tree Station project incorporates 14 of the mandatory measures, plus six additional measures, contained the SRCAP. These include the following:

Policy 1.1.1 – Comply with CAL Green Tier 1 Standards: Construction documents will be designed to comply with State Energy requirements for Title 24, City of Santa Rosa's Cal Green requirements and CAL Green Tier 1 Standards.

Policy 1.3.1 – Install real-time energy monitors to track energy use: The project will install a "Smart Meter" system to provide real-time monitoring of energy usage.

Policy 1.4.2 – Comply with the City's Tree Preservation Ordinance (Santa Rosa Code Section 17-24.020): Existing trees have been preserved to the greatest extent possible and mitigation trees are proposed on site for those trees that are proposed for removal.

Policy 1.4.3 – Provide public and private trees incompliance with the Zoning Code: New trees and plantings associated with development of the Elm Tree Station project shown on the Conceptual Landscape Plan will be installed in compliance with the Santa Rosa Zoning Code and Santa Rosa Design Review Landscape Standards for planting private and public trees.

Policy 1.5 – Install new sidewalks and paving with high solar reflectivity materials: The project includes light colored concrete and light colored paving seal coat.

Policy 2.1.3 – Pre-wire and pre-plumb for solar thermal or PV systems: The project will include both a photovoltaic system and pre-wiring for potential future additional PV system(s).

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1 Climate Protection Campaign. *Greenhouse Gas Emissions Related to Water and Wastewater Services: Baseline, Reduction Strategies, and Recommendations,* June 2008, http://coolplan.org/ccap-report/source-material/4%20Wastewater.pdf, Section 3.1.2.

Policy 3.2.2 – Improve non-vehicular network to promote walking, biking: The project includes a bicycle and pedestrian path that ties into the Joe Rodota Trail. In addition, the project also includes seating and bicycle racks to serve and support Joe Rodota Trail users.

Policy 3.2.3 – Support mixed-use, higher-density development near services: The project is mixed use in nature (it combines a retail market, a residential unit and automobile/pedestrian/bicycle uses).

Policy 3.6.1 – Install calming features to improve ped/bike experience: The project has seating areas, patios and a market that improve the pedestrian/bicyclist experience.

Policy 4.1.1 – Implement the Bicycle and Pedestrian Master Plan: The project's pedestrian/bicycle path and amenities for users (see Policy 3.6.1 above) support the Bicycle and Pedestrian Master Plan.

Policy 4.1.2 – Install bicycle parking consistent with regulations: Proposed Parcels 1 and 2 both have bicycle parking for the two buildings and the Joe Rodota Trail users, consistent with the Zoning Code requirements.

Policy 4.5.1 – Include facilities for employees that promote telecommuting: The proposed residential unit is intended to be occupied by an employee of the market.

Policy 5.1.2 – Install electric vehicle charging equipment: The service station on proposed Parcel 1 includes four electrical vehicle charging stations, two of which are covered and dedicated to electric vehicle use only.

Policy 6.1.3 – Increase diversion of construction waste: A construction waste management plan will be created in compliance with CalGreen Tier 1 Standards.

Policy 7.1.1 – Reduce potable water for outdoor landscaping: As shown on the landscape plan, lower water usage landscaping will be installed to reduce potable water usage.

Policy 7.1.3 – Use water meters which track real-time water use: The project will have water meters with real-time usage tracking, assuming that the City of Santa Rosa has this capacity at the time of construction.

Policy 9.1.3 – Install low water use landscapes: Low water use native plants will be used to landscape the site. Plant materials and locations are shown on the project landscape plans.

Policy 9.2.1 – Minimize construction equipment idling time to 5 minutes or less: Construction procedures complying with the Climate Action Plan new development checklist will be noted in the project specifications and construction documents.

Policy 9.2.2 – Maintain construction equipment per manufacturer's specifications: Construction procedures complying with the Climate Action Plan new development checklist will be noted in the project specifications and construction documents.

Policy 9.2.3 – Limit Green House Gas (GHG) construction equipment by using electrified equipment or alternate fuels: Construction procedures complying with the Climate Action Plan new development checklist will be noted in the project specifications and construction documents.

Standard Measures:

None.

Recommended Mitigation Measures:

No mitigation required.

Sources:

- City of Santa Rosa General Plan 2035, adopted November 3, 2009, and Final EIR, certified November 3, 2009
- Santa Rosa Climate Action Plan New Development Checklist (Appendix E), and Elm Tree Station Climate Action Plan New Development Checklist Compliance Explanation, prepared by Tierney/Figueiredo Architects, dated June 20, 2013

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact
VIII. HAZARDS AND HAZARDOUS MATERIALS				
Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or	☐	☐	☐	☒

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact
working in the project area?				
f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

Discussion:

VII.(a-d) Less than Significant Impact.

The proposed project would be required to comply with relevant Fire, Building and Health and Safety Codes which would reduce the risk of upset. According to the State of California EnviroStor Database of Hazardous Material Cleanup Sites the site is not in or near any Federal or State Superfund sites.

The project would not emit hazardous emissions or handle acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school. Water for the site would be provided by the City of Santa Rosa. Accordingly, the project is not anticipated to create a significant risk of upset or hazard to human health and safety.

VII.(e, f) No Impact.

The project site is located approximately six miles from the Sonoma County Airport, and is outside of the Airport Land Use Plan planning area. The project site is not within the vicinity of a private airstrip.

VII.(g) Less than Significant Impact.

The City of Santa Rosa is under the County of Sonoma's jurisdiction for the Department of Emergency Services. The Division of Emergency Management in the Department of Emergency Services is the lead agency for the Sonoma Operational Area. The Sonoma Operational Area consists of nine incorporated cities (Cloverdale, Cotati, Healdsburg, Petaluma, Rohnert Park, Santa Rosa, Sebastopol, and the Town of Windsor), Sonoma State University, the Sonoma County Junior College District, and other special districts within the county's geographical boundary. Construction at the project site would not interfere with an adopted emergency response or evacuation plan. However, there may be brief and intermittent disruptions to traffic during construction at the site. These minor disruptions would be monitored by flaggers who would clear the road for on-coming emergency vehicles.

VII.(h) No Impact.

According to General Plan Section 12-7, the project site is not located in an area designated for Wildland Fire. Since the project is not located in one of the indicated areas, the project would not expose people or structures to a significant risk of loss, injury or death involving wildland fires.

Standard Measures:

- Two copies of a Phase 1 Environmental Site Assessment shall be required with submittal of the first Engineering plan check. One copy shall be submitted directly to the Fire Department and review fee paid; a copy of the receipt will be submitted with the remaining copy to the Engineering Department. Grading, demolition or construction permits will not be issued until the Fire Department has reviewed and approved the Phase 1 study.

  a. Obtain authorization from the Santa Rosa Fire Department – Hazardous Materials Division (CUPA) for construction to commence.

  b. Provide a copy of no further action letter from the Regional Water Quality Control Board to the Fire Department.

  c. Both authorizations above are to ensure that no additional remediation is necessary and that construction will not entomb contaminated materials which will not be able to be remediated once a building is atop same.

Recommended Mitigation Measures:

No mitigation required.

Sources:

- City of Santa Rosa General Plan 2035, adopted November 3, 2009, and Final EIR, certified November 3, 2009
- City of Santa Rosa's Geographic Information System Database
- State of California EnviroStor Database of Hazardous Material Cleanup Sites (http://www.dtsc.ca.gov/SiteCleanup/Cortese_List.cfm)

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact
IX. HYDROLOGY AND WATER QUALITY				
Would the project:				
a. Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells	☐	☐	☒	☐

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact
would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off- site?	☐	☐	☒	☐
e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f. Otherwise substantially degrade water quality?	☐	☐	☒	☐
g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☒	☐
h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☒	☐
i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
j. Inundation by seiche, tsunami, or mudflow?	☐	☐	☒	☐

Discussion:

IX.(a-j) Less than Significant Impact.

Water Supply/Conservation

To determine the water supply needs of the City's current General Plan, the Utilities Department has calculated water demand and water supply projections. These projections are included in the City's 2005 Urban Water Management Plan and the Water Supply Assessment for the Santa Rosa General Plan 2035. To meet the current water supply needs, the City has an agreement for water supply with the Sonoma County Water Agency to receive up to 29,100 acre-feet per year of water. In addition, the City has two groundwater wells that can produce up to 2,300 acre-feet per year and the City is the owner and operator of the Subregional System, which produces recycled water for irrigation. To meet the needs of the City's General Plan growth projections, additional water sources beyond what the City has currently developed could be needed as early as 2015. To augment currently developed supply, the City will use water conservation, recycled water, additional groundwater (wells), and possibly additional supply from the Sonoma County Water Agency. At this time, there is adequate reliable water supply during most hydrologic conditions for both current users and future users as dictated by the City's growth management regulations.

The City has had a long-standing commitment to water conservation, resulting in savings of over 3,900 acre-feet per year. In 1976-77, the City began its water conservation program and over the years has implemented many innovative water conservation incentives, such as the Go Low Flow program (replaced over 47,000 high flow toilets, showerheads and faucet aerators with ultra-low flow versions), washing machine rebate programs, landscape irrigation rebate programs, and other residential and commercial programs. Development fees fund the City's Water Conservation Program. In addition, new development is required to install ultra-low flush toilets and low flow showerheads and faucet aerators, as well as water efficient landscapes.

To deal with water supply shortages, the City has an adopted Urban Water Shortage Contingency Plan (Shortage Plan), which outlines how the City will respond to a reduction in water supply and which addresses the effect on new development when a cutback of 35% or greater is required. The Shortage Plan was updated in 2006 and adopted by City Council on June 27, 2006. Water supply shortages of 35% and greater require development to offset the water demand from their projects by conserving 2 times and 3 times the amount, depending on the level of the water supply shortage.

The Sonoma County Water Agency has not declared a water shortage to date. Should the Water Agency declare a water shortage and allocate water per the Water Shortage Allocation Methodology as outlined in the Restructured Agreement for water supply, the City will enact the appropriate stage of our Shortage Plan. Depending on when the project is developed, the appropriate demand offset will be required if needed.

Water Quality

Storm water, or runoff generated from rain, that is not absorbed into the ground accumulates debris, chemicals and other polluting substances harmful to water quality. Polluted stormwater entering creeks is a huge concern because of its threat to public health and the plant and animal life that inhabit waterways. Additionally, rain runoff from developments may increase flow rates and durations that cause hydromodification in creeks contributing to loss of habitat and decreased aquatic biological diversity. In areas with known groundwater pollution, infiltration of stormwater may need to be avoided as it could contribute to the movement or dispersion of groundwater contamination.

The project was required to provide a Preliminary Stormwater Treatment Plan for the project. The plan was reviewed by the City's Public Works - Engineering Development Services Division for compliance with Low

Impact Development stormwater management standards and found to be consistent with the requirements. The plan is attached to this report.

Flooding

The project site is not located within a flood zone (Santa Rosa General Plan 2035 Figure 12-4). As such, the proposed project is not anticipated to expose people or structures to a significant risk or loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam, nor is the site expected to be impacted by inundation by seiche, tsunami or mudflow. Impacts are expected to be less than significant.

Standard Measures:

- Developer's engineer shall comply with all requirements of the City Standard Storm Water Mitigation Plan Guidelines using Low Impact Development (LID) Best Management Practices (BMPs). Final Plans shall address the storm water quality and quantity along with a maintenance agreement or comparable document to assure continuous maintenance of the source and treatment.

- Submit landscape and irrigation plans in conformance with the Water Efficient Landscape Ordinance adopted by the Santa Rosa City Council, Resolution No. 27518, on November 17, 2009. Plans shall be submitted with the Building Permit application. Submit the following with the above mentioned plans: Maximum Applied Water Allowance (Appendix A) and Hydrozone Table (Appendix B).

- A Final Standard Urban Storm Water Mitigation Plan (SUSMP) using Low Impact Development (LID) Best Management Practices (BMP) is to be included with the Building Permit application. All private SUSMP structures are to be located outside of Public Right of Way and Public Utility Easements. All SUSMP details and improvements are to be included in the Building Permit Site Plans. This site is currently under a Toxic Remediation Order, review and approval of infiltration through on site retention will be required by the Regional Water Quality Control Board before submittal of the Final SUSMP for review and approval by the City. Recommendations received by the Board are to be incorporated into the Final SUSMP submitted to the City for review and approval.

Recommended Mitigation Measures:

No mitigation required.

Sources:

- City of Santa Rosa General Plan 2035, adopted November 3, 2009, and Final EIR, certified November 3, 2009
- Standard Urban Storm Water Management Plan for Elm Tree Station, prepared by BKF Engineers, dated August 2012, revised February 2013 and July 29, 2013

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact
X. LAND USE AND PLANNING				
Would the project:				
a. Physically divide an established community?	☐	☐	☒	☐
b. Conflict with any applicable land use plan,	☐	☐	☒	☐

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact
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 mitigating an environmental effect?				
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☒	☐

Discussion:

IX.(a-c) Less than Significant.

The subject sites Retail and Business Services General Plan land use designation allows retail and service enterprises, offices, and restaurants.

The project area is comprised of a single parcel totaling approximately 0.98 acres. The site is bordered to the north by the Joe Rodota Trail and Highway 12, to the south by a propane distribution business, to the west by North Wright Road and a construction product and equipment supplier, and to the east by undeveloped residential land. Given the types of development allowed under the Retail and Business Services General Plan designation and the Planned Development (PD-0435: Wright-Sebastopol Commercial District) zoning classification, the proposed project is not anticipated to divide an existing community or conflict with a habitat conservation plan.

The proposed project is consistent with the Santa Rosa General Plan. In addition, project is not expected to translate into comprehensive environmental impacts with respect to the current General Plan designation and Zoning classification.

Standard Measures:

None.

Recommended Mitigation Measures:

No mitigation required.

Sources:

- City of Santa Rosa General Plan 2035, adopted November 3, 2009, and Final EIR, certified November 3, 2009
- City of Santa Rosa Zoning Code, 2006

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact

XI. MINERAL RESOURCES

Would the project:				
a. 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?	☐	☐	☐	☐
b. Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☐

Discussion:

X.(a-b) No Impact.

The project site does not contain any locally or regionally significant mineral resources. The proposed development of the project site will not create an adverse impact upon locally or regionally significant resources since there are no such resources located on the project site.

Standard Measures:

None.

Recommended Mitigation Measures:

No mitigation required.

Sources:

- City of Santa Rosa General Plan 2035, adopted November 3, 2009, and Final EIR, certified November 3, 2009

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact

XII. NOISE

Would the project result in:				
a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☐
b. Exposure of persons to or generation of excessive ground borne vibration or ground	☐	☐	☐	☐

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact
borne noise levels?				
c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☐
d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☐
e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☐
f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☐

Discussion:

XI.(a-f) Less than Significant with Mitigation.

The Noise Element of the City of Santa Rosa's General Plan identifies policies that are intended to guide the development of new projects with regard to exposure to or generation of noise. The policies support the City's goal of maintaining an acceptable community noise level. The following policies are applicable to the proposed project:

NS-B-1 Do not locate noise-sensitive uses in proximity to major noise sources.

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 (of the Santa Rosa General Plan 2035).

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.

NS-B-4 Require new projects in the following categories to submit an acoustical study, prepared by a qualified acoustical consultant:

- All new projects that could generate noise whose impacts on other existing uses would be greater than those normally acceptable.

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 alternatives.

NS-B-6 Do not permit existing uses to generate new noises exceeding normally acceptable levels unless:

- Those noises are mitigated to acceptable levels; or
- The activities are specifically exempted by the City Council on the basis of community health, safety and welfare.

NS-B-14 Discourage new projects that have potential to create ambient noise levels more than 5 dBALdn above existing background, within 250 feet of sensitive receptors.

The City of Santa Rosa has adopted a quantitative noise ordinance in Chapter 17-16 of the Municipal Code. Section 17-16.120 regulates noise from machinery and equipment: "It is unlawful for any person to operate any machinery, equipment, pump, fan, air conditioning apparatus, or similar mechanical device in any manner so as to create any noise which would cause the noise level at the property line of any property to exceed the ambient base noise level by more than 5 decibels. Ambient base noise levels for residential office, commercial, and industrial areas are established in Section 17-16.030. The applicable ambient noise level criteria are shown in Table 1, below:

TABLE 1:City of Santa Rosa Municipal Code Ambient Base Noise Levels (dBA)

Land Use Zone	Daytime Level	Evening Level	Nighttime Level
Single-Family Residential	55	50	45
Multi-Family Residential	55	55	50
Office and Commercial	60	60	55
Intensive Commercial	65	65	55
Industrial	70	70	70

Source: City of Santa Rosa, City of Santa Rosa Municipal Code 17-16.030

The Noise Ordinance defines ambient noise as follows: "Ambient noise is the all-encompassing noise associated with a given environment usually a composite of sounds from many sources near and far. For the purpose of this chapter, ambient noise level is the level obtained when the noise level is averaged over a period of 15 minutes without inclusion of noise from isolated identifiable sources at the location and time of day near that at which a comparison is to be made." The noise descriptor, Leq, is used in the noise report for the purposes of determining noise with respect to these limits.

Based on the results of the Environmental Noise Study, Elm Tree Station, prepared by Illingworth & Rodkin, Inc., dated May 16, 2013, it was determined that the following project activities could exceed the site-specific allowable noise levels at adjacent residential uses:

- Nighttime market/retail deliveries; and
- Daytime, evening or nighttime fuel deliveries.

The mitigation measures listed below will reduce these potential project noise impacts and allow project compliance with the City's Noise Ordinance limits.

Standard Measures:

- Standard City conditions of project approval limit the hours of construction to 7 a.m. to 7 p.m. Monday through Friday and 8 a.m. to 6 p.m. Saturdays. No construction is permitted on Sundays and holidays.

Recommended Mitigation Measures:

N-1 To mitigate the potential project noise impacts and allow daytime fuel deliveries and daytime, evening and nighttime market deliveries to comply with the City's Noise Ordinance limits, prior to the occupancy of future residences on the adjacent to property to the east, a sound wall with a minimum height of ten (10) feet above parking lot grade shall be constructed. The sound wall shall be located on the eastern property line from the northern edge of the proposed southeast corner pedestrian access point, northward for approximately 160 feet to a point approximately 30 feet north of the southernmost edge of the market footprint (as illustrated in Figure 2 in the Environmental Noise Study, Elm Tree Station, prepared by Illingworth & Rodkin, Inc., dated May 16, 2013).

To be effective as a noise barrier, the wall shall be built without cracks or gaps in the face or large or continuous gaps at the base and have a minimum surface weight of 3.0 pounds per square-foot.

N-1 To mitigate potential impacts to future residential uses from heavy (semi-trailer type) truck fuel deliveries, fuel deliveries shall be during the hours of 7 a.m. to 7 p.m. only.

Sources:

- City of Santa Rosa General Plan 2035, adopted November 3, 2009, and Final EIR, certified November 3, 2009
- City of Santa Rosa Zoning Code, 2006
- Environmental Noise Study, Elm Tree Station, prepared by Illingworth & Rodkin, Inc., dated May 16, 2013

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact
XIII. POPULATION AND HOUSING				
Would the project:				
a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☒	☐
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☒	☐

Discussion:

XII. (a-c) Less than Significant Impact.

The Retail and Business Services General Plan category allows retail and service enterprises, offices, and restaurants. Self-storage facilities are permitted under the existing CG (General Commercial) zoning with a Minor Use Permit (MUP).

The subject site is bordered Sonoma Highway to the northwest, a commercial center including car wash, retail and offices to the northeast, commercial to the southeast and Santa Rosa Creek to the southwest. The proposal does not include substantial changes to the infrastructure beyond the established baseline of existing conditions. Given the types of development allowed under the Retail and Business Services General Plan designation and the scope of the proposal, the proposed project is not anticipated to induce substantial population growth in the area, nor is it expected to displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.

The proposed project is not expected to translate into comprehensive environmental impacts with respect to the current General Plan designation and Zoning classification.

Standard Measures:

None

Recommended Mitigation Measures:

No mitigation required.

Sources:

- City of Santa Rosa General Plan 2035, adopted November 3, 2009, and Final EIR, certified November 3, 2009
- City of Santa Rosa Zoning Code, 2006

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact
XIV. PUBLIC SERVICES				
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:				
a. Fire protection?	☐	☐	☒	☐

b. Police protection?	☐	☐	☒	☐
c. Schools?	☐	☐	☒	☐
d. Parks?	☐	☐	☒	☐
e. Other public facilities?	☐	☐	☒	☐

Discussion:

XIII.(a-e) Less than Significant. The project site is located within the City of Santa Rosa and would receive all necessary public services. Fire protection services will be provided by the City of Santa Rosa. Police protection services will be provided by the City's Police Department. The proposal is not anticipated to cause the need for new public services or facilities. Existing fire and police protection are determined to be adequate to serve the Project.

Standard Measures:

- The Fire Department has reviewed plans for the proposed project and imposed standard conditions of approval.
- Other standard conditions of approval will apply, including provision of a fire flow analysis to ensure adequate water pressure and flow rates.

Recommended Mitigation Measures:

None.

Sources:

- City of Santa Rosa General Plan 2035, adopted November 3, 2009, and Final EIR, certified November 3, 2009
- Community Development Department's Standard Conditions of Approval dated August 27, 2008

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact
XV. RECREATION				
Would the project:				
a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b. Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse	☐	☐	☒	☐

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact

physical effect on the environment?

Discussion:

XIV.(a-b) Less than Significant. No on-site park or recreational facilities are proposed with the project. The project will provide an on-site connection to the Joe Rodota Trail, and will provide seating areas for bicyclists and pedestrians, although the area will not be a City park. Potential impacts to parks and recreation, relative to the proposed Elm Tree Station project, are anticipated to be less than significant.

Standard Measures:

None

Recommended Mitigation Measures:

No mitigation required.

Sources:

- City of Santa Rosa General Plan 2035, adopted November 3, 2009, and Final EIR, certified November 3, 2009

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact
XVI. TRANSPORTATION/TRAFFIC				
Would the project:				
a. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐
b. Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact
c. 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?	☐	☐	☒	☒
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
e. Result in inadequate emergency access?	☐	☐	☒	☐
f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☒	☐

Discussion:

XV.(a-b and d-f) Less than Significant.

A Traffic Impact Study was prepared for the proposed Elm Tree Station project by Whitlock & Weinberger Transportation, Inc. (W-Trans), dated July 26, 2013. The Study states that the proposed project is expected to generate an average of 1,506 net new daily trips after deductions are made for the pass-by component, which 73 of these trips during the morning peak hour and 91 during the evening peak hour. The study intersections of State Route (SR) 12/Fulton Road and Sebastopol Road/South Wright Road are currently operating acceptably and are expected to continue doing so upon the addition of project-generated traffic. Both study intersections are expected to operate acceptably at LOS D or better under existing plus project conditions, and both are currently experiencing collisions at a rate that is below the statewide average for similar facilities. Under future conditions, both intersections are expected to operate deficiently both without and with project traffic added. However, planned improvements in the Santa Rosa General Plan are assumed to improve both intersections to acceptable operation.

As outlined in the Study, existing facilities for non-vehicular modes of transportation are largely provided by the Joe Rodota Trail. However, connectivity between North Wright Road and the Joe Rodota Trail is generally lacking. To improve access, the project will add a pedestrian and bicycle path to connect the existing sidewalk along the project frontage to the Joe Rodota Trail. Bike racks are included as part of the project plan.

The Study further states that sight distance at the project's driveway is adequate, though landscaping should be maintained to ensure continued adequate site lines. The project will have two access driveways: the north for egress only and the south for both ingress and egress. The existing two-way left-turn lane on North Wright Road is expected to serve inbound traffic.

With regard to on-site circulation, the plans provided indicate that the AutoTURN application was used to analyze AASHTO design vehicle types P (passenger car) and WB-50 (intermediate semi-trailer). The two design vehicles were used because the site's main traffic generator is passenger vehicles and the intermediate semi-trailer will be used for delivering gas. Based on the information provided, circulation is expected to be adequate.

The proposed project is not expected to conflict with an applicable plan, ordinance or policy or conflict with an applicable congestion management program. The project is not anticipated to increase hazards due to design features nor result in inadequate emergency access. Public transit, bicycle, or pedestrian facilities in the vicinity are expected to operate acceptably with respect to the proposed project. Staff members from the City's Department of Public Works –Engineering Development Services, including the City's Traffic Engineer, have reviewed the proposal and have not identified any significant issues.

The project is anticipated to have a less-than-significant impact relative to transportation and traffic.

XV.(c) No Impact.

The project site is located approximately six miles from the Sonoma County Airport, and is outside of the Airport Land Use Plan planning area. The project site is not located near a public or private airport. The project will not impact air traffic patterns nor will it conflict with adopted policies programs supporting alternative transportation.

Standard Measures:

- The applicant shall pay traffic impact fees to help fund planned future improvements at State Route 12/Fulton Road and road widening on Sebastopol Road.

Recommended Mitigation Measures:

No mitigation required.

Sources:

- City of Santa Rosa General Plan 2035, adopted November 3, 2009, and Final EIR, certified November 3, 2009
- City of Santa Rosa's Geographic Information System Database
- Traffic Impact Study for the Elm Tree Station Project, prepared by Whitlock & Weinberger Transportation, Inc., dated July 26, 2013

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact
XVII. UTILITIES AND SERVICE SYSTEMS				
Would the project:				
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of	☐	☐	☒	☐

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact
which could cause significant environmental effects?				
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐
e. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g. Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

Discussion:

XVI.(a-g) Less than Significant Impact.

The proposed project is located within an urbanized area within the City limits of Santa Rosa. Utilities and services exist or are available through local City services, waste removal, Pacific Gas & Electric and other providers. The project will use some of the existing service capacity. Services and supplies are adequate to serve the project which does not result in the need for new systems or supplies, therefore the impact is considered to be less than significant.

Standard City conditions will require compliance with the Storm Water Mitigation Plan Guidelines, including implementation of conditions of approval requiring use of best management practices, and submittal of storm drainage plans to the Regional Water Quality Control Board. Adequate landfill capacity exists at County facilities to support future development.

Standard Measures:

None.

Recommended Mitigation Measures:

No mitigation required.

Sources:

- City of Santa Rosa General Plan 2035, adopted November 3, 2009, and Final EIR, certified November 3, 2009

	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporation	Less-Than-Significant Impact	No Impact
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE				
Would the project:				
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a 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)?	☐	☐	☒	☐
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

Discussion:

XVII (a) Less-Than-Significant with Mitigation Incorporation.

The project is not anticipated to degrade the quality of the environment or eliminate important examples of the major periods of California history or prehistory. Through implementation of Mitigation Measures BR-1 through BR-6, potential impacts to the habitat of a fish or wildlife species, as well as flora and/or fauna on site, are anticipated to be reduced to less than significant.

XVII (b and c) Less-Than-Significant.

The project does not have the potential to create impacts which are individually limited but cumulatively considerable. The environmental effects of the project are generally negligible and will be lessened through standard City construction standards and practices.

Traffic impacts are not anticipated to result in adverse cumulative conditions; the City has adopted circulation policies as part of its General Plan Transportation Element that regulates traffic movement and requires construction of project improvements to ensure traffic safety. Long-term traffic impacts related to General Plan build-out (2035 scenario) and cumulative traffic conditions will be addressed by ongoing City efforts to pursue alternative transportation modes, including increased use of public transit and other Transportation Systems Management methods.

The proposal does not present potentially significant impacts which may cause adverse impacts upon human beings, either directly or indirectly. The development project will be conditioned to make City standard improvements with respect to noise impacts, roadways and storm drainage. Building and improvement plans will be reviewed to ensure compliance with applicable building codes and standards.

Standard Measures:

None.

Recommended Mitigation Measures:

No mitigation required.

Sources:

- City of Santa Rosa General Plan 2035, adopted November 3, 2009, and Final EIR, certified November 3, 2009
- City of Santa Rosa Zoning Code, 2006
- Traffic Impact Study for the Elm Tree Station Project, prepared by Whitlock & Weinberger Transportation, Inc., dated July 26, 2013
- Biological Resources Analysis – Elm Tree Station, prepared by Monk & Associates, Inc., dated November 6, 2012
- California Tiger Salamander Larval Survey Request – 874 North Wright Road, letter to U.S. Fish and Wildlife Service, prepared by Monk & Associates, Inc., dated February 21, 2011
- Request for Jurisdictional Determination – 874 North Wright Road, letter to U.S. Army Corps of Engineers, prepared by Monk & Associates, Inc., dated July 15, 2010
- Tree Preservation and Mitigation Report – 874 North Wright Road, prepared by Horticultural Associates, dated June 21, 2007
- Review of Elm Station Tree Preservation, letter to MacNair Landscape Architecture, prepared by Horticultural Associates, dated October 7, 2012
- A Cultural Resources Evaluation of the Elm Tree Station Project, prepared by Archaeological Resource Service, dated April 23, 2013
- Geotechnical Investigation Report – Elm Tree Station, prepared by Bauer Associates, dated October 16, 2012
- Santa Rosa Climate Action Plan New Development Checklist (Appendix E), and Elm Tree Station Climate Action Plan New Development Checklist Compliance Explanation, prepared by Tierney/Figueiredo Architects, dated June 20, 2013
- State of California EnviroStor Database of Hazardous Material Cleanup Sites (http://www.dtsc.ca.gov/SiteCleanup/Cortese_List.cfm)

- Standard Urban Storm Water Management Plan for Elm Tree Station, prepared by BKF Engineers, dated August 2012, revised February 2013 and July 29, 2013
- Environmental Noise Study, Elm Tree Station, prepared by Illingworth & Rodkin, Inc., dated May 16, 2013

APPENDIX

SOURCE REFERENCES

The following is a list of references used in the preparation of this document. Unless attached herein, copies of all reference reports, memorandums and letters are on file with the City of Santa Rosa Department of Community Development. References to Publications prepared by Federal or State agencies may be found with the agency responsible for providing such information.

- City of Santa Rosa General Plan 2035, adopted November 3, 2009, and Final EIR, certified November 3, 2009
- City of Santa Rosa Design Guidelines, September 2002
- City of Santa Rosa Zoning Code, 2006
- City of Santa Rosa's Geographic Information System Database
- Traffic Impact Study for the Elm Tree Station Project, prepared by Whitlock & Weinberger Transportation, Inc., dated July 26, 2013
- Biological Resources Analysis – Elm Tree Station, prepared by Monk & Associates, Inc., dated November 6, 2012
- California Tiger Salamander Larval Survey Request – 874 North Wright Road, letter to U.S. Fish and Wildlife Service, prepared by Monk & Associates, Inc., dated February 21, 2011
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- Environmental Noise Study, Elm Tree Station, prepared by Illingworth & Rodkin, Inc., dated May 16, 2013
- Community Development Department's Standard Conditions of Approval dated August 27, 2008

PROJECT SPONSOR'S INCORPORATION OF MITIGATION MEASURES

As the project sponsor or the authorized agent of the project sponsor, I, Jean Kapolchok, J. Kapolchok & Associates, undersigned, have reviewed the Initial Study for the Elm Tree Station project and have particularly reviewed all mitigation measures and monitoring programs identified herein. I accept the findings of the Initial Study and mitigation measures and hereby agree to modify the proposed project applications now on file with the City of Santa Rosa to include and incorporate all mitigation measures and monitoring programs set out in this Initial Study.

Jean Kapolchok 8/27/13

Property Owner (authorized agent) Date

DETERMINATION FOR PROJECT

On the basis of this Initial Study and Environmental Checklist I find that the proposed project (choose the appropriate text):

☐ could not have a Potentially Significant Effect on the environment. A Negative Declaration will be prepared.

☒ could have a Potentially Significant Effect on the environment; however, the aforementioned mitigation measures to be performed by the property owner (authorized agent) will reduce the potential environmental impacts to a point where no significant effects on the environment will occur. A Mitigated Negative Declaration will be prepared.

Jessica Jones 8-26-13

Signature Date

Jessica Jones Senior Planner

Printed Name Title

REPORT AUTHORS AND CONSULTANTS
Jessica Jones, Senior Planner
City of Santa Rosa, Community Development Department.

Attachments:

1. Traffic Impact Study for the Elm Tree Station Project, prepared by Whitlock & Weinberger Transportation, Inc., dated July 26, 2013
2. Biological Resources Analysis – Elm Tree Station, prepared by Monk & Associates, Inc., dated November 6, 2012
3. California Tiger Salamander Larval Survey Request – 874 North Wright Road, letter to U.S. Fish and Wildlife Service, prepared by Monk & Associates, Inc., dated February 21, 2011
4. Request for Jurisdictional Determination – 874 North Wright Road, letter to U.S. Army Corps of Engineers, prepared by Monk & Associates, Inc., dated July 15, 2010
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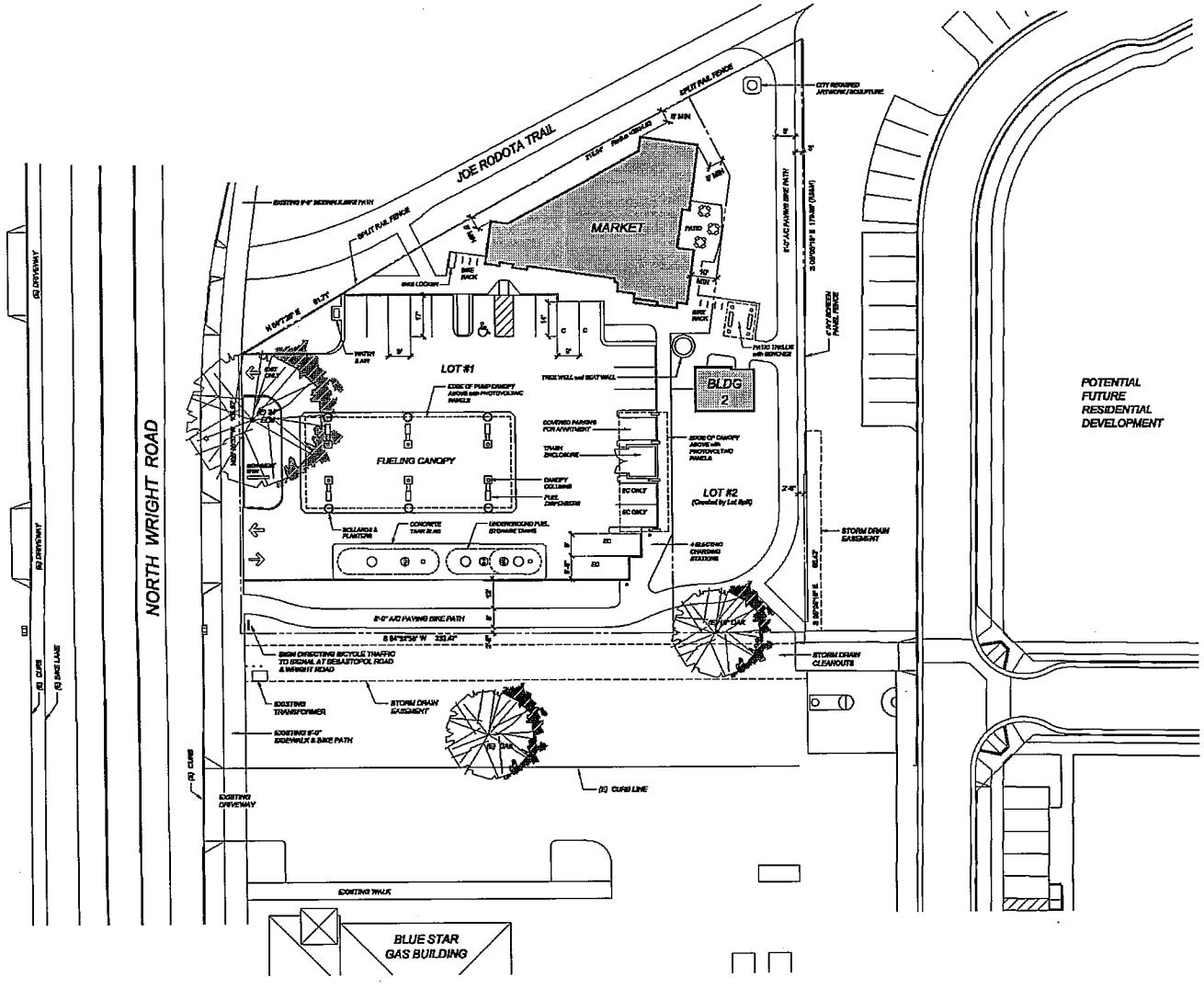
10. Standard Urban Storm Water Management Plan for Elm Tree Station, prepared by BKF Engineers, dated August 2012, revised February 2013 and July 29, 2013
11. Environmental Noise Study, Elm Tree Station, prepared by Illingworth & Rodkin, Inc., dated May 16, 2013



ELM TREE STATION

RETAIL MARKET and FUEL FACILITY

874 N. Wright Road Santa Rosa, California

DEVELOPMENT PLAN

SCALE: 1" = 20'-0"

0' 10' 20' 40'

NORTH

PROJECT DATA

ADDRESS:	874 NORTH WRIGHT ROAD
APN:	035-083-001
ZONING:	PD-0435
LOT SIZE:	
LOT #1:	Approx. 0.73 ACRES
LOT #2:	Approx. 0.25 ACRES
MARKET:	3,448 S.F.
APARTMENT:	806 S.F.
BUILDING 2:	432 S.F.

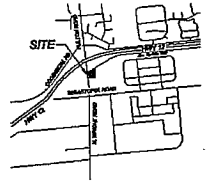
BUILDING COVERAGE (LOT #1): 24.7%

(Building, Gas Pump Canopy, Trash Encl/Carport Canopy)

PARKING REQUIRED:	
MARKET (Retail at 1:250 S.F.)	13.8
1-BEDROOM APARTMENT	1.5
BUILDING 2 (Retail at 1:250 S.F.)	1.7
	17.0
PARKING PROVIDED:	18.0

BICYCLE PARKING REQUIRED:	
MARKET	1
1-BEDROOM APARTMENT	1
BUILDING 2	1
	3
BICYCLE PARKING PROVIDED:	8

VICINITY MAP



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ARCHITECTS AIA

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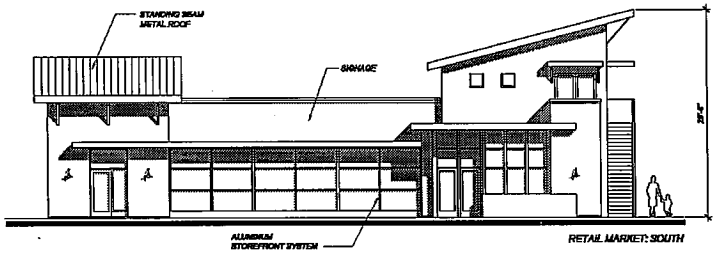

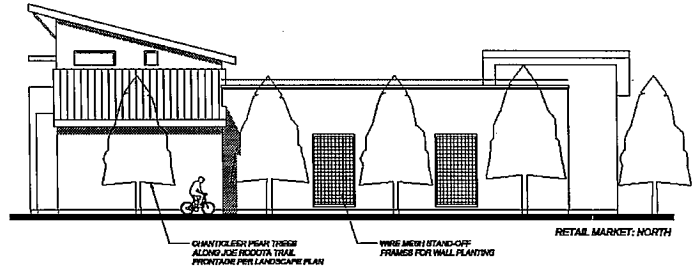

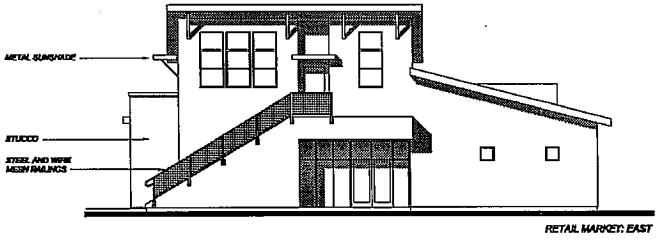

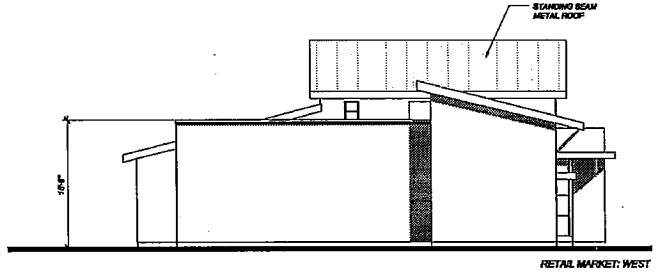

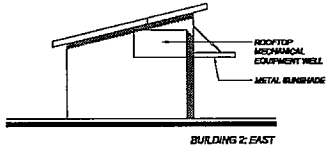

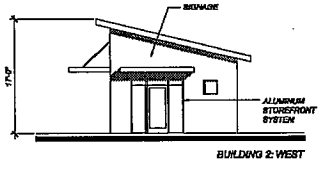

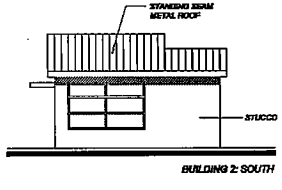

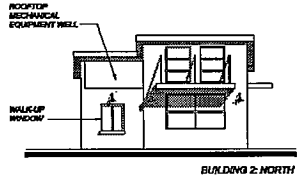

ELM TREE STATION

RETAIL MARKET and FUEL FACILITY

874 N. Wright Road Santa Rosa, CA

CONCEPTUAL ELEVATIONS
RETAIL MARKET and BUILDING 2

SCALE: 1/8" = 1'-0"

0' 8' 16'

TIERNEY/FIGUEIREDO
817 BUSSELL AVE, SUITE H, SANTA ROSA, CA 95403
(707) 576-1557 (707) 576-1655 FAX TFA@SONIC.NET
ARCHITECTS AIA

ELM TREE STATION

Mitigation Monitoring and Reporting Program

August 26, 2013

MITIGATION MONITORING AND REPORTING PROGRAM

Elm Tree Station Project

Impact Area/Measures	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
AESTHETICS – Standard Measures					
• Design Re view is required for the project. Design Review will be obtained prior to issuance of a building permit. • A standard condition of approval regarding exterior lighting requirements will be placed on the project. • Conformance review shall occur at the building permit stage.	Design Review process (Design Review Board). Incorporate into conditions of approval. Conformance review prior to building permit issuance.	Planning Division	Prior to issuance of building permit.	Deny issuance of building permit.	
AIR QUALITY – Mitigation Measures					
AQ-1 The Applicant shall implement air quality protection measures recommended by the BAAQMD, including but not limited to those listed below, to reduce diesel particulate matter and $PM_{2.5}$ from construction operations to ensure that short-term health impacts are avoided: a. Water all active construction grading areas at least twice daily and more often during windy periods. b. Cover all hauling trucks or maintain at least	Incorporate into project conditions of approval, as well as the design and construction documents; on-site observation.	Building Division	Verification of incorporation into design and construction documents prior to issuance of building permit. Monitor during regularly scheduled inspections.	Deny issuance of building permit. Stop construction until compliance.	

MITIGATION MONITORING AND REPORTING PROGRAM

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two feet of freeboard.					
c. Pave, apply water at least twice daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas.					
d. Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas. Sweep streets daily (with water sweepers) if visible soil material is deposited onto adjacent roads.					
e. Enclose, cover, water twice daily, or apply (non-toxic) soil binders to exposed stockpiles.					
f. Limit traffic speeds on any unpaved roads to 15 mph.					
g. Suspend construction activities that cause visible dust plumes that extend beyond the construction site.					
h. A Disturbance Coordinator will be assigned to the Project at least for the full duration of demolition activities, grading, excavation, and building construction. This coordinator will ensure that all air quality mitigation measures are enforced. In addition, the Disturbance Coordinator will respond to complaints from the public regarding air quality issues (e.g., dust and odors) in a timely manner. The contact information for this Coordinator will be posted in plain view					

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Elm Tree Station Project

Impact Area/Measures	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
at the Project site. The Coordinator will also be responsible for notifying adjacent properties of the demolition schedules.					
i. Opacity is an indicator of exhaust particulate emissions from off-road diesel powered equipment. The Disturbance Coordinator shall ensure that emissions from all construction diesel powered equipment used on the Project site do not exceed 40 percent opacity for more than three minutes in any one hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately. Any equipment emitting dark smoke 3 minutes after start up is in violation of this measure.					
j. Properly tune and maintain equipment in accordance with manufacturer specifications.					
k. Reduce combustion emissions during construction as required in the California Air Resources Board Off-Road Diesel Rule. The "no idling" rule for in-use off-road diesel-fueled vehicles limits idling for such vehicles to no more than five minutes. Signs shall be clearly posted at the construction sites indicating the idle times for construction-related equipment shall be minimized and noting that no diesel equipment shall idle for more than five minutes. Idling necessary to accomplish work for which a vehicle was designed (such as operating a crane) are					

MITIGATION MONITORING AND REPORTING PROGRAM

Elm Tree Station Project

Impact Area/Measures	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
exempt from the rule (see rule for additional exemptions). l. During renovation and demolition activities, removal or disturbance of any materials containing asbestos, lead paint or other hazardous pollutants will be conducted in accordance with BAAQMD rules and regulations or other regulatory requirements.					
BIOLOGICAL RESOURCES – Mitigation Measures					
BR-1 **Nesting Raptors** – In order to avoid impacts to nesting raptors, a nesting survey shall be conducted 30 days prior to commencing with tree removal or construction work if this work would commence between February 1st and August 31st. The raptor nesting surveys shall include examination of all trees within 300 feet of the entire project site (if access is readily available to offsite areas), not just trees slated for removal. If nesting raptors are identified during the surveys, the dripline of the nest tree must be fenced with orange construction fencing (provided the tree is on the project site), and a 300-foot radius around the nest tree must be staked with bright orange lath or other suitable staking. If the tree is adjacent to the project site, then the buffer shall be demarcated per above where the buffer occurs on the project site. The	Incorporate into project conditions of approval. A qualified biologist to conduct at preconstruction survey if earth moving activities and construction is proposed to occur during the nesting season. If found buffer areas will be established around any nesting site.	Building Division/Planning Division	Verification of incorporation into design and construction documents prior to issuance of building permit Monitor during regularly scheduled inspections	Deny issuance of building permit Stop construction until compliance	

MITIGATION MONITORING AND REPORTING PROGRAM

Elm Tree Station Project

Impact Area/Measures	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
size of the buffer may be altered if a qualified raptor biologist conducts behavioral observations and determines the nesting raptors are well acclimated to disturbance. If this occurs, the raptor biologist shall prescribe a modified buffer that allows sufficient room to prevent undue disturbance/harassment to the nesting raptors. No construction or earth-moving activity shall occur within the established buffer until it is determined by a qualified raptor biologist that the young have fledged (that is, left the nest) and have attained sufficient flight skills to avoid project construction zones. This typically occurs by August 1st. This date may be earlier than August 1st, or later, and would have to be determined by a qualified raptor biologist.					
BR-2 **Nesting Passerine Birds** – If tree removal or site disturbance would occur between February 1st and August 31st, a nesting survey shall be conducted on the project site prior to the disturbance. The nesting surveys should be completed 15 days prior to commencing with the work. If nesting passerine birds are identified nesting on or near the project site, a 75-foot radius around the nest must be staked with bright orange spray painted lath or construction fencing. If an active nest is found offsite, the portion of the buffer that is onsite must be staked. No construction or earth-moving activity shall occur within this 75-foot staked buffer until it is	Incorporate into project conditions of approval. A qualified biologist to conduct at preconstruction survey if earth moving activities and construction is proposed to occur during the nesting season. If found buffer	Building Division/Planning Division	Verification of incorporation into design and construction documents prior to issuance of building permit Monitor during regularly scheduled inspections	Deny issuance of building permit Stop construction until compliance	

MITIGATION MONITORING AND REPORTING PROGRAM

Elm Tree Station Project

Impact Area/Measures	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
determined by a qualified ornithologist that the young have fledged (that is, left the nest) and have attained sufficient flight skills to avoid project construction zones. Typically, most birds in the region of the project site area expected to complete nesting by August 1st. However, in the region many species can complete nesting by mid-June to mid-July. Regardless, nesting buffers should be maintained until August 1st unless a qualified ornithologist determines that young have fledged and are independent of their nests at an earlier date. If buffers are removed prior to August 1st, the qualified biologist conducting the nesting surveys shall prepare a report that provides details about the nesting outcome and the removal of buffers. This report shall be submitted to the City of Santa Rosa Community Development Department prior to the time that buffers are removed if the date is before August 1st.	areas will be established around any nesting site.				
BR-3 **Waters of the United States and/or State** – The applicant is proposing to mitigate impacts to 0.22 acres (9,623 square-feet) of U.S. Army Corps of Engineers and Regional Water Quality Control Board jurisdictional seasonal wetlands via purchase of mitigation credits from the Horn Avenue Mitigation Bank. Wetlands on the project were mostly created by the former	Incorporate into project conditions of approval. Proof of purchase of mitigation credits shall be provided to the City of Santa	Planning Division	Verification of mitigation credit purchase	Deny issuance of building permit	

MITIGATION MONITORING AND REPORTING PROGRAM

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Impact Area/Measures	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
resident as a "sink" collecting surface runoff from the surface area for the private residence relatively recently removed from the site. Wetland vegetation does not consist of vernal pool species, rather is mostly comprised of low value, non-native wetland plant species. As such the proposed impacted wetlands have low functions and services (i.e., they are low quality wetlands). Thus mitigation at a 2:1 ratio (i.e., for each tenth of an acre of impact, compensation shall consist of 2tenths of an acre of mitigation credits) from a qualified mitigation bank is appropriate. Since mitigation credits must be purchased at a minimum of 0.05-acre increments, and since the project will impact 0.22 acres of seasonal wetland, 0.45 acres of mitigation credits shall be purchased from the Horn Mitigation Bank, a qualified wetlands mitigation bank. An agreement with the Horn Mitigation Bank to purchase theses mitigation credits was signed by the applicant on March 12, 2012. Mitigation credits shall be purchased prior to issuance of a building permit. Proof of purchase of the credits shall be provided to the City of Santa Rosa's Community Development Department, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service and the California Department of Fish and Game.	Rosa's Community Development Department, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service and the California Department of Fish and Game.				

MITIGATION MONITORING AND REPORTING PROGRAM

Elm Tree Station Project

Impact Area/Measures	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
BR-4 **California Tiger Salamander** – In accordance with the "Programmatic Biological Opinion of U.S. Army Corps of Engineers Permitted Projects that May Affect California Tiger Salamander and Three Endangered Plan Species on the Santa Rosa Plain (Programmatic BO)", the applicant will mitigate impacts to 0.98 acres of California Tiger Salamander habitat with the purchase of 1.96 acres of mitigation credits from a U.S. Fish and Wildlife Service approved mitigation bank. To meet this mitigation requirement, the applicant has agreed to purchase 0.33 acres of combined Sebastopol Meadowfoam (Limnanthes vinculans) and California Tiger Salamander (CTS) mitigation credit from the Swift/Turner Conservation Bank. The remaining 1.63 acres of CTS mitigation credits have been purchased from Hale Wetland mitigation and the Hazel Mitigation Bank. An agreement with the Hale and Hazel Mitigation Banks and the Swift/Turner Conservation Bank to purchase these mitigation credits was signed by the applicant on March 12, 2012. CTS and rare plant mitigation credits shall be purchased prior to issuance of a building permit. Proof of purchase of the credits shall be provided to the City of Santa Rosa's Community Development Department, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and California Department of Fish and Game.	Incorporate into project conditions of approval. Proof of purchase of mitigation credits shall be provided to the City of Santa Rosa's Community Development Department, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and California Department of Fish and Game.	Planning Division	Verification of mitigation credit purchase	Deny issuance of building permit	

MITIGATION MONITORING AND REPORTING PROGRAM

Elm Tree Station Project

Impact Area/Measures	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
BR-5 **Suitable Habitat for Special-Status Plants** – Prior to issuance of a building permit, impacts to suitable habitat for Sonoma sunshine, Burke's goldfields and Sebastopol meadowfoam are required to be mitigated with 1:1 occupied or established habitat (any combination) and 0.5:1 of established habitat. The mitigation land is to be preserved and managed in perpetuity. The proposed project would result in impacts to 0.22 acres of seasonal wetland. Per the Programmatic Biological Opinion, it would be considered "suitable habitat" for listed vernal pool plant species. Thus, the applicant shall mitigate impacts to 0.22 acres of seasonal wetland/endangered plant habitat by purchasing 0.33 acres of credit from a U.S. Fish and Wildlife Services approved mitigation bank (1.5:1 ratio). An agreement with the Swift/Turner Conservation Bank to purchase 0.33 acres of Sebastopol meadowfoam mitigation credits was signed by the applicant on March 12, 2012. Mitigation credits shall be purchased prior to issuance of a building permit. Proof of purchase of the credits shall be provided to the City of Santa Rosa's Community Development Department, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and California Department of Fish and Game.	Incorporate into project conditions of approval. Proof of purchase of mitigation credits shall be provided to the City of Santa Rosa's Community Development Department, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and California Department of Fish and Game.	Planning Division	Verification of mitigation credit purchase	Deny issuance of building permit	

MITIGATION MONITORING AND REPORTING PROGRAM

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Impact Area/Measures	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
BR-6 **Loss of Protected or Heritage Trees** – In accordance with Santa Rosa City Code, Chapter 17-24, the alteration, removal or relocation, of heritage, protected, or street trees and shall comply with the mitigation ratio requirements for tree removal mandated by the City Code. The total trunk diameter of heritage trees to be removed is 103 inches. Per the requirements of the City Code, the total trunk diameter is divided by 6 and multiplied by 2 to determine the total number of trees required as mitigation. A total of 35 trees are therefore required to be planted as mitigation. A fee of $100 per replacement tree may be paid to the City of Santa Rosa's Tree Mitigation Fund prior to the removal of the trees in-lieu of planting replacement trees onsite. The project developer shall comply with all grading, landscaping and pruning provisions contained in the Tree Preservation and Mitigation Report prepared by Horticultural Associates, dated June 21, 2007, consistent with requirements of the City's Tree Ordinance. This shall include, but not be limited to the following: a. Install temporary protective fencing at the edge of illustrated dripline or the edge of approved construction prior to grading on the site. Maintain fencing in place for duration of construction.	Incorporate into project conditions of approval. Trees that are not to be removed shall be clearly marked by the construction manager in consultation with the project horticulturist and landscape architect. Temporary protective fencing shall be placed at the edge of illustrated dripline or the edge of approved construction prior to grading on the site. Replacement trees mitigating loss of removed trees shall be shown on the project landscape plans, and/or all	Building Division/Planning Division.	Verification of incorporation into design and construction documents prior to issuance of building permit Monitor during regularly scheduled inspections	Deny issuance of building permit Stop construction until compliance	

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Impact Area/Measures	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
b. Maintain existing grade within the fenced portion of the dripline. Route drainage swales and underground work outside the dripline where possible. c. Place a 4-inch layer of chipped bark mulch over the soil surface within the fenced dripline prior to installing temporary fencing. Suitable bark must contain bark "fines". Maintain this layer of mulch throughout construction. d. Prune to clean and raise the canopy, and reduce end weight, per International Society of Arboriculture pruning standards.	in-lieu fees shall be paid prior to issuance of a building permit, with documentation of payment provided to the Community Development Department.				
CULTURAL RESOURCES – Standard Measures					
• If cultural resources are discovered during the project construction (inadvertent discoveries), all work in the area of the find shall cease and a qualified archaeologist and representatives of the appropriate tribe shall be retained by the project sponsor to investigate the find and make recommendations as to treatment and mitigation of any impacts to those resources. • If human remains are encountered, California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until	Incorporate into conditions of approval.	Planning Division	Prior to issuance of building and/or grading permit verify that conditions are on the plans for informational purposes.		

MITIGATION MONITORING AND REPORTING PROGRAM

Elm Tree Station Project

Impact Area/Measures	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
the County Coroner has made the necessary findings as to origin. Further, pursuant to California Public Resources Code Section 5097.98(b) remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission shall be contacted within a reasonable timeframe. Subsequently, the Native American Heritage Commission shall identify the "most likely descendant." The most likely descendant shall then make recommendations, and engage in consultations concerning the treatment of the remains as provided in Public Resources Code 5097.98. • If human remains are encountered, California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin. Further, pursuant to California Public Resources Code Section 5097.98(b) remains shall be left in place and free from disturbance until a final decision as to the treatment and disposition has been made. If the Riverside County Coroner determines the remains to be Native American, the Native American Heritage Commission shall be contacted within a					

MITIGATION MONITORING AND REPORTING PROGRAM

Elm Tree Station Project

Impact Area/Measures	Implementation Procedure	Monitoring Responsibility	Monitoring / Reporting Action & Schedule	Non-Compliance Sanction/Activity	Monitoring Compliance Record (Name/Date)
reasonable timeframe. Subsequently, the Native American Heritage Commission shall identify the "most likely descendant." The most likely descendant shall then make recommendations, and engage in consultations concerning the treatment of the remains as provided in Public Resources Code 5097.98.					
GEOLOGY AND SOILS – Mitigation Measures					
GS-1 All recommendations outlined in the Geotechnical Investigation Report for Elm Tree Station Retail Market and Fuel Facility, prepared by Bauer Associates, dated October 16, 2012, shall be adhered to.	Incorporate into project conditions of approval, as well as the design and construction documents.	Building Division/Planning Division	Verification of incorporation into design and construction documents prior to issuance of building permit Monitor during regularly scheduled inspections	Deny issuance of building permit Stop work	
HAZARDS AND HAZARDOUS MATERIALS – Standard Measures					
• Two copies of a Phase 1 Environmental Site Assessment shall be required with submittal of the first Engineering plan check. One copy shall be submitted directly to the Fire Department and review fee paid; a copy of the receipt will be submitted with the remaining copy to the Engineering Department. Grading, demolition or	Incorporate into conditions of approval.	Planning Division			

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construction permits will not be issued until the Fire Department has reviewed and approved the Phase 1 study. a. Obtain authorization from the Santa Rosa Fire Department – Hazardous Materials Division (CUPA) for construction to commence. b. Provide a copy of no further action letter from the Regional Water Quality Control Board to the Fire Department. c. Both authorizations above are to ensure that no additional remediation is necessary and that construction will not entomb contaminated materials which will not be able to be remediated once a building is atop same.					
HYDROLOGY AND WATER QUALITY – Standard Measures					
• Developer's engineer shall comply with all requirements of the City Standard Storm Water Mitigation Plan Guidelines using Low Impact Development (LID) Best Management Practices (BMPs). Final Plans shall address the storm water quality and quantity along with a maintenance agreement or comparable document to assure continuous maintenance of the source and treatment.	Incorporate into conditions of approval.	Planning Division			

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• Submit landscape and irrigation plans in conformance with the Water Efficient Landscape Ordinance adopted by the Santa Rosa City Council, Resolution No. 27518, on November 17, 2009. Plans shall be submitted with the Building Permit application. Submit the following with the above mentioned plans: Maximum Applied Water Allowance (Appendix A) and Hydrozone Table (Appendix B). • A Final Standard Urban Storm Water Mitigation Plan (SUSMP) using Low Impact Development (LID) Best Management Practices (BMP) is to be included with the Building Permit application. All private SUSMP structures are to be located outside of Public Right of Way and Public Utility Easements. All SUSMP details and improvements are to be included in the Building Permit Site Plans. This site is currently under a Toxic Remediation Order, review and approval of infiltration through on site retention will be required by the Regional Water Quality Control Board before submittal of the Final SUSMP for review and approval by the City. Recommendations received by the Board are to be incorporated into the Final SUSMP submitted to the City for review and approval.					

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NOISE – Standard Measures					
• Standard City conditions of project approval limit the hours of construction to 7 a.m. to 7 p.m. Monday through Friday and 8 a.m. to 6 p.m. Saturdays. No construction is permitted on Sundays and holidays.	Incorporate into conditions of approval.	Planning Division			
NOISE – Mitigation Measures					
N-1 To mitigate the potential project noise impacts and allow daytime fuel deliveries and daytime, evening and nighttime market deliveries to comply with the City's Noise Ordinance limits, prior to the occupancy of future residences on the adjacent to property to the east, a sound wall with a minimum height of ten (10) feet above parking lot grade shall be constructed. The sound wall shall be located on the eastern property line from the northern edge of the proposed southeast corner pedestrian access point, northward for approximately 160 feet to a point approximately 30 feet north of the southernmost edge of the market footprint (as illustrated in Figure 2 in the Environmental Noise Study, Elm Tree Station, prepared by Illingworth & Rodkin, Inc., dated May 16, 2013). To be effective as a noise barrier, the wall shall be built without cracks or gaps in the face or large	Incorporate into project conditions of approval.	Planning Division			

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or continuous gaps at the base and have a minimum surface weight of 3.0 pounds per square-foot.					
N-1 To mitigate potential impacts to future residential uses from heavy (semi-trailer type) truck fuel deliveries, fuel deliveries shall be during the hours of 7 a.m. to 7 p.m. only.	Incorporate into project conditions of approval.	Planning Division			
PUBLIC SERVICES – Standard Measures					
• The Fire Department has reviewed plans for the proposed project and imposed standard conditions of approval. • Other standard conditions of approval will apply, including provision of a fire flow analysis to ensure adequate water pressure and flow rates.	Incorporate into project conditions of approval.	Planning Division			
TRANSPORTATION/TRAFFIC – Standard Measures					
• The applicant shall pay traffic impact fees to help fund planned future improvements at State Route 12/Fulton Road and road widening on Sebastopol Road.	Incorporate into project conditions of approval.	Planning Division			

Traffic Impact Study for the Elm Tree Station Project

CITY OF SANTA ROSA
P.O. Box 1678
Santa Rosa, CA 95402

AUG 0 5 2013

DEPARTMENT OF
COMMUNITY DEVELOPMENT

Prepared for the

City of Santa Rosa

Submitted by

Whitlock & Weinberger Transportation, Inc.

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July 26, 2013

Balancing Functionality and Livability
Traffic Engineering • Transportation Planning

Table of Contents

Executive Summary

The proposed Elm Tree Station project consists of a community grocery store, a gasoline station with fueling and electric vehicle charging, open space and a bicycle path, a small commercial building, and a single apartment to be located on a currently vacant site on North Wright Road, between Sebastopol Road and State Route (SR) 12.

The proposed project is expected to generate an average of 1,506 net new daily trips after deductions are made for the pass-by component, with 73 of these trips during the morning peak hour and 91 during the evening peak hour. The study intersections of SR 12/Fulton Road and Sebastopol Road/South Wright Road are currently operating acceptably and are expected to continue doing so upon the addition of project-generated traffic. Both are currently experiencing collisions at a rate that is below the statewide average for similar facilities. Under future conditions, both intersections are expected to operate deficiently both without and with project traffic added. However, planned improvements in the Santa Rosa General Plan are assumed to improve both intersections to acceptable operation.

Existing facilities for non-vehicular modes of transportation are largely provided by the Joe Rodota Trail. However, connectivity between North Wright Road and the Joe Rodota Trail is generally lacking. To improve access, the project will add a pedestrian and bicycle path to connect the existing sidewalk along the project frontage to the Joe Rodota Trail. Bike racks are included as part of the project plan.

Sight distance at the project's driveway is adequate, though landscaping should be maintained to ensure continued adequate sight lines. The project will have two access driveways: the north for egress only and the south for both ingress and egress. The existing two-way left-turn lane on North Wright Road is expected to serve inbound traffic.

Introduction

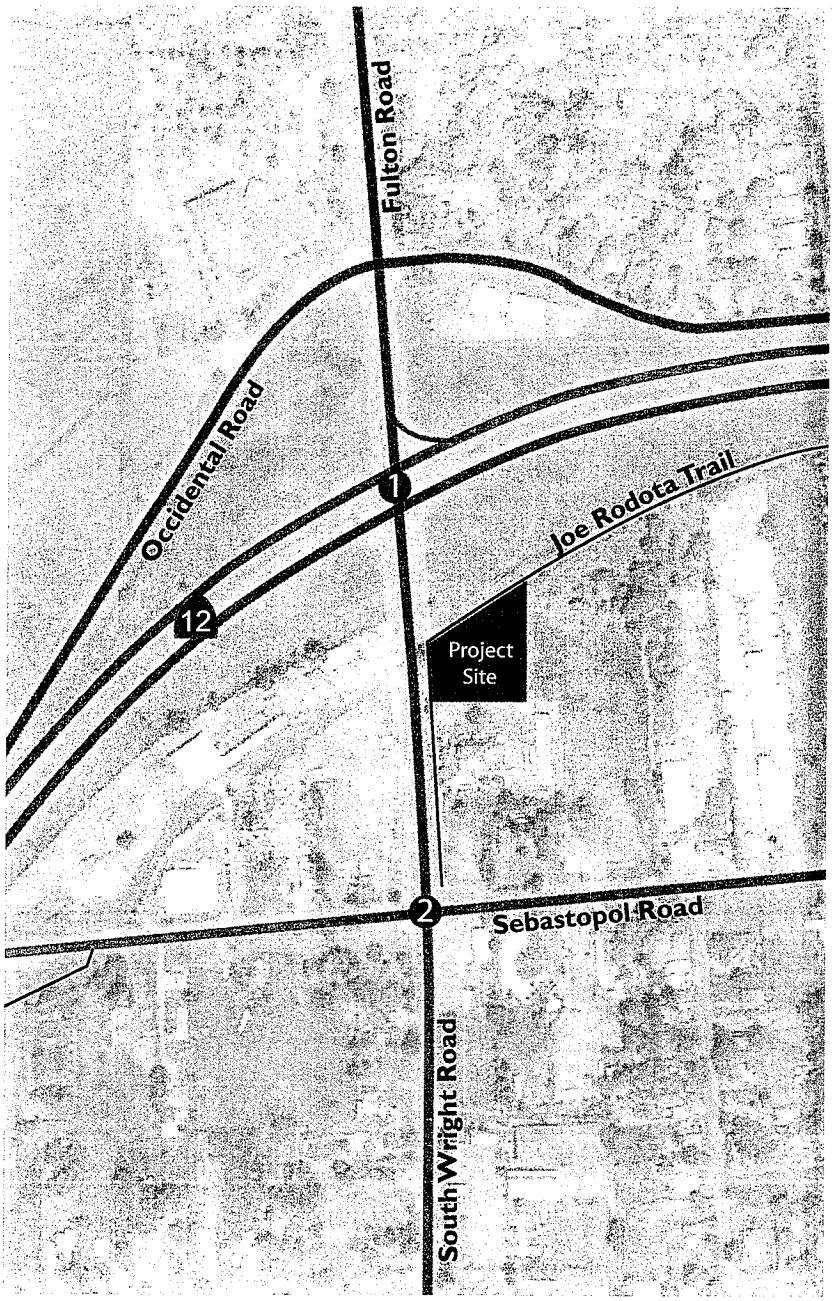
This report presents an analysis of the potential traffic impacts that would be associated with development of the proposed Elm Tree Station project, which includes a community grocery store, a gasoline station with fueling and electric vehicle charging, open space and a bicycle path, a small commercial building, and a single apartment. The traffic study was completed in accordance with the criteria established by the City of Santa Rosa, and is consistent with standard traffic engineering techniques.

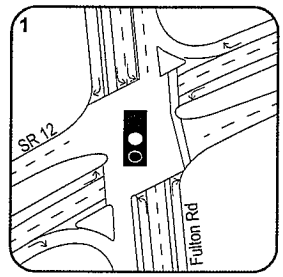
Prelude

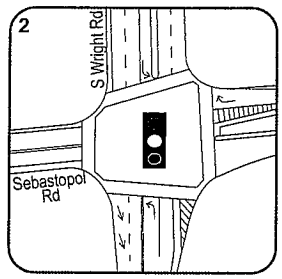
The purpose of a traffic impact study is to provide City staff and policy makers with data that they can use to make an informed decision regarding the potential traffic impacts of a proposed project, and any associated improvements that would be required in order to mitigate these impacts to a level of insignificance as defined by the City's General Plan or other policies. Vehicular traffic impacts are typically evaluated by determining the number of new trips that the proposed use would be expected to generate, distributing these trips to the surrounding street system based on existing travel patterns or anticipated travel patterns specific to the proposed project, then analyzing the impact the new traffic would be expected to have on critical intersections or roadway segments. Impacts relative to safety, including for pedestrians and bicyclists, and to transit are also addressed.

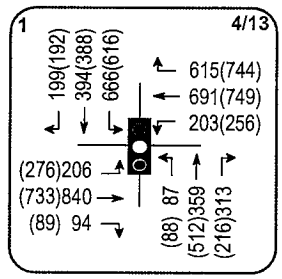
Project Profile

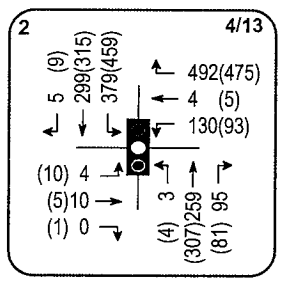
The proposed Elm Tree Station project would be located on the east side of North Wright Road adjacent to the Joe Rodota Trail in the City of Santa Rosa, as shown in Figure 1. The site is located south of SR 12 and north of Sebastopol Road. The proposed project would develop an approximately 3,500 square foot community grocery store, a gasoline station with twelve fueling positions and four electric vehicle charging stations along with an approximately one-quarter acre open space and bicycle path with a small commercial building (approximately 432 square feet). Additionally, a single apartment would be constructed on the site which is planned to be occupied by a site caretaker employee.











LEGEND
- ● Study Intersection
- xx A.M. Peak Hour Volume
- (xx) P.M. Peak Hour Volume

North

Not to Scale

330sro.ai 7/13

Traffic Impact Study for the Elm Tree Station Project — Figure 1

City of Santa Rosa — Lane Configurations and Existing Traffic Volumes

Operational Analysis

Study Area and Periods

The study area consists of the following intersections:

1. SR 12/Fulton Road
2. Sebastopol Road/South Wright Road

Operating conditions during the a.m. and p.m. peak periods were evaluated to capture the highest potential impacts for the proposed project as well as the highest volumes on the local transportation network. The morning peak hour occurs between 7:00 and 9:00 a.m. and reflects conditions during the home to work or school commute, while the p.m. peak hour occurs between 4:00 and 6:00 p.m. and typically reflects the highest level of congestion during the homeward bound commute.

Study Intersections

SR 12/Fulton Road is a four-legged signalized intersection with protected left-turn phasing on all approaches as well as free right-turn lanes on both SR 12 approaches. A pedestrian phase and crosswalk are provided across the eastern leg.

Sebastopol Road/South Wright Road is a signalized four-legged intersection with protected left-turn phases for the northbound and southbound approaches and split phasing for the eastbound and westbound approaches. Crosswalks and pedestrian phases are provided for all approaches.

The locations of the study intersections and the existing lane configurations and controls are shown in Figure 1.

Study Roadways

Wright Road is a north-south Regional/Arterial street with two travel lanes in each direction north of Sebastopol Road and one travel lane in each direction to the south. South Wright Road becomes North Wright Road at the intersection with Sebastopol Road and terminates at the City's southern limits. The posted speed limit is 40 mph.

Fulton Road runs north-south, beginning at its intersection with SR 12 and terminating at Old Redwood Highway south of the Town of Windsor. The regional/arterial street has two travel lanes in each direction and a posted speed limit of 45 mph.

Sebastopol Road is an east-west road that runs across the southwest quadrant of the City of Santa Rosa, terminating at US 101. The regional/arterial street has one travel lane in each direction and a posted speed limit of 40 mph.

SR 12 is a major east-west divided highway that runs through the County of Sonoma and is operated by California Department of Transportation (Caltrans).

Collision History

The collision history for the study area was reviewed to determine any trends or patterns that may indicate a safety issue. Collision rates were calculated based on records available from the California

Highway Patrol as published in their Statewide Integrated Traffic Records System (SWITRS) reports. The most current five-year period available is July 2006 through June 2011.

As presented in Table 1, the calculated collision rates for the study intersections were compared to average collision rates for similar facilities statewide, as indicated in *2009 Collision Data on California State Highways*, Caltrans. Both study intersections were equal to or below the statewide average collision rate. The injury rate for SR 12/Fulton Road was 68.8 percent, which is higher than the statewide average. Rear-end collisions were the most common collision type and the primary collision factor was speeding. SR 12 is a major regional highway with speeds of 55 mph. The high injury rate is likely due to high speeds, which can cause more severe collisions. Calculations for the collision rates are provided in Appendix A.

Table 1
Collision Rates at the Study Intersections

Study Intersection	Number of Collisions (2006-2011)	Calculated Collision Rate (c/mve)	Statewide Average Collision Rate (c/mve)
1. SR 12/Fulton Rd	32	0.36	0.36
2. Sebastopol Rd/S Wright Rd	1	0.03	0.36

Note: c/mve = collisions per million vehicles entering

Alternative Modes

Pedestrian Facilities

Pedestrian facilities include sidewalks, crosswalks, pedestrian signal phases, curb ramps, curb extensions, and various streetscape amenities such as lighting, benches, etc. In general, a network of sidewalks, crosswalks, pedestrian signals, and curb ramps provide access for pedestrians in the vicinity of the proposed project site; however, sidewalk gaps can be found along some of the roadways connecting to the project site. Existing gaps and obstacles along the connecting roadways impact convenient and continuous access for pedestrians and present safety concerns in those locations where appropriate pedestrian infrastructure would address potential conflict points.

- *Wright Road* – Intermittent sidewalk coverage is provided on Wright Road with significant gaps on both sides of the street south of Sebastopol Road and continuous sidewalks provided on the east side north of Sebastopol Road. Sidewalks are provided along developed property frontages. Curb ramps and crosswalks at side street approaches are intermittent, non-existent, or not compliant with current ADA standards.

- *Sebastopol Road* – No sidewalks are provided on Sebastopol Road, except for a segment approximately 100 feet on the north side, east of its intersection with Wright Road. Curb ramps and crosswalks are provided at its intersection with Wright Road.

- *SR 12* – No sidewalks are provided on SR 12. However, curb ramps and a crosswalk exist on the east leg at its intersection with Fulton Road.

Bicycle Facilities

The *Highway Design Manual*, Caltrans, 2006, classifies bikeways into three categories:

- *Class I Multi-Use Path*: a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized.

- *Class II Bike Lane*: a striped and signed lane for one-way bike travel on a street or highway.

- *Class III Bike Route*: signing only for shared use with motor vehicles within the same travel lane on a street or highway.

In the project area, a Class I multi-use path exists along the north frontage of the project site. In addition Class II bike lanes are available on Fulton Road-Wright Road between Sebastopol Road and the northern city limit. A Class III bike route runs along Sebastopol Road west of Wright Road to fill the existing gap between segments of the Joe Rodota Trail. Bicyclists ride in the roadway and/or on sidewalks along all other streets within the project study area. Also, a "bike box" is demarcated on the westbound approach of Sebastopol Road/South Wright Road. Table 2 summarizes the existing and planned bicycle facilities in the project vicinity, as contained in the 2010 *Santa Rosa Bicycle and Pedestrian Master Plan*.

Table 2
Bicycle Facility Summary

Status Facility	Class	Length (miles)	Begin Point	End Point
Existing				
Joe Rodota Bikeway	I	6.3	Petaluma Ave *(Sebastopol)*	Prince Memorial Greenway
Fulton Rd-Wright Rd	II	4.4	Sebastopol Rd	Northern City Limit
Sebastopol Rd	III	0.2	Joe Rodota Trail	Wright Rd
Planned				
Wright Rd	II	1.6	SR 12	Ludwig Ave
Sebastopol Rd	II	0.1	Joe Rodota Trail	Leddy Ave
Joe Rodota Trail Connector	I	0.2	Joe Rodota Trail/ Sebastopol Rd	Joe Rodota Trail/ Wright Rd

Note: The Joe Rodota Bikeway operates between Sebastopol and the City of Santa Rosa. All other bikeways are located within the City of Santa Rosa.
Source: *Santa Rosa Bicycle and Pedestrian Master Plan*, 2010

Capacity Analysis

Intersection Level of Service Methodologies

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. A unit of measure that indicates a level of delay generally accompanies the LOS designation.

The study intersections were analyzed using methodologies published in the *Highway Capacity Manual* (HCM), Transportation Research Board, 2000. This source contains methodologies for various types of intersection control, all of which are related to a measurement of delay in average number of seconds per vehicle.

Both study intersections are controlled by a traffic signal and were therefore evaluated using the signalized methodology from the HCM. 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. For purposes of this study, delays were calculated using optimized signal timing.

The ranges of delay associated with the various levels of service are indicated in Table 3.

Table 3
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.

Reference: *Highway Capacity Manual*, Transportation Research Board, 2000

Traffic Operation Standards

Standards of Significance

The following standards of significance are based on the CEQA Guidelines as well as criteria established by the City of Santa Rosa. The project would result in a significant impact on transportation if it would:

1. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including

but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.

Caltrans is responsible for the maintenance and operation of State routes and highways. Within the project study area, Caltrans' facilities include SR 12. Caltrans maintains a volume monitoring program and reviews local agencies' planning documents to assist in its forecasting of future volumes and congestion points. The Guide for the Preparation of Traffic Impacts Studies (January 2001) published by Caltrans is intended to provide a consistent basis for evaluating traffic impacts to State facilities. According to this document, Caltrans strives to maintain service levels on State facilities at the transition between LOS C and LOS D. In cases where this level of service is not feasible the lead agency should consult with Caltrans to establish an appropriate level of service threshold. If an existing state highway facility is operating worse than the appropriate target LOS, the existing Measures of Effectiveness (MOE) should be maintained.

2. Substantially increase hazards due to a design feature.

3. Result in inadequate emergency access.

4. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

   - A significant impact would occur if the project violates alternative transportation policies set forth in the City of Santa Rosa General Plan and/or if the project precludes bicycle improvements identified in the City of Santa Rosa Bicycle and Pedestrian Plan from being implemented.
   - The project would have a significant impact if it would result in unsafe conditions for bicyclists and pedestrians.
   - The project would have a significant impact if it would cause a substantial delay in transit service or create barriers to travel for pedestrians walking to transit terminals and bus stops.

5. The City of Santa Rosa's adopted Level of Service (LOS) Standard is contained in Santa Rosa General Plan 2035. Standard TD-1 states that the City will try to maintain a Level of Service (LOS) D or better along all major corridors. Although the City's standard does not specify criteria for intersections, for the purposes of this study a minimum operation of LOS D for the overall operation of the study intersection was applied.

Existing Conditions

The Existing Conditions scenario provides an evaluation of current operation based on existing traffic volumes during the a.m. and p.m. peak periods. This condition does not include project-generated traffic volumes. Volume data was collected April 17, 2013.

Intersection Levels of Service

Under existing conditions, both study intersections operate at acceptable Levels of Service. The existing traffic volumes are shown in Figure 1. A summary of the intersection level of service calculations is contained in Table 4, and copies of the Level of Service calculations are provided in Appendix B.

Table 4
Existing Peak Hour Intersection Levels of Service

Study Intersection	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS
1. SR 12/Fulton Rd	39.7	D	39.6	D
2. Sebastopol Rd/ S Wright Rd	21.3	B	22.4	C

Notes: Delay is measured in average seconds per vehicle
LOS = Level of Service; **Bold** text = deficient operation

Future Conditions

Segment volumes for the horizon year of 2040 were obtained from Sonoma County's gravity demand model and translated to turning movement volumes at each of the study intersections using the "Furness" method. The Furness method is an iterative process that employs existing turn movement data, existing link volumes and future link volumes to project likely turning future movement volumes at intersections.

Under the anticipated Future volumes both study intersections are expected to operate unacceptably during the both the a.m. and p.m. peak hours. Future operating conditions are summarized in Table 5 and traffic volumes are shown in Figure 2.

Table 5
Future Peak Hour Intersection Levels of Service

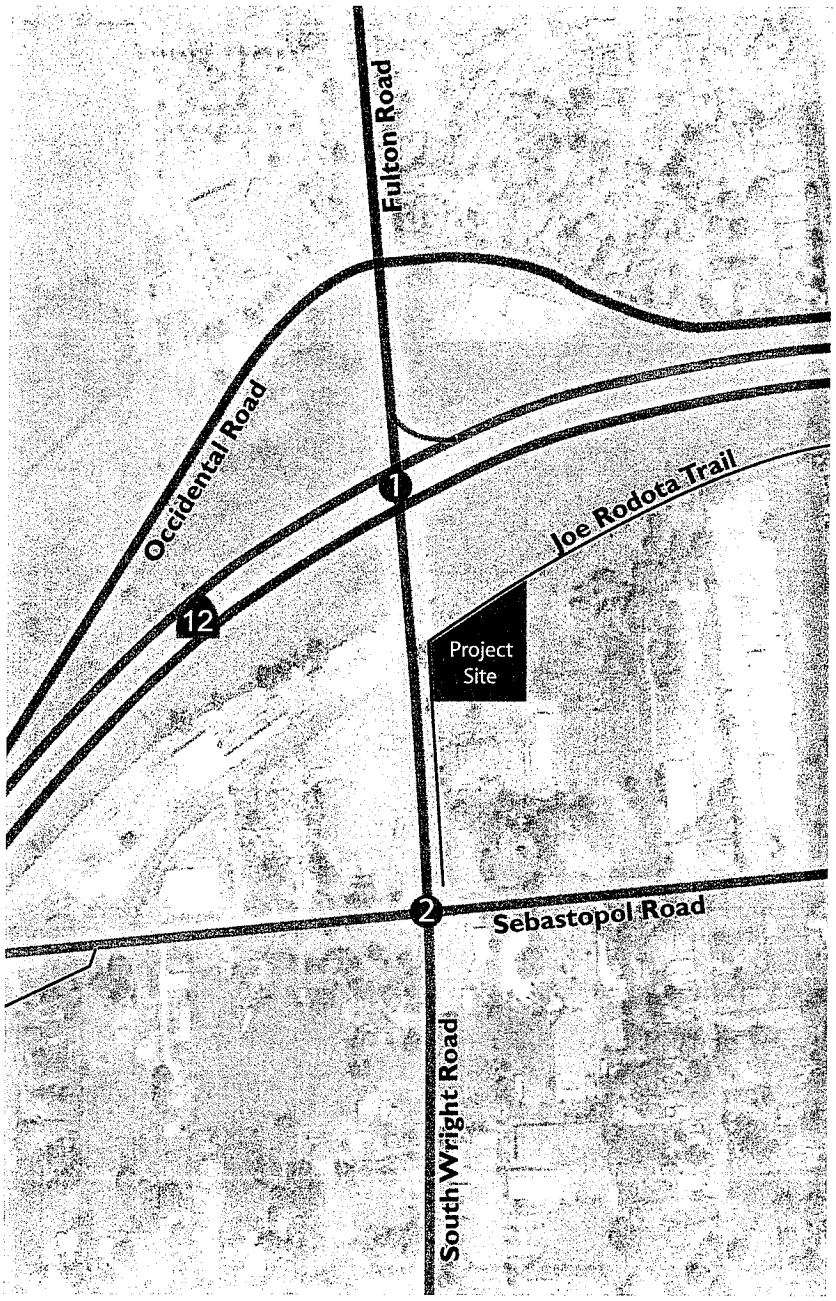
Study Intersection	AM Peak		PM Peak	
	Delay	LOS	Delay	LOS
1. SR 12/Fulton Rd	**113.9**	**F**	**>120**	**F**
2. Sebastopol Rd/S Wright Rd	**60.1**	**E**	**119.9**	**F**

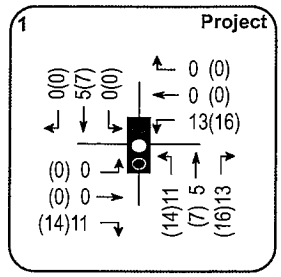
Notes: Delay is measured in average seconds per vehicle
LOS = Level of Service; **Bold** text = deficient operation

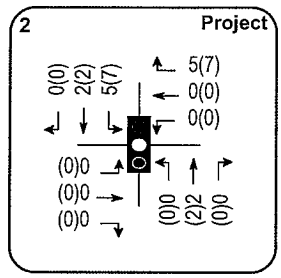
According to the *2035 Santa Rosa General Plan*, the SR 12/Fulton Road intersection is expected to be converted to an interchange and Sebastopol Road is planned to be widened to four lanes through the study area.

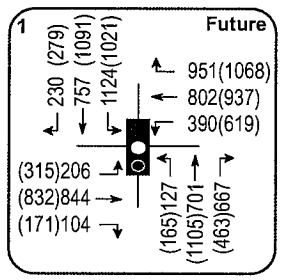
Project Description

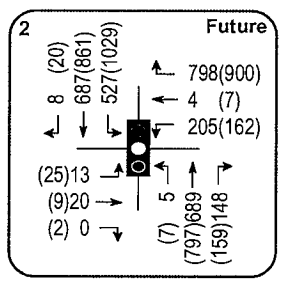
The project would develop an approximately 3,500 square-foot community grocery store, a gasoline station with twelve fueling positions and four electric vehicle charging stations along with an approximately one-quarter acre open space and bicycle path with a small commercial building (approximately 432 square feet). Additionally, a single apartment would be constructed on the site which is planned to be occupied by a site caretaker employee. The proposed project site plan is shown in Figure 3.











LEGEND
- ● Study Intersection
- xx A.M. Peak Hour Volume
- (xx) P.M. Peak Hour Volume

North

Not to Scale

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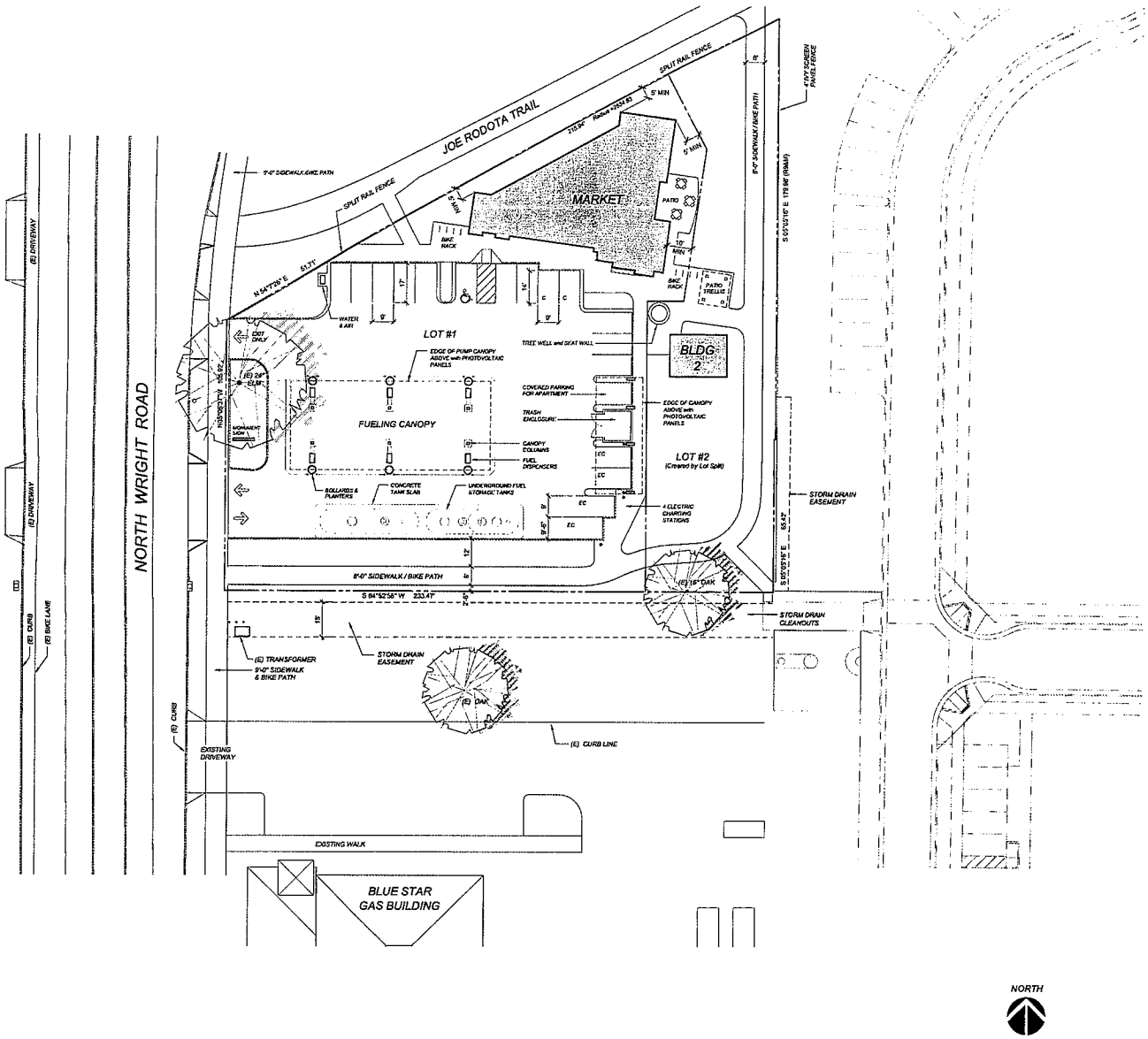
Traffic Impact Study for the Elm Tree Station Project — Figure 2

City of Santa Rosa — Project and Future Traffic Volumes



Source: TIERNEY/FIGUEIREDO ARCHITECTS 3/13

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Traffic Impact Study for the Elm Tree Station Project
City of Santa Rosa

Figure 3
Site Plan

Trip Generation

The anticipated trip generation for the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 9th Edition, 2012, for a Convenience Market with gas pumps (Land Use #853) and Single Family Residence (Land Use #210). Consideration was given to using the ITE Land Use Category for a Supermarket (Land Use #850); however, all data points published for a supermarket were for study locations that were considerably larger than the proposed use (the smallest being approximately 15,000 square feet, about five times the size of the proposed project), so this use was determined not to be a more accurate representation of the project. It is understood that the market is not a convenience store, but instead a small format neighborhood grocery store; however, due to its size as well as the inclusion of the gas pumps, the proposed development most closely matches the ITE category for Convenience Market with gas pumps. The total commercial building size for both the main community grocery store and the small commercial building in the open space area were combined and used to develop trip generation projections.

The proposed project would include electric vehicle charging stations; however, such a use is not included in the ITE publication. In general, it takes several hours for an electric vehicle to fully recharge, resulting in a very low turnover potential and therefore little to no impact on peak period traffic volumes. Because of this together with the conservatism of the trip rates applied to the primary components of the project, no adjustments were made to the trip generation projections to account for the electric vehicle charging station. Finally, the proposed open space with a small walk-up commercial use is expected to be an additional amenity for the project site's customers or Joe Rodota Trail users, and not a generator of traffic in and of itself; therefore, no additional traffic is projected to be generated by open space use.

While the residential unit would be occupied by a caretaker employee, it is reasonable to assume that this apartment would have a lower than typical trip generation potential as the occupant would not be traveling off-site for work. However, to provide a conservative analysis, no such deduction was applied.

Pass-by Trips

Some portion of the traffic associated with the commercial uses would be drawn from existing traffic on nearby streets. These vehicle trips are not considered "new," but are instead comprised of drivers who are already driving on the adjacent street and choose to make an interim stop. These trips are referred to as "pass-by." The percentage of these pass-by trips was based on information also provided in the *Trip Generation Manual*. The pass-by data presented by ITE is in the range of 48 to 87 percent of total trips. To ensure a conservative analysis, a pass-by rate at the lower end of the range of published data of 50 percent was applied to this analysis.

Total Project Trip Generation

The expected trip generation potential for the proposed project is indicated in Table 6, with deductions taken for pass-by trips. The proposed project is expected to generate an average of 1,506 trips per day, including 73 trips during the a.m. peak hour and 91 during the p.m. peak hour.

Table 6
Trip Generation Summary

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Convenience Market w/gas pumps	3.54 ksf	845.6	2,993	40.92	145	72	73	50.92	180	90	90
Pass-by Component		*-50%*	*-1,497*	*-50%*	*-73*	*-36*	*-37*	*-50%*	*-90*	*-45*	*-45*
Single Family Residence	1 du	9.52	10	0.75	1	0	1	1.00	1	1	0
Total Primary Trips			**1,506**		**73**	**36**	**37**		**91**	**46**	**45**

Notes: ksf = thousand square feet, du = dwelling units

Trip Distribution

The pattern used to allocate new project trips to the street network was based on the location of likely trip origins and destinations as well as knowledge of local travel trends near the project site. The applied distribution assumptions and resulting trips are shown in Table 7.

Table 7
Trip Distribution Assumptions

Route	Percent	Daily Trips	AM Trips	PM Trips
SR 12 to/from the west	30%	452	22	27
SR 12 to/from the east	35%	527	26	32
Wright Rd to/from the south	5%	75	3	4
Fulton Rd to/from the north	15%	226	11	14
Sebastopol Rd to/from the east	15%	226	11	14
TOTAL	**100%**	**1,506**	**73**	**91**

Intersection Operation

Existing plus Project Conditions

Upon the addition of project-related traffic to the Existing volumes, the study intersections are expected to operate acceptably. These results are summarized in Table 8. Project traffic volumes are shown in Figure 2.

Table 8
Existing and Existing plus Project Peak Hour Intersection Levels of Service

Study Intersection	Existing Conditions				Existing plus Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. SR 12/Fulton Rd	39.7	D	39.6	D	40.9	D	40.5	D
2. Sebastopol Rd/S Wright Rd	21.3	B	22.4	C	21.4	C	22.5	C

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service
Bold text = deficient operation

Finding: The study intersections are expected to continue operating acceptably at the same levels of service upon the addition of project-generated traffic.

Future plus Project Conditions

Upon the addition of project-generated traffic to the anticipated Future volumes the study intersections are expected to continue operating deficiently. The Future plus Project operating conditions are summarized in Table 9.

Table 9
Future and Future plus Project Peak Hour Intersection Levels of Service

Study Intersection	Future Conditions				Future plus Project			
	AM Peak		PM Peak		AM Peak		PM Peak	
1. SR 12/Fulton Rd	**113.9**	**F**	**>120**	**F**	**117.8**	**F**	**>120**	**F**
2. Sebastopol Rd/ S Wright Rd	**60.1**	**E**	**119.9**	**F**	**61.0**	**E**	**>120**	**F**

Notes: Delay is measured in average seconds per vehicle; LOS = Level of Service
Bold text = deficient operation

Finding: Both study intersections will continue operating unacceptably during both peak hours, but at the same Levels of Service with the project as without it.

Recommendation: SR 12/Fulton Road is planned to be converted to an interchange and Sebastopol Road is planned to be widened according to the *2035 Santa Rosa General Plan*. It is assumed that with these planned improvements acceptable operation would be achieved. The applicant should pay applicable traffic impact fees in order to help fund these planned improvements.

Alternative Modes

Pedestrian Facilities

Given the proximity of residential uses surrounding the site, it is reasonable to assume that some project patrons and employees will want to walk, bicycle, and/or utilize transit to reach the grocery market portion of the site.

Project Site – Sidewalks separated from the road by landscaping exist along the project frontage. As part of the project, a pedestrian and bicycle path is proposed that would connect to the sidewalk along the project frontage and the Joe Rodota Trail and would be located along the southern and eastern edges of the project.

Finding: Pedestrian facilities serving the project site are expected to be adequate.

Bicycle Facilities

Existing bicycle facilities, including the Joe Rodota Trail, bike lanes on Wright Road and Sebastopol Road, together with shared use of minor streets, provide adequate access for bicyclists.

Bicycle Storage

Short-term bicycle parking is to be provided at the site by bike racks which are to be located near the entrance to the proposed neighborhood market.

Finding: Bicycle facilities serving the project site are expected to be adequate.

Access and Circulation

Site Access

The site will be accessed by two driveways along the frontage of the project on North Wright Road. The south driveway will have full access, with vehicles allowed to enter and exit, while the north driveway will be limited to egress only. Southbound vehicles making left-turn movements will be able to use the existing two-way left-turn lane on North Wright Road. The north driveway serves exiting vehicles only.

Sight Distance

At driveways a substantially clear line of sight should be maintained between the driver of a vehicle waiting to cross or enter the street and the driver of a vehicle approaching on that street. Adequate time must be provided for the waiting vehicle to either cross, turn left, or turn right, without requiring the through traffic to radically alter their speed. Sight distance along Wright Road at the project driveway was evaluated based on sight distance criteria contained in the *Highway Design Manual* published by Caltrans. The recommended sight distances for driveways are based on stopping sight distance, which use the approach travel speeds as the basis for determining the recommended sight distance. Based on a design speed of 45 mph, the posted speed limit of North Wright Road in the vicinity of the proposed project, the minimum stopping sight distance needed is 360 feet.

From a review of the proposed site plan, it appears that existing trees located near the site's frontage would be removed, with the exception of an elm tree located approximately 60 feet south of the Joe Rodota Trail. Provided that the tree does not impede sight lines for vehicles leaving the project site, the sight distance for vehicles exiting the project site is expected to be adequate. In order to maintain adequate sight lines for vehicles leaving the site, it is recommended that the elm tree and other landscaping be trimmed such that tree canopies are at least seven feet above the ground; other landscaping should be limited to low-lying vegetation no greater than three feet in height. In addition, signs and monuments planned along the project's frontage should be placed in a manner that does not obstruct sight distance at the project driveways.

Finding: Adequate sight distance is available provided that trees and other landscaping are trimmed to maintain clear sight lines.

Recommendation: The elm tree and other landscaping should be maintained such that foliage stays above seven feet and below three feet from the ground. Signs or monuments to be installed along the project frontage should be placed so that sight distance is not obstructed at the project driveways.

Access Analysis

A two-way left-turn lane is provided for southbound traffic turning left into the proposed project driveway. It is expected that the two-way left-turn lane will be able to accommodate all peak hour traffic making this turning movement.

On-Site Circulation

Two driveways will be provided along the frontage of the project on North Wright Road. The north driveway is for egress only. Vehicles will be able to enter and exit the site at the south driveway.

Plans provided indicate that the AutoTURN application was used to analyze AASHTO design vehicle types P (passenger car) and WB-50 (intermediate semi trailer). The two design vehicles were used because the site's main traffic generator is passenger vehicles and the intermediate semi-trailer will be used for delivering gas. Based on the information provided, circulation is expected to be adequate.

Conclusions and Recommendations

Conclusions

- The project is expected to generate an average of 1,506 trips on a daily basis, including 73 in the a.m. peak hour, and 91 in the p.m. peak hour.
- Both study intersections are expected to operate acceptably at LOS D or better under existing plus project conditions.
- Under future conditions, both without and with the project, SR 12/Fulton Road is expected to operate at LOS F. Also under future volumes, Sebastopol Road/South Wright Road is expected to operate deficiently during both peak hours. Improvements included in the City of Santa Rosa's General Plan are assumed to result in acceptable operating conditions at both of these intersections.
- Pedestrian and bicycle facilities to be provided as part of the project offer additional connectivity to the Joe Rodota trail.
- Vehicle access to the project site is to be from North Wright Road, with one driveway for egress only and the other for ingress and egress. Southbound vehicles traveling along North Wright Road will be able to use the existing two-way left-turn lane to access the site.
- Passenger vehicles and intermediate semi-trailer design vehicles were used to determine that on-site circulation is adequate.

Recommendations

- The applicant should pay traffic impact fees to help fund planned future improvements at SR 12/ Fulton Road and road widening on Sebastopol Road.

Study Participants and References

Study Participants

Principal in Charge:	Dalene J. Whitlock, PE, PTOE
Engineer:	Tony Henderson, PE
Assistant Engineer:	Smadar Boardman, EIT
Technician/Graphics:	Deborah J. Mizell
Editing/Formatting:	Angela McCoy
Report Review:	Dalene J. Whitlock, PE, PTOE

References

2009 Collision Data on California State Highways, California Department of Transportation, 2009
Highway Capacity Manual, Transportation Research Board, 2000
Highway Design Manual, 6th Edition, California Department of Transportation, 2006
Santa Rosa Bicycle and Pedestrian Master Plan, City of Santa Rosa, 2010
Santa Rosa City Code, Quality Code Company, 2013
Santa Rosa General Plan 2035, City of Santa Rosa, 2009
Statewide Integrated Traffic Records System (SWITRS), California Highway Patrol, 2006-2011
Trip Generation Manual, 9th Edition, Institute of Transportation Engineers, 2012

SRO330

Appendix A

Intersection Collision Rate Calculations

INTERSECTION COLLISION RATE CALCULATIONS

City of Santa Rosa

Intersection # 1: State Route 12 & Fulton Rd/Wright Rd

Date of Count: Wednesday, April 17, 2013

Number of Collisions: 32
Number of Injuries: 22
Number of Fatalities: 1
ADT: 48500
Start Date: July 1, 2006
End Date: June 30, 2011
Number of Years: 5

Intersection Type: Four-Legged
Control Type: Signals
Area: Urban

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1\ \text{MILLION}}{\text{ADT} \times 365\ \text{DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{32 \times 1{,}000{,}000}{48{,}500 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.36 c/mve**	**3.1%**	**68.8%**
Statewide Average*	**0.36 c/mve**	**0.5%**	**39.5%**

ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2009 Collision Data on California State Highways, Caltrans

Intersection # 2: Sebastopol Rd & Wright Rd

Date of Count: Wednesday, April 17, 2013

Number of Collisions: 1
Number of Injuries: 0
Number of Fatalities: 0
ADT: 17600
Start Date: July 1, 2006
End Date: June 30, 2011
Number of Years: 5

Intersection Type: Four-Legged
Control Type: Signals
Area: Urban

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1\ \text{MILLION}}{\text{ADT} \times 365\ \text{DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{1 \times 1{,}000{,}000}{17{,}600 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.03 c/mve**	**0.0%**	**0.0%**
Statewide Average*	**0.36 c/mve**	**0.5%**	**39.5%**

ADT = average daily total vehicles entering intersection
c/mve = collisions per million vehicles entering intersection
* 2009 Collision Data on California State Highways, Caltrans

Appendix B

Intersection Level of Service Calculations

AM Peak Hour - Existing Conditions
Elm Tree Station Traffic Analysis
City of Santa Rosa

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 SR 12/Fulton Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.847
Loss Time (sec):	8	Average Delay (sec/veh):	39.7
Optimal Cycle:	78	Level Of Service:	D

Street Name:	Fulton Rd						SR 12					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Ignore			Ignore		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	2	0 1	2	0	1 0 1	1	0	2 0 1	1	0	2 0 1
Volume Module: >> Count Date: 17 Apr 2013 << 7:30 - 8:30 am												
Base Vol:	87	359	313	666	394	199	206	840	94	203	691	615
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	87	359	313	666	394	199	206	840	94	203	691	615
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.00	0.94	0.94	0.00
PHF Volume:	93	384	334	712	421	213	220	897	0	217	738	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	93	384	334	712	421	213	220	897	0	217	738	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
FinalVolume:	93	384	334	712	421	213	220	897	0	217	738	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.85	0.92	1.00	0.85	0.95	0.95	1.00	0.95	0.95	1.00
Lanes:	1.00	2.00	1.00	2.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1805	3610	1615	3502	1900	1615	1805	3610	1900	1805	3610	1900
Capacity Analysis Module:												
Vol/Sat:	0.05	0.11	0.21	0.20	0.22	0.13	0.12	0.25	0.00	0.12	0.20	0.00
Crit Moves:			****	****				****		****		
Green/Cycle:	0.09	0.24	0.24	0.24	0.39	0.39	0.16	0.29	0.00	0.14	0.27	0.00
Volume/Cap:	0.56	0.43	0.85	0.85	0.56	0.33	0.75	0.85	0.00	0.85	0.75	0.00
Delay/Veh:	48.0	32.3	51.5	44.3	24.7	21.5	50.2	39.7	0.0	64.0	36.5	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	48.0	32.3	51.5	44.3	24.7	21.5	50.2	39.7	0.0	64.0	36.5	0.0
LOS by Move:	D	C	D	D	C	C	D	D	A	E	D	A
HCM2k95thQ:	5	10	19	24	19	9	15	28	0	17	22	0

Note: Queue reported is the number of cars per lane.

Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to W-TRANS, Santa Rosa, CA

PM Peak Hour - Existing Conditions
Elm Tree Station Traffic Analysis
City of Santa Rosa

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 SR 12/Fulton Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.797
Loss Time (sec):	8	Average Delay (sec/veh):	39.6
Optimal Cycle:	64	Level Of Service:	D

Street Name:	Fulton Rd						SR 12					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Ignore			Ignore		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	2	0 1	2	0	1 0 1	1	0	2 0 1	1	0	2 0 1
Volume Module: >> Count Date: 17 Apr 2013 << 4:45 - 5:45 pm												
Base Vol:	88	512	216	616	388	192	276	733	89	256	749	744
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	88	512	216	616	388	192	276	733	89	256	749	744
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.00	0.93	0.93	0.00
PHF Volume:	95	554	234	666	419	208	298	792	0	277	810	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	95	554	234	666	419	208	298	792	0	277	810	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
FinalVolume:	95	554	234	666	419	208	298	792	0	277	810	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.85	0.92	1.00	0.85	0.95	0.95	1.00	0.95	0.95	1.00
Lanes:	1.00	2.00	1.00	2.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1805	3610	1615	3502	1900	1615	1805	3610	1900	1805	3610	1900
Capacity Analysis Module:												
Vol/Sat:	0.05	0.15	0.14	0.19	0.22	0.13	0.17	0.22	0.00	0.15	0.22	0.00
Crit Moves:		****		****			****				****	
Green/Cycle:	0.08	0.19	0.19	0.24	0.35	0.35	0.21	0.29	0.00	0.20	0.28	0.00
Volume/Cap:	0.63	0.80	0.75	0.80	0.63	0.37	0.80	0.76	0.00	0.76	0.80	0.00
Delay/Veh:	53.0	44.9	48.0	41.2	29.3	24.8	49.0	35.9	0.0	46.9	37.8	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	53.0	44.9	48.0	41.2	29.3	24.8	49.0	35.9	0.0	46.9	37.8	0.0
LOS by Move:	D	D	D	D	C	C	D	D	A	D	D	A
HCM2k95thQ:	6	16	13	22	21	10	20	24	0	18	25	0

Note: Queue reported is the number of cars per lane.

Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to W-TRANS, Santa Rosa, CA

AM Peak Hour - Existing Conditions
Elm Tree Station Traffic Analysis
City of Santa Rosa

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #2 Sebastopol Rd/S Wright Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.607
Loss Time (sec):	8	Average Delay (sec/veh):	21.3
Optimal Cycle:	39	Level Of Service:	C

Street Name:	S Wright Rd						Sebastopol Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	0 1	0	1	0 1	1	0	0 1	0	0	0 1
Volume Module: >> Count Date: 17 Apr 2013 << 7:30 - 8:30 am												
Base Vol:	3	259	95	379	299	5	4	10	0	130	4	492
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	3	259	95	379	299	5	4	10	0	130	4	492
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	3	286	105	418	330	6	4	11	0	143	4	542
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	3	286	105	418	330	6	4	11	0	143	4	542
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	3	286	105	418	330	6	4	11	0	143	4	542
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.96	0.96	0.95	0.95	0.95	0.99	0.99	1.00	0.95	0.95	0.85
Lanes:	1.00	0.73	0.27	1.00	1.97	0.03	0.29	0.71	0.00	0.97	0.03	1.00
Final Sat.:	1805	1335	489	1805	3544	59	535	1338	0	1758	54	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.21	0.21	0.23	0.09	0.09	0.01	0.01	0.00	0.08	0.08	0.34
Crit Moves:		****		****				****				****
Green/Cycle:	0.01	0.35	0.35	0.38	0.72	0.72	0.01	0.01	0.00	0.17	0.17	0.55
Volume/Cap:	0.13	0.61	0.61	0.61	0.13	0.13	0.61	0.61	0.00	0.47	0.47	0.61
Delay/Veh:	51.0	28.3	28.3	26.4	4.3	4.3	84.6	84.6	0.0	38.5	38.5	16.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	51.0	28.3	28.3	26.4	4.3	4.3	84.6	84.6	0.0	38.5	38.5	16.2
LOS by Move:	D	C	C	C	A	A	F	F	A	D	D	B
HCM2k95thQ:	0	19	19	20	3	3	3	3	0	9	9	21

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing Conditions
Elm Tree Station Traffic Analysis
City of Santa Rosa

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #2 Sebastopol Rd/S Wright Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.683
Loss Time (sec):	8	Average Delay (sec/veh):	22.4
Optimal Cycle:	46	Level Of Service:	C

Street Name:	S Wright Rd						Sebastopol Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	0 1	0	1	0 1	0	0	1! 0	0	1	0 0 1
Volume Module: >> Count Date: 17 Apr 2013 << 5:00 - 6:00 pm												
Base Vol:	4	307	81	459	315	9	10	5	1	93	5	475
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	4	307	81	459	315	9	10	5	1	93	5	475
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
PHF Volume:	5	365	96	546	375	11	12	6	1	111	6	565
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	5	365	96	546	375	11	12	6	1	111	6	565
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	5	365	96	546	375	11	12	6	1	111	6	565
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.97	0.97	0.95	0.95	0.95	0.96	0.96	0.96	0.96	0.96	0.85
Lanes:	1.00	0.79	0.21	1.00	1.94	0.06	0.63	0.31	0.06	0.95	0.05	1.00
Final Sat.:	1805	1457	384	1805	3496	100	1142	571	114	1722	93	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.25	0.25	0.30	0.11	0.11	0.01	0.01	0.01	0.06	0.06	0.35
Crit Moves:		****		****					****		****	
Green/Cycle:	0.02	0.37	0.37	0.44	0.79	0.79	0.02	0.02	0.02	0.09	0.09	0.54
Volume/Cap:	0.14	0.68	0.68	0.68	0.14	0.14	0.68	0.68	0.68	0.68	0.68	0.65
Delay/Veh:	50.0	29.6	29.6	24.7	2.5	2.5	101.2	101	101.2	54.7	54.7	18.2
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	50.0	29.6	29.6	24.7	2.5	2.5	101.2	101	101.2	54.7	54.7	18.2
LOS by Move:	D	C	C	C	A	A	F	F	F	D	D	B
HCM2k95thQ:	1	23	23	25	3	3	3	3	3	10	10	23

Note: Queue reported is the number of cars per lane.

AM Peak Hour - Existing plus Project Conditions
Elm Tree Station Traffic Analysis
City of Santa Rosa

Trip Generation Report

Forecast for am

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1		3.54	Convenience Ma	20.46	20.46	72	72	144	200.0
1		-1.00	Passby	36.00	37.00	-36	-37	-73	-101.
1		1.00	SFR	0.19	0.56	0	1	1	1.4
	Zone 1 Subtotal					36	36	72	100.0
TOTAL						36	36	72	100.0

PM Peak Hour - Existing plus Project Conditions
Elm Tree Station Traffic Analysis
City of Santa Rosa

Trip Generation Report

Forecast for pm

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1		3.54	Convenience Ma	25.46	25.46	90	90	180	197.8
1		-1.00	Passby	45.00	45.00	-45	-45	-90	-98.9
1		1.00	SFR	0.63	0.37	1	0	1	1.1
	Zone 1 Subtotal					46	45	91	100.0
TOTAL						46	45	91	100.0

AM Peak Hour - Existing plus Project Conditions
Elm Tree Station Traffic Analysis
City of Santa Rosa

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 SR 12/Fulton Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.864
Loss Time (sec):	8	Average Delay (sec/veh):	40.9
Optimal Cycle:	84	Level Of Service:	D

Street Name:	Fulton Rd						SR 12					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Ignore			Ignore		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	2	0 1	2	0 1	0 1	1	0 2	0 1	1	0 2
Volume Module: >> Count Date: 17 Apr 2013 << 7:30 - 8:30 am												
Base Vol:	87	359	313	666	394	199	206	840	94	203	691	615
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	87	359	313	666	394	199	206	840	94	203	691	615
Added Vol:	11	5	13	0	5	0	0	0	11	13	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	98	364	326	666	399	199	206	840	105	216	691	615
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.00	0.94	0.94	0.00
PHF Volume:	105	389	348	712	426	213	220	897	0	231	738	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	105	389	348	712	426	213	220	897	0	231	738	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
FinalVolume:	105	389	348	712	426	213	220	897	0	231	738	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.85	0.92	1.00	0.85	0.95	0.95	1.00	0.95	0.95	1.00
Lanes:	1.00	2.00	1.00	2.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1805	3610	1615	3502	1900	1615	1805	3610	1900	1805	3610	1900
Capacity Analysis Module:												
Vol/Sat:	0.06	0.11	0.22	0.20	0.22	0.13	0.12	0.25	0.00	0.13	0.20	0.00
Crit Moves:			****	****				****		****		
Green/Cycle:	0.10	0.25	0.25	0.24	0.38	0.38	0.16	0.29	0.00	0.15	0.27	0.00
Volume/Cap:	0.58	0.43	0.86	0.86	0.58	0.34	0.75	0.86	0.00	0.86	0.75	0.00
Delay/Veh:	47.8	31.9	53.3	46.2	25.6	22.1	50.2	41.5	0.0	65.8	36.5	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	47.8	31.9	53.3	46.2	25.6	22.1	50.2	41.5	0.0	65.8	36.5	0.0
LOS by Move:	D	C	D	D	C	C	D	D	A	E	D	A
HCM2k95thQ:	8	11	24	25	20	9	15	29	0	18	22	0

PM Peak Hour - Existing plus Project Conditions
Elm Tree Station Traffic Analysis
City of Santa Rosa

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 SR 12/Fulton Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.799
Loss Time (sec):	8	Average Delay (sec/veh):	40.5
Optimal Cycle:	65	Level Of Service:	D

Street Name:	Fulton Rd						SR 12					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Ignore			Ignore		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	2	0 1	2	0 1	1 0	1	0 2	0 1	1	0 2
Volume Module: >> Count Date: 17 Apr 2013 << 4:45 - 5:45 pm												
Base Vol:	88	512	216	616	388	192	276	733	89	256	749	744
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	88	512	216	616	388	192	276	733	89	256	749	744
Added Vol:	14	7	16	0	7	0	0	0	14	16	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	102	519	232	616	395	192	276	733	103	272	749	744
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.00	0.93	0.93	0.00
PHF Volume:	110	561	251	666	427	208	298	792	0	294	810	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	110	561	251	666	427	208	298	792	0	294	810	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
FinalVolume:	110	561	251	666	427	208	298	792	0	294	810	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.85	0.92	1.00	0.85	0.95	0.95	1.00	0.95	0.95	1.00
Lanes:	1.00	2.00	1.00	2.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1805	3610	1615	3502	1900	1615	1805	3610	1900	1805	3610	1900
Capacity Analysis Module:												
Vol/Sat:	0.06	0.16	0.16	0.19	0.22	0.13	0.17	0.22	0.00	0.16	0.22	0.00
Crit Moves:		****		****			****				****	
Green/Cycle:	0.09	0.19	0.19	0.24	0.34	0.34	0.21	0.28	0.00	0.21	0.28	0.00
Volume/Cap:	0.66	0.80	0.80	0.80	0.66	0.38	0.80	0.78	0.00	0.78	0.80	0.00
Delay/Veh:	53.3	44.9	51.8	41.4	30.6	25.4	49.2	37.3	0.0	47.9	37.9	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	53.3	44.9	51.8	41.4	30.6	25.4	49.2	37.3	0.0	47.9	37.9	0.0
LOS by Move:	D	D	D	D	C	C	D	D	A	D	D	A
HCM2k95thQ:	9	20	18	22	22	10	20	24	0	19	25	0

AM Peak Hour - Existing plus Project Conditions
Elm Tree Station Traffic Analysis
City of Santa Rosa

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #2 Sebastopol Rd/S Wright Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.612
Loss Time (sec):	8	Average Delay (sec/veh):	21.4
Optimal Cycle:	39	Level Of Service:	C

Street Name:	S Wright Rd						Sebastopol Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	0 1	0	1	0 1	1	0	0 1	0	0	0 1
Volume Module: >> Count Date: 17 Apr 2013 << 7:30 - 8:30 am												
Base Vol:	3	259	95	379	299	5	4	10	0	130	4	492
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	3	259	95	379	299	5	4	10	0	130	4	492
Added Vol:	0	2	0	5	2	0	0	0	0	0	0	5
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	3	261	95	384	301	5	4	10	0	130	4	497
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
PHF Volume:	3	288	105	423	332	6	4	11	0	143	4	548
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	3	288	105	423	332	6	4	11	0	143	4	548
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	3	288	105	423	332	6	4	11	0	143	4	548
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.96	0.96	0.95	0.95	0.95	0.99	0.99	1.00	0.95	0.95	0.85
Lanes:	1.00	0.73	0.27	1.00	1.97	0.03	0.29	0.71	0.00	0.97	0.03	1.00
Final Sat.:	1805	1337	487	1805	3544	59	535	1338	0	1758	54	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.22	0.22	0.23	0.09	0.09	0.01	0.01	0.00	0.08	0.08	0.34
Crit Moves:		****		****				****				****
Green/Cycle:	0.01	0.35	0.35	0.38	0.72	0.72	0.01	0.01	0.00	0.17	0.17	0.55
Volume/Cap:	0.13	0.61	0.61	0.61	0.13	0.13	0.61	0.61	0.00	0.48	0.48	0.61
Delay/Veh:	51.0	28.5	28.5	26.4	4.3	4.3	86.0	86.0	0.0	38.5	38.5	16.3
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	51.0	28.5	28.5	26.4	4.3	4.3	86.0	86.0	0.0	38.5	38.5	16.3
LOS by Move:	D	C	C	C	A	A	F	F	A	D	D	B
HCM2k95thQ:	0	19	19	20	3	3	3	3	0	9	9	21

PM Peak Hour - Existing plus Project Conditions
Elm Tree Station Traffic Analysis
City of Santa Rosa

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #2 Sebastopol Rd/S Wright Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.689
Loss Time (sec):	8	Average Delay (sec/veh):	22.5
Optimal Cycle:	47	Level Of Service:	C

Street Name:	S Wright Rd						Sebastopol Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	0 1	0	1	0 1	0	0	1! 0	0	1	0 0 1
Volume Module: >> Count Date: 17 Apr 2013 << 5:00 - 6:00 pm												
Base Vol:	4	307	81	459	315	9	10	5	1	93	5	475
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	4	307	81	459	315	9	10	5	1	93	5	475
Added Vol:	0	2	0	7	2	0	0	0	0	0	0	7
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	4	309	81	466	317	9	10	5	1	93	5	482
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
PHF Volume:	5	368	96	555	377	11	12	6	1	111	6	574
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	5	368	96	555	377	11	12	6	1	111	6	574
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	5	368	96	555	377	11	12	6	1	111	6	574
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.97	0.97	0.95	0.95	0.95	0.96	0.96	0.96	0.96	0.96	0.85
Lanes:	1.00	0.79	0.21	1.00	1.94	0.06	0.63	0.31	0.06	0.95	0.05	1.00
Final Sat.:	1805	1459	382	1805	3496	99	1142	571	114	1722	93	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.25	0.25	0.31	0.11	0.11	0.01	0.01	0.01	0.06	0.06	0.36
Crit Moves:		****		****					****		****	
Green/Cycle:	0.02	0.37	0.37	0.45	0.79	0.79	0.02	0.02	0.02	0.09	0.09	0.54
Volume/Cap:	0.14	0.69	0.69	0.69	0.14	0.14	0.69	0.69	0.69	0.69	0.69	0.66
Delay/Veh:	50.0	29.9	29.9	24.7	2.4	2.4	103.4	103	103.4	55.3	55.3	18.4
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	50.0	29.9	29.9	24.7	2.4	2.4	103.4	103	103.4	55.3	55.3	18.4
LOS by Move:	D	C	C	C	A	A	F	F	F	E	E	B
HCM2k95thQ:	1	23	23	25	3	3	3	3	3	10	10	24

AM Peak Hour - Future Conditions
Elm Tree Station Traffic Analysis
City of Santa Rosa

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 SR 12/Fulton Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	1.287
Loss Time (sec):	8	Average Delay (sec/veh):	113.9
Optimal Cycle:	180	Level Of Service:	F

Street Name:	Fulton Rd						SR 12					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Ignore			Ignore		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0 2	0 1	2	0 1	0 1	1	0 2	0 1	1	0 2	0 1
Volume Module:												
Base Vol:	127	701	667	1124	757	230	206	844	104	390	802	951
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	127	701	667	1124	757	230	206	844	104	390	802	951
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
PHF Volume:	127	701	667	1124	757	230	206	844	0	390	802	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	127	701	667	1124	757	230	206	844	0	390	802	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
FinalVolume:	127	701	667	1124	757	230	206	844	0	390	802	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.85	0.92	1.00	0.85	0.95	0.95	1.00	0.95	0.95	1.00
Lanes:	1.00	2.00	1.00	2.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1805	3610	1615	3502	1900	1615	1805	3610	1900	1805	3610	1900
Capacity Analysis Module:												
Vol/Sat:	0.07	0.19	0.41	0.32	0.40	0.14	0.11	0.23	0.00	0.22	0.22	0.00
Crit Moves:			****	****				****		****		
Green/Cycle:	0.09	0.32	0.32	0.25	0.48	0.48	0.12	0.18	0.00	0.17	0.23	0.00
Volume/Cap:	0.82	0.61	1.29	1.29	0.82	0.29	0.96	1.29	0.00	1.29	0.96	0.00
Delay/Veh:	73.3	29.5	177.1	175.2	28.1	15.7	94.4	181	0.0	193.3	60.3	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	73.3	29.5	177.1	175.2	28.1	15.7	94.4	181	0.0	193.3	60.3	0.0
LOS by Move:	E	C	F	F	C	B	F	F	A	F	E	A
HCM2k95thQ:	12	19	64	57	37	8	19	46	0	41	31	0

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Future Conditions
Elm Tree Station Traffic Analysis
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Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #1 SR 12/Fulton Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	1.347
Loss Time (sec):	8	Average Delay (sec/veh):	148.9
Optimal Cycle:	180	Level Of Service:	F

Street Name:	Fulton Rd						SR 12					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Ignore			Ignore		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0 2	0 1	2	0 1	0 1	1	0 2	0 1	1	0 2	0 1
Volume Module:												
Base Vol:	165	1105	463	1021	1091	279	315	832	171	619	937	1068
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	165	1105	463	1021	1091	279	315	832	171	619	937	1068
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
PHF Volume:	165	1105	463	1021	1091	279	315	832	0	619	937	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	165	1105	463	1021	1091	279	315	832	0	619	937	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
FinalVolume:	165	1105	463	1021	1091	279	315	832	0	619	937	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.85	0.92	1.00	0.85	0.95	0.95	1.00	0.95	0.95	1.00
Lanes:	1.00	2.00	1.00	2.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1805	3610	1615	3502	1900	1615	1805	3610	1900	1805	3610	1900
Capacity Analysis Module:												
Vol/Sat:	0.09	0.31	0.29	0.29	0.57	0.17	0.17	0.23	0.00	0.34	0.26	0.00
Crit Moves:	****				****			****		****		
Green/Cycle:	0.07	0.25	0.25	0.24	0.43	0.43	0.17	0.17	0.00	0.25	0.25	0.00
Volume/Cap:	1.35	1.21	1.13	1.21	1.35	0.41	1.02	1.35	0.00	1.35	1.02	0.00
Delay/Veh:	247.1	142	123.2	143.1	193	20.3	97.7	208	0.0	207.3	72.0	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	247.1	142	123.2	143.1	193	20.3	97.7	208	0.0	207.3	72.0	0.0
LOS by Move:	F	F	F	F	F	C	F	F	A	F	E	A
HCM2k95thQ:	22	53	41	49	104	12	27	48	0	63	37	0

Note: Queue reported is the number of cars per lane.

AM Peak Hour - Future Conditions
Elm Tree Station Traffic Analysis
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Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #2 Sebastopol Rd/S Wright Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	1.048
Loss Time (sec):	8	Average Delay (sec/veh):	60.1
Optimal Cycle:	180	Level Of Service:	E

Street Name:	S Wright Rd						Sebastopol Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	0 1	0	1	0	1	0	0	0 1	0	0 1
Volume Module:												
Base Vol:	5	689	148	527	687	8	13	20	0	205	4	798
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	5	689	148	527	687	8	13	20	0	205	4	798
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	5	689	148	527	687	8	13	20	0	205	4	798
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	5	689	148	527	687	8	13	20	0	205	4	798
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	5	689	148	527	687	8	13	20	0	205	4	798
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.97	0.97	0.95	0.95	0.95	0.98	0.98	1.00	0.95	0.95	0.85
Lanes:	1.00	0.82	0.18	1.00	1.98	0.02	0.39	0.61	0.00	0.98	0.02	1.00
Final Sat.:	1805	1522	327	1805	3561	41	734	1130	0	1776	35	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.45	0.45	0.29	0.19	0.19	0.02	0.02	0.00	0.12	0.12	0.49
Crit Moves:		****		****				****				****
Green/Cycle:	0.01	0.43	0.43	0.28	0.70	0.70	0.02	0.02	0.00	0.19	0.19	0.47
Volume/Cap:	0.28	1.05	1.05	1.05	0.28	0.28	1.05	1.05	0.00	0.60	0.60	1.05
Delay/Veh:	57.2	73.7	73.7	89.5	5.6	5.6	224.7	225	0.0	39.7	39.7	72.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	57.2	73.7	73.7	89.5	5.6	5.6	224.7	225	0.0	39.7	39.7	72.5
LOS by Move:	E	E	E	F	A	A	F	F	A	D	D	E
HCM2k95thQ:	1	57	57	40	8	8	6	6	0	13	13	55

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Future Conditions
Elm Tree Station Traffic Analysis
City of Santa Rosa

Level Of Service Computation Report
2000 HCM Operations Method (Base Volume Alternative)

Intersection #2 Sebastopol Rd/S Wright Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	1.303
Loss Time (sec):	8	Average Delay (sec/veh):	119.9
Optimal Cycle:	180	Level Of Service:	F

Street Name:	S Wright Rd						Sebastopol Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	0 1	0	1	0	0	0	1! 0	0	1	0 0 1
Volume Module:												
Base Vol:	7	797	159	1029	861	20	25	9	2	162	7	900
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	7	797	159	1029	861	20	25	9	2	162	7	900
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	7	797	159	1029	861	20	25	9	2	162	7	900
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	7	797	159	1029	861	20	25	9	2	162	7	900
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	7	797	159	1029	861	20	25	9	2	162	7	900
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.98	0.98	0.95	0.95	0.95	0.96	0.96	0.96	0.95	0.95	0.85
Lanes:	1.00	0.83	0.17	1.00	1.95	0.05	0.69	0.25	0.06	0.96	0.04	1.00
Final Sat.:	1805	1544	308	1805	3517	82	1264	455	101	1738	75	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.52	0.52	0.57	0.24	0.24	0.02	0.02	0.02	0.09	0.09	0.56
Crit Moves:		****		****					****	****		
Green/Cycle:	0.01	0.40	0.40	0.44	0.82	0.82	0.02	0.02	0.02	0.07	0.07	0.51
Volume/Cap:	0.30	1.30	1.30	1.30	0.30	0.30	1.30	1.30	1.30	1.30	1.30	1.10
Delay/Veh:	55.9	177	176.6	173.9	2.2	2.2	324.6	325	324.6	227.8	228	85.1
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	55.9	177	176.6	173.9	2.2	2.2	324.6	325	324.6	227.8	228	85.1
LOS by Move:	E	F	F	F	A	A	F	F	F	F	F	F
HCM2k95thQ:	1	89	89	95	7	7	7	7	7	22	22	65

Note: Queue reported is the number of cars per lane.

AM Peak Hour - Future plus Project Conditions
Elm Tree Station Traffic Analysis
City of Santa Rosa

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 SR 12/Fulton Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	1.303
Loss Time (sec):	8	Average Delay (sec/veh):	117.8
Optimal Cycle:	180	Level Of Service:	F

Street Name:	Fulton Rd						SR 12					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Ignore			Ignore		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	2	0	1	2	0	1	0	1	1	0	2	0	1	1	0	2	0	1
Volume Module:												
Base Vol:	127	701	667	1124	757	230	206	844	104	390	802	951
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	127	701	667	1124	757	230	206	844	104	390	802	951
Added Vol:	11	5	13	0	5	0	0	0	11	13	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	138	706	680	1124	762	230	206	844	115	403	802	951
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
PHF Volume:	138	706	680	1124	762	230	206	844	0	403	802	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	138	706	680	1124	762	230	206	844	0	403	802	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
FinalVolume:	138	706	680	1124	762	230	206	844	0	403	802	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.85	0.92	1.00	0.85	0.95	0.95	1.00	0.95	0.95	1.00
Lanes:	1.00	2.00	1.00	2.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1805	3610	1615	3502	1900	1615	1805	3610	1900	1805	3610	1900
Capacity Analysis Module:												
Vol/Sat:	0.08	0.20	0.42	0.32	0.40	0.14	0.11	0.23	0.00	0.22	0.22	0.00
Crit Moves:			****	****				****		****		
Green/Cycle:	0.09	0.32	0.32	0.25	0.48	0.48	0.12	0.18	0.00	0.17	0.23	0.00
Volume/Cap:	0.84	0.61	1.30	1.30	0.84	0.30	0.96	1.30	0.00	1.30	0.96	0.00
Delay/Veh:	74.6	29.4	183.9	182.6	29.7	16.1	93.4	189	0.0	199.5	59.6	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	74.6	29.4	183.9	182.6	29.7	16.1	93.4	189	0.0	199.5	59.6	0.0
LOS by Move:	E	C	F	F	C	B	F	F	A	F	E	A
HCM2k95thQ:	13	19	66	58	38	8	19	46	0	43	31	0

PM Peak Hour - Future plus Project Conditions
Elm Tree Station Traffic Analysis
City of Santa Rosa

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #1 SR 12/Fulton Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	1.369
Loss Time (sec):	8	Average Delay (sec/veh):	154.3
Optimal Cycle:	180	Level Of Service:	F

Street Name:	Fulton Rd						SR 12					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Ignore			Ignore		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	2	0	1	2	0	1	0	1	1	0	2	0	1	1	0	2	0	1
Volume Module:												
Base Vol:	165	1105	463	1021	1091	279	315	832	171	619	937	1068
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	165	1105	463	1021	1091	279	315	832	171	619	937	1068
Added Vol:	14	7	16	0	7	0	0	0	14	16	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	179	1112	479	1021	1098	279	315	832	185	635	937	1068
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
PHF Volume:	179	1112	479	1021	1098	279	315	832	0	635	937	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	179	1112	479	1021	1098	279	315	832	0	635	937	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00
FinalVolume:	179	1112	479	1021	1098	279	315	832	0	635	937	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.85	0.92	1.00	0.85	0.95	0.95	1.00	0.95	0.95	1.00
Lanes:	1.00	2.00	1.00	2.00	1.00	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1805	3610	1615	3502	1900	1615	1805	3610	1900	1805	3610	1900
Capacity Analysis Module:												
Vol/Sat:	0.10	0.31	0.30	0.29	0.58	0.17	0.17	0.23	0.00	0.35	0.26	0.00
Crit Moves:	****				****			****			****	
Green/Cycle:	0.07	0.25	0.25	0.24	0.42	0.42	0.17	0.17	0.00	0.26	0.25	0.00
Volume/Cap:	1.37	1.21	1.17	1.21	1.37	0.41	1.02	1.37	0.00	1.37	1.02	0.00
Delay/Veh:	253.3	143	135.9	144.4	203	20.6	98.0	218	0.0	216.5	72.2	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	253.3	143	135.9	144.4	203	20.6	98.0	218	0.0	216.5	72.2	0.0
LOS by Move:	F	F	F	F	F	C	F	F	A	F	E	A
HCM2k95thQ:	24	53	43	49	107	12	27	48	0	66	37	0

AM Peak Hour - Future plus Project Conditions
Elm Tree Station Traffic Analysis
City of Santa Rosa

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #2 Sebastopol Rd/S Wright Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	1.052
Loss Time (sec):	8	Average Delay (sec/veh):	61.0
Optimal Cycle:	180	Level Of Service:	E

Street Name:	S Wright Rd						Sebastopol Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	0 1	0	1	0 1	1	0	0 1	0	1	0 1
Volume Module:												
Base Vol:	5	689	148	527	687	8	13	20	0	205	4	798
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	5	689	148	527	687	8	13	20	0	205	4	798
Added Vol:	0	2	0	5	2	0	0	0	0	0	0	5
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	5	691	148	532	689	8	13	20	0	205	4	803
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	5	691	148	532	689	8	13	20	0	205	4	803
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	5	691	148	532	689	8	13	20	0	205	4	803
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	5	691	148	532	689	8	13	20	0	205	4	803
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.97	0.97	0.95	0.95	0.95	0.98	0.98	1.00	0.95	0.95	0.85
Lanes:	1.00	0.82	0.18	1.00	1.98	0.02	0.39	0.61	0.00	0.98	0.02	1.00
Final Sat.:	1805	1524	326	1805	3561	41	734	1130	0	1776	35	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.45	0.45	0.29	0.19	0.19	0.02	0.02	0.00	0.12	0.12	0.50
Crit Moves:		****		****				****				****
Green/Cycle:	0.01	0.43	0.43	0.28	0.70	0.70	0.02	0.02	0.00	0.19	0.19	0.47
Volume/Cap:	0.28	1.05	1.05	1.05	0.28	0.28	1.05	1.05	0.00	0.60	0.60	1.05
Delay/Veh:	57.3	75.0	75.0	90.5	5.6	5.6	226.3	226	0.0	39.8	39.8	73.6
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	57.3	75.0	75.0	90.5	5.6	5.6	226.3	226	0.0	39.8	39.8	73.6
LOS by Move:	E	E	E	F	A	A	F	F	A	D	D	E
HCM2k95thQ:	1	58	58	41	8	8	6	6	0	13	13	56

PM Peak Hour - Future plus Project Conditions
Elm Tree Station Traffic Analysis
City of Santa Rosa

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #2 Sebastopol Rd/S Wright Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	1.309
Loss Time (sec):	8	Average Delay (sec/veh):	121.7
Optimal Cycle:	180	Level Of Service:	F

Street Name:	S Wright Rd						Sebastopol Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			Include			Ovl		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Y+R:	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lanes:	1	0	0 1	0	1	0 1	0	0	1! 0	0	1	0 1
Volume Module:												
Base Vol:	7	797	159	1029	861	20	25	9	2	162	7	900
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	7	797	159	1029	861	20	25	9	2	162	7	900
Added Vol:	0	2	0	7	2	0	0	0	0	0	0	7
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	7	799	159	1036	863	20	25	9	2	162	7	907
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	7	799	159	1036	863	20	25	9	2	162	7	907
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	7	799	159	1036	863	20	25	9	2	162	7	907
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
FinalVolume:	7	799	159	1036	863	20	25	9	2	162	7	907
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.98	0.98	0.95	0.95	0.95	0.96	0.96	0.96	0.95	0.95	0.85
Lanes:	1.00	0.83	0.17	1.00	1.95	0.05	0.69	0.25	0.06	0.96	0.04	1.00
Final Sat.:	1805	1545	307	1805	3518	82	1264	455	101	1738	75	1615
Capacity Analysis Module:												
Vol/Sat:	0.00	0.52	0.52	0.57	0.25	0.25	0.02	0.02	0.02	0.09	0.09	0.56
Crit Moves:		****		****					****	****		
Green/Cycle:	0.01	0.40	0.40	0.44	0.82	0.82	0.02	0.02	0.02	0.07	0.07	0.51
Volume/Cap:	0.30	1.31	1.31	1.31	0.30	0.30	1.31	1.31	1.31	1.31	1.31	1.10
Delay/Veh:	56.0	179	179.0	176.1	2.2	2.2	327.0	327	327.0	230.1	230	87.5
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	56.0	179	179.0	176.1	2.2	2.2	327.0	327	327.0	230.1	230	87.5
LOS by Move:	E	F	F	F	A	A	F	F	F	F	F	F
HCM2k95thQ:	1	89	89	96	7	7	7	7	7	22	22	66

MONK & ASSOCIATES
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JAN 17 2013
DEPARTMENT OF
COMMUNITY DEVELOPMENT

BIOLOGICAL RESOURCES ANALYSIS
ELM TREE STATION
CITY OF SANTA ROSA
SONOMA COUNTY, CALIFORNIA

November 6, 2012

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1. INTRODUCTION

Monk & Associates, Inc. (M&A) has prepared this Biological Resource Analysis for the proposed Elm Tree Station project (herein referred to as the project site). The applicant is proposing to build a fueling station and small market on the project site which is located at 874 North Wright Road in the City of Santa Rosa, Sonoma County, California (Figures 1 and 2). This development would be called the "North Wright Road Center." The purpose of our analysis is to provide a description of existing biological resources on the project site and to identify potentially significant impacts that could occur to sensitive biological resources from development of the North Wright Road Center.

Biological resources include common plant and animal species, and special-status plants and animals as designated by the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), National Marine Fisheries Service (NMFS), and other resource organizations including the California Native Plant Society (CNPS). Biological resources also include waters of the United States, as regulated by the U.S. Army Corps of Engineers (Corps), and waters of the State as regulated by the California Regional Water Quality Control Board (RWQCB), and CDFG.

This biological resources analysis also provides mitigation measures for "potentially significant" and "significant" impacts that could occur to biological resources. When implemented, the mitigation measures would reduce proposed project impacts to levels considered less than significant pursuant to the California Environmental Quality Act (CEQA). Accordingly, this report is suitable for review and inclusion in any review being conducted by the City of Santa Rosa for the proposed project pursuant to the CEQA.

2. PROPERTY APN, LOCATION, AND SETTING

The 0.98-acre project site is located at 874 North Wright Road, just southeast of the intersection of North Wright Road and the Luther Burbank Memorial Highway (Highway 12) in Santa Rosa, Sonoma County, California. The Assessor's Parcel Number for the parcel is 035-063-001. The project site, located on the western boundary of the City of Santa Rosa, is the site of a former residential home, now demolished. Ornamental trees, shrubs and a pit at the location of a removed septic tank, remain from the former residential land use. A man-made ditch starts in the central eastern portion of the project site, runs diagonally through the project site, and terminates at a stormdrain inlet structure on the west side of the project site alongside North Wright Road. The ditch was likely excavated by the previous homeowner to drain stormwater runoff from the residential area of the project site. Project site vegetation is characterized as ruderal (weedy) and ornamental vegetation, non-native annual grassland and seasonal wetland. There currently are no structures on the site.

Figure 3 provides an aerial photograph showing the project site and surrounding lands. The "Joe Rodota Trail," a bicycle and pedestrian path, is located immediately north and parallel to the northern project site boundary. Immediately east of the project site is an undeveloped parcel(s) that is slated in the General Plan for residential development. Immediately east of the undeveloped parcel(s) is high density residential housing. Commercial and light industrial

businesses are located to the west of the project site on the west side of Wright Road and immediately to the south of the project site. A 4-Lane portion of Highway 12 occurs immediately north of the project site, and high density residential development is located to north of Highway 12.

3. PROJECT DESCRIPTION

Appendix A provides the site development plan for the proposed project. The project applicant proposes to subdivide the ±0.98-acre parcel into two parcels. Parcel 1 is ±31,143 sq. ft. and is to be developed with a fueling station and a small market. The market may house multiple "store–fronts" within the building such as a coffee shop, ice cream parlor and neighborhood market. The fueling station will consist of six gasoline pump stations and four electric charging stations. Solar power will be incorporated into both the fueling station and the market to the extent feasible.

The North Wright Road Center is designed to incorporate the Joe Rodota Trail and its users by providing a bicycle and pedestrian linkage, as well as an easily accessible ±11,600 sq. ft. park/picnic area on Parcel 2 of the project site with bicycle racks and a sheltered area. The park parcel is proposed to be dedicated to the city of Santa Rosa. However, perpetual maintenance of the park will remain with the owner(s) of Parcel 1. An additional pedestrian/bicycle connection will be provided to future residential development that will occur immediately east of Parcel 2.

The overall design of the project will be residential in scale and present a clean, inviting appearance. The canopy for the six-bay service station will not be "trade-mark" but designed to coordinate with the design of the market. As is outlined in the Storm Water Management Plan prepared for the property by BKF/Carlenzoli, Engineers, dated July 2011, portions of both the park parcel and the retail parcel will be used for storm water detention, and treatment.

The subject property was chosen for its:

- Location along a major arterial (State Highway 12)
- Location near a second major arterial (Sebastopol Road)
- Ability to serve existing commuters
- Ability to serve an adjoining neighborhood
- Site accessibility
- Site usability
- Consistency with the General Plan
- Consistency with the Wright-Sebastopol Commercial District Policy Statement

The proposed uses accomplish many public goals by providing:

- A neighborhood market and services adjacent to a planned residential community
- A resting point or destination along the Joe Rodota Trail
- Enhanced bicycle and pedestrian connections
- Superior design
- A convenient service station
- Incorporation of solar power to the extent feasible
- Well positioned electric fueling station

4. ANALYSIS METHODS

For this analysis, M&A biologists used a combination of literature research and field surveys to ascertain field conditions and whether the habitats present on the project site could support special-status species protected pursuant to CEQA. M&A biologists researched the most recent version of the CDFG's Natural Diversity Database, RareFind 3.1 application (CNDDB 2012) for historic and recent records of special-status plant and animal species (that is, threatened, endangered, rare) known to occur in the region of the project site. M&A also searched the 2012 electronic version of the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Plants of California* (CNPS 2001) for records of special-status plants known in the region of the project site. All special-status species records were compiled in tables. M&A examined all known record locations for special-status species to determine if special-status species could occur on the project site or within an area of affect.

4.1 Site Assessments

On March 16, 2010, M&A biologists Mr. Geoff Monk and Ms. Isabelle de Geofroy conducted a site evaluation to characterize plant communities and wildlife habitats onsite, and to determine if there could be areas within the project site that would be regulated as waters of the United States and/or State. The evaluations involved searching all habitats on the project site and recording all plant and wildlife species observed. M&A also noted potential habitats on or adjacent to the project site that could support special-status species.

4.2 Rare Plant Surveys

The project site occurs in the region of Sonoma County known as the Santa Rosa Plain. In accordance with policies adopted by the Corps, the CDFG, and the USFWS, special-status plant surveys in the Santa Rosa Plain must be conducted over a minimum two-year period and during the flowering period of the targeted special-status plant species to ensure that special-status plant species do not occur on a site.

Special-status plant surveys were conducted on the project site by Mr. Geoff Monk and Ms. Isabelle de Geofroy on March 16, 2010; by Ms. de Geofroy on April 30, May 28, and June 30, 2010; by Mr. Monk and Ms. Sadie McGarvey on March 18, 2011; and by Ms. de Geofroy on April 19, May 12, and June 17, 2011. The surveys followed USFWS (2005a) published survey guidelines for the Santa Rosa Plain as well as the CDFG (2009) and CNPS (2001) published survey guidelines. These guidelines state that special-status plant surveys should be conducted at the proper time of year when special-status and locally significant plants are both evident and identifiable. These guidelines also state that the surveys be floristic in nature with every plant observed identified to species, subspecies, or variety as necessary to determine their rarity status. Finally, these surveys must be conducted in a manner that is consistent with conservation ethics and accepted plant collection and documentation techniques. Following these guidelines, surveys were conducted during the months when special-status plant species from the region are known to be evident and flowering.

In accordance with USFWS guidelines, reference special-status plant populations were monitored carefully to ensure that federally listed plant species occurring on the Santa Rosa Plain, including Sonoma sunshine (*Blennosperma bakeri*), Burke's goldfields (*Lasthenia burkei*),

and Sebastopol meadowfoam (*Limnanthes vinculans*), were visible during survey periods. The local reference site used was the Alton Lane Mitigation Site (Figure 4). Visits to the reference site were made prior to each survey to determine if the federally listed plants were flowering and otherwise visible at the time of the surveys. Figure 4, attached, illustrates the proximity of the reference site to the Elm Tree Station project site. Burke's goldfields, Sonoma sunshine and Sebastopol meadowfoam were observed at the reference sites during the 2010 and 2011 survey period in both vegetative and flowering forms.

During surveys, all areas of the project site were examined by walking systematic transects through potential habitat, and by closely examining any existing microhabitats that could support special-status plants (for example, wetland habitats). Nearly all plant species found on the project site were identified to species. All plants were identified to the level required to determine rarity status. A list of all vascular plant taxa encountered within the project site was recorded in the field. Plants that needed further evaluation were collected and keyed in the lab. Final determinations for collected plants were made by keying specimens using standard references such as *The Jepson Manual* (Hickman 1993 and Baldwin et al. 2012) and *A Flora of Sonoma County* (Best et al. 1996).

4.1 California Tiger Salamander (CTS) Larval Surveys

The applicant is assuming presence of CTS and will mitigate these impacts as discussed below. In order to determine if there would be any need to "salvage" CTS on the project site, surveys were conducted. In 2011, spring larval surveys for CTS were completed in the project site's wetlands to determine if there are aquatic habitats on the project site where CTS could be breeding. Authorization to conduct spring larval surveys at the project site was granted by Mr. David Kelly of the USFWS in a March 2, 2011 email correspondence. Suitable aquatic habitats within the project site that provide potential CTS breeding/larval development habitat were surveyed in the spring of 2011. In accordance with CDFG's and USFWS' joint survey protocol, larval surveys were conducted during separate spring periods. The surveys took place on March 19, April 12, and May 12, 2011. All larval surveys were conducted by M&A's federal permitted biologists Mr. Geoff Monk and Mr. Brian Spirou. M&A's staff biologist, Ms. Sadie McGarvey, assisted these two permitted biologists with all surveys.

4.2 Wetland Delineation

On March 16, 2010, M&A biologists Mr. Geoff Monk and Ms. Isabelle de Geofroy conducted preliminary wetland delineation on the project site using the Corps' 1987 *Wetlands Delineation Manual* in conjunction with the regional supplement for the Arid West Region (Corps 2008). The site investigation was completed during a very wet spring at a time when hydrology was plainly apparent. The wetland delineation was conducted by looking at the project site's vegetation, hydrology, and soils at selected data point locations.

Data points and potential wetland areas were mapped using a Trimble Pro-XR Global Positioning System (GPS) having sub-meter accuracy. GPS data were corrected using base station files from the U.S. Forest Service Remote Sensing Laboratory in Sacramento. The delineation map was made from the GPS files using ArcMap 9.0. All spatial data were projected into the California State Plane, NAD 83 coordinate system, Zone 2. Using GPS technology, the

boundaries (within 30 inches) of each delineated wetland was transferred to an aerial photograph of the project site. On September 22, 2010, the preliminary wetland delineation was confirmed in the field by Sahrye Cohen of the San Francisco District of the Corps. The confirmed map is included in this document at Appendix B.

5. RESULTS OF RESEARCH AND PROJECT SITE ANALYSES

The project site's vegetation has been altered through historic and ongoing human activities and primarily supports a mix of ruderal and ornamental taxa. Seasonal wetlands are present in the lower elevations of the east side of the project site. Oregon ash (*Fraxinus latifolia*) and white poplar (*Populus alba*) occur along the edge of the man-made ditch. Below we discuss the soils, the hydrology and topography, the plant communities and associated habitat for wildlife found on the project site.

5.1 Soils

The Natural Resource Conservation Service (NRCS) mapped three soil types on the project site. These soil types are Alluvial land, clayey (AeA); Clear Lake clay, ponded, 0 to 2 percent slopes (CfA); and Wright loam, shallow, wet, 0 to 2 percent slopes (WoA). The soil types are discussed below.

5.1.1 ALLUVIAL LAND, CLAYEY

Alluvial land, clayey (AeA) consists of nearly level clay loams to silty clays underlain by stratified sand and gravel lenses at a depth of 20 to 40 inches. These areas are mainly on alluvial fans or along river and stream channels in the broad valley areas. They are a heterogeneous mixture of finer soil texture which cannot be mapped as distinct series at the scale of mapping.

Alluvial land is used for crops such as prunes and pears, as well as for vineyards, row crops, and pasture. Occasionally, Alluvial land is inundated by floodwater. This results in little or no damage, and there may be some beneficial deposition. *Alluvial land, clayey, is classified as a hydric soil by the NRCS*, as it is frequently flooded for long or very long duration during the growing season.

5.1.2 CLEAR LAKE, PONDED, 0 TO 2 PERCENT SLOPES

Clear Lake soils are poorly-drained soils formed in alluvium derived from sedimentary rock. These soils occur on plains and flat basin areas and predominate on the project site. They occur in an area that extends from approximately 5 miles south of Santa Rosa and east of Petaluma to north of the tidelands bordering San Francisco Bay.

Clear Lake clay, ponded, 0 to 2 percent slopes is in poorly drained basins and on floodplains and is subject to temporary ponding. Permeability is slow. Runoff is slow and the hazard of erosion is slight. The available water capacity is 8 to 10 inches. This soil is used mainly for producing oat-vetch hay or oat hay for feeding cattle and horses. *Clear Lake Soil clay, ponded, 0 to 2 percent slopes is classified as a hydric soil by the NRCS*, as this soil is frequently ponded for long or very long duration during the growing season; and/or it is a poorly drained soil with a water table that has a depth of 1 foot or less during the growing season, if permeability is less than 6 inches/hour in any layer within a depth of 20 inches.

5.1.3 WRIGHT LOAM, SHALLOW, WET, 0 TO 2 PERCENT SLOPES

The Wright soil series consists of somewhat poorly drained and moderately well-drained loams that have a clay subsoil. They are underlain by old valley, plain alluvium of mixed origin such as volcanic and marine sediment. These soils are mostly undulating and are on low terraces. They are mainly on the central Santa Rosa Plain and south of the town of Sonoma. Wright soils are used mainly for dryland and irrigated pasture.

Wright loam, shallow, wet, 0 to 2 percent slopes has an A horizon that ranges from 10 to 20 inches in thickness and from very fine sandy loam to sandy clay loam in texture. Permeability is very slow in the subsoil; drainage is somewhat poor. The available water capacity is 3 to 5 inches. *Wright loam, shallow, wet, 0 to 2 percent slopes is classified as a hydric soil by the NRCS*, as this soil is frequently ponded for long or very long duration during the growing season; and/or it is a poorly drained soil with a water table that has a depth of 1 foot or less during the growing season, if permeability is less than 6 inches/hour in any layer within a depth of 20 inches.

5.2 Site Topography

Topography of the project site varies from previously graded level areas to nearly level undulating terrain bisected by a ditch and that appears to dip to a lower elevation at the southeast corner of the project site. Elevations range from 89.76 to 94.57 feet above sea level, with the highest elevations occurring at the site of the former home site at the northwestern corner of the project site. The lowest point in the project site is at the centerline of the man-made ditch. Lower elevations on the site are concentrated along the length of the ditch and in the southeastern and northeastern corners of the project site.

5.3 Site Hydrology

The project site has no significant offsite watershed. Virtually the entire project site drains during storm events via percolation into the soil and into the ditch and topographic low areas on the northeastern and southeastern sides of the project site. Soil pit investigations found a high water table on the east side of the project site during a site visit on March 16, 2010.

Appendix B depicts the confirmed Corps jurisdictional map for the project site. Under normal conditions, a man-made ditch on the project site leads into a drain inlet on the southwestern corner of the project site and drains stormwater from the entire project site into the City of Santa Rosa's underground municipal storm drain system; however, redeposition of fill from recent home site and septic tank removal has resulted in blockages in the conveyance ditch which effectively stops all water from being conveyed off the project site. Accordingly, ponded and/or flooded conditions in the ditch and the south side of the project site are prolonged during the rainy season, thus enhancing wetland conditions.

5.4 Plant Communities and Associated Wildlife Habitats

The project site's vegetation has been altered through historic and ongoing human activities and primarily supports a mix of ruderal and ornamental taxa. Seasonal wetlands are present in the lower elevations of the east side of the project site. Oregon ash (*Fraxinus latifolia*) and white

poplar (*Populus alba*) occur along the edge of the man-made ditch. Below we discuss the plant communities and associated habitat for wildlife found on the project site.

A complete list of plant species observed on the project site is presented in Table 1. Nomenclature used for plant names follows The Jepson Manual, Second Edition (Baldwin et al. 2012). Table 2 is a list of wildlife species observed on the project site. Nomenclature for wildlife follows CDFG's Complete list of amphibian, reptile, bird, and mammal species in California (2008) and any changes made to species nomenclature as published in scientific journals since the publication of CDFG's list.

The project site supports three plant communities: non-native annual grassland, seasonal wetlands and anthropogenic communities. These plant communities are discussed in detail below.

5.4.1 NON-NATIVE ANNUAL GRASSLAND

Prior to European settlement of California, the valley and coastal grasslands were dominated by a mix of native, perennial bunchgrasses and spring-flowering forbs (broad-leaved plants) accustomed to intermittent, low-pressure grazing, browsing, and trampling by deer and other native ungulates such as tule elk (*Cervus elaphus nannodes*) and pronghorn (*Antilocapra americana*). Native plants commonly found in California at that time were purple-needle grass (*Stipa pulchra*), California oat grass (*Danthonia californica*), and blue wildrye (*Elymus glaucus*). European settlement resulted in the introduction of Mediterranean and Eurasian grasses and forbs for horticulture, agriculture and forage as well as unintentional introductions of exotic species in the fur and digestive systems of livestock. Introduced, annual grasses flourished under the high grazing pressure of cattle while native, perennial bunchgrasses diminished under the same conditions. Introduced species tolerant of high grazing pressure, particularly annual grasses of Eurasian ancestry, have displaced native bunchgrasses and created a shift in plant species composition toward non-native annual grassland.

Non-native annual grassland occurs on the upland portions of the project site. This plant community is dominated by non-native grasses such as Harding grass (*Phalaris aquatica*), Italian ryegrass (*Festuca perennis*), ripgut brome (*Bromus diandrus*), slender oats (*Avena barbata*), roadside brome (*Bromus catharticus* var. *elatus*) and non-native forbs such as Italian thistle (*Carduus pycnocephalus*), spring vetch (*Vicia sativa*), salsify (*Tragopogon porrifolius*), rough cat's ear (*Hypochaeris radicata*) prickly lettuce (*Lactuca serriola*), dissected geranium (*Geranium dissectum*), California burclover (*Medicago polymorpha*), white-stem filaree (*Erodium moschatum*) and wild teasel (*Dipsacus sativus*).

The project site's grassland habitat provides food and cover for a variety of wildlife species. The grasses, thistles, and some forbs provide seeds for passerine birds (perching birds) such as the lesser goldfinch (*Carduelis psaltria*), house finch (*Carpodacus mexicanus*), and spotted towhee (*Pipilo maculatus*), all of which were observed on the project site. Insects that feed on the wildflowers and grasses also provide a food source for commonly occurring insectivorous birds and reptiles such as the black phoebe (*Sayornis nigricans*), yellow-rumped warbler (*Dendroica coronata*), and western fence lizard (*Sceloporus occidentalis*). These animals provide a food

source for larger raptors such as the red shouldered hawk (*Buteo lineatus*), which has been observed foraging over the project site.

5.4.2 ANTHROPOGENIC COMMUNITIES

Anthropogenic communities can describe several types of human-influenced plant communities. Ruderal (weedy) communities are assemblages of plants that thrive in waste areas, roadsides and other sites that have been affected by human activity. In many areas of California, non-native and native trees were planted for agricultural purposes, ornamental purposes, to serve as windbreaks or for lumber. Many of these trees naturally reproduce and invade existing plant communities or just remain as remnants in the landscape. On the project site, anthropogenic communities consist of ruderal vegetation and ornamental plants. Ruderal vegetation thrives in the former residential areas of the project site, particularly on the former building pads where soils are compacted, and in locations where soils have been recently disturbed from demolition activities. Common ruderal species detected in this community include slender wild oats, ripgut brome, soft chess (*Bromus hordeaceus*), white-stem filaree (, California burclover, short-podded mustard (*Hirschfeldia incana*), white clover (*Trifolium repens*), milk thistle (*Silybum marianum*), Italian thistle (*Carduus pycnocephalus*), and bull thistle (*Cirsium vulgare*).

Ornamental trees and shrubs that were planted by the previous property owners occur throughout the project site, although most are concentrated in the former residential area. Ornamental trees identified on site include white poplar, Monterey pine (*Pinus radiata*), Siberian elm (*Ulmus pumila*), and Mayten tree (*Maytenus boaria*). Several native valley oaks (*Quercus lobata*) have also been planted along the edge of the project site, as well as fruit trees, including plum (*Prunus* sp.) and quince (*Cydonia oblonga*). Ornamental shrubs and plants include rose bushes (*Rosa* sp.), calla lily (*Zantedeschia aethiopica*), daffodil (*Narcissus* sp.) and iris (*Iris* sp.).

Several ornamental and invasive ruderal plants are becoming naturalized on the project site. Mayten tree and white poplar saplings and young fruit trees were observed on and adjacent to the banks of the man-made ditch. The invasive giant reed (*Arundo donax*) was also detected onsite.

Anthropogenic habitats typically provide habitat for common animals that are adapted to living in association with man. Non-secretive birds, in particular, can utilize both native and non-native trees for foraging, nesting and perching, while ruderal areas can still provide foraging habitat. Common wildlife species associated with anthropogenic communities include Botta's pocket gopher (*Thomomys bottae*), California meadow vole (*Microtus californicus*), western fence lizard, western scrub jay (*Aphelocoma californica*), American crow (*Corvus brachyrhynchos*), northern mockingbird (*Mimus polyglottos*), American robin (*Turdus migratorius*), California towhee (*Pipilo crissalis*), bushtit (*Psaltriparus minimus*), and house finch, all of which were observed on the project site.

5.4.3 SEASONAL WETLANDS

Seasonal wetlands are habitats that may appear dry in the summer and fall months, but by the first winter rains become inundated and hold water for a period of several weeks to months at a time. Seasonal wetlands are able to hold water for long duration typically due to the presence of impervious soils and/or confining topography such as depressions also known as topographic

low areas. On the project site, two topographic depressions on the east side of the project site and the man-made ditch leading to a City-maintained drain inlet support seasonal wetland vegetation. Wetland hydrology is prolonged on the project site owing to blockages in the ditch on the site that drain the site to the City's storm drain inlet alongside North Wright Road. Species within this plant community include cocklebur (*Xanthium strumarium*), curly dock (*Rumex crispus*), annual semaphore grass (*Pleuropogon californicus*), western mannagrass (*Glyceria occidentalis*), tall flatsedge (*Cyperus eragrostis*), creeping spikerush (*Eleocharis macrostachya*), dense sedge (*Carex densa*), hyssop loosestrife (*Lythrum hyssopifolium*), Italian ryegrass, and bird's foot trefoil (*Lotus corniculatus*).

The seasonal wetlands on the project site provide a temporary water source for wildlife. These areas may hold water long enough to provide amphibians adapted to short hydroperiods with breeding habitat. Sierran tree frog larvae (*Pseudacris regilla*) have been detected in the seasonal wetlands on the project site. A mallard (*Anas platyrhynchos*) nest was observed along the man-made ditch on the project site. Other aquatic species observed while conducting dip-netting studies included invertebrates such as water scavenger beetle (Hydrophilidae), predacious water beetle (Dytiscidae), back swimmers (Notonectidae), water boatmen (Corixidae), dragonfly larvae (Epiprocta), and clam shrimp (Conchostraca).

6. SPECIAL-STATUS SPECIES DEFINITION

6.1 Definitions

For purposes of this analysis, special-status species are plants and animals that are legally protected under the California and Federal Endangered Species Acts (CESA and FESA, respectively) or other regulations, and species that are considered rare by the scientific community (for example, the CNPS). Special-status species are defined as:

- plants and animals that are listed or proposed for listing as threatened or endangered under the CESA (Fish and Game Code §2050 *et seq.*; 14 CCR §670.1 *et seq.*) or the FESA (50 CFR 17.12 for plants; 50 CFR 17.11 for animals; various notices in the Federal Register [FR] for proposed species);

- plants and animals that are candidates for possible future listing as threatened or endangered under the FESA (50 CFR 17; FR Vol. 64, No. 205, pages 57533-57547, October 25, 1999); and under the CESA (California Fish and Game Code §2068);

- plants and animals that meet the definition of endangered, rare, or threatened under the California Environmental Quality Act (CEQA) (14 CCR §15380) that may include species not found on either State or Federal Endangered Species lists;

- Plants occurring on Lists 1A, 1B, 2, 3, and 4 of CNPS' *Electronic Inventory* (CNPS 2001). The California Department of Fish and Game (CDFG) recognizes that Lists 1A, 1B, and 2 of the CNPS inventory contain plants that, in the majority of cases, would qualify for State listing, and CDFG requests their inclusion in EIRs. Plants occurring on CNPS Lists 3 and 4 are "plants about which more information is necessary," and "plants

of limited distribution," respectively (CNPS 2001). Such plants may be included as special-status species on a case by case basis due to local significance or recent biological information;

- migratory nongame birds of management concern listed by U.S. Fish and Wildlife Service (Migratory Nongame Birds of Management Concern in the United States: The list 1995; Office of Migratory Bird Management; Washington D.C.; Sept. 1995);

- animals that are designated as "species of special concern" by CDFG (2012);

- Animal species that are "fully protected" in California (Fish and Game Codes 3511, 4700, 5050, and 5515).

In the paragraphs below we provide further definitions of legal status as they pertain to the special-status species discussed in this report or in the attached tables.

Federal Endangered or Threatened Species. A species listed as Endangered or Threatened under the FESA is protected from unauthorized "take" (that is, harass, harm, pursue, hunt, shoot, trap) of that species. If it is necessary to take a Federal listed Endangered or Threatened species as part of an otherwise lawful activity, it would be necessary to receive permission from the USFWS prior to initiating the take.

State Threatened Species. A species listed as Threatened under the state Endangered Species Act (§2050 of California Fish and Game Code) is protected from unauthorized "take" (that is, harass, pursue, hunt, shoot, trap) of that species. If it is necessary to "take" a state listed Threatened species as part of an otherwise lawful activity, it would be necessary to receive permission from CDFG prior to initiating the "take."

California Species of Special Concern. These are species in which their California breeding populations are seriously declining and extirpation from all or a portion of their range is possible. This designation affords no legally mandated protection; however, pursuant to the CEQA Guidelines (14 CCR §15380), some species of special concern could be considered "rare." Pursuant to its rarity status, any unmitigated impacts to rare species could be considered a "significant effect on the environment" (§15382). Thus, species of special concern must be considered in any project that will, or is currently, undergoing CEQA review, and/or that must obtain an environmental permit(s) from a public agency.

CNPS List Species. The California Native Plant Society (CNPS) maintains an inventory of special status plant species. This inventory has four lists of plants with varying rarity. These lists are: List 1, List 2, List 3, and List 4. Although plants on these lists have no formal legal protection (unless they are also state or federal listed species), the California Department of Fish and Game requests the inclusion of List 1 species in environmental documents. In addition, other state and local agencies may request the inclusion of species on other lists as well. List 1 species have the highest priority: List 1A species are thought to be extinct, and List 1B species are known to still exist but are considered "rare, threatened, and endangered in California and elsewhere." All of the plants constituting List 1B meet the definitions of Section 1901, Chapter

10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the CDFG Code, and are eligible for state listing (CNPS 2001). List 2 species are rare in California, but more common elsewhere. Lists 3 and 4 contain species about which there is some concern, and are review and watch lists, respectively. Additionally, in 2006 CNPS updated their lists to include "threat code extensions" for each list. For example, List 1B species would now be categorized as List 1B.1, List 1B.2, or List 1B.3. These threat codes are defined as follows: .1 is considered "seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat)"; .2 is "fairly endangered in California (20-80% of occurrences threatened)"; .3 is "not very endangered in California (less than 20% of occurrences threatened or no current threats known)."

Under the CEQA review process only CNPS List 1 and 2 species are considered since these are the only CNPS species that meet CEQA's definition of "rare" or "endangered." Impacts to List 3 and 4 species are not regarded as significant pursuant to CEQA.

Fully Protected Birds. Fully protected birds, such as the white-tailed kite and golden eagle, are protected under California Fish and Game Code (§3511). Fully protected birds may not be "taken" or possessed (i.e., kept in captivity) at any time.

Protected Amphibians. Under Title 14 of the California Code of Regulations (14 CCR 41), protected amphibians, such as the California tiger salamander, may only be taken under special permit from California Department of Fish and Game issued pursuant to Sections 650 and 670.7 of these regulations.

6.2 Potential Special-Status Plants on the Project Site

Figure 5 provides a graphical illustration of the closest known records for special-status species within 5 miles of the project site and helps readers visually understand the number of sensitive species that occur in the vicinity of the project site.

According to the CNPS' *Inventory* and CDFG's CNDDB, a total of 62 special-status plant species are known to occur in the region of the project site (Table 3). Many of these plants occur in specialized habitats such as serpentinite soils, chaparral, coastal scrub or marshes. The project site's ruderal and non-native, annual grassland with two small seasonal wetlands provides suitable habitat for only 14 of these 62 special-status plant species. These plants are discussed in the paragraphs below.

Finally, the project site is designated by the USFWS' Santa Rosa Plain Conservation Strategy as having "potential for presence of CTS and listed plants" (USFWS 2005b). In accordance with the *Programmatic Biological Opinion of U.S. Army Corps of Engineers Permitted Projects that May Affect California Tiger Salamander and Three Endangered Plant Species on the Santa Rosa Plain* (USFWS 1998), if surveys have been conducted following USFWS protocols and no listed plants are found, seasonal wetlands on the project site (located in the South Area of the Santa Rosa Plain Study Area) are nevertheless considered to be suitable habitat for listed plant species Sonoma sunshine (*Blennosperma bakeri*), Burke's goldfields (*Lasthenia burkei*), and Sebastopol meadowfoam (*Limnanthes vinculans*). Impacts to suitable habitat for these listed plants are

required to be mitigated with 1:1 occupied or established habitat (any combination) and 0.5:1 of established habitat prior to groundbreaking. The mitigation land is to be preserved and managed in perpetuity.

6.2.1 BIG SCALE BALSAM-ROOT

Big-scale balsam-root (*Balsamorhiza macrolepis*) is a CNPS List 1B.2 species. It has no state or federal status. This perennial member of the sunflower family is found in chaparral, woodland, and grassland habitats, sometimes on serpentinite soils, from 295 to 5101 feet in elevation. It is most frequently encountered on rocky outcrops, and often on hillslopes. Big-scale balsam-root flowers from March through June. Big-scale balsam-root is known to occur within the Sebastopol, California U.S. Geological Survey Quadrangle although there no CNDDB records for this species within 5 miles of the project site. The non-native grassland that comprises a portion of the project site provides marginally suitable habitat for this plant that is known from valley and foothill grasslands but lacks any serpentinite or gabbro substrate. Special-status plant surveys were conducted by M&A in March, April, May and June of 2010 and 2011. Big-scale balsam-root was not found during any of M&A's appropriately timed surveys. Hence, no impacts to this species are expected from the proposed development and no mitigation should be required.

6.2.2 SONOMA SUNSHINE

Sonoma sunshine is a federal and state-listed endangered plant species. It is also a CNPS List 1B.1 species, indicating that it is seriously endangered in California. This annual member of the sunflower family is found in vernal pools and grassland habitats from 10 to 110 meters elevation, known only from Laguna de Santa Rosa and the Sonoma area. It is threatened by urbanization, grazing and agriculture. Sonoma sunshine flowers from March through May.

The project site provides suitable habitat for this species within the annual grassland and seasonal wetlands. The closest CNDDB occurrence for this plant is 2.0 miles north of the project site west of Santa Rosa (Occurrence No. 9); this CNDDB occurrence is from 1997. This population is still believed to be extant although site quality is much reduced after disking for fire control began (according to the CNDDB record). Special-status plant surveys were conducted by M&A in March, April, May, and June of 2010 and 2011 and this plant was not observed onsite. These surveys were conducted at times when this plant was evident and identifiable at the nearby Alton Lane Mitigation Site. M&A believes that the project site's absence of vernal pools, lack of mesic grassland and the strong anthropogenic influence on the project site reduce the likelihood this plant would naturally occur onsite. The project site surveys confirm this. Although this plant has not been observed onsite after two years of appropriately timed surveys, according to the USFWS' Santa Rosa Plain Conservation Strategy, any impact to potentially suitable seasonal wetland habitat for Sonoma sunshine would be significant. The Impacts and Mitigation Measures that follow address these impacts.

potential

6.2.3 HAYFIELD TARWEED

Hayfield tarweed (*Hemizonia congesta* ssp. *congesta*) is a CNPS List 1B.2 species. It has no state or federal status. This annual member of the sunflower family is found in valley and foothill grassland from 65 to 1837 feet in elevation, sometimes on roadsides. Hayfield tarweed blooms

from April through November. The closest CNDDB occurrence for this plant is 0.1-mile west of the project site on the west side of Santa Rosa (Occurrence No. 27); this CNDDB occurrence is from 1994. This population is presumed extant (according to the CNDDB record).

Special-status plant surveys were conducted on the project site by M&A in March, April, May, and June of 2010 and 2011 and this species was not observed onsite. Since this plant has not been observed onsite after two years of appropriately timed surveys, no impacts to hayfield tarweed are expected from the proposed development.

6.2.4 BURKE'S GOLDFIELDS

Burke's goldfields is federally-listed and state-listed as endangered, and is a CNPS List 1B.1 species, indicating that it is seriously endangered in California. This annual member of the sunflower family is found in vernal pools, meadows and seeps from 15 to 600 meters elevation. Burke's goldfields flowers from April through June and is known only from southern portions of Lake and Mendocino counties and from northeastern Sonoma County (the Santa Rosa Plain). Historically, 39 populations were known from the "Cotati valley" (Santa Rosa Plain area), 2 sites in Lake county, and one site in Mendocino County. The occurrence in Mendocino County is most likely extirpated. From north to south in the Cotati Valley, the species ranges from north of the community of Windsor to east of the city of Sebastopol. The project site provides marginally suitable habitat for this species within the annual grassland and seasonal wetlands. The closest CNDDB occurrence for this plant is 0.5-mile northwest of the project site and west of Santa Rosa (Occurrence No. 28); this CNDDB occurrence is from 2002. This population is believed to still be extant and preserved in the Wright Preservation Bank. This plant also occurs on the parcel adjacent to the Wright Bank (CNDDB records).

Special-status plant surveys were conducted by M&A in March, April, May, and June of 2010 and 2011 and this plant was not observed onsite. These surveys were conducted at times when this plant was evident and identifiable at the nearby Alton Lane Mitigation Site. M&A believes that the project site's absence of vernal pools, lack of mesic grassland and the strong anthropogenic influence on the project site reduce the likelihood this plant would naturally occur onsite. The project site surveys confirm this. Although this plant has not been observed onsite after two years of appropriately timed surveys, according to the USFWS' Santa Rosa Plain Conservation Strategy, any impact to potentially suitable seasonal wetland habitat for Burke's goldfields would be significant. The Impacts and Mitigation Measures that follow address these impacts.

Potential

6.2.5 BAKER'S GOLDFIELDS

Baker's goldfields (*Lasthenia californica* ssp. *bakeri*) is a CNPS List 1B.1 species. It has no state or federal status. This annual member of the sunflower family is found in closed-cone conifer forest, coastal scrub, meadows, seeps and marshes from 196 to 1706 feet in elevation. Baker's goldfields flowers from April through October and is known only from Mendocino, Marin and Sonoma counties. Historically, 14 populations were known from these counties, with 3 populations in Marin, 4 populations in Sonoma (Santa Rosa Plain area) and 7 populations in Mendocino County. Only one of these occurrences, last observed in 1957, is most likely extirpated.

The project site provides marginally suitable habitat for this species within the annual grassland and seasonal wetlands. The closest CNDDB occurrence for this plant is 2.7 miles west of the project site and west of Santa Rosa (Occurrence No. 3); this CNDDB occurrence is from 1939. This population is believed to still be extant (CNDDB record). Special-status plant surveys were conducted by M&A in March, April, May, and June of 2010 and 2011 and this plant was not observed onsite. M&A believes that the project site's absence of coniferous forest, scrub and marshes and the strong anthropogenic influence on the project site reduce the likelihood this plant would naturally occur onsite. The project site surveys confirm this. Since this plant has not been observed onsite after two years of appropriately timed surveys, no impacts to Baker's goldfields are expected from the proposed development.

6.2.6 CONTRA COSTA GOLDFIELDS

Contra Costa goldfields (*Lasthenia conjugens*) is a federally-listed endangered plant. It is also on CNPS List 1B.1. It has no state status. Contra Costa goldfields is a showy, spring annual herb with yellow flowers in the sunflower family. Contra Costa goldfields occur in vernal pools within open, grassy areas in woodland and valley grasslands from 0 to 1,542 feet in elevation. Currently, 23 populations are believed to be extant in Mendocino, Napa, Marin, Contra Costa, Alameda, Solano, Sonoma, and Monterey counties. Contra Costa goldfields is known to occur within the Sebastopol, California U.S. Geological Survey Quadrangle although there no CNDDB records for this species within 5 miles of the project site.

The non-native annual grassland and seasonal wetlands on the project site provide marginal habitat for Contra Costa goldfields. Special-status plant surveys were conducted by M&A in March, April, May, and June of 2010 and 2011 and this plant was not observed onsite. M&A believes that the project site's absence of vernal pools, lack of mesic grassland and the strong anthropogenic influence on the project site reduce the likelihood this plant would naturally occur onsite. The project site surveys confirm this. Since this plant has not been observed onsite after two years of appropriately timed surveys, no impacts to Contra Costa goldfields are expected from the proposed development.

6.2.7 MARSH SILVERPUFFS

Marsh silverpuffs (*Microseris paludosa*) is a CNPS List 1B.2 species. It has no state or federal status. This annual member of the sunflower family is found in closed-cone conifer forest, cismontane woodland, coastal scrub, and mesic, grassy slopes from 16 to 984 feet in elevation. Marsh silverpuffs flowers from April through July. The project site provides marginally suitable habitat for this species within the annual grassland and seasonal wetlands. The closest CNDDB occurrence for this plant is 2.7 miles south of the project site and southeast of Sebastopol (Occurrence No. 20); this CNDDB occurrence is from 1978. This population is located in the Laguna De Santa Rosa drainage and is believed to still be extant.

Special-status plant surveys were conducted by M&A in March, April, May, and June of 2010 and 2011 and this plant was not observed onsite. M&A believes that the project site's absence of coniferous forest, woodland scrub and marshes and the strong anthropogenic influence on the project site reduce the likelihood this plant would naturally occur onsite. The project site surveys

confirm this. Since this plant has not been observed onsite after two years of appropriately timed surveys, no impacts to Marsh silverpuffs are expected from the proposed development.

6.2.8 DWARF DOWNINGIA

Dwarf downingia (*Downingia pusilla*) is a CNPS List 2.2 species. It has no state or federal status. This small, annual member of the bellflower family is found in vernal pools and mesic valley and foothill grassland from 3 to 1459 feet in elevation. Dwarf downingia flowers from March through May in the Santa Rosa Plain in Sonoma County, in Napa and Solano Counties, and in the Central Valley from the Sacramento region southward. The project site provides marginally suitable habitat for this species within the annual grassland and seasonal wetlands. The closest CNDDB occurrence for this plant is 2.2 miles south of the project site and southwest of Santa Rosa (Occurrence No. 86); this CNDDB occurrence is believed to still be extant.

Special-status plant surveys were conducted by M&A in March, April, May, and June of 2010 and 2011 and this plant was not observed onsite. M&A believes that the project site's absence of vernal pools, mesic grassland and the strong anthropogenic influence on the project site reduce the likelihood this plant would naturally occur onsite. The project site surveys confirm this. Since this plant has not been observed onsite after two years of appropriately timed surveys, no impacts to dwarf downingia are expected from the proposed development.

6.2.9 BEARDED SEDGE

Bearded sedge (*Carex comosa*) is a CNPS List 2.1 species. It has no state or federal status. This perennial member of the sedge family is found in marshes, swamps, lake margins, coastal prairie and annual grassland from 0 to 625 meters elevation. Bearded sedge flowers from May through September. The project site provides marginally suitable habitat for this species within the annual grassland and seasonal wetlands. This taxon is known to occur within the Sebastopol, California U.S. Geological Survey Quadrangle although there no CNDDB records for bearded sedge within 5 miles of the project site.

Special-status plant surveys were conducted by M&A in March, April, May, and June of 2010 and 2011 and this plant was not observed onsite. M&A believes that the project site's absence of marshes, swamps and coastal prairie coupled with the strong anthropogenic influence on the project site reduce the likelihood this plant would naturally occur onsite. The project site surveys confirm this. Since this plant has not been observed onsite after two years of appropriately timed surveys, no impacts to bearded sedge are expected from the proposed development.

6.2.10 FRAGRANT FRITILLARY

Fragrant fritillary (*Fritillaria liliacea*) is on CNPS List 1B.2 but has no federal or state status. This white-flowering, bulbiferous member of the lily family is found in cismontane woodland, coastal prairie, coastal scrub and annual grassland, often on serpentine soils from 10 to 1,345 feet in elevation. Fragrant fritillary is an early bloomer, flowering between February and April. Subsequent to the blooming period, fragrant fritillary can be identified on a site by its characteristic fruits. The closest CNDDB occurrence is 3.1 miles southeast of the project site (Occurrence No. 49). The project site provides suitable habitat for this species but lacks serpentine substrate. No members of the *Fritillaria* genus were identified onsite during March,

April and May of 2010 and 2011 special-status plant surveys; thus, the potential for occurrence is low to none. No impacts to this special-status species are expected from the proposed development and no mitigation would be required.

6.2.11 SHOWY INDIAN CLOVER

Showy Indian clover (*Trifolium amoenum*) is federally endangered and a CNPS List 1B.1 plant but has no state status. This annual member of the pea family is characterized by dense heads of purple flowers with white tips. Showy Indian clover blooms between April and June. Historically, this species occurred in a variety of habitats including low, wet swales, grasslands, and grassy hillsides up to 310 m (1,020 ft) in elevation, sometimes on serpentine substrate. The historical range of showy Indian clover was from the western edge of the Sacramento Valley in Solano County, west and north to Marin and Sonoma counties. The project site provides suitable habitat for this species within the annual grassland and seasonal wetlands.

The closest CNDDB occurrence for showy Indian clover is 0.4-mile southwest of the project site (Occurrence No. 20). This CNDDB occurrence is from 1945. Significant loss of showy Indian clover habitat resulted primarily from urbanization and land conversion to agriculture. Showy Indian clover was considered extinct until 1993, when Peter Connors from the Bodega Marine Laboratory discovered a single plant in Sonoma County. In 1994, Dr. Connors grew 18 plants in cultivation from seed produced by this plant found to produce seed for later reintroduction efforts. The current population consists of about 200 plants growing on two residential lots in Marin County. Both landowners are currently cooperating in the conservation of the species on their property.

Special-status plant surveys were conducted by M&A in March, April, May, and June of 2010 and 2011 and this plant was not observed onsite. Since this plant has not been observed onsite after two years of appropriately timed surveys, no impacts to showy Indian clover are expected from the proposed development.

6.2.12 SEBASTOPOL MEADOWFOAM

Sebastopol meadowfoam is a federal and state listed endangered species. It is also on CNPS List 1B. This annual member of the meadowfoam family has small, bowl-shaped, white flowers and mature leaves that have three to five undivided leaflets along each side of a long stalk (petiole). The shape of the leaves distinguishes Sebastopol meadowfoam from other members of the *Limnanthes* genus. Sebastopol meadowfoam is found in meadows, mesic valley and foothill grassland and vernal pools from 49 to 344 feet elevation. The species has not been recorded outside the southwestern Cotati Valley, where it occurs in less than thirty locations. Where it does occur, it is found in seasonally wet meadows, swales and vernal pools in the Laguna de Santa Rosa, Sonoma County. The species ranges from the city of Graton, east to Santa Rosa, southeast to Scenic Avenue, and southwest to the community of Cunningham, largely surrounding the northern and western perimeter of the city of Sebastopol. The closest CNDDB occurrence for this plant is 0.1-mile northwest of the project site and west of Santa Rosa (Occurrence No. 22); this CNDDB occurrence is from 2010. This population is believed to still be extant, part of which is preserved in the Wright Preservation Bank and occurs in both constructed and natural vernal pools.

The project site provides suitable habitat for this species within the annual grassland and seasonal wetlands. Special-status plant surveys were conducted by M&A in March, April, May, and June of 2010 and 2011 and this plant was not observed onsite. These surveys were conducted at times when this plant was evident and identifiable at the nearby Alton Lane Mitigation Site. Although this plant has not been observed onsite after two years of appropriately timed surveys, according to the USFWS' Santa Rosa Plain Conservation Strategy, any impact to potentially suitable seasonal wetland habitat for Sebastopol meadowfoam would be significant. The Impacts and Mitigation Measures that follow address these impacts.

6.2.13 BAKER'S NAVARRETIA

Baker's navarretia (*Navarretia leucocephala bakeri*) is a CNPS List 1B.1 species. It has no federal or state status. This annual member of the phlox family is found in cismontane woodland, lower montane coniferous forest, meadows and seeps, vernal pools and valley and foothill grasslands from 5 to 1740 meters elevation. This species occurs from Humboldt County south to Marin County, extending east to Sutter and Glenn counties. There are several disjunct populations further the northeast in Modoc and Lassen counties as well as to the southeast in Madera and Merced counties. Suitable habitat for Baker's navarretia occurs in the seasonal wetlands and in the annual grasslands on the project site although no vernal pools occur onsite. The closest CNDDB occurrence for this plant is 0.1-mile north of the project site and west of Santa Rosa (Occurrence No. 21); this CNDDB occurrence is from 1994. This population is believed to still be extant.

Special-status plant surveys were conducted by M&A in March, April, May, and June of 2010 and 2011 and this plant was not observed onsite. Since this plant has not been observed onsite after two years of appropriately timed surveys, no impacts to Baker's navarretia are expected from the proposed development.

6.2.14 THIN-LOBED HORKELIA

Thin-leaved horkelia (*Horkelia tenuiloba*) is a CNPS List 1B.2 species. It has no federal or state status. This annual member of the rose family is found in mesic openings on sandy soils in broad-leaved upland forest, valley and foothill grassland and chaparral from 164 to 1640 feet in elevation. It flowers between May and July. According to herbarium records, this species occurs from Mendocino, Marin, Sonoma, Monterey and San Luis Obispo counties. Marginally suitable habitat for thin-leaved horkelia occurs in the seasonal wetlands and annual grasslands on the project site although no chaparral or forest occurs onsite. The closest CNDDB occurrence for this plant is 2.7 miles southwest of the project site and near Sebastopol school (Occurrence No. 6); this CNDDB occurrence is a historic occurrence from 1931 and is presumed extant (CNDDB record).

Special-status plant surveys were conducted by M&A in March, April, May, and June of 2010 and 2011 and this plant was not observed onsite. Since this plant has not been observed onsite after two years of appropriately timed surveys, no impacts to thin-leaved horkelia are expected from the proposed development.

6.3 Potential Special-Status Animals on the Project Site

Figure 5 provides a graphical illustration of the closest known records for special-status species within 5 miles of the project site and helps readers visually understand the number of sensitive species that occur in the vicinity of the project site. No special-status animals have ever been mapped on the project site. Field surveys, including aquatic dip-netting surveys, were conducted by M&A in March, April, May, and June of 2010 and 2011. No special-status animal species were observed on the project site during those studies. However, according to the CNDDB, a total of 6 special-status animal species are known to occur within five miles of the project site (Table 4). Of the 6 species listed in Table 4, due to habitat requirements, only one only one special-status species, the California tiger salamander, has the potential to occur on the project site. All other special-status animals known from the region are summarily dismissed for the reasons presented in Table 4 and are not discussed further in this report. Additionally, based on M&A's experience, it is our expectation that raptors (birds of prey) and passerine (perching birds) could also nest in the mature ornamental and native trees on or adjacent to the project site. Those raptors that could nest onsite are also discussed below.

6.3.1 California Tiger Salamander

6.3.1.1 Legal Status

The project site is located within the known range of the Sonoma County "Distinct Population Segment" (DPS) of the California tiger salamander (*Ambystoma californiense*) (CTS). Under the FESA, the USFWS emergency listed the Sonoma County DPS as endangered on July 22, 2002. The USFWS formalized the listing of the Sonoma County DPS of the CTS as endangered on March 19, 2003 (USFWS 2003a). USFWS determined that this population is significantly and immediately imperiled by a variety of threats including habitat destruction, degradation, and fragmentation due to urban development, road construction, pesticide drift, collection, and inadequate regulatory mechanisms. In addition, it was determined that this population could face extinction as a result of naturally occurring events (e.g., fires, droughts) due to the small and isolated nature of the remaining breeding sites combined with the small number of individuals in the population. Finally, in September 2011, USFWS designated Critical Habitat for CTS in the Santa Rosa Plain. *The project site is within designated Critical Habitat.*

On March 4, 2010, CTS was also state listed as a threatened species under the California Endangered Species Act (CESA). Proposed projects may not impact the CTS without incidental taking authority from both the USFWS and the CDFG. Prior to impacting habitat that supports CTS, the USFWS must prepare an incidental take permit pursuant to either Section 7 or Section 10 of the Federal Endangered Species Act (FESA). Similarly, projects that impact CTS also require incidental taking authority from the CDFG. Under Section 2080 of CESA an incidental take permit may be authorized by CDFG for proposed projects that impact the CTS. An alternative is available that can significantly shorten the time frame necessary to acquire incidental taking authority pursuant to the CESA. Provided the USFWS has already authorized a federal incidental take permit for a proposed project that impacts CTS, CDFG can conduct a "consistency determination" pursuant to Section 2080.1 of the CESA and make a finding that the federal incidental take permit is consistent with CDFG's interests in protecting the CTS. This consistency determination must be completed (accepted or denied) by CDFG within 30 days of

when a complete application for a consistency determination has been submitted to the appropriate department of the CDFG.

Finally, CTS is also a protected amphibian under Title 14 of the California Code of Regulations (CCR 41) (1996), which provides that CTS may only be taken or possessed (that is, kept in captivity) under a special permit issued by the CDFG pursuant to sections 650 and 670.7 of these regulations, or Section 2081 of the Fish and Game Code.

6.3.1.2 CTS HABITAT REQUIREMENTS

CTS occur in grasslands and open oak woodlands that provide suitable aestivation and/or breeding habitats. M&A has worked with populations that are almost at sea level (Catellus Site in the City of Fremont) to almost 2,900 feet above sea level (Kammerer Ranch, East Santa Clara County). CTS spend the majority of their lives underground. They typically only emerge from their subterranean refugia for a few nights each year during the rainy season to migrate to breeding ponds. CTS may migrate up to 0.6-mile or further from their underground refugia to breeding ponds (personal data; Monk & Lynch 1997). As such, unobstructed migration corridors are important component of CTS habitat.

In Sonoma County, CTS emerge during the first heavy, warm rains of the year, typically in late November and early December. In most instances, larger movements of CTS do not occur unless it has been raining hard and continuously for several hours. Storm events that are continuous or of sufficient intensity to raise the ground water table to near the surface, or that otherwise causes subterranean burrow flooding results in larger storm event driven movements of CTS from their refugia to breeding pools (G. Monk personal observations). This incentive to leave subterranean refugia en masse has been observed by G. Monk in Springtown, east Alameda County in December 1997 and in Sonoma County in December 2009. Typically, for larger movements of CTS to occur, nighttime temperatures also must be above 48° F (G. Monk and S. Lynch pers. observations).

During the spring, summer, and fall months, most known populations of the CTS predominately use California ground squirrel (*Spermophilus beechyi*) burrows as aestivation habitat (G. Monk personal observation). In Sonoma County where California ground squirrel populations are scarce to non-existent, subterranean refugia likely include Botta's pocket gopher (*Thomomys bottae*) burrows, deep fissures in desiccated clay soils, and debris piles (e.g., downed wood, rock piles). Currently the only common, truly fossorial (i.e., those animals with a life cycle that is predominately lived underground) rodent in the range of the CTS in Sonoma County is Botta's pocket gopher. These rodents typically only open their burrows to feed, closing their burrows shortly after consuming available suitable forage. In most instances, pocket gophers will feed from below ground, pulling tuberous vegetation down into their burrows for consumption. Sometimes at night they will leave their burrows traveling only a few feet to graze on the above ground forage of non-tuberous plants. The pocket gopher's behavior of meticulously closing burrows, especially in times of inclement weather when storm events potentially can cause in-burrow flooding, do not leave CTS many opportunities to use their burrows. Since most CTS migrate at night during large storm events to and from their breeding ponds, the likelihood of CTS being able to readily exit or re-enter open gopher burrows in storm events is greatly diminished since this is naturally a time when pocket gophers have their burrows closed. For this

reason, the importance of the relationship between the Sonoma County "distinct population segment" of the CTS and the Botta's pocket gopher is likely to be far less significant than the relationship of the CTS to the California ground squirrel in other parts of the CTS' range since this ground squirrel always maintains its burrows to remain open.

Stock ponds, seasonal wetlands, and deep vernal pools typically provide most of the breeding habitat used by CTS. In such locations, CTS attach their eggs to rooted, emergent vegetation, and other stable filamentous objects in the water column. Eggs are gelatinous and are laid singly or occasionally in small clusters. Eggs range in size from about ¾ the diameter of a dime to the full diameter of a dime.

Occasionally CTS are found breeding in slow moving, streams or ditches. In 1997, Mr. G. Monk and S. Lynch observed CTS breeding in large, still ditches in Fremont, California. Similarly, in 2001/2002, Mr. D. Wooten observed CTS breeding in a roadside ditch in Cotati, California (D. Wooten, formerly of USFWS, pers. comm. w/ Mr. G. Monk). Ditches and/or streams that are subject to rapid flows, even if only on occasion, typically will not support or sustain CTS egg attachment through hatching, and thus, are not usually used successfully by CTS for breeding (G. Monk and S. Lynch, pers. observations). Similarly, streams and/or ditches that support predators of CTS or their eggs and larvae such as fish, bullfrogs (*Rana catesbeiana*), red swamp crayfish (*Procambarus clarkii*), or signal crayfish (*Pacifastacus leniusculus*), almost never constitute suitable breeding habitat.

In most of the CTS' range, seasonal wetlands that are used for breeding typically must hold water into the month of May to allow enough time for larvae to fully metamorphose. In dry years, seasonal wetlands may dry too early to allow enough time for CTS larvae to successfully metamorphose. Under such circumstances, desiccated CTS larvae can be found in dried pools. In addition, as pools dry down to very small areas of inundation, CTS larvae become concentrated and are very susceptible to predation. In Cotati, Mr. Monk observed drying pool predation by red-sided garter snakes (*Thamnophis sirtalis infernalis*) and ducks (various spp.). In the South Bay east of Fremont, Mr. Monk observed CTS larval predation in drying pools by wild pigs (*Sus scrofa*) and raccoons (*Procyon lotor*). However, in years exhibiting wet springs, these same drier (shallower) pools can remain hydrated long enough through continual rewetting to allow CTS larvae ample time to successfully metamorphose.

6.3.1.3 CTS RECORDS IN THE VICINITY AND LARVAL SURVEYS ON THE PROJECT SITE

The project site is within the boundaries of USFWS' designated Critical Habitat of the Sonoma County DPS of California tiger salamanders (Unit 1 - Santa Rosa Plain). Figure 6 shows that there are 20 reported occurrences of CTS within 2 miles of the project site. Six separate breeding areas are located within 1.5 miles of the project site; however, the closest breeding site (CNDDB Record No. 344) occurs north of Highway 12, a major geographic barrier to CTS movements. Mr. Monk and Mr. C. Patterson detected and reported CTS at this record location in 1989 prior to the establishment of the North Wright Conservation Bank, but the record has somehow been expunged by the CNDDB. CNDDB Occurrence Number 344 is located approximately 0.15-mile west of the project site. At this location, CTS larvae were detected in a small breeding pond between 1993 and 2008.

The nearest recorded CTS occurrence to the project site that is not separated by physical barriers is approximately 2,000 feet east of the project site (CNDDB No. 237) in what was native grassland containing swales, but that is now partially developed (streets and sidewalks constructed). M&A detected CTS at this record location in the early 1990s. M&A also detected CTS approximately 2,000 feet south of the project site (CNDDB No. 236) in an area characterized by small vernal pools and oak savannah. M&A biologists also observed CTS at the old Santa Rosa Air Center (CNDDB record No. 652) which is the fourth closest record to the project site. M&A reported CTS here to CDFG in the early 1990s. CNDDB

During M&A's 2011 spring larval surveys, no CTS were found on the project site. The project site does not provide suitable breeding habitat for CTS; hence, no impacts to breeding or larval development habitat are expected from the proposed project. Accordingly, no salvage of CTS will be necessary prior to development of this project site.

No adult CTS occurrences have been documented within 500 feet of the project site. However, in accordance with the *Programmatic Biological Opinion of U.S. Army Corps of Engineers Permitted Projects that May Affect California Tiger Salamander and Three Endangered Plant Species on the Santa Rosa Plain* (USFWS 1998), for projects that are greater than 500 feet and within 2,200 feet of a known breeding site, CTS are required to be mitigated at a 2:1 ratio (i.e., for each acre of impact, compensation shall consist of 2 acres of mitigation credits). As there is no existing hardscape on the project site, the entire 0.98-acre project site is considered to provide upland over-summering habitat for CTS. Thus, it can be assumed that this habitat will be significantly impacted by development of the project site. Finally, the project site is located in an area of the Santa Rosa Plain that has been designated in the Final Santa Rosa Plain Conservation Strategy (USFWS 2005b) as "potential for presence of CTS and listed plants." Such a conclusion is consistent with M&A's assessment of the value of the proposed project site to CTS. Hence, impacts to the CTS from development of the project site are considered potentially significant pursuant to CEQA. The Impacts and Mitigation Measures that follow address this impact.

6.3.2 RED SHOULDERED HAWK

Red shouldered hawk (*Buteo lineatus*) is protected under the Migratory Bird Treaty Act (50 CFR 10.13) and under California Fish and Game Code Sections 3503, 3503.5, 3800, and 3513 which protect nesting raptors and their eggs/young. This medium-sized raptor prefers the largest trees in a particular area for nest construction. Blue gum eucalyptus (*Eucalyptus globulus*) trees have become favorite nesting trees for this species in California. A stick nest is constructed and usually two to four eggs are laid in the spring. Incubation lasts about 27 days. Usually two or three nests are built over a several year period by a nesting pair and then are reused year after year. Prey consists of reptiles and small rodents.

The project site provides suitable nesting and foraging habitat for red shouldered hawk. Mature elm, pine, mayten and valley oak trees provide suitable nesting habitat for this species. Hence, until nesting surveys are conducted that confirm or negate this species' presence on the project site impacts to nesting red shouldered hawks from the proposed project are considered potentially significant pursuant to CEQA. Preconstruction nesting surveys will be conducted before tree removal and earth-moving activities commence on the project site. If nesting red shouldered

hawks are found on or adjacent to the project site, a buffer should be established until the young have fledged. The Impacts and Mitigation Measures that follow address these impacts.

6.3.3 RED-TAILED HAWK

The red-tailed hawk (*Buteo jamaicensis*) is protected under the Migratory Bird Treaty Act (50 CFR 10.13) and under California Fish and Game Code §3503.5, 3800, and 3513 which protect nesting raptors and their eggs/young. This raptor species has an extremely wide tolerance for habitat variation, which can be attributed to its very broad spectrum of prey (Johnsgard 1990). Some clear habitat preferences do exist, however, and have been analyzed by a variety of studies. Habitat preferences in the winter for both sexes are oriented toward upland pasture, grassland, and hardwood habitats, with females also using lowland hardwoods and males using marsh–shrub communities. In the spring, females continue to use mainly upland and lowland hardwoods, probably as a reflection of their orientation toward a nest site. M&A has observed red-tailed hawks nesting in a variety of tree species including eucalyptus, coast live oak, and valley oak trees.

The project site's mature ornamental trees provide suitable nesting habitat for red-tailed hawks. The ruderal areas and non-native grassland on the project site provide suitable foraging habitat. Hence, until nesting surveys are conducted that confirms or negates this species' presence; impacts to this hawk from the proposed project would be considered potentially significant pursuant to CEQA. Preconstruction nesting surveys will be conducted before tree removal and earth-moving activities commence on the project site. If nesting red-tailed hawks are found on or adjacent to the project site, a buffer should be established until the young have fledged. The Impacts and Mitigation Measures that follow address these impacts.

6.3.4 WHITE-TAILED KITE

The white-tailed kite (*Elanus caeruleus*) is fully protected under the California Fish and Game Code. Fully protected birds may not be "taken" or possessed (i.e., kept in captivity) at any time (§3511). It is also protected under the Federal Migratory Bird Treaty Act (50 CFR 10.13). The white-tailed kite is typically found foraging in grassland, marsh, or cultivated fields where there are dense-topped trees or shrubs for nesting and perching. They nest in a wide variety of trees of moderate height and sometimes in tall bushes, such as coyote bush (*Baccharis pilularis*). Native trees used are live and deciduous oaks (*Quercus* spp.), willows (*Salix* spp.), cottonwoods (*Populus* spp.), sycamores (*Platanus* spp.), maples (*Acer* spp.), toyon (*Heteromeles arbutifolia*), and Monterey cypress (*Cupressus macrocarpa*). Although the surrounding terrain may be semiarid, kites often reside near water sources, where prey is more abundant. The particular characteristics of the nesting site do not appear to be as important as its proximity to a suitable food source (Shuford 1993). Kites primarily hunt small mammals, with California meadow voles (*Microtus californicus*) accounting from between 50-100% of their diet (Shuford 1993).

The mature ornamental trees and valley oaks on the project site provide suitable nesting habitat for white-tailed kites. The ruderal areas and non-native grassland on the project site provides suitable foraging habitat. Hence, until nesting surveys are conducted that confirms or negates this species' presence; impacts to this hawk from the proposed project would be considered potentially significant pursuant to CEQA. Preconstruction nesting surveys will be conducted

before tree removal and earth-moving activities commence on the project site. If nesting white-tailed kites are found on or adjacent to the project site, a buffer should be established until the young have fledged. The Impacts and Mitigation Measures that follow address these impacts.

7. REGULATORY FRAMEWORK FOR NATIVE WILDLIFE, FISH, AND PLANTS

This section provides a discussion of those laws and regulations that are in place to protect native wildlife, fish, and plants. Under each law we discuss its pertinence to the proposed development.

7.1 Federal Endangered Species Act

The Federal Endangered Species Act (FESA) forms the basis for the federal protection of threatened or endangered plants, insects, fish and wildlife. FESA contains four main elements, they are as follows:

Section 4 (16 USCA §1533): Species listing, Critical Habitat Designation, and Recovery Planning: outlines the procedure for listing endangered plants and wildlife.

Section 7 (§1536): Federal Consultation Requirement: imposes limits on the actions of federal agencies that might impact listed species.

Section 9 (§1538): Prohibition on Take: prohibits the "taking" of a listed species by anyone, including private individuals, and State and local agencies.

Section 10: Exceptions to the Take Prohibition: non-federal agencies can obtain an incidental take permit through approval of a Habitat Conservation Plan.

In the case of salt water fish and other marine organisms, the requirements of FESA are enforced by the National Marine Fisheries Service (NMFS). The USFWS enforces all other cases. Below, Sections 9, 7, and 10 of FESA are discussed since they are the sections most relevant to the proposed project.

Section 9 of FESA as amended, prohibits the "take" of any fish or wildlife species listed under FESA as endangered. Under Federal regulation, "take" of fish or wildlife species listed as threatened is also prohibited unless otherwise specifically authorized by regulation. "Take," as defined by FESA, means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." "Harm" includes not only the direct taking of a species itself, but the destruction or modification of the species' habitat resulting in the potential injury of the species. As such, "harm" is further defined to mean "an act which actually kills or injures wildlife; such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering" (50 CFR 17.3). A December 2001 decision by the 9th Circuit Court of Appeals (Arizona Cattle Growers' Association, Jeff Menges, vs. the U.S. Fish and Wildlife Service and Bureau of Land Management, and the Southwest Center for Biological Diversity) ruled that the USFWS must show that a threatened or endangered species is present on a project site and that it would be taken by the project activities. According to this ruling, the

USFWS can no longer require mitigation based on the probability that the species could use the site. Rather they must show that it is actually present.

Section 9 applies to any person, corporation, federal agency, or any local or State agency. If "take" of a listed species is necessary to complete an otherwise lawful activity, this triggers the need to obtain an incidental take permit either through a Section 7 Consultation as discussed further below (for federal actions or private actions that are permitted or funded by a federal agency), or requires preparation of a Habitat Conservation Plan (HCP) pursuant to Section 10 of FESA (for state and local agencies, or individuals, and projects without a federal "nexus").

Section 7(a)(2) of the Act requires that each federal agency consult with the USFWS to ensure that any action authorized, funded or carried out by such agency is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction or adverse modification of critical habitat for listed species. Critical habitat designations mean: (1) specific areas within a geographic region currently occupied by a listed species, on which are found those physical or biological features that are essential to the conservation of a listed species and that may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by a listed species that are determined essential for the conservation of the species.

The Section 7 consultation process applies only to actions taken by federal agencies, or actions by private parties that require federal agency permits, approval, or funding (for example, a private landowner applying to the Corps for a permit). Section 7's consultation process is triggered by a determination of the "action agency" — i.e., the federal agency that is carrying out, funding, or approving a project — that the project "may affect" a listed species or critical habitat. If an action is likely to adversely affect a listed species or designated critical habitat, formal consultation with the USFWS is required. As part of the formal consultation, the USFWS prepares a Biological Opinion assessing whether the proposed action is likely to result in jeopardy to a listed species or adversely modify designated critical habitat. If the USFWS finds "no jeopardy" or adverse modification, it provides an incidental take permit which allows for the taking of a limited number of listed species or critical habitat.

Federal actions include permitting, funding, and entitlements for both federal projects, as well as private projects facilitated by federal actions (for example, a private landowner applying to the Corps for a permit). As an example, if a federally listed endangered species is present in "waters of the United States" on a project site, prior to authorizing impacts to "waters of the United States," the U.S. Army Corps of Engineers (who administers the Clean Water Act) would be required to initiate "formal consultation" with USFWS pursuant to Section 7 of FESA. As part of the formal consultation, the USFWS would then be required to prepare a Biological Opinion based on a review and analysis of the project applicant's avoidance and mitigation plan. The Biological Opinion will either state that the project will or will not result in "take" or threaten the continued existence of the species (not just that population). If an endangered species could be harmed by a proposed project, USFWS has to be in complete concurrence with the proposed avoidance and mitigation plan. If USFWS is not in complete concurrence with the mitigation plan, they will submit a Biological Opinion to the Corps containing a "jeopardy decision" and state that a Corps' permit should not be issued for the pending project. The applicant would then

have an opportunity to submit a revised mitigation plan that provides greater protection for the species.

For non-federal entities, Section 10 provides the mechanism for obtaining take authorization. Under Section 10 of FESA, the applicant for an "incidental take permit" is required to submit a "conservation plan" to USFWS or NMFS that specifies, among other things, the impacts that are likely to result from the taking, and the measures the permit applicant will undertake to minimize and mitigate such impacts, and the funding that will be available to implement those steps. Conservation plans under FESA have come to be known as "habitat conservation plans" or "HCPs" for short. The terms incidental take permit, Section 10 permit, and Section 10(a)(1)(B) permit are used interchangeably by USFWS. Section 10(a)(2)(B) of FESA provides statutory criteria that must be satisfied before an incidental take permit can be issued.

7.1.1 RESPONSIBLE AGENCY

FESA gives regulatory authority over terrestrial species and non-anadromous fish to the USFWS. The NMFS has authority over marine mammals and anadromous fish.

7.1.2 APPLICABILITY TO THE PROPOSED PROJECT

The project site does not provide fisheries habitat; hence, there would be no impacts to federally listed fish species. Appropriately timed surveys were conducted for special-status plants and animals known to occur in similar habitats to those found on the project site. No federally listed plants or animals were identified onsite. The California tiger salamander is the only federally listed animal species with a potential for occurring on the project site. Spring larval surveys for CTS were completed to determine if there are aquatic habitats on the project site where CTS could be breeding; no larval CTS were identified during these surveys. However, in accordance with the *Programmatic Biological Opinion of U.S. Army Corps of Engineers Permitted Projects that May Affect California Tiger Salamander and Three Endangered Plant Species on the Santa Rosa Plain* (USFWS 1998), for projects that are greater than 500 feet and within 2,200 feet of a known breeding site (the project site qualifies), CTS are required to be mitigated at a 2:1 ratio (i.e., for each acre of impact, compensation shall consist of 2 acres of mitigation credits). As there is no existing hardscape on the project site, the entire 0.98-acre project site is considered to provide upland aestivation habitat for CTS. Thus, it can be assumed that this habitat will be significantly impacted by project site development.

On September 14, 2011, M&A's principal biologist, Mr. Geoff Monk, met with Mr. Vincent Griego of the USFWS and Ms. Stephanie Buss of the CDFG in Sacramento at the USFWS' Endangered Species Office. At this meeting, Mr. Griego and Ms. Buss stated that the proposed development plan for the 0.98-acre parcel was acceptable provided the applicant purchased mitigation credits from an approved USFWS/CDFG compensation bank for impacts to CTS, state and federally listed pants, and wetlands.

Thus, based on this meeting and in accordance with the *Programmatic Biological Opinion of U.S. Army Corps of Engineers Permitted Projects that May Affect California Tiger Salamander and Three Endangered Plant Species on the Santa Rosa Plain* (Programmatic BO), the applicant will mitigate impacts to 0.98-acre of CTS habitat with the purchase of 1.96 acres of mitigation

credits from a USFWS-approved mitigation bank. To meet this mitigation requirement, the applicant has agreed to purchase 0.33-acre of combined Sebastopol meadowfoam and CTS mitigation credit from the Swift/Turner Conservation Bank. The remaining 1.63 acres of CTS mitigation credits have been purchased from Hale Wetland Mitigation Bank and the Hazel Mitigation Bank. An agreement with the Hale and Hazel Mitigation Banks and the Swift/Turner Conservation Bank to purchase these mitigation credits was signed by the Applicant on March 12, 2012.

Finally, a Biological Assessment (BA) was submitted to the Corps concurrently with the Preconstruction Notice (that is, a permit application) so that this agency may initiate formal consultation with the USFWS in regards to federally listed plant species and CTS. On June 1, 2012, the Corps initiated formal consultation with the USFWS pursuant to Section 7 of FESA. The Corps permit is pending while the USFWS prepares a Biological Opinion for the project. Please see the Impacts and Mitigation Measures section of this report for additional details.

7.2 Federal Migratory Bird Treaty Act

The Migratory Bird Treaty Act of 1918 (16 U.S.C. §§ 703-712, July 3, 1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986 and 1989) makes it unlawful to "take" (kill, harm, harass, shoot, etc.) any migratory bird listed in Title 50 of the Code of Federal Regulations, Section 10.13, including their nests, eggs, or young. Migratory birds include geese, ducks, shorebirds, raptors, songbirds, wading birds, seabirds, and passerine birds (such as warblers, flycatchers, swallows, etc.).

7.2.1 Applicability to Proposed Project

Red-tailed hawk, red shouldered hawk, and white-tailed kite could nest on the project site although none were observed by M&A's Wildlife Biologist during the 2010 and 2011 field surveys. These raptors are protected pursuant to the Migratory Bird Treaty Act. Also, the passerine birds (perching birds) that could occur on the site are also protected pursuant to this Act. As long as there is no direct mortality of species protected pursuant to the Migratory Bird Treaty Act caused by development of the site, there should be no constraints to development of the site. Since "take" is the issue (which means to kill or harm), it is expected that most birds will fly out of harm's way. However, nests that have eggs or nestlings cannot maneuver out of harm's way. Thus, the primary issue is that a proposed project can harm nesting birds. To comply with the Migratory Bird Treaty Act, all active nest sites would have to be avoided while such birds were nesting. Upon completion of nesting, the project could commence as otherwise planned. Please review specific requirements for avoidance of nest sites for potentially occurring species in the Impacts and Mitigations Section below. Preconstruction nesting surveys for nesting birds should be conducted prior to breaking ground for the project if it would occur between February 1st and September 31st.

7.3 State Endangered Species Act

7.3.1 Section 2081 of the State Endangered Species Act

In 1984, the state legislated the California Endangered Species Act (CESA) (Fish and Game Code §2050). The basic policy of CESA is to conserve and enhance endangered species and their

habitats. State agencies will not approve private or public projects under their jurisdiction that would impact threatened or endangered species if reasonable and prudent alternatives are available. Because CESA does not have a provision for "harm" (see discussion of FESA, above), CDFG considerations pursuant to CESA are limited to those actions that would result in the direct take of a listed species.

If CDFG determines that a proposed project could impact a State listed threatened or endangered species, CDFG will provide recommendations for "reasonable and prudent" project alternatives. The CEQA lead agency can only approve a project if these alternatives are implemented, unless it finds that the project's benefits clearly outweigh the costs, reasonable mitigation measures are adopted, there has been no "irreversible or irretrievable" commitment of resources made in the interim, and the resulting project would not result in the extinction of the species. In addition, if there would be impacts to threatened or endangered species, the lead agency typically requires project applicants to demonstrate that they have acquired "incidental take" permits from CDFG and/or USFWS (if it is a Federal listed species) prior to allowing/permitting impacts to such species.

If proposed projects would result in impacts to a State listed species, an "incidental take" permit pursuant to §2081 of the Fish and Game Code would be necessary (versus a Federal incidental take permit for Federal listed species). CDFG will issue an incidental take permit only if:

1) the authorized take is incidental to an otherwise lawful activity;
2) the impacts of the authorized take are minimized and fully mitigated;
3) measures required to minimize and fully mitigate the impacts of the authorized take:
    a) are roughly proportional in extent to the impact of the taking on the species;
    b) maintain the project applicant's objectives to the greatest extent possible; and,
    c) capable of successful implementation; and,
4) adequate funding is provided to implement the required minimization and mitigation measures and to monitor compliance with, and the effectiveness of, the measures.

If an applicant is preparing a habitat conservation plan (HCP) as part of the federal 10(a) permit process, the HCP might be incorporated into the §2081 permit if it meets the substantive criteria of §2081(b). To ensure that an HCP meets the mitigation and monitoring standards in Section 2081(b), an applicant should involve CDFG staff in development of the HCP. If a final Biological Opinion (federal action) has been issued for the project pursuant to Section 7 of the federal Endangered Species Act, it might also be incorporated into the §2081 permit if it meets the standards of §2081(b).

No §2081 permit may authorize the take of a species for which the Legislature has imposed strict prohibitions on all forms of "take." These species are listed in several statutes that identify "fully protected" species and "specified birds." See Fish and Game Code §§ 3505, 3511, 4700, 5050, 5515, and 5517. If a project is planned in an area where a "fully protected" species or a "specified bird" occurs, an applicant must design the project to avoid all take.

In September 1997, Assembly Bill 21 (Fish and Game Code §2080.1) was passed. This bill allows an applicant who has obtained a "non-jeopardy" federal Biological Opinion pursuant to

Section 7, or who has received a federal 10(a) permit (federal incidental take permit), to submit the federal opinion or permit to CDFG for a determination as to whether the federal document is "consistent" with CESA. If after 30 days CDFG determines that the federal incidental take permit is consistent with state law, and that all state listed species under consideration have been considered in the federal Biological Opinion, then no further permit or consultation is required under CESA for the project. However, if CDFG determines that the federal opinion or permit is not consistent with CESA, or that there are state listed species that were not considered in the federal Biological Opinion, then the applicant must apply for a state permit under Section 2081(b). The process provided in Fish and Game Code §2080.1 (Assembly Bill 21) may be of use when the incidental take would occur to species that are listed under both the federal and state endangered species acts. Assembly Bill 21 is of no use if an affected species is state-listed, but not federally listed.

State and federal incidental take permits are issued on a discretionary basis, and are typically only authorized if applicants are able to demonstrate that impacts to the listed species in question are unavoidable, and can be mitigated to an extent that the reviewing agency can conclude that the proposed impacts would not jeopardize the continued existence of the listed species under review. Typically, if there would be impacts to a listed species, mitigation that includes habitat avoidance, preservation, and creation of endangered species habitat is necessary to demonstrate that projects would not threaten the continued existence of a species. In addition, management endowment fees are usually collected as part of the agreement for the incidental take permit(s). The endowment is used to manage any lands set-aside to protect listed species, and for biological mitigation monitoring of these lands over (typically) a five-year period.

7.3.2 APPLICABILITY TO PROPOSED PROJECT

The project site does not provide fisheries habitat; hence, there would be no impacts to state listed fish species. Appropriately timed surveys were conducted for state listed plants known to occur in similar habitats to those found on the project site. Larval surveys for CTS were conducted in the spring of 2011. No state listed plants or animals were identified onsite.

On September 14, 2011, M&A's principal biologist, Mr. Geoff Monk, met with Mr. Vincent Griego of the USFWS and Ms. Stephanie Buss of the CDFG at the USFWS' Endangered Species Office. At this meeting, Mr. Griego and Ms. Buss stated that the proposed development plan for the 0.98-acre parcel was acceptable provided the applicant purchased mitigation credits from an approved USFWS/CDFG compensation bank for impacts to California tiger salamander, rare pants, and wetlands. Thus, based on this meeting and in accordance with the *Programmatic Biological Opinion of U.S. Army Corps of Engineers Permitted Projects that May Affect California Tiger Salamander and Three Endangered Plant Species on the Santa Rosa Plain* (Programmatic BO), the applicant will mitigate impacts to 0.98-acre of CTS habitat with the purchase of 1.96 acres of mitigation credits from a USFWS-approved mitigation bank.

Further detail is in the "Impacts and Mitigation" section below.

7.4 Applicable CEQA Regulations

Section 15380 of CEQA defines "endangered" species as those whose survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors. "Rare" species are defined by CEQA as those who are in such low numbers that they could become endangered if their environment worsens; or the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in the FESA. The CEQA Guidelines also state that a project will normally have a significant effect on the environment if it will "substantially affect a rare or endangered species of animal or plant or the habitat of the species." The significance of impacts to a species under CEQA, therefore, must be based on analyzing actual rarity and threat to that species despite its legal status or lack thereof.

7.4.1 Applicability to Proposed Project

This document addresses impacts to species that would be defined as endangered or rare pursuant to Section 15380 of the CEQA. This document is suitable for use by the CEQA lead agency (in this case the City of Santa Rosa) for preparation of any CEQA review document prepared for the proposed project. This report has been prepared as a Biology Section that is suitable for incorporation into an Initial Study or the biology section of an Environmental Impact Report.

7.5 California Fish and Game Code § 3503, 3503.5, 3511, and 3513

California Fish and Game Code §3503, 3503.5, 3511, and 3513 prohibit the "take, possession, or destruction of birds, their nests or eggs." Disturbance that causes nest abandonment and/or loss of reproductive effort (killing or abandonment of eggs or young) is considered "take." Such a take would also violate federal law protecting migratory birds (Migratory Bird Treaty Act).

All raptors (that is, hawks, eagles, owls) their nests, eggs, and young are protected under California Fish and Game Code (§3503.5). Additionally, "fully protected" birds, such as the white-tailed kite (*Elanus leucurus*) and golden eagle (*Aquila chrysaetos*), are protected under California Fish and Game Code (§3511). "Fully protected" birds may not be taken or possessed (that is, kept in captivity) at any time.

7.5.1 Applicability to the Project

Raptors that could nest on the project site and have their nesting disturbed by the project include red-tailed hawk, red shouldered hawk, and white-tailed kite. Although no raptors were observed nesting on the project site during surveys conducted by M&A's Wildlife Biologist during field surveys in 2010 and 2011, raptors are mobile animals and can change their nesting location from year to year. Thus, preconstruction surveys would have to be conducted for these species to ensure that there is no direct take of these birds including their eggs, or young. Any active nests that were found during preconstruction surveys would have to be avoided by the project. Suitable non-disturbance buffers would have to be established around nest sites until the nesting cycle is complete. More specifics on the size of buffers are provided in the "Impacts and Mitigations" section.

7.6 Protected Amphibians

Under Title 14 of the California Code of Regulations (CCR 14, Division 1, Subdivision 1, Chapter 5, §41. Protected Amphibians), protected amphibians, such as the California tiger salamander may only be taken under special permit from California Department of Fish and Game issued pursuant to Sections 650 and 670.7 of these regulations.

7.6.1 APPLICABILITY TO THE PROJECT

The applicant is "assuming presence" of CTS and will mitigate accordingly. Larval surveys for the California tiger salamander were nonetheless conducted on the project site to determine if CTS would need to be "salvaged" prior to development of the project site. M&A did not find CTS eggs or larvae on the project site and further determined that the wetlands on the project site be unlikely to support breeding CTS.

In accordance with the *Programmatic Biological Opinion of U.S. Army Corps of Engineers Permitted Projects that May Affect California Tiger Salamander and Three Endangered Plant Species on the Santa Rosa Plain* (USFWS 1998), for projects that are greater than 500 feet and within 2,200 feet of a known breeding site (the project site qualifies), CTS are required to be mitigated at a 2:1 ratio (i.e., for each acre of impact, compensation shall consist of 2 acres of mitigation credits). As there is no existing hardscape on the project site, the entire 0.98-acre project site is considered to provide upland aestivation habitat for CTS. Thus, it can be assumed that this habitat will be significantly impacted by project site development. This impact can be mitigated to a less than significant level pursuant to CEQA. Please see the Impacts and Mitigations Section of this report for details.

7.7 City of Santa Rosa Tree Ordinance

The Santa Rosa City Code, Chapter 17.24, has three articles that pertain to the protection of trees on the project site and the proposed development. These three articles, and their applicability to the project site are provided below.

7.7.1.1 Article III – Prohibitions – Tree alteration, removal, relocation-Permit required.

Article III has provisions that protect trees which are defined as any woody plant with a single trunk diameter of 4 inches or more or a combination of multiple trunks having a total diameter of 8 inches or more. This article also protects the following types of trees:

(a) Heritage tree which includes any of the following trees, whether located on public or private property, at a diameter equal to or greater than those listed below:

Species	**Diameter**
valley oak (*Quercus lobata*)	6
coast live oak (*Quercus agrifolia*)	18
black oak (*Quercus kelloggii*)	18
Oregon oak (*Quercus garryana*)	18
Canyon oak (*Quercus chrysolepis*)	18
Blue oak (*Quercus douglasii*)	6

Interior live oak (*Quercus wislizenii*)	18
Coast redwood (*Sequoia sempervirens*)	24
Bay (*Umbellularia californica*)	24
Madrone (*Arbutus menziesii*)	12
Douglas's fir (*Pseudotsuga menziesii*)	24
Red alder (*Alnus rubra*)	18
White alder (*Alnus rhombifolia*)	18
Big leaf maple (*Acer macrophyllum*)	24

(b) Protected tree which means any tree, including a heritage tree, designated to be preserved on an approved development plan or as a condition of approval of a tentative map, a tentative parcel map, or other development.

(c) Street tree which means any tree having a single trunk circumference greater than 6 and one-quarter inches or a diameter greater than 2 inches, a height of more than 6 feet, and one half or more of its trunk is within a public right of way or within 5 feet of the paved portion of a City street or a public side walk.

The following tree species are exempt from the above provisions (except for those that may exist as street trees): acacia, silver maple, poplar, ailanthus, hawthorn fruitless mulberry, privet, pyracantha, Monterey pine, Monterey cypress, and fruit and nut trees (except walnut trees). A permit is not required for these tree species alteration, removal or relocation.

7.7.1.1 Article IV – Permit category II – Tree alteration, removal or relocation on property proposed for development-Requirements.

Article IV requires the following:

(a) All development proposals and subdivision applications shall clearly designate all trees and heritage trees on the property by trunk location and accurate outline of the dripline and shall indicate those trees proposed to be altered, removed or relocated. The reasons for the removal of any tree shall be stated in writing. The development plan or tentative subdivision map shall indicate the genus and species, shape, drip-line and trunk circumference of each tree and heritage tree. The owner of the property and person in control of the proposed development shall protect and preserve each tree and heritage tree situated within the site of the proposed development during the period the application for the proposed development is being considered by the City. The proposed development shall be designed so that:

(1) The proposed lots and/or improvements preserve any heritage trees to the greatest possible extent.

(2) The road and lot grades protect heritage trees to the greatest extent possible and the existing grad shall be maintained within each such tree's root zone.

(b) If the proposed project is approved, the recordation of the final map or issuance of a grading permit or building permit for the project shall constitute a permit to alter, remove or relocate any trees designated for alteration, removal or relocation upon the project's approved plans. Any change in the trees to altered, removed or relocated as designated on the approved development plan or tentative map shall only be permitted upon the written approval of the Director or, when the Director determines that the proposed change may be substantial, by the Planning Commission.

(c) A tree replacement program that will require the applicant to replace trees and heritage trees approved for removal as part of the approval of the project in accordance with subdivision 1; each protected tree removed or damaged shall be replaced in accordance with subdivision 2. For each 6 inches or fraction thereof of the diameter of a tree which was approved for removal, two trees of the same genus and species as the removed tree (or another approved species), each of a minimum 15-gallon container size, shall be planted on the project site. For each 6 inches or fraction thereof of the diameter of a tree which was not approved for removal, four trees of the same genus and species as the removed tree (or another approved species), each of a minimum 15-gallon container size, shall be planted on the project site.

(d) If the development site is inadequate in size to accommodate the replacement trees, the trees shall be planted on public property with the approval of the Director of the City's Recreation and Parks Department. Upon the request of the developer and the approval of the Director, the City may accept an in-lieu payment of $100.00 per 15-gallon replacement tree on the condition that all such payments shall be used for tree-related educational projects and/or planting programs of the City.

(e) The following requirements will apply any applicant of property upon which a protected tree is located:

(1) Before the start of any clearing, excavation, construction or other work on the site, every protected tree shall be securely fenced off at the "protected perimeter" which shall either be the root zone or other limit as may be established by the City.

(2) If the proposed development, including any site work for the development, will encroach upon the protected perimeter of a protected tree, special measures shall be utilized, to allow the roots to obtain oxygen, water and nutrients as needed. Any excavation, cutting, filling, or compaction of the existing ground surface within the protected perimeter, if authorized at all by the Director, shall be minimized and subject to such conditions as may be imposed by the Director. No significant change in existing ground level shall be made within the dripline of a protected tree.

(3) No oil, gas, chemicals or other substances that may be harmful to trees shall be stored or dumped within the protected perimeter. All brush, earth and other debris shall be removed in a manner which prevents injury to the protected tree.

(4) Underground trenching for utilities shall avoid major support and absorbing tree roots of protected trees. If avoidance is impractical, tunnels shall be made below the roots. Trenches shall be consolidated to service as many units as possible. Trenching within the drip line of protected trees shall be avoided to the greatest extent possible and shall only be done under the at-site directions of a certified arborist.

(5) No concrete or asphalt paving shall be placed over the root zones of protected trees. No artificial irrigation shall occur within the root zone of oaks.

(6) No compaction of the soil within the root zone of protected trees shall occur.

(7) If the trees proposed to be removed can be economically relocated, the developer shall move the trees to a suitable location on the site shown on the approved plans.

7.7.1.1 Article V – Permit category II – Street trees and plantings on and adjacent to public streets and sidewalks.

Article V pertains to the alteration, removal, and relocation of street trees and entails the following:

(a) As per Section 17-24.075, no tree growing within a planting strip or within any public right-of-way shall be removed or altered by or at the instigation of the abutting property owner or anyone other than a duly authorized officer, agent or employee of the City, except upon issuance of a permit therefore by the Director of Recreation and Parks who may require, as a condition of permitting the removal or alteration of a tree, the posting of security for such work and the planting, at the expense of the permittee, of a tree to replace the one removed from a list approved under Section 17-24.070 of the city code.
(b) As per Section 17-24.080, a permit approved by the Director of Recreation and Parks under the provisions of this article shall be valid for a period of 60 days from its issuance unless a longer term is set forth in the permit. If the work to be done under the permit does not commence prior to the permit's expiration and thereafter expeditiously pursued, the permit shall become null and void.

7.7.2 APPLICABILITY TO THE PROPOSED PROJECT

M&A reviewed the September 12, 2012 Conceptual Landscape Plan (MacNair Landscape Architecture 2012). Based on the current site plan (September 23, 2012) we determined that 4 "protected trees" would need to be removed to accommodate the proposed grading plan. For purposes of this analysis, a "protected tree" is: "any woody plant with a single trunk diameter of 4 inches or more or a combination of multiple trunks having a total diameter of 8 inches or more." Removal of protected trees on this project site will require a Category II permit from the City of Santa Rosa and the planting of replacement trees. *Please see the discussion on Article IV, Category II permits, above, to determine what information must be provided to the City of Santa Rosa in order to obtain a Category II tree permit.* Three exempt trees and one dead tree will also be removed and do not require a permit or compensation mitigation. Please also see the "Impacts and Mitigations Section" of this report for details on tree removal and mitigation requirements to satisfy CEQA.

7.8 City of Santa Rosa General Plan

According to the City of Santa Rosa General Plan, Biological Resources and Waterways, Goals and Policies, the following measures have applicability to the proposed project:

OSC-A-1: Cooperate with various public and private entities to create new public access trails to parks, open spaces, and drainage ways within the city, as well as to trail systems outside the UGB. Priorities for trail access outside of the UGB should include: the Joe Rodota Trail, Bay Area Ridge Trail, Santa Rosa Creek Trail, Laguna Trail, Roseland Creek Trail, Colgan Creek Trail and Paulin Creek Trail.

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.

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

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

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

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.

7.8.1 APPLICABILITY TO THE PROPOSED PROJECT

The proposed project is designed to incorporate the Joe Rodota Trail as per OSC-A-1, and its users by providing a bicycle and pedestrian linkage, as well as an easily accessible ±11,600 sq. ft. park/picnic area (Parcel 2). The park parcel is proposed to be dedicated to the city.

As per OSC-D-1, OSC-D-2 and OSC-H-1, the applicant is proposing to mitigate impacts to 0.22-acre (9,623 square feet) of Corps and RWQCB jurisdictional seasonal wetlands. Mitigation will be accomplished via purchase of mitigation credits from the Horn Avenue Mitigation Bank. Mitigation at a 2:1 ratio (i.e., for each tenth of an acre of impact, compensation shall consist of 2 tenths of an acre of mitigation credits) from a qualified mitigation bank is appropriate. Since mitigation credits must be purchased at a minimum of 0.05 acre increments, and since the project will impact 0.22-acre of seasonal wetland,

0.45-acre of mitigation credits shall be purchased from a qualified wetlands mitigation bank.

The 0.22-acre of seasonal wetland would be considered "suitable habitat" for listed vernal pool plant species and CTS under the USFWS Santa Rosa Plain Conservation Strategy. *Thus, the applicant shall mitigate impacts to 0.22-acre of seasonal wetland (presumed under the Conservation Strategy to be endangered plant and CTS habitat) by purchasing 0.33 acre of credit from a USFWS-approved mitigation bank (1.5:1 ratio).* An agreement with the Swift/Turner Conservation Bank to purchase 0.33-acre of Sebastopol meadowfoam mitigation credits was signed by the Applicant on March 12, 2012.

As per OSC-H-2 and OSC-H-4, native oaks will be preserved where feasible and all native oaks will be mitigated for with appropriate native oak species within the proposed landscape plan for the project site.

8. REGULATORY REQUIREMENTS PERTAINING TO WATERS OF THE UNITED STATES AND STATE

This section presents an overview of the criteria used by the U.S. Army Corps of Engineers, the California Regional Water Quality Control Board, the State Water Resources Control Board, and CDFG to determine those areas within a project area that would be subject to their regulation.

8.1 U.S. Army Corps of Engineers Jurisdiction and General Permitting

8.1.1 SECTION 404 OF THE CLEAN WATER ACT

Pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344), the U.S. Army Corps of Engineers (Corps) regulates the discharge of dredged or fill material into "waters of the United States" (33 CFR Parts 328 through 330). This requires project applicants to obtain authorization from the Corps prior to discharging dredged or fill material into any water of the United States. In the Federal Register "waters of the United States" are defined as, "...all interstate waters including interstate wetlands...intrastate lakes, rivers, streams (including intermittent streams), wetlands, [and] natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce..." (33 CFR Section 328.3).

Limits of Corps' jurisdiction.

(a) Territorial Seas. The limit of jurisdiction in the territorial seas is measured from the baseline in a seaward direction a distance of three nautical miles. (See 33 CFR 329.12)

(b) Tidal Waters of the United States. The landward limits of jurisdiction in tidal waters:
(1) Extends to the high tide line, or
(2) When adjacent non-tidal waters of the United States are present, the jurisdiction extends to the limits identified in paragraph (c) of this section.

(c) Non-Tidal Waters of the United States. The limits of jurisdiction in non-tidal waters:

(1) In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water mark, or
(2) When adjacent wetlands are present, the jurisdiction extends beyond the ordinary high water mark to the limit of the adjacent wetlands.
(3) When the water of the United States consists only of wetlands the jurisdiction extends to the limit of the wetland.

Section 404 jurisdiction in "other waters" such as lakes, ponds, and streams, extends to the upward limit of the ordinary high water mark (OHWM) or the upward extent of any adjacent wetland. The OHWM on a non-tidal water is the "line on shore established by the fluctuations of water and indicated by physical characteristics such as a clear natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter or debris; or other appropriate means that consider the characteristics of the surrounding areas" (33 CFR Section 328.3[e]). Wetlands are defined as "...those areas that are inundated or saturated by surface or ground water at a frequency and duration to support a prevalence of vegetation adapted for life in saturated soil conditions" (33 CFR Section 328.8 [b]). Wetlands usually must possess hydrophytic vegetation (i.e., plants adapted to inundated or saturated conditions), wetland hydrology (e.g., topographic low areas, exposed water tables, stream channels), and hydric soils (i.e., soils that are periodically or permanently saturated, inundated or flooded) to be regulated by the Corps pursuant to Section 404 of the Clean Water Act.

It should be noted that the extent of the Corps jurisdiction pursuant to Section 404 of the Clean Water Act was recently modified. In Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers, the U.S. Supreme Court [148 L. Ed. 2d 576 (2001) (SWANCC)] ruled that the Corps exceeded its authority under the Clean Water Act when it regulated discharges of fill material into "isolated" waters used as habitat by migratory birds. Accordingly, waters (including wetlands) that are not connected hydrologically to navigable waters are not subject to regulation by the Corps.

Another Supreme Court decision also significantly changes how the Corps defines waters of the United States. On June 19, 2006 the United States Supreme Court, in a "four-one-four" decision, addressed the extent of Clean Water Act jurisdiction over wetlands adjacent to tributaries of navigable waters. In two consolidated cases, *Rapanos v. United States* and *Carabell v. U.S. Army Corps of Engineers*, a five-Justice majority of the Court remanded the case to the Sixth circuit for further consideration. The Court was unable to produce a majority vote in favor of any one jurisdictional standard for the Sixth Circuit to apply (or for the regulated community to follow). Instead, Justice Scalia authored a plurality opinion that would significantly narrow the reach of federal wetlands jurisdiction, while Justice Kennedy, concurring in the judgment only, concluded that the appropriate test for jurisdiction over wetlands was the presence of a "significant nexus" between wetlands and "navigable waters" in the traditional sense. The remaining four Justices, in a dissenting opinion by Justice Stevens, would have upheld the Corps of Engineers' assertion of jurisdiction and would have affirmed the Sixth Circuit's decision. When no opinion garners at least five votes, lower courts follow the concurrence that reached the result on the narrowest grounds. Here, that is Justice Kennedy's opinion. Unfortunately, Justice Kennedy did not provide specific guidance about the extent of federal jurisdiction over wetlands that are adjacent to tributaries of navigable waters.

Justice Kennedy concluded that the Clean Water Act applies only to those wetlands with a "significant nexus" to "navigable waters in the traditional sense." A significant nexus exists when a wetland, "either alone or in combination with similarly situated lands in the region, significantly affect[s] the chemical, physical, and biological integrity" of factually navigable waters. Under Supreme Court precedent, wetlands adjacent to navigable waters meet this test. For wetlands located near tributaries of navigable waters, however, each wetland demands a case-by-case jurisdictional inquiry. We know that a "mere hydrological connection" is not enough in all cases, and that "speculative or insubstantial" effects on water quality will not suffice to satisfy the test. [Preceding text excerpted from a newsletter prepared by Briscoe, Ivester, and Bazel LLP]. The Corps of Engineers and the Environmental Protection Agency jointly prepared an Instructional Guidebook to aid Corps field staff in completing the new "Approved Jurisdictional Determination Form," and is intended to be used as the U.S. Army Corps of Engineers Regulatory National Standard Operating Procedures for conducting an approved jurisdictional determination.

To remain in compliance with Section 404 of the Clean Water Act, project proponents and property owners (applicants) are required to acquire authorization from the Corps prior to discharging or otherwise impacting "waters of the United States". In many cases, the Corps must visit a proposed project area to confirm the extent of area falling under their jurisdiction (to conduct a "jurisdictional determination") prior to authorizing any permit for that project. Typically, at the time the jurisdictional determination is conducted, applicants (or their representative) will discuss the appropriate permit application that would be filed with the Corps for permitting the proposed impact(s) to "waters of the United States."

Pursuant to Section 404 of the Clean Water Act, the Corps normally provides two alternatives for permitting impacts to "waters of the United States." The first alternative would be to use Nationwide Permit(s). The second alternative is to apply to the Corps for an Individual Permit (33 CFR Section 235.5(2)(b)). The application process for Individual Permits is extensive and includes a public review (i.e., public notice and receipt of public comments) and must contain an "alternatives analysis" that is prepared pursuant to Section 404(b) of the Clean Water Act (33 U.S.C. 1344(b)). The alternatives analysis is also typically reviewed by the federal Environmental Protect Agency (EPA), and thus brings another resource agency into the permitting framework. Both the Corps and EPA take the initial viewpoint that there are practical alternatives to any proposed project there would not result in impacts to waters of the U.S., if the proposed permitted action is not a water dependent project (e.g. a pier or a dredging project). Alternative analyses therefore must provide convincing reasons that the proposed impacts are unavoidable.

Nationwide Permit(s) (NWP) are a type of general permit administered by the Corps and issued on a nationwide basis that authorize minor activities that affect Corps regulated waters. Under the NWP program, if certain conditions are met, the specified activities can take place without the need for an individual or regional permit from the Corps (33 CFR, Section 235.5[c][2]). In order to use NWP(s), a project must meet 27 general nationwide permit conditions, and all specific conditions pertaining to the NWP being used (as presented at 33 CFR Section 330). It is also important to note that pursuant to 33 CFR Section 330.4(e), there may be special regional

conditions or modifications to NWPs that could have relevance to individual proposed projects. Finally, pursuant to 33 CFR Section 330.6(a), Nationwide permittees may, and in some cases, request from the Corps confirmation that an activity complies with the terms and conditions of the NWP intended for use (*i.e.,* must receive "verification" from the Corps).

Prior to finalizing design plans, the applicant needs to be aware that the Corps maintains a policy of "no net loss" of wetlands (waters of the United States). Therefore, it is incumbent upon applicants that propose to impact Corps regulated areas to submit a mitigation plan that demonstrates that impacted regulated areas would be recreated (*i.e.,* impacts would be mitigated). Typically, the Corps requires mitigation to be "in-kind" (i.e., if a stream channel would be filled, mitigation would include replacing it with a new stream channel), and at a minimum of a 1:1 replacement ratio (i.e., one acre or fraction thereof recreated for each acre or fraction thereof lost). Often a 2:1 replacement ratio is required. Usually the 2:1 ratio is met by recreation or enhancement of an equivalent amount of wetland that is impacted, in addition to preserving an equivalent amount of wetland. In some cases, the Corps allows "out-of-kind" mitigation if the compensation/mitigation has greater value than the impacted area. Finally, there are many Corps approved wetland mitigation banks where wetland mitigation credits can be purchased by applicants to meet their mitigation requirements. Mitigation banks have limited distribution and the Corps typically only allows their use when projects have limited impacts. If a project meets conditions of Nationwide Permits, and an Individual Permit is not required by the Corps, then typically the Corps allows use of wetland mitigation banks (if available) to meet its no net loss requirement and to otherwise mitigate the impacts to waters of the United States resulting from the proposed project.

8.1.2 APPLICABILITY TO THE PROPOSED PROJECT

On March 16, 2010, M&A staff Mr. Geoff Monk and Ms. Isabelle de Geofroy conducted preliminary wetland delineation on the project site using the Corps' 1987 *Wetlands Delineation Manual* in conjunction with the regional supplement for the Arid West Region. On September 22, 2010, the Corps field verified the extent of their jurisdiction on the project site pursuant to Section 404 of the Clean Water Act. The Corps confirmed a total of 0.22-acre of waters of the U.S. on the project site. Waters of the U.S. on the project site consist of low-quality seasonal wetlands within a man-made ditch, two topographical depressions and a channel leading to a culvert on the southwestern corner of the project site. Construction of the proposed project will result in impacts to all Corps jurisdictional areas. In total, 0.22-acre (9,623 square feet) of waters of the U.S. would be impacted by the proposed project. The confirmed wetland delineation map is included in this report as Appendix B.

On February 17, 2011, M&A biologists Mr. Monk and Ms. de Geofroy met at RWQCB's North Coast office with Mrs. Stephen Bargsten of the RWQCB and Mr. Sahrye Cohen of the Corps to discuss the proposed project. Both Ms. Cohen and Mr. Bargsten agreed that impacts to waters of the U.S. and State (respectively) could be mitigated using a Corps and RWQCB approved wetland conservation bank. Both Ms. Cohen and Mr. Bargsten agreed that it made little sense to preserve wetland on this relatively small project site. On April 20, 2012, M&A submitted a Preconstruction Notice (PCN) to the Corps requesting authorization to use Nationwide Permit 39 for the proposed development project.

Since the project site is within the portion of the Santa Rosa Plain referred to in the Conservation Strategy as an area with "Potential for presence of CTS and Listed Plants," a Biological Assessment (BA) was submitted to the Corps concurrently with the PCN so that this agency may initiate consultation with the USFWS in regards to federally listed plant species and CTS. On June 1, 2012, the Corps initiated consultation with the USFWS pursuant to Section 7 of FESA. The PCN and Corps permit remain pending while the USFWS prepares a Biological Opinion (BO) for the project. By regulation, the USFWS has 135 days to complete the BO and deliver it to the Corps. The Corps must then incorporate conditions in the BO into its permit authorized for the project.

8.2 State Water Resources Control Board (SWRCB) / California Regional Water Quality Control Board (RWQCB)

8.2.1 Section 401 of the Clean Water Act

The SWRCB and RWQCB regulate activities in "waters of the State" (which includes wetlands) through Section 401 of the Clean Water Act. While the Corps administers a permitting program that authorizes impacts to waters of the United States, including wetlands and other waters, any Corps permit authorized for a proposed project would be inoperative unless it is a NWP that has been certified for use in California by the SWRCB, or if the RWQCB has issued a project specific certification or waiver of water quality. Certification of NWPs requires a finding by the SWRCB that the activities permitted by the NWP will not violate water quality standards individually or cumulatively over the term of the permit (the term is typically for five years). Certification must be consistent with the requirements of the federal Clean Water Act, the California Environmental Quality Act, the California Endangered Species Act, and the SWRCB's mandate to protect beneficial uses of waters of the State. Any denied (i.e., not certified) NWPs, and all Individual Corps permits, would require a project specific RWQCB certification of water quality.

Additionally, if a proposed project would impact waters of the State, including wetlands, the project applicant must demonstrate that the project is unable to avoid these adverse impacts, or water quality certification will most likely be denied. Section 401 Certification may also be denied based on significant adverse impacts to waters of the United States/State, including wetlands. The RWQCB has also adopted the Corps' policy that there shall be "no net loss" of wetlands. Thus, prior to certifying water quality, the RWQCB will impose avoidance mitigation requirements on project proponents that impact waters of the State.

8.2.2 Applicability to the Proposed Project

On March 16, 2010, M&A staff Mr. Geoff Monk and Ms. Isabelle de Geofroy conducted a wetland delineation on the project site using the Corps' 1987 *Wetlands Delineation Manual* in conjunction with the regional supplement for the Arid West Region. On September 22, 2010, the Corps field verified the extent of their jurisdiction on the project site pursuant to Section 404 of the Clean Water Act. The Corps confirmed a total of 0.22-acre of waters of the U.S. on the project site. Typically the RWQCB accepts and uses the official Corps delineation map to determine the extent of waters of the State. In total, 0.22-acre (9,623 square feet) of waters of the United States and State would be impacted by the proposed project. The confirmed wetland delineation map is included in this report as Appendix B.

On February 17, 2011, M&A biologists Mr. Monk and Ms. de Geofroy met at RWQCB's North Coast office with Mrs. Stephen Bargsten of the RWQCB and Mr. Sahrye Cohen of the Corps to discuss the proposed project. Both Ms. Cohen and Mr. Bargsten agreed that impacts to waters of the U.S. and State (respectively) could be mitigated using a Corps and RWQCB approved wetland conservation bank. Both Ms. Cohen and Mr. Bargsten agreed that it made little sense to preserve wetland on this relatively small project site.

Any impacts to waters of the State would have to be mitigated to the satisfaction of the RWQCB prior to the time this resource agency would issue a permit for impacts to such features. The RWQCB requirements for issuance of a "401 Permit" typically parallel the Corps requirements for permitting impacts to Corps regulated areas pursuant to Section 404 of the Clean Water Act. Please refer to the Corps Applicability Section above for likely mitigation requirements for impacts to RWQCB regulated wetlands. Also, please refer to the applicability section of the Porter-Cologne Water Quality Control Act below for other applicable actions that may be imposed on the project by the RWQCB prior to the time any certification of water quality is authorized for the project.

8.2.3 PORTER-COLOGNE WATER QUALITY CONTROL ACT

The Porter-Cologne Water Quality Control Act, Water Code § 13260, requires that "any person discharging waste, or proposing to discharge waste, that could affect the waters of the State to file a report of discharge" with the RWQCB through an application for waste discharge (Water Code Section 13260(a)(1). The term "waters of the State" is defined as any surface water or groundwater, including saline waters, within the boundaries of the State (Water Code § 13050(e)). It should be noted that pursuant to the Porter-Cologne Water Quality Control Act, the RWQCB also regulates "isolated wetlands," or those wetlands considered to be outside of the Corps' jurisdiction pursuant to the SWANCC decision (see Corps Section above).

The RWQCB generally considers filling in waters of the State to constitute "pollution." Pollution is defined as an alteration of the quality of the waters of the state by waste that unreasonably affects its beneficial uses (Water Code §13050(1)). The RWQCB litmus test for determining if a project should be regulated pursuant to the Porter-Cologne Water Quality Control Act is if the action could result in any "threat" to water quality.

The RWQCB requires complete pre- and post-development Best Management Practices Plan (BMPs) of any portion of the project site that is developed. This means that a water quality treatment plan for the pre- and post-developed project site must be prepared and implemented. Preconstruction requirements must be consistent with the requirements of the National Pollutant Discharge Elimination System (NPDES). That is, a *Stormwater Pollution Prevention Plan* (SWPPP) must be developed prior to the time that a site is graded (see NPDES section below). In addition, a post construction BMPs plan, or a Stormwater Management Plan (SWMP) must be developed and incorporated into any site development plan.

8.2.4 APPLICABILITY TO PROPOSED PROJECT

On March 16, 2010, M&A staff Mr. Geoff Monk and Ms. Isabelle de Geofroy conducted a wetland delineation on the project site using the Corps' 1987 *Wetlands Delineation Manual* in conjunction with the regional supplement for the Arid West Region. On September 22, 2010, the Corps field verified the extent of their jurisdiction on the project site pursuant to Section 404 of the Clean Water Act. The Corps confirmed a total of 0.22-acre of waters of the U.S. on the project site. No isolated wetlands were identified or mapped by the Corps. The confirmed wetland delineation map is included in this report as Appendix B.

The Corps' mapped jurisdictional areas would be regulated by the RWQCB pursuant to the Porter-Cologne Water Quality Control Act. Since any "threat" to water quality could conceivably be regulated pursuant to the Porter-Cologne Water Quality Control Act, care will be required when constructing the proposed project to be sure that adequate pre- and post-construction Best Management Practices Plan (BMPs) are incorporated into the project implementation plans.

It should also be noted that prior to issuance of any permit from the RWQCB this agency will require submittal of a Notice of Determination from the County of Sonoma, indicating that the proposed project has completed a review conducted pursuant to CEQA. The pertinent sections of the CEQA document (typically the biology section) are often submitted to the RWQCB for review prior to the time this agency will issue a permit for a proposed project.

Finally, it should be noted that any SWMP prepared to meet Sonoma County's Standard Urban Storm Water Mitigation Plan (SUSMP) guidelines, would also meet the RWQCB's SWMP requirements. For greater detail please review the SUSMP requirements presented below.

8.2.5 NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

In 1972 the Clean Water Act was amended to state that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with an NPDES permit. The 1987 amendments to the Clean Water Act added Section 402(p) which establishes a framework for regulating municipal and industrial stormwater discharges under the NPDES Program.

While federal regulations allow two permitting options for stormwater discharges (individual permits and General Permits), the SWRCB has elected to adopt only one statewide General Permit at this time that will apply to all stormwater discharges associated with construction activity, except from those on Tribal Lands, in the Lake Tahoe Hydrologic Unit, and those performed by the California Department of Transportation (CalTrans). The General Permit requires all dischargers where construction activity disturbs greater than one acre of land or those sites less than one acre that are part of a common plan of development or sale that disturbs more than one acre of land surface to:

1. Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) which specifies Best Management Practices (BMPs) that will prevent all construction pollutants from

contacting stormwater with the intent of keeping all products of erosion from moving off site into receiving waters.

2. Eliminate or reduce non-stormwater discharges to storm sewer systems and other waters of the nation.

3. Perform inspections of all BMPs.

This General Permit is implemented and enforced by the nine California Regional Water Quality Control Boards (RWQCBs).

Types of Construction Activity Covered by the General Permit

Construction activity subject to this General Permit includes clearing, grading, and disturbances to the ground such as stockpiling, or excavation that results in soil disturbances of at least one acre or more of total land area. Construction activity that results in soil disturbances to a smaller area would still be subject to this General Permit if the construction activity is part of a larger common plan of development that encompasses greater than one acre of soil disturbance, or if there is significant water quality impairment resulting from the activity. Construction activity does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility, nor does it include emergency construction activities required to protect public health and safety. Project proponents (landowners) should confirm with the local RWQCB whether or not a particular routine maintenance activity is subject to this General Permit.

8.2.6 2009 Changes to the NPDES Program and Use of the General Permit

[This section excerpted in part from Morrison Foerster Legal Updates and News September 2009, by Robert L. Falk and Corinne Fratini]. The California State Water Resources Control Board ("State Water Board") has adopted a new National Pollutant Discharge Elimination System General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities ("Construction General Permit"). The new Construction General Permit which was issued pursuant to the federal Clean Water Act and is enforceable through citizens' suits, represents a dramatic shift in the State Water Board's approach to regulating new and redevelopment sites, imposing new affirmative duties and fixed standards on builders and developers. Changes to use of the General Permit became effective on July 1, 2010.

The new Construction General Permit does not completely carry forward the former qualitative and self-selected compliance approach based on preparation of a SWPPP. Instead, developers and construction contractors must implement specific BMPs, achieve quantitatively-defined (i.e., numeric) pollutant-specific discharge standards, and conduct much more rigorous monitoring based on the project's projected risk level.

The State Water Board's new quantitative standards take a two-tiered approach, depending on the risk level associated with the site in question. Exceedance of a benchmark Numeric Action Level ("NAL") measured in terms of pH and turbidity (a measure related to both the amount of sediment in and the velocity of site runoff) triggers an additional obligation to implement

additional BMPs and corrective action to improve SWPPP performance. For medium- and high-risk sites, failure to meet more stringent numeric standards for pH and turbidity, known as Numeric Effluent Limitations ("NELs"), will also automatically result in a permit violation and be directly enforceable in administrative or, in the case of a citizens' group taking up the cause, judicial forums. New minimum BMPs include Active Treatment Systems, which may be necessary where traditional erosion and sediment controls do not effectively control accelerated erosion; where site constraints inhibit the ability to construct a correctly-sized sediment basin; where clay and/or highly erosive soils are present; or where the site has very steep or long slope lengths.

In addition, the new Construction General Permit includes several "post-construction" requirements. These requirements entail that site designs provide no net increase in overall site runoff and match pre-project hydrology by maintaining runoff volume and drainage concentrations. To achieve the required results where impervious surfaces such as roofs and paved surfaces are being increased, developers must implement non-structural off-setting BMPs, such as landform grading, site design BMPs, and distributed structural BMPs (bioretention cells, rain gardens, and rain cisterns). This "runoff reduction" approach is essentially a State Water Board-imposed regulatory requirement to implement Low Impact Development ("LID") design features. Volume that cannot be addressed using non-structural BMPs must be captured in structural BMPs that are approved by the Regional Water Board.

Finally, the new Construction General Permit requires electronic filing of all Permit Registration Documents, NOIs, SWPPPs, annual reports, Notices of Termination, and NAL/NEL Exceedance Reports. This information will be readily available to the Water Boards and citizen enforcers who can then determine whether to initiate enforcement actions—actions which can result in significant penalties and legal fees.

8.2.7 APPLICABILITY TO PROPOSED PROJECT

On September 2, 2009, the State Water Resources Control Board adopted Order No. 2009-0009-DWQ, which reissued the Construction General Permit for projects disturbing one or more acres of land surface, or those sites less than one acre that are part of a common plan of development or sale that disturbs more than one acre of land surface. Effective July 1, 2010, the requirements of this order replaced and superseded State Water Board Orders No. 99-08-DWQ.

The project engineer will be preparing a Stormwater Management Plan (SWMP) and a SWPPP for this project. These plans will be submitted to the SWRCB at the same time that Section 401 certification application will take place. Hence, the applicant will be provided coverage under the NPDES program by the RWQCB.

8.3 RWQCB Municipal Storm Water Permitting Program

The Municipal Storm Water Permitting Program regulates storm water discharges from municipal separate storm sewer systems (MS4s). MS4 permits were issued in two phases. Under Phase I, which started in 1990, the RWQCBs have adopted NPDES storm water permits for medium (serving between 100,000 and 250,000 people) and large (serving 250,000 people)

municipalities. Most of these permits are issued to a group of co-permittees encompassing an entire metropolitan area. These permits are reissued as the permits expire.

As part of Phase II, the SWRCB adopted a General Permit for the Discharge of Storm Water from Small MS4s (WQ Order No. 2003-0005-DWQ) to provide permit coverage for smaller municipalities, including non-traditional Small MS4s, which are governmental facilities such as military bases, public campuses, and prison and hospital complexes.

The MS4 permits require the discharger to develop and implement a Storm Water Management Plan/Program (SWMP) with the goal of reducing the discharge of pollutants to the maximum extent practicable (MEP). MEP is the performance standard specified in Section 402(p) of the Clean Water Act. The management programs specify what best management practices (BMPs) will be used to address certain program areas. The program areas include public education and outreach; illicit discharge detection and elimination; construction and post-construction; and good housekeeping for municipal operations. In general, medium and large municipalities are required to conduct chemical monitoring, though small municipalities are not.

8.3.1 RWQCB PHASE II PROGRAM REQUIREMENTS

The federal Clean Water Act (CWA) provides that National Pollutant Discharge Elimination System (NPDES) permits for Municipal Separate Storm Sewer Systems (MS4) must require municipalities to reduce pollutants in their storm water discharges to the Maximum Extent Practicable (MEP) (CWA §402(p)(3)(B).) MS4 permits "shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods." Under the Phase II Requirements implemented by the RWQCB, permittees that operate an MS4 that serves 50,000 people or more, or that serve an area of high growth (which is defined as more than 25% over 10 years), must comply with the Supplemental Provisions contained in Attachment 4 of the Small MS4 General Permit. *The City of Santa Rosa would be a MS4 permittee.*

Permittees must ensure that any new development or redevelopment projects implement a Post Construction Storm Water Management Plan (SWMP). The MEP standard involves applying best management practices (BMPs) that are effective in reducing the discharge of pollutants in storm water runoff. In discussing the MEP standard, the State Board has said the following: "There must be a serious attempt to comply, and practical solutions may not be lightly rejected. If, from the list of BMPs, a permittee chooses only a few of the least expensive methods, it is likely that MEP has not been met. On the other hand, if a permittee employs all applicable BMPs except those where it can show that they are not technically feasible in the locality, or whose cost would exceed any benefit to be derived, it would have met the standard.

It should be noted that the Small MS4 Permit and the General Construction Permit (NPDES Phase I requirements) are programmatically different. The Construction Site Storm Water Runoff Control Minimum Control Measure requires the municipality to develop and implement a program that provides local oversight of construction projects within the municipality to ensure that pollutants being discharged from construction sites into the MS4 are reduced. The program must include adopting an ordinance requiring storm water quality controls at construction sites, reviewing site plans, receiving comments from the public regarding the discharge of pollutants

from construction sites, inspecting construction sites to ensure that pollutants are not being discharged in storm water runoff, and taking enforcement when necessary. Typically, such measures are detailed in SWMPs prepared by the project proponent. In contrast, the General Construction Permit requires projects to have a site specific SWPPP and to implement BMPs specific to activities at the construction site. The General Construction Permit directly regulates landowners engaged in construction involving land disturbance of one acre or more.

8.3.2 APPLICABILITY TO THE PROPOSED PROJECT

According to the RWQCB records, the City of Santa Rosa is an MS4 permittee and thus is supposed to enforce development of a project specific SWPPP and a SWMP that incorporate both pre- and post-construction BMPs (respectively). As an MS4 permittee the City of Santa Rosa is required to enforce development of a SWMP containing pre- and post-construction BMPs. Currently this is accomplished by applicants through compliance with the Standard Urban Storm Water Mitigation Plan (SUSMP) that is discussed in detail below. Accordingly, the project civil engineer has prepared a SWMP that can be reviewed by the City of Santa Rosa for formulation of the conditions of project approval.

9. STANDARD URBAN STORM WATER MITIGATION PLAN (SUSMP),

To comply with their MS4 permit, the City of Santa Rosa, Sonoma Water Agency and County prepared *Guidelines for the Standard Urban Storm Water Mitigation Plan (SUSMP), Storm Water Best Management Practices for New Development and Redevelopment for the Santa Rosa Area and Unincorporated Areas around Petaluma and Sonoma were released by Sonoma County* on June 3, 2005. The SUSMP guidelines were developed to assist project sponsors and municipal staff to implement the Santa Rosa Area requirements that were adopted by the North Coast Regional Water Quality Control Board in June 2003. Since the SUSMP requirements apply to both privately sponsored projects and public capital improvement projects, these Guidelines are required to be used by development project applicants, municipal development project review staff, and municipal staff responsible for capital improvement projects. The SUSMP requirements are part of the Storm Water Management Plan that has become an enforceable part of the reissued municipal storm water National Pollutant Discharge Elimination System (NPDES) permit for the City of Santa Rosa, the County of Sonoma, and the Sonoma County Water Agency. The SUSMP guidelines also have been created to comply with the municipal storm water NPDES permit requirement for the City of Santa Rosa and County of Sonoma to develop a SUSMP Guidance Document.

The SUSMP goals for new and redevelopment projects are to manage, as close to the point of origin as possible, 1) storm water quality, 2) storm water quantity, and 3) to conserve natural areas of the development site. These three goals are described further below. It should be noted that the concept of "maximum extent practical" (MEP) applies to each of the goals. The MEP requirement is a technology based standard established by Congress in the Clean Water Act U.S.C. S 1342 (p)(3)(B)(iii) that municipal dischargers of storm water must meet. To achieve the maximum extent practicable standard, municipalities must employ whatever Best Management Practices (BMPs) are technically feasible (i.e., are likely to be effective) and are not cost prohibitive. The major emphasis is on technical feasibility. Reducing pollutants to the maximum extent practicable means choosing effective BMPs, and rejecting applicable BMPs only where

other effective BMPs will serve the same purpose, or the BMPs would not be technically feasible, or the cost would be prohibitive.

The SUSMP goals for new and redevelopment projects are as follows:

Storm Water Quality. The first goal is to prevent pollutants generated at development and redevelopment projects from reaching storm drains. Projects covered by the SUSMP must be designed to minimize the introduction of pollutants.

Storm Water Quantity. The second goal is to prevent increases in storm water runoff from the two-year 24 hour storm event for Sonoma County. SUSMP projects should incorporate best management practices to limit the post-development runoff to pre-development conditions to the MEP. Best management practices are methods used to minimize pollutants in storm water and the quantity of runoff. One of the objectives of these guidelines is to provide more specific information about how MEP will be achieved.

Conserve Natural Areas. The third goal is to conserve natural areas of a development site. This goal supports the other two goals by preserving areas where storm water runoff can be purified naturally by infiltration into the soil and flow over vegetated areas. SUSMP projects should strive to maximize the amount of land left in a natural, undisturbed condition, preserve riparian areas and wetlands, limit clearing of native vegetation, and maximize trees and vegetation.

This SUSMP applies to applicable projects that require a discretionary permit, including any ministerial permits that are based on the discretionary permit. Source controls will be recommended for all discretionary projects.

Projects that must comply with the SUSMP include:

a) Development projects that create one acre (43,560 square feet) or more of new impervious surface. This category includes development of any type on public or private land, which falls under the planning and building authority of Sonoma County or City of Santa Rosa, where one acre or more of new impervious surface, collectively over the entire project site, will be created.
b) Streets, roads, highways and freeways that create one acre (43,560 square feet) or more of new impervious surface. This category includes any newly constructed impervious surface used for the transportation of pedestrians, bicycles, and motorized vehicles.
c) Redevelopment projects that are located on an already developed site and result in the addition of and/or reconstruction of one acre (43,560 square feet) or more of new impervious surface. Only the additional and/or reconstructed portion(s) of the site must be included in treatment design. Excluded from this category are interior remodels and routine maintenance or repair, including roof or exterior surface replacement and resurfacing.
d) Development and redevelopment projects located directly adjacent to a natural waterway, modified natural waterway, or constructed channel or that require a new storm drain outfall to such waterway, regardless of project size or impervious surface. This requirement is intended to protect environmentally sensitive areas. For redevelopment

projects, excluded from this category are interior remodels and routine maintenance or repair, including roof or exterior surface replacement and resurfacing.

Regarding phased projects, new development or redevelopment activity that is part of a larger common plan of development that results in less than one acre of impervious surface must comply with SUSMP requirements. For example, if 50% of a subdivision is constructed and results in 0.9 acre of impervious surface and the remaining 50% of the subdivision is to be developed at a future date, the property owner must comply with SUSMP requirements.

9.1 Source and Treatment Control Requirements

Source control and treatment control BMPs are intended to reduce runoff and keep pollutants out of storm water throughout the life of the project. They may be described as post-construction BMPs or "post-development" control measures. Post-construction BMPs differ from construction BMPs, which are used during the construction phase to prevent erosion and keep construction-related pollutants from reaching storm water.

The SUSMP recognizes two types of post-development BMPs for storm water pollution control – source controls and treatment controls. Source controls include BMPs that are designed to prevent pollutants from reaching storm water runoff and minimize site runoff. Source controls include a large variety of BMPs that range from minimizing the amount of impervious surface used at a project site to specific pollution prevention BMPs such as providing a roof over waste storage areas. The municipal storm water NPDES permit characterizes source control as the first line of defense at a project site and storm water treatment as a backup or additional line of defense. Source controls will be recommended for all discretionary projects.

Storm water treatment controls are engineered systems that are designed to remove pollutants from storm water. The SUSMP and NPDES permit have specific hydraulic design criteria for sizing storm water treatment controls to assure that an optimum amount of storm water receives treatment. Examples of storm water treatment controls include vegetated swales, extended detention basins, and bioretention areas. These are described in more detail in Chapter 4.

Source and treatment controls require long-term maintenance to continue to function effectively and avoid the creation of nuisance conditions. The SUSMP requires the project applicant to provide to the City or County a signed statement accepting responsibility for maintenance until the responsibility is legally transferred. The SUSMP further requires property owners to conduct maintenance inspection of all source and treatment control BMPs at least once a year or as specified by the designer or manufacturer.

9.2 Post-Construction Sediment and Erosion Control

Sediment is an important pollutant of concern in the North Coast Region. During construction sediment and erosion control BMPs must be implemented in accordance with the Statewide Construction Activity NPDES General Permit and the City of Santa Rosa or County of Sonoma grading permit programs. The design of projects must also consider potential sedimentation and erosion issues during long-term project operations and incorporate appropriate sediment and erosion controls in the project design.

Source Controls includes the need to select and maintain vegetation in landscaped pervious areas to prevent runoff from contacting bare earth and conveying sediment into the storm drain system. Similarly, pervious paving materials must also be selected, designed and maintained to avoid sedimentation and erosion.

9.3 Enforceability

The Santa Rosa Area municipal storm water NPDES permit requires the City of Santa Rosa, County of Sonoma and Sonoma County Water Agency to implement legal authority to control pollutant discharges to their respective storm drain systems. At a minimum, this legal authority empowers the agencies to use enforcement mechanisms, including monetary fines, to require compliance by private entities within their jurisdictions. In the event that a project applicant fails to comply with the SUSMP requirements, the City or County may determine that it is necessary to undertake enforcement actions, which may include a monetary fine.

9.4 Applicability to the Proposed Project

The Project Engineer will be preparing a Stormwater Management Plan for the proposed project and this will be submitted to the City of Santa Rosa (and the RWQCB). Thus, the project will meet the requirements of SUSMP (and the NPDES).

10. CALIFORNIA DEPARTMENT OF FISH AND GAME PROTECTIONS

10.1 Section 1602 of California Fish and Game Code

Pursuant to Section 1602 of the California Fish and Game Code, California Department of Fish and Game (CDFG) regulates activities that divert, obstruct, or alter stream flow, or substantially modify the bed, channel, or bank of a stream which CDFG typically considers to include its riparian vegetation. Any proposed activity in a natural stream channel that would substantially adversely affect an existing fish and/or wildlife resource, would require entering into a Streambed Alteration Agreement (SBAA) with CDFG prior to commencing with work in the stream. However, prior to authorizing such permits, CDFG typically reviews an analysis of the expected biological impacts, any proposed mitigation plans that would be implemented to offset biological impacts and engineering and erosion control plans.

10.1.1 Applicability to Proposed Project

Virtually the entire project site drains during storm events via percolation into the soil and into a man-made ditch that begins on the eastern central portion of the project site and drains to a City Storm Drain inlet on the western boundary of the project site alongside North Wright Avenue. The man-made ditch is a minor feature, does not have a defined bed, bank or channel, and only conveys water away from existing buildings to outlets off-site; hence, it would be most unlikely to be regulated by CDFG pursuant to 1602 of the Fish and Game Code, which typically concerns natural tributaries or man-made features with direct connectivity to tributaries.

11. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) REGULATIONS

A CEQA lead agency must determine if a proposed activity constitutes a project requiring further review pursuant to the CEQA. Pursuant to CEQA, a lead agency would have to determine if there could be significant adverse impacts to the environment from a proposed project. Typically, if within the city limits, the city would be the CEQA lead agency. If a discretionary permit (i.e., conditional use permit) would be required for a project (e.g. an occupancy permit must be issued), the lead agency typically must determine if there could be significant environmental impacts. This is usually accomplished by an "initial study." If there could be significant environmental impacts, the lead agency must determine an appropriate level of environmental review prior to approving and/or otherwise permitting the impacts. In some cases, there are "Categorical Exemptions" that apply to the proposed activity; thus the activity is exempt from CEQA. The Categorical Exemptions are provided in CEQA. There are also Statutory Exemptions in CEQA that must be investigated for any proposed project. If the project is not exempt from CEQA, the lowest level of review typically reserved for projects with no significant effects on the environment would be for the lead agency to prepare a "Negative Declaration." If a proposed project would have only minimal impacts that can be mitigated to a level of no significance pursuant to the CEQA, then a "Mitigated Negative Declaration" is typically prepared by the lead agency. Finally those projects that may have significant effects on the environment, or that have impacts that can't be mitigated to a level considered less than significant pursuant to the CEQA, typically must be reviewed via an Environmental Impact Report (EIR). All CEQA review documents are subject to public circulation, and comment periods.

Section 15380 of CEQA defines "endangered" species as those whose survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors. "Rare" species are defined by CEQA as those who are in such low numbers that they could become endangered if their environment worsens; or the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in FESA. The CEQA Guidelines also state that a project will normally have a significant effect on the environment if it will "substantially affect a rare or endangered species of animal or plant or the habitat of the species." The significance of impacts to a species under CEQA, therefore, must be based on analyzing actual rarity and threat of extinction to that species despite its legal status or lack thereof.

11.1.1 APPLICABILITY TO THE PROPOSED PROJECT

This report has been prepared as a Biology Section that is suitable for incorporation into the biology section of a CEQA review document such as a Mitigated Negative Declaration or EIR. This document addresses potential impacts to species that would be defined as endangered or rare pursuant to Section 15380 of the CEQA. This document is suitable for use by the CEQA lead agency (in this case the City of Santa Rosa) for preparation of any CEQA review document prepared for the proposed project.

12. IMPACT ANALYSIS

In this section we discuss potential impacts to sensitive biological resources including special-status animal species and waters of the United States and/or State. We follow each impact with a mitigation prescription that when implemented would reduce impacts to the greatest extent possible. This impact analysis is based on a Conceptual Site Plan prepared on April 15, 2010 by Tierny/Figueiredo Architects, last updated on September 23, 2012 (Appendix A).

12.1 Significance Criteria

A significant impact is determined using CEQA and CEQA Guidelines. Pursuant to CEQA §21068, a significant effect on the environment means a substantial, or potentially substantial, adverse change in the environment. Pursuant to CEQA Guideline §15382, a significant effect on the environment is further defined as a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. Other Federal, State, and local agencies' considerations and regulations are also used in the evaluation of significance of proposed actions.

Direct and indirect adverse impacts to biological resources are classified as "significant," "potentially significant," or "less than significant." Biological resources are broken down into four categories: vegetation, wildlife, threatened and endangered species, and regulated "waters of the United States" and/or stream channels.

12.1.1 THRESHOLDS OF SIGNIFICANCE

12.1.1.1 Plants, Wildlife, Waters

In accordance with Appendix G (Environmental Checklist Form) of the CEQA Guidelines, implementing the project would have a significant biological impact if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or US Fish and Wildlife Service.

- 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.

- 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.

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

- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

12.1.1.2 Waters of the United States and State.

Pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344), the U.S. Army Corps of Engineers (Corps) regulates the discharge of dredged or fill material into waters of the United States, which includes wetlands, as discussed in the bulleted item above, and also includes "other waters" (stream channels, rivers) (33 CFR Parts 328 through 330). Substantial impacts to Corps regulated areas on a project site would be considered a significant adverse impact. Similarly, pursuant to Section 401 of the Clean Water Act, and to the Porter-Cologne Water Quality Control Act, the RWQCB regulates impacts to waters of the state. Thus, substantial impacts to RWQCB regulated areas on a project site would also be considered a significant adverse impact.

12.1.1.3 Stream Channels

Pursuant to Section 1602 of the California Fish and Game Code, CDFG regulates activities that divert, obstruct, or alter stream flow, or substantially modify the bed, channel, or bank of a stream which CDFG typically considers to include riparian vegetation. Any proposed activity that would result in substantial modifications to a natural stream channel would be considered a significant adverse impact.

13. IMPACT ASSESSMENT AND PROPOSED MITIGATION

13.1 Impact 1. Trees (Significant)

According to the City of Santa Rosa's Tree Ordinance, a "protected tree" situated within the City is defined as: "any species with a diameter of four-inches or more" (Section 17.24.020 under Article II and Section 17.24.030 under Article III). Four protected trees will be removed for the proposed project. According to OSC-H-2 of the Santa Rosa General Plan, native oak trees should be preserved and helped regenerate. One of these protected trees to be removed is a native valley oak. Hence, based on the above regulations, removal of native and protected trees onsite without compensatory mitigation would constitute a significant impact pursuant to CEQA. This impact could be mitigated to a level considered less than significant.

13.2 Mitigation Measure 1 - Trees

According to the Site Development Plan (September 23, 2012) and the Conceptual Landscape Plan (MacNair Landscape Architecture 2012), M&A determined that 4 "protected trees", according to the tree ordinance definitions, would need to be removed to accommodate the proposed development. These four protected trees are: 1 Chinese elm, 1 valley oak, 1 Oregon ash and 1 mayten with diameters equaling 58 inches, 28 inches, 9.5 inches and 7.5 inches, respectively. Implementation of the following mitigation would reduce impacts to protected trees to a level considered less than significant.

To offset impacts resulting from the removal of protected trees, replacement trees shall be planted. Mitigation required will be in accordance with the City's tree ordinance which requires for each six inches or fraction thereof of the diameter of a tree which was approved for removal, two trees of the same genus and species or another appropriate species as approved by the Planning Director, each of a minimum 15-gallon container size, shall be planted on site. For example, removal of an 11-inch diameter tree shall require planting 4 replacement trees. To offset the removal of 4 protected trees, 38 replacement trees of a 15-gallon container size would be required per the ordinance. However, there is a clause in the tree ordinance which stipulates that alternate replacement planting is allowed with prior approval from the City's Planning Director. Thus, the applicant is proposing to plant 22 replacement trees of site-appropriate species of a larger size (24 inch box) to mitigate for this impact due to the small size of the project site and the appropriate landscape areas (as per email communication from Don MacNair at MacNair Landscape Architecture to Christy Owens at Monk & Associates and shown in the Conceptual Landscape Plan in Appendix C). There will be 9 appropriate replacement oaks and 13 appropriate replacement ornamentals. The replacement trees' health shall be monitored annually for five years by a qualified biologist or arborist. Annual monitoring reports shall be submitted to the City of Santa Rosa's Planning Department.

A tree preservation and management plan shall be prepared for the project. Preparation of this plan and subsequent planting and monitoring shall be a condition of project approval and shall be tied to a security bond posted by the developer. A cash bond prepared for the benefit of the City of Santa Rosa or a cash deposit shall be submitted to the City of Santa Rosa by the applicant covering the costs of mitigation trees (and required irrigation) that are to be installed to compensate for impacts. The cash amount to be held by the City of Santa Rosa shall be determined by a qualified landscape company or landscape architect. The cash or bond shall be held for 24 months and shall be released upon receipt of a report from a qualified arborist or botanist that all planted trees are healthy and established.

The planting plan shall include a planting detail that specifies where all replacement trees would be planted on the project site. The methods used to plant trees shall also be specified. Adequate measures shall be established to minimize predation of planted trees by rodents including, but not limited to, pocket gophers (*Thomomys bottae*) and/or California ground squirrels (*Spermophilus beechyi*).

All planted trees shall be provided with a temporary irrigation system that would be maintained over a minimum three-year establishment period. The irrigation system shall be placed on electric timers so that trees are automatically watered during the dry months of the establishment period. At the end of a suitable establishment period, the irrigation system could be removed.

At the end of a five-year monitoring period, at least 80 percent of planted trees shall be in good health. If the numbers of planted trees falls below an 80 percent survival rate, additional trees shall be planted to bring the total number of planted trees up to 100 percent of the original number of trees planted. Irrigation and follow-up monitoring shall be established over an additional three year period after any replanting occurs. Any follow-up monitoring will be reported annually to the City of Santa Rosa Planning Department.

Additionally, the following construction policies and guidelines for tree preservation and protection put forth by the City of Santa Rosa shall also be followed during project implementation:

1. Before the start of any clearing, excavation, construction or other work on the site, every protected tree shall be securely fenced off at the "protected perimeter," which shall be either the root zone or other limit as may be established by the City. Such fences shall remain continuously in place for the duration of all work undertaken in connection with the development. The area so fenced off shall not be used as a storage area or altered or disturbed except as may be permitted under this subsection.

2. If the proposed development, including any site work for the development, will encroach upon the protected perimeter of a protected tree, special measures shall be utilized, as approved by the Director or the Planning Commission, to allow the roots to obtain oxygen, water and nutrients as needed. Any excavation, cutting, filling, or compaction of the existing ground surface within the protected perimeter, if authorized at all by the Director, shall be minimized and subject to such conditions as may be imposed by the Director. No significant change in existing ground level shall be made within the drip line of a protected tree. No burning or use of equipment with an open flame shall occur near or within the protected perimeter. All brush, earth and other debris shall be removed in a manner which prevents injury to the protected tree..

3. No oil, gas, chemicals or other substances that may be harmful to trees shall be stored or dumped within the protected perimeter of any protected tree, or at any other location on the site from which substances might enter the perimeter of a protected tree. No construction materials shall be stored within the protected perimeter of a protected tree.

4. Underground trenching for utilities shall avoid major support and absorbing tree roots of protected trees. If avoidance is impractical, tunnels shall be made below the roots. Trenches shall be consolidated to service as many units as possible. Trenching within the drip line of protected trees shall be avoided to the greatest extent possible and shall only be done under the at-site directions of a certified arborist.

5. No concrete or asphalt paving shall be placed over the root zones of protected trees. No artificial irrigation shall occur within the root zone of oaks.

6. No compaction of the soil within the root zone of protected trees shall occur.

7. If the trees proposed to be removed can be economically relocated, the developer shall move the trees to a suitable location on the site shown on the approved plans.

This mitigation measure would reduce impacts to trees to a level considered less than significant.

13.3 Impact 2. Nesting Raptors (Potentially Significant)

Suitable nesting habitat for red shouldered hawk, red-tailed hawk and white-tailed kite, which are all known from the area, occurs on and adjacent to the project site. All of these raptors (that

is, birds of prey) are protected under the Migratory Bird Treaty Act (50 CFR 10.13) and their eggs and young are protected under California Fish and Game Codes Sections 3503, 3503.5, 3511, and 3513. Any project-related impacts to these species would be considered a significant adverse impact. Potential impacts to these species from the proposed project include disturbance to nesting birds, and possibly death of adults and/or young.

While old (inactive) nests or nesting raptors were not observed on or near the project site during field surveys in 2010 and 2011, the survey on the project site did not specifically focus on nesting raptors; hence, not every tree was checked for an active nest. Additionally, raptors are highly mobile species that could move into the area at any time to nest. Potential impacts to these species from the proposed project include loss of nesting habitat, disturbance to nesting birds, and possibly death of adults and/or young. In the absence of survey results, it must be concluded that impacts to nesting raptors from the proposed project would be potentially significant. This impact could be mitigated to a less than significant level.

13.4 Mitigation Measure 2. Nesting Raptors

In order to avoid impacts to nesting raptors, a nesting survey shall be conducted 30 days prior to commencing with tree removal or construction work if this work would commence between February 1st and August 31st. The raptor nesting surveys shall include examination of all trees within 300 feet of the entire project site (if access is readily available to offsite areas), not just trees slated for removal.

If nesting raptors are identified during the surveys, the dripline of the nest tree must be fenced with orange construction fencing (provided the tree is on the project site), and a 300-foot radius around the nest tree must be staked with bright orange lath or other suitable staking. If the tree is adjacent to the project site, then the buffer shall be demarcated per above where the buffer occurs on the project site. *The size of the buffer may be altered if a qualified raptor biologist conducts behavioral observations and determines the nesting raptors are well acclimated to disturbance. If this occurs, the raptor biologist shall prescribe a modified buffer that allows sufficient room to prevent undue disturbance/harassment to the nesting raptors.* No construction or earth-moving activity shall occur within the established buffer until it is determined by a qualified raptor biologist that the young have fledged (that is, left the nest) and have attained sufficient flight skills to avoid project construction zones. This typically occurs by August 1st. *This date may be earlier than August 1, or later, and would have to be determined by a qualified raptor biologist.* Implementation of this mitigation measure would reduce impacts to nesting raptors to a level considered less than significant pursuant to CEQA.

This mitigation measure would reduce impacts to nesting raptors to a level considered less than significant.

13.1 Impact 3. Nesting Passerine Birds – Tree Removal and Site Development May Have a Potentially Significant Impact on Nesting Passerine Birds (Potentially Significant)

Nesting passerine (perching) birds could be impacted by the proposed project. Birds and their nests are protected under California Fish and Game Code (Sections 3503, 3503.5), and the Federal Migratory Bird Treaty Act. Impacts to nesting birds, their eggs, and/or young caused by

implementation of the proposed project would be regarded as potentially significant. This impact could be mitigated to a level considered less than significant pursuant to CEQA.

13.2 Mitigation Measure 3. Nesting Passerine Birds

If tree removal or site disturbance would occur between February 1 and August 31, a nesting survey shall be conducted on the project site prior to the disturbance. The nesting surveys should be completed 15 days prior to commencing with the work. If nesting passerine birds are identified nesting on or near the project site, a 75-foot radius around the nest must be staked with bright orange spray painted lath or construction fencing. If an active nest is found offsite, the portion of the buffer that is onsite must be staked. No construction or earth-moving activity shall occur within this 75-foot staked buffer until it is determined by a qualified ornithologist that the young have fledged (that is, left the nest) and have attained sufficient flight skills to avoid project construction zones.

Typically, most birds in the region of the project site are expected to complete nesting by August 1st. However, in the region many species can complete nesting by mid-June to mid-July. Regardless, nesting buffers should be maintained until August 1st unless a qualified ornithologist determines that young have fledged and are independent of their nests at an earlier date. If buffers are removed prior to August 1st, the qualified biologist conducting the nesting surveys shall prepare a report that provides details about the nesting outcome and the removal of buffers. This report shall be submitted to the City of Santa Rosa Planning Department prior to the time that buffers are removed if the date is before August 1st.

This mitigation measure would reduce impacts to nesting passerine bird species to a level considered less than significant.

13.3 Impact 4. Impacts to Waters of the United States and/or State (Significant)

There is one man-made ditch and several topographic low areas on the northeastern and southeastern sides of the project site where seasonal wetlands occur. The proposed project would result in impacts to areas within the Corps' and RWQCB jurisdiction pursuant to Sections 404 and 401 of the Clean Water Act, respectively. Areas subject to jurisdiction by these two agencies include the seasonal wetlands and ditch in the northeastern and southeastern portions of the project site. **Impacts to 0.22-acre of "waters of the United States/State" would occur from implementation of the proposed project.** This impact would be regarded as significant. This impact could be mitigated to a level considered less than significant pursuant to CEQA.

13.4 Mitigation Measure 4. Impacts to Waters of the United States and/or State

Impacts to potential waters of the United States and/or State can be reduced to less-than-significant levels through various means, including avoidance, minimization of impacts, and mitigation compensation.

On February 17, 2011, M&A biologists Mr. Monk and Ms. de Geofroy met at RWQCB's North Coast office with Mrs. Stephen Bargsten of the RWQCB and Mr. Sahrye Cohen of the Corps to discuss the proposed project. Both Ms. Cohen and Mr. Bargsten agreed that impacts to waters of the U.S. and State (respectively) could be mitigated using a Corps and RWQCB approved

wetland conservation bank. Both Ms. Cohen and Mr. Bargsten agreed that it made little sense to preserve wetland on this relatively small project site.

The applicant is proposing to mitigate impacts to 0.22-acre (9,623 square feet) of Corps and RWQCB jurisdictional seasonal wetlands via purchase of mitigation credits from the Horn Avenue Mitigation Bank. Wetlands on the project were mostly created by the former resident as a "sink" collecting surface runoff from the surface area for the private residence relatively recently removed from the site. Wetland vegetation does not consist of vernal pool species, rather is mostly comprised of low value, non-native wetland plant species. As such the proposed impacted wetlands have low functions and services (i.e., they are low quality wetlands). Thus, mitigation at a 2:1 ratio (i.e., for each tenth of an acre of impact, compensation shall consist of 2 tenths of an acre of mitigation credits) from a qualified mitigation bank is appropriate. Since mitigation credits must be purchased at a minimum of 0.05-acre increments, and since the project will impact 0.22-acre of seasonal wetland, 0.45-acre of mitigation credits shall be purchased from the Horn Mitigation Bank, a qualified wetlands mitigation bank. An agreement with the Horn Mitigation Bank to purchase these mitigation credits was signed by the Applicant on March 12, 2012. Proof of purchase of the credits shall be provided to the City of Santa Rosa, Corps, USFWS, and CDFG.

This mitigation measure would reduce the project's impact to waters of the U.S./State to a less than significant level.

13.1 Impact 5. Impacts to Suitable California Tiger Salamander Habitat (Significant)

Although no CTS larvae were found on the project site, potentially suitable CTS habitat occurs on the project site. The project site is within the "Santa Rosa Plain Unit, Unit 1" of federally designated CTS Critical Habitat. Additionally, there are records of CTS within 0.30-mile of the project site although no adult CTS occurrences have been documented within 500 feet of the project site. In accordance with the *Programmatic Biological Opinion of U.S. Army Corps of Engineers Permitted Projects that May Affect California Tiger Salamander and Three Endangered Plant Species on the Santa Rosa Plain* (USFWS 1998), for projects that are greater than 500 feet and within 2,200 feet of a known breeding site, CTS are required to be mitigated at a 2:1 ratio (i.e., for each acre of impact, compensation shall consist of 2 acres of mitigation credits). As there is no existing hardscape on the project site, the entire 0.98-acre project site is considered to be CTS habitat. Development of this project site without further consideration of CTS would be a significant adverse impact.

This impact could be mitigated to a level considered less than significant pursuant to CEQA.

13.2 Mitigation Measure 5. Impacts to Suitable California Tiger Salamander Habitat.

In accordance with the *Programmatic Biological Opinion of U.S. Army Corps of Engineers Permitted Projects that May Affect California Tiger Salamander and Three Endangered Plant Species on the Santa Rosa Plain* (Programmatic BO), the applicant will mitigate impacts to 0.98-acre of CTS habitat with the purchase of 1.96 acres of mitigation credits from a USFWS-approved mitigation bank. To meet this mitigation requirement, the applicant has agreed to purchase 0.33-acre of combined Sebastopol Meadowfoam (*Limnanthes vinculans*) and CTS mitigation credit from the Swift/Turner Conservation Bank. The remaining 1.63 acres of CTS

mitigation credits have been purchased from Hale Wetland Mitigation and the Hazel Mitigation Bank. An agreement with the Hale and Hazel Mitigation Banks and the Swift/Turner Conservation Bank to purchase these mitigation credits was signed by the Applicant on March 12, 2012.

On September 14, 2011, Monk & Associates principal biologist Mr. Geoff Monk met with Mr. Vincent Griego of the USFWS and Ms. Stephanie Buss of the CDFG in Sacramento at the USFWS' Endangered Species Office. At this meeting, Mr. Griego and Ms. Buss stated that the proposed development plan for the 0.98-acre parcel was acceptable provided the applicant purchased mitigation credits from an approved USFWS/CDFG compensation bank for impacts to California tiger salamander, rare pants, and wetlands. Mitigation credits were to be purchased commensurate with the requirements set forth in the Programmatic BO. After reviewing the survey results of CTS larval studies completed by M&A that were negative on this project site (i.e., no CTS were found breeding and there is not a likelihood that CTS would breed on this project site), USFWS and CDFG agreed with Mr. Monk that CTS salvage would *not likely* be required (but caveated this by stating that they could not weigh in with certainty regarding salvage until a formal permit application was filed). CTS and rare plant mitigation credits shall be purchased prior to breaking ground on the project site. Proof of purchase of the credits shall be provided to the Corps, USFWS, and CDFG.

This mitigation measure would reduce the project's impact to suitable CTS habitat to a less than significant level.

13.1 Impact 6. Impacts to Suitable Habitat for Special-Status Plants (Significant)

No special-status plant species were identified on the project site during the 2010 and 2011 focused surveys conducted in accordance with all required rare plant survey protocols. Regardless, the project site is designated by the USFWS' Santa Rosa Plain Conservation Strategy as having "Potential for presence of CTS and Listed Plants" (USFWS 2005b). On September 14, 2011, Monk & Associates principal biologist, Mr. Geoff Monk, met with Mr. Vincent Griego of the USFWS and Ms. Stephanie Buss of the CDFG in Sacramento at the USFWS' Endangered Species Office. At this meeting, Mr. Griego and Ms. Buss stated that the proposed development plan for the 0.98-acre parcel was acceptable provided the applicant purchased mitigation credits from an approved USFWS/CDFG compensation bank for impacts to California tiger salamander, rare plants, and wetlands. Mitigation credits were to be purchased commensurate with the requirements set forth in the Programmatic BO. Thus, in accordance with the *Programmatic Biological Opinion of U.S. Army Corps of Engineers Permitted Projects that May Affect California Tiger Salamander and Three Endangered Plant Species on the Santa Rosa Plain* (USFWS 1998), if surveys have been conducted following USFWS protocols and no listed plants are found, seasonal wetlands on the project site (located in the South Area of the Santa Rosa Plain Study Area) are nevertheless considered to be suitable habitat for listed plant species Sonoma sunshine (*Blennosperma bakeri*), Burke's goldfields (*Lasthenia burkei*), and Sebastopol meadowfoam (*Limnanthes vinculans*). Development of the project site without consideration for these federally and state listed plant species would be a significant adverse impact. This impact could be mitigated to a less than significant level pursuant to CEQA.

13.1 Mitigation Measure 6. Special Status Plants

Prior to groundbreaking, impacts to suitable habitat for Sonoma sunshine, Burke's goldfields and Sebastopol meadowfoam are required to be mitigated with 1:1 occupied or established habitat (any combination) and 0.5:1 of established habitat. The mitigation land is to be preserved and managed in perpetuity. The proposed project would result in impacts to 0.22-acre of seasonal wetland. Per the Programmatic Biological Opinion, it would be considered "suitable habitat" for listed vernal pool plant species. Thus, the applicant shall mitigate impacts to 0.22-acre of seasonal wetland/endangered plant habitat by purchasing 0.33-acre of credit from a USFWS-approved mitigation bank (1.5:1 ratio). An agreement with the Swift/Turner Conservation Bank to purchase 0.33-acre of Sebastopol meadowfoam mitigation credits was signed by the Applicant on March 12, 2012.

This mitigation measure would reduce the project's impact to special-status plants to a less than significant level.

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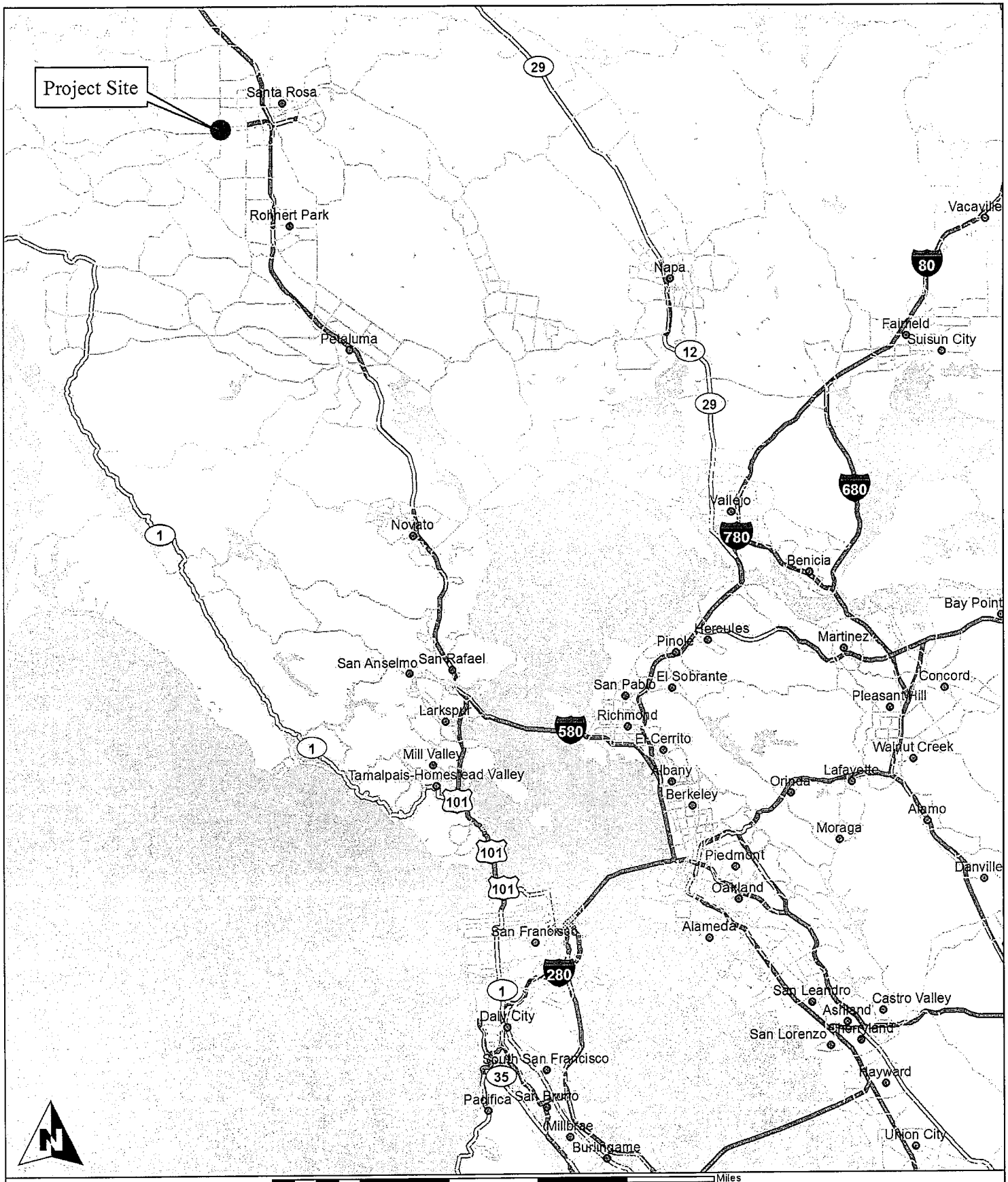

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Figure 1. Elm Tree Station
Project Site Regional Map
Santa Rosa, California

County: Sonoma
Map Preparation Date: April 20, 2012

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Figure 2. Elm Tree Station
Project Site Location Map
Santa Rosa, California

7.5-Minute Sebastopol quadrangle
Topography Source: http://gis.ca.gov
Map Preparation Date: April 20, 2012

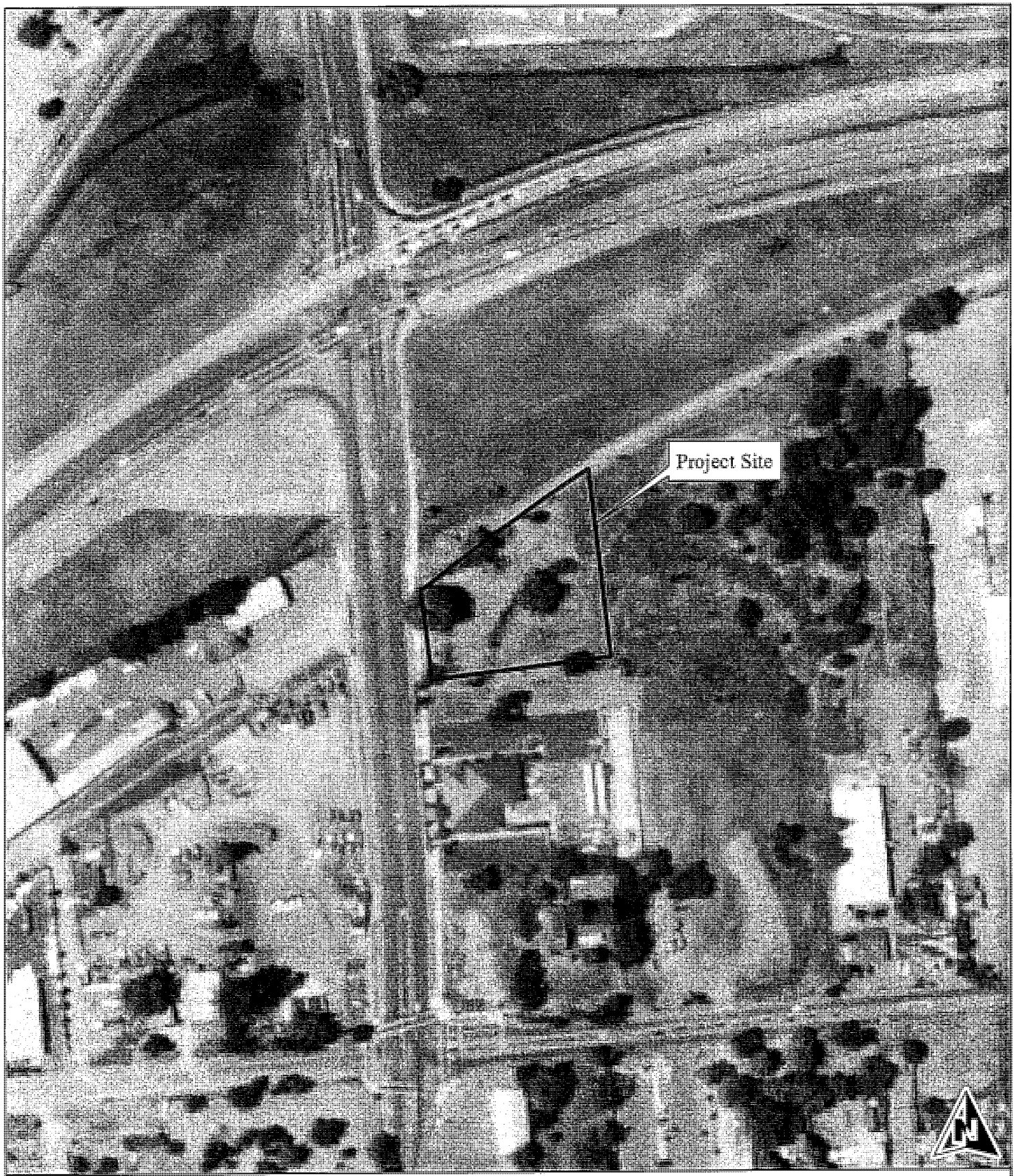

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Figure 3. Aerial Photograph of the
Elm Tree Station Project
Santa Rosa, California

Map Preparation Date: April 20, 2012
Aerial Photograph Source: http://gis.ca.gov

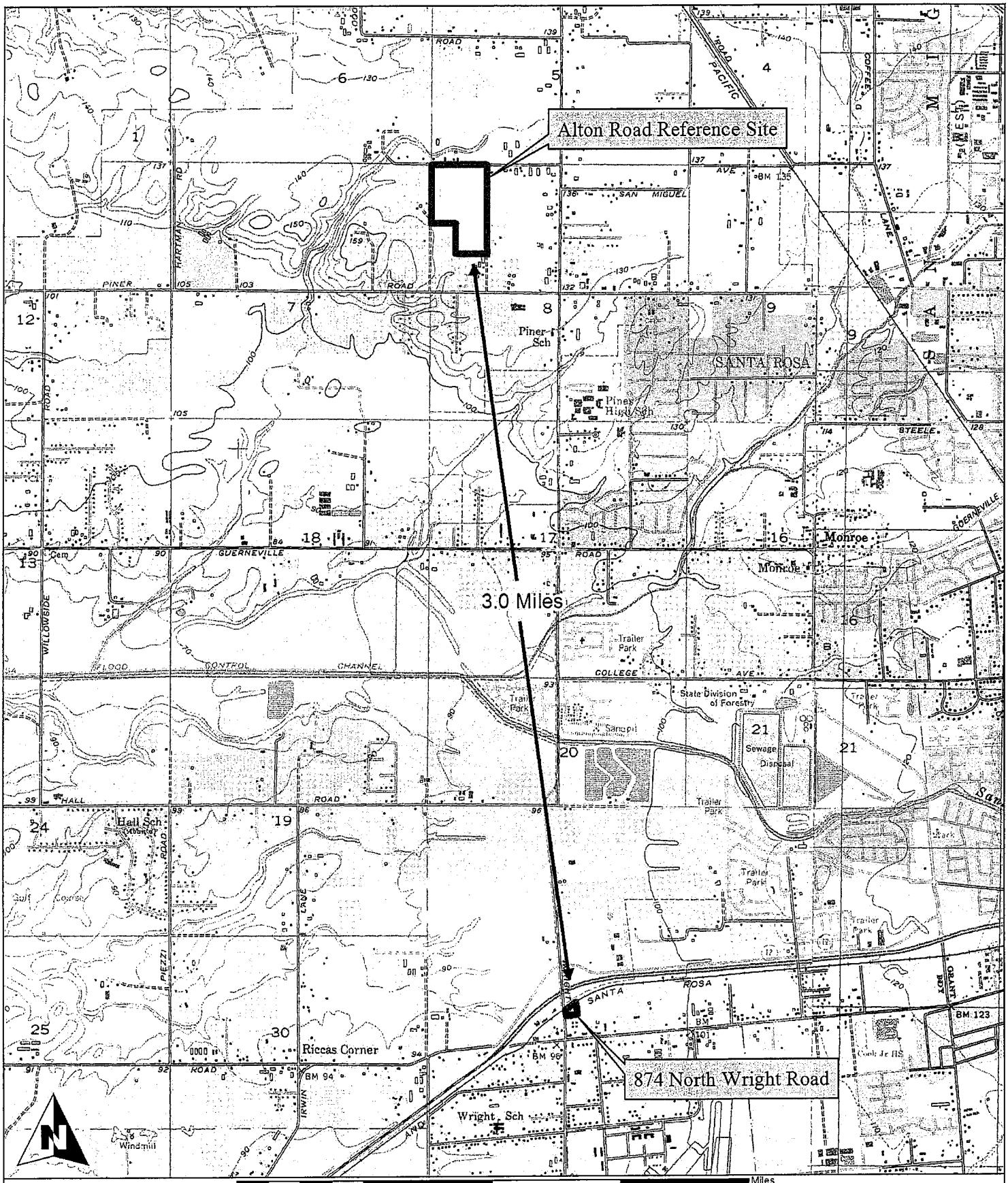

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Figure 4. Proximity of Reference Site to the
Elm Tree Station Project Site
Santa Rosa, California

7.5-Minute Sebastopol quadrangle
Topography Source: http://gis.ca.gov
Map Preparation Date: April 20, 2012

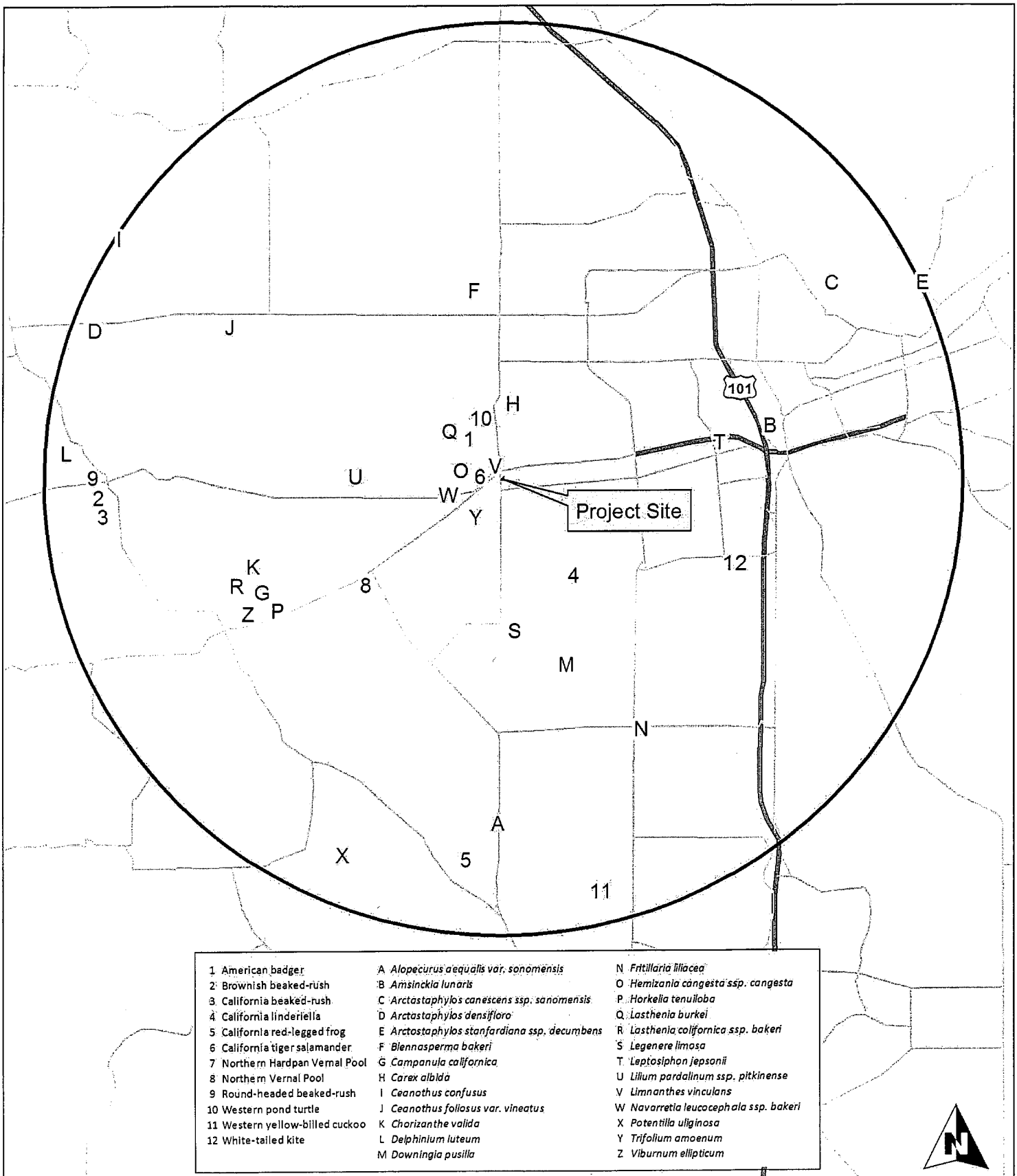

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Figure 5. Closest Known Special-Status Species within 5 Miles of the Elm Tree Station Project Site

Map Preparation Date: April 20, 2012
5-Mile Radius
Source: CDFG
California Natural Diversity Data Base, 2012

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Figure 6. Closest California Tiger Salamander (CTS) Occurrences within 2 Miles of the Elm Tree Station Project Site Santa Rosa, California

Map Preparation Date: April 20, 2012
Source: CDFG, California Natural Diversity Data Base, 2012

Table 1

Plants Species Observed on the Elm Tree Station Project Site

Gymnosperms	
Pinaceae	
Pinus radiata	Monterey pine
Angiosperms - Dicots	
Apocynaceae	
Asclepias fascicularis	Narrow-leaf milkweed
Asteraceae	
Baccharis pilularis subsp. pilularis	Baccharis
**Carduus pycnocephalus subsp. pycnocephalus*	Italian thistle
**Cichorium intybus*	Chicory
**Cirsium vulgare*	Bull thistle
**Helminthotheca echioides*	Bristly ox-tongue
**Hypochaeris radicata*	Rough cat's-ear
**Lactuca saligna*	Willow lettuce
**Lactuca serriola*	Prickly lettuce
**Senecio vulgaris*	Common groundsel
**Silybum marianum*	Milk thistle
**Sonchus asper subsp. asper*	Prickly sow-thistle
**Taraxacum officinale*	Common dandelion
**Tragopogon porrifolius*	Common salsify
Xanthium strumarium	Cocklebur
Brassicaceae	
**Brassica nigra*	Black mustard
**Hirschfeldia incana*	Short-podded mustard
**Raphanus sativus*	Wild radish
Celastraceae	
**Maytenus boaria*	Mayten tree
Convolvulaceae	
**Convolvulus arvensis*	Bindweed
Dipsacaceae	
**Dipsacus fullonum*	Wild teasel
Fabaceae	
**Lotus corniculatus*	Birdfoot trefoil
**Medicago polymorpha*	California burclover
**Trifolium repens*	White clover
**Vicia sativa*	Common vetch
Fagaceae	
Quercus lobata	Valley oak
Geraniaceae	
**Erodium moschatum*	White-stem filaree
**Geranium dissectum*	Cut-leaf geranium

* Indicates a non-native species

Table 1

Plants Species Observed on the Elm Tree Station Project Site

Lamiaceae	
**Mentha pulegium*	Pennyroyal
Stachys rigida var. rigida	Rigid hedge-nettle
Lythraceae	
**Lythrum hyssopifolia*	Hyssop loosestrife
Oleaceae	
Fraxinus latifolia	Oregon ash
Polygonaceae	
**Rumex conglomeratus*	Green dock
**Rumex crispus*	Curly dock
**Rumex pulcher*	Fiddle dock
Rosaceae	
Prunus sp.	Prunus
**Rosa sp.*	Wild rose
**Rubus armeniacus*	Himalayan blackberry
Rubiaceae	
Galium aparine	Goose grass
Salicaceae	
**Populus alba*	White poplar
Ulmaceae	
**Ulmus parvifolia*	Chinese elm
**Ulmus pumila*	Dwarf Asiatic elm
Vitaceae	
Vitis californica	California wild grape
Angiosperms -Monocots	
Alismataceae	
Alisma triviale	Water plantain
Alliaceae	
**Allium triquetrum*	Onion
Amaryllidaceae	
**Agapanthus orientalis*	Lilly-of-the-Nile
**Narcissus sp.*	Narcissus
Araceae	
**Zantedeschia aethiopica*	Calla-lily
Asphodelaceae	
**Kniphofia uvaria*	Red-hot poker
Cyperaceae	
Carex densa	Dense sedge
Cyperus eragrostis	Tall flatsedge
Eleocharis macrostachya	Creeping spikerush

* Indicates a non-native species

Table 1

Plants Species Observed on the Elm Tree Station Project Site

Iridaceae	
Iris sp.	Iris
Juncaceae	
Juncus mexicanus	Mexican rush
Poaceae	
**Arundo donax*	Giant reed
**Avena barbata*	Slender wild oat
**Bromus catharticus var. elatus*	Chilean brome
**Bromus diandrus*	Ripgut grass
**Bromus hordeaceus*	Soft chess
**Bromus sterilis*	Poverty brome
Elymus glaucus	Blue wildrye
**Festuca bromoides*	Brome fescue
**Festuca myuros*	Rattail sixweeks grass
**Festuca perennis*	Italian ryegrass
Hordeum brachyantherum	Meadow barley
**Hordeum murinum subsp. leporinum*	Hare barley
**Phalaris aquatica*	Harding grass
Pleuropogon californicus var. californicus	Annual semaphore grass
**Poa trivialis*	Rough bluegrass
**Stipa miliacea var. miliacea*	Smilo grass

* Indicates a non-native species

Table 2

Wildlife Species Observed on the Elm Tree Station Project Site

Amphibians	
Sierran tree frog	*Pseudacris sierra*
Reptiles	
Western fence lizard	*Sceloporus occidentalis*
Birds	
Turkey vulture	*Cathartes aura*
Mallard	*Anas platyrhynchos*
Red-shouldered hawk	*Buteo lineatus*
Killdeer	*Charadrius vociferus*
Anna's hummingbird	*Calypte anna*
Nuttall's woodpecker	*Picoides nuttallii*
Black phoebe	*Sayornis nigricans*
Western scrub jay	*Aphelocoma californica*
American crow	*Corvus brachyrhynchos*
Bushtit	*Psaltriparus minimus*
American robin	*Turdus migratorius*
Northern mockingbird	*Mimus polyglottos*
Yellow-rumped warbler	*Dendroica coronata*
Spotted towhee	*Pipilo maculatus*
California towhee	*Pipilo crissalis*
Song sparrow	*Melospiza melodia*
House finch	*Carpodacus mexicanus*
Lesser goldfinch	*Carduelis psaltria*
Mammals	
California ground squirrel	*Spermophilus beecheyi*
Botta's pocket gopher	*Thomomys bottae*
Columbian black-tailed deer	*Odocoileus hemionus columbianus*
California meadow vole	*Microtus californicus*

Table 3

Special-Status Plant Species Known to Occur within 5 Miles of the Elm Tree Station Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Adoxaceae					
Viburnum ellipticum Western viburnum	Fed: - State: - CNPS: List 2.3	May-July	Chaparral; cismontane woodland; lower montane coniferous forest.	Closest known occurrence to the project site is 2.7 miles to the west (CNDDB Occurrence No. 22).	None. This species was not observed during two years of appropriately timed surveys.
Asteraceae					
Balsamorhiza macrolepis Big-scale balsam-root	Fed: - State: - CNPS: List 1B.2	March-June	Cismontane woodland; valley and foothill grassland; [sometimes serpentinite].	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Blennosperma bakeri Sonoma sunshine	Fed: FE State: CE CNPS: List 1B.1	February-April	Valley and foothill grassland (mesic); vernal pools.	Closest known occurrence to the project site is 2.0 miles to the north (CNDDB Occurrence No. 9)	None. This species was not observed during two years of appropriately timed surveys.
Centromadia parryi parryi Pappose tarplant	Fed: - State: - CNPS: List 1B.2	May-November	Coastal prairie; meadows and seeps; marshes and swamps; vernally wet grassland (sometimes alkaline).	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Cirsium andrewsii Franciscan thistle	Fed: - State: - CNPS: List 1B.2	June-July	Broadleafed upland forest; coastal bluff scrub; [sometimes serpentinite].	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Erigeron greenei Narrow-leaved daisy	Fed: - State: - CNPS: List 1B.2	May-September	Chaparral (serpentinite).	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.

Table 3

Special-Status Plant Species Known to Occur within 5 Miles of the Elm Tree Station Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Erigeron serpentinus Serpentine daisy	Fed: - State: - CNPS: List 1B.3	May-August	Chaparral (serpentinite).	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Hemizonia congesta congesta Pale yellow hayfield tarplant	Fed: - State: - CNPS: List 1B.2	April-November	Valley and foothill grassland. 20 to 560 meters.	Closest known occurrence to the project site is 0.1 miles to the west (CNDDB Occurrence No. 49)	None. This species was not observed during two years of appropriately timed surveys.
Hesperevax sparsiflora brevifolia Short-leaved evax	Fed: - State: - CNPS: List 1B.2	April-June	Coastal bluff scrub; coastal dunes.	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Lasthenia burkei Burke's goldfields	Fed: FE State: CE CNPS: List 1B.1	April-June	Meadows (mesic); vernal pools.	Closest known occurrence to the project site is 0.5 miles to the northwest (CNDDB Occurrence No. 28)	None. This species was not observed during two years of appropriately timed surveys.
Lasthenia conjugens Contra Costa goldfields	Fed: FE State: - CNPS: List 1B.1	March-June	Valley and foothill grassland (mesic); vernal pools.	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Lasthenia macrantha bakeri Baker's goldfields	Fed: - State: - CNPS: List 1B.2	April-October	Closed-cone coniferous forest, coastal scrub (meeadows and seeps; marshes and swamps).	Closest known occurrence to the project site is 2.7 miles to the west (CNDDB Occurrence No. 3)	None. This species was not observed during two years of appropriately timed surveys.

Table 3

Special-Status Plant Species Known to Occur within 5 Miles of the Elm Tree Station Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Microseris paludosa Marsh silverpuffs	Fed: - State: - CNPS: List 1B.2	April-June	Closed-cone coniferous forest; cismontane woodland; coastal scrub; valley and foothill grassland. 5-300 m.	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Campanulaceae					
Campanula californica Swamp bellflower	Fed: - State: - CNPS: List 1B.2	June-September	Bogs & fens; closed-cone coniferous forest; coastal prairie; meadows; marshes & swamps (freswater); north coast coniferous forest.	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Downingia pusilla Dwarf downingia	Fed: - State: - CNPS: List 2.2	March-May	Valley and foothill grassland (mesic); vernal pools.	Closest known occurrenct to the project site is 2.2 miles to the south (CNDDB Occurrence No. 86)	None. This species was not observed during two years of appropriately timed surveys.
Legenere limosa Legenere	Fed: - State: - CNPS: List 1B.1	April-June	Vernal pools.	Closest known occurrence to the project site is 1.6 miles to the south (CNDDB Occurrence No. 39)	None. This species was not observed during two years of appropriately timed surveys.
Convolvulaceae					
Cuscuta obtusiflora glandulosa Dodder	Fed: State: CNPS: List 2.2	July-October		Closest known occurrence to the project site is 3.0 miles to the west (CNDDB Occurrence No. 4).	None. No suitable habitat on the project site. No species in the genus Cuscuta observed during field surveys.
Cyperaceae					
Carex albida White sedge	Fed: FE State: CE CNPS: List 1B.1	May-July	Bogs and fens; marshes and swamps (freshwater).	Closest known occurrence to the project site is 0.7 miles to the northwest (CNDDB Occurrence No. 2)	None. This species was not observed during two years of appropriately timed surveys.

Table 3

Special-Status Plant Species Known to Occur within 5 Miles of the Elm Tree Station Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Carex comosa Bristly sedge	Fed: - State: - CNPS: List 2.1	May-September	Marshes and swamps.	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Rhynchospora alba White beaked-rush	Fed: - State: - CNPS: List 2.2	July-August	Bogs and fens; marshes and swamps (freshwater).	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Rhynchospora californica California beaked-rush	Fed: - State: - CNPS: List 1B.1	May-July	Lower montane conifersous forest; meadows (seeps); marshes and swamps (freshwater).	Closest known occurrence to the project site is 4.3 miles to the west (CNDDB Occurrence No. 3)	None. This species was not observed during two years of appropriately timed surveys.
Rhynchospora capitellata Brownish beaked-rush	Fed: - State: - CNPS: List 2.2	July-August	Lower montane coniferous forest, meadows and seeps, marshes and swamps, upper montane coniferous forest / mesic; elevation range 455 - 2000 meters (approx. 1,493 - 6,652 feet)	Closest known occurrence to the project site is 4.3 miles to the west (CNDDB Occurrence No. 2)	None. This species was not observed during two years of appropriately timed surveys.
Rhynchospora globularis Roundheaded beaked-rush	Fed: - State: - CNPS: List 2.1	July-August	Marshes and swamps (freshwater).	Closest known occurrence to the project site is 4.3 miles to the west (CNDDB Occurrence No. 2)	None. This species was not observed during two years of appropriately timed surveys.
Ericaceae					
Arctostaphylos bakeri bakeri Baker's manzanita	Fed: - State: CR CNPS: List 1B.1	February-April	Broad-leaved upland forest; chaparral; [often serpentinite].	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.

Table 3

Special-Status Plant Species Known to Occur within 5 Miles of the Elm Tree Station Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Arctostaphylos bakeri sublaevis The Cedars manzanita	Fed: - State: CR CNPS: List 1B.2	April-May	closed-cone coniferous forest; chaparral; [serpentinite seeps].	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Arctostaphylos canescens sonomensis Sonoma manzanita	Fed: - State: - CNPS: List 1B.2	January-March	Chaparral; lower montane coniferous forest.	Closest known occurrence to the project site is 3.8 miles to the northeast (CNDDB Occurrence No. 20)	None. This species was not observed during two years of appropriately timed surveys.
Arctostaphylos densiflora Vine Hill manzanita	Fed: - State: CE CNPS: List 1B.1	February-March	Chaparral (acid marine sand).	Closest known occurrence to the project site is 4.1 miles to the northwest (CNDDB Occurrence No. 4)	None. This species was not observed during two years of appropriately timed surveys.
Arctostaphylos stanfordiana decumbens Rincon manzanita	Fed: - State: - CNPS: List 1B.1	February-April	Chaparral (rhyolitic).	Closest known occurrenc to the project site is 4.8 miles to the northeast (CNDDB Occurrence No. 2)	None. This species was not observed during two years of appropriately timed surveys.
Fabaceae					
Amorpha californica napensis Napa false indigo	Fed: - State: - CNPS: List 1B.2	April-July	Broadleaved upland forest (openings); chaparral, cismontane woodland. 150-2000 m.	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Astragalus claranus Clara Hunt's milkvetch	Fed: FE State: CT CNPS: List 1B.1	March-May	Cismontane woodland; valley and foothill grassland; [serpentinite, volcanic clay].	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.

Table 3

Special-Status Plant Species Known to Occur within 5 Miles of the Elm Tree Station Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Trifolium amoenum Showy Indian clover	Fed: FE State: - CNPS: List 1B.1	April-June	Valley and foothill grassland (sometimes serpentinite)	Closest known occurrence to the project site is a 1945 record located 0.4 miles to the southwest (CNDDB Occurrence No. 20)	None. This species was not observed during two years of appropriately timed surveys.
Trifolium hydrophilum Saline clover	Fed: - State: - CNPS: List 1B.2	April-June	Marshes and swamps; valley and foothill grassland (mesic, alkaline); vernal pools. 0-300 m.	Closest known occurrence to the project site is 0.4 miles to the southwest (CNDDB Occurrence No. 16). Habitat at this location is now extirpated.	None. This species was not observed during two years of appropriately timed surveys.
Liliaceae					
Fritillaria liliacea Fragrant fritillary	Fed: - State: - CNPS: List 1B.2	February-April	Coastal prairie; coastal scrub; valley and foothill grassland; [often serpentinite].	Closest known occurrence to the project site is 3.1 miles to the southeast (CNDDB Occurrence No. 49)	None. This species was not observed during two years of appropriately timed surveys.
Lilium pardalinum pitkinense Pitkin Marsh lily	Fed: FE State: CE CNPS: List 1B.1	June-July	Cismontane woodland (mesic); marshes and swamps (freshwater).	Closest known occurrence undisclosed (CNDDB Occurrence No. 3)	None. This species was not observed during two years of appropriately timed surveys.
Limnanthaceae					
Limnanthes vinculans Sebastopol meadowfoam	Fed: FE State: CE CNPS: List 1B.1	April-May	Meadows (mesic); vernal pools.	Closest known occurrence to the project site is 0.1 miles to the northwest (CNDDB Occurrence No. 22)	None. This species was not observed during two years of appropriately timed surveys.
Onagraceae					
Clarkia imbricata Vine Hill clarkia	Fed: FE State: CE CNPS: List 1B.1	June-July	Chaparral; meadows; cismontane woodland.	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.

Table 3

Special-Status Plant Species Known to Occur within 5 Miles of the Elm Tree Station Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Orobanchaceae					
Castilleja uliginosa Pitkin Marsh paintbrush	Fed: - State: CE CNPS: List 1A	June-July	Marshes and swamps (freshwater).	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Chloropyron maritimum palustre Point Reyes salty bird's-beak	Fed: - State: - CNPS: List 1B.2	June-October	Marshes and swamsp (coastal salt).	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Cordylanthus tenuis capillaris Pennell's bird's-beak	Fed: FE State: CR CNPS: List 1B.2	June-July	Closed-cone coniferous forest; chaparral; [serpentinite].	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Poaceae					
Agrostis blasdalei Blasdale's bent grass	Fed: - State: - CNPS: List 1B.2	May-July	Coastal bluff scrub; coastal dunes; coastal prairie.	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Alopecurus aequalis sonomensis Sonoma alopecurus	Fed: FE State: - CNPS: List 1B.1	May-July	Marshes & swamps (freshwater); riparian scrub.	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Calamagrostis stricta inexpansa Narrow-spike reed grass	Fed: - State: - CNPS: List 2.1	May-July	Coastal scrub (mesic). Swamps and marshes (freshwater).	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.

Table 3

Special-Status Plant Species Known to Occur within 5 Miles of the Elm Tree Station Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Polemoniaceae					
Gilia capitata chamissonis Blue coast gilia	Fed: - State: - CNPS: List 1B.1	April-July	Coastal dunes; coastal scrub.	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Gilia capitata tomentosa Woolly-headed gilia	Fed: - State: - CNPS: List 1B.1	May-July	Coastal bluff scrub (rocky, outcrops). 15-155 m.	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Leptosiphon jepsonii Jepson's leptosiphon	Fed: - State: - CNPS: List 1B.2	March-May	Chaparral; cismontane woodland (usually volcanic).	Closest known occurrence to the project site is 2.0 miles to the west (CNDDB Occurrence No. 3)	None. This species was not observed during two years of appropriately timed surveys.
Navarretia leucocephala bakeri Baker's navarretia	Fed: - State: - CNPS: List 1B.1	May-July	Cismontane woodland; lower montane coniferous forest; meadows (mesic); valley and foothill grassland; vernal pools.	Closest known occurrence to the project site is 0.1 miles to the north (CNDDB Occurrence No. 21)	None. This species was not observed during two years of appropriately timed surveys.
Polygonaceae					
Chorizanthe cuspidata cuspidata San Francisco Bay spineflower	Fed: - State: - CNPS: List 1B	April-July	Coastal bluff scrub; coastal dunes; coastal prairie; coastal scrub [sandy]	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Chorizanthe cuspidata villosa Woolly-headed spineflower	Fed: - State: - CNPS: List 1B.2	May-August	Coastal dunes; coastal prairie; coastal scrub; [sandy].	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.

Table 3

Special-Status Plant Species Known to Occur within 5 Miles of the Elm Tree Station Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Chorizanthe valida Sonoma spineflower	Fed: FE State: CE CNPS: List 1B.1	June-August	Coastal prairie (sandy).	Closest known occurrence to the project site is 2.7 miles to the southwest (CNDDB Occurrence No. 4)	None. This species was not observed during two years of appropriately timed surveys.
Ranunculaceae					
Delphinium bakeri Baker's larkspur	Fed: FE State: CE CNPS: List 1B.1	March-May	Coastal scrub.	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Delphinium luteum Golden larkspur	Fed: FE State: CR CNPS: List 1B.1	March-May	Chaparral; coastal prairie; coastal scrub.	Closest known occurrence to the project site is 4.2 miles to the west (CNDDB Occurrence No. 3).	None. This species was not observed during two years of appropriately timed surveys.
Rhamnaceae					
Ceanothus confusus Rincon Ridge ceanothus	Fed: - State: - CNPS: List 1B.1	February-April	Closed-cone coniferous forest; chaparral; cismontane woodland; [volcanic or serpentinite].	Closest known occurrence to the project site is 4.9 miles to the northwest (CNDDB Occurrence No. 9)	None. This species was not observed during two years of appropriately timed surveys.
Ceanothus divergens Calistoga ceanothus	Fed: - State: - CNPS: List 1B.2	March-April	Chaparral (serpentinite or volcanic).	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Ceanothus foliosus vineatus Vine Hill ceanothus	Fed: - State: - CNPS: List 1B.1	March-May	Chaparral.	Closest known occurrence to the project site is 3.3 miles to the northwest (CNDDB Occurrence No. 3)	None. This species was not observed during two years of appropriately timed surveys.

Table 3

Special-Status Plant Species Known to Occur within 5 Miles of the Elm Tree Station Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Ceanothus purpureus Holly-leaf ceanothus	Fed: - State: - CNPS: List 1B.2	February-April	Chaparral (volcanic).	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Ceanothus sonomensis Sonoma ceanothus	Fed: - State: - CNPS: List 1B.2	February-April	Chaparral (sandy, serpentinite, or volcanic).	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Rosaceae					
Horkelia marinensis Point Reyes horkelia	Fed: - State: - CNPS: List 1B.2	May-September	Coastal dunes; coastal prairie; coastal scrub.	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.
Horkelia tenuiloba Thin-lobed horkelia	Fed: - State: - CNPS: List 1B.2	May-July	Chaparral (mesic openings).	Closest known occurrence to the project site is 2.7 miles to the southeast (CNDDB Occurrence No. 49)	None. This species was not observed during two years of appropriately timed surveys.
Potentilla hickmanii Hickman's cinquefoil	Fed: FE State: CE CNPS: List 1B	April-August	Coastal bluff scrub; closed-cone coniferous forest; meadows (vernally mesic); marshes and swamps (freshwater).	Closest known occurrence to the project site is 4.4 miles to the southwest (CNDDB Occurrence No. 5)	None. This species was not observed during two years of appropriately timed surveys.
Themidaceae					
Brodiaea leptandra Narrow-flowered California brodiaea	Fed: - State: - CNPS: List 1B.2	May-July	Broadleaved upland forest; chaparral; lower montane coniferous forest. 110-915 m.	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.

Table 3

Special-Status Plant Species Known to Occur within 5 Miles of the Elm Tree Station Project Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Area Locations	Probability on Project Site
Thymelaeaceae					
Dirca occidentalis Western leatherwood	Fed: - State: - CNPS: List 1B.2	January-April	Chaparral; riparian, broadleaf, and coniferous woodlands and forests; [mesic locations].	On CNPS Sebastopol quad search.	None. This species was not observed during two years of appropriately timed surveys.

***Status**

Federal:
- FE - Federal Endangered
- FT - Federal Threatened
- FPE - Federal Proposed Endangered
- FPT - Federal Proposed Threatened
- FC - Federal Candidate

State:
- CE - California Endangered
- CT - California Threatened
- CR - California Rare
- CC - California Candidate
- CSC - California Species of Special Concern

CNPS:
- List 1A - Presumed extinct in California
- List 1B - Plants rare, threatened, or endangered in California and elsewhere
- List 1B.1 - Seriously endangered in California (over 80% occurrences threatened/ high degree and immediacy of threat)
- List 1B.2 - Fairly endangered in California (20-80% occurrences threatened)
- List 1B.3 - Not very endangered in California (<20% of occurrences threatened or no current threats known)

CNPS Continued:
- List 2 - Plants rare, threatened, or endangered in California, but more common elsewhere
- List 2.1 - Seriously endangered in California, but more common elsewhere
- List 2.2 - Fairly endangered in California, but more common elsewhere
- List 2.3 - Not very endangered in California, but more common elsewhere
- List 3 - Plants about which we need more information (Review List)
- List 3.1 - Plants about which we need more information (Review List) Seriously endangered in California
- List 3.2 - Plants about which we need more information (Review List) Fairly endangered in California
- List 4 - Plants of limited distribution - a watch list

Table 4

Special-Status Wildlife Species Known to Occur within 5 Miles of the Elm Tree Station Project Site

Species	*Status	Habitat	Closest Locations	Probability on Project Site
Amphibians				
California tiger salamander *Ambystoma californiense*	Fed: FT State: CT Other:	Found in grassland habitats of the valleys and foothills. Requires burrows for aestivation and standing water until late spring (May) for larvae to metamorphose.	Closest known location is 0.15 mile to the northwest of the project site, on the other side of Highway 12 which acts as a geographic barrier (CNDDB Occurrence No. 344).	None. Absence confirmed by negative surveys. See text for detail.
California red-legged frog *Rana draytonii*	Fed: FT State: CSC Other:	Occurs in lowlands and foothills in deeper pools and streams, usually with emergent wetland vegetation. Requires 11-20 weeks of permanent water for larval development.	Closest known location is 3.5 miles to the south of project site (CNDDB Occurrence No. 742).	None. No suitable habitat for this species occurs on the project site.
Reptiles				
Western pond turtle *Emys marmorata*	Fed: -- State: CSC Other:	Inhabits ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Needs suitable basking sites and upland habitat for egg laying. Occurs in the Central Valley and Contra Costa County.	Closest known location is 0.7 mile to the north of the project site (CNDDB Occurrence No. 680).	None. No suitable habitat for this species occurs on the project site.
Birds				
White-tailed kite *Elanus leucurus*	Fed: State: Other: *	Found in lower foothills and valley margins with scattered oaks and along river bottomlands or marshes adjacent to oak woodlands. Nests in trees with dense tops.	Closest known location is 2.6 miles to the east of the project site (CNDDB Occurrence No. 77).	None. Preconstruction surveys will be conducted. See text for detail.
Red-shouldered hawk *Buteo lineatus*	Fed: - State: - Other: *	Found in a wide variety of habitats. Nest in oaks, eucalyptus, cypress trees, riparian woodland. Forages over grasslands, agricultural fields, woodlands.	Common in California	None. Preconstruction surveys will be conducted. See text for detail.

Table 4

Special-Status Wildlife Species Known to Occur within 5 Miles of the Elm Tree Station Project Site

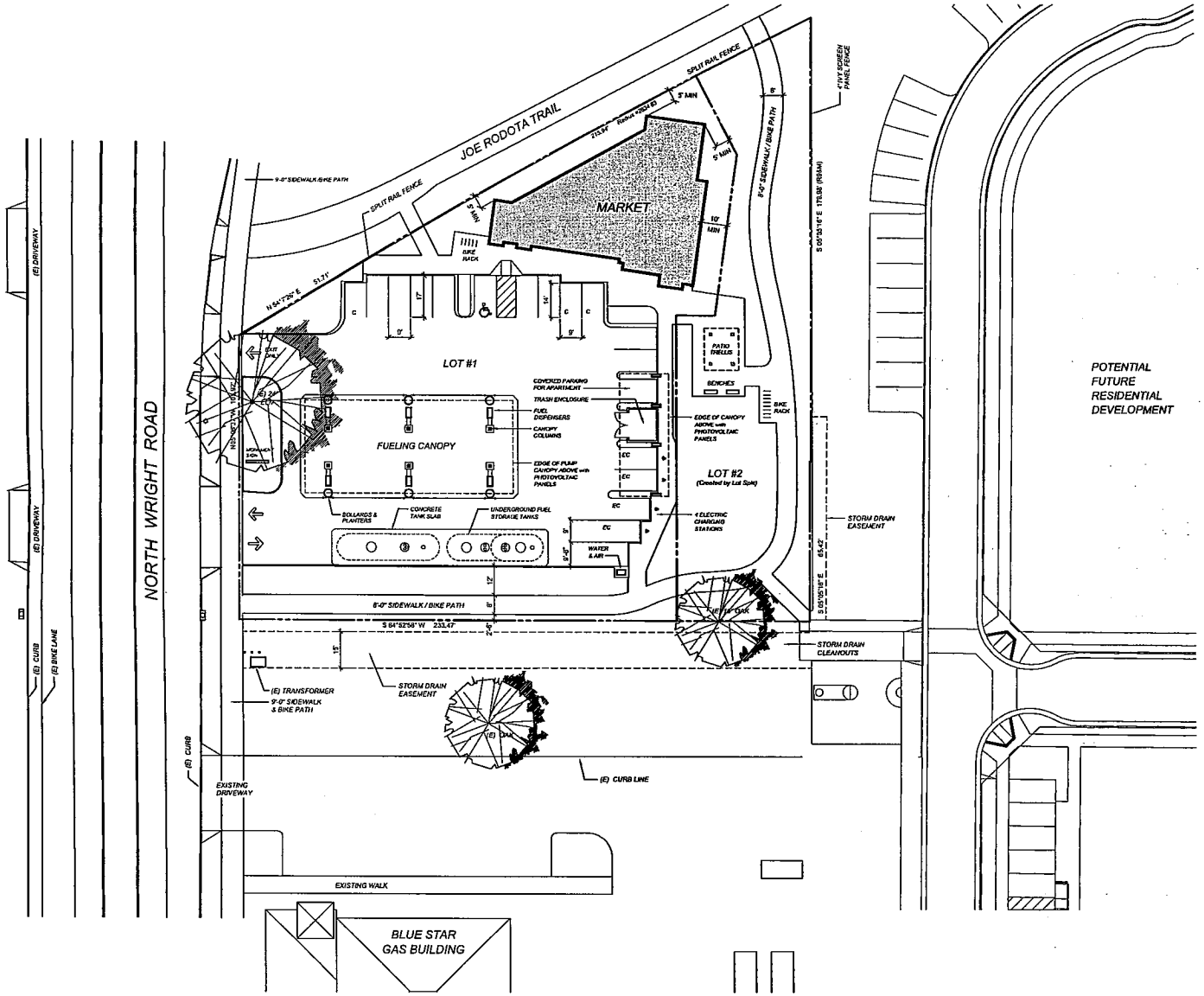
Species	*Status	Habitat	Closest Locations	Probability on Project Site
Red-tailed hawk *Buteo jamaicensis*	Fed: - State: - Other: *	Found in a wide variety of habitats. Nests in oaks, eucalyptus, cypress trees, among others. Forages over grasslands, agricultural fields, woodlands, marshes.	Common in California	None. Preconstruction surveys will be conducted. See text for detail.
Yellow-billed cuckoo *Coccyzus americanus*	Fed: - State: CE Other: *	Inhabits riparian forests along the broad, lower floodplains of larger rivers. Nests in thickets of willows and cottonwoods with an understory of blackberry, nettle, or wild grape.	Closest known location is 4.3 miles to the south of the project site (CNDDB Occurrence No. 97).	None. No suitable habitat for this species occurs on the project site.
Mammals				
American badger *Taxidea taxus*	Fed: - State: CSC Other:	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Need sufficient food, friable soils & open, uncultivated ground. Prey on burrowing rodents. Dig burrows.	Closest known location is 0.5 mile to the northwest of the project site (CNDDB Occurrence No. 28).	None. No suitable habitat for this species occurs on the project site.

***Status**

Federal:
FE - Federal Endangered
FT - Federal Threatened
FPE - Federal Proposed Endangered
FPT - Federal Proposed Threatened
FC - Federal Candidate
FPD - Federally Proposed for delisting

State:
CE - California Endangered
CT - California Threatened
CR - California Rare
CC - California Candidate
CSC - California Species of Special Concern
WL - Watch List. Not protected persuant to CEQA

*Other:
Most birds have protection under the Migratory Bird Treaty Act. Raptors and their nests are protected by provisions of the California Fish and Game Code. A few species, such as the monarch butterfly and "California Fully Protected Animals," may be protected by policies of the California Department of Fish and Game.



PROJECT DATA

ADDRESS:	874 NORTH WRIGHT ROAD
APN:	035-063-001
ZONING:	PD-0435
LOT SIZE:	
LOT #1:	Approx. 0.73 ACRES
LOT #2:	Approx. 0.25 ACRES
MARKET:	3,558 S.F.
APARTMENT:	806 S.F.
BUILDING COVERAGE:	24.7%

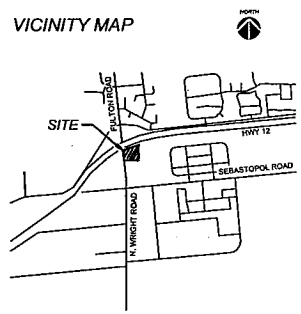
(Building, Gas Pump Canopy, Trash Encl/Carport Canopy)

PARKING REQUIRED:

MARKET (Retail at 1:250 S.F.)	14.0
1-BEDROOM APARTMENT	1.5
	15.5

PARKING PROVIDED: 18

VICINITY MAP



ELM TREE STATION

RETAIL MARKET and FUEL FACILITY

874 N. Wright Road Santa Rosa, California

DEVELOPMENT PLAN

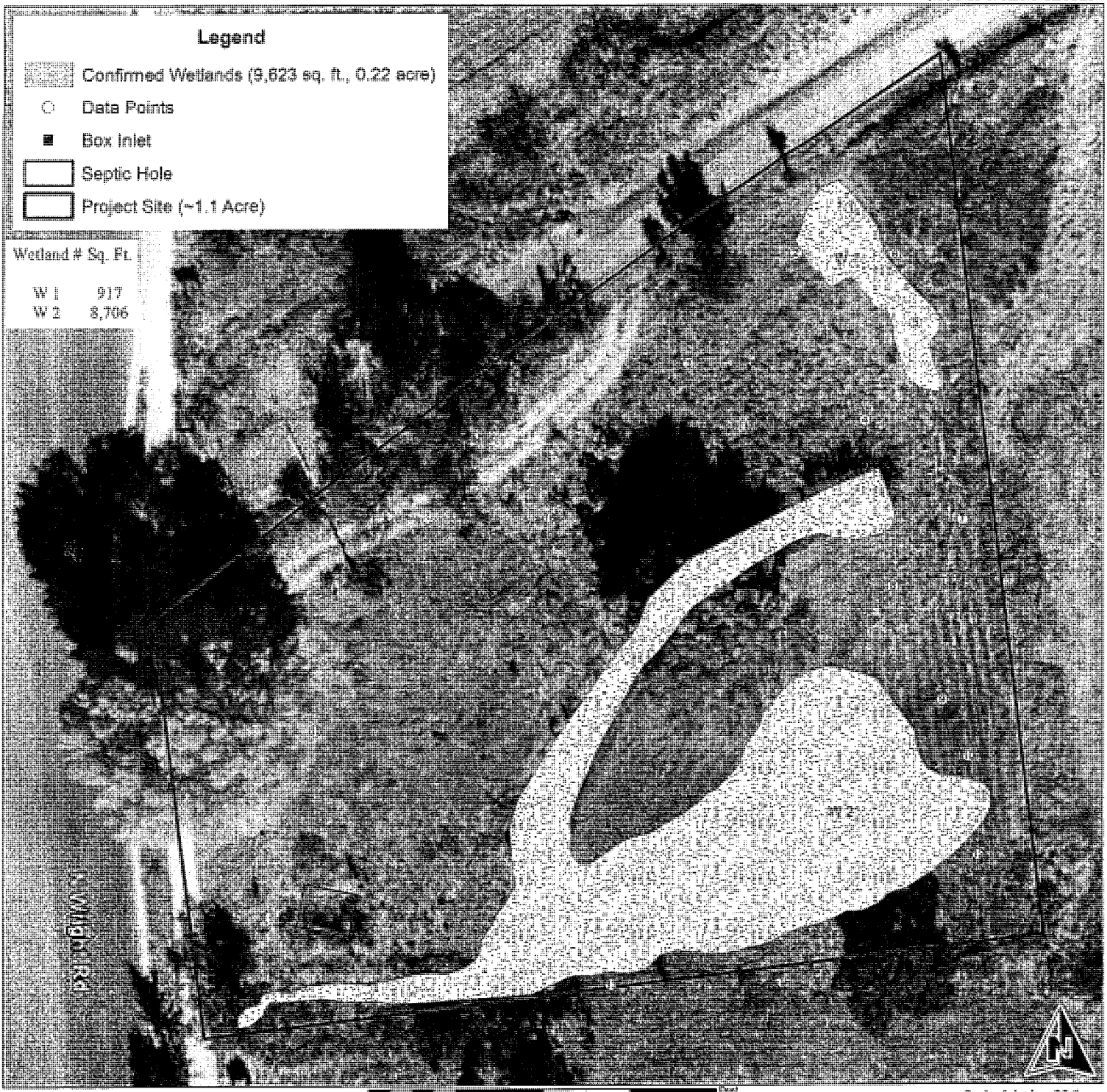
SCALE: 1" = 20'-0"

0' 10' 20' 40'

NORTH

TIERNEY / FIGUEIREDO
817 RUSSELL AVE. SUITE H, SANTA ROSA, CA 95403
(707) 576-1557 (707) 576-1555 FAX TFA@SONIC.NET
ARCHITECTS AIA

09/23/12
#0338



Monk & Associates
Environmental Consultants
1136 Saranap Avenue, Suite Q
Walnut Creek, California 94595
(925) 947-4867

Sheet 1. Confirmed Wetland Delineation
874 North Wright Road Project Site
Santa Rosa, California

Scale: 1 inch = 25 feet
Corps Confimation Date: September 22, 2010
Confirmed by: Sahryc Cohen
Map Revision Date: February 2, 2011
Aerial Photograph Source: Google Earth

TREE REMOVAL MITIGATION

NO.	REMOVAL STATUS	TYPE	PROTECTED TREE	STATUS (SPECIES OR SIZE)	TRUNK D.B.H. IN INCHES	ARBOREAL VALUE (# OF #15 SIZE REPLACEMENT TREES)
1	To remain	Quercus lobata	Y	HERITAGE	17.5	0
2	Remove	Ulmus parvifolia	Y	MITIGATE	11,10.5,13,12.5,11	20
3	To remain	Ulmus parvifolia	Y	PROTECT	21.5, 24	0
4	Remove	Quercus lobata	Y	MITIGATE	4, 3.5 ,5, 5, 6, 4.5	10
5	Remove	Populus alba	Y	EXEMPT	6	0
6	Remove	Fraxinus latifolia	Y	MITIGATE	8.5	4
7	Remove	Populus alba	N	EXEMPT	32	0
8	Remove	Populus alba	Y	DEAD	35	0
9	Remove	Maytenus boaria	Y	MITIGATE	7.5	4
10	Remove	Pinus radiata	Y	EXEMPT	11"	0

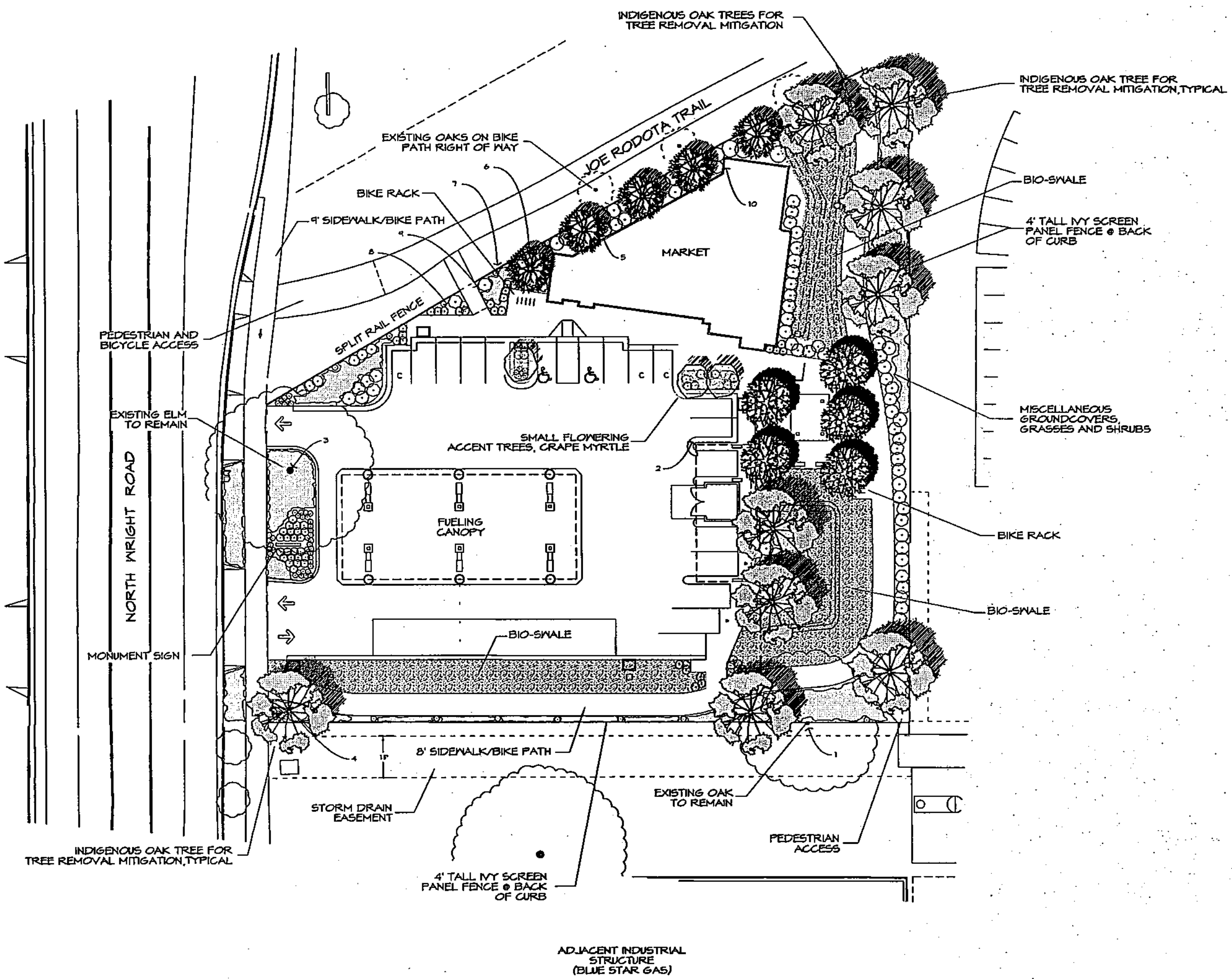
Total #15 Size Replacement Trees Required 38

Proposed Total #24 Size Replacement Trees to be Planted in Lieu of #15 Size Trees 22

- FOR EACH SIX INCHES OR FRACTION THEREOF OF THE DIAMETER OF A TREE WHICH WAS APPROVED FOR REMOVAL, TWO TREES OF THE SAME GENUS AND SPECIES AS THE REMOVED TREE (OR ANOTHER SPECIES, IF APPROVED BY THE DIRECTOR), EACH OF A MINIMUM 15 GALLON CONTAINER SIZE, SHALL BE PLANTED ON THE PROJECT SITE, PROVIDED HOWEVER, THAT AN INCREASED NUMBER OF SMALLER SIZE TREES OF THE SAME GENUS AND SPECIES MAY BE PLANTED IF APPROVED BY THE DIRECTOR, OR A FEWER NUMBER OF SUCH TREES OF A LARGER SIZE IF APPROVED BY THE DIRECTOR. THE VALUE CALCULATION IS BASED ON TREE DIAMETER AT BREAST HEIGHT WITH THE FOLLOWING ARBOREAL REPLACEMENT VALUES:

D.B.H.(INCHES)	$15 SIZE REPLACEMENT TREES
0 - 5	2
6 - 11	4
12 - 17	6
18 - 23	8
24 - 29	10
30 - 35	12
36 - 41	14
42 - 47	16
48 - 53	18
54 - 59	20

- MULTI-TRUNK TREES DBH SIZE IS CALCULATED BY ADDING THE TOTAL DBH OF ALL TRUNKS FOR A SINGULAR TRUNK SIZE CALCULATION
- ALL TREES PROPOSED FOR REMOVAL SHALL BE MITIGATED IN ACCORDANCE WITH THE CITY OF SANTA ROSA TREE ORDINANCE, CHAPTER 17 24



CONCEPTUAL LANDSCAPE PLAN

0 10 20 40

CONCEPTUAL LANDSCAPE PLAN

ELM TREE STATION

874 NORTH WRIGHT ROAD
SANTA ROSA, CA

MACNAIR
LANDSCAPE ARCHITECTURE

REGISTERED LANDSCAPE ARCHITECT
DONALD G. MACNAIR
No. 2800
STATE OF CALIFORNIA

DATE: 9/12/12
JOB: 12-20
SCALE: 1" = 20'
DRAWN: DM
SHEET L-1
SHEET 1 OF 1

MONK & ASSOCIATES
Environmental Consultants

February 21, 2011

CITY OF SANTA ROSA
P.O. Box 1678
Santa Rosa, CA 95402
JAN 17 2013
DEPARTMENT OF
COMMUNITY DEVELOPMENT

U.S. Fish and Wildlife Service
Region 1, Endangered Species Division
2800 Cottage Way, Room W2605
Sacramento, CA 95825-1846

Attention: Mr. David Kelly

RE: California Tiger Salamander Larval Survey Request
874 North Wright Road (APN 035-063-001) Santa Rosa, Sonoma County, California

Dear Mr. Kelly:

1. INTRODUCTION

On behalf of Mr. Mangal Dhillon, Monk & Associates, Inc. (M&A) is requesting permission to conduct larval surveys for the California tiger salamander (*Ambystoma californiense*) (CTS) on a proposed gas and electric car charging station that is going to be constructed at 874 North Wright Road project site (herein referred to as the project site) located in Santa Rosa, Sonoma County, California (see Figures 1 and 2). M&A is not expecting to find reproducing CTS at this site owing to the small parcel size and it deeply urbanized setting. The applicant, at this point in time, is proposing to assume presence of CTS and pay mitigation fees at an acceptable U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) approved mitigation site. The larval surveys would be conducted to determine if the project site is being used by breeding CTS and thus if there could be salvage requirements. M&A conducted a search of the California Department of Fish and Game CNDDB[1] to determine known CTS locations with respect to the project site and present this locational data in Figure 3.

2. PROJECT SITE DESCRIPTION

The one-acre project site is located at 874 North Wright Road, just southeast of the intersection of North Wright Road and the Luther Burbank Memorial Highway (Highway 12), in Santa Rosa, Sonoma County, California. The project site, located on the western boundary of the City of Santa Rosa, is the site of a former residential home, now demolished. Ornamental trees, shrubs and a pit at the location of a removed septic tank remain from the former residential land use. A man-made ditch running diagonally through the project site was likely excavated by the previous homeowner to drain stormwater runoff from the residential area of the project site. Project site vegetation is characterized by ruderal (weedy) and ornamental vegetation, non-native annual grassland and seasonal wetland. There currently are no structures on the site. The applicant is proposing to build a retail market and automobile fuel and electric charging facility on the project site.

[1] California Department of Fish and Game (CDFG). 2003. California Natural Diversity Data Base (CNDDB). California Natural Heritage Division, California Department of Fish and Game, Sacramento, CA.

2.1 Project Site Topography and Hydrology

The project site elevations range from 89.76 to 94.57 feet above sea level, with the highest elevations occurring at the site of the former home site at the northwestern corner of the project site. The lowest point in the project site is at the centerline of the man-made ditch. Lower elevations on the site are concentrated along the length of the ditch and in the southeastern and northeastern corners of the project site.

The project site has no significant offsite watershed. Virtually the entire project site drains during storm events via percolation into the soil and into the ditch and topographic low areas on the northeastern and southeastern sides of the project site. Under normal conditions, a drain inlet on the southwestern corner of the project site drains stormwater from the entire project site into the City of Santa Rosa's underground municipal storm drain system; however, redeposition of fill from recent home site and septic tank removal has resulted in stormwater collection areas such that the site is currently not conveying all stormwater to the manmade ditch that drains into the culvert. As such, ponded and/or flooded conditions in the ditch and the south side of the project site are prolonged, enhancing wetland conditions.

2.2 Plant Communities

The project site's vegetation has been altered through historic and ongoing human activities, and is dominated by ruderal (weedy) vegetation and ornamental plants. Non-native annual grassland also occurs on the project site. Seasonal wetlands are present in the lower elevations on the east side of the project site. Oregon ash saplings (*Fraxinus latifolia*) and white poplar (*Populus alba*) occur along the edge of the man-made ditch. These plant communities are described in the paragraphs below.

2.2.1 Anthropogenic Communities

Anthropogenic communities are assemblages of plants that occur in areas of concentrated human activity. On the project site, anthropogenic communities consist of ruderal (weedy) vegetation and ornamental plants. Ruderal vegetation thrives in the former residential areas of the project site, particularly on the former building pads where soils are compacted, and in locations where soils have been recently disturbed from demolition activities. Common ruderal species detected in this community include slender wild oats (*Avena barbata*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), white-stem filaree (*Erodium moschatum*), California burclover (*Medicago polymorpha*), short-podded mustard (*Hirschfeldia incana*), white clover (*Trifolium repens*), milk thistle (*Silybum marianum*), Italian thistle (*Carduus pycnocephalus*), and bull thistle (*Cirsium vulgare*).

Ornamental trees and shrubs that were planted by the previous property owners occur throughout the project site, although most are concentrated in the former residential area. Ornamental trees identified on site include white poplar, Monterey pine (*Pinus radiata*), Siberian elm (*Ulmus pumila*), and Mayten tree (*Maytenus boaria*). Several native valley oaks (*Quercus lobata*) have also been planted along the edge of the project site, as well as fruit trees, including plum (*Prunus*

sp.) and quince (*Cydonia oblonga*). Ornamental shrubs and plants include rose bushes (*Rosa* sp.), calla lily (*Zantedeschia aethiopica*), daffodil (*Narcissus* sp.) and iris (*Iris* sp.).

Several ornamental and invasive ruderal plants are becoming naturalized on the project site. Mayten tree and white poplar saplings and young fruit trees were observed on and adjacent to the banks of the man-made ditch. The invasive giant reed (*Arundo donax*) [FACW] was also detected onsite.

2.2.2 Non-Native Annual Grassland

Non-native annual grassland occurs on the upland portions of the project site outside of the residential area. This plant community is dominated by introduced grasses and forbs, including Harding grass (*Phalaris aquatica*), Italian rye grass (*Lolium multiflorum*), bindweed (*Convolvulus arvensis*), spring vetch (*Vicia sativa*), salsify (*Tragopogon porrifolius*), rough cat's ear (*Hypochaeris radicata*), prickly lettuce (*Lactuca serriola*), cut leaf geranium (*Geranium dissectum*), and wild teasel (*Dipsacus sativus*).

2.2.3 Seasonal Wetlands

Seasonal wetlands are habitats that may appear dry in the summer and fall months, but by the first winter rains become inundated and hold water for a period of several weeks to months at a time. Seasonal wetlands are able to hold water for long duration typically due to the presence of impervious soils and/or confining topography such as topographic low areas. On the project site, two topographic depressions on the east side of the project site and a man-made ditch that drains to a drain inlet to the municipal stormwater conveyance system support seasonal wetland vegetation. Species within this plant community include cocklebur (*Xanthium strumarium*), curly dock (*Rumex crispus*), annual semaphore grass (*Pleuropogon californicus*), western mannagrass (*Glyceria occidentalis*), tall flatsedge (*Cyperus eragrostis*), creeping spikerush (*Eleocharis macrostachya*), dense sedge (*Carex densa*), hyssop loosestrife (*Lythrum hyssopifolium*), Italian ryegrass, and birdfoot trefoil (*Lotus corniculatus*). Winter water depths in the ditch are approximately 14 to 18 inches while depths in the seasonal wetland are from 8 to 14 inches.

3. METHODOLOGY

Larval surveys will be conducted by Mr. Geoff Monk, a federally permitted 10(a)(1)(A) CTS biologist (Recovery Permit TE-776608). The surveys will be conducted following the USFWS' October 2003 *Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander*[2]. This included identifying known and historical localities of this population within 5 km (approximately 3 miles) of the project site boundaries and identifying potentially suitable CTS habitats at and within 2 km (approximately 1.2 miles) of the project site. Potentially suitable habitat would include breeding areas (i.e., seasonal wetlands, vernal pools) and/or upland habitat with suitable aestivation sites (i.e.,

[2] USFWS (U.S. Fish and Wildlife Service). 2003. Interim guidance on site assessment and field surveys for determining presence or a negative finding of the California tiger salamander. October 2003. Joint survey protocol released by the California Department of Fish and Game and the U.S. Fish and Wildlife Service. October 2003. 12 pp.

abandoned gopher burrows, deep fissures in desiccated clay soils, and to some extent by debris piles or downed trees and logs) that are within 1.2 miles of potential breeding areas.

4. MAPPED CRITICAL HABITATS AND RECORDS FOR CTS IN THE PROJECT VICINITY

The project site is within the boundaries of USFWS proposed Critical Habitat of the Sonoma County population of CTS (Unit 1 - Santa Rosa Plain). Figure 3 shows that there are 20 reported occurrences of CTS within 2 miles of the project site. Six separate breeding areas are located within 1.5 miles of the project site; however, the closest breeding site (CNDDB Record No. 344) occurs north of Highway 12, a major geographic barrier to CTS movements. The nearest recorded CTS occurrence to the project site that is not separated by geographic barriers is approximately 2000 feet east of the project site (CNDDB No. 237) in what was native grassland containing swales, but that is now partially developed (streets and sidewalks constructed). M&A detected CTS at this record location in the early 1990s. M&A also detected CTS approximately 2000 feet south of the project site (CNDDB No. 236) in an area characterized by small vernal pools and oak savannah. M&A also is also responsible for CNDDB record No. 652, which occurs at the old Santa Rosa Air Center and is the fourth closest record to the project site. M&A reported CTS here to CDFG in the early 1990s; however, more recently recorded observations have usurped reference to this record.

5. HABITAT ASSESSMENT

The project site is geographically located in the center of the proposed Critical Habitat and within close range of known CTS locations in the Santa Rosa Plain. The project site is located immediately south of and adjacent to Highway 12. It is developed on 3 sides of the project site with other high density commercial enterprises. There is vacant land immediately east of the project site that is otherwise 100 percent surrounded by high density urban development. Aquatic conditions are deep enough to support breeding CTS; however, they are man-made in origin and relatively small areas within a highly urbanized area. According, while CTS could breed at this site, Mr. Monk believes the likelihood is low that they do owing to the surrounding setting. That said, we cannot rule out CTS breeding without conducting larval surveys.

6. DISSCUSION AND CONCLUSIONS

The applicant, is proposing to assume presence of CTS and to pay a mitigation fees at an acceptable USFWS and CDFG approved mitigation site. The larval surveys would be conducted to determine if the project site is being used by breeding CTS and thus if there could be salvage requirements. M&A likely will not find reproducing CTS at this site owing to the small parcel size and it deeply urbanized setting. However, due to the physical and biological features of the project site and the abundance of evidence of CTS presence in the vicinity of the project site, M&A cannot rule out that CTS could be breeding on the project site.

To address the presence of suitable habitat, M&A proposes to conduct spring larval surveys within all wetlands present on the project site. M&A is requesting permission from USFWS to conduct larval surveys in these wetlands. The spring larval surveys would be conducted

according the October 2003 *Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander*[3] for surveys conducted within aquatic habitats. If CTS are determined to be present within one or more of the aquatic features, M&A will closely coordinate all future actions with USFWS with respect to development of this project site. If CTS are not found on the project site this spring, M&A will be preparing an application for a permit from the U.S. Army Corps of Engineers (a Section 7 nexus agency) and will include a Biological Assessment in that application with a full mitigation proposal for CTS. It should be noted that M&A has already completed one year of rare plant surveys with negative findings for federal listed plants. We will be completing the second year of these surveys this spring.

If you have any questions or would like to visit the project site please do not hesitate to call me at (925) 947-4867 x 201.

Sincerely,

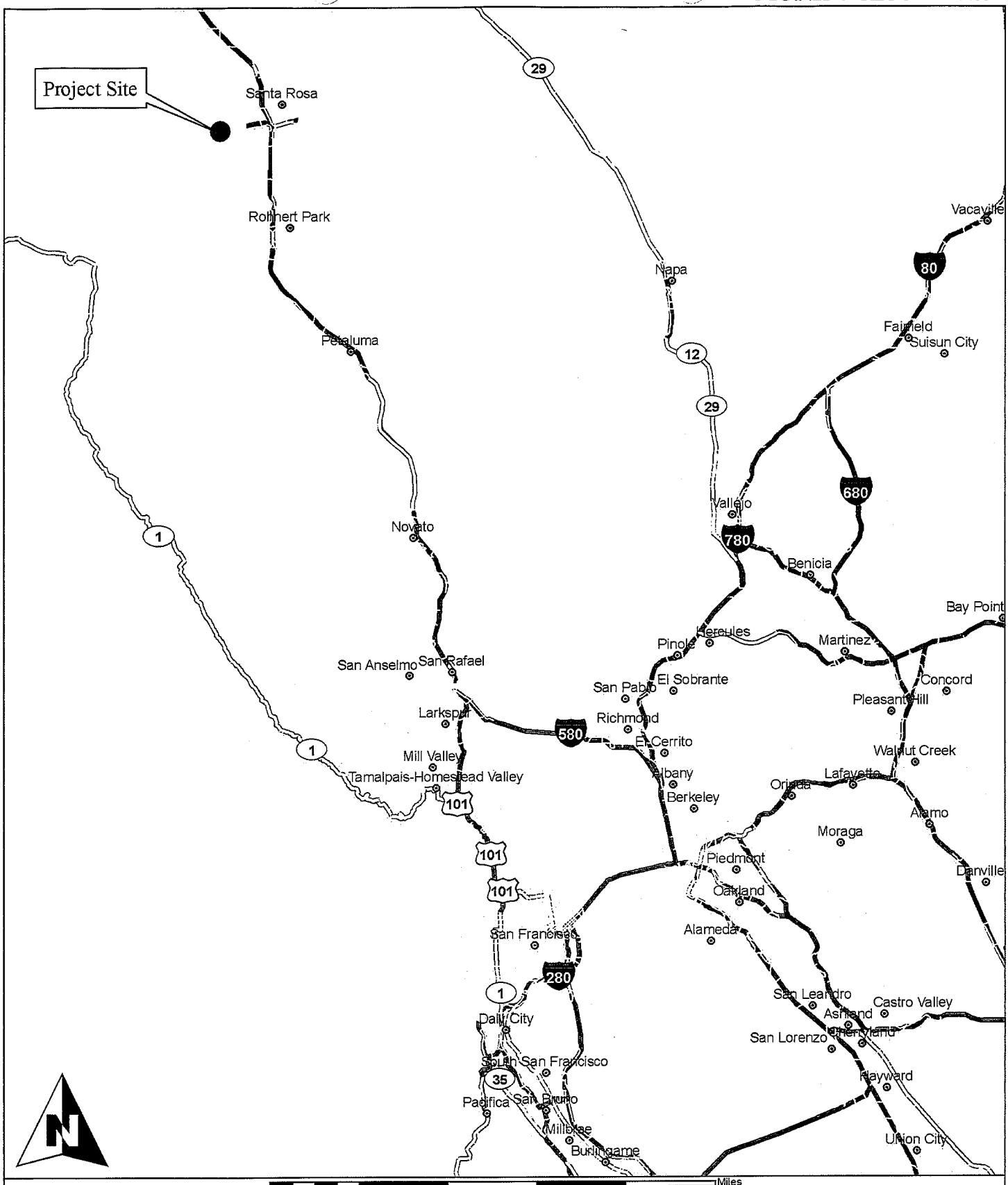
J. Geoff Monk

Geoff Monk
Principal Biologist

Attachments:

Figures 1-3

[3] USFWS (U.S. Fish and Wildlife Service). 2003. Interim guidance on site assessment and field surveys for determining presence or a negative finding of the California tiger salamander. October 2003. Joint survey protocol released by the California Department of Fish and Game and the U.S. Fish and Wildlife Service. October 2003. 12 pp.



Monk & Associates
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Walnut Creek, California 94595
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Figure 1. 874 North Wright Road
Project Site Regional Map
Santa Rosa, California

County: Sonoma
Map Preparation Date: February 22, 2010

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Figure 2. 874 North Wright Road
Project Site Location Map
Santa Rosa, California

7.5-Minute Sebastopol quadrangle
Topography Source: http://gis.ca.gov
Map Preparation Date: February 22, 2010

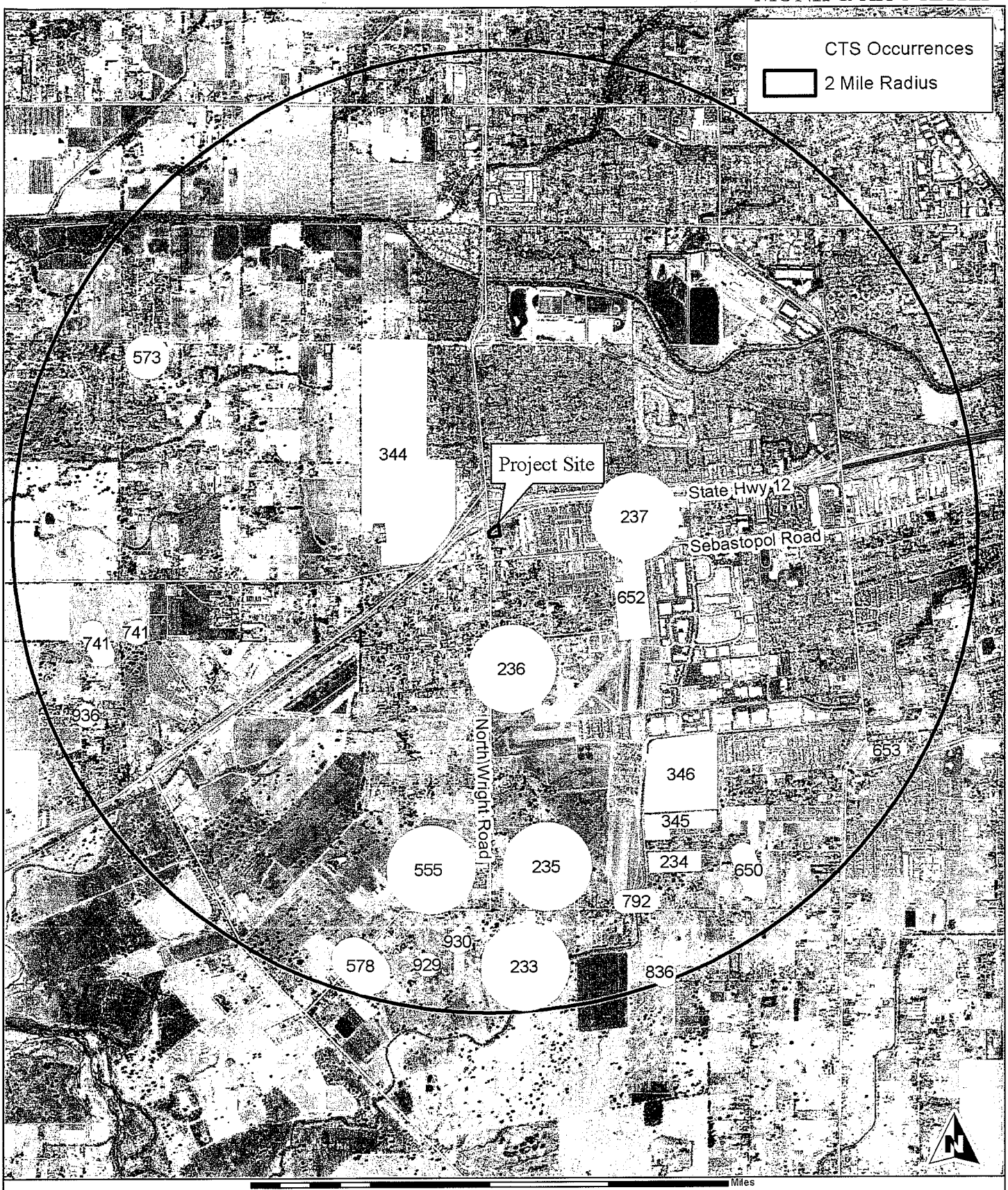

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Figure 3. Closest CTS Occurrences within 2 Miles of the 874 North Wright Road Project Site Santa Rosa, California

Map Preparation Date: February 21, 2011
Source: CDFG, California Natural Diversity Data Base, 2010

MONK & ASSOCIATES
Environmental Consultants

July 15, 2010

CITY OF SANTA ROSA
P.O. Box 1678
Santa Rosa, CA 95402
JAN 17 2013
DEPARTMENT OF
COMMUNITY DEVELOPMENT

U.S. Army Corps of Engineers
San Francisco District Regulatory Branch
1455 Market Street
San Francisco, California 94103

Attention: Ms. Jane Hicks, Regulatory Chief

RE: Request for Jurisdictional Determination
874 North Wright Road
Santa Rosa, Sonoma County, California

Dear Ms. Hicks:

1. INTRODUCTION

On behalf of Mr. Mangal Dhillon (herein referred to as the applicant), Monk & Associates, Inc. (M&A) has completed a preliminary wetland delineation on the proposed 874 North Wright Road project site (herein referred to as the project site) located in Santa Rosa, Sonoma County, California (Figures 1 and 2). The applicant is proposing to build a retail market and fuel facility on the project site.

This letter-report presents the results of M&A's delineation of potential waters of the United States on the project site. M&A requests that the U.S. Army Corps of Engineers (Corps) confirm those areas on the project site that would be within the Corps' jurisdiction pursuant to Section 404 of the Clean Water Act.

2. APPLICANT

Mangal Dhillon
2743 Yulupa Avenue
Santa Rosa, California 95405
Phone: (707) 526-1180
Fax: (707) 526-1186

3. PROPERTY LOCATION AND SETTING

The one-acre project site is located at 874 North Wright Road, just southeast of the intersection of North Wright Road and the Luther Burbank Memorial Highway (Highway 12), in Santa Rosa, Sonoma County, California. The project site, located on the western boundary of the City of Santa Rosa, is the site of a former residential home, now demolished. Ornamental trees, shrubs and a pit at the location of a removed septic tank remain from the former residential land use. A man-made ditch running diagonally through the project site was likely excavated by the previous homeowner to drain stormwater runoff from the residential area of the project site. Project site vegetation is characterized by ruderal (weedy) and ornamental vegetation, non-native annual grassland and seasonal wetland. There currently are no structures on the site.

Figure 3 provides an aerial photograph showing the project site and surrounding lands. A bicycle path is located immediately north and parallel to the northern project site boundary. Immediately east of the project site are undeveloped lands. Suburban housing is located further to the east. Commercial and light industrial businesses are located to the south and west of the project site. Suburban housing is also located to north, and rural residential housing is located further to the south and west.

4. ASSESSORS PARCEL NUMBER

The property consists of one parcel: APN 035-063-001

5. WETLAND DELINEATION METHODS

On March 16, 2010, M&A staff Mr. Geoff Monk and Ms. Isabelle de Geofroy conducted a wetland delineation on the project site using the Corps' 1987 *Wetlands Delineation Manual*[1] in conjunction with the regional supplement for the Arid West Region[2]. The site investigation was completed during a very wet spring at a time when hydrology was plainly apparent. The wetland delineation was conducted by looking at the project site's vegetation, hydrology, and soils at selected data point locations. These locations were recorded on data sheets that are attached to this report. The locations of these data points are indicated on the preliminary wetlands map (Sheet 1).

Data points and potential wetland areas were mapped using a Trimble Pro-XR Global Positioning System (GPS) having sub-meter accuracy. GPS data were corrected using base station files from the U.S. Forest Service Remote Sensing Laboratory in Sacramento. The delineation map was made from the GPS files using ArcMap 9.0. All spatial data were projected into the California State Plane, NAD 83 coordinate system, Zone 2. Using GPS technology, the boundaries (within 30 inches) of each delineated wetland was transferred to an aerial photograph of the project site (Sheet 1).

6. WETLAND DELINEATION RESULTS

6.1 Project Site Topography and Hydrology

The topography of the project site is illustrated in Appendix A. Elevations range from 89.76 to 94.57 feet above sea level, with the highest elevations occurring at the site of the former home site at the northwestern corner of the project site. The lowest point in the project site is at the centerline of the man-made ditch. Lower elevations on the site are concentrated along the length of the ditch and in the southeastern and northeastern corners of the project site.

The project site has no significant offsite watershed. Virtually the entire project site drains during storm events via percolation into the soil and into the ditch and topographic low areas on the northeastern and southeastern sides of the project site. At the time of the March 16 site visit, the ditch and both topographic depressions were flooded. Soil pit investigations found a high water

[1] U.S. Army Corps of Engineers. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station. Technical Report, Y-87-1. Vicksburg, Mississippi. 100 pp

[2] U.S. Army Corps of Engineers. 2006. Interim regional supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region. Ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-06-16. Vicksburg, MS: U.S. Army Engineer Research and Development Center (December 2006).

table on the east side of the project site. Surface water or a water table of 8" or less was found at data points 1, 5, 6 11, and 12, indicating wetland hydrology.

Under normal conditions, a culvert on the southwestern corner of the project site drains stormwater from the entire project site into the City of Santa Rosa's underground municipal storm drain system; however, redeposition of fill from recent home site and septic tank removal has resulted in stormwater collection areas such that the site is currently not conveying all stormwater to the manmade ditch that drains into the culvert. As such, ponded and/or flooded conditions in the ditch and the south side of the project site are prolonged, enhancing wetland conditions.

6.2 Soils

The Natural Resource Conservation Service (NRCS) mapped three soil types on the project site[3]. These soil types are Alluvial land, clayey (AeA); Clear Lake clay, ponded, 0 to 2 percent slopes (CfA); and Wright loam, shallow, wet, 0 to 2 percent slopes (WoA). A map of the soils on the project site is shown in Figure 3. The soil types are discussed below.

6.2.1 ALLUVIAL LAND, CLAYEY

Alluvial land, clayey (AeA) consists of nearly level clay loams to silty clays underlain by stratified sand and gravel lenses at a depth of 20 to 40 inches. These areas are mainly on alluvial fans or along river and stream channels in the broad valley areas. They are a heterogeneous mixture of finer soil texture which cannot be mapped as distinct series at the scale of mapping.

This Alluvial land is used for such crops as prunes and pears, as well as for vineyards, row crops, and pasture. Occasionally, Alluvial land is inundated by floodwater. This results in little or no damage, and there may be some beneficial deposition. *Alluvial land, clayey, is classified as a hydric soil by the NRCS*[4], as it is frequently flooded for long or very long duration during the growing season.

6.2.2 CLEAR LAKE, PONDED, 0 TO 2 PERCENT SLOPES

Clear Lake soils are poorly drained soils formed in alluvium derived from sedimentary rock. They are on plains and flat basin areas. They occur in an area that extends from approximately 5 miles south of Santa Rosa and east of Petaluma to north of the tidelands bordering San Francisco Bay.

Clear Lake clay, ponded, 0 to 2 percent slopes is in poorly drained basins and on floodplains and is subject to temporary ponding. Permeability is slow. Runoff is slow and the hazard of erosion is slight. The available water capacity is 8 to 10 inches. This soil is used mainly for producing oat-vetch hay or oat hay for feeding cattle and horses. *Clear Lake Soil clay, ponded, 0 to 2 percent slopes is classified as a hydric soil by the NRCS*, as this soil is frequently ponded for long or very long duration during the growing season; and/or it is a poorly drained soil with a water table that

[3] USDA. 1972. Soil survey of Sonoma County, California. United States Department of Agriculture, Forest Service and Soil Conservation Service. In cooperation with University of California (Agricultural Experiment Station). May.

[4] NRCS. 2010. National Resources Conservation Service Soil Data Mart website INTERNET: http://soildatamart.nrcs.usda.gov/Default.aspx

has a depth of 1 foot or less during the growing season, if permeability is less than 6 inches/hour in any layer within a depth of 20 inches.

6.2.3 WRIGHT LOAM, SHALLOW, WET, 0 TO 2 PERCENT SLOPES

The Wright soil series consists of somewhat poorly drained and moderately well drained loams that have a clay subsoil. They are underlain by old valley plain alluvium of mixed origin such as volcanic and marine sediment. These soils are mostly undulating and are on low terraces. They are mainly on the central Santa Rosa Plain and south of the town of Sonoma. Wright soils are used mainly for dryland and irrigated pasture.

Wright loam, shallow, wet, 0 to 2 percent slopes has an A horizon that ranges from 10 to 20 inches in thickness and from very fine sandy loam to sandy clay loam in texture. Permeability is very slow in the subsoil; drainage is somewhat poor. The available water capacity is 3 to 5 inches. *Wright loam, shallow, wet, 0 to 2 percent slopes is classified as a hydric soil by the NRCS*, as this soil is frequently ponded for long or very long duration during the growing season; and/or it is a poorly drained soil with a water table that has a depth of 1 foot or less during the growing season, if permeability is less than 6 inches/hour in any layer within a depth of 20 inches.

6.2.4 SOIL IDENTIFICATION ON THE PROJECT SITE

During the site investigation, test pits dug by M&A at each sample point for the wetland delineation generally corresponded with the soil description provided by the NRCS maps. The soil texture identified during our site investigation was clay. Soil matrix colors in uplands were noted as 7.5YR 2.5/1, 10YR 2/1, and 10YR2/2.

Hydric soil criteria were met through evidence of prolonged inundation, including the presence of a high water table (within 12 inches of the surface) and/or the presence of surface water. As stated in Section 2 of Appendix A in the 1987 Corps Manual, soils that are ponded or frequently flooded for long duration or very long duration during part of the growing season meet the criteria for hydric soils. Soil matrix colors in the wetland areas identified in the field were noted as 7.5YR 2.5/1. No evidence of redox was detected in these soils during the March 16 site visit.

6.3 Vegetation

The project site's vegetation has been altered through historic and ongoing human activities, and is dominated by ruderal (weedy) vegetation and ornamental plants. Non-native annual grassland also occurs on the project site. Seasonal wetlands are present in the lower elevations on the east side of the project site. Scattered Oregon ash saplings (*Fraxinus latifolia*) [FACW] occur along the edge of the man-made ditch. These plant communities are described in the paragraphs below.

6.3.1 ANTHROPOGENIC COMMUNITIES

Anthropogenic communities are assemblages of plants that occur in areas of concentrated human activity. On the project site, anthropogenic communities consist of ruderal (weedy) vegetation and ornamental plants. Ruderal vegetation thrives in the former residential areas of the project site, particularly on the former building pads where soils are compacted, and in locations where soils have been recently disturbed from demolition activities. Common ruderal species detected in this community include slender wild oats (*Avena barbata*) [NA], ripgut brome (*Bromus diandrus*) [NA], soft chess (*Bromus hordeaceus*) [FACU], white-stem filaree (*Erodium*

moschatum) [NA], California burclover (*Medicago polymorpha*) [NA], white clover (*Trifolium repens*) [FACU+], milk thistle (*Silybum marianum*) [NA], Italian thistle (*Carduus pycnocephalus*) [NA], and bull thistle (*Cirsium vulgare*) [FACU].

Ornamental trees and shrubs that were planted by the previous property owners occur throughout the project site, although most are concentrated in the former residential area. Ornamental trees identified on site include pine (*Pinus* sp.), elm (*Ulmus* sp.), and Mayten tree (*Maytenus boaria*) [NA]. Several native valley oaks (*Quercus lobata*) [FAC*] have also been planted along the edge of the project site, as well as fruit trees, including plum (*Prunus* sp.) and apple (*Malus* sp.). Ornamental shrubs and plants include rose bushes (*Rosa* sp.), calla lily (*Zantedeschia aethiopica*), daffodil (*Narcissus* sp.) and iris (*Iris* sp.).

Several ornamental and invasive ruderal plants are becoming naturalized on the project site. Mayten tree saplings and young fruit trees were observed on the banks of the man-made ditch. The invasive giant reed (*Arundo donax*) [FACW] was also detected onsite.

6.3.2 Non-Native Annual Grassland

Non-native annual grassland occurs on the upland portions of the project site outside of the residential area. This plant community is dominated by introduced grasses and forbs, including Harding grass (*Phalaris aquatica*) [FAC+], Italian rye grass (*Lolium multiflorum*) [FAC*], spring vetch (*Vicia sativa*) [FACU], prickly lettuce (*Lactuca serriola*) [FAC], cut leaf geranium (*Geranium dissectum*) [NA], and Fuller's teasel (*Dipsacus sativus*) [NA].

6.3.3 Seasonal Wetlands

Seasonal wetlands are habitats that may appear dry in the summer and fall months, but by the first winter rains become inundated and hold water for a period of several weeks to months at a time. Seasonal wetlands are able to hold water for long duration typically due to the presence of impervious soils and/or confining topography such as topographic low areas. On the project site, two topographic depressions on the east side of the project site and the channel leading to the culvert support seasonal wetland vegetation. Species within this plant community include western mannagrass (*Glyceria occidentalis*) [OBL], dense sedge (*Carex densa*) [OBL], hyssop loosestrife (*Lythrum hyssopifolium*) [FACW], curly dock (*Rumex crispus*) [FACW], Harding grass, Italian ryegrass, cocklebur (*Xanthium strumarium*) [FAC+], and birdfoot trefoil (*Lotus corniculatus*) [FAC].

7. DISCUSSION

The March 2010 site visit was conducted when wetland hydrology was plainly evident. Spring rainfall event exceeded normal rainfall amounts. The ditch, the two topographic depressions on the east side of the project site, and the channel leading to the culvert all support a dominance of hydrophytic vegetation and hold water for prolonged periods, as evidenced by flooded conditions, soil saturation and/or a high water table. All these features meet the wetland criteria

presented in the Corps' 1987 *Wetlands Delineation Manual*[5] and the regional supplement for the Arid West Region[6].

The routine data sheets attached to this report indicate the percent cover of the plant species that were identified as dominants during the site investigation for the property. In addition, the data sheets indicate the wetland indicator status for each listed plant. Data points 1, 5, and 11 had a dominance of hydrophytic vegetation, hydric soils, and the presence of/or evidence of wetland hydrology, thereby meeting all the wetland criteria presented in the Corps' 1987 *Wetlands Delineation Manual* and the regional supplement for the Arid West Region.. Data points 2, 3, 4, 6, 7, 8, 9, 10, 12, 13, 14, 15 and 16 were taken in upland sites. These data points are subject to Corps verification.

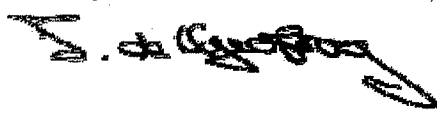
Sheet 1 indicates all areas on the project site that may be regulated as "waters of the U.S" by the Corps. The total area of wetlands currently mapped on the site is 0.22-acre. The actual acreage of all areas on the project site that may be regulated as "waters of the U.S." pursuant to Section 404 of the Clean Water Act is subject to Corps verification.

8. ADDITIONAL INFORMATION

In addition to the regional location and project site location maps (Figures 1 and 2), M&A is including an aerial photograph of the project area (Figure 3), a soils map of the project site (Figure 4), a list of plant species observed on the project site (Table 1) and a preliminary delineation map depicted over an aerial photograph of the project site (Sheet 1). A topographic map of the project site is also included as Appendix A. We have attached routine data sheets for the sampling sites that were investigated. The routine datasheets attached to this report indicate soil properties, presence/absence of hydrology indicators, and the plant species that were identified as dominants at the respective data points. In addition, the datasheets indicate the relative percent cover of each of the dominant plant species, and finally, present the wetland indicator status for each listed plant.

M&A would like to schedule a site visit with a project manager to further discuss our methods and findings. I will be calling you within the next few weeks to see if you have assigned this project to a project manager. Should you have questions or need other information, please do not hesitate to call me anytime at (925) 947-4867 ext. 211

Sincerely,



Isabelle de Geofroy
Project Biologist

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[5] U.S. Army Corps of Engineers. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station. Technical Report, Y-87-1. Vicksburg, Mississippi. 100 pp

[6] U.S. Army Corps of Engineers. 2006. Interim regional supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region. Ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-06-16. Vicksburg, MS: U.S. Army Engineer Research and Development Center (December 2006).

Attachments: Figures: 1-4
Table 1
Data Sheets 1-16
Sheet 1. Preliminary Wetland Delineation Map
Appendix A. Topographic Map

cc: Mr. Mangal Dillon
Mr. Ray Hickman, Hickman Realty

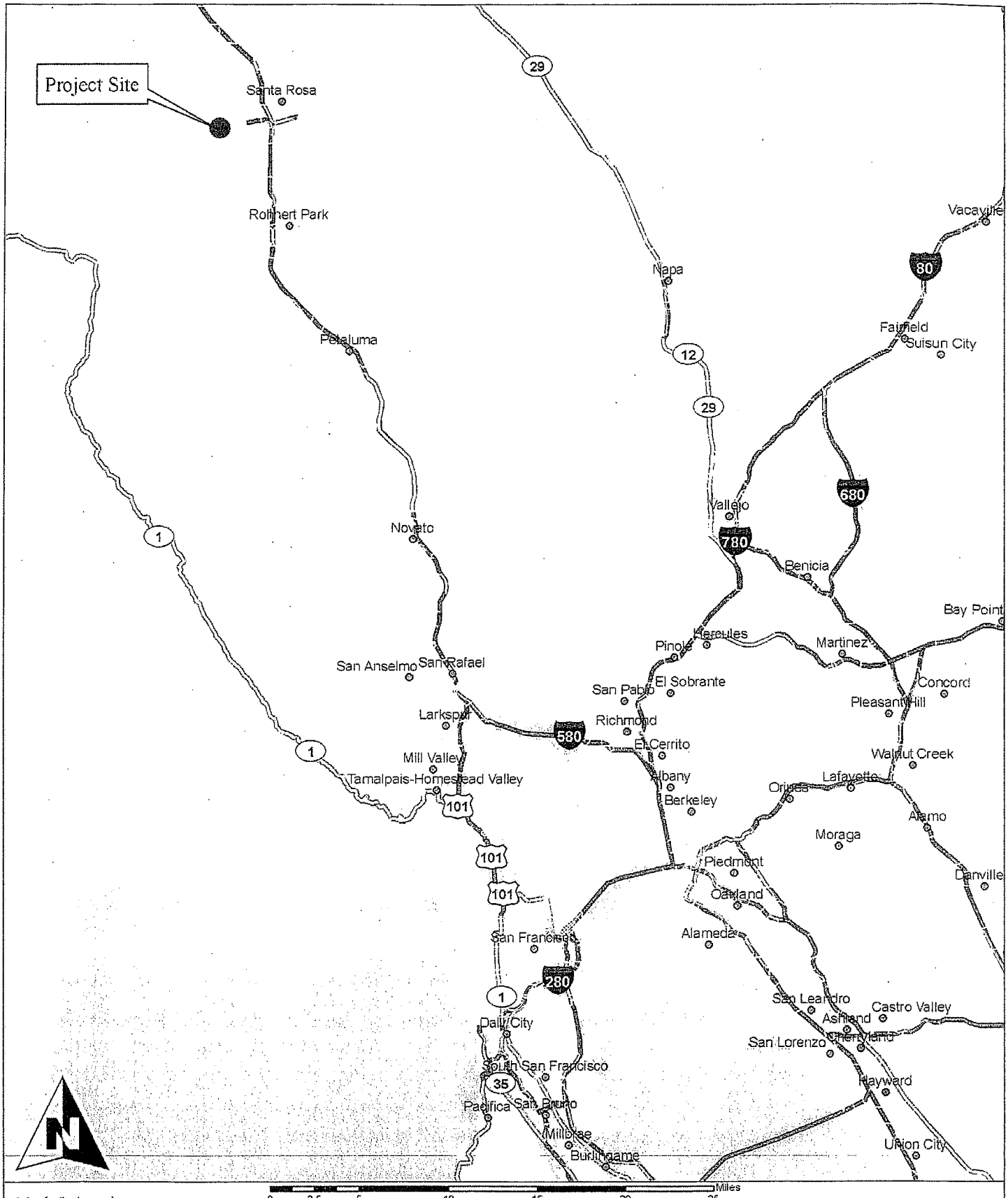

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Figure 1. 874 North Wright Road
Project Site Regional Map
Santa Rosa, California

County: Sonoma
Map Preparation Date: February 22, 2010

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Figure 2. 874 North Wright Road
Project Site Location Map
Santa Rosa, California

7.5-Minute Sebastopol quadrangle
Topography Source: http://gis.ca.gov
Map Preparation Date: February 22, 2010

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Figure 3. Aerial Photograph of the
874 North Wright Road Project
Santa Rosa, California

Map Preparation Date: March 17, 2010
Aerial Photograph Source: Google Earth

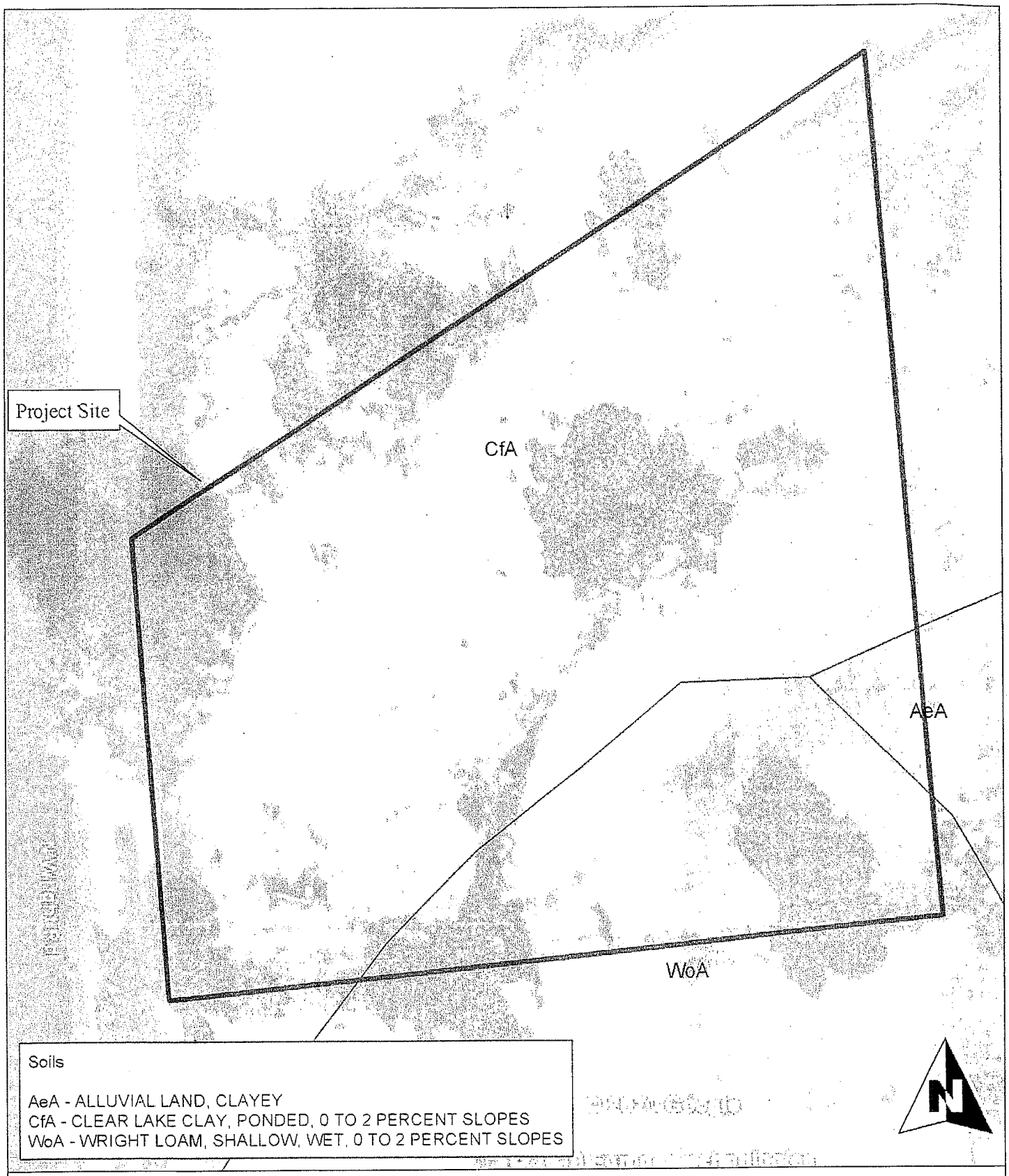

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Figure 4. Soils of the
874 North Wright Road Project
Santa Rosa, California

Map Preparation Date: March 17, 2010
Aerial Photograph Source: Google Earth
Soils Data Source: http://soildatamart.nrcs.usda.gov

Table 1

Plants Observed on the 874 North Wright Road Project Site

Gymnosperms	
Pinaceae	
Pinus radiata	Monterey pine
Angiosperms - Dicots	
Asteraceae	
Baccharis pilularis	Coyote brush
**Carduus pycnocephalus*	Italian thistle
**Cichorium intybus*	Chicory
**Cirsium vulgare*	Bull thistle
**Helminthotheca echioides*	Bristly ox-tongue
**Hypochaeris radicata*	Rough cat's-ear
**Lactuca saligna*	Willow lettuce
**Lactuca serriola*	Prickly lettuce
**Senecio vulgaris*	Common groundsel
**Silybum marianum*	Milk thistle
**Sonchus asper*	Prickly sow-thistle
**Taraxacum officinale*	Common dandelion
**Tragopogon porrifolius*	Salsify
Xanthium strumarium	Cocklebur
Brassicaceae	
**Brassica nigra*	Black mustard
**Hirschfeldia incana*	Short-podded mustard
**Raphanus sativus*	Wild radish
Celastraceae	
**Maytenus boaria*	Mayten tree
Convolvulaceae	
**Convolvulus arvensis*	Bindweed
Dipsacaceae	
**Dipsacus fullonum*	Wild teasel
Fabaceae	
**Lotus corniculatus*	Birdfoot trefoil
**Medicago polymorpha*	California burclover
**Trifolium repens*	White clover
**Vicia sativa*	Common vetch
Fagaceae	
Quercus lobata	Valley oak
Geraniaceae	
**Erodium moschatum*	White-stem filaree
**Geranium dissectum*	Cut-leaf geranium
Lamiaceae	
**Mentha pulegium*	Pennyroyal

* Indicates a non-native species

Stachys ajugoides var. rigida	Rigid hedge-nettle

Lythraceae

**Lythrum hyssopifolium*	Hyssop loosestrife

Oleaceae

Fraxinus latifolia	Oregon ash

Polygonaceae

**Rumex conglomeratus*	Green dock
**Rumex crispus*	Curly dock
**Rumex pulcher*	Fiddle dock

Rosaceae

**Cydonia oblonga*	Quince
**Prunus sp.*	Prunus
**Rosa sp.*	Rose
**Rubus discolor*	Himalayan blackberry

Rubiaceae

**Galium aparine*	Goose grass

Salicaceae

**Populus alba*	White poplar

Ulmaceae

**Ulmus pumila*	Siberian elm

Vitaceae

Vitis californica	California wild grape

Angiosperms -Monocots

Araceae

**Zantedeschia aethiopica*	Calla-lily

Cyperaceae

Carex densa	Dense sedge
Cyperus eragrostis	Tall flatsedge
Eleocharis macrostachya	Creeping spikerush

Iridaceae

Iris sp.	Iris

Juncaceae

Juncus mexicanus	Mexican rush

Liliaceae

**Agapanthus orientalis*	Lily-of-the-Nile
**Allium triquetrum*	Onion
**Narcissus sp.*	Narcissus

Poaceae

**Arundo donax*	Giant reed
**Avena barbata*	Slender wild oat
**Bromus diandrus*	Ripgut grass
**Bromus hordeaceus*	Soft chess
**Bromus stamineus*	Brome
**Bromus sterilis*	Poverty brome
Elymus glaucus	Blue wildrye
Glyceria occidentalis	Western mannagrass

* Indicates a non-native species

Hordeum brachyantherum	Meadow barley
**Hordeum murinum ssp. leporinum*	Foxtail barley
**Lolium multiflorum*	Italian ryegrass
**Phalaris aquatica*	Harding grass
Piptatherum miliaceum	Smilo grass
Pleuropogon californicus	Annual semaphore grass
**Poa trivialis*	Rough bluegrass
**Vulpia bromoides*	Brome fescue

* Indicates a non-native species

Table 2

Wildlife Observed on the 874 N Wright Ave Project Site

Reptiles

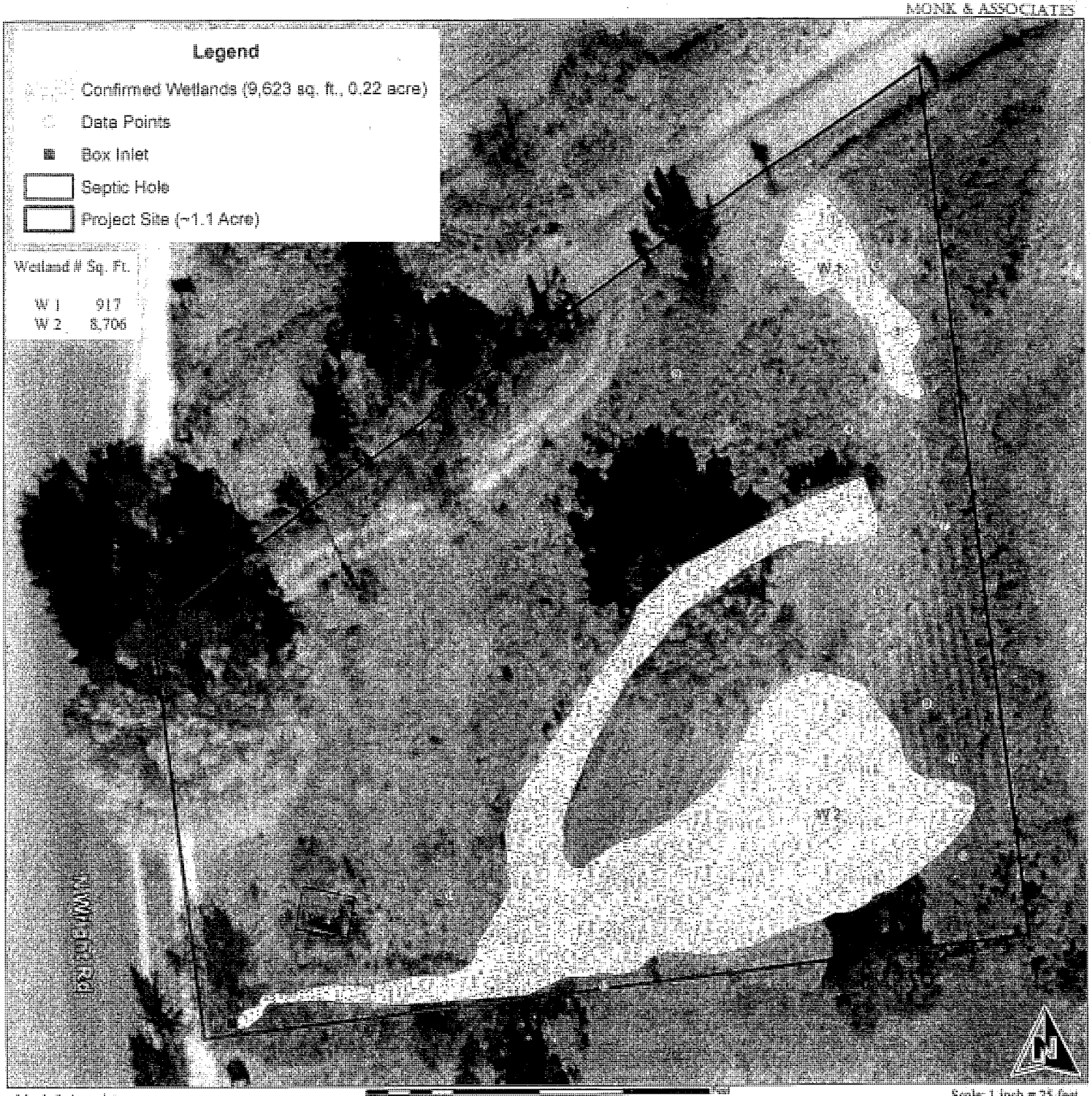
Western fence lizard	*Sceloporus occidentalis*

Birds

Turkey vulture	*Cathartes aura*
Mallard	*Anas platyrhynchos*
Red-shouldered hawk	*Buteo lineatus*
Killdeer	*Charadrius vociferus*
Nuttall's woodpecker	*Picoides nuttallii*
Western scrub jay	*Aphelocoma californica*
American crow	*Corvus brachyrhynchos*
Bushtit	*Psaltriparus minimus*
American robin	*Turdus migratorius*
Northern mockingbird	*Mimus polyglottos*
Song sparrow	*Melospiza melodia*

Mammals

Botta's pocket gopher	*Thomomys bottae*
California meadow vole	*Microtus californicus*



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Sheet 1. Confirmed Wetland Delineation
874 North Wright Road Project Site
Santa Rosa, California

Scale: 1 inch = 25 feet
Corps Confirmation Date: September 22, 2010
Confirmed by: Sahrye Cohen
Map Revision Date: February 2, 2011
Aerial Photograph Source: Google Earth

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: 874 N. Wright Road City/County: Santa Rosa / Sonoma Sampling Date: 3/16/2010

Applicant/Owner: Mangal Dhillon State: CA Sampling Point: 1

Investigator(s): Geoff Monk & Isabelle de Geofroy Section, Township, Range: Sebastopol Quad

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Level Slope (%) 0

Subregion (LRR): C Lat: 38°25'35.28"N Long: 122°46'6.33"N Datum: NAD 83

Soil Map Unit Name: CfA - Clear Lake Clay, Ponded, 0 to 2 Percent Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? ☐ Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? ☐ (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒ No ☐
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks:

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:)			
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. Phalaris aquatica	90	X	FACW
2. Lolium multiflorum	10		FAC
3. Geranium dissectum	< 1		UPL
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum % Cover of Biotic Crust

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index=B/A =

Hydrophytic Vegetation Indicators:

☒ Dominance Test is >50%

☐ Prevalence Index is:≤3.0[1]

☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	LOC[2]	Texture	Remarks

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Saturated to surface - no pit dug. No evidence of redox. Soils ponded for long duration.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (132) (**Nonriverine**)
- ☐ Drift Deposits (133) (**Nonriverine**)
- ☐ Surface Soil Cracks (136)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (139)
- ☐ Salt Crust (B11)
- ☒ Biotic Crust (1312)
- ☐ Aquatic Invertebrates (1313)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (131) (**Riverine**)
- ☐ Sediment Deposits (132) (Riverine)
- ☐ Drift Deposits (133) (Riverine)
- ☐ Drainage Patterns (1310)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): 1/2"

Water Table Present? Yes ☒ No ☐ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): _____

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Algal matting.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: 874 N. Wright Road City/County: Santa Rosa / Sonoma Sampling Date: 3/16/2010

Applicant/Owner: Mangal Dhillon State: CA Sampling Point: 2

Investigator(s): Geoff Monk & Isabelle de Geofroy Section, Township, Range: Sebastopol Quad

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Level Slope (%) 0

Subregion (LRR): C Lat: 38°25'35.28"N Long: 122°46'6.33"N Datum: NAD 83

Soil Map Unit Name: CfA - Clear Lake Clay, Ponded, 0 to 2 Percent Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? [ ] Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? [ ] (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	Is the Sampled Area within a Wetland?	Yes [ ] No [X]
Hydric Soil Present?	Yes [ ]	No [X]		
Wetland Hydrology Present?	Yes [ ]	No [X]		

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. Phalaris aquatica	55	X	FAC
2. Lolium multiflorum	30	X	FAC
3. Geranium dissectum	10		UPL
4. Vicia sativa	5		FACU
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum % Cover of Biotic Crust

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [ ] Prevalence Index is: ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [X] No [ ]

Remarks:

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	LOC[2]	Texture	Remarks
0-16"	7.5 YR 2.5/1	100		0				clay

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A1 1)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (I-RR 13)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No evidence of redox. Soils moist.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (132) (**Nonriverine**)
- ☐ Drift Deposits (133) (**Nonriverine**)
- ☐ Surface Soil Cracks (136)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (139)
- ☐ Salt Crust (B1 1)
- ☐ Biotic Crust (1312)
- ☐ Aquatic Invertebrates (1313)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (131) (**Riverine**)
- ☐ Sediment Deposits (132) (Riverine)
- ☐ Drift Deposits (133) (Riverine)
- ☐ Drainage Patterns (1310)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches): _____
Water Table Present?	Yes ☒	No ☐	Depth (inches): 13"
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturated soils were at 13" and thus not within the 12" required to demonstrate hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: 874 N. Wright Road City/County: Santa Rosa / Sonoma Sampling Date: 3/16/2010

Applicant/Owner: Mangal Dhillon State: CA Sampling Point: 3

Investigator(s): Geoff Monk & Isabelle de Geofroy Section, Township, Range: Sebastopol Quads

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Level Slope (%) 0

Subregion (LRR): C Lat: 38°25'35.28"N Long: 122°46'6.33"N Datum: NAD 83

Soil Map Unit Name: CfA - Clear Lake Clay, Ponded, 0 to 2 Percent Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? [ ] Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? [ ] (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	**Is the Sampled Area within a Wetland?**	Yes [ ] No [X]
Hydric Soil Present?	Yes [ ]	No [X]		
Wetland Hydrology Present?	Yes [ ]	No [X]		

Remarks:

Elevated area.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. Phalaris aquatica	80	X	FACW
2. Lolium multiflorum	10		FAC
3. Geranium dissectum	10		UPL
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum % Cover of Biotic Crust

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- [X] Dominance Test is >50%
- [ ] Prevalence Index is: ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [X] No [ ]

Remarks:

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	LOC[2]	Texture	Remarks
0-16"	7.5 YR 2.5/1	100						Clay

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A1 1)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (**S4**)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (l-RR 13)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No evidence of redox. Soil does not fit SCS mapped soil type.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (132) (**Nonriverine**)
- ☐ Drift Deposits (133) (**Nonriverine**)
- ☐ Surface Soil Cracks (136)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (139)
- ☐ Salt Crust (B1 1)
- ☐ Biotic Crust (1312)
- ☐ Aquatic Invertebrates (1313)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (131) (**Riverine**)
- ☐ Sediment Deposits (132) (Riverine)
- ☐ Drift Deposits (133) (Riverine)
- ☐ Drainage Patterns (1310)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: 874 N. Wright Road City/County: Santa Rosa / Sonoma Sampling Date: 3/16/2010

Applicant/Owner: Mangal Dhillon State: CA Sampling Point: 4

Investigator(s): Geoff Monk & Isabelle de Geofroy Section, Township, Range: Sebastopol Quad

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Level Slope (%) 0

Subregion (LRR): C Lat: 38°25'35.28"N Long: 122°46'6.33"N Datum: NAD 83

Soil Map Unit Name: CfA - Clear Lake Clay, Ponded, 0 to 2 Percent Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? ☐ Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? ☐ (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	Yes ☐ No ☒
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks:

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:)			
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. Phalaris aquatica	40	X	FAC
2. Carex densa	20	X	OBL
3. Lolium multiflorum	30	X	FAC
4. Geranium dissectum	10		UPL
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum % Cover of Biotic Crust

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index=B/A =

Hydrophytic Vegetation Indicators:

☒ Dominance Test is >50%

☐ Prevalence Index is:≤3.0[1]

☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	LOC[2]	Texture	Remarks
0-16"	7.5 YR 2.5/1	100					Clay	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A1 1)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (**S4**)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (I-RR 13)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No evidence of redox. Soil type doesn't fit SCS description as hydric soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (132) (**Nonriverine**)
- ☐ Drift Deposits (133) (**Nonriverine**)
- ☐ Surface Soil Cracks (136)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (139)
- ☐ Salt Crust (B1 1)
- ☐ Biotic Crust (1312)
- ☐ Aquatic Invertebrates (1313)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (131) (**Riverine**)
- ☐ Sediment Deposits (132) (Riverine)
- ☐ Drift Deposits (133) (Riverine)
- ☐ Drainage Patterns (1310)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches): _____
Water Table Present?	Yes ☒	No ☐	Depth (inches): 14"
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturated soils were at 14" and thus not within the 12" required to demonstrate hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: 874 N. Wright Road City/County: Santa Rosa / Sonoma Sampling Date: 3/16/2010

Applicant/Owner: Mangal Dhillon State: CA Sampling Point: 5

Investigator(s): Geoff Monk & Isabelle de Geofroy Section, Township, Range: Sebastopol Quad

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Level Slope (%) 0

Subregion (LRR): C Lat: 38°25'35.28"N Long: 122°46'6.33"N Datum: NAD 83

Soil Map Unit Name: CfA - Clear Lake Clay, Ponded, 0 to 2 Percent Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? ☐ Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? ☐ (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?**	Yes ☒	No ☐
Hydric Soil Present?	Yes ☒	No ☐			
Wetland Hydrology Present?	Yes ☒	No ☐			

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. Phalaris aquatica	80	X	FAC
2. Helminthotheca echioides	10		FAC
3. Geranium dissectum	10		UPL
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum % Cover of Biotic Crust

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index=B/A =

Hydrophytic Vegetation Indicators:

☒ Dominance Test is >50%

☐ Prevalence Index is:≤3.0[1]

☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	LOC[2]	Texture	Remarks
0-16"	7.5 YR 2.5/1	100						Clay

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

No evidence of redox. Soil type doesn't fit SCS description as hydric soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (B2) (Nonriverine)
- ☐ Drift Deposits (B3) (Nonriverine)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
- ☐ Sediment Deposits (B2) (Riverine)
- ☐ Drift Deposits (B3) (Riverine)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☒ No ☐ Depth (inches): 8"

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: 874 N. Wright Road City/County: Santa Rosa / Sonoma Sampling Date: 3/16/2010

Applicant/Owner: Mangal Dhillon State: CA Sampling Point: 6

Investigator(s): Geoff Monk & Isabelle de Geofroy Section, Township, Range: Sebastopol Quad

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Level Slope (%) 0

Subregion (LRR): C Lat: 38°25'35.28"N Long: 122°46'6.33"N Datum: NAD 83

Soil Map Unit Name: CfA - Clear Lake Clay, Ponded, 0 to 2 Percent Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? ☐ Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? ☐ (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	**Is the Sampled Area within a Wetland?**	Yes ☐ No ☒
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. Lolium multiflorum	50	X	FAC
2. Vicia sativa	20	X	FACU
3. Helminthotheca echioides	10		FAC
4. Dipsacus fullonum	10		UPL
5. Phalaris aquatica	10		FAC
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum % Cover of Biotic Crust

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	70	x 3 =	210
FACU species	20	x 4 =	80
UPL species	10	x 5 =	50
Column Totals:	100 (A)		340 (B)

Prevalence Index=B/A = 3.40

Hydrophytic Vegetation Indicators:

- ☐ Dominance Test is >50%
- ☐ Prevalence Index is:≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks:

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	LOC[2]	Texture	Remarks
0-16"	7.5 YR 2.5/1	100						Clay

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A1 1)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix **(S4)**
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soil[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (I-RR 13)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

No evidence of redox. Soil type doesn't fit SCS description as hydric soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (132) **(Nonriverine)**
- ☐ Drift Deposits (133) **(Nonriverine)**
- ☐ Surface Soil Cracks (136)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (139)
- ☐ Salt Crust (B1 1)
- ☐ Biotic Crust (1312)
- ☐ Aquatic Invertebrates (1313)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (131) **(Riverine)**
- ☐ Sediment Deposits (132) (Riverine)
- ☐ Drift Deposits (133) (Riverine)
- ☐ Drainage Patterns (1310)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches): _____
Water Table Present?	Yes ☒	No ☐	Depth (inches): 8"
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches): _____

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: 874 N. Wright Road City/County: Santa Rosa / Sonoma Sampling Date: 3/16/2010

Applicant/Owner: Mangal Dhillon State: CA Sampling Point: 7

Investigator(s): Geoff Monk & Isabelle de Geofroy Section, Township, Range: Sebastopol Quad

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Level Slope (%) 0

Subregion (LRR): C Lat: 38°25'35.28"N Long: 122°46'6.33"N Datum: NAD 83

Soil Map Unit Name: CfA - Clear Lake Clay, Ponded, 0 to 2 Percent Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? ☐ Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? ☐ (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☐ No ☒
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks:

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:)			
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. Phalaris aquatica	85	X	FAC
2. Geranium dissectum	5		UPL
3. Vicia sativa	5		FACU
4. Lactuca serriola	5		FAC
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum % Cover of Biotic Crust

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index=B/A =

Hydrophytic Vegetation Indicators:

☒ Dominance Test is >50%

☐ Prevalence Index is:≤3.0[1]

☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

SOIL

Sampling Point: 7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	LOC[2]	Texture	Remarks
0-16"	10 YR 2/1	100					Clay	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A1 1)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (l-RR 13)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No evidence of redox. Soil type doesn't fit SCS description as hydric soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (132) (**Nonriverine**)
- ☐ Drift Deposits (133) (**Nonriverine**)
- ☐ Surface Soil Cracks (136)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (139)
- ☐ Salt Crust (B1 1)
- ☐ Biotic Crust (1312)
- ☐ Aquatic Invertebrates (1313)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (131) (**Riverine**)
- ☐ Sediment Deposits (132) (Riverine)
- ☐ Drift Deposits (133) (Riverine)
- ☐ Drainage Patterns (1310)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches): _____
Water Table Present?	Yes ☐	No ☒	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: 874 N. Wright Road City/County: Santa Rosa / Sonoma Sampling Date: 3/16/2010

Applicant/Owner: Mangal Dhillon State: CA Sampling Point: 8

Investigator(s): Geoff Monk & Isabelle de Geofroy Section, Township, Range: Sebastopol Quad

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Level Slope (%) 0

Subregion (LRR): C Lat: 38°25'35.28"N Long: 122°46'6.33"N Datum: NAD 83

Soil Map Unit Name: CfA - Clear Lake Clay, Ponded, 0 to 2 Percent Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? ☐ Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? ☐ (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	**Is the Sampled Area within a Wetland?** Yes ☐ No ☒
Hydric Soil Present?	Yes ☐	No ☒	
Wetland Hydrology Present?	Yes ☐	No ☒	

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. Vulpia bromoides	45	X	FACW
2. Geranium dissectum	5		UPL
3. Phalaris aquatica	45	X	FAC
4. Lactuca serriola	5		FAC
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum % Cover of Biotic Crust

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

☒ Dominance Test is >50%

☐ Prevalence Index is: ≤3.0[1]

☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

SOIL

Sampling Point: 8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	LOC[2]	Texture	Remarks
0-16"	10 YR 2/1	100						clay

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A1 1)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR 13)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No evidence of redox. Soil type doesn't fit SCS description as hydric soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (132) **(Nonriverine)**
- ☐ Drift Deposits (133) **(Nonriverine)**
- ☐ Surface Soil Cracks (136)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (139)
- ☐ Salt Crust (B1 1)
- ☐ Biotic Crust (1312)
- ☐ Aquatic Invertebrates (1313)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (131) **(Riverine)**
- ☐ Sediment Deposits (132) (Riverine)
- ☐ Drift Deposits (133) (Riverine)
- ☐ Drainage Patterns (1310)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: 874 N. Wright Road City/County: Santa Rosa / Sonoma Sampling Date: 3/16/2010

Applicant/Owner: Mangal Dhillon State: CA Sampling Point: 9

Investigator(s): Geoff Monk & Isabelle de Geofroy Section, Township, Range: Sebastopol Quad

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Level Slope (%) 0

Subregion (LRR): C Lat: 38°25'35.28"N Long: 122°46'6.33"N Datum: NAD 83

Soil Map Unit Name: AeA - Alluvial Land, Clayey NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? [ ] Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? [ ] (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [ ]	No [X]	Is the Sampled Area within a Wetland? Yes [ ] No [X]
Hydric Soil Present?	Yes [ ]	No [X]	
Wetland Hydrology Present?	Yes [ ]	No [X]	

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. Lolium multiflorum	45	X	FAC
2. Rumex crispus	5		FACW
3. Carex densa	10		OBL
4. Dipsacus fullonum	30	X	UPL
5. Geranium dissectum	10		UPL
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	5	x 2 =	10
FAC species	45	x 3 =	135
FACU species	0	x 4 =	0
UPL species	40	x 5 =	200
Column Totals:	100 (A)		355 (B)

Prevalence Index=B/A = 3.55

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is:≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [ ] No [X]

Remarks:

SOIL

Sampling Point: 9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	LOC[2]	Texture	Remarks
0-16"	7.5 YR 2.5/1	100						Clay

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A1 1)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (I-RR 13)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No evidence of redox. Soil type doesn't fit SCS description as hydric soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (132) (**Nonriverine**)
- ☐ Drift Deposits (133) (**Nonriverine**)
- ☐ Surface Soil Cracks (136)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (139)
- ☐ Salt Crust (B1 1)
- ☐ Biotic Crust (1312)
- ☐ Aquatic Invertebrates (1313)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (131) (**Riverine**)
- ☐ Sediment Deposits (132) (Riverine)
- ☐ Drift Deposits (133) (Riverine)
- ☐ Drainage Patterns (1310)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: 874 N. Wright Road City/County: Santa Rosa / Sonoma Sampling Date: 3/16/2010

Applicant/Owner: Mangal Dhillon State: CA Sampling Point: 10

Investigator(s): Geoff Monk & Isabelle de Geofroy Section, Township, Range: Sebastopol Quad

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Level Slope (%) 0

Subregion (LRR): C Lat: 38°25'35.28"N Long: 122°46'6.33"N Datum: NAD 83

Soil Map Unit Name: AeA - Alluvial Land, Clayey NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? ☐ Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? ☐ (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☐ No ☒
Hydric Soil Present?	Yes ☐	No ☒		
Wetland Hydrology Present?	Yes ☐	No ☒		

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. Phalaris aquatica	65	X	FAC
2. Geranium dissectum	15		UPL
3. Vulpia bromoides	20	X	FACW
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index=B/A = ____

Hydrophytic Vegetation Indicators:

☒ Dominance Test is >50%

☐ Prevalence Index is:≤3.0[1]

☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

SOIL

Sampling Point: 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	LOC[2]	Texture	Remarks
0-16"	7.5 YR 2.5/1	100					Clay	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A1 1)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (**S4**)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (I-RR 13)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No evidence of redox. Soil type doesn't fit SCS description as hydric soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (132) (**Nonriverine**)
- ☐ Drift Deposits (133) (**Nonriverine**)
- ☐ Surface Soil Cracks (136)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (139)
- ☐ Salt Crust (B1 1)
- ☐ Biotic Crust (1312)
- ☐ Aquatic Invertebrates (1313)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (131) (**Riverine**)
- ☐ Sediment Deposits (132) (Riverine)
- ☐ Drift Deposits (133) (Riverine)
- ☐ Drainage Patterns (1310)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches): _____
Water Table Present?	Yes ☒	No ☐	Depth (inches): 13"
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturated soils were at 13" and thus not within the 12" required to demonstrate hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: 874 N. Wright Road City/County: Santa Rosa / Sonoma Sampling Date: 3/16/2010

Applicant/Owner: Mangal Dhillon State: CA Sampling Point: 11

Investigator(s): Geoff Monk & Isabelle de Geofroy Section, Township, Range: Sebastopol Quad

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Level Slope (%) 0

Subregion (LRR): C Lat: 38°25'35.28"N Long: 122°46'6.33"N Datum: NAD 83

Soil Map Unit Name: AeA - Alluvial Land, Clayey NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? ☐ Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? ☐ (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☒ No ☐
Hydric Soil Present?	Yes ☒	No ☐		
Wetland Hydrology Present?	Yes ☒	No ☐		

Remarks:

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:)			
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. Phalaris aquatica	40	X	FAC
2. Geranium dissectum	35	X	UPL
3. Vulpia bromoides	25	X	FACW
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW or FAC: 66 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

☒ Dominance Test is >50%

☐ Prevalence Index is: ≤3.0[1]

☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☒ No ☐

Remarks:

SOIL

Sampling Point: 11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	LOC[2]	Texture	Remarks
0-16"	7.5 YR 2.5/1	100					Clay	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A1 1)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (**S4**)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soil[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (I-RR 13)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

No evidence of redox. Soil type doesn't fit SCS description as hydric soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)

- ☐ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (132) (**Nonriverine**)
- ☐ Drift Deposits (133) (**Nonriverine**)
- ☐ Surface Soil Cracks (136)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (139)
- ☐ Salt Crust (B1 1)
- ☐ Biotic Crust (1312)
- ☐ Aquatic Invertebrates (1313)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (131) (**Riverine**)
- ☐ Sediment Deposits (132) (Riverine)
- ☐ Drift Deposits (133) (Riverine)
- ☐ Drainage Patterns (1310)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐ No ☒	Depth (inches):	
Water Table Present?	Yes ☒ No ☐	Depth (inches):	8"
Saturation Present? (includes capillary fringe)	Yes ☒ No ☐	Depth (inches):	4"

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: 874 N. Wright Road City/County: Santa Rosa / Sonoma Sampling Date: 3/16/2010

Applicant/Owner: Mangal Dhillon State: CA Sampling Point: 12

Investigator(s): Geoff Monk & Isabelle de Geofroy Section, Township, Range: Sebastopol Quad

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Level Slope (%) 0

Subregion (LRR): C Lat: 38°25'35.28"N Long: 122°46'6.33"N Datum: NAD 83

Soil Map Unit Name: WoA - Wright Loam, Shallow, Wet, 0 to 2 Percent Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? [ ] Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? [ ] (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [ ]	No [X]	Is the Sampled Area within a Wetland?	Yes [ ] No [X]
Hydric Soil Present?	Yes [X]	No [ ]		
Wetland Hydrology Present?	Yes [X]	No [ ]		

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. Piptatherum miliaceum	20	X	UPL
2. Bromus hordeaceus	30	X	FACU
3. Lolium multiflorum	40	X	FAC
4. Helminthotheca echioides	5		FAC
5. Geranium dissectum	5		UPL
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum % Cover of Biotic Crust

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	45	x 3 =	135
FACU species	30	x 4 =	120
UPL species	25	x 5 =	125
Column Totals:	100 (A)		375 (B)

Prevalence Index = B/A = 3.75

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is: ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [ ] No [X]

Remarks:

SOIL

Sampling Point: 12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	LOC[2]	Texture	Remarks
0-16"	7.5 YR 2.5/1	100					Clay	

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR B)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☒ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

No evidence of redox. Soil type doesn't fit SCS description as hydric soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☒ Surface Water (A1)
- ☒ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (132) (**Nonriverine**)
- ☐ Drift Deposits (133) (**Nonriverine**)
- ☐ Surface Soil Cracks (136)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (139)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (1312)
- ☐ Aquatic Invertebrates (1313)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (131) (**Riverine**)
- ☐ Sediment Deposits (132) (Riverine)
- ☐ Drift Deposits (133) (Riverine)
- ☐ Drainage Patterns (1310)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (inches): 1/2"

Water Table Present? Yes ☐ No ☐ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☒ No ☐ Depth (inches): 0-16"

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: 874 N. Wright Road City/County: Santa Rosa / Sonoma Sampling Date: 3/16/2010

Applicant/Owner: Mangal Dhillon State: CA Sampling Point: 13

Investigator(s): Geoff Monk & Isabelle de Geofroy Section, Township, Range: Sebastopol Quad

Landform (hillslope, terrace, etc.): Side Slope Local relief (concave, convex, none): Slope Slope (%) 6

Subregion (LRR): C Lat: 38°25'35.28"N Long: 122°46'6.33"N Datum: NAD 83

Soil Map Unit Name: WoA - Wright Loam, Shallow, Wet, 0 to 2 Percent Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? ☐ Are "Normal Circumstances" present? Yes ☒ No ☐

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? ☐ (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐	No ☒	Is the Sampled Area within a Wetland? Yes ☐ No ☒
Hydric Soil Present?	Yes ☐	No ☒	
Wetland Hydrology Present?	Yes ☐	No ☒	

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. Phalaris aquatica	15		FAC
2. Bromus diandrus	80	X	UPL
3. Lolium multiflorum	3		FAC
4. Geranium dissectum	2		UPL
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index=B/A =

Hydrophytic Vegetation Indicators:

- ☐ Dominance Test is >50%
- ☐ Prevalence Index is:≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks:

SOIL

Sampling Point: 13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	LOC[2]	Texture	Remarks
0 - 16"	10 YR 2/2	100						clay

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A1 1)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (I-RR 13)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No evidence of redox. Soil type doesn't fit SCS description as hydric soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (132) **(Nonriverine)**
- ☐ Drift Deposits (133) **(Nonriverine)**
- ☐ Surface Soil Cracks (136)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (139)
- ☐ Salt Crust (B1 1)
- ☐ Biotic Crust (1312)
- ☐ Aquatic Invertebrates (1313)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (131) **(Riverine)**
- ☐ Sediment Deposits (132) (Riverine)
- ☐ Drift Deposits (133) (Riverine)
- ☐ Drainage Patterns (1310)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (inches): _____
Water Table Present?	Yes ☐	No ☒	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: 874 N. Wright Road City/County: Santa Rosa / Sonoma Sampling Date: 3/16/2010

Applicant/Owner: Mangal Dhillon State: CA Sampling Point: 14

Investigator(s): Geoff Monk & Isabelle de Geofroy Section, Township, Range: Sebastopol Quad

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Level Slope (%) 0

Subregion (LRR): C Lat: 38°25'35.28"N Long: 122°46'6.33"N Datum: NAD 83

Soil Map Unit Name: CfA - Clear Lake Clay, Ponded, 0 to 2 Percent Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? [ ] Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? [ ] (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [X]	No [ ]	Is the Sampled Area within a Wetland?	Yes [ ] No [X]
Hydric Soil Present?	Yes [ ]	No [X]		
Wetland Hydrology Present?	Yes [ ]	No [X]		

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. Phalaris aquatica	90	X	FAC
2. Vulpia bromoides	5		FACW
3. Geranium dissectum	5		UPL
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum % Cover of Biotic Crust

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is: ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [X] No [ ]

Remarks:

SOIL

Sampling Point: 14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	LOC[2]	Texture	Remarks
0 - 16"	10 YR 2/2	100						clay - mixed

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A1 1)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soil[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (I-RR 13)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No evidence of redox. Mixed soils from homesite landscaping.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (132) (Nonriverine)
- ☐ Drift Deposits (133) (Nonriverine)
- ☐ Surface Soil Cracks (136)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (139)
- ☐ Salt Crust (B1 1)
- ☐ Biotic Crust (1312)
- ☐ Aquatic Invertebrates (1313)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (131) (Riverine)
- ☐ Sediment Deposits (132) (Riverine)
- ☐ Drift Deposits (133) (Riverine)
- ☐ Drainage Patterns (1310)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: 874 N. Wright Road City/County: Santa Rosa / Sonoma Sampling Date: 3/16/2010

Applicant/Owner: Mangal Dhillon State: CA Sampling Point: 15

Investigator(s): Geoff Monk & Isabelle de Geofroy Section, Township, Range: Sebastopol Quad

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Level Slope (%) 0

Subregion (LRR): C Lat: 38°25'35.28"N Long: 122°46'6.33"N Datum: NAD 83

Soil Map Unit Name: CfA - Clear Lake Clay, Ponded, 0 to 2 Percent Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? [ ] Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? [ ] (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [ ]	No [X]	**Is the Sampled Area within a Wetland?** Yes [ ] No [X]
Hydric Soil Present?	Yes [ ]	No [X]	
Wetland Hydrology Present?	Yes [ ]	No [X]	

Remarks:

Old house foundation site.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. Avena barbata	75	X	UPL
2. Helminthotheca echioides	10		FAC
3. Vicia sativa	5		FACU
4. Phalaris aquatica	10		FAC
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is: ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [ ] No [X]

Remarks:

SOIL

Sampling Point: 15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	LOC[2]	Texture	Remarks
0 - 16"	10 YR 2/2	100						Gravelly clay

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A1 1)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (LRR 13)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No evidence of redox. Soil compacted.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (Nonriverine)
- ☐ Sediment Deposits (132) (Nonriverine)
- ☐ Drift Deposits (133) (Nonriverine)
- ☐ Surface Soil Cracks (136)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (139)
- ☐ Salt Crust (B1 1)
- ☐ Biotic Crust (1312)
- ☐ Aquatic Invertebrates (1313)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (131) (Riverine)
- ☐ Sediment Deposits (132) (Riverine)
- ☐ Drift Deposits (133) (Riverine)
- ☐ Drainage Patterns (1310)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of hydrology.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: 874 N. Wright Road City/County: Santa Rosa / Sonoma Sampling Date: 3/16/2010

Applicant/Owner: Mangal Dhillon State: CA Sampling Point: 16

Investigator(s): Geoff Monk & Isabelle de Geofroy Section, Township, Range: Sebastopol Quad

Landform (hillslope, terrace, etc.): Plain Local relief (concave, convex, none): Level Slope (%) 0

Subregion (LRR): C Lat: 38°25'35.28"N Long: 122°46'6.33"N Datum: NAD 83

Soil Map Unit Name: CfA - Clear Lake Clay, Ponded, 0 to 2 Percent Slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [X] No [ ] (If no, explain in Remarks.)

Are Vegetation [ ] Soil [ ] or Hydrology [ ] significantly disturbed? [ ] Are "Normal Circumstances" present? Yes [X] No [ ]

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? [ ] (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes [ ]	No [X]	**Is the Sampled Area within a Wetland?** Yes [ ] No [X]
Hydric Soil Present?	Yes [ ]	No [X]	
Wetland Hydrology Present?	Yes [ ]	No [X]	

Remarks:

Old house foundation site.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. Geranium dissectum	5		UPL
2. Bromus diandrus	80	X	UPL
3. Leucanthemum sp.	10		NI
4. Perideridia sp.	5		NI
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index=B/A =

Hydrophytic Vegetation Indicators:

- [ ] Dominance Test is >50%
- [ ] Prevalence Index is:≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes [ ] No [X]

Remarks:

SOIL

Sampling Point: 16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	LOC[2]	Texture	Remarks
0 - 16"	10 YR 2/2	100						Gravelly clay

[1]Type: C= Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (LRR C)
- ☐ 1 cm Muck (A9) (LRR D)
- ☐ Depleted Below Dark Surface (A1 1)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (LRR C)
- ☐ 2 cm Muck (A10) (l-RR 13)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No evidence of redox. Soil does not fit SCS mapped soil type.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) **(Nonriverine)**
- ☐ Sediment Deposits (132) **(Nonriverine)**
- ☐ Drift Deposits (133) **(Nonriverine)**
- ☐ Surface Soil Cracks (136)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (139)
- ☐ Salt Crust (B1 1)
- ☐ Biotic Crust (1312)
- ☐ Aquatic Invertebrates (1313)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (131) **(Riverine)**
- ☐ Sediment Deposits (132) (Riverine)
- ☐ Drift Deposits (133) (Riverine)
- ☐ Drainage Patterns (1310)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____

Water Table Present? Yes ☐ No ☒ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No evidence of hydrology.

HORTICULTURAL
Associates

Consultants in Horticulture and Arboriculture

TREE PRESERVATION AND MITIGATION REPORT

847 NORTH WRIGHT ROAD SANTA ROSA, CALIFORNIA

Prepared for:

Mr. Mangal Dhillon
2743 Yulupa Ave.
Santa Rosa, CA 95405

By:

John C. Meserve
Member, American Society of Consulting Arborists
International Society of Arboriculture WCISA #478

June 21, 2007

HORTICULTURAL Associates

Consultants in Horticulture and Arboriculture
P.O Box 1261, Glen Ellen, CA 95442

June 21, 2007

Mr. Mangal Dhillon
2743 Yulupa Ave.
Santa Rosa, CA 95405

Re: Completed *Tree Preservation and Mitigation Report,* 847 North Wright Rd., Santa Rosa

Mr. Dhillon,

Attached you will find our *Tree Preservation and Mitigation Report* for the above-noted project. A total of 10 trees were evaluated, based on their trunk diameter and location in relation to proposed construction. Other trees were present at the site but were not included in this report, because they were either too small or not expected to be affected by proposed development activities.

Each tree in this report was evaluated for size, health, and structural condition. These observations are presented in the section entitled *Individual Tree Evaluations.* Also, in this section, we provide our estimate of the development impact on each tree, as well as specific recommendations for preservation or removal. Another section, entitled *Tree Location Plan,* shows the location and numbering sequence of all evaluated trees and illustrates the dripline of each tree. Two other sections are general *Tree Preservation Guidelines* and *Pruning Standards.*

This report is intended to be a basic inventory of trees present at this site, which includes a general review of tree health and structural condition. No in-depth evaluation has occurred, and assessment has included only external visual examination of each tree without probing, drilling, coring, root collar examination, root excavation, or dissecting any tree part. Failures, deficiencies, and problems may occur in these trees in the future, and this inventory in no way guarantees or provides a warranty for their condition. We would be glad to provide a detailed evaluation of any tree at your specific direction. All preserved trees should be periodically monitored by a consulting arborist during and after construction to ensure that decline or hazard does not develop. Each tree must be protected and mitigated per this report, and common sense, to have a reasonable chance for long-term survival.

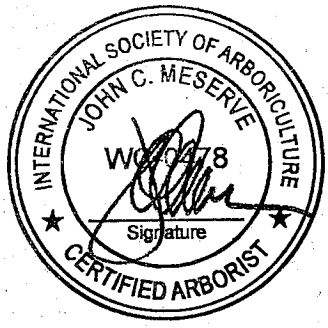
At the time of my field evaluation it was uncertain whether or not trees along the north property line were actually located on project property or on adjacent county property. Tree #7 is in poor condition, and Tree #8 is completely dead. Both trees should be removed as they represent a hazard to occupants and improvements at the proposed project site.

Thousands of white poplar seedlings were observed throughout the site, primarily along the edge of the existing drainage ditch and along the north property line. This exotic, invasive tree species may represent a long term management issue even after the project is complete if they are not brought under control prior to development. It is recommended that an herbicide spray program be implemented to control seedling growth prior to grading the site.

Please feel free to contact me if you have questions regarding this report, or if further discussion about any tree issue is required.

Sincerely,

John C. Meserve
Member, American Society of Consulting Arborists
International Society of Arboriculture, WCISA #478



INDIVIDUAL TREE EVALUATIONS

Individual Tree Evaluations

847 North Wright Road
Santa Rosa, California

June 21, 2007

Tree #1 *Quercus lobata* (valley oak)

Trunk Diameter in Inches: 17.5

Number of Trunks: 1

Height in Feet ±: 25

Canopy Radius in Feet ±: 15

Observations:

Tree vigor is good; trunk condition appears to be sound; root crown appears to be sound; canopy structure is generally symmetrical; habit is dense; canopy is low branched; no significant pest present.

Development Impacts:

A significant impact on long-term tree integrity can be expected as a result of the storm drain and the car wash exit lane.

Recommendations:

This tree can be preserved and monitored to determine whether it declines over time. Incorporate the following mitigation and protection measures to improve its chances of survival:

1) Install temporary protective fencing at the edge of illustrated dripline or the edge of approved construction prior to grading on the site. Maintain fencing in place for duration of construction.

2) Maintain existing grade within the fenced portion of the dripline. Route drainage swales and underground work outside the dripline where possible.

3) Place a 4" layer of chipped bark mulch over the soil surface within the fenced dripline prior to installing temporary fencing. Suitable bark must contain bark "fines." Maintain this layer of mulch throughout construction.

4) Prune to clean and raise the canopy, and reduce end weight, per International Society of Arboriculture pruning standards.

Tree #2 *Ulmus parvifolia* (Chinese elm)

Trunk Diameter in Inches: multiple trunks

Number of Trunks: multiple

Height in Feet ±: 40

Canopy Radius in Feet ±: 27

Observations:

Tree vigor is good; trunk condition appears to be sound; root crown appears to be sound; canopy structure is generally symmetrical; habit is dense; canopy is low branched; structurally weak; co-dominant leaders present; no significant pest present.

Development Impacts:

A significant impact on long-term tree integrity can be expected as a result of location within the proposed development footprint.

Recommendations:

Removal required due to significant development impacts.

Tree #3 *Ulmus parvifolia* (Chinese elm)

Trunk Diameter in Inches: 21.5 + 24

Number of Trunks: 2

Height in Feet ±: 45

Canopy Radius in Feet ±: 30

Observations:

Tree vigor is good; trunk condition appears to be sound; root crown appears to be sound; canopy structure is generally symmetrical; habit is dense; canopy is low branched; structurally weak; co-dominant leaders present; no significant pest present.

Development Impacts:

A significant impact on long-term tree integrity can be expected as a result of location within the proposed development footprint.

Recommendations:

Removal required due to significant development impacts.

Tree #4 *Quercus lobata* (valley oak)

Trunk Diameter in Inches: multiple trunks

Number of Trunks: multiple

Height in Feet ±: 15

Canopy Radius in Feet ±: 12

Observations:

Tree vigor is good; trunk condition appears to be sound; root crown appears to be sound; canopy structure is generally symmetrical; habit is dense; canopy is low branched; no significant pest present.

Development Impacts:

A significant impact on long-term tree integrity can be expected as a result of location within the proposed development footprint.

Recommendations:

Removal required due to significant development impacts.

Tree #5 *Populus alba* (white poplar)

Trunk Diameter in Inches: 5

Number of Trunks: 1

Height in Feet ±: 15

Canopy Radius in Feet ±: 10

Observations:

Tree vigor is good; trunk condition appears to be sound; root crown appears to be sound; canopy structure is generally asymmetrical; habit is dense; canopy is low branched; structurally weak; no significant pest present. This tree may be off-site.

Development Impacts:

A moderate impact on long-term tree integrity can be expected as a result of proposed development.

Recommendations:

This is a preservable tree. Implement the following mitigation measures to protect and promote long term health:

1) Install temporary protective fencing at the edge of illustrated dripline or the edge of approved construction prior to grading on the site. Maintain fencing in place for duration of construction.

2) Maintain existing grade within the fenced portion of the dripline. Route drainage swales and underground work outside the dripline where possible.

3) Place a 4" layer of chipped bark mulch over the soil surface within the fenced dripline prior to installing temporary fencing. Suitable bark must contain bark "fines." Maintain this layer of mulch throughout construction.

Trunk location may be on adjacent county property.

Tree #6 *Fraxinus latifolia* (Oregon ash)

Trunk Diameter in Inches: 9.5

Number of Trunks: 1

Height in Feet ±: 25

Canopy Radius in Feet ±: 14

Observations:

Tree vigor is good; trunk condition appears to be sound; root crown appears to be sound; canopy structure is generally asymmetrical; habit is dense; canopy is low branched; no significant pest present. This tree may be off-site.

Development Impacts:

A moderate impact on long-term tree integrity can be expected as a result of proposed development.

Recommendations:

This is a preservable tree. Implement the following mitigation measures to protect and promote long term health:

1) Install temporary protective fencing at the edge of illustrated dripline or the edge of approved construction prior to grading on the site. Maintain fencing in place for duration of construction.

2) Maintain existing grade within the fenced portion of the dripline. Route drainage swales and underground work outside the dripline where possible.

3) Place a 4" layer of chipped bark mulch over the soil surface within the fenced dripline prior to installing temporary fencing. Suitable bark must contain bark "fines." Maintain this layer of mulch throughout construction.

Trunk location may be on adjacent county property.

Tree #7 *Populus alba* (white poplar)

Trunk Diameter in Inches: 32

Number of Trunks: 1

Height in Feet ±: 35

Canopy Radius in Feet ±: 36

Observations:

Tree vigor is poor; trunk exhibits minor decay; root crown appears to have minor decay; canopy structure is generally asymmetrical; habit is open; canopy is low branched; structurally weak; co-dominant leaders present; no significant pest present. This tree may be off-site.

Development Impacts:

A moderate impact on long-term tree integrity can be expected as a result of proposed development.

Recommendations:

This tree is in poor condition, and should be removed because it is hazardous. Verify ownership before removing.

Tree #8 *Populus alba* (white poplar)

Trunk Diameter in Inches: 17.5+16

Number of Trunks: 2

Height in Feet ±: 30

Canopy Radius in Feet ±:

Observations:
This tree is dead.

Development Impacts:

Recommendations:
Remove dead tree, but verify ownership before removing.

Tree #9 *Maytenus boaria* (mayten)

Trunk Diameter in Inches: 7.5

Number of Trunks: 1

Height in Feet ±: 12

Canopy Radius in Feet ±: 10

Observations:
Tree vigor is good; trunk condition appears to be sound; root crown appears to be sound; canopy structure is generally symmetrical; habit is dense; canopy is low branched; no significant pest present. This tree may be off-site.

Development Impacts:
A moderate impact on long-term tree integrity can be expected as a result of proposed development.

Recommendations:
This is a preservable tree. Implement the following mitigation measures to protect and promote long term health:

1) Install temporary protective fencing at the edge of illustrated dripline or the edge of approved construction prior to grading on the site. Maintain fencing in place for duration of construction.

2) Maintain existing grade within the fenced portion of the dripline. Route drainage swales and underground work outside the dripline where possible.

3) Place a 4" layer of chipped bark mulch over the soil surface within the fenced dripline prior to installing temporary fencing. Suitable bark must contain bark "fines." Maintain this layer of mulch throughout construction.

Tree #10 *Pinus radiata* (Monterey pine)

Trunk Diameter in Inches: 11

Number of Trunks: 1

Height in Feet ±: 20

Canopy Radius in Feet ±: 10

Observations:

Tree vigor is good; trunk condition appears to be sound; root crown appears to be sound; canopy structure is generally symmetrical; habit is dense; canopy is low branched; no significant pest present. This tree may be off-site.

Development Impacts:

A moderate impact on long-term tree integrity can be expected as a result of proposed development.

Recommendations:

This is a preservable tree. Implement the following mitigation measures to protect and promote long term health:

1) Install temporary protective fencing at the edge of illustrated dripline or the edge of approved construction prior to grading on the site. Maintain fencing in place for duration of construction.

2) Maintain existing grade within the fenced portion of the dripline. Route drainage swales and underground work outside the dripline where possible.

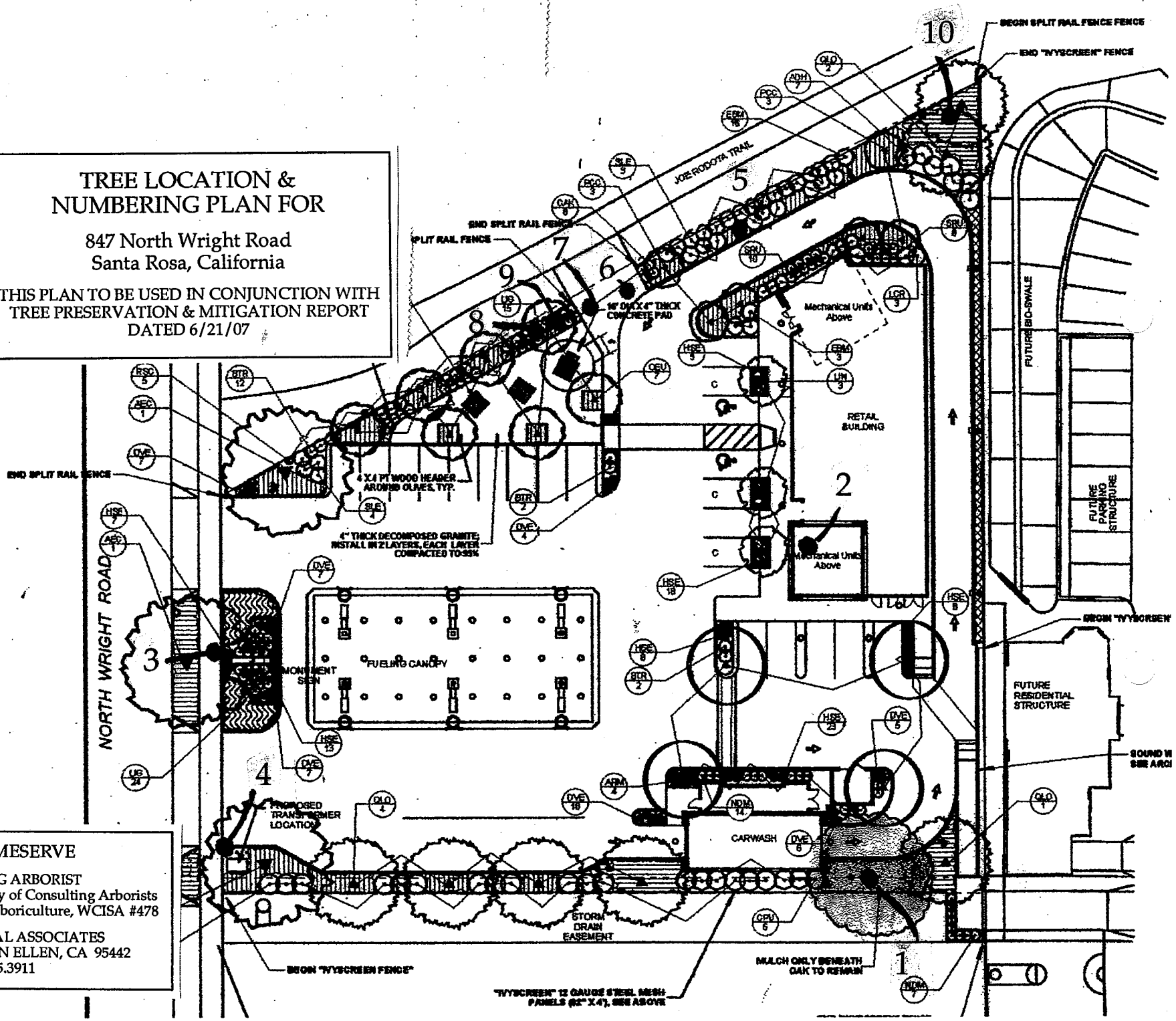
3) Place a 4" layer of chipped bark mulch over the soil surface within the fenced dripline prior to installing temporary fencing. Suitable bark must contain bark "fines." Maintain this layer of mulch throughout construction.

TREE LOCATION PLAN

TREE LOCATION & NUMBERING PLAN FOR

847 North Wright Road
Santa Rosa, California

THIS PLAN TO BE USED IN CONJUNCTION WITH TREE PRESERVATION & MITIGATION REPORT DATED 6/21/07



JOHN C. MESERVE

CONSULTING ARBORIST
Member, American Society of Consulting Arborists
International Society of Arboriculture, WCISA #478

HORTICULTURAL ASSOCIATES
P.O. BOX 1261 / GLEN ELLEN, CA 95442
707.935.3911

TREE PRESERVATION GUIDELINES

GENERAL TREE PRESERVATION GUIDELINES

Introduction to Tree Preservation

Great care must be exercised when development is proposed in the vicinity of established trees of any type. The trees present at this proposed construction site will require specialized protection techniques during all construction activities to minimize negative impact on their health and vigor. The area immediately under canopy driplines of these trees is especially critical, and for these reasons the requirements, procedures, and recommendations which follow have been established for short and long term tree protection. The purpose of this preservation guideline is therefore to define the procedures which must be followed during any and all phases of development in the immediate vicinity of these trees.

Established, mature trees respond in a number of different ways to disruption of their natural conditions. Change of grade within the dripline or near the root crown, damage to the bark of the tree, soil compaction above the root system, root system reduction or damage, or alteration of summer soil moisture levels may individually or collectively cause physiological stress leading to tree decline and death. The individual effects of these procedures may cause trees to immediately exhibit symptoms and begin to decline, but more commonly the process may take many years, with symptoms appearing slowly over a period of time. Trees may not begin to show obvious signs of decline until many years after construction is completed. It is not appropriate to wait for symptoms to appear, as this may be too late to correct the conditions at fault and to halt decline.

It is therefore critical to the long term health of all tree species that a well conceived management program be agreed upon before implementation of any construction activities. Once agreed upon at the design level, it is imperative that contractors and construction personnel understand the importance of guidelines and their potential implications. The following guidelines are meant to be utilized by project managers and those supervising any construction in the vicinity of these trees including grading contractors, underground contractors, all equipment operators, construction personnel, and landscape contractors. Guidelines are presented in a brief outline form to be applied to each individual circumstance which occurs during development activities. It is left to the project supervisor to apply and enforce these protection measures. Questions which arise, or interpretation of guidelines as they apply to site activities, should be referred to the office of Horticultural Associates as they occur.

It should be understood by all those involved in this project that by altering natural conditions around any existing, healthy tree, the potential for root damage and eventual tree decline is increased. A well written and implemented protection specification will minimize to an acceptable level but not necessarily eliminate negative impacts on trees. Compromise or deviation from protection specifications will significantly increase the chance of tree decline or failure.

The term *dripline* has different meanings and should be defined for use at this project. Tree dripline is defined as the perimeter of each tree canopy at the widest point from the main

trunk. This traditionally is applied to the actual field condition, however, where a one-sided tree structure exists and the tree is not structurally uniform, the dripline shall be assumed to be the widest distance to the edge of canopy extending equally around tree circumference. The area below ground within the dripline is the location of only approximately 70% of the root system, *primarily in the top two feet of the soil surface*. Tree protection guidelines are focused on minimizing intrusion, soil cut or fill, and all activities causing compaction within this area. Site supervision should be completely familiar with this definition and these guidelines, as well as utilizing common sense when working near this critical area.

The following guidelines will cover most circumstances which might arise during construction and will require application to the particular circumstances at the development site based on the actual conditions present.

Protection Within Dripline of Individual Trees

1) Prior to initiating any construction activity in the area, including demolition or grading, temporary protective fencing shall be installed at each site tree in the immediate vicinity of construction. Fencing is to be located a minimum of one foot beyond the canopy dripline. If available space and logistics allow, fence shall be placed at a greater distance or up to twice the diameter of the dripline.

2) Fencing shall be minimum four foot height at all locations, and shall form a continuous barrier without entry points around all individual trees, or groups of trees. Barrier type fencing such as chain link or Tensar plastic fencing is suggested, but any fencing system which adequately prevents the entry of equipment and activity will be acceptable. The use of simple post and cable fencing is not recommended as this provides minimal protection and is easily removed or moved by construction personnel. Fencing shall be installed in a professional manner with adequate uprights and appropriate attachments. Concrete footings are not required due to the temporary nature of the fencing. Any encroachment into the dripline for fencing or construction purposes should be discussed and agreed upon in advance.

3) This fencing shall serve as a barrier to prevent dripline encroachment of any type by construction activities, equipment, materials storage, and personnel.

4) Contractors and subcontractors shall direct all equipment and personnel to remain outside the fenced area at all times until project is complete, and shall instruct personnel and sub-contractors as to the purpose and importance of fencing and preservation.

5) Fencing should remain in place and not be removed until all construction activities are completed. This shall include grading and compaction activities, installation of underground, all construction activities. and any other construction or activity which is scheduled prior to landscape installation. There may be occasion when access is required, and fencing may temporarily be moved to facilitate the work.

6) Roots of single standing trees often extend two to three times the distance of the actual dripline and function primarily in the uptake of nutrients and water. The dripline is arbitrarily established as the minimum root area generally required to preserve tree health. As much area around the circumference of the tree beyond the dripline should have minimum intrusion to further ensure tree survival and health.

Grade Changes

1) Grade changes within tree dripline are to be minimized wherever possible. Grade should not change from that which existed prior to grading activities without approval from the project arborist.

2) Maximum cut or fill within actual or estimated dripline not to exceed 6 inches. All cut activities should be done in conjunction with the project arborist, even those under 6", to minimize root damage.

3) Estimated dripline is defined as the widest distance from main trunk to furthest branch tip applied around the entire circumference of each individual tree. This definition specifically applies to all trees where a one-sided or unbalanced structure exists and the actual dripline is not truly representative of the area of the root zone requiring protection. Cut and fill activities apply to this definition.

4) No more than 6 inches of fill soil shall occur without specifically developed mitigation measures. Removal of soil within tree dripline is also limited to 6 inches, or a lesser amount which can be removed without contacting major roots. Detailed mitigation is required to remove a greater amount. The amount of cut and fill is to be determined by actual tree species, rooting characteristics, soil conditions, and purpose of grade change.

5) All cut and fill activities within tree dripline increases percentage of short and long term tree decline and loss, and approval of these activities, or compromise in this area, shall be done with full knowledge of the negative potential that is incurred.

6) Original grade shall be maintained in immediate area of the root crown, where the soil contacts tree bole, at all times. No increase in grade shall be allowed under any circumstances in this area.

7) Physical retaining structures are required where any fill operation is approved and exceeds 6 inches above original grade. Retaining structures function to prevent soil grade from being raised in the root crown area.

8) Retaining structures shall be permanent in nature and may be constructed from any material which is appropriate in function to hold raised grade away from root crown on a long term basis. Engineering may be required in some instances.

9) Tree retaining structures shall be installed a minimum distance of four feet from any tree trunk and may completely or partially surround the tree depending on location of grade change. If grade is raised on 50% of the dripline, then retaining structures must be installed to prevent that soil from moving to the immediate root crown in that area. If 100% of the grade is raised, structure must surround the tree entirely. It is the responsibility of the project designer to develop an appropriate structure for this purpose.

10) If site conditions exist which necessitate installation of retaining structures closer than four feet to tree trunk, the project arborist shall be consulted for details of this installation.

11) No part of the dry well structure shall be placed below original grade to minimize impact on root system. If necessary, structural posts may be installed to hold walls in place, providing that care is taken during installation to minimize damage to the root system, and that post hole size is minimized. The excavation and pouring of footings and other structural support is not compatible with tree preservation.

12) Grade changes outside the retaining structures shall be such that drainage water of any type or source is not diverted toward or around the root crown in any manner. Grade shall drain away from root crown at a minimum of 2%.

13) If grading toward root crown is required, appropriate surface and/or subsurface drain facilities shall be installed so that water is effectively diverted away from root crown area.

14) Where fill is approved and/or where paving of any type is planned within the dripline, aeration tubes shall be installed from the dry well or retaining structure to the limit of the dripline and placed at a depth corresponding to slightly below original grade. A description of aeration tube use and construction follows:

In all areas where paving, impermeable or semipermeable surfaces, or fill over 6 inches is to be installed within any tree dripline, aeration tubes shall be required to the limit of the dripline or beyond where possible. Tubes shall radiate horizontally from each dry well or the root crown area to the limit of the dripline, and shall be located on 4 foot centers. Ends of tubes shall be connected to one another. A proportional number of tubes shall be installed when partial paving or filling within dripline is required.

Aeration tubes shall consist of rigid and perforated PVC pipe, minimum class 200 , styrene plastic, or molded ABS, minimum 3 inch diameter, 10 perforations per foot. Pipe shall be placed slightly below original grade. Each tube shall be wrapped in suitable filter fabric securely fastened with waterproof tape. Aeration tubes shall daylight within the retaining structure around tree trunk, and a grate shall be attached, but not glued, to the end of each daylighted tube to prevent the entry of debris. Aeration tubes shall also daylight near the outer perimeter of the dripline with a fitted metal grate properly installed slightly above finished grade. Tubes and grate shall not be installed such that water of any type or source backdrains into dry well.

15) The installation of aeration tubes is meant to facilitate the normal exchange of atmospheric gasses with the soil and root system. When impermeable or semi-permeable paving is installed, or when soil grade is raised, this normal exchange is limited and commonly becomes a source of root damage and potential disease.

16) Tree roots will be expected to grow into areas of soil fill, and quality of imported soil should be considered. Ideally, fill soil should be site soil that closely matches that present within tree dripline. If import soil is utilized it should be the same or slightly coarser texture than existing site soil, should have a pH range comparable to site soils, and generally should have acceptable chemical properties for appropriate plant growth. A soil analysis is recommended prior to importation to evaluate import soil for these criteria

17) All approved soil cuts should be made outside the immediate dripline for minimal negative impact on trees. If approved within dripline, crown foliage shall be reduced

accordingly to balance the estimated root loss. Any construction activity which necessitates soil excavation in the vicinity of preserved trees should be avoided where possible, or mitigated under the guidance of the project arborist. Roots are to be hand cut and sealed wherever possible when major structural roots are encountered over one inch in diameter. The tearing of roots by equipment of any type within the dripline shall not be allowed.

Underground Construction

1) All underground work within tree driplines shall be avoided wherever possible to reduce negative impact on trees. The location of underground utilities well outside dripline is recommended as part of tree preservation.

2) Weakened anchorage, root system integrity, and the ability to acquire moisture from the root soil areas are the most critical issues when considering any type of root impact or removal .

3) Underground work in the area of site trees has a potentially serious impact on tree health and tree stability. Underground trenching for a variety of utilities will sever large structural roots reducing nutrient and water uptake and more seriously affecting the ability of each tree to remain appropriately anchored.

4) The existing root system within the dripline should not be severed by construction activities of any type. If undergrounding within dripline is required for unavoidable logistical reasons, the project arborist shall be consulted to determine whether the impact on tree health will be significant.

Pruning Requirements

1) The removal of dead wood, damaged branches, structurally unsound wood including bark included wood, narrow crotches, and crossing branches shall be the goal of the climbing tree worker. Co-dominant leaders or lateral branches shall be removed, pruned to retard growth, or cabled wherever possible.

2) The removal of significant live wood is discouraged at all times. Where removal of significant wood is required to mitigate the loss of roots, careful coordination between project arborist and tree workers is required. Severity of pruning should be restricted wherever possible while still modifying unhealthy or inadequate structure appropriately. The use of drop crotching and thinning techniques to restore balance is preferred when necessary to accomplish pruning goals, over heading type cuts. The use of heading type cuts shall be minimized or eliminated whenever possible.

Pruning shall be as minimal as possible, removing dead or damaged branches, crossing or rubbing branches, or correcting other structural deficiencies which may be present. Removal of lower branches may be required to allow for access and clearance following construction Minimal pruning is the desired approach to all trees.

3) The following general guidelines shall be used during all pruning procedures:

Lateral Branch Removal

All laterals shall be removed immediately beyond the branch bark ridge, always preserving the branch collar.

No stub cuts should be made which leave an inch or more beyond the branch collar.

No flush cuts through the branch collar shall occur

Triple Cuts

All branches too large to be hand held shall be removed by means of the triple cut; undercutting branch 4 to 8 inches beyond base, removing branch beyond undercut, and removing remaining stub utilizing a shoulder cut.

Terminal Pruning

Thinning
Cut back terminal portions of branches by cutting back to laterals with a basal diameter 1/3 the size of the terminal being removed. Removal of many smaller terminals is preferred over removal of a few large ones.

Size Reduction
Remove portions of the crown for reducing height by removing terminals back to laterals. Each lateral remaining should be located to serve as a new terminal. This will establish the crown at a lower level. The diameter at the base of a remaining lateral should be 1/3 the diameter of the terminal being removed.

4) Pruning to reduce the amount of top growth in relation to root severance shall occur on all trees where approved trenching or underground work is to occur Pruning is required to directly compensate for the amount of roots being damaged and removed by this work. This shall be determined after plans and construction techniques are determined.

5) Pruning may also be required to create appropriate access for construction equipment where low limb presence may obstruct access. This pruning is to be done by a qualified arborist, and shall by no means be done by construction personnel under any circumstances.

6) Pruning shall occur prior to initiation of any/all approved underground trenching. No ground shall be broken within the dripline of street trees without having pruning completed.

7) Project arborist shall be consulted prior to initiation of any pruning procedures to coordinate activities with the working arborist.

Additional Recommended Procedures

Continued discussion and coordination between project arborist, owners, designers, and general contractor should occur to further discuss and define these guidelines based on the actual work planned in the vicinity of these trees.

Fertilization

Fertilization is not generally recommended unless a specific nutrient deficiency symptom is visible. Following completion of construction activities, a determination of tree health should be conducted to visually evaluate tree performance and to recommend fertilization or mitigation if it is required based on the appearance of each individual tree. Owners additionally should monitor visible tree appearance and contact the project arborist should any tree exhibit unusual growth or characteristics.

Pest Control

A close visual examination for tree pests shall be conducted by the climbing arborist as he completes pruning procedures. If a serious infestation is present which was not apparent from ground observation then pesticide application should be considered at that time. However, the simple presence of tree pests does not warrant the use of chemical pesticides, and it should clear that a serious infestation capable of causing tree decline must be present to warrant their use. The use of organic sprays or pesticidal soaps is the preferred method for treating any serious pest infestation. If infestations should occur, discussion with the project arborist is recommended.

Weed Control

No specific measures are recommended for weed control, and the presence of weeds should not be considered a problem in relation to continued tree health.

Disease Control

No specific measures are recommended for disease control unless noted in the Individual Tree Evaluations. The tree pruning specialist should note any serious problem during his climbing procedures if they become evident.

Paving Reference

The use of asphalt or concrete as a primary paving surface within the canopy dripline is generally discouraged. Utilization of a permeable substance which does not impede the natural percolation of water or limit the nature of gaseous exchange is recommended. Materials such as decomposed gravel or cobble are ideal for this purpose, however, generally do not function satisfactorily as a parking or driving surface.

Interlocking pavers come in a variety of shapes, colors and sizes and provide a suitable surface for driving, parking and walking. At the same time they will allow some infiltration of water and air to the original soil level. Functionally and aesthetically they are appropriate for consideration at many projects. Utilization of an installation method which excludes fine sand

joints must be used however, to maintain infiltration. A coarse sand leveling bed and course sand joints are recommended to increase water infiltration and aeration.

Planting Under Existing Trees

The installation of lawn beneath established native trees is strongly discouraged. The ideal treatment under natives is the use of an organic or inert mulch. Redwood chips, gravel, or stone cobble are all excellent materials. If planting is required for aesthetic or functional purposes, the use of drought tolerant, woody species is most appropriate. Species should be selected for their ability to survive with minimal or no water through the summer months after initial establishment period. Only drip irrigation should be utilized within the canopy dripline to minimize summer water in the root zone.

Nature of Work

All work to date has been intended to be general in nature and comments and recommendations are based on obvious external conditions and symptoms. This inspection and evaluation did not include root crown excavation or inspection, nor did it include the use of instruments to determine unseen cavities or inherent weakness in trunk or branch structure. This inspection and evaluation did not include the climbing of each tree or inspection at that level. Underground portions of the root system cannot be viewed, and roots have not been excavated. Structural stability, root crown health, and root health are all inferred from external growth characteristics only. Many of these trees have cavities present and this is a normal occurrence which may or may not affect tree health and structural stability in the future. It is the recommendation of this firm that regular annual inspections be performed to determine whether any tree on site is in a declining state and may become a hazard. Trees are living, changing organisms which can be affected by any number of environmental conditions and biotic factors beyond our control. Construction activities, even when rigidly supervised, may lead to a quick decline or to unseen hazards within the tree and should be considered potentially damaging to the natural balance present before development began.

PRUNING STANDARDS

PRUNING STANDARDS

WESTERN 

CHAPTER

WESTERN CHAPTER

International Society of Arboriculture

ARIZONA CALIFORNIA HAWAII NEVADA

Certification Committee • P.O. Box 424 • St. Helena, California 94574

WESTERN CHAPTER

ISA

PRUNING STANDARDS

Purpose:

Trees and other woody plants respond in specific and predictable ways to pruning and other maintenance practices. Careful study of these responses has led to pruning practices which best preserve and enhance the beauty, structural integrity, and functional value of trees.

In an effort to promote practices which encourage the preservation of tree structure and health, the W.C. ISA Certification Committee has established the following Standards of Pruning for Certified Arborists. The Standards are presented as working guidelines, recognizing that trees are individually unique in form and structure, and that their pruning needs may not always fit strict rules. The Certified Arborist must take responsibility for special pruning practices that vary greatly from these Standards.

I. Pruning Techniques

A. A thinning cut removes a branch at its point of attachment or shortens it to a lateral large enough to assume the terminal role. Thinning opens up a tree, reduces weight on heavy limbs, can reduce a tree's height, distributes ensuing invigoration throughout a tree and helps retain the tree's natural shape. Thinning cuts are therefore preferred in tree pruning.

When shortening a branch or leader, the lateral to which it is cut should be at least one-half the diameter of the cut being made. Removal of a branch or leader back to a sufficiently large lateral is often called "drop crotching."

B. A heading cut removes a branch to a stub, a bud or a lateral branch not large enough to assume the terminal role. Heading cuts should seldom be used because vigorous, weakly attached upright sprouts are forced just below such cuts, and the tree's natural form is altered. In some situations, branch stubs die or produce only weak sprouts.

C. When removing a live branch, pruning cuts should be made in branch tissue just outside the branch bark ridge and collar, which are trunk tissue. *(Figure 1)* If no collar is visible, the angle of the cut should approximate the angle formed by the branch bark ridge and the trunk. *(Figure 2)*

D. When removing a dead branch, the final cut should be made outside the collar of live callus tissue. If the collar has grown out along the branch stub, only the dead stub should be removed, the live collar should remain intact, and uninjured. *(Figure 3)*

E. When reducing the length of a branch or the height of a leader, the final cut should be made just beyond (without violating) the branch bark ridge of the branch being cut to. The cut should approximately bisect the angle formed by the branch bark ridge and an imaginary line perpendicular to the trunk or branch cut. *(Figure 4)*

F. A goal of structural pruning is to maintain the size of lateral branches to less than three-fourths the diameter of the parent branch or trunk. If the branch is codominant or close to the size of the parent branch, thin the branch's foliage by 15% to 25%, particularly near the terminal. Thin the parent branch less, if at all. This will allow the parent branch to grow at a faster rate, will reduce the weight of the lateral branch, slow its total growth, and develop a stronger branch attachment. If this does not appear appropriate, the branch should be completely removed or shortened to a large lateral. *(Figure 5)*

G. On large-growing trees, except whorl-branching conifers, branches that are more than one-third the diameter of the trunk should be spaced along the trunk at least 18 inches apart, on center. If this is not possible because of the present size of the tree, such branches should have their foliage thinned 15% to 25%, particularly near their terminals. *(Figure 6)*

H. Pruning cuts should be clean and smooth with the bark at the edge of the cut firmly attached to the wood.

I. Large or heavy branches that cannot be thrown clear, should be lowered on ropes to prevent injury to the tree or other property.

J. Wound dressings and tree paints have not been shown to be effective in preventing or reducing decay. They are therefore not recommended for routine use when pruning.

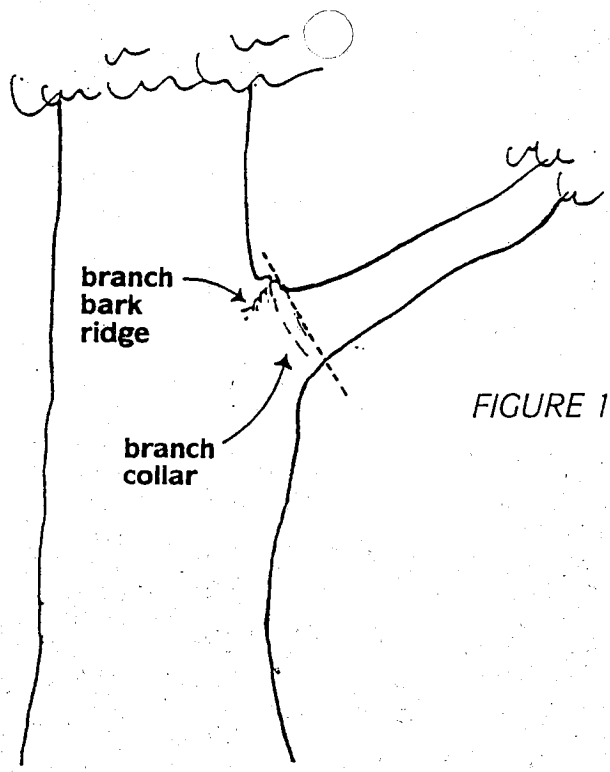


FIGURE 1. *When removing a branch, the final cut should be just outside the branch bark ridge and collar.*

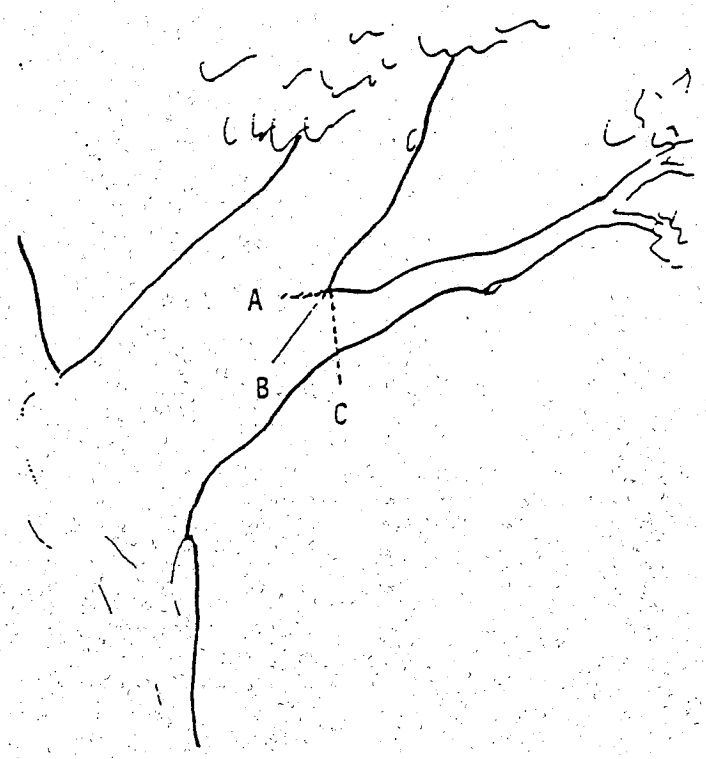


FIGURE 2. *In removing a limb without a branch collar, the angle of the final cut to the branch bark ridge should approximate the angle the branch bark ridge forms with the limb. Angle AB should equal Angle BC.*

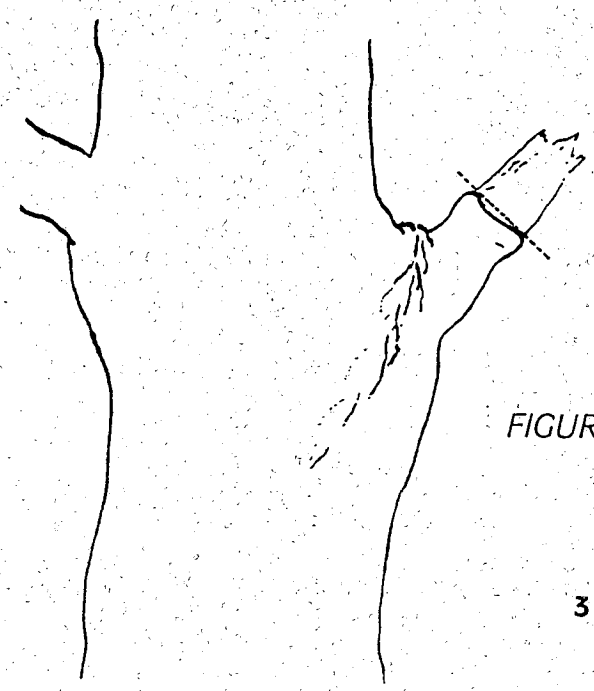


FIGURE 3. *When removing a dead branch, cut outside the callus tissue that has begun to form around the branch.*

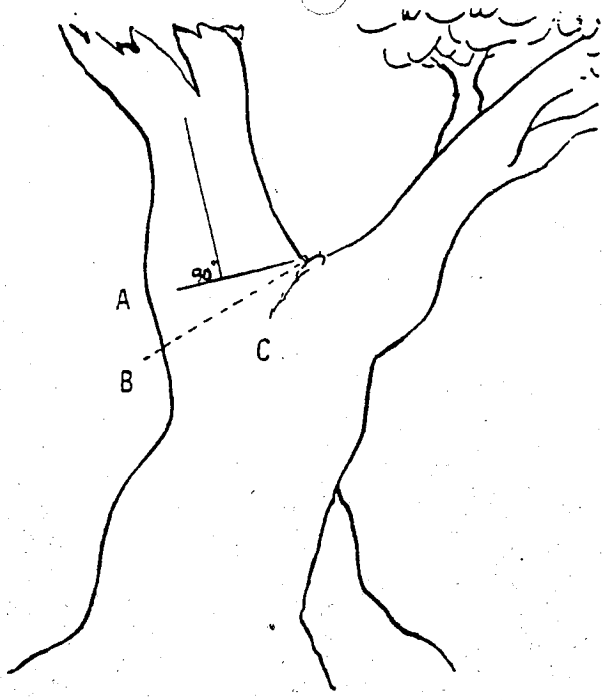


FIGURE 4. *In removing the end of a limb to a large lateral branch, the final cut is made along a line that bisects the angle between the branch bark ridge and a line perpendicular to the limb being removed. Angle AB is equal to Angle BC.*

FIGURE 5. *A tree with limbs tending to be equal-sized, or codominant. Limbs marked B are greater than ¾ the size of the parent limb A. Thin the foliage of branch B more than branch A to slow its growth and develop a stronger branch attachment.*

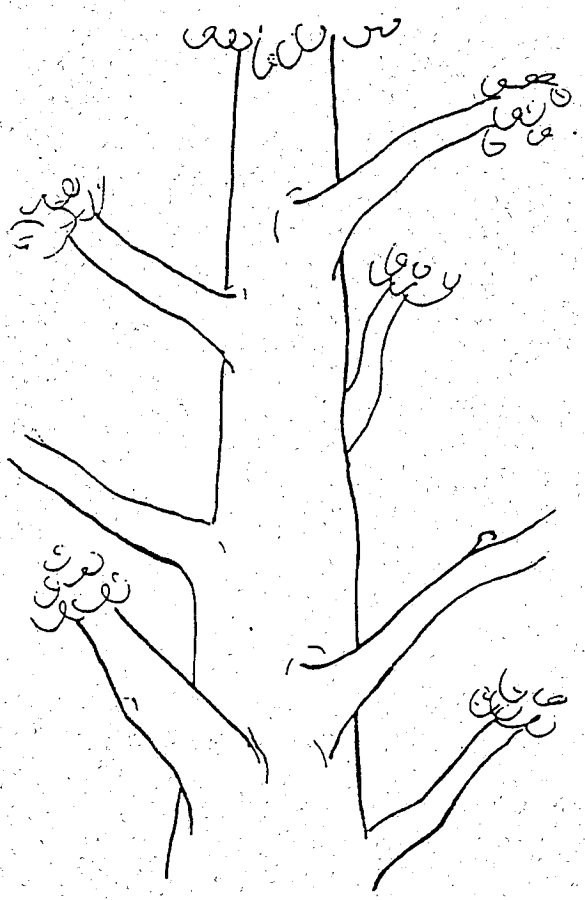


FIGURE 6. *Major branches should be well spaced both along and around the stem.*

II. Types of Pruning — Mature Trees

A. CROWN CLEANING

Crown cleaning or cleaning out is the removal of dead, dying, diseased, crowded, weakly attached, and low-vigor branches and watersprouts from a tree crown.

B. CROWN THINNING

Crown thinning includes crown cleaning and the selective removal of branches to increase light penetration and air movement into the crown. Increased light and air stimulates and maintains interior foliage, which in turn improves branch taper and strength. Thinning reduces the wind-sail effect of the crown and the weight of heavy limbs. Thinning the crown can emphasize the structural beauty of trunk and branches as well as improve the growth of plants beneath the tree by increasing light penetration. When thinning the crown of mature trees, seldom should more than one-third of the live foliage be removed.

At least one-half of the foliage should be on branches that arise in the lower two-thirds of the trees. Likewise, when thinning laterals from a limb, an effort should be made to retain inner lateral branches and leave the same distribution of foliage along the branch. Trees and branches so pruned will have stress more evenly distributed throughout the tree or along a branch.

An effect known as "lion's-tailing" results from pruning out the inside lateral branches. Lion's-tailing, by removing all the inner foliage, displaces the weight to the ends of the branches and may result in sunburned branches, water-sprouts, weakened branch structure and limb breakage.

C. CROWN REDUCTION

Crown reduction is used to reduce the height and/or spread of a tree. Thinning cuts are most effective in maintaining the structural integrity and natural form of a tree and in delaying the time when it will need to be pruned again. The lateral to which a branch or trunk is cut should be at least one-half the diameter of the cut being made.

D. CROWN RESTORATION

Crown restoration can improve the structure and appearance of trees that have been topped or severely pruned using heading cuts. One to three sprouts on main branch stubs should be selected to reform a more natural appearing crown. Selected vigorous sprouts may need to be thinned to a lateral, or even headed, to control length growth in order to ensure adequate attachment for the size of the sprout. Restoration may require several prunings over a number of years.

II. Types of Pruning — Mature Trees *(continued)*

E. CROWN RAISING

Crown raising removes the lower branches of a tree in order to provide clearance for buildings, vehicles, pedestrians, and vistas. It is important that a tree have at least one-half of its foliage on branches that originate in the lower two-thirds of its crown to ensure a well-formed, tapered structure and to uniformly distribute stress within a tree.

When pruning for view, it is preferable to develop "windows" through the foliage of the tree, rather than to severely raise or reduce the crown.

III. Size of Pruning Cuts

Each of the Pruning Techniques (Section I) and Types of Pruning (Section II) can be done to different levels of detail or refinement. The removal of many small branches rather than a few large branches will require more time, but will produce a less-pruned appearance, will force fewer watersprouts and will help to maintain the vitality and structure of the tree. Designating the maximum size (base diameter) that any occasional undesirable branch may be left within the tree crown, such as ½", 1" or 2" branch diameter, will establish the degree of pruning desired.

IV. Climbing Techniques

A. Climbing and pruning practices should not injure the tree except for the pruning cuts.

B. Climbing spurs or gaffs should not be used when pruning a tree, unless the branches are more than throw-line distance apart. In such cases, the spurs should be removed once the climber is tied in.

C. Spurs may be used to reach an injured climber and when removing a tree.

D. Rope injury to thin barked trees from loading out heavy limbs should be avoided by installing a block in the tree to carry the load. This technique may also be used to reduce injury to a crotch from the climber's line.

HORTICULTURAL Associates

Consultants in Horticulture and Arboriculture
P.O Box 1261, Glen Ellen, CA 95442

October 7, 2012

CITY OF SANTA ROSA
P.O. Box 1678
Santa Rosa, CA 95402
JAN 17 2013
DEPARTMENT OF
COMMUNITY DEVELOPMENT

Don MacNair
MacNair Landscape Architecture
P.O. Box 251
Kenwood, CA 95452

Re: Review of Elm Station tree preservation, Santa Rosa, California

Don,

Per your request I reviewed the proposed plans for the Elm Station project on Wright Road and provide you with the following observations and recommendations:

1. The project proposes to preserve and protect two trees, which are the two most significant specimens at the site. They are a Valley Oak (#1) with a 17.5" trunk diameter and a Chinese Elm (#3) with trunk diameters of 21.5" and 24".

2. Project design appears to provide a reasonable opportunity for both trees to be preserved. Temporary protective fencing should be illustrated to provide optimum protection during construction.

3. The project proposes to remove four protected trees including a 9.5" Oregon Ash, a 7.5" Mayten, a 11"+10.5"+ 13"+12.5"+ 11" Chinese Elm, and a 4"+3.5"+5"+5"+6"+4.5" Valley Oak. These trees will require mitigation per the Santa Rosa Tree Ordinance to compensate for their removal. The City generally prefers that replacement trees be planted on the project site, but placement off-site or in-lieu fees are also acceptable mitigation.

4. The project also proposes to remove four exempt trees including a 11" Monterey Pine, 5" White Poplar, 32" White Poplar, and 17.5"+16" White Poplar which is already dead. These trees are exempt from being mitigation by definition in the Santa Rosa Tree Ordinance.

Please feel free to contact me if you have questions of any type regarding this evaluation or tree preservation in the future.

Regards,

John C. Meserve
Consulting Arborist and Horticulturist
Member, American Society of Consulting Arborists
International Society of Arboriculture,
Certified Arborist #WE 0478A
Certified Tree Risk Appraiser PNW #1187

Archaeological Resource Service

A CULTURAL RESOURCES EVALUATION OF THE ELM TREE STATION PROJECT: 874 NORTH WRIGHT ROAD, CITY OF SANTA ROSA, SONOMA COUNTY, CALIFORNIA.

SUBMITTED TO

Mangal Dhillon, Applicant
c/o Jean Kapolchok

SUBMITTED BY

Robert Gleaton,
Archaeological Resource Service

April 23, 2013 **A.R.S. Project 13-009**

PROJECT SUMMARY

A cultural resource evaluation of the proposed project area, totaling 0.98 acres, was conducted by Archaeological Resource Service. The project area (APN 035-063-001) is located at 874 North Wright Road, Santa Rosa, Sonoma County, California. The parcel is located on the east side of North Wright Road at the southwest intersection of North Wright Road and the Joe Rodota Trail that parallels Highway 12 west of Highway 101. The study was done to determine the presence or absence of potentially significant cultural resources that could be affected by the project, pursuant to criteria established in the California Environmental Quality Act (CEQA) (14 CCR 15064.5 and PRC 21084.1).

The methods employed included a literature review using information on file at ARS and at the Northwest Information Center (NWIC) of the California Historical Information Systems (CHRIS) pertaining to the history and archaeology of the area, and a field survey of the .98 acre project area. Also as part of the literature search process the Native American Heritage Commission (NAHC) conducted a Sacred Lands inventory and the Native American individuals/organizations listed by the NAHC were contacted for further consultation. The literature review indicated the potential for prehistoric resources and older buildings to be present within the project area. A field survey was conducted, which did not confirm the presence of any potentially significant cultural resources.

The study did not identify the presence of potentially significant cultural resources within the project area. Due to this finding, no specific recommendations are warranted at this time. However, general recommendations are provided in the unlikely event that archaeological resources are discovered during excavation.

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CITY OF SANTA ROSA
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JUN 25 2013

DEPARTMENT OF
COMMUNITY DEVELOPMENT

PROJECT DESCRIPTION

The Elm Street Station project proposes the installation of a gasoline and electric fueling station, a neighborhood market with a residential unit above and a public-park. Ground disturbance is expected.

As part of the environmental review process, the Sonoma County Permit and Resource Management Department (PRMD) required a cultural resource study to determine if the proposed project will cause any impacts to potentially significant historic or prehistoric resources. ARS was retained to conduct the cultural resource study of the project area and to provide further recommendations if warranted by the identification of potentially significant cultural resources.

PROJECT LOCATION

The project area is located at 874 North Wright Road in Santa Rosa, Sonoma County, California. The 0.98-acre parcel (APN 035-063-001) is situated on the east side of North Wright Road at the southeast intersection of North Wright Road and the Joe Rodota Trail. State Highway 12 lies approximately 440 feet to the north of the project area and Sebastopol Road is situated approximately 443 feet south (see Figure 1).

As shown on the location map in Figure 1, the parcel lies within unsectioned land of the Mexican-era Rancho *Llano de Santa Rosa*, in Township 7 North, Range 8 West, Mt. Diablo Base and Meridian. The Universal Transverse Mercator (UTM) grid coordinates to the center of the parcel, as determined by measurement from the USGS 7.5' Sebastopol, California quadrangle map (NAD 27) are:

4252960 meters north
520310 meters east,
Zone 10

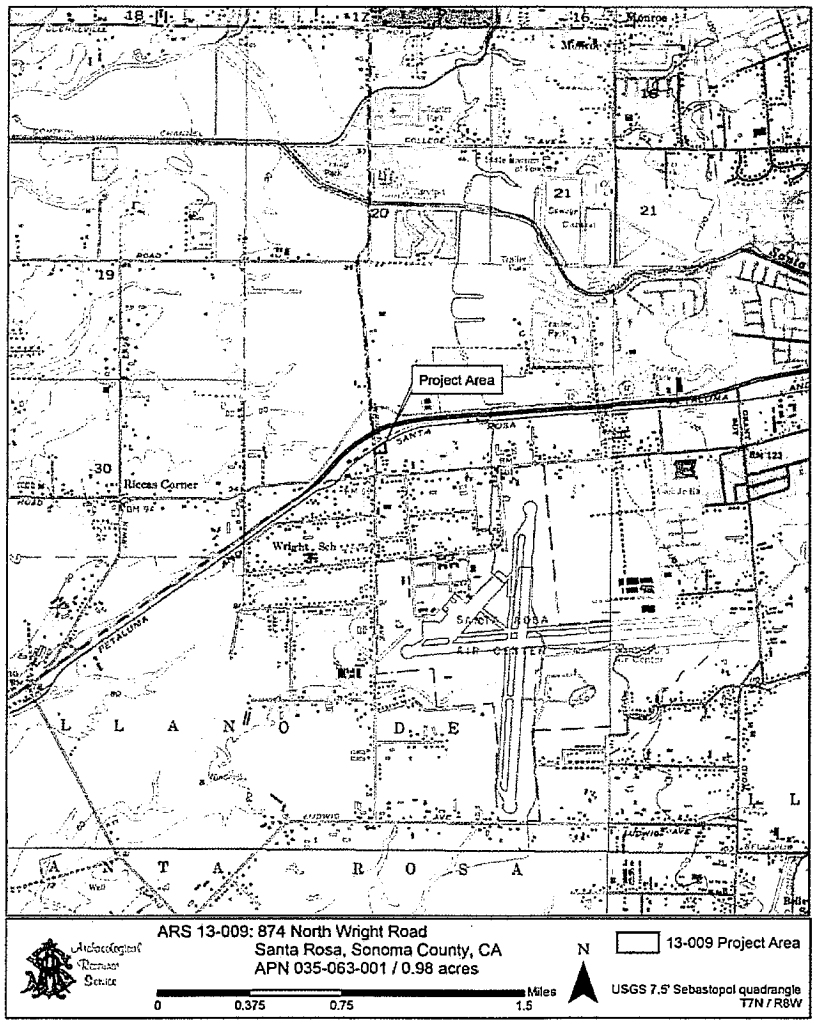

FIGURE 1: PROJECT LOCATION MAP.

STUDY METHODS

This cultural resource study was done in accordance with CEQA and its guidelines (Title 14 CCR § 15064.5). The methods employed to identify the presence or absence of potentially significant cultural resources within the project area included the following four tasks:

1. A check of the information on file with our office and the Northwest Information Center (NWIC) of the California Historical Resources Information System (CHRIS), to determine the presence or absence of previously recorded historic or prehistoric cultural resources within or adjacent the project area;
2. A check with the Native American Heritage Commission (NAHC) to determine if there are sites listed in the Sacred Lands File within or near to the subject parcel;
3. Consultation with the local Native American contact persons regarding the potential to impact prehistoric resources or places of social and religious significance to modern Native American communities; and,
4. A surface reconnaissance of the project area to locate any visible signs of potentially significant cultural resources.

This report also provides a preliminary statement of potential significance for each cultural resource identified within the project area that appears to meet the California Register of Historic Resources (CRHR) criteria; as well as a statement of potential effects from the proposed project activities. Further recommendations will also be provided if potentially significant cultural resources are identified within the project area.

REGULATORY SETTING

CEQA

The California Environmental Quality Act (CEQA) requires that potential impacts to the environment be identified and assessed prior to commencement of any project that has the potential to effect the environment. Cultural resources are aspects of the environment that require identification and assessment for potential significance (14 CCR 15064.5 and PRC 21084.1). There are five classes of cultural resources defined by the State Office of Historic Preservation (OHP). These are:

- **Building**: A structure created principally to shelter or assist in carrying out any form of human activity. A "building" may also be used to refer to a historically and functionally related unit, such as a courthouse and jail or a house and barn.
- **Structure**: A construction made for a functional purpose rather than creating human shelter. Examples include mines, bridges, and tunnels.
- **Object**: Construction primarily artist in nature or relatively small in scale and simply constructed. It may be movable by nature or design or made for a specific setting or environment. Objects should be in a setting appropriate to their significant historic use or character. Examples include fountains, monuments, maritime resources, sculptures and boundary markers.
- **Site**: The location of a significant event. A prehistoric or historic occupation or activity, or a building or structure, whether standing, ruined, or vanished, where the location itself possesses historic, cultural, or archaeological value regardless of the value of any existing building, structure, or object. A site need not be marked by physical remains if it is the location of a prehistoric or historic event and if no buildings, structures, or objects marked it at that time. Examples include trails, designed landscapes, battlefields, habitation sites, Native American ceremonial areas, petroglyphs, and pictographs.
- **Historic District**: Unified geographic entities which contain a concentration of historic buildings, structures, or sites united historically, culturally, or architecturally.

According to California Code of Regulations Section 15064.5, cultural resources are significant if they are:

- Listed in, or eligible for listing in the California Register of Historic Resources (CRHR) (Public Resources Code 5024.1, Title 14 CCR, Section 4850 et. seq.);
- Listed in, or eligible for listing in, the National Register of Historic Places (NRHP);
- Included in a local register of historical resources, as defined in an historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resource Code; or
- 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, provided the lead agency's determination is supported by substantial evidence in light of the whole record.

A resource may be listed as an historical resource in the CRHR if it has integrity and meets any of the following criteria:

1) Associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States;
2) Associated with the lives of persons important to local, California or national history;
3) Embodies the distinctive characteristics of a type, period, region or method of construction or represents the work of a master or possesses high artistic values; or
4) Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation.

Buildings, sites, structures, objects, and districts representative of California and United States history, architecture, archaeology, engineering, and culture convey significance when they also possess integrity of location, design, setting, materials, workmanship, feeling, and association. A resource has integrity if it retains the characteristics that were present during the resource's period of significance. Enough of these characteristics must remain to convey the reasons for its significance.

CEQA (PRC 21083.2) also distinguishes between two classes of archaeological resources: archaeological sites that meet the definition of a historical resource as above, and "unique archaeological resources." A "unique archaeological resource" has been defined in CEQA as 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:

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

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

RESULTS OF LITERATURE CHECK

A literature search was conducted to determine if the project area has been previously evaluated for cultural resources and to assess the archaeological sensitivity of the parcel and surrounding area. The literature search was done using information on file at Archaeological Resource Service and the Northwest Information Center (NWIC) of the California Historical Resources Inventory Systems (CHRIS) office located in Rohnert Park, CA. (File No. 12-1008). This record search included checking ethnographic documents, historic maps, survey reports, site records and base maps pertaining to this area of Sonoma County and in particular, within a one-half mile radius of the subject parcel. The Office of Historic Preservation's (OHP) Historic Properties Directory was also consulted (OHP 2012). The Historic Property Directory includes the National Register of Historic Places, the California Register of Historical Resources, the list of California Historical Landmarks, and the list of California Points of Historical Interest. The Native American Heritage Commission was also consulted for information regarding Native American Sacred Sites and a list of the appropriate Native American organizations to contact regarding this project.

SACRED SITES LOCATED IN THE VICINITY AND NATIVE AMERICAN CONSULTATION

The Native American Heritage Commission (NAHC) is in the process of conducting a search of the Sacred Land file to determine if there are any Sacred Sites located within or near to the current project area. The NAHC works to identify, catalogue, and protect places of special religious or social significance,

graves, and cemeteries of Native Americans per the authority given the Commission in Public Resources Code 5097.9.

On March 18th the NAHC was requested to do a Sacred Lands file search for this project. On April 17th the NAHC responded with the results of the Sacred Lands inventory and a list of the appropriate individuals/organizations to contact for this project area (Plias-Treadway 2013). The NAHC has no record of any Sacred Sites in the immediate vicinity, but recommended further consultation with local Native American organizations/individuals. The local Native American organizations listed by the NAHC were contacted on April 23rd for further information and consultation regarding the potential affects to Native American resources, including any traditional, cultural, and religious values associated with the project area. No further consultation has occurred to date.

NATIVE AMERICAN PREHISTORIC AND ETHNOGRAPHIC SETTING

The property is located in an area of former marsh known as the *Llano de Santa Rosa*, *Llano* being Spanish for "plain" or "delta". The area was seasonally flooded with the overflow from Colgan, Roseland, and Santa Rosa creeks and their tributaries, which have since been channelized. Prehistoric populations are known to have exploited the plant and animal resources available at the freshwater lakes and marshes that were seasonally present in the *Laguna de Santa Rosa* and along the major creek systems. Habitation sites within this landscape are often marked by midden soil, a result of built up decomposed organic matter, with obsidian and chert debitage, shellfish remains, obsidian tools (such as projectile points, knives and scrappers), ground stone, fire cracked rock, charcoal, ash from cooking fires, and other constituents. A scatter of chipped stone tools often marks campsites, task specific sites or short-term settlements. Chipped and ground stone implements and waste flakes in what seem to be isolated finds have also been encountered in the area. These specimens may represent hunting losses or on-spot manufacture or repair of broken projectile points.

The current project area lies within the ethnographic territory of the *Bitakomtara* tribelet of the Southern Pomo linguistic affiliation (Stewart 1943). According to Stewart (1943:53), the area of the *Bitakomtara*, covering about 200 square miles, is bounded on the north by Mark West Creek; on the east by Sonoma Canyon, Bear Creek, and the summit of the Mayacama Mountains; on the south by the peak of Sonoma Mountain (north of Cotati) and the end of the Laguna de Santa Rosa Creek; and on the west by Laguna de Santa Rosa. Ethnographer S.A. Barrett reported village sites in the area, including one along the south side of Santa Rosa Creek and several others on the west side of the Laguna de Santa Rosa in the vicinity of Sebastopol. None were reported as having been located near the current project area (Barrett 1908).

In historic documents, the Indians of the Santa Rosa Plain are often referred to as the Gualomi tribelet. Gualomi is actually the Coast Miwok name for the people that inhabited the Santa Rosa area, but since the missionaries used Coast Miwok guides the people were referred to by their Coast Miwok name. Gualomi is also used in reference to a main village site along Santa Rosa Creek and possibly Barrett's ethnographic village site of hūkabet•a'wī, located on the south side of Santa Rosa Creek in the vicinity of the Carrillo Abobe.

The Gualomi Pomo of the Santa Rosa area began to be missionized in 1821 (Milliken 2008). "The wave of 1824 Santa Rosa Plains baptisms came to a head on September 3, 1824, when Father Amoros went north to the main Gualomi village, somewhere along Santa Rosa Creek, to baptize some of the last tribal Gualiomis, Jauyomis, and Livantolomis, elders who were either too resistant or too weak to travel to Mission San Rafael" (Milliken 2008). During his visit Amoros named the village "Santa Rosa de Lima in Gualomi". By 1826 mission control of the Indians of the Santa Rosa plain was nearly complete and "the mission records suggest, the Gualomi group as a tribal unit came to an end with the baptism of Captain Narciso Nomeuaye's mother and another elderly couple at Santa Rosa on June 20, 1826" (Milliken 2008).

According to Thompson's 1877 Atlas of Sonoma County, California, Father Amoros came to the territory of the *Cainemeros* tribe of Indians who resided on *Chocoalomi*, the Indian name for Santa Rosa Creek. Thompson states, at a location opposite the old adobe (Carrillo Adobe) he captured an Indian girl, baptized her in the stream and gave her the name Santa Rosa, from the fact that on that very day the Church was celebrating the feast of Santa Rosa de Lima.

HISTORIC SETTING

In the historic period the project area was within the boundaries of the Mexican era land grant of *Rancho Llano de Santa Rosa*, bequeathed to Joaquin Carrillo by the Mexican Government in 1844. The grant

consisted of three square leagues adjoining his mother's land grant of the *Cabeza de Santa Rosa* (Munro-Fraser 1880). The grant extended from the Laguna de Santa Rosa on the west and southwest, the base of Sonoma Mountain near Kawana Springs at the east, and Santa Rosa Creek on the north. In the American period this area started out as large farms and by the late 1800s was characterized by small family farms between five and thirty-five acres in size with larger tracts of land in between.

In 1867, the current project area was part of a large property that is referred to as the Leddy Tract, situated within the Wright School District (Bowers 1867). The Wright School House is depicted to be located within this tract as well, but not within the current project area. In 1877, the project area was part of a 720-acre property owned by Patrick Leddy that included lands to the south, as well as two additional buildings and an orchard (Thompson 1877). By 1897 the Leddy property had been subdivided, and the northern part of the project area became part of a 323.57-acre parcel, but still retained by Leddy (Reynolds and Proctor 1897). The San Francisco and Northern Pacific Railroad tracks had also been constructed, bisecting the northwest corner of Leddy's property. The Wright District Schoolhouse building was also still present. Patrick and Mary Leddy still owned the property in 1908 and had acquired additional land to the south, totaling 734.52 acres. The Sebastopol and Santa Rosa Electric Railway had also been constructed and the tracks ran east-west along the northern boundary of the project area (McIntyre and Lewis 1908).

Based on several historic maps (Bowers 1867; Thompson 1877; Reynolds and Proctor 1897; Ricksecker and Walkup 1900; McIntire and Lewis 1908; USGS 15' Sebastopol quadrangle 1942; USGS 7.5' Sebastopol quadrangle 1954) no buildings were present within the project area during the historic period. However, the 1968 revision of the USGS 7.5' Sebastopol quadrangle map depicts a building located within the west-central area of the current project area.

CULTURAL RESOURCES AND PREVIOUS STUDIES

A review of archaeological site and survey maps, survey reports and site records revealed that the subject parcel has not been previously evaluated for cultural resources. However, at least twenty-one parcels within a one-half mile radius of the project area have been previously evaluated. The findings of such evaluations can provide an idea of the types of cultural resources that may be potentially encountered on the property. There are at least five recorded cultural resources located within a one-half mile radius of the project area. The closest is a prehistoric site (CA-Son-1526) located approximately 300 feet to the south of the project area, and approximately 100 feet north of Sebastopol Road. The site is described as containing a low density of prehistoric obsidian flakes (Jordan and Bieling 1986).

Cultural resources recorded within ½-mile include:

- CA-Son-1526- Prehistoric lithic scatter
- P-49-003860- Five historic (circa 1940) school and farm buildings
- P-49-001718- Historic (circa 1940) building
- P-49-001725- Historic (circa1925) building
- P-49-001801– Historic (circa 1941) Naval Air Station

NWIC #	Date	Report	Author(s)	Resources
S-37608	2010	Cultural Resource Survey for the City of Santa Rosa Creek Restoration Project, Sonoma County, California.	Lauren Del Bonido Tom Origer	None within .5 mile of project area
S-35159	2008	An Archaeological Survey of the Property 1055 South Wright road, Santa Rosa, Sonoma County, California	Elyssa L. Figari Tom Origer	None
S-34906	2008	A Cultural Resources Survey of the Parcel at 950 south Wright Road, Santa Rosa, Sonoma County, California.	Vicki R. Beard	P-49-3860
S-23972	2001	A Cultural Resources Study for the ABC Plumbing Project at 4340 Occidental Road, Santa Rosa, Sonoma County, California.	James P. Quinn Thomas Origer	None
S-23000	2000	Portrait of the Forgotten Fields: Sonoma County and its Auxiliary Airfields of World War Two.	Andrew Lee Pulchean	
S-28858	2004	A Cultural Resources Evaluation of the Four Parcels at Wright Road and Sebastopol Road, Santa Rosa, California.	Cassandra Chattan	Son-1526
S-34757	2007	A Cultural Resources Evaluation of Park Lane II, Pradero Row and Elizabeth Place Project Areas Sebastopol Road, Santa Rosa, Sonoma County, California.	Cassandra Chattan	None

S-32761	2006	A Cultural Resources Survey of 958 and 966 Leddy Avenue Santa Rosa, Sonoma County, California	Vicky R. Beard	None
S-608	1975	Field Survey of Signal Modification Project at Stony Point Road and North Wright Road on California State Highway 12 04-Son-12 PM 12.9/14.5 04204 - 388581(Caltrans)	Richard E. Hastings	None
S-9006	1987	Cultural Resource Assessment of the Proposed West Santa Rosa Water Transmission Main, Sonoma County, California	Peak and Associates	None
S-23968	2001	A Cultural Resources Survey of the Parcel at 4042 Sebastopol Road Santa Rosa, Sonoma County, California.	James Quin Vicki Beard	None
S-7923	1986	An Archaeological Investigation of the South Wright Road Area (Sewerage System Master Plan Job #6462), Santa Rosa, Sonoma County, California.	David Bieling Leigh Jordan	SON-1526, SON-1527, SON-1528, SON-1529, SON-1530, SON-1531H
S-22896	2000	A Cultural Resources Evaluation of the Property at 1071 Fresno Avenue, APN 035-102-004, Santa Rosa, Sonoma County, CA.	Cassandra Chattan	isolated prehistoric flake
S-28154	2004	A Cultural Resources Evaluation of the Samuel Jones Hall Multi-Use Facility and Proposed Water Line Along Wright Road, Santa Rosa, Sonoma Country.	Cassandra Chattan	None
S-13448	1992	An Archaeological Study for a Proposed 18-hole Golf Course at 4321/4433 Occidental Road, Santa Rosa, Sonoma County, California	Jennifer Ferneau-Lion	Son-1953, Son-1954
S-372	1976	An Archaeological Survey of an Eighty Acre Parcel in the West Santa Rosa Area, Sonoma County, California.	Thomas Origer	None
S-21	1973	The Archaeological Impact Analysis of Three Land Parcels on the Morrison Homes Tract, Wright and Occidental Roads, Santa Rosa, California.	David A. Fredrickson	Son-1021
S-510	1975	Draft: Environmental Impact Report, Valley West Subdivision, West Third Street, Santa Rosa, California	Ronald F. King	None
S-18522	1996	A Cultural Resources Study of the Santa Rosa Naval Auxiliary Air Station, Santa Rosa, Sonoma County, California	Sunshine Psota	P-49-001801, Son-1529, Son-1530

SURVEY EXPECTIONS BASED ON LITERATURE REVIEW

The literature review revealed the presence of a previously recorded Native American site located in close proximity to the subject parcel (CA-Son-1526). The site is described as containing a low density of prehistoric obsidian flakes and because of its close proximity there is the potential of finding additional prehistoric artifacts within the project area. A review of historic maps indicate a previous built environment dating back 100 years, including the Petaluma and Santa Rosa Electric Railroad tracks that bordered the project area on the north and construction of a residence within the project area sometime between 1954 and 1968. Based on the literature review, the current project area has the potential to contain potentially significant prehistoric and/or historic resources.

RESULTS OF FIELD SURVEY

On March 21, 2013 the author went to the subject parcel and conducted a pedestrian survey of the area to be affected by the proposed project. The purpose of the field survey was to look for potentially significant cultural resources that could be affected by the proposed development of the Elm Street Station project.

The project area is characterized by a 0.98 acre undeveloped parcel (APN 035-063-001) that contains no buildings. The elevation ranges from 98 to 95 feet above sea level and appears to have a gentle downward slope leading to the center of the parcel. At the time of the survey the project area contained a range of annual and perennial grasses and forbs and various species of trees, including pine as well as a number of deciduous trees. At least three saw-cut tree stumps are located in various places within the project area. There is a drainage ditch near the northeast section of the parcel that leads to a cement culvert located along the southwest corner of the property, adjacent to North Wright Road. Various types of riparian vegetation were observed along the edges of the drainage ditch.

The soil throughout the project area is medium-brown Clear Lake clay and Wright loam that forms on 0-2% slopes. These soil types consist of alluvium derived from sedimentary rock and are poorly drained (USDA 2013). On the surface, the soil appeared medium-brown to greyish-brown in color and had high

clay content. The gravel content of the soil is approximately twenty to twenty–five percent and contains rounded to sub angular, moderately sorted granules, pebbles and cobbles of various sizes and material including chert and basalt.

FIGURE 2: LOOKING SOUTH ACROSS THE PROPERTY WITH THE UTILITY POLE IN THE FOREGROUND.

The surveyor employed pedestrian transects to survey the project area. North-south oriented transects were conducted with approximately two to three meters of separation between each transect. The survey commenced along the southwest corner of the parcel. Surface visibility within the project area was poor, about 5%, due to vegetation. Using a hand trowel, soil scrapings were conducted every three to five meters to view the underlying soil. The surveyed area is bounded by the Blue Star Gas property to the south, North Wright Road and the Jo Rodota Trail to the west, the Joe Rodota Trail to the north, and an undeveloped parcel to the east that was delineated by flagging attached to several metal posts.

The building depicted on the 1968 revision of the 1954 USGS 7.5' Sebastopol quadrangle map was not observed on the property (APN 035-063-001). Only remnants of the utilities were observed, including a square utility pole and a possible sewer pipe. The utility pole, located near the northwest section of the parcel, is constructed with round wire nails and two 4x4 circular saw-cut wooden post, with the longest post averaging approximately 15 feet in height. The utility pole contained two gutted and rusted metal fuse boxes, one gutted electric meter box, two brown colored ceramic insulators, and one ceramic brown guy-wire insulator once used for structural support. The construction date of the utility pole is unknown.

Rusted metal sewer pipe was observed within an excavated depression in the southwest corner of the project area, approximately a few feet north of the drainage ditch that empties into the nearby culvert. The feature might be from the removal of a septic tank. It measures five feet in width by fifteen feet in length, and is approximate five feet deep. The soil removed from the pit forms an elevated mound around the area. Modern refuse was observed within the depression.

CONCLUSIONS

No prehistoric cultural resources were observed within the project area. The previous building has been removed, but its presence is evident by the remains of a utility pole and an excavated pit, probably from the removal of a septic tank, and associated sewer pipe. The construction date of these features is not known, but they are likely associated with the previous building that was constructed sometime between 1954 and 1968. While they are structures that appear to be greater than 45 years of age, they do not appear to be potentially significant historic resources under the CRHR criteria. They are not associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States (CRHR criterion 1); they do not appear to be associated with the lives of persons important to local, California or national history (CRHR criterion2); they do not embody the distinctive characteristics of a type, period, region or method of construction or represents the work of a master or possesses high artistic values (CRHR criterion 3); and they do not

appear to have the potential to yield information important to the history of the local area, California or the nation (CRHR criterion 4). Consequently, they do not qualify for listing on the CRHR, and so the removal of them as part of this project will not have any negative impact to potentially significant historical resources.

RECOMMENDATIONS

No potentially significant cultural resources were identified within the project area; therefore no specific recommendations are warranted at this time. However, general recommendations have been provided in the unlikely event that any buried archaeological resources are discovered during excavation.

General Recommendations

General recommendations have been provided in the event that any artifacts or cultural soil deposits are discovered in any unexpected areas of the property during future grading or underground excavation. ARS recommends that if historic or prehistoric artifacts or sites are observed that all work in the vicinity of the find be stopped until the discovery area can be evaluated by an archaeologist. Depending on the extent and cultural composition of the discovered materials, data recovery may be necessary and it may be advisable to have subsequent excavation monitored by an archaeologist who should be ready to record, recover, and/or protect significant cultural materials from further damage.

Artifacts that are typically found associated with prehistoric sites include humanly modified stone, shell, bone or other cultural materials such as charcoal, ash and burned rock indicative of food procurement or processing activities. Prehistoric domestic features include hearths, firepits, or house floor depressions whereas typical mortuary features are represented by human skeletal remains. Historic resources potentially include all by-products of human land use greater than 50 years of age, including alignments of stone, foundation elements from previous structures, minor earthworks, and surface scatters and subsurface deposits of domestic type debris.

Although highly unlikely, if human remains are encountered, all work must stop in the immediate vicinity of the discovered remains and the County Coroner and a qualified archaeologist must be notified immediately so that an evaluation can be performed. If the remains are deemed to be Native American and prehistoric, the Native American Heritage Commission must be contacted by the Coroner so that a "Most Likely Descendant" can be designated and further recommendations regarding treatment of the remains is provided.

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Fredrickson, David A.
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Hastings, Richard E.
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Jordan, L. and D. Beiling
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Milliken, Randy
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Origer, Thomas
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1987 Cultural Resource Assessment of the Proposed West Santa Rosa Water Transmission Main, Sonoma County, California. Unpublished report on file at the NWIC of the CHRIS as S-9006.

Pilas-Treadway, Debbie (NAHC)
2013 Letter regarding ARS 13-009, with results of Sacred Lands file inventory and list of appropriate Native American individuals/organizations to contact. Letter on file at ARS and at the NAHC.

Psota, Sunshine with contributions by Holly Hoods
1996 A Cultural Resources Study of the Santa Rosa Naval Auxiliary Air Station, Santa Rosa, Sonoma County, California. Unpublished report on file at the NWIC of the CHRIS as S-18522.

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Quinn, James P. and Thomas Origer
2001 A Cultural Resources Study for the ABC Plumbing Project at 4340 Occidental Road, Santa Rosa, Sonoma County, California. Unpublished report on file at the NWIC of the CHRIS as S-23972.

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Thompson, Thomas H.
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Archaeological Resource Service

March 18, 2013

Ms. Debbie Pilas-Treadway
Native American Heritage Commission
915 Capitol Mall, Room 364
Sacramento, CA 95814

Re: ARS 13-009: *Sacred Lands inventory request for Sonoma County APN 035-063-001 at 874 North Wright Road, Santa Rosa, Sonoma County, CA.* ***T7N / R8W, Llano de Santa Rosa***

Dear Ms. Pilas-Treadway:

Archaeological Resource Service has been retained to conduct a cultural resource evaluation of a 0.98-acre property located at 874 North Wright Road in Santa Rosa, Sonoma County, California. The proposed project includes a minor subdivision to create a park parcel and mixed use parcel with residential and retail uses.

On the attached map, the parcel lies within unsectioned land of the Mexican era land grant of Llano de Santa Rosa, in Township 7 North, Range 8 West, Mt. Diablo Base and Meridian. The Universal Transverse Mercator (UTM) grid coordinates to the center of the parcel, as determined by measurement from the USGS 7.5' Sebastopol, California topographic quadrangle are: 4252960 meters north and 520310 meters east, Zone 10.

To assist us in identifying any Native American cultural resources within the project area please undertake a Sacred Lands Inventory for this location, and supply us with a list of the appropriate Native American organizations and individuals to contact regarding this project area. Thank you.

Sincerely,

Sally Evans
Archaeologist

3820 Bodega Avenue, Petaluma, California 94952
(707) 762-2573 ☎ FAX (707) 762-1791

Archaeological Resource Service

April 1, 2013

Ms. Debbie Pilas-Treadway
Native American Heritage Commission
915 Capitol Mall, Room 364
Sacramento, CA 95814

Re: ARS 13-009: *Sacred Lands inventory request for Sonoma County APN 035-063-001 at 874 North Wright Road, Santa Rosa, Sonoma County, CA.* ***T7N / R8W, Llano de Santa Rosa***

Dear Ms. Pilas-Treadway:

Archaeological Resource Service has been retained to conduct a cultural resource evaluation of a 0.98-acre property located at 874 North Wright Road in Santa Rosa, Sonoma County, California. The proposed project includes a minor subdivision to create a park parcel and mixed use parcel with residential and retail uses.

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Sincerely,

Sally Evans
Archaeologist

3820 Bodega Avenue, Petaluma, California 94952
(707) 762-2573 ☎ FAX (707) 762-1791

STATE OF CALIFORNIA Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390

April 17, 2013

Sally Evans
Archaeological Resource Service
3820 Bodega Avenue
Petaluma, CA 94952

Sent by Fax: 707-762-1291
Number of Pages: 2

Re: ARS 13-009, Sonoma County

Dear Ms. Evans:

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 653-4038.

Sincerely,

Debbie Pilas-Treadway
Environmental Specialist III

Native American Contacts
Sonoma County
April 16, 2013

Cloverdale Rancheria of Pomo Indians
Patricia Hermosillo, Chairperson
555 South Cloverdale Blvd., Suite A Pomo
Cloverdale , CA 95425
(707) 894-5775
909-894-5727

Cloverdale Rancheria of Pomo Indians
Mario Hermosillo Jr., Tribal Environmental Planner
555 South Cloverdale Blvd., Suite A Pomo
Cloverdale , CA 95425
mhermosillo@cloverdalerancheria.com
(707) 894-5775
707-894-5727

Dry Creek Rancheria of Pomo Indians
Harvey Hopkins, Chairperson
P.O. Box 607 Pomo
Geyserville , CA 95441
(707) 522-4290

Lytton Rancheria of California
Marjorie Mejia, Chairperson
437Aviation Blvd Pomo
Santa Rosa , CA 95403
margiemejia@aol.com
(707) 575-5917
(707) 575-6974 - Fax

Stewarts Point Rancheria
Emilio Valencia, Chairperson
1420 Guerneville Road, Ste 1 Pomo
Santa Rosa , CA 95403
Emilio@stewartspoint.com

(707) 591-0580-voice
(707) 591-0583 - Fax

Stewarts Point Rancheria
Nina Hapner, Environmental Planning Department
1420 Guerneville Road, Ste 1 Pomo
Santa Rosa , CA 95403
nina@stewartspoint.org
(707) 591-0580 ext107
(707) 591-0583 FAX

Stewarts Point Rancheria THPO
Otis Parish, Tribal Historic Preservation Officer
1420 Guerneville Road, Ste 1 Pomo
Santa Rosa , CA 95403
Otis@stewartspoint.org
(707) 591-0580 EXT 105
(707) 591-0583 FAX

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

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

The Federated Indians of Graton Rancheria
Frank Ross
PO Box 854 Coast Miwok
Novato , CA 94948 Southern Pomo
miwokone@yahoo.com
(415) 269-6075

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of 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 874 North Wright Road project, Sonoma County

Native American Contacts
Sonoma County
April 16, 2013

Ya-Ka-Ama
7465 Steve Olson Lane
Forestville , CA 95436
cbelleau@yakaama.org,
(707) 887-1541

Pomo
Coast Miwok
Wappo

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of 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 874 North Wright Road project, Sonoma County

Subject: ARS 13-009: Notice of Cultural Resources Evaluation at 874 North Wright Road, Santa Rosa

From: sally evans (slyevans@yahoo.com)

To: mhermosillo@cloverdalerancheria.com;

Date: Tuesday, April 23, 2013 5:02 PM

Dear Mr. Hermosillo,

Archaeological Resource Service has been retained to conduct a cultural resource evaluation of a 0.98-acre property located at 874 North Wright Road in Santa Rosa, Sonoma County, California. The proposed project includes a minor subdivision to create a park parcel and mixed use parcel with residential and retail uses.

On the attached map, the parcel lies within unsectioned land of the Mexican era land grant of Llano de Santa Rosa, in Township 7 North, Range 8 West, Mt. Diablo Base and Meridian. The Universal Transverse Mercator (UTM) grid coordinates to the center of the parcel, as determined by measurement from the USGS 7.5' Sebastopol, California topographic quadrangle are: 4252960 meters north and 520310 meters east, Zone 10.

As part of the process to identify potentially significant cultural resources we contacted the Native American Heritage Commission to see if there were any Native American sites, including Sacred Sites, in the vicinity of the project area. They did not indicate the presence of any Native American sites in the area, but suggested we contact you for further information about Sacred Sites, gathering areas, or other locations important to your tribe.

If you are interested in further consultation about this project and its potential effects to Native American sites, please contact me by responding to this e-mail, or at the address or phone numbers listed below. Please refer to ARS 13-009 in your communication, and thank you in advance for your participation in this evaluation process.

Sincerely,

Sally Evans
Archaeological Resource Service
3820 Bodega Avenue
Petaluma, CA 94952
(707) 762-2573 office
(707) 484-9628 cell

Subject: ARS 13-009: Notice of Cultural Resources Evaluation at 874 North Wright Road, Santa Rosa

From: sally evans (slyevans@yahoo.com)

To: margiemejia@aol.com;

Date: Tuesday, April 23, 2013 5:04 PM

Dear Ms. Mejia,

Archaeological Resource Service has been retained to conduct a cultural resource evaluation of a 0.98-acre property located at 874 North Wright Road in Santa Rosa, Sonoma County, California. The proposed project includes a minor subdivision to create a park parcel and mixed use parcel with residential and retail uses.

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Sincerely,

Sally Evans
Archaeological Resource Service
3820 Bodega Avenue
Petaluma, CA 94952
(707) 762-2573 office
(707) 484-9628 cell

Subject: ARS 13-009: Notice of Cultural Resources Evaluation at 874 North Wright Road, Santa Rosa

From: sally evans (slyevans@yahoo.com)

To: emilio@stewartspoint.com;

Date: Tuesday, April 23, 2013 5:04 PM

Dear Mr. Valencia,

Archaeological Resource Service has been retained to conduct a cultural resource evaluation of a 0.98-acre property located at 874 North Wright Road in Santa Rosa, Sonoma County, California. The proposed project includes a minor subdivision to create a park parcel and mixed use parcel with residential and retail uses.

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Sincerely,

Sally Evans
Archaeological Resource Service
3820 Bodega Avenue
Petaluma, CA 94952
(707) 762-2573 office
(707) 484-9628 cell

Subject: ARS 13-009: Notice of Cultural Resources Evaluation at 874 North Wright Road, Santa Rosa

From: sally evans (slyevans@yahoo.com)

To: nina@stewartspoint.org;

Date: Tuesday, April 23, 2013 5:05 PM

Dear Nina Hapner,

Archaeological Resource Service has been retained to conduct a cultural resource evaluation of a 0.98-acre property located at 874 North Wright Road in Santa Rosa, Sonoma County, California. The proposed project includes a minor subdivision to create a park parcel and mixed use parcel with residential and retail uses.

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Sincerely,

Sally Evans
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3820 Bodega Avenue
Petaluma, CA 94952
(707) 762-2573 office
(707) 484-9628 cell

Subject: ARS 13-009: Notice of Cultural Resources Evaluation at 874 North Wright Road, Santa Rosa

From: sally evans (slyevans@yahoo.com)

To: otis@stewartspoint.org;

Date: Tuesday, April 23, 2013 5:07 PM

Dear Otis Parish,

Archaeological Resource Service has been retained to conduct a cultural resource evaluation of a 0.98-acre property located at 874 North Wright Road in Santa Rosa, Sonoma County, California. The proposed project includes a minor subdivision to create a park parcel and mixed use parcel with residential and retail uses.

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Sincerely,

Sally Evans
Archaeological Resource Service
3820 Bodega Avenue
Petaluma, CA 94952
(707) 762-2573 office
(707) 484-9628 cell

Subject: ARS 13-009: Notice of Cultural Resources Evaluation at 874 North Wright Road, Santa Rosa

From: sally evans (slyevans@yahoo.com)

To: coastmiwok@aol.com;

Date: Tuesday, April 23, 2013 5:07 PM

Dear Mr. Buvelot,

Archaeological Resource Service has been retained to conduct a cultural resource evaluation of a 0.98-acre property located at 874 North Wright Road in Santa Rosa, Sonoma County, California. The proposed project includes a minor subdivision to create a park parcel and mixed use parcel with residential and retail uses.

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Sincerely,

Sally Evans

Archaeological Resource Service
3820 Bodega Avenue
Petaluma, CA 94952
(707) 762-2573 office
(707) 484-9628 cell

Subject: ARS 13-009: Notice of Cultural Resources Evaluation at 874 North Wright Road, Santa Rosa

From: sally evans (slyevans@yahoo.com)

To: coastmiwok@aol.com;

Date: Tuesday, April 23, 2013 5:08 PM

Dear Mr. Sarris,

Archaeological Resource Service has been retained to conduct a cultural resource evaluation of a 0.98-acre property located at 874 North Wright Road in Santa Rosa, Sonoma County, California. The proposed project includes a minor subdivision to create a park parcel and mixed use parcel with residential and retail uses.

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Sincerely,

Sally Evans

Archaeological Resource Service
3820 Bodega Avenue
Petaluma, CA 94952
(707) 762-2573 office
(707) 484-9628 cell

Subject: ARS 13-009: Notice of Cultural Resources Evaluation at 874 North Wright Road, Santa Rosa

From: sally evans (slyevans@yahoo.com)

To: miwokone@yahoo.com;

Date: Tuesday, April 23, 2013 5:09 PM

Dear Mr. Ross,

Archaeological Resource Service has been retained to conduct a cultural resource evaluation of a 0.98-acre property located at 874 North Wright Road in Santa Rosa, Sonoma County, California. The proposed project includes a minor subdivision to create a park parcel and mixed use parcel with residential and retail uses.

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Sincerely,

Sally Evans

Archaeological Resource Service
3820 Bodega Avenue
Petaluma, CA 94952
(707) 762-2573 office
(707) 484-9628 cell

Subject: ARS 13-009: Notice of Cultural Resources Evaluation at 874 North Wright Road, Santa Rosa

From: sally evans (slyevans@yahoo.com)

To: cbelleau@yakaama.org;

Date: Tuesday, April 23, 2013 5:10 PM

Dear Ya-Ka-Ama

Archaeological Resource Service has been retained to conduct a cultural resource evaluation of a 0.98-acre property located at 874 North Wright Road in Santa Rosa, Sonoma County, California. The proposed project includes a minor subdivision to create a park parcel and mixed use parcel with residential and retail uses.

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Sincerely,

Sally Evans
Archaeological Resource Service
3820 Bodega Avenue
Petaluma, CA 94952
(707) 762-2573 office
(707) 484-9628 cell

Archaeological Resource Service

April 23, 2013

Patricia Hermosillo, Chairperson
Cloverdale Rancheria of Pomo Indians
555 South Cloverdale Blvd., Suite A
Cloverdale, CA 95425

RE: Notice of Cultural Resources Evaluation at 874 North Wright Road, Santa Rosa

Dear Patricia,

Archaeological Resource Service has been retained to conduct a cultural resource evaluation of a 0.98-acre property located at 874 North Wright Road in Santa Rosa, Sonoma County, California. The proposed project includes a minor subdivision to create a park parcel and mixed use parcel with residential and retail uses.

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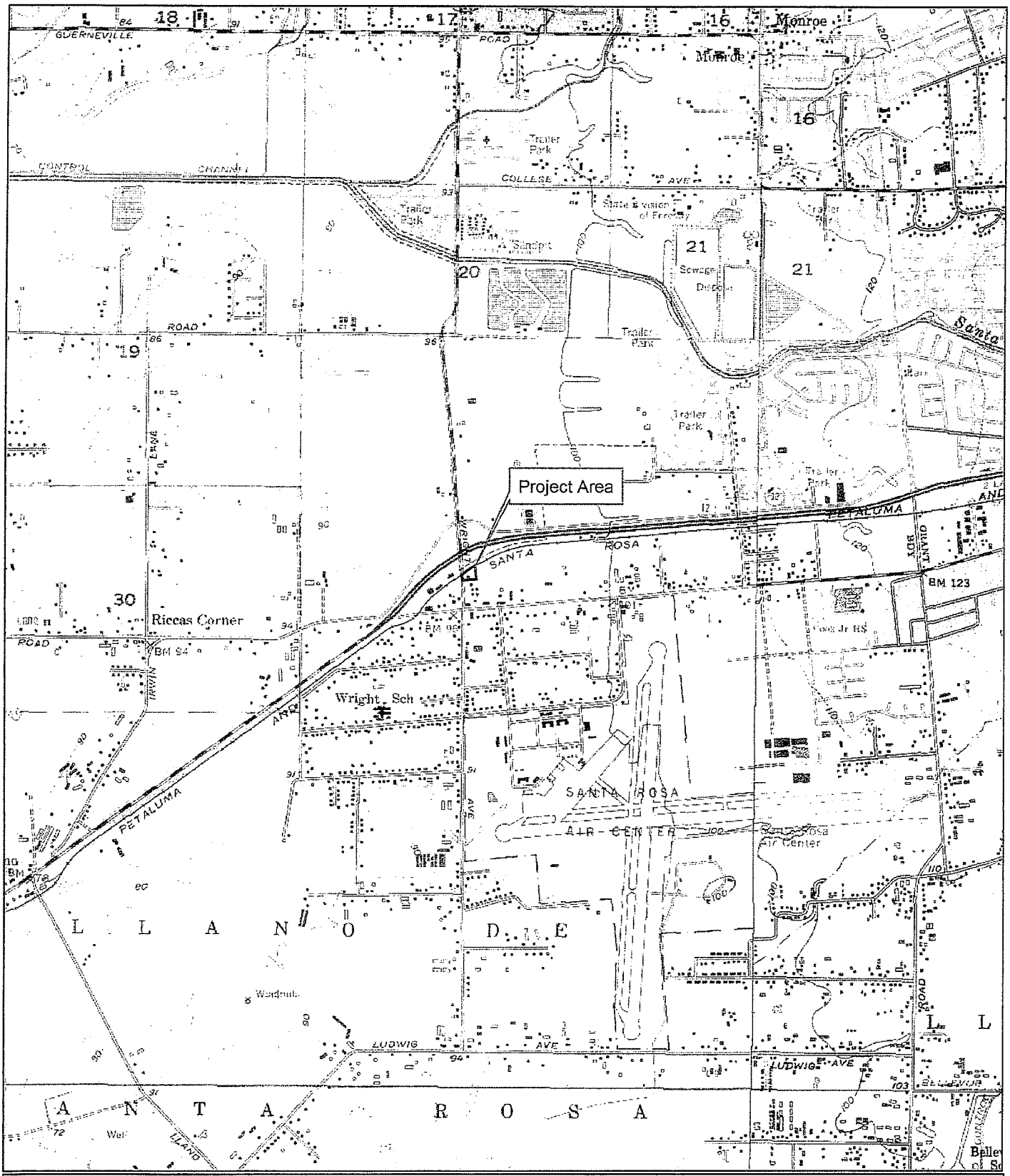
Sally Evans
Archaeological Resource Service
3820 Bodega Avenue
Petaluma, CA 94952
(707) 762-2573 office
(707) 484-9628 cell



Archaeological Resource Service

ARS 13-009: 874 North Wright Road
Santa Rosa, Sonoma County, CA
APN 035-063-001 / 0.98 acres

N

13-009 Project Area

0 0.375 0.75 1.5 Miles

USGS 7.5' Sebastopol quadrangle
T7N / R8W

BAUER associates

GEOTECHNICAL CONSULTANTS

REPORT
GEOTECHNICAL INVESTIGATION
Elm Tree Station
Retail Market & Fuel Facility
874 North Wright Road
Santa Rosa, California

CITY OF SANTA ROSA
P.O. Box 1678
Santa Rosa, CA 95402
JAN 17 2013
DEPARTMENT OF
COMMUNITY DEVELOPMENT

Prepared for:

Mr. Mangal Dhillon
2743 Yulupa Avenue
Santa Rosa, CA 95405

by

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October 16, 2012

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LIST OF ILLUSTRATIONS

INTRODUCTION

This report presents the results of our geotechnical investigation for the subject project. The planned development is indicated on the Development Plan, prepared by the Prism Design Group, dated July 31, 2012, and partially reproduced on Plate 1.

We understand that the project consists of constructing two, one-story, wood or metal frame buildings with an associated fuel canopy and pavement areas. Foundation loads are expected to be typical for the type of construction indicated. We understand that unretained cuts and fills will be relatively minor and less than about 4 feet high. No retaining walls are planned.

The scope of our investigation, as outlined in our agreement dated August 28, 2012, included reviewing selected published geologic information from our files, exploring subsurface conditions at the site, and performing laboratory testing on selected samples. Based upon our work, we have developed conclusions and recommendations regarding:

1. Proximity of the site to published active faults and evaluation of liquefaction potential.
2. Soil/rock and ground water conditions observed.
3. Site preparation and grading.
4. Foundation type(s) and design criteria.
5. Concrete slabs-on-grade.
6. Pavement thicknesses.

7. Geotechnical engineering drainage.

8. Supplemental services.

Our scope of work did not include an evaluation of any potential hazardous waste contamination of the soil or groundwater at the site.

WORK PERFORMED

We reviewed the published geologic information summarized in the List of References as well as our previous work from other projects in the vicinity.

On September 11 and 14, 2012, our geotechnical engineer observed the surface conditions and explored the subsurface conditions to the extent of four test borings within the planned development area. The test borings were drilled with a truck mounted drill rig equipped with 8-inch diameter, hollow stem augers. The completed test borings ranged in depth from about 13-1/2 to 51-1/2 feet. Test Boring 4 was backfilled with cement grout. The other borings were backfilled with auger cuttings.

The test borings were located by pacing the distance from features indicated on Plate 1. Our engineer logged the conditions exposed and obtained both loose bulk and relatively undisturbed samples at selected intervals for visual identification and laboratory testing. Relatively undisturbed samples were obtained with a 2.4-inch, inside-diameter, split-spoon sampler driven with a 140-pound hammer. Other samples were obtained with a Standard

Penetration Sampler. The stroke during driving was about 30 inches. The blows required to drive samplers were recorded and the Modified California blows were converted to equivalent standard penetration blow counts for correlation with other data. Logs of the test borings showing the materials encountered, sample depths, and converted blow counts are presented on Plates 2 through 5. The soil is classified in accordance with the Unified Soil Classification System presented on Plate 6.

The logs show our interpretation of the subsurface conditions on the date and locations indicated, and it is not warranted that they are representative of the subsurface conditions at other locations and times. Also, the stratification lines on the logs represent the approximate boundaries between soil types; the transition may be gradual.

Representative samples of the soils encountered were laboratory tested to determine their strength, moisture content, density, classification (Atterberg Limits and gradation), Resistance (R-) Value, and expansion index. The test results are typically presented on the logs in the manner described in the Key to Test Data, Plate 6.

SITE AND SOIL CONDITIONS

The nearly level property is located on the east side of North Wright Road between an existing propane commercial facility and the Joe Rodota Bike Trail. The parcel is currently undeveloped. However, an old power pole indicates that the parcel was previously developed.

A hole approximately several feet deep and across was observed in the southwest quadrant. A seasonal drainage swale crosses the central portion of the property in a northeast/southwest direction. The swale is typically about 1 to 3 feet deep except for two isolated filled in areas. The property is covered with grass, weeds, and several trees and stumps.

The geologic maps reviewed that the site is underlain by bedrock of the Glen Ellen Formation which regionally consists of poorly lithified sands, clays, silts, and gravels. The Glen Ellen generally resembles a stiff soil. The poorly lithified and clayey Glen Ellen can erode easily, however, the gravelly and cemented zones are more erosion resistant.

The results of our field exploration indicate that the property is typically covered by about 3-1/2 to 5 feet of natural sandy clays. The natural surface soils observed in our test borings are typically porous and weak to about 2-1/2 to 3-1/2 feet deep. Two to three inches of variable density gravel fill, likely for a driveway for the previous development was observed near the west property line. Porous/weak soils and variable density old fills are prone to non-uniform settlement, and may collapse when loaded and saturated. The estimated depth of weak soils is shown on the right side of the test boring logs. Our visual classification and laboratory test results indicate that the surface soils are typically of moderate to high expansion potential. Highly expansive soils can heave and crack lightly loaded, shallow foundations and slabs-on-grade.

Underlying the surface soils are stiff to hard sandy clays and silts, medium dense silty sands, and medium dense to dense sandy gravels. The underlying clays are of moderate expansion potential. The underlying materials have moderate to high strength and are relatively incompressible for the range of anticipated foundation loads.

Groundwater was encountered in Test Borings 1, 2, and 3 at depths of about 7 to 8 feet. In Test Boring 4, groundwater was encountered at about 12 feet in depth. However, groundwater conditions are expected to vary seasonally and at different locations. Our work did not include an evaluation of flooding.

Published geologic maps of the area do not show active faults at the site. Faults that have experienced surface rupture within about the last 11,000 years are considered 'active'. The property is not within an Alquist-Priolo (AP) Earthquake Fault Zone, which could require a detailed investigation to evaluate the hazard of fault surface rupture in relation to nearby active faults.

The Healdsburg- Rodgers Creek and San Andreas Faults are located approximately 4 and 15-1/2 miles to the northeast and southwest of the site, respectively. An unnamed, possibly active fault is located about 1-1/2 miles to the east. A possibly active fault is considered to have experienced displacement within about the last 2 million years, and is therefore, considered less prone to renewed movement.

DISCUSSION AND CONCLUSIONS

Based on the results of our investigation, we conclude that the planned development is feasible from a geotechnical engineering viewpoint. The primary geotechnical concerns are the presence of the variable density old fills and weak surface soils, and the presence of highly expansive soils.

Upon saturation, weak/porous soils and variable density old fills, where encountered, will lose strength and consolidate rapidly under loads of new fill and structural elements. Saturation will occur when the natural evaporation of soil moisture is inhibited by new fill and structural elements. Expansive soils undergo significant volumetric changes with seasonal variations in moisture content. Such movements can result in unacceptable heaving and cracking of lightly-loaded structural elements, such as foundations, pavements and concrete slabs. We conclude that the existing surface materials are unsuitable for support of fills, foundations, and concrete slabs in their present condition.

Suitable foundation support can be achieved by upgrading weak/porous surface soils in building areas by removal and recompaction for their full depth. Further, the risk of future structural damage by shrinking and swelling of the expansive clays should be mitigated by covering the expansive soils with a 30-inch thick confining and moisture protecting blanket of non-expansive fill (where expansive soils are encountered within 30 inches of subgrade).

Less critical slabs (such for exterior areas) may be constructed on properly prepared subgrade provided that: 1) the slabs are separated from foundations; 2) slabs are designed to minimize cracking (i.e. reinforced and provided with control joints); and 3) some soil related cracking and settlement is considered acceptable. Improved performance of slabs could be attained by removal and replacement of some, or all, of the weak and expansive soils with engineered fill.

Three of our test borings encountered groundwater at depth of about 7 to 8 feet. The other test boring encountered groundwater at about 12 feet. However, groundwater conditions are expected to vary. Excavations performed in the summer or autumn months will typically result in a lower risk of encountering groundwater.

Control of surface run-off will significantly enhance the stability of the site. The discharge of roof gutter downspouts, must be collected into non-perforated pipes. All collected water must be discharged into the storm drain system or in erosion resistant areas, well away from the development. All building areas must be graded to provide positive drainage away from building foundations.

The published geologic maps do not indicate active faults on the site, therefore the risk of fault rupture during earthquakes is considered to be low. Like all of Sonoma County, the site is subject to severe ground shaking during earthquakes generated by faults in the region. The intensity of shaking will depend on the distance from the earthquake to the site, magnitude of the earthquake, and response of the structure to the underlying soil and rock. We did not observe soils considered prone to liquefaction or densification below the weak surface soils. It will be

necessary to design and construct the structure in accordance with current standards for earthquake-resistant construction. Construction in accordance with our recommendations will enhance the integrity of the development, however, damage related to faulting/earthquake shaking may still occur during the life of the development.

RECOMMENDATIONS

A. Site Preparation and Grading

Areas to be graded should be cleared of designated brush, rubble, debris and old fills. Material generated by the clearing operations should be removed from the site. Wells, cesspools, and other voids encountered or generated during clearing should be either backfilled with granular material or compacted soil, or capped with concrete as determined by us and in accordance with Sonoma County requirements.

Areas to be graded should be stripped of the upper soils containing root growth and organic matter. We anticipate that the required depth of stripping will average about 3 to 6 inches. Deeper stripping will be required to remove localized heavy concentrations of root growth. The strippings should be removed from the site, stockpiled for reuse as topsoil, or mixed with at least two parts soil and used as fill in areas 10 feet beyond structures, walks and paved areas.

For the purpose of definition, "select fill areas" referred to in this report are: (1) building areas (including trash enclosures) and the zones extending for a distance of at least 5 feet beyond outside edges of perimeter footings or other footings extending from buildings; (2) within critical exterior concrete slab areas and the zones extending for a distance of 5 feet beyond their edges; and (3) fill slopes for buildings and the zone extending at least 3 feet beyond the toe of the fill slope.

Within the select fill areas, existing weak surface and old fill soils, should be removed for their full depth. Additional excavation will be necessary to provide space for a minimum of 30 inches of select fill. Further excavation may be needed to provide at least one foot of compacted select fill below the bottom of planned footings. Exposed soils should be scarified to a depth of 6 inches, moisture conditioned to at least two percent above optimum moisture content (four percent for expansive soils) and compacted to at least 90 percent relative compaction. Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density of the same soil, as determined by ASTM D 1557. Optimum moisture content is the water content (percentage by dry weight) corresponding to the maximum dry density. The moisture conditioning and recompaction should extend to the bottom of any shrinkage cracks.

If grading is performed during the winter or spring seasons, we anticipate that higher groundwater conditions may be encountered. Severe groundwater conditions may result in the need for dewatering, placement of stabilization fabrics, and/or placement of ballast rock to achieve stable excavation bottoms.

The on-site soils should be suitable for reuse as general and select fill provided that: 1) all rock sizes greater than 6 inches in largest dimension and perishable materials are removed, and 2) the fill materials are approved by us prior to use. However, expansive soils will not be suitable for select fill, or for use within 30 inches of subgrade. Imported, non-expansive fill, should be free of organic matter, and should conform to the following requirements:

Sieve Size	Percent Passing
6-Inch	100
4-Inch	90 - 100
No. 200	15 - 60

Liquid Limit - 40 Maximum
Plasticity Index - 15 Maximum
(ASTM D 4318-84 Wet Test Method)

Fill should be placed in thin lifts (normally 6 to 8 inches depending on compaction equipment), moisture conditioned to at least two percent above optimum moisture content, and compacted to at least 90 percent relative compaction. Generally, granular backfill should be vibrated in-place. All surfaces should be finished to present a smooth, unyielding subgrade.

Fill and cutslopes should be constructed no steeper than 2:1. Fill and cutslopes should be planted with erosion-resistant vegetation, or protected from erosion by other measures upon completion of grading. Ground cover should be maintained on all slopes.

B. Spread Footings

Spread footings supported in compacted fill should be designed using an allowable soil bearing pressure of 2,000 pounds per square foot (psf) for dead plus code live loads and 3,000 psf

for total design loads, including wind or seismic forces. Wall and column footings should be at least 12 and 18 inches wide, respectively, regardless of load, and should be bottomed at least 18 inches below the lowest adjacent compacted fill subgrade. Typically, bottoms of footings should be underlain by at least one foot of compacted fill. We should observe the footing excavations prior to the placement of reinforcing steel and concrete.

Resistance to lateral loads in compacted fill should be calculated using a passive pressure of 350 pounds per cubic foot (pcf) equivalent fluid pressure (triangular distribution) and a base friction of 0.35 times net vertical dead load. Passive pressures should be neglected in the upper 1 foot where footings are not confined by concrete slabs-on-grade or asphalt pavement structural sections.

C. Concrete Slabs-on-Grade

Critical use slabs should be supported on non-expansive engineered fill placed in accordance with our recommendations. Exterior concrete slabs can be placed directly on a properly prepared subgrade soil provided that: 1) the slabs are separated from foundations; 2) slabs are designed to minimize cracking (i.e. reinforced and provided with control joints); and 3) some soil related cracking and settlement is considered acceptable. Improved performance of slabs could be attained by removal and replacement of some, or all, of the weak soils with non-expansive engineered fill.

During foundation installation and utility trench excavation and backfilling, previously compacted subgrade soils may become disturbed. Where this is the case, these soils should be

uniformly moisture conditioned to least at two percent above optimum moisture content and rerolled to provide a smooth, unyielding surface compacted to at least 90 percent relative compaction.

Subgrade should be maintained at a uniform moisture, at least two percent above optimum moisture content, until the concrete slabs are placed. Slabs should be underlain with a capillary moisture break and cushion layer consisting of at least four inches of clean, free-draining crushed rock. The crushed rock should be at least 1/4-inch, and no larger than 3/4-inch, in size.

Moisture will condense on the underside of slabs. Where moisture migration through slabs is detrimental, waterproofing mitigation methods should be designed by others for incorporation into the project plans. Slabs should be at least 4 inches thick and reinforced to reduce cracking. Exterior slabs should be carefully separated from foundations with felt paper, mastic, or other positive and low friction separation.

Some cracking of slabs must be anticipated considering concrete shrinkage. Reinforcing must be carefully installed in accordance with the structural engineer's recommendations to minimize the potential of cracking. We typically recommend the use rebar reinforcement, placed on blocks at the center of the slab. We have commonly observed that welded wire mesh is not properly located in the slabs. Control and expansion joints should be provided, as appropriate, to mitigate the effects of differential settlement.

D. Asphalt Pavement Structural Sections

A Resistance (R-) Value test was performed on a sample of representative subgrade soils from Test Boring 4. The test resulted in an R-Value of less than 5. The minimum R-Value used for design is 5. Using this R-Value and the assumed Traffic Indices (T.I.), we recommend the following pavement section alternatives. Traffic Indices are typically provided by the Project Civil Engineer. We would be pleased to evaluate and provide recommended T.I.'s for the project if anticipated traffic loadings are available. Further, we should be contacted if higher T.I.'s are anticipated.

T.I.	Asphalt Concrete	Class 2* Aggregate Base	Class 4** Aggregate Subbase
4.0	2.5	9.0	---
4.0	2.5	7.0	12
4.5	2.5	10.0	---
4.5	2.5	7.0	12
5.0	3.0	10.0	---
5.0	3.0	6.0	12
5.5	3.0	12.0	---
5.5	3.0	6.0	12
6.0	3.0	14.0	---
6.0	3.0	8.0	12

*R-Value = 78 minimum
**R-Value = 30 minimum

If the upper 12 inches of subgrade soils are lime treated soils or consist of imported materials with R-Values on the order of 30, then the reduced Class 2 Aggregate Base sections for each T.I. may be used and the Class 4 Aggregate Subbase can be eliminated.

A sample of subgrade materials was obtained for Expansion Index testing. The test indicates that the material in the planned paved areas has an Expansion Index of 103. The City of Santa Rosa requires special treatment of pavement edges where the Expansion Index tests exceed 50. We have previously contacted the City of Santa Rosa, Material Testing Department, and understand that the recommendations presented in the following paragraph will conform with their requirements. The City should be contacted to confirm their current regulations and requirements.

Where continuous sidewalks are constructed directly adjacent the curb, no special treatment will be required. However, where planting strips are provided, a 4-inch wide and 30-inch deep (below grade on which curb is formed) slurry cut-off should be constructed at the back of the curb. The cut-off may be lined on the street side with visqueen plastic. The slurry should be 2-sack, pea and sand mix with a 6 to 8 inch slump. At other locations where the soils at the pavement edges are subject to wetting and drying, edge cracking should be anticipated. Periodic patching should be performed to prevent water from entering the cracks. Edge cracking can be reduced by installation of a perimeter moisture vapor cutoff as described above, or the cutoff could consist of a compacted select fill dike 36 inches deep and 8 feet wide.

The flexible pavement materials and construction methods should conform to the quality requirements of the State of California, Caltrans Standard Specifications, current edition, and

that of the City of Santa Rosa. We have not developed pavement thicknesses for the paved areas adjacent the dumpsters. We understand that recommendations are available from the waste disposal service companies for dumpster areas.

Prior to preparation of the subgrade, all underground utilities in the paved areas should be installed and properly backfilled, and the concrete curbs and gutters or header-boards should be in place. Subgrade soil should be uniformly moisture conditioned to 2 percent above optimum moisture content (4 percent for expansive soils) and compacted to at least 95 percent relative compaction (93 percent for expansive soils), providing a firm and unyielding surface. This may require scarifying and recompacting to achieve uniformity. The aggregate base materials should be placed in thin lifts in a manner to prevent segregation, uniformly moisture conditioned, and compacted to at least 95 percent relative compaction to provide a smooth, unyielding surface.

E. Geotechnical Engineering Drainage

Ponding water will be detrimental to building foundations and structural elements. The site should be graded to provide positive drainage away from the building foundations.

Roofs should be provided with gutters, and the downspouts connected to non-perforated pipes discharging into the storm drain system or erosion resistant areas well away from the structures. Roof downspouts and surface drains must be maintained entirely separate from subsurface drainage.

Slab-on-grade floors should be provided with a moisture capillary break. Outlets should be provided in slab rock at slab-on-grade floors to reduce the risk of water build up in the slab

rock. Increased mitigation for interior slab-on-grade floors should be provided by installation of trench subdrains beneath the slab rock. The subdrains should consist of 12-inch deep by 12-inch wide trenches that cross the slab areas, as directed by us. These subdrains are typically located 15 to 20 feet apart. Specific locations should be determined after plans, including utility locations beneath the slab, are substantially completed. The slab rock should be connected to the subdrain rock. The pipe should conform to the requirements of Section 68, State of California "Caltrans" Standard Specifications, current addition. The trench should be backfilled with clean, free-draining, 3/4 or 1-1/2 inch crushed drain rock separated from adjacent soil/rock by a non-woven filter fabric. As an alternative, Class II permeable material complying with Section 68, "Caltrans" may be used without fabric.

F. Supplemental Services

We should review the final plans for conformance with the intent of our recommendations. During grading and foundation construction, we should provide intermittent geotechnical engineering observations, along with necessary field and laboratory testing, during: 1) removal of weak and expansive soils; 2) fill placement and compaction; 3) preparation and compaction of subgrade; and 4) excavation of foundations. These observations and tests would allow us to check that the contractor's work conforms with the intent of our recommendations and the project plans and specifications. These observations also permit us to check that conditions encountered are as anticipated, and modify our recommendations, as necessary. Upon

completion of the project, we should perform a final observation prior to occupancy. We should summarize the results of this work in a final report.

These supplemental services are performed on an as-requested basis, and we can accept absolutely no responsibility for items that we are not notified to observe. These supplemental services are in addition to this investigation, and are charged for on a hourly basis in accordance with our Schedule of Charges. We must be provided with at least 48 hours notice for scheduling our initial site visit, and 24 hours thereafter.

MAINTENANCE

Periodic land maintenance will be required. Surface and subsurface drains should be checked frequently, and cleaned and maintained as necessary. Sloughing or erosion that occurs should be repaired before it can enlarge.

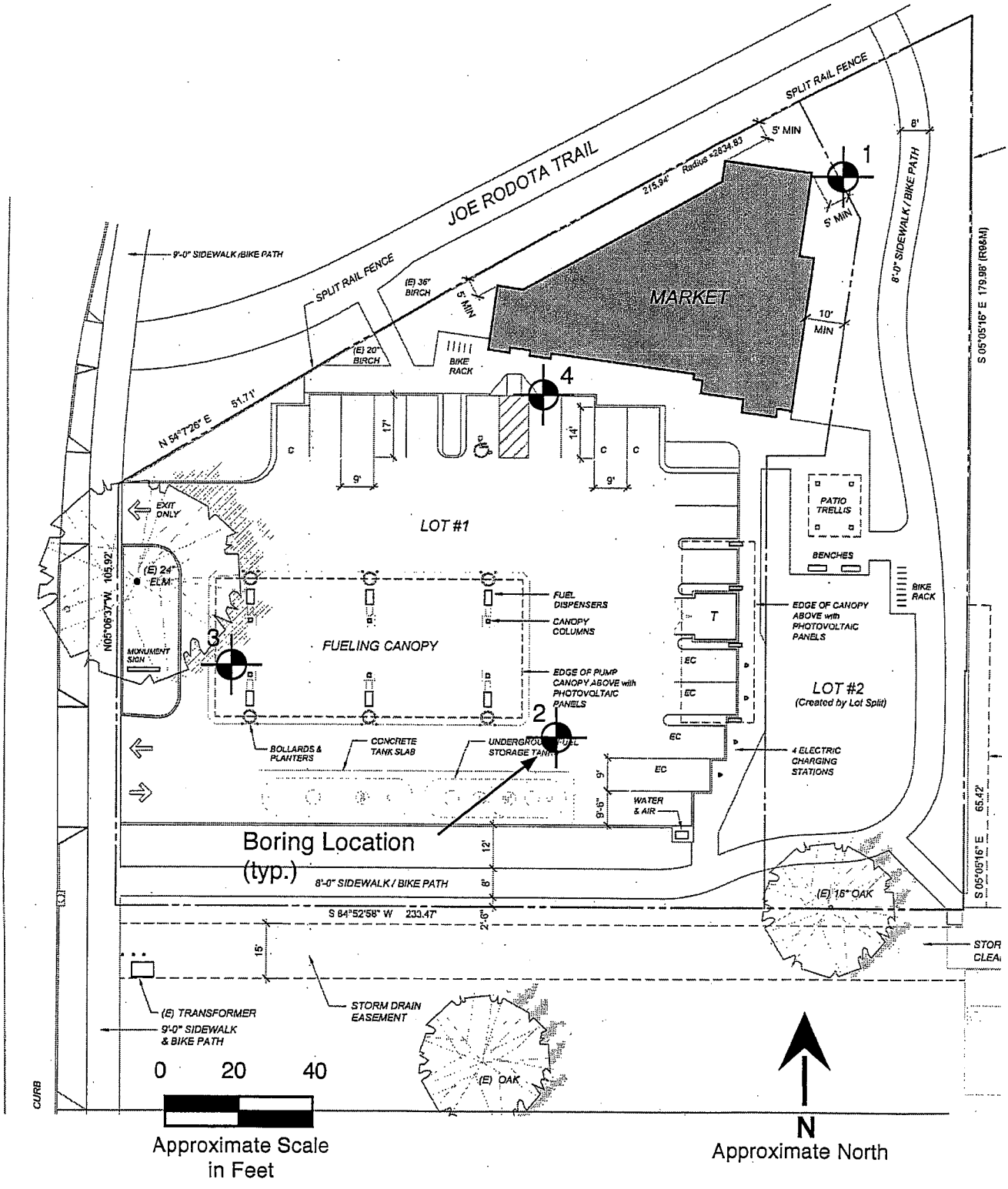
LIMITATIONS

We performed the investigation and prepared this report in accordance with generally accepted standards of the geotechnical engineering profession. No other warranty, either express or implied, is given.

If the project is revised, or if conditions different from those described in this report are encountered during construction, we should be notified immediately so that we can take timely action to modify our recommendations, if warranted.

Site conditions and standards of practice change. Therefore, we should be notified to update this report if construction is not performed within 24 months of the submittal date.

ILLUSTRATIONS



Reference: Development Plan, dated July 31, 2012, prepared by Tierney/Figueiredo Architects, AIA.

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2717.0 Date: 10/12 By: AHG	**TEST BORING LOCATION PLAN** 874 NORTH WRIGHT ROAD Santa Rosa, California	PLATE **1**

Equipment: 6" Flight Auger

Date: September 11, 2012

Elevation: Not Available

Laboratory Tests	Blows/Foot*	Moisture Content (%)	Dry Density (pcf)	Depth
Classification Test LL= 51 PL= 17 PI = 34	13			
DS 1475 (500) DS 1805 (1000)	12	20.9 20.9	102 104	3
	12			6
	24			9
				12
	17			15
				18
				21

GRAY SANDY CLAY (CH)
stiff, moist, porous to about 3-1/2'

Weak Soils

moist to wet below about 3-1/2'

GRAY BROWN SANDY CLAY (CL)
stiff, wet, gravels

▽ water level about one hour after drilling completed

BROWN SANDY GRAVEL (GP)
medium dense, saturated

GRAY BROWN SANDY SILT (ML)
very stiff, saturated

*Blows converted to Standard Penetration Resistance Values

** Sampled with 1.5" diameter sampler

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2717.0 Date: 10/12 By: AHG	**LOG OF TEST BORING 1** 874 NORTH WRIGHT ROAD Santa Rosa, California	PLATE **2**

Equipment: 6" Flight Auger

Date: September 11, 2012

Elevation: Not Available

Laboratory Tests	Blows/Foot*	Moisture Content (%)	Dry Density (pcf)	Depth	
	10				GRAY BROWN SANDY CLAY (CL) stiff, moist, porous to about 2-1/2'
				3	
	13	17.7	103		DARK BROWN SANDY CLAY (CH) stiff, moist
					TAN SANDY SILT (ML) stiff, wet
	15			6	
					GRAY BROWN SILTY SAND (SM) medium dense, saturated
					▽ water level after drilling completed
	17	25.2	96	9	
	15**				ORANGE BROWN SANDY GRAVEL (GP) medium dense, saturated
				12	GRAY BROWN SANDY SILT (ML) stiff, saturated
	19				color change to Blue Gray & very stiff below about 13'
				15	
				18	
				21	

Weak Soils

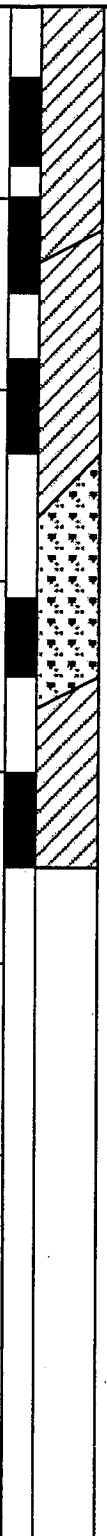
BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2717.0 Date: 10/12 By: AHG	**LOG OF TEST BORING 2** 874 NORTH WRIGHT ROAD Santa Rosa, California	PLATE **3**

Equipment: 6" Flight Auger

Date: September 11, 2012

Elevation: Not Available

Laboratory Tests	Blows/Foot*	Moisture Content (%)	Dry Density (pcf)	Depth
Classification Test LL = 26 PL = 14 PI = 12	16			3
	22			6
	27			9
	29			12
	14			15
				18
				21



BROWN SANDY CLAY (CL)
very stiff, dry, porous to about 2-1/2'

Weak Soils

LIGHT BROWN SANDY CLAY (CL)
very stiff to hard, wet

▽ water level after drilling completed

GRAY & BROWN SANDY GRAVEL (GP)
medium dense, saturated

LIGHT BROWN SANDY CLAY (CL)
stiff, saturated

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2717.0 Date: 10/12 By: AHG	LOG OF TEST BORING 3 874 NORTH WRIGHT ROAD Santa Rosa, California	PLATE 4

Equipment: 8" Hollow Auger

Date: September 14, 2012

Elevation: Not Available

Laboratory Tests	Blows/Foot*	Moisture Content (%)	Dry Density (pcf)	Depth
EI = 103 R-Value<5, Note: Sample ribboned before completion.	10	16.1	94	
	16			3
	24			6
				9
	36			12
				15
	15			
Passing Sieve #200 - 74%	14**			18
				21
	12			
	11			

GRAY BROWN SANDY CLAY (CH)
stiff, moist, porous to about 2-1/2'

Weak Soils

TAN SANDY SILT (ML)
very stiff, wet

GRAY SANDY GRAVEL (GP)
dense, saturated

▽ water level upon drilling completion

GRAY BROWN SANDY CLAY (CL)
stiff, saturated

(continued on Plate 5a)

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2717.0 Date: 10/12 By: AHG	**LOG OF TEST BORING 4** 874 NORTH WRIGHT ROAD Santa Rosa, California	PLATE **5**

Equipment: 8" Hollow Auger

Date: September 14, 2012

Elevation: Not Available

Laboratory Tests	Blows/Foot*	Moisture Content (%)	Dry Density (pcf)	Depth	
					Same - GRAY BROWN SANDY CLAY (CL) stiff, saturated
Passing Sieve #200 - 53%	13				
				27	GRAY SANDY SILT (ML) stiff, saturated
	16**			30	
				33	GRAY SILTY GRAVEL (GP) dense, saturated
	36**			36	
				39	GRAY BROWN SANDY CLAY (CL) stiff, saturated, minor gravel
	14**			42	GRAY SANDY GRAVEL (GP) medium dense, saturated
				45	LIGHT GRAY SANDY SILT (ML) stiff, saturated
Passing Sieve #200 - 63%	13**				
					(CONTINUED ON PLATE 5b)

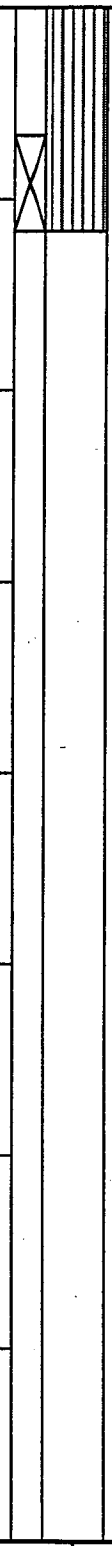
BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2717.0 Date: 10/12 By: AHG	**LOG OF TEST BORING 4** 874 NORTH WRIGHT ROAD Santa Rosa, California	PLATE **5a**

Equipment: 8" Hollow Auger

Date: September 14, 2012

Elevation: Not Available

Laboratory Tests	Blows/Foot*	Moisture Content (%)	Dry Density (pcf)	Depth	
					Same - LIGHT GRAY SANDY SILT (ML) stiff, saturated
	13**			51	
				54	
				57	
				60	
				63	
				66	
				69	



BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2717.0 Date: 10/12 By: AHG	**LOG OF TEST BORING 4** 874 NORTH WRIGHT ROAD Santa Rosa, California	PLATE **5b**

MAJOR DIVISIONS					TYPICAL NAMES
COARSE GRAINED SOILS More than half is larger than #200 sieve	GRAVELS more than half coarse fraction is larger than no. 4 sieve size	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW		WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES
			GP		POORLY GRADED GRAVELS, GRAVEL-SAND MIXTURES
		GRAVELS WITH OVER 12% FINES	GM		SILTY GRAVELS, POORLY GRADED GRAVEL-SAND MIXTURES
			GC		CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND MIXTURES
	SANDS more than half coarse fraction is smaller than no. 4 sieve size	CLEAN SANDS WITH LITTLE OR NO FINES	SW		WELL GRADED SANDS, GRAVELLY SANDS
			SP		POORLY GRADED SANDS, GRAVEL-SAND MIXTURES
		SANDS WITH OVER 12% FINES	SM		SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES
			SC		CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS More than half is smaller than #200 sieve	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML		INORGANIC SILTS, SILTY OR CLAYEY FINE SANDS, VERY FINE SANDS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS OR LEAN CLAYS
			OL		ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH		INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH		ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			Pt		PEAT AND OTHER HIGHLY ORGANIC SOILS

KEY TO TEST DATA

LL — Liquid Limit (in %)
PL — Plastic Limit (in %)
G — Specific Gravity
SA — Sieve Analysis
Consol — Consolidation
■ "Undisturbed" Sample
⊠ Bulk or Disturbed Sample
□ No Sample Recovery

	Shear Strength, psf	Confining Pressure, psf	
*Tx	320	(2600)	Unconsolidated Undrained Triaxial
Tx CU	320	(2600)	Consolidated Undrained Triaxial
DS	2750	(2000)	Consolidated Drained Direct Shear
FVS	470		Field Vane Shear
*UC	2000		Unconfined Compression
LVS	700		Laboratory Vane Shear

Notes: (1) All strength tests on 2.8" or 2.4" diameter sample unless otherwise indicated
(2) * Indicates 1.4" diameter sample

BAUER ASSOCIATES GEOTECHNICAL CONSULTANTS	Job No: 2717.0 Date: 10/12 By: AHG	SOIL CLASSIFICATION CHART & KEY TO TEST DATA 874 NORTH WRIGHT ROAD Santa Rosa, California	PLATE 6

LIST OF REFERENCES

Hart, E.W., and Bryant, W.A., 1997, Fault-Rupture Hazard Zones in California: California Division of Mines and Geology, Special Publication 42, 38 pp.

Huffman, M.E., and Armstrong, C.F., 1980; Geology for Planning in Sonoma County: California Division of Mines and Geology, Special Report 120, Scale 1:62,500.

Wagner, D.L., and Bortugno, E.J., 1982, Geologic Map of the Santa Rosa Quadrangle: California Division of Mines and Geology, Scale 1:250,000.

http://geomaps.wr.usgs.gov/sfgeo/liquefaction/susceptibility.html, Witter et. al., 2006, and Knudsen, et. al. 2000, Preliminary Maps of Quaternary Deposits and Liquefaction Susceptibility, Nine-County San Francisco Bay Region, California: U.S. Geological Survey, Open File Report 00-444, Scale 1:275,000, Sheet 2.

DISTRIBUTION

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BKF Engineers Attention: Ms. Bonnie Diefendorf 325 Tesconi Circle Santa Rosa, CA 95401	1

AHG/BB (gi/n. wright rd)

APPENDIX E: CAP NEW DEVELOPMENT CHECKLIST

To ensure new development projects are compliant with the City's Climate Action Plan, the following checklist has been developed. This checklist should be filled out for each new project, subject to discretionary review, to allow new development to find a less than significant impact for greenhouse gas emissions in the environmental review process.

#	Description	Compliance			
		Complies	Does Not Comply	N/A	See Discussion
1.1.1	Comply with CALGreen Tier 1 standards*	✓			
1.1.3	After 2020, all new development will utilize zero net electricity*			✓	
1.3.1	Install real-time energy monitors to track energy use*	✓			
1.4.2	Comply with the City's tree preservation ordinance*	✓			
1.4.3	Provide public & private trees in compliance with the Zoning Code*	✓			
1.5	Install new sidewalks and paving with high solar reflectivity materials*	✓	LIGHT COLORED CONCRETE and PAVING SEAL COAT		
2.1.3	Pre-wire and pre-plumb for solar thermal or PV systems	✓			
3.1.2	Support implementation of station plans and corridor plans			✓	
3.2.1	Provide on-site services such as ATMs or dry cleaning to site users			✓	
3.2.2	Improve non-vehicular network to promote walking, biking	✓			
3.2.3	Support mixed-use, higher-density development near services	✓			
3.3.1	Provide affordable housing near transit			✓	
3.5.1	Unbundle parking from property cost			✓	
3.6.1	Install calming features to improve ped/bike experience	✓			
4.1.1	Implement the Bicycle and Pedestrian Master Plan	✓			
4.1.2	Install bicycle parking consistent with regulations*	✓			
4.1.3	Provide bicycle safety training to residents, employees, motorists		✓		
4.2.2	Provide safe spaces to wait for bus arrival			✓	

CITY OF SANTA ROSA
P.O. Box 1678
Santa Rosa CA 95402

JUN 25 2013

DEPARTMENT OF
COMMUNITY DEVELOPMENT

NEW DEVELOPMENT CHECKLIST

#	Description	Compliance			
		Complies	Does Not Comply	N/A	See Discussion
4.3.2	Work with large employers to provide rideshare programs			✓	
4.3.3	Consider expanding employee programs promoting transit use		✓		
4.3.4	Provide awards for employee use of alternative commute options		✓		
4.3.5	Encourage new employers of 50+ to provide subsidized transit passes*			✓	
4.3.7	Provide space for additional park-and-ride lots		✓		
4.5.1	Include facilities for employees that promote telecommuting	✓			
5.1.2	Install electric vehicle charging equipment	✓			
5.2.1	Provide alternative fuels at new refueling stations*	✓			
6.1.3	Increase diversion of construction waste*	✓			
7.1.1	Reduce potable water use for outdoor landscaping*	✓			
7.1.3	Use water meters which track real-time water use*	✓			
7.3.2	Meet on-site meter separation requirements in locations with current or future recycled water capabilities*			✓	
8.1.3	Establish community gardens and urban farms			✓	
9.1.2	Provide outdoor electrical outlets for charging lawn equipment			✓	
9.1.3	Install low water use landscapes*	✓			
9.2.1	Minimize construction equipment idling time to 5 minutes or less*	✓	CONSTRUCTION PROCEDURES TO BE NOTED IN PROJECT SPECIFICATIONS and CONSTRUCTION DOCUMENTS		
9.2.2	Maintain construction equipment per manufacturer's specs*	✓			
9.2.3	Limit GHG construction equipment emissions by using electrified equipment or alternative fuels*	✓			

**To be in compliance with the CAP, all measures denoted with an asterisk are required in all new development projects unless otherwise specified. If a project cannot meet one or more of the mandatory requirements, substitutions may be made from other measures listed at the discretion of the Community Development Director.*

TIERNEY / FIGUEIREDO
TFA
ARCHITECTS AIA
817 Russell Avenue, Suite H
Santa Rosa, CA 95403
Phone (707) 576-1557 Fax 576-1555

ELM TREE STATION

June 20, 2013

CLIMATE ACTION PLAN NEW DEVELOPMENT CHECKLIST COMPLIANCE EXPLANATION

ITEM	COMPLIANCE FEATURE EXPLANATION
1.1.1	Permit set of construction documents will comply with Tier 1 Standards per City of Santa Rosa Building Department requirements.
1.3.1	Project will install "Smart Meter" system to provide real-time monitoring of energy usage.
1.4.2	Existing trees have been preserved to the greatest extent possible and mitigation trees have been provided for those removed.
1.4.3	Landscape plan includes new trees in compliance with zoning ordinances.
1.5	Project will have light colored concrete (no lamp black additives) and light colored paving seal coat.
2.1.3	Project includes both a photovoltaic system and pre-wiring for potential future additional PV system(s).
3.2.2	The project includes a bicycle and pedestrian path that ties into the Joe Rodota Trail; in addition, project also includes seating and bicycle racks to serve and support Joe Rodota Trail users.
3.2.3	The project is mixed use in nature (it combines a retail market, a residential unit and automobile/pedestrian/bicycle uses).

3.6.1	The project has seating areas, patios and a market that improve the pedestrian/bicyclist experience.
4.1.1	The project's pedestrian/bicycle path and amenities for users (see item 3.6.1) support the Bicycle and Pedestrian Master Plan.
4.1.2	Lot #1 and lot #2 both have bicycle parking for the two buildings and the Joe Rodota Trail users.
4.5.1	The residential unit is intended to be occupied by an employee of the market.
5.1.2	The service station on lot #1 includes 4 electrical vehicle charging stations, two of which are covered and dedicated to E.V. use only.
5.2.1	Electric Vehicle charging stations will be provided in the service station; bio-diesel and/or ethanol fuels may be provided in the future based on customer demand.
6.1.3	A construction waste management plan shall be created in compliance with CalGreen Tier 1 Standards.
7.1.1	Lower water usage landscaping will be installed to reduce potable water usage.
7.1.3	Project will have water meters with real-time usage tracking (assuming City of Santa Rosa has this capability at time of construction).
9.1.3	See Item 7.1.1
9.2.1	Construction procedures complying with the C.A.P. new development checklist will be noted in the project specifications and construction documents.
9.2.2	See Item 9.2.1
9.2.3	See Item 9.2.1

BkF
ENGINEERS
SURVEYORS
PLANNERS

JOB NO. 20109009

STANDARD URBAN STORM WATER MANAGEMENT PLAN

FOR

ELM TREE STATION

874 NORTH WRIGHT ROAD

Santa Rosa, CA

APN 035-063-001

AUGUST 2012
REVISED FEBRUARY 2013
REVISED JULY 29, 2013

CITY OF SANTA ROSA
Santa Rosa, CA

AUG 05 2013

DEPARTMENT OF
COMMUNITY DEVELOPMENT

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Santa Rosa
California 95401
phone 707.583.8500
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APPLICANT/OWNER

As the Applicant/Owner, I declare that permanent storm water Best Management Practices will be installed and maintained in accordance with this document.

CIVIL ENGINEER

This document was prepared by BKF Engineers to summarize storm water Best Management Practices proposed with this development. Storm water elements reflected in this document have been designed using sound engineering principals and are anticipated to reduce pollutants in downstream water bodies.

BONNIE A. DIEFENDORF
NO. C2491
LIC. EXP. 12/31/2013

8-9-2012

REGISTERED PROFESSIONAL ENGINEER
BONNIE A. DIEFENDORF
No. C 24916
CIVIL
STATE OF CALIFORNIA

7-29-2013

GENERAL INFORMATION REGARDING THE PURPOSE OF BMPS

The Standard Urban Storm Water Management Plan (SUSMP) is a set of guidelines established for the Santa Rosa area and unincorporated areas around Sonoma County which requires projects to incorporate sustainable Low Impact Development (LID) strategies to encourage infiltration and minimize the introduction of pollutants into downstream receiving waters.

Studies suggest that approximately 85% of the total annual rainfall volume is produced from the predominant population of smaller storms. Therefore, in an effort to treat storm water in a cost effective manner, storm water quality management is typically designed to target these smaller events.

Storm Water Pollutant Control Measures

Storm water runoff Best Management Practices (BMPs) are programs, processes or engineered systems designed to reduce pollutants in storm water. Temporary Best Management Practices such as straw wattle and silt fence are used to reduce pollutants in storm water during construction while permanent storm water Best Management Practices are intended to reduce pollutants in storm water for the life of the project following construction.

Permanent storm water Best Management Practices are often categorized as being Source Control BMPs or Treatment Control BMPs. Source Control BMPs, also referred to as pollution prevention measures, are practices such as street sweeping which help keep pollutants from coming into contact with storm water rather than attempting to remove pollutants after they have interacted with storm water. Educational outreach and stenciling storm water inlets with graphics which inform people that the storm water drains to the creek are other effective pollution prevention measures. Treatment Control BMPs are engineered systems that are designed to remove pollutants from storm water and are often categorized as being landscape-based or mechanical.

Landscape-based treatment controls are preferred by most municipalities and include measures such as bioretention systems, vegetated swales and constructed wetlands. The mechanical treatment controls are generally subsurface vaults that rely on filtering storm water through sand or engineered media.

Storm Water Volume Control Measures

Increasing the amount of impervious surface area with the development of bare land generally increases the rate which storm water flows across a site. While the impact of increasing the impervious area for an individual project is often insignificant, the cumulative impact of increasing the impervious area for multiple projects may have an adverse affect on downstream facilities, because the cumulative increase has the potential to increase runoff causing downstream erosion and sediment load in the storm water conveyance system.

In order to minimize downstream erosion and protect stream habitat, Best Management Practices are often implemented to encourage infiltration and limit the post-development storm water discharge to the pre-development condition to the "maximum extent practicable".

The LID manual being developed by the City of Santa Rosa and County of Sonoma recognizes the benefit of providing 100% volume capture of the post development storm water runoff and notes that projects which capture the post development storm water runoff are not required to provide a treatment component.

PROJECT DESCRIPTION

This project is a new commercial development in an infill area. The commercial development is a automobile service station with a small store and a electric car recharging station.

Since this project proposes to impact an existing isolated wetlands area, a 401 clean water certification from the Regional Water Quality Control Board and 404 permit from the Army Corps of Engineers are required. Therefore, the proposed BMPs will be reviewed by these agencies simultaneously with the City of Santa Rosa Engineering Department review.

STORM WATER BMPS SELECTED FOR THIS SITE

This project will be designed to incorporate temporary, pollution prevention and permanent storm water Best Management Practices to minimize the introduction of pollutants in downstream water bodies.

Temporary Measures

A "Sediment Control Plan" will be prepared and included with the construction drawings requiring the contractor to implement temporary storm water BMPs. The contractor is required to use gravel bags and straw wattles to collect sediment and filter water before allowing its discharge to Santa Rosa Creek. A construction entrance/exit will be designated on the drawings having a blanket of rock to assist with removing dirt from trucks to minimize soil tracked into the public street during the early stages of construction. This drawing will also require that disturbed areas be seeded to help stabilize un-vegetated areas. A storm water pollution prevention plan will be prepared which more precisely identifies temporary storm water BMPs that may be incorporated during different phases of construction.

Pollution Prevention Measures

The City of Santa Rosa also has a street sweeping program which will help remove pollutants before they have an opportunity to come into contact with storm water.
For this project, measures are anticipated for avoiding pollutants from getting into the rainwater runoff. Some of these measures include minimizing the exposure of rain and runoff to fueling areas by using cover, proper grading and public education..

- Grade and pave the waste receptacle area to prevent run-on of storm water and install a roof over the waste receptacle area.
- Grade and pave the fueling area to prevent run-on of storm water and stall a roof over the fueling area.
- Stencil catch basins with graphics which identify that the water drains to the creek.

Permanent Volume Control Measures

Recent changes to local legislation now require BMPs which encourage storm water capture and groundwater recharge. Therefore, bio-retention areas, and bio-retention vegetated buffer strips have been proposed to better accomplish this objective.

Permanent storm water BMPs will be incorporated into this project to help emulate the predevelopment condition and keep storm water clean for the life of the project following construction. In an effort to promote infiltration, bioretention areas have been located along parking areas and generally sized to retain the post-development storm for the target event.

Pervious concrete gutter pan along the head of the parking areas and some drive aisles will allow storm water to filter into the bioretention areas and interact with the plants in the landscape strip, provide storage and increase the time it takes for water to enter downstream receiving waters.

Structural soil will be used within the bio-retention area consisting of: ¾"-1 ½ " highly angular crushed stone (83% of mix, by weight) with no fines Clay loam (gravel<5%, sand 25% 30%, silt 20% 40%, clay 20% 40%, organic matter 2% 5%), and Hydrogel tackifier (0.03% of mix, by weight). Structural soil shall be installed as described in Appendix F of the City of Santa Rosa LID Manual. Native soil shall remain uncompacted to preserve infiltration capacity and will be fenced off during construction for protection. The bottom of bio-retention will be unlined to allow infiltration into native soil. A moisture barrier will be installed to protect pavement subbase and any trenches adjacent to the bio-retention area. Pervious concrete shall be designed and installed as described in Appendix F of the City of Santa Rosa LID Manual. Porous gutter will be protected during construction to prevent sediment loading. Bio-retention areas shall be planted with plants from the approved plant and tree list included in Appendix G of the City of Santa Rosa LID Manual and shall be planted to achieve 90-100% cover. All bio-retention areas shall be designed with a designated high flow bypass inlet for storms larger than the design storm. Catch Basins are show for these high flow bypass facilities.

The building rooftop water will be collected, conveyed in pipes and allowed to enter bioretention areas along the pervious gutter pan or in landscape areas, 'F' adjacent to the building. In larger storm events, when the bioretention areas are at capacity, water will run down the gutter, collect in catch basins and then be piped to City of Santa Rosa storm drain system.

The project includes a bike path which may be built at a later time. The path drains toward the bio-retention area on Parcel 1, area 'B' and the runoff will be absorbed into the ground from the surface interface with the planting and pervious soils over the bio-retention cell in Area 'B'.

Vegetated bio-retention buffer strips and vegetated swales are proposed for the volume capture facilities on Parcel 1 and 2, area 'D', and 'E'. The path which crosses Parcel 2, area 'D' and 'E' of Tributary No. 2 and the patio on Parcel 2 drain across vegetated bio-retention buffer strips or into vegetated swales. The buffer strips will contain infiltration trenches for the retention requirements.

- Slope shall be at least 2% without a sub-drain system and 0.5% with a sub-drain system.
- Minimum length (in direction of flow) shall be 15 feet.
- Width shall be the same as the tributary area.
- Either grass or a diverse selection of other low growing, drought tolerant, native vegetation will be specified.
- Planting soil shall be to a minimum depth to at least 6 inches. Native soil may be used as a planting soil if approved by the landscape architect.
- Strip will be free of gullies or rills.
- Slope vegetated swales at 1%
- Provide rock infiltration below vegetated swale.

Sizing Design Goal and Requirements

- The design goal for all vegetated buffer strips and vegetated swales is to capture (infiltration and/or reuse)100% of the runoff volume generated by the 85th percentile 24 hour storm event. 100% volume capture has been established as the ideal condition.

HYDROLOGY AND HYDRAULIC SIZING

Tree Offset Credit

The City of Santa Rosa and County of Sonoma LID manual recognizes the benefits of planting trees since they intercept precipitation and provide several storm water management benefits.

They hold water on leaves and branches and allow water to evaporate, retaining flow and dissipating the energy of runoff. Trees also reduce the amount of water coming into contact with impervious surfaces such as parking lots, which minimizes pollution in downstream water bodies.

The City of Santa Rosa and County of Sonoma LID manual allows projects an impervious surface offset credit of 100sf for 15 gallon deciduous trees and 200sf for 15 gallon evergreen trees having trunks planted within 25ft of impervious surfaces. The LID manual also allows an impervious surface offset credit for 50% of the canopy of existing trees when the canopy is planted within 25ft of impervious surfaces. Tree credit computations have been included in the body of this report for reference. This project proposes to plant deciduous trees. A credit is not included for this planting at this time. A tree credit for existing trees to be retained has been included in the body of this report. The area used for credit amounts to 1,552 square feet. That credit has been taken off of the site area on the Storm Water calculator sheet for Tributary No 1. The trees being retained are in Area 'A', so the reduction is used in the volume capture requirements for Area 'A'

Volume Capture Calculations

The Soil Conservation Service, known today as the Natural Resource Conservation Service, developed a process to estimate storm water runoff and compute storm water volumes for reservoirs in small watersheds. This process is based on a soil designation relating to how well the underlying soil drains and a curve number which reflects the runoff condition. The LID manual developed by the City of Santa Rosa and County of Sonoma suggests that this method be used to determine the volume of water which should be stored for the 85th percentile storm (defined in the Santa Rosa and Sonoma County areas as providing up to 0.92-inches of precipitation) in order to emulate the predevelopment condition.

The groundwater depths in the Santa Rosa area fluctuate throughout the year. Shallow depths of the bio-retention areas are used to maintain the capture volume above any anticipated ground water levels. Therefore, groundwater is not anticipated to have a detrimental impact on the BMPs ability to function.

A drawing has been included in the body of this report which identifies the hydrographic areas draining to each bioretention area. The City of Santa Rosa and County of Sonoma developed a storm water calculator to assist designers with sizing volume capture facilities in accordance with their municipal storm water permit. Computations were performed using this calculator and are included in the body of this report for reference.

The calculations for Tributary No. 1 indicate a volume capture requirement of 1216 Cubic Feet of water. That volume is then factored by area into each of the Areas, A. B. and C to determine the requirements of the individual bio-retention areas. Perforated pipes are included in the bio-retentions areas at 6-inches below the parking and/or drive aisle structural sections. A calculation for the structural section for parking indicates a total section thickness of 1.05 feet and for the drive aisles, a total section thickness of 1.70 feet.

Structural soil is the material planned for volume capture. A summary of each volume capture area, the depth of the structural soil, the depth of the structural section, and the resultant capture volume based on a void ratio of 25% in the soil used is included for reference. The volume capture areas are colored and labeled on the Storm Water Plan sheet included in this report. If it is determined in the final storm water plan that perforated pipes will not be needed for overflow or distribution of the storm water into the bio-retention areas, the pipes will not be included.

Treatment Control Calculations

Projects which incorporate measures intended to store the 85th percentile post development storm are not required to provide permanent treatment control storm water best management practices, since runoff generated for the target event is encouraged to infiltrate rather than be

discharged directly to the downstream storm water system. However, projects which capture runoff equal to the difference between the predevelopment and post development storms are required to treat the balance of the storm water for the target event.

The size of Treatment Control Best Management Practices is predicated on the type of treatment control and the size / nature of the area draining to the treatment control. Treatment control Best management practices for this project were sized to remove pollutants from a moving stream of storm water using a flow based criteria. The flow rate of water being treated was computed using the rational expression below.

$$Q = (K)(C)(i)(A)$$

Where Q = Design flow rate required to be treated (cfs)
K = Site specific precipitation factor (from the SCWA design criteria) K=1.0 for this site.
C = Watershed runoff coefficient for the developed condition
i = Rainfall Intensity (in/hr)
A = Project area that drains to the treatment control (acres)

The storm water intensity nationally recognized to size storm water BMPs is 0.2in/hr. This intensity is multiplied when computing treatment flows for projects, using a "Site Specific Precipitation factor" which accounts for certain areas within Sonoma County receiving more annual rainfall than the mean annual rainfall.

All areas are currently volume capture areas and require no additional treatment.

MAINTENANCE OF PERMANENT STORMWATER BMPs

Construction drawings have been prepared with sufficient information to furnish and install temporary and permanent storm water Best Management Practices in substantial conformance with this document.

Maintenance of permanent storm water Best Management Practices is essential to ensure that the BMPs continue to function effectively and that they do not become a nuisance. An exhibit has been included in the body of this report which identifies the locations of the permanent storm water BMPs referred to in this report which require inspection and maintenance. It is the responsibility of the Applicant/Owner to ensure that permanent storm water BMPs are installed and maintained in accordance with this document until this responsibility is legally transferred.

The Regional Water Quality Control Board requires the legally responsible party to inspect and maintain permanent storm water BMPs at least once a year. A sample inspection and reporting template has been included as Appendix "A" of this report for reference. Reports which document maintenance activities should be completed when maintenance is performed and kept on file for a period of at least five years. These reports shall be made available to the Regional Water Quality Control Board staff upon request.

The grooming of Best Management Practices is anticipated to be performed by the future property owner. In the context of this document, "Grooming" is intended to mean minor pruning, weeding, mowing and periodically removing trash, while the term "Maintain" is intended to include the inspection / replacement of plants and media, the removal of sediment and the cleaning/replacement of pervious concrete and subsurface drainage elements. The surface of pervious concrete and bioretention areas should be inspected on a quarterly basis, and following larger storm events, for signs of erosion, damage to vegetation, foreign debris and sediment accumulation.
A maintenance plan shall be provided with the Final SUSMP. The maintenance plan shall include recommended maintenance practices, state the parties responsible for maintenance and

upkeep, specify the funding source for ongoing maintenance with provisions for full replacement when necessary and provide site specific inspection checklist.
At a minimum maintenance shall include the following:
Dry street sweeping upon completion of construction
Dry street sweeping annually, and

- When water is observed flowing in the gutter during a low intensity storm.
- Algae is observed in the gutter. Sediment/debris covers 1/3 of the gutter width or more.
- Inspect twice annually for sedimentation and trash accumulation in the gutter.

Obstructions and trash shall be removed and properly disposed of. Inspect twice during the rainy season for ponded water. Pesticides and fertilizers shall not be used in the bio-retention area. Plants should be pruned, weeds pulled and dead plants replaced as needed.
Maintenance of the fueling area should also include the use of dry cleanup methods such as sweeping for removal of litter and debris, or use of rags and absorbents for leaks and spills. The facility should maintain and keep current, as required by other regulations, a spill response plan and ensure that employees are trained on the elements of the plan.

As a general guide, the National Ready Mixed Concrete Association recommends that pervious concrete be cleaned twice a year. However, BMP maintenance and replacement should be conducted as required to maintain their character and function in substantial conformance with the original design.

LID WORKSHEETS

Print Form

FOR OFFICE USE ONLY:
Does Project require permanent storm water BMP's?

Y ◯ N ◯

Review Fee Paid?

Y ◯ N ◯

City of Santa Rosa

DETERMINATION WORKSHEET

PURPOSE: Use this form to determine whether or not this project will need to incorporate permanent Storm Water Best Management Practices (BMP's) and submit a Standard Urban Storm Water Mitigation Plan (SUSMP).
APPLICABILITY: Requred with all entitilement application packages, improvement plans and building permit applications. Information presented on this worksheet must reflect the final development condition.

Part 1: Information

874 North Wright Road Project Name	MD Wine and Liquor *Applicant Name
874 North Wright Road Site Address	2743 Yulupa Avenue Mailing Address
Santa Rosa / 95407 City/Zip	Santa Rosa / CA. / 95405 City/State/Zip
 Permit Number(s) - if applicable	(707) 546-7500 / n/a / (707) 546-2883 Phone/Email/Fax
BKF Engineers Engineer Name	325 Tesconi Circle Mailing Address
Santa Rosa / CA. / 95401 City/State/Zip	(707) 583-8513 / bdiefendorf@bkf.com Phone/Email

Type of Application/Project:

☒ Subdivision ☐ Grading Permit ☐ Building Permit

☐ Design Review ☐ Use Permit ☐ Other _____

*Applicant is the owner or developer.

Part 2: Other Regulatory Determinations

Initial Determination:

1. Does this Project create or replace 10,000 sq ft or more of impervious surface?

☒ **YES:** Complete the remainder of this worksheet.

☐ **NO:** Continue with this worksheet.

CALGREEN:

2. Does this Project require a non-residential building permit for a newly constructed building without sleeping accomodations? [1]

☒ **YES:** this project must implement permanent Storm Water BMP's and be designed in accordance with the Storm Water Low Impact Development (LID) Technical Design Manual due to CALGreen requirements. **Skip to page 6 and sign the "acknowledgement signature section."**

☐ **NO:** Complete the remainder of the worksheet.

Section 401:

3. Does this Project require a section 401 permit? [2]

☒ Yes ☐ No

3A. if YES, are any of the following a component of this project? (Check all that apply)

☐ Disturbance of 1 acre or more of soil

☐ New Outfall

☐ Any new impervious surface

If you checked any of the boxes in section 3A, please be advised that this Project will require North Coast Regional Water Quality Control Board review and permanent Storm Water BMP's designed in accordance with the Low Impact Development (LID) Technical Design Manual. Skip to page six and sign the "acknowledgement signature section."

1. Additions, alterations, repairs and existing structures are not subject to the requirements of CALGreen. For further information on determining building permit requirements, contact the govering agency's building department.
2. A 401 permit is required from the North Coast Regional Water Quality Control Board (NCRWQCB) if any part of this project is located within or adjacent to "waters of the State" which can be a creek, drainage ditch, wetland or any seasonal waterway.For further information on determining 401 Permit requirements, contact the North Coast Regional Water Quality Control Board.

PART 3: Exemptions

1. Is this a ***routine maintenance activity*** [3] that is being conducted to maintain original line and grade, hydraulic capacity, and original purpose of facility such as resurfacing existing roads and parking lots?
Yes ☐ No ☒

2. Is this an ***emergency redevelopment activity*** [4] required to protect public health and safety?
Yes ☐ No ☒

3. Is this a project undertaken solely to install or reinstall ***public utilities*** (such as sewer or water lines) that does not include any additional street or road development or development activities?
Yes ☐ No ☒

4. Is this a ***reconstruction project***, undertaken by a ***public agency*** [5], of street or roads remaining within the original footprint and less than 48 feet wide?
Yes ☐ No ☒

5. Is this a stand alone pedestrian pathway, trail or off street bike lane?
Yes ☐ No ☒

Did you answer "YES" to any of the above questions in Part 3?

☐ **YES: Stop.** This project is exempt and will not need to incorporate permanent storm water Best Management Practices. **Please go to Page 6 and complete the exemption signature section.**

☒ **NO:** Proceed to Part 4 below to see if this project will need to incorporate permanent Storm Water BMP's.

Part 4: Project Triggers

Projects that Trigger Requirements:
Please answer the following questions to determine whether this project requires permanent Storm Water BMP's and the submittal of a SUSMP.

1. Does this ***development or redevelopment project*** create or replace a combined total of 1.0 acres or more of impervious surface [6]? Yes ☐ No ☒

---

3 "***Routine Maintenance Activity***"- This exemption includes activities such as overlays and/or resurfacing of existing roads or parking lots as well as trenching and patching activities and reroofing activities.

4 "***Emergency Redevelopment***"- The Regional Water Quality Control Board must agree that the activities are needed to protect public health and safety to qualify for this exemption.

5 "***Reconstruction***" is defined as work that replaces surfaces down to subgrade. Street width is measured from face-of-curb to face-of-curb. Overlays, resurfacing, trenching, and patching are considered maintenance activities and are exempt.

6 "***Impervious Surface***" is defined as an area that has been modified to reduce storm water runoff capture and percolation into underlying soils. Such surfaces include rooftops, walkways, and parking areas. Permeable pavementsshall be considered impervious for this section if they have subdrains to preclude infiltration into underlying soils.

2. Does this project create or replace a combined total or 10,000 ft² or more of ***impervious street, roads, highways, or freeway construction or reconstruction?*** Yes ☒ No ☐

3. Does this project include ***four or more new homes***? Yes ☐ No ☒

4. Is this project an ***industrial park***[7] creating or replacing a combined total of 10,000 ft² or more of impervious surface[6]? Yes ☐ No ☒

5. Is this project a ***Commercial strip mall***[8] creating or replacing a combined total of 10,000 ft² or more of impervious surface[6]? Yes ☐ No ☒

6. Is this project a **retail gasoline outlet** creating or replacing a combined total of 10,000 ft² of more or impervious surface[6]? Yes ☒ No ☐

7. Is this project a **restaurant** creating or replacing a combined total of 10,000 ft² or more of impervious surface[6]? Yes ☐ No ☒

8. Is this project a **parking lot** (not included as part of a project type listed above) creating or replacing a combined total of 10,000 ft² or more or impervious surface or with 25 or more parking spaces? Yes ☐ No ☒

9. Is this project an **automotive service facility** creating or replacing a combined total of 10,000 ft² or more or impervious surface[6]? Yes ☐ No ☒

Did you answer "YES" to any of the above questions in Part 4?

☒ **YES:** The project must implement permanent Storm Water BMP's and be designed in accordance with the Storm Water LID Technical Design Manual. Please complete the remainder of this worksheet. sign under the "Acknowledgment Section" on page 6.

☐ **NO: Stop**. The project will **not** need to incorporate permanent Storm Water BMP's. Please continue to Page 6 and complete the exemption signature section.

---

7 "***Industrial Park***" is defined as industrial facility or building and associated impervious surface on a site zoned or planned to allow industrial or commercial development (planning for mixed-use residential, industrial or commercial development and redevelopment is included).

8"***Commercial Strip Mall***" is defined as commercial facility or impervious surface on a site zoned or planned to allow commercial or industrial use (planning for mixed-use residential, industrial or commercial development and redevelopment is included) with street access and onsite parking.

Part 5: Project Description

1. Total Project area: [ ] Square feet or [.98] acres.

2. Existing land use(s): (check all that apply)

☐ Commercial ☐ Industrial ☒ Residential ☐ Public Other [ ]

Description of buildings, significant site features , etc.:

Empty Lot

3. Existing impervious surface area: [ ] square feet or [0] acres.

4. Proposed Land Use (s): (check all that apply)

☒ Commercial ☐ Industrial ☐ Residential ☐ Public Other [ ]

Description of buildings, significant site features, etc.:

Retail Market and Fuel Facility

Determination Worksheet

Acknowledgment Signature Section:

As the property owner or developer, I understand that this project is required to implement permanent Storm Water Best Management Practices and the submittal of a SUSMP. Any unknown responses must be resolved to determine if the project is subject to these requirements.

Signature of Property Owner or Developer — Date: 8/15/2012

Exemption Signature Section:

As the property owner or developer, I understand that this project as currently designed does not require permanent Storm Water BMP's nor the submital of a SUSMP. I understand that redesign may require submittal of a new Determination Worksheet and may require permananet Storm Water BMP's .

Signature of Property Owner or Developer — Date: 8/15/2012

Implementation Requirements: *All calculations shall be completed using the "Storm Water Calculator" available at: www.srcity.org/stormwaterLID*

Design Goal: Capture (infiltration and/or reuse) of 100% of the volume of runoff generated by the 85th percentile 24 hour storm event, as calculated using the "Urban Hydrology for Small Watersheds" TR-55 Manual. 100% volume capture is the ideal condition and if achieved satisfies all requirements so that no additional treatment is required and pages 2 and 3 of this calculator do not need to be completed. This is a retention requirement.

Design Requirements: If the Design Goal of 100% volume capture is not achieved; then both Requirement 1-100% Treatment AND Requirement 2- Volume Capture must be achieved.

Requirement 1: Treatment of 100% of the flow generated by the 85th percentile 24 hour storm event, as calculated using the Rational Method and a know intensity of 0.20 inches per hour.

Requirement 2: Capture (infiltration and/or reuse) of the increase in volume of storm water due to development generated by the 85th percentile 24 hour storm event, as calculated using the "Urban Hydrology for Small Watersheds" TR-55 Manual. This is a retention requirement.

City of Santa Rosa

APPENDIX D **Preliminary SUSMP Submittal Guide**

Project Information:

Applicant Name (owner or developer)	MD Wine and Liquor
Mailing Address	2743 Yulupa Avenue
City/State/Zip	Santa Rosa / CA. / 95405
Phone/Email/Fax	(707) 546-7500 / n/a / (707) 546-2883

Project Name	874 North Wright Road
Site Address	874 North Wright Road
City/State/Zip	Santa Rosa / CA / 95407
Permit # (s)	

Engineer Name	BKF Engineers
Mailing Address	325 Tesconi Circle
City/State/Zip	Santa Rosa / CA / 95401
Phone/Email/Fax	(707) 583-8513/bdiefendorf@bkf.com

Type of Application/Project:

☒ Subdivision ☐ Grading Permit ☐ Building Permit ☐ Design Review ☐ Use Permit ☐ Other _____

What your Preliminary Plan must include:

Narrative:

Project Description

- ☒ Description of proposed project type, location, and any specific uses or features.
- ☒ Description of any sensitive features (creeks, wetlands, trees, etc) and weather they are going to be preserved, removed or altered.
- ☒ Description of the existing site.
- ☒ Description of how this project triggers these requirements (impervious area, CALGreen, 401 Permit, etc).

Pollution Prevention and Credits

- ☒ Description of all proposed pollution prevention measures (street sweeping, covered trash enclosures, indoor uses, etc).
- ☒ Description of all credits utilized (Interceptor Trees, Impervious Area Disconnection, and/or Alternative Driveway Design).
- ☒ Summary of tributary area reduction due to credits.

Type of BMPs proposed

- ☒ Description of the types of BMPs selected including priority group that each is in.
- ☒ Description of level of treatment and volume capture achieved (if 100% Capture is achieved treatment is not required).

Maintenance

- ☒ Description of maintenance for each type of BMP.
- ☒ Description of funding mechanism.
- ☒ Designation of Responsible Party.

Exhibits:

Proposed SUSMP Exhibit

- ☒ Exhibit should include: street names, property lines, storm drainage system, waterways, title block, scale, and north arrow.
- ☒ Tributary areas shown for all inlets (including offsite drainage areas).
- ☒ C value for each tributary area.
- ☒ Soil Type of existing site.
- ☒ New or replaced impervious area.
- ☒ All inlets shown (including identifier).
- ☒ All interceptor trees shown.
- ☒ All proposed BMPs shown.

Existing Condition Exhibit

- ◴ ***Not necessary if no impervious area existed on the undeveloped site or if the Design Goal of 100% Volume Capture is achieved.***

- ☐ Exhibit should include: street names, property lines, proposed storm drainage system, waterways, title block, scale, and north arrow.
- ☐ Soil Type of existing site.
- ☐ Proposed tributary areas shown for all proposed inlets (including offsite drainage areas).
- ☐ Existing impervious areas

BMP Details:

- ☒ Preliminary detail for each type of BMP selected - provide a preliminary 8.5"x11" detail for each BMP type or include on submitted drawings. These can be taken straight from the Fact Sheets if no significant changes are proposed.

On Plans:

- ☒ Show all applicable elements of the selected BMPs on the appropriate sheets.

Calculations:

- ☒ Preliminary calculations; both volume and treatment, using the "storm water calculator" for each inlet.

VOLUME CAPTURE CALCULATIONS

City of Santa Rosa

STORM WATER CALCULATOR

Project:	874 North Wright Road
Address/Location:	874 North Wright Road
Designer:	BKF Engineers
Date:	July 29, 2013
Inlet Number/Tributary Area/BMP:	Trib #1, Area's A

NOTE: In order for this calculator to function properly **macros must be enabled.**

Physical Tributary Area that drains to Inlet/BMP = 9,171 ft²

This portion of the Storm water Calculator is designed to account for pollution prevention measures implemented on site. Additional information and description of these measures can be found in the Fact Sheets in Appendix F and in Chapter 4 of the narrative.

Disconnected Roof Drains [1]

Input:

Select disconnection condition: Runoff is directed across landscape; Width of area: 25' and larger

Condition Factor = 1

Method 1: **Based on the total rooftop drainage area** - to be used if rooftop information is known.

Input:

Enter amount of rooftop area that drain to disconnected downspouts = ft²

Rooftop Area Factor = 0.00 Rooftop Area Factor= (Total Rooftop Disconnected Area/Tributary Area)

Solution:

Area reduction = (Physical Tributary Area x Conditional Factor x Rooftop Area Factor)

(9,171 x 1.00 x 0.00) = - ft² **Rooftop Drainage Area Reduction**

Method 2: **Based on density (units per acre)** - to be used if rooftop information is unknown.

Input:

Enter percent of rooftop area to be disconnected from downspouts: 0 %

Select Density: 1 Units per Acre

Density Reduction Factor= 0.08

Solution:

Area reduction = (Physical Tributary Area x Conditional Factor x Percent Disconnected x Density Factor)

(9,171 x 1.00 x 0.00 x 0.08) = - ft² **Density Reduction**

NOTE:

Either Method 1 (rooftop area) or Method 2 (density) can be used. Providing input for both methods will cause an error. If rooftop area information is avallable, Method 1 should be used.

[1] *See "Impervious Area Disconnection" Fact Sheet in Appendix E for further details.*

[2] See "Interceptor Trees" Fact Sheet in Appendix E for further details and see "Plant and Tree List" in Appendix G for approved trees.

[3] See "Vegetated Buffer Strip" and "Bovine Terrace" Fact Sheets in Appendix E for further details.

[4] *Total area reductions due to pollution Prevention Measures cannot exceed 50% of the physical Tributary Area.*

[5] *Per the "Urban Hydrology For Small Watersheds" TR-55 manual.*

[6] *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

[7] *From Sonoma County Water Agency Flood Control Design Criteria.*

[8] *Hydrologic soil type based of infiltration rate of native soil as defined by "Urban Hydrology For Small Watersheds" TR-55 Manual.*

[9] *Composite CN calculated per Worksheet 2 Part 1 of the "Urban Hydrology For Small Watersheds" TR-55 manual.*

[10] From "Using Site Design to Meet Development Standards For Storm water Quality" by the Bay Area Storm water Management Agencies Association (BASMAA).

Paved Area Disconnection [1]

Paved Area Type (select from drop down list): Not Directly-connected Paved Area

Multiplier = 1

Enter area of alternatively designed paved area: 0 ft^2

Area Reduction = 0 ft^2

INSTRUCTIONS:
Calculates the area reduction credit for driveways designed to minimize runoff. Enter type and area of alternate design.

Interceptor Trees [3]

Number of new ***Evergreen Trees*** that qualify as interceptor trees= 0 **New Evergreen Trees**

Area Reduction due to new Evergreen Trees= 0 ft^2 (200 ft^2/tree)

Number of new ***Deciduous Trees*** that qualify as interceptor trees= - **New Deciduous Trees**

Area Reduction due to new Deciduous Trees= 0 ft^2 (100 ft^2/tree)

Enter square footage of qualifying **existing tree canopy** = 3,102 **Existing Tree Canopy**

Allowed reduction credit for existing tree canopy= 1,551 ft^2 Allowed credit for existing tree canopy = 50 % of actual canopy square footage

Area Reduction = 1,551 ft^2 = Sum of areas managed by evergreen + deciduous + existing canopy

INSTRUCTIONS:
Calculates the area reductions credit due to interceptor trees. Includes both new and existing trees. Enter the number of new deciduous and evergreen trees and the canopy area of existing trees.

Buffer Strips & Bovine Terraces [4]

Enter area draining to a Buffer Strip or Bovine Terrace = ft^2

Buffer Factor = 0.7

Solution:

Area Reduction = (Area draining to Buffer Strip or Bovine Terrace) x (Buffer Factor) =

Area Reduction = 0 ft^2

INSTRUCTIONS:
Calculates the area reduction credit due to buffer strips and/or bovine terraces. Runoff Must be direct to these features as sheet flow. Enter the area draining to these features.

STORM WATER CALCULATOR

Revised Tributary Area due to Pollution Prevention Measures

Physical Tributary Area =	9,171	ft²
Tributary Area Reduction due to Pollution Prevention Measures [4] =	1,551	ft²
Reduced Tributary Area to be used for Calculations =	7,620	ft²

This worksheet calculates the quantity of storm water that needs to be addressed (captured and/or treated) to comply with the NPDES Storm Water Permit issued to the City of Santa Rosa and County of Sonoma by the North Coast Regional Water Quality Control Board.

Design Goal: 100% Volume Capture

Capture (infiltration and/or reuse) of 100% of the volume of runoff generated by the 85th percentile 24 hour storm event.

Formulas:

$$S = \frac{1000}{CN} - 10$$

Where:
S= Potential maximum retention after runoff (in)[5]
CN= Curve Number [5]

$$Q = \frac{[(P*K)-(0.2*S)]^2}{[(P*K)+(0.8*S)]} \times \frac{1ft}{12"}$$

Where:
Q= Runoff depth (ft) [6]
P= Precipitation (in) = 0.92 *0.92 inches in the Santa Rosa area, based on local historical data.*
K= Seasonal Precipitation Factor [7]

$$V = (Q)(A_r)$$

Where:
V= Volume of Storm Water to be Retained (ft³)
A_r= Reduced Tributary Area including credit for Pollution Prevention Measures (ft²)

Input: (Pick data from drop down lists or enter calculated values)

A_r =	7,620	ft²
K [7] =	1	

Drop down Lists

Select post development hydrologic soil type within tributary area [8] =	D: 0 - 0.05 in/hr infiltration (transmission) rate
Select post development ground cover description [5] =	Urban districts - Commercial and business

CN_{POST} =	95	
OR: Composite post development CN [9] =		

Note: Entering a calculated composite CN will override selections made from the pull down menu above. Calculation worksheet should be used for all composite calculations and included with submittal.

Solution:

Volume of storm water - Post Development

S_{POST}= 0.53 in

$$S_{POST} = \frac{1000}{95} - 10$$

Where:
S= Post development potential maximum retention after runoff (in).

Q_{POST}= 0.04108 ft

$$Q_{POST} = \frac{[(0.92 * 1.00)-(0.2 * 0.53)]^2}{[(0.92 * 1.00)+(0.8 * 0.53)]} \times \frac{1ft}{12in}$$

Q= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

V_{GOAL}= 313 ft³

V_{GOAL}= (0.04108)(7,620)

V= Post Development Volume of Storm Water to be Retained (ft³)

INSTRUCTIONS:
This Design Goal of 100% Capture is the ideal condition and if achieved satisfies all requirements so that no additional treatment is required and pages 4 and 5 of this calculator do not need to be completed.

NOTE:
If the Design Goal of 100% Capture is not achieved, 100% Treatment AND Volume Capture must be achieved and both pages 4 and 5 of this calculator need to be completed.

Requirement 1: 100% Treatment

Treatment of 100% of the flow generated by 85th percentile 24 hour mean annual rain event (0.2 in/hr).

Formula:

$Q_{TREATMENT}$= (0.2 in/hr)(A)(C_{POST})(K) cfs

Where:

$Q_{TREATMENT}$= Design flow rate required to be treated (cfs)

C_{POST} = Rational method runoff coefficient for the developed condition [10]

A_r = Reduced Tributary Area including credit for Pollution Prevention Measures (ft^2)

K = Seasonal Precipitation Factor [7]

Input:

A_r =	7,620	ft^2 =	0.17 Acres
C_{POST} [10] =	0.75		
K [7] =	1		

Solution:

$Q_{TREATMENT}$= 0.03 cfs

$Q_{TREATMENT}$= (0.2)(0.17)(0.75)(1.00)

INSTRUCTIONS:

If the Design Goal of 100% Capture on page 3 of this calculator is not achieved; then Requirement 1-100% Treatment, this page of the calculator, AND Requirement 2- Volume Capture, page 5 of the calculator, **must** be achieved.

Requirement 2: Delta Volume Capture

No increase in volume of runoff leaving the site due to development for the 85th percentile 24 hour storm event.

INSTRUCTIONS:
If the Design Goal of 100% Capture on page 3 of this calculator is not achieved; then Requirement 1-100% Treatment, page 4 of the calculator, AND Requirement 2- Volume Capture, this page of the calculator, **must** be achieved.

NOTE:
If the amount of volume generated after development is less than or equal to that generated before development, Requirement 2-Volume Capture is not required.

($C_{POST} \leq C_{PRE}$ or $CN_{POST} \leq CN_{PRE}$)

Formulas:

$$S = \frac{1000}{CN} - 10$$

Where:
S= Potential maximum retention after runoff (in)[5]
CN= Curve Number [5]

$$Q = \frac{[(P*K)-(0.2*S)]^2}{[(P*K)+(0.8*S)]} \times \frac{1ft}{12in}$$

Where:
Q= Runoff depth (ft) [6]
P= Precipitation (in) = 0.92 *0.92 inches in the Santa Rosa area, based on local historical data.*
K= Seasonal Precipitation Factor [7]

$$V = (Q)(A_r)$$

Where:
V= Volume of Storm Water to be Retained (ft^3)
A_r= Reduced Tributary Area including credit for Pollution Prevention Measures (ft^2)

Input: (Pick data from drop down lists or enter calculated values)

A_r =	7,620	ft^2
K [7] =	1	

Drop down Lists

Select hydrologic soil type within tributary area [6] =	D: 0 - 0.05 in/hr infiltration (transmission) rate
Select predevelopment ground cover description [5] =	Pasture, grassland, range - Good (>75% ground cover, lightly or occasionally grazed)
Select post development ground cover description [5] =	Urban districts - Commercial and business
CN_{PRE} =	80
CN_{POST} =	95
OR Composite Predevelopment CN [9] =	
Composite Post development CN [9] =	

Solution:

Pre Development Storm Water Runoff Volume

S_{PRE}= 2.50 in

$$S_{PRE} = \frac{1000}{80} - 10$$

Where:
S= Pre development potential maximum retention after runoff (in).

Q_{PRE}= 0.00503 ft

$$Q_{PRE} = \frac{[(0.92*1.00)-(0.2*2.50)]^2}{[(0.92*1.00)+(0.8*2.50)]} \times \frac{1ft}{12in}$$

Q= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

V_{PRE}= 38.33 ft^3

V_{PRE}= (0.00503)(7,620)

V= Pre Development Volume of Storm Water Generated (ft^3)

Post Development Storm Water Runoff Volume

S_{POST}= 0.53 in

$$S_{POST} = \frac{1000}{95} - 10$$

Where:
S= Post development potential maximum retention after runoff (in).

Q_{POST}= 0.04108 ft

$$Q_{POST} = \frac{[(0.92*1.00)-(0.2*0.53)]^2}{[(0.92*1.00)+(0.8*0.53)]} \times \frac{1ft}{12in}$$

Q= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

V_{POST}= 313.03 ft^3

V_{POST}= (0.04108)(7,620)

V= Post Development Volume of Storm Water Generated (ft^3)

Solution: Volume Capture Requirement

Increase in volume of storm water that must be retained onsite (may be infiltrated or reused).

Delta Volume Capture= $(V_{POST}-V_{PRE})$

Delta Volume Capture= (313.03) - (38.33)

V_{DELTA}= 275 ft^3

Where:
Delta Volume Capture= The increase in volume of storm water generated by the 85th percentile 24 hour storm event due to development that must be retained onsite (may be infiltrated or reused).

LID BMP Sizing Tool: 100% Volume Capture Goal; V_{GOAL}

NOTE:
LID Sizing Tool only applicable for volume based BMPs. Not required if site requires treatment only.

INSTRUCTIONS:
The 100% volume capture sizing tool helps the designer appropriately size a LID BMP to achieve the design goal of 100% volume capture of the post development condition. Enter the percent porosity of the specified soil and depth below perforated pipe (if present). The width and length entries will need to be interactively adjusted until "Percent of Goal" equals 100%.

Formulas:

$V_{LID\ GOAL}=((V_{GOAL}))/(P)=$ 1,252 ft^3

$A_{LID\ GOAL}=(W)(L)=$ 700 ft^2

Where:
$V_{LID\ GOAL}$= Required volume of soil in LID BMP.
$A_{LID\ GOAL}$ = Footprint of LID BMP area for a given depth (below perforated pipe if present).

$V_{GOAL}=$ 313 ft^3

USED

$$\text{Percent of Goal Achieved} = \frac{(D)(A_{LID\ GOAL})}{V_{LID\ GOAL}} \times 100$$

Where:
P= Porosity (enter as a decimal)
D= Depth below perforated pipe if present (in decimal feet)
W= Width (in decimal feet)
L= Length (in decimal feet)

Input:

P =	0.25	as a decimal
D =	2.0 ft	Below perforated pipe if present
W =	10.0 ft	
L =	70.0 ft	

Solution:

Percent of Goal Achieved = 112 %

$$= [(2.0 \times 700.0) / 1{,}252] \times 100 \quad (1.0)$$

LID BMP Sizing Tool Delta Volume Capture Requirement: V_{DELTA}

NOTE:
LID Sizing Tool only applicable for volume based BMPs. Not required if site requires treatment only.

INSTRUCTIONS:
The Delta Volume Capture sizing tool helps the designer appropriately size a LID BMP to achieve the design requirement of the delta volume capture. Enter the percent of porosity of the specified soil and depth below perforated pipe (if present). The width and length entries will need to be interactively adjusted until "Percent of Requirement achieved" reaches 100%.

Formulas:

$V_{LID\ DELTA}=((V_{DELTA}))/(P)=$ 1,099 ft^3

$A_{LID\ DELTA}=(W)(L)=$ 700 ft^2

Where:
$V_{LID\ DELTA}$= Required volume of soil in LID BMP
$A_{LID\ DELTA}$ = Footprint of LID BMP area for a given depth (below perforated pipe if present).

$V_{DELTA}=$ 275 ft^3

$$\text{Percent of Requirement Achieved} = \frac{(D)(A_{LID\ DELTA})}{V_{LID\ DELTA}} \times 100$$

Where:
P= Porosity (enter as a decimal)
D= Depth below perforated pipe if present (in decimal feet)
W= Width (in decimal feet)
L= Length (in decimal feet)

Input:

P =	0.25	as a decimal
D =	2.0 ft	Below perforated pipe if present
W =	10.0 ft	
L =	70.0 ft	

Solution:

Percent of Requirement Achieved = 127 %

$$= [(2.0 \times 700.0) / 1{,}099] \times 100$$

City of Santa Rosa

STORM WATER CALCULATOR

STORM WATER CALCULATOR

Project:	874 North Wright Road
Address/Location:	874 North Wright Road
Designer:	BKF Engineers
Date:	July 29, 2013
Inlet Number/Tributary Area/BMP:	Trib #1, Area's B

NOTE: In order for this calculator to function properly **macros must be enabled.**

Physical Tributary Area that drains to Inlet/BMP = 12,767 ft^2

This portion of the Storm water Calculator is designed to account for pollution prevention measures implemented on site. Additional information and description of these measures can be found in the Fact Sheets in Appendix F and in Chapter 4 of the narrative.

Disconnected Roof Drains [1]

Input:

Select disconnection condition: Runoff is directed across landscape; Width of area: 25' and larger

Condition Factor = 1

Method 1: Based on the total rooftop drainage area - to be used if rooftop information is known.

Input:

Enter amount of rooftop area that drain to disconnected downspouts = _____ ft^2

Rooftop Area Factor = 0.00 Rooftop Area Factor= (Total Rooftop Disconnected Area/Tributary Area)

Solution:

Area reduction = (Physical Tributary Area x Conditional Factor x Rooftop Area Factor)

(12,767 x 1.00 x 0.00) = - ft^2 **Rooftop Drainage Area Reduction**

Method 2: Based on density (units per acre) - to be used if rooftop information is unknown.

Input:

Enter percent of rooftop area to be disconnected from downspouts: 0 %

Select Density: 1 Units per Acre

Density Reduction Factor= 0.08

NOTE:

Either Method 1 (rooftop area) or Method 2 (density) can be used. Providing input for both methods will cause an error. If rooftop area information is available, Method 1 should be used.

Solution:

Area reduction = (Physical Tributary Area x Conditional Factor x Percent Disconnected x Density Factor)

(12,767 x 1.00 x 0.00 x 0.08) = - ft^2 **Density Reduction**

[1] *See "Impervious Area Disconnection" Fact Sheet in Appendix E for further details.*

[2] See "Interceptor Trees" Fact Sheet in Appendix E for further details and see "Plant and Tree List" in Appendix G for approved trees.

[3] See "Vegetated Buffer Strip" and "Bovine Terrace" Fact Sheets in Appendix E for further details.

[4] *Total area reductions due to pollution Prevention Measures cannot exceed 50% of the physical Tributary Area.*

[5] *Per the "Urban Hydrology For Small Watersheds" TR-55 manual.*

[6] *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

[7] *From Sonoma County Water Agency Flood Control Design Criteria.*

[8] *Hydrologic soil type based of infiltration rate of native soil as defined by "Urban Hydrology For Small Watersheds" TR-55 Manual.*

[9] *Composite CN calculated per Worksheet 2 Part 1 of the "Urban Hydrology For Small Watersheds" TR-55 manual.*

[10] From "Using Site Design to Meet Development Standards For Storm water Quality" by the Bay Area Storm water Management Agencies Association (BASMAA).

Paved Area Disconnection [1]

Paved Area Type (select from drop down list): Not Directly-connected Paved Area

Multiplier = 1

Enter area of alternatively designed paved area: 0 ft^2

Area Reduction = 0 ft^2

INSTRUCTIONS:
Calculates the area reduction credit for driveways designed to minimize runoff. Enter type and area of alternate design.

Interceptor Trees [3]

Number of new *Evergreen Trees* that qualify as interceptor trees= 0 **New Evergreen Trees**

Area Reduction due to new Evergreen Trees= 0 ft^2 (200 ft^2/tree)

Number of new *Deciduous Trees* that qualify as interceptor trees= - **New Deciduous Trees**

Area Reduction due to new Deciduous Trees= 0 ft^2 (100 ft^2/tree)

Enter square footage of qualifying **existing tree canopy** = 0 **Existing Tree Canopy**

Allowed reduction credit for existing tree canopy= 0 ft^2 Allowed credit for existing tree canopy = 50 % of actual canopy square footage

Area Reduction = - ft^2 = Sum of areas managed by evergreen + deciduous + existing canopy

INSTRUCTIONS:
Calculates the area reductions credit due to interceptor trees. Includes both new and existing trees. Enter the number of new deciduous and evergreen trees and the canopy area of existing trees.

Buffer Strips & Bovine Terraces [4]

Enter area draining to a Buffer Strip or Bovine Terrace = ft^2

Buffer Factor = 0.7

Solution:

Area Reduction = (Area draining to Buffer Strip or Bovine Terrace) x (Buffer Factor) =

Area Reduction = 0 ft^2

INSTRUCTIONS:
Calculates the area reduction credit due to buffer strips and/or bovine terraces. Runoff Must be direct to these features as sheet flow. Enter the area draining to these features.

STORM WATER CALCULATOR

Revised Tributary Area due to Pollution Prevention Measures

Physical Tributary Area =	12,767	ft²
Tributary Area Reduction due to Pollution Prevention Measures [4] =	-	ft²
Reduced Tributary Area to be used for Calculations =	12,767	ft²

This worksheet calculates the quantity of storm water that needs to be addressed (captured and/or treated) to comply with the NPDES Storm Water Permit issued to the City of Santa Rosa and County of Sonoma by the North Coast Regional Water Quality Control Board.

Design Goal: 100% Volume Capture

Capture (infiltration and/or reuse) of 100% of the volume of runoff generated by the 85th percentile 24 hour storm event.

Formulas:

$$S = \frac{1000}{CN} - 10$$

Where:
- S= Potential maximum retention after runoff (in)[5]
- CN= Curve Number [5]

$$Q = \frac{[(P*K)-(0.2*S)]^2}{[(P*K)+(0.8*S)]} \times \frac{1ft}{12"}$$

Where:
- Q= Runoff depth (ft) [6]
- P= Precipitation (in) = 0.92 *0.92 inches in the Santa Rosa area, based on local historical data.*
- K= Seasonal Precipitation Factor [7]

$$V = (Q)(A_r)$$

Where:
- V= Volume of Storm Water to be Retained (ft^3)
- A_r= Reduced Tributary Area including credit for Pollution Prevention Measures (ft^2)

Input: (Pick data from drop down lists or enter calculated values)

A_r =	12,767	ft²
K [7] =	1	

Drop down Lists

Select post development hydrologic soil type within tributary area [6] =	D: 0 - 0.05 in/hr infiltration (transmission) rate
Select post development ground cover description [5] =	Urban districts - Commercial and business

CN_{POST} =	95	
OR: Composite post development CN [9] =		

Note: Entering a calculated composite CN will override selections made from the pull down menu above. Calculation worksheet should be used for all composite calculations and included with submittal.

Solution:

Volume of storm water - Post Development

S_{POST}= 0.53 in — $S_{POST} = \frac{1000}{95} - 10$

Where:
- S= Post development potential maximum retention after runoff (in).

Q_{POST}= 0.04108 ft — $Q_{POST} = \frac{[(0.92 * 1.00)-(0.2 * 0.53)]^2}{[(0.92 * 1.00)+(0.8 * 0.53)]} \times \frac{1ft}{12in}$

- Q= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

V_{GOAL}= 524 ft^3 — V_{GOAL}= (0.04108)(12,767)

- V= Post Development Volume of Storm Water to be Retained (ft^3)

INSTRUCTIONS:
This Design Goal of 100% Capture is the ideal condition and if achieved satisfies all requirements so that no additional treatment is required and pages 4 and 5 of this calculator do not need to be completed.

NOTE:
If the Design Goal of 100% Capture is not achieved, 100% Treatment AND Volume Capture must be achieved and both pages 4 and 5 of this calculator need to be completed.

STORM WATER CALCULATOR

Requirement 1: 100% Treatment

Treatment of 100% of the flow generated by 85th percentile 24 hour mean annual rain event (0.2 in/hr).

Formula:

$Q_{TREATMENT}$= (0.2 in/hr)(A)(C_{POST})(K) cfs

Where:

$Q_{TREATMENT}$= Design flow rate required to be treated (cfs)

C_{POST} = Rational method runoff coefficient for the developed condition [10]

A_r = Reduced Tributary Area including credit for Pollution Prevention Measures (ft^2)

K = Seasonal Precipitation Factor [7]

Input:

A_r =	12,767	ft^2 =	0.29 Acres
C_{POST} [10] =	0.75		
K [7] =	1		

Solution:

$Q_{TREATMENT}$= 0.04 cfs

$Q_{TREATMENT}$= (0.2)(0.29)(0.75)(1.00)

INSTRUCTIONS:

If the Design Goal of 100% Capture on page 3 of this calculator is not achieved; then Requirement 1-100% Treatment, this page of the calculator, AND Requirement 2- Volume Capture, page 5 of the calculator, **must** be achieved.

Requirement 2: Delta Volume Capture

No increase in volume of runoff leaving the site due to development for the 85th percentile 24 hour storm event.

INSTRUCTIONS:
If the Design Goal of 100% Capture on page 3 of this calculator is not achieved; then Requirement 1-100% Treatment, page 4 of the calculator, AND Requirement 2- Volume Capture, this page of the calculator, **must** be achieved.

NOTE:
If the amount of volume generated after development is less than or equal to that generated before development, Requirement 2-Volume Capture is not required.

($C_{POST} \leq C_{PRE}$ or $CN_{POST} \leq CN_{PRE}$)

Formulas:

$$S = \frac{1000}{CN} - 10$$

Where:
S= Potential maximum retention after runoff (in)[5]
CN= Curve Number [5]

$$Q = \frac{[(P*K)-(0.2*S)]^2}{[(P*K)+(0.8*S)]} \times \frac{1ft}{12in}$$

Where:
Q= Runoff depth (ft) [6]
P= Precipitation (in) = 0.92 *0.92 inches in the Santa Rosa area, based on local historical data.*
K= Seasonal Precipitation Factor [7]

$V = (Q)(A_r)$

Where:
V= Volume of Storm Water to be Retained (ft^3)
A_r= Reduced Tributary Area including credit for Pollution Prevention Measures (ft^2)

Input: (Pick data from drop down lists or enter calculated values)

A_r =	12,767	ft^2
K [7] =	1	

Drop down Lists

Select hydrologic soil type within tributary area [8] =	D: 0 - 0.05 in/hr infiltration (transmission) rate
Select predevelopment ground cover description [5] =	Pasture, grassland, range - Good (>75% ground cover, lightly or occasionally grazed)
Select post development ground cover description [5] =	Urban districts - Commercial and business
CN_{PRE} =	80
CN_{POST} =	95
OR Composite Predevelopment CN [9] =	
Composite Post development CN [9] =	

Solution:

Pre Development Storm Water Runoff Volume

S_{PRE}= 2.50 in

$$S_{PRE} = \frac{1000}{80} - 10$$

Where:
S= Pre development potential maximum retention after runoff (in).

Q_{PRE}= 0.00503 ft

$$Q_{PRE} = \frac{[(0.92*1.00)-(0.2*2.50)]^2}{[(0.92*1.00)+(0.8*2.50)]} \times \frac{1ft}{12in}$$

Q= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

V_{PRE}= 64.22 ft^3

V_{PRE}= (0.00503)(12,767)

V= Pre Development Volume of Storm Water Generated (ft^3)

Post Development Storm Water Runoff Volume

S_{POST}= 0.53 in

$$S_{POST} = \frac{1000}{95} - 10$$

Where:
S= Post development potential maximum retention after runoff (in).

Q_{POST}= 0.04108 ft

$$Q_{POST} = \frac{[(0.92*1.00)-(0.2*0.53)]^2}{[(0.92*1.00)+(0.8*0.53)]} \times \frac{1ft}{12in}$$

Q= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

V_{POST}= 524.47 ft^3

V_{POST}= (0.04108)(12,767)

V= Post Development Volume of Storm Water Generated (ft^3)

Solution: Volume Capture Requirement

Increase in volume of storm water that must be retained onsite (may be infiltrated or reused).

Delta Volume Capture= $(V_{POST}-V_{PRE})$

Delta Volume Capture= (524.47) - (64.22)

V_{DELTA}= 460 ft^3

Where:
Delta Volume Capture= The increase in volume of storm water generated by the 85th percentile 24 hour storm event due to development that must be retained onsite (may be infiltrated or reused).

LID BMP Sizing Tool: 100% Volume Capture Goal; V_{GOAL}

NOTE:
LID Sizing Tool only applicable for volume based BMPs. Not required if site requires treatment only.

Formulas:

$V_{LID\ GOAL}=((V_{GOAL}))/(P)$ = 2,098 ft^3

$A_{LID\ GOAL}=(W)(L)$ = 2,280 ft^2

Where:
$V_{LID\ GOAL}$ = Required volume of soil in LID BMP.
$A_{LID\ GOAL}$ = Footprint of LID BMP area for a given depth (below perforated pipe if present).

V_{GOAL} = 524 ft^3

$$\text{Percent of Goal Achieved} = \frac{(D)(A_{LID\ GOAL})}{V_{LID\ GOAL}} \times 100$$

Where:
P= Porosity (enter as a decimal)
D= Depth below perforated pipe if present (in decimal feet)
W= Width (in decimal feet)
L= Length (in decimal feet)

Input:

P =	0.25	as a decimal
D =	1.0 ft	Below perforated pipe if present
W =	19.0 ft	
L =	120.0 ft	

← USED

SEE FOLLOWING PAGE FOR BIO-RET. INFILTRATION

Solution:

Percent of Goal Achieved = 109 %

$$= [(1.0 \times 2{,}280.0) / 2{,}098] \times 100$$

1.0

INSTRUCTIONS:
The 100% volume capture sizing tool helps the designer appropriately size a LID BMP to achieve the design goal of 100% volume capture of the post development condition. Enter the percent porosity of the specified soil and depth below perforated pipe (if present). The width and length entries will need to be interactively adjusted until "Percent of Goal" equals 100%.

LID BMP Sizing Tool Delta Volume Capture Requirement: V_{DELTA}

NOTE:
LID Sizing Tool only applicable for volume based BMPs. Not required if site requires treatment only.

Formulas:

$V_{LID\ DELTA}=((V_{DELTA}))/(P)$ = 1,841 ft^3

$A_{LID\ DELTA}=(W)(L)$ = 2,280 ft^2

Where:
$V_{LID\ DELTA}$ = Required volume of soil in LID BMP
$A_{LID\ DELTA}$ = Footprint of LID BMP area for a given depth (below perforated pipe if present).

V_{DELTA} = 460 ft^3

$$\text{Percent of Requirement Achieved} = \frac{(D)(A_{LID\ DELTA})}{V_{LID\ DELTA}} \times 100$$

Where:
P= Porosity (enter as a decimal)
D= Depth below perforated pipe if present (in decimal feet)
W= Width (in decimal feet)
L= Length (in decimal feet)

Input:

P =	0.25	as a decimal
D =	1.0 ft	Below perforated pipe if present
W =	19.0 ft	
L =	120.0 ft	

Solution:

Percent of Requirement Achieved = 124 %

$$= [(1.0 \times 2{,}280.0) / 1{,}841] \times 100$$

INSTRUCTIONS:
The Delta Volume Capture sizing tool helps the designer appropriately size a LID BMP to achieve the design requirement of the delta volume capture. Enter the percent of porosity of the specified soil and depth below perforated pipe (if present). The width and length entries will need to be interactively adjusted until "Percent of Requirement achieved" reaches 100%

Area B infiltration calculation:

The total flows for area B are Q=0.04 CFS or 17.95 GPM. Of this flow, 29% is onto the bio-retention area and the sidewalk/path. The remaining flows go to a pervious concrete gutter an into the structural soil void space for volume capture.

The remaining 29% fall onto the bio-retention area directly or onto the 8 FT wide path and then flow onto the bio-retention surface. This rate is 29% times 17.95 gpm or 5.2 gpm. The total volume would be 29% of 524 CF or 152 CF. The surface soils infiltrate at the rate of 5 inches per minute minimum or 0.42 ft per hour. Surface storage is 4 inches at the inlets and would cover a surface area of 510 SF assuming a 5 ft level center section sloped at 2% toward the easterly Grate inlet (GI) and 1% slope toward the westerly Grate inlet (GI).The infiltration rate for 510 SF would be 214 cf per hour or 3.57 cf pre minute or 26.7 gpm. The surface area exceeds the area required to infiltrate the required volume by 5 times. In reality, the full surface area would infiltrate the rain water falling on its surface and the runoff from the sidewalk/path would run across the landscape area before reaching the surface storage area, so this calculation is conservative.

City of Santa Rosa

APPENDIX C

STORM WATER CALCULATOR

STORM WATER CALCULATOR

Project:	874 North Wright Road
Address/Location:	874 North Wright Road
Designer:	BKF Engineers
Date:	July 29, 2013
Inlet Number/Tributary Area/BMP:	Trib #1, Area's C

NOTE: In order for this calculator to function properly **macros must be enabled.**

Physical Tributary Area that drains to Inlet/BMP = 6,185 ft²

This portion of the Storm water Calculator is designed to account for pollution prevention measures implemented on site. Additional information and description of these measures can be found in the Fact Sheets in Appendix F and in Chapter 4 of the narrative.

Disconnected Roof Drains [1]

Input:

Select disconnection condition: Runoff is directed across landscape; Width of area: 25' and larger

Condition Factor = 1

Method 1: Based on the total rooftop drainage area - to be used if rooftop information is known.

Input:

Enter amount of rooftop area that drain to disconnected downspouts = ft²

Rooftop Area Factor = 0.00 Rooftop Area Factor= (Total Rooftop Disconnected Area/Tributary Area)

Solution:

Area reduction = (Physical Tributary Area x Conditional Factor x Rooftop Area Factor)

(6,185 x 1.00 x 0.00) = - ft² **Rooftop Drainage Area Reduction**

Method 2: Based on density (units per acre) - to be used if rooftop information is unknown.

Input:

Enter percent of rooftop area to be disconnected from downspouts: 0 %

Select Density: 1 Units per Acre

Density Reduction Factor= 0.08

Solution:

Area reduction = (Physical Tributary Area x Conditional Factor x Percent Disconnected x Density Factor)

(6,185 x 1.00 x 0.00 x 0.08) = - ft² **Density Reduction**

NOTE:

Either Method 1 (rooftop area) or Method 2 (density) can be used. Providing input for both methods will cause an error. If rooftop area information is available, Method 1 should be used.

[1] *See "Impervious Area Disconnection" Fact Sheet in Appendix E for further details.*

[2] See "Interceptor Trees" Fact Sheet in Appendix E for further details and see "Plant and Tree List" in Appendix G for approved trees.

[3] See "Vegetated Buffer Strip" and "Bovine Terrace" Fact Sheets in Appendix E for further details.

[4] *Total area reductions due to pollution Prevention Measures cannot exceed 50% of the physical Tributary Area.*

[5] *Per the "Urban Hydrology For Small Watersheds" TR-55 manual.*

[6] *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

[7] *From Sonoma County Water Agency Flood Control Design Criteria.*

[8] *Hydrologic soil type based of infiltration rate of native soil as defined by "Urban Hydrology For Small Watersheds" TR-55 Manual.*

[9] *Composite CN calculated per Worksheet 2 Part 1 of the "Urban Hydrology For Small Watersheds" TR-55 manual.*

[10] From "Using Site Design to Meet Development Standards For Storm water Quality" by the Bay Area Storm water Management Agencies Association (BASMAA).

Paved Area Disconnection [1]

Paved Area Type (select from drop down list): Not Directly-connected Paved Area

Multiplier = 1

Enter area of alternatively designed paved area: 0 ft^2

Area Reduction = 0 ft^2

INSTRUCTIONS:
Calculates the area reduction credit for driveways designed to minimize runoff. Enter type and area of alternate design.

Interceptor Trees [3]

Number of new *Evergreen Trees* that qualify as interceptor trees= 0 **New Evergreen Trees**

Area Reduction due to new Evergreen Trees= 0 ft^2 (200 ft^2/tree)

Number of new *Deciduous Trees* that qualify as interceptor trees= - **New Deciduous Trees**

Area Reduction due to new Deciduous Trees= 0 ft^2 (100 ft^2/tree)

Enter square footage of qualifying **existing tree canopy** = 0 **Existing Tree Canopy**

Allowed reduction credit for existing tree canopy= 0 ft^2 Allowed credit for existing tree canopy = 50 % of actual canopy square footage

Area Reduction = - ft^2 = Sum of areas managed by evergreen + deciduous + existing canopy

INSTRUCTIONS:
Calculates the area reductions credit due to interceptor trees. Includes both new and existing trees. Enter the number of new deciduous and evergreen trees and the canopy area of existing trees.

Buffer Strips & Bovine Terraces [4]

Enter area draining to a Buffer Strip or Bovine Terrace = ft^2

Buffer Factor = 0.7

Solution:

Area Reduction = (Area draining to Buffer Strip or Bovine Terrace) x (Buffer Factor) =

Area Reduction = 0 ft^2

INSTRUCTIONS:
Calculates the area reduction credit due to buffer strips and/or bovine terraces. Runoff Must be direct to these features as sheet flow. Enter the area draining to these features.

STORM WATER CALCULATOR

Revised Tributary Area due to Pollution Prevention Measures

Physical Tributary Area = 6,185 ft²

Tributary Area Reduction due to Pollution Prevention Measures [4] = - ft²

Reduced Tributary Area to be used for Calculations = 6,185 ft²

This worksheet calculates the quantity of storm water that needs to be addressed (captured and/or treated) to comply with the NPDES Storm Water Permit issued to the City of Santa Rosa and County of Sonoma by the North Coast Regional Water Quality Control Board.

Design Goal: 100% Volume Capture

Capture (infiltration and/or reuse) of 100% of the volume of runoff generated by the 85th percentile 24 hour storm event.

Formulas:

$S = \frac{1000}{CN} - 10$

Where:
S= Potential maximum retention after runoff (in)[5]
CN= Curve Number [5]

$Q = \frac{[(P*K)-(0.2*S)]^2}{[(P*K)+(0.8*S)]} \times \frac{1ft}{12"}$

Where:
Q= Runoff depth (ft) [6]
P= Precipitation (in) = 0.92 *0.92 inches in the Santa Rosa area, based on local historical data.*
K= Seasonal Precipitation Factor [7]

$V = (Q)(A_r)$

Where:
V= Volume of Storm Water to be Retained (ft³)
A_r= Reduced Tributary Area including credit for Pollution Prevention Measures (ft²)

Input: (Pick data from drop down lists or enter calculated values)

A_r = 6,185 ft²
K [7] = 1

Drop down Lists

Select post development hydrologic soil type within tributary area [8] = D: 0 - 0.05 in/hr infiltration (transmission) rate
Select post development ground cover description [5] = Urban districts - Commercial and business

CN_{POST} = 95

OR: Composite post development CN [9] =

Note: Entering a calculated composite CN will override selections made from the pull down menu above. Calculation worksheet should be used for all composite calculations and included with submittal.

Solution:

Volume of storm water - Post Development

S_{POST}= 0.53 in

$S_{POST} = \frac{1000}{95} - 10$

Where:
S= Post development potential maximum retention after runoff (in).

Q_{POST}= 0.04108 ft

$Q_{POST} = \frac{[(0.92 * 1.00)-(0.2 * 0.53)]^2}{[(0.92 * 1.00)+(0.8 * 0.53)]} \times \frac{1ft}{12in}$

Q= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

V_{GOAL}= 254 ft³

V_{GOAL}= (0.04108)(6,185)

V= Post Development Volume of Storm Water to be Retained (ft³)

INSTRUCTIONS:

This Design Goal of 100% Capture is the ideal condition and if achieved satisfies all requirements so that no additional treatment is required and pages 4 and 5 of this calculator do not need to be completed.

NOTE:

If the Design Goal of 100% Capture is not achieved, 100% Treatment AND Volume Capture must be achieved and both pages 4 and 5 of this calculator need to be completed.

Requirement 1: 100% Treatment

Treatment of 100% of the flow generated by 85th percentile 24 hour mean annual rain event (0.2 in/hr).

Formula:

$Q_{TREATMENT}$= (0.2 in/hr)(A)(C_{POST})(K) cfs

Where:

$Q_{TREATMENT}$= Design flow rate required to be treated (cfs)

C_{POST} = Rational method runoff coefficient for the developed condition[10]

A_r = Reduced Tributary Area including credit for Pollution Prevention Measures (ft^2)

K = Seasonal Precipitation Factor[7]

Input:

A_r =	6,185	ft^2 =	0.14 Acres
C_{POST}[10] =	0.75		
K[7] =	1		

Solution:

$Q_{TREATMENT}$= 0.02 cfs

$Q_{TREATMENT}$= (0.2)(0.14)(0.75)(1.00)

INSTRUCTIONS:

If the Design Goal of 100% Capture on page 3 of this calculator is not achieved; then Requirement 1-100% Treatment, this page of the calculator, AND Requirement 2- Volume Capture, page 5 of the calculator, **must** be achieved.

Requirement 2: Delta Volume Capture

No increase in volume of runoff leaving the site due to development for the 85th percentile 24 hour storm event.

INSTRUCTIONS:
If the Design Goal of 100% Capture on page 3 of this calculator is not achieved; then Requirement 1-100% Treatment, page 4 of the calculator, AND Requirement 2- Volume Capture, this page of the calculator, **must** be achieved.

NOTE:
If the amount of volume generated after development is less than or equal to that generated before development, Requirement 2-Volume Capture is not required.

($C_{POST} \leq C_{PRE}$ or $CN_{POST} \leq CN_{PRE}$)

Formulas:

$$S = \frac{1000}{CN} - 10$$

Where:
S= Potential maximum retention after runoff (in)[5]
CN= Curve Number [5]

$$Q = \frac{[(P*K)-(0.2*S)]^2}{[(P*K)+(0.8*S)]} \times \frac{1ft}{12in}$$

Where:
Q= Runoff depth (ft) [6]
P= Precipitation (in) = 0.92 *0.92 inches in the Santa Rosa area, based on local historical data.*
K= Seasonal Precipitation Factor [7]

$$V = (Q)(A_r)$$

Where:
V= Volume of Storm Water to be Retained (ft^3)
A_r= Reduced Tributary Area including credit for Pollution Prevention Measures (ft^2)

Input: (Pick data from drop down lists or enter calculated values)

A_r =	6,185	ft^2
K [7] =	1	

Drop down Lists

Select hydrologic soil type within tributary area [8] =	D: 0 - 0.05 in/hr infiltration (transmission) rate
Select predevelopment ground cover description [5] =	Pasture, grassland, range - Good (>75% ground cover, lightly or occasionally grazed)
Select post development ground cover description [5] =	Urban districts - Commercial and business
CN_{PRE} =	80
CN_{POST} =	95
OR Composite Predevelopment CN [9] =	
Composite Post development CN [9] =	

Solution:

Pre Development Storm Water Runoff Volume

S_{PRE}= 2.50 in

$$S_{PRE} = \frac{1000}{80} - 10$$

Where:
S= Pre development potential maximum retention after runoff (in).

Q_{PRE}= 0.00503 ft

$$Q_{PRE} = \frac{[(0.92*1.00)-(0.2*2.50)]^2}{[(0.92*1.00)+(0.8*2.50)]} \times \frac{1ft}{12in}$$

Q= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

V_{PRE}= 31.11 ft^3

V_{PRE}= (0.00503)(6,185)

V= Pre Development Volume of Storm Water Generated (ft^3)

Post Development Storm Water Runoff Volume

S_{POST}= 0.53 in

$$S_{POST} = \frac{1000}{95} - 10$$

Where:
S= Post development potential maximum retention after runoff (in).

Q_{POST}= 0.04108 ft

$$Q_{POST} = \frac{[(0.92*1.00)-(0.2*0.53)]^2}{[(0.92*1.00)+(0.8*0.53)]} \times \frac{1ft}{12in}$$

Q= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

V_{POST}= 254.08 ft^3

V_{POST}= (0.04108)(6,185)

V= Post Development Volume of Storm Water Generated (ft^3)

Solution: Volume Capture Requirement

Increase in volume of storm water that must be retained onsite (may be infiltrated or reused).

Delta Volume Capture= $(V_{POST}-V_{PRE})$

Delta Volume Capture= (254.08) - (31.11)

V_{DELTA}= 223 ft^3

Where:
Delta Volume Capture= The increase in volume of storm water generated by the 85th percentile 24 hour storm event due to development that must be retained onsite (may be infiltrated or reused).

STORM WATER CALCULATOR

LID BMP Sizing Tool: 100% Volume Capture Goal: V_{GOAL}

NOTE:
LID Sizing Tool only applicable for volume based BMPs. Not required if site requires treatment only.

Formulas:

$V_{LID\ GOAL}=((V_{GOAL}))/(P)=$ 1,016 ft^3

$A_{LID\ GOAL}=(W)(L)=$ 560 ft^2

Where:
$V_{LID\ GOAL}$= Required volume of soil in LID BMP.
$A_{LID\ GOAL}$ = Footprint of LID BMP area for a given depth (below perforated pipe if present).

$V_{GOAL}=$ 254 ft^3

$$\text{Percent of Goal Achieved} = \frac{(D)(A_{LID\ GOAL})}{V_{LID\ GOAL}} \times 100$$

Where:
P= Porosity (enter as a decimal)
D= Depth below perforated pipe if present (in decimal feet)
W= Width (in decimal feet)
L= Length (in decimal feet)

Input:

P =	0.25	as a decimal
D =	2.0 ft	Below perforated pipe if present
W =	8.0 ft	
L =	70.0 ft	

USED

Solution:

Percent of Goal Achieved = 110 **%**

$$= [(2.0 \times 560.0) / 1{,}016] \times 100$$
$$1.0$$

INSTRUCTIONS:
The 100% volume capture sizing tool helps the designer appropriately size a LID BMP to achieve the design goal of 100% volume capture of the post development condition. Enter the percent porosity of the specified soil and depth below perforated pipe (if present). The width and length entries will need to be interactively adjusted until "Percent of Goal" equals 100%.

LID BMP Sizing Tool Delta Volume Capture Requirement: V_{DELTA}

NOTE:
LID Sizing Tool only applicable for volume based BMPs. Not required if site requires treatment only.

Formulas:

$V_{LID\ DELTA}=((V_{DELTA}))/(P)=$ 892 ft^3

$A_{LID\ DELTA}=(W)(L)=$ 560 ft^2

Where:
$V_{LID\ DELTA}$= Required volume of soil in LID BMP
$A_{LID\ DELTA}$ = Footprint of LID BMP area for a given depth (below perforated pipe if present).

$V_{DELTA}=$ 223 ft^3

$$\text{Percent of Requirement Achieved} = \frac{(D)(A_{LID\ DELTA})}{V_{LID\ DELTA}} \times 100$$

Where:
P= Porosity (enter as a decimal)
D= Depth below perforated pipe if present (in decimal feet)
W= Width (in decimal feet)
L= Length (in decimal feet)

Input:

P =	0.25	as a decimal
D =	2.0 ft	Below perforated pipe if present
W =	8.0 ft	
L =	70.0 ft	

Solution:

Percent of Requirement Achieved = 126 **%**

$$= [(2.0 \times 560.0) / 892] \times 100$$

INSTRUCTIONS:
The Delta Volume Capture sizing tool helps the designer appropriately size a LID BMP to achieve the design requirement of the delta volume capture. Enter the percent of porosity of the specified soil and depth below perforated pipe (if present). The width and length entries will need to be interactively adjusted until "Percent of Requirement achieved" reaches 100%.

City of Santa Rosa

APPENDIX C
STORM WATER CALCULATOR

STORM WATER CALCULATOR

Project:	874 North Wright Road
Address/Location:	874 North Wright Road
Designer:	BKF Engineers
Date:	July 29, 2013
Inlet Number/Tributary Area/BMP:	Trib # 2, Area D

NOTE: In order for this calculator to function properly **macros must be enabled.**

Physical Tributary Area that drains to Inlet/BMP = 5,646 ft²

This portion of the Storm water Calculator is designed to account for pollution prevention measures implemented on site. Additional information and description of these measures can be found in the Fact Sheets in Appendix F and in Chapter 4 of the narrative.

Disconnected Roof Drains [1]

Input:

Select disconnection condition: Runoff is directed across landscape; Width of area: 25' and larger

Condition Factor = 1

Method 1: Based on the total rooftop drainage area - to be used if rooftop information is known.

Input:

Enter amount of rooftop area that drain to disconnected downspouts = ft²

Rooftop Area Factor = 0.00 Rooftop Area Factor= (Total Rooftop Disconnected Area/Tributary Area)

Solution:

Area reduction = (Physical Tributary Area x Conditional Factor x Rooftop Area Factor)

(5,646 x 1.00 x 0.00) = - ft² **Rooftop Drainage Area Reduction**

Method 2: Based on density (units per acre) - to be used if rooftop information is unknown.

Input:

Enter percent of rooftop area to be disconnected from downspouts: 0 %

Select Density: 1 Units per Acre

Density Reduction Factor= 0.08

NOTE:
Either Method 1 (rooftop area) or Method 2 (density) can be used. Providing input for both methods will cause an error. If rooftop area information is available, Method 1 should be used.

Solution:

Area reduction = (Physical Tributary Area x Conditional Factor x Percent Disconnected x Density Factor)

(5,646 x 1.00 x 0.00 x 0.08) = - ft² **Density Reduction**

[1] *See "Impervious Area Disconnection" Fact Sheet in Appendix E for further details.*

[2] See "Interceptor Trees" Fact Sheet in Appendix E for further details and see "Plant and Tree List" in Appendix G for approved trees.

[3] See "Vegetated Buffer Strip" and "Bovine Terrace" Fact Sheets in Appendix E for further details.

[4] *Total area reductions due to pollution Prevention Measures cannot exceed 50% of the physical Tributary Area.*

[5] *Per the "Urban Hydrology For Small Watersheds" TR-55 manual.*

[6] *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

[7] *From Sonoma County Water Agency Flood Control Design Criteria.*

[8] *Hydrologic soil type based of infiltration rate of native soil as defined by "Urban Hydrology For Small Watersheds" TR-55 Manual.*

[9] *Composite CN calculated per Worksheet 2 Part 1 of the "Urban Hydrology For Small Watersheds" TR-55 manual.*

[10] From "Using Site Design to Meet Development Standards For Storm water Quality" by the Bay Area Storm water Management Agencies Association (BASMAA).

Paved Area Disconnection [1]

Paved Area Type (select from drop down list): Not Directly-connected Paved Area

Multiplier = 1

Enter area of alternatively designed paved area: 0 ft^2

Area Reduction = 0 ft^2

INSTRUCTIONS:
Calculates the area reduction credit for driveways designed to minimize runoff. Enter type and area of alternate design.

Interceptor Trees [3]

Number of new ***Evergreen Trees*** that qualify as interceptor trees= 0 **New Evergreen Trees**

Area Reduction due to new Evergreen Trees= 0 ft^2 (200 ft^2/tree)

Number of new ***Deciduous Trees*** that qualify as interceptor trees= - **New Deciduous Trees**

Area Reduction due to new Deciduous Trees= 0 ft^2 (100 ft^2/tree)

Enter square footage of qualifying **existing tree canopy** = 0 **Existing Tree Canopy**

Allowed reduction credit for existing tree canopy= 0 ft^2 Allowed credit for existing tree canopy = 50 % of actual canopy square footage

Area Reduction = - ft^2 = Sum of areas managed by evergreen + deciduous + existing canopy

INSTRUCTIONS:
Calculates the area reductions credit due to interceptor trees. Includes both new and existing trees. Enter the number of new deciduous and evergreen trees and the canopy area of existing trees.

Buffer Strips & Bovine Terraces [4]

Enter area draining to a Buffer Strip or Bovine Terrace = 5,646 ft^2

Buffer Factor = 0.7

Solution:

Area Reduction = (Area draining to Buffer Strip or Bovine Terrace) x (Buffer Factor) =

Area Reduction = 3,952 ft^2

INSTRUCTIONS:
Calculates the area reduction credit due to buffer strips and/or bovine terraces. Runoff Must be direct to these features as sheet flow. Enter the area draining to these features.

STORM WATER CALCULATOR

Revised Tributary Area due to Pollution Prevention Measures

Physical Tributary Area =	5,646	ft^2
Tributary Area Reduction due to Pollution Prevention Measures [4] =	3,952	ft^2
Reduced Tributary Area to be used for Calculations =	1,694	ft^2

This worksheet calculates the quantity of storm water that needs to be addressed (captured and/or treated) to comply with the NPDES Storm Water Permit issued to the City of Santa Rosa and County of Sonoma by the North Coast Regional Water Quality Control Board.

Design Goal: 100% Volume Capture

Capture (infiltration and/or reuse) of 100% of the volume of runoff generated by the 85th percentile 24 hour storm event.

Formulas:

$$S = \frac{1000}{CN} - 10$$

Where:
S= Potential maximum retention after runoff (in)[5]
CN= Curve Number [5]

$$Q = \frac{[(P*K)-(0.2*S)]^2}{[(P*K)+(0.8*S)]} \times \frac{1ft}{12"}$$

Where:
Q= Runoff depth (ft) [6]
P= Precipitation (in) = 0.92 *0.92 inches in the Santa Rosa area, based on local historical data.*
K= Seasonal Precipitation Factor [7]

$$V = (Q)(A_r)$$

Where:
V= Volume of Storm Water to be Retained (ft^3)
A_r= Reduced Tributary Area including credit for Pollution Prevention Measures (ft^2)

Input: (Pick data from drop down lists or enter calculated values)

A_r =	1,694	ft^2
K [7] =	1	

Drop down Lists

Select post development hydrologic soil type within tributary area [8] =	D: 0 - 0.05 in/hr infiltration (transmission) rate
Select post development ground cover description [5] =	Urban districts - Commercial and business

CN_{POST} =	95	
OR: Composite post development CN [9] =		

Note: Entering a calculated composite CN will override selections made from the pull down menu above. Calculation worksheet should be used for all composite calculations and included with submittal.

Solution:

Volume of storm water - Post Development

S_{POST}= 0.53 in $S_{POST} = \frac{1000}{95} - 10$

Q_{POST}= 0.04108 ft $Q_{POST} = \frac{[(0.92 * 1.00)-(0.2 * 0.53)]^2}{[(0.92 * 1.00)+(0.8 * 0.53)]} \times \frac{1ft}{12in}$

V_{GOAL}= 70 ft^3 V_{GOAL}= (0.04108)(1,694)

Where:
S= Post development potential maximum retention after runoff (in).
Q= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*
V= Post Development Volume of Storm Water to be Retained (ft^3)

INSTRUCTIONS:
This Design Goal of 100% Capture is the ideal condition and if achieved satisfies all requirements so that no additional treatment is required and pages 4 and 5 of this calculator do not need to be completed.

NOTE:
If the Design Goal of 100% Capture is not achieved, 100% Treatment AND Volume Capture must be achieved and both pages 4 and 5 of this calculator need to be completed.

Requirement 1: 100% Treatment

Treatment of 100% of the flow generated by 85th percentile 24 hour mean annual rain event (0.2 in/hr).

Formula:

$Q_{TREATMENT}$= (0.2 in/hr)(A)(C_{POST})(K) cfs

Where:

$Q_{TREATMENT}$= Design flow rate required to be treated (cfs)

C_{POST} = Rational method runoff coefficient for the developed condition[10]

A_r = Reduced Tributary Area including credit for Pollution Prevention Measures (ft^2)

K = Seasonal Precipitation Factor[7]

Input:

A_r =	1,694	ft^2 =	0.04 Acres
C_{POST} [10] =	0.75		
K [7] =	1		

Solution:

$Q_{TREATMENT}$= 0.01 cfs

$Q_{TREATMENT}$= (0.2)(0.04)(0.75)(1.00)

INSTRUCTIONS:

If the Design Goal of 100% Capture on page 3 of this calculator is not achieved; then Requirement 1-100% Treatment, this page of the calculator, AND Requirement 2- Volume Capture, page 5 of the calculator, **must** be achieved.

Requirement 2: Delta Volume Capture

No increase in volume of runoff leaving the site due to development for the 85th percentile 24 hour storm event.

INSTRUCTIONS:
If the Design Goal of 100% Capture on page 3 of this calculator is not achieved; then Requirement 1-100% Treatment, page 4 of the calculator, AND Requirement 2- Volume Capture, this page of the calculator, must be achieved.

NOTE:
If the amount of volume generated after development is less than or equal to that generated before development, Requirement 2-Volume Capture is not required.

($C_{POST} \leq C_{PRE}$ or $CN_{POST} \leq CN_{PRE}$)

Formulas:

$$S = \frac{1000}{CN} - 10$$

Where:
S= Potential maximum retention after runoff (in)[5]
CN= Curve Number [5]

$$Q = \frac{[(P \cdot K)-(0.2 \cdot S)]^2}{[(P \cdot K)+(0.8 \cdot S)]} \times \frac{1ft}{12in}$$

Where:
Q= Runoff depth (ft) [6]
P= Precipitation (in) = 0.92 *0.92 inches in the Santa Rosa area, based on local historical data.*
K= Seasonal Precipitation Factor [7]

$$V = (Q)(A_r)$$

Where:
V= Volume of Storm Water to be Retained (ft^3)
A_r= Reduced Tributary Area including credit for Pollution Prevention Measures (ft^2)

Input: (Pick data from drop down lists or enter calculated values)

A_r =	1,694	ft^2
K[7] =	1	

Drop down Lists

Select hydrologic soil type within tributary area [8] =	D: 0 - 0.05 in/hr infiltration (transmission) rate
Select predevelopment ground cover description [5] =	Pasture, grassland, range - Good (>75% ground cover, lightly or occasionally grazed)
Select post development ground cover description [5] =	Urban districts - Commercial and business
CN_{PRE} =	80
CN_{POST} =	95
OR Composite Predevelopment CN [9] =	
Composite Post development CN [9] =	

Solution:

Pre Development Storm Water Runoff Volume

S_{PRE}= 2.50 in

$$S_{PRE} = \frac{1000}{80} - 10$$

Where:
S= Pre development potential maximum retention after runoff (in).

Q_{PRE}= 0.00503 ft

$$Q_{PRE} = \frac{[(0.92*1.00)-(0.2 * 2.50)]^2}{[(0.92*1.00)+(0.8 * 2.50)]} \times \frac{1ft}{12in}$$

Q= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

V_{PRE}= 8.52 ft^3

V_{PRE}= (0.00503)(1,694)

V= Pre Development Volume of Storm Water Generated (ft^3)

Post Development Storm Water Runoff Volume

S_{POST}= 0.53 in

$$S_{POST} = \frac{1000}{95} - 10$$

Where:
S= Post development potential maximum retention after runoff (in).

Q_{POST}= 0.04108 ft

$$Q_{POST} = \frac{[(0.92*1.00)-(0.2 * 0.53)]^2}{[(0.92*1.00)+(0.8 * 0.53)]} \times \frac{1ft}{12in}$$

Q= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

V_{POST}= 69.58 ft^3

V_{POST}= (0.04108)(1,694)

V= Post Development Volume of Storm Water Generated (ft^3)

Solution: Volume Capture Requirement

Increase in volume of storm water that must be retained onsite (may be infiltrated or reused).

Delta Volume Capture= $(V_{POST}-V_{PRE})$

Delta Volume Capture= (69.58) - (8.52)

V_{DELTA}= 61 ft^3

Where:
Delta Volume Capture= The increase in volume of storm water generated by the 85th percentile 24 hour storm event due to development that must be retained onsite (may be infiltrated or reused).

LID BMP Sizing Tool: 100% Volume Capture Goal; V_{GOAL}

NOTE:
LID Sizing Tool only applicable for volume based BMPs. Not required if site requires treatment only.

INSTRUCTIONS:
The 100% volume capture sizing tool helps the designer appropriately size a LID BMP to achieve the design goal of 100% volume capture of the post development condition. Enter the percent porosity of the specified soil and depth below perforated pipe (if present). The width and length entries will need to be interactively adjusted until "Percent of Goal" equals 100%.

Formulas:

$V_{LID\ GOAL}=((V_{GOAL}))/(P)=$ 278 ft^3

$A_{LID\ GOAL}=(W)(L)=$ 207 ft^2

Where:
$V_{LID\ GOAL}$ = Required volume of soil in LID BMP.
$A_{LID\ GOAL}$ = Footprint of LID BMP area for a given depth (below perforated pipe if present).

$V_{GOAL}=$ 70 ft^3

$$\text{Percent of Goal Achieved} = \frac{(D)(A_{LID\ GOAL})}{V_{LID\ GOAL}} \times 100$$

Where:
P= Porosity (enter as a decimal)
D= Depth below perforated pipe if present (in decimal feet)
W= Width (in decimal feet)
L= Length (in decimal feet)

Input:

P =	0.25	as a decimal
D =	1.5 ft	Below perforated pipe if present
W =	2.3 ft	
L =	90.0 ft	

← USED

Solution:

Percent of Goal Achieved = 112 %

$$= [(1.5 \times 207.0) / 278] \times \frac{100}{1.0}$$

LID BMP Sizing Tool Delta Volume Capture Requirement: V_{DELTA}

NOTE:
LID Sizing Tool only applicable for volume based BMPs. Not required if site requires treatment only.

INSTRUCTIONS:
The Delta Volume Capture sizing tool helps the designer appropriately size a LID BMP to achieve the design requirement of the delta volume capture. Enter the percent of porosity of the specified soil and depth below perforated pipe (if present). The width and length entries will need to be interactively adjusted until "Percent of Requirement achieved" reaches 100%

Formulas:

$V_{LID\ DELTA}=((V_{DELTA}))/(P)=$ 204 ft^3

$A_{LID\ DELTA}=(W)(L)=$ 207 ft^2

Where:
$V_{LID\ DELTA}$= Required volume of soil in LID BMP
$A_{LID\ DELTA}$ = Footprint of LID BMP area for a given depth (below perforated pipe if present).

$V_{DELTA}=$ 61 ft^3

$$\text{Percent of Requirement Achieved} = \frac{(D)(A_{LID\ DELTA})}{V_{LID\ DELTA}} \times 100$$

Where:
P= Porosity (enter as a decimal)
D= Depth below perforated pipe if present (in decimal feet)
W= Width (in decimal feet)
L= Length (in decimal feet)

Input:

P =	0.30	as a decimal
D =	1.5 ft	Below perforated pipe if present
W =	2.3 ft	
L =	90.0 ft	

Solution:

Percent of Requirement Achieved = 153 %

$= [(1.5 \times 207.0) / 204] \times 100$

City of Santa Rosa

STORM WATER CALCULATOR

Project:	874 North Wright Road
Address/Location:	874 North Wright Road
Designer:	BKF Engineers
Date:	July 29, 2013
Inlet Number/Tributary Area/BMP:	Trib #3, Area E

NOTE: In order for this calculator to function properly **macros must be enabled.**

Physical Tributary Area that drains to Inlet/BMP = 5,167 ft^2

This portion of the Storm water Calculator is designed to account for pollution prevention measures implemented on site. Additional information and description of these measures can be found in the Fact Sheets in Appendix F and in Chapter 4 of the narrative.

Disconnected Roof Drains [1]

Input:

Select disconnection condition: Runoff is directed across landscape; Width of area: 25' and larger

Condition Factor = 1

Method 1: Based on the total rooftop drainage area - to be used if rooftop information is known.

Input:

Enter amount of rooftop area that drain to disconnected downspouts = _____ ft^2

Rooftop Area Factor = 0.00 Rooftop Area Factor= (Total Rooftop Disconnected Area/Tributary Area)

Solution:

Area reduction = (Physical Tributary Area x Conditional Factor x Rooftop Area Factor)

(5,167 x 1.00 x 0.00) = - ft^2 **Rooftop Drainage Area Reduction**

Method 2: Based on density (units per acre) - to be used if rooftop information is unknown.

Input:

Enter percent of rooftop area to be disconnected from downspouts: 0 %

Select Density: 1 Units per Acre

Density Reduction Factor= 0.08

Solution:

Area reduction = (Physical Tributary Area x Conditional Factor x Percent Disconnected x Density Factor)

(5,167 x 1.00 x 0.00 x 0.08) = - ft^2 **Density Reduction**

NOTE:

Either Method 1 (rooftop area) or Method 2 (density) can be used. Providing input for both methods will cause an error. If rooftop area information is available, Method 1 should be used.

[1] *See "Impervious Area Disconnection" Fact Sheet in Appendix E for further details.*

[2] See "Interceptor Trees" Fact Sheet in Appendix E for further details and see "Plant and Tree List" in Appendix G for approved trees.

[3] See "Vegetated Buffer Strip" and "Bovine Terrace" Fact Sheets in Appendix E for further details.

[4] *Total area reductions due to pollution Prevention Measures cannot exceed 50% of the physical Tributary Area.*

[5] *Per the "Urban Hydrology For Small Watersheds" TR-55 manual.*

[6] *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

[7] *From Sonoma County Water Agency Flood Control Design Criteria.*

[8] *Hydrologic soil type based of infiltration rate of native soil as defined by "Urban Hydrology For Small Watersheds" TR-55 Manual.*

[9] *Composite CN calculated per Worksheet 2 Part 1 of the "Urban Hydrology For Small Watersheds" TR-55 manual.*

[10] From "Using Site Design to Meet Development Standards For Storm water Quality" by the Bay Area Storm water Management Agencies Association (BASMAA).

Paved Area Disconnection [1]

Paved Area Type (select from drop down list): Not Directly-connected Paved Area

Multiplier = 1

Enter area of alternatively designed paved area: 0 ft^2

Area Reduction = 0 ft^2

INSTRUCTIONS:
Calculates the area reduction credit for driveways designed to minimize runoff. Enter type and area of alternate design.

Interceptor Trees [3]

Number of new *Evergreen Trees* that qualify as interceptor trees= 0 **New Evergreen Trees**

Area Reduction due to new Evergreen Trees= 0 ft^2 (200 ft^2/tree)

Number of new *Deciduous Trees* that qualify as interceptor trees= - **New Deciduous Trees**

Area Reduction due to new Deciduous Trees= 0 ft^2 (100 ft^2/tree)

Enter square footage of qualifying **existing tree canopy** = 0 **Existing Tree Canopy**

Allowed reduction credit for existing tree canopy= 0 ft^2 Allowed credit for existing tree canopy = 50 % of actual canopy square footage

Area Reduction = - ft^2 = Sum of areas managed by evergreen + deciduous + existing canopy

INSTRUCTIONS:
Calculates the area reductions credit due to interceptor trees. Includes both new and existing trees. Enter the number of new deciduous and evergreen trees and the canopy area of existing trees.

Buffer Strips & Bovine Terraces [4]

Enter area draining to a Buffer Strip or Bovine Terrace = 0 ft^2

Buffer Factor = 0.7

Solution:

Area Reduction = (Area draining to Buffer Strip or Bovine Terrace) x (Buffer Factor) =

Area Reduction = 0 ft^2

INSTRUCTIONS:
Calculates the area reduction credit due to buffer strips and/or bovine terraces. Runoff Must be direct to these features as sheet flow. Enter the area draining to these features.

Revised Tributary Area due to Pollution Prevention Measures

Physical Tributary Area = 5,167 ft²

Tributary Area Reduction due to Pollution Prevention Measures [4] = - ft²

Reduced Tributary Area to be used for Calculations = 5,167 ft²

This worksheet calculates the quantity of storm water that needs to be addressed (captured and/or treated) to comply with the NPDES Storm Water Permit issued to the City of Santa Rosa and County of Sonoma by the North Coast Regional Water Quality Control Board.

Design Goal: 100% Volume Capture

Capture (infiltration and/or reuse) of 100% of the volume of runoff generated by the 85th percentile 24 hour storm event.

Formulas:

$$S = \frac{1000}{CN} - 10$$

Where:
S= Potential maximum retention after runoff (in)[5]
CN= Curve Number [5]

$$Q = \frac{[(P*K)-(0.2*S)]^2}{[(P*K)+(0.8*S)]} \times \frac{1ft}{12"}$$

Where:
Q= Runoff depth (ft) [6]
P= Precipitation (in) = 0.92 *0.92 inches in the Santa Rosa area, based on local historical data.*
K= Seasonal Precipitation Factor [7]

$$V = (Q)(A_r)$$

Where:
V= Volume of Storm Water to be Retained (ft³)
A_r= Reduced Tributary Area including credit for Pollution Prevention Measures (ft²)

Input: (Pick data from drop down lists or enter calculated values)

A_r = 5,167 ft²
K [7] = 1

Drop down Lists

Select post development hydrologic soil type within tributary area [8] = D: 0 - 0.05 in/hr infiltration (transmission) rate
Select post development ground cover description [5] = Urban districts - Commercial and business

CN_{POST} = 95 — SEE NEXT SHEET

OR: Composite post development CN [9] = 86

Note: Entering a calculated composite CN will override selections made from the pull down menu above. Calculation worksheet should be used for all composite calculations and included with submittal.

Solution:

Volume of storm water - Post Development

S_{POST}= 1.63 in $\quad S_{POST} = \frac{1000}{86} - 10$

Where:
S= Post development potential maximum retention after runoff (in).

Q_{POST}= 0.01322 ft $\quad Q_{POST} = \frac{[(0.92 * 1.00)-(0.2 * 1.63)]^2}{[(0.92 * 1.00)+(0.8 * 1.63)]} \times \frac{1ft}{12in}$

Q= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

V_{GOAL}= 68 ft³ $\quad V_{GOAL} = (0.01322)(5,167)$

V= Post Development Volume of Storm Water to be Retained (ft³)

INSTRUCTIONS:
This Design Goal of 100% Capture is the ideal condition and if achieved satisfies all requirements so that no additional treatment is required and pages 4 and 5 of this calculator do not need to be completed.

NOTE:
If the Design Goal of 100% Capture is not achieved, 100% Treatment AND Volume Capture must be achieved and both pages 4 and 5 of this calculator need to be completed.

Elm Tree Station

Determine Composite Curve number (CN) AREA E

Composite CN factor		Area (SF)	Percent (%) Total area	% X CN
Buildings and walks	CN = 98	1600	31%	31
Landscaping	CN = 80	3567	69%	55
	Total	5167	Sum	86
			Composite CN =	86

Requirement 1: 100% Treatment

Treatment of 100% of the flow generated by 85th percentile 24 hour mean annual rain event (0.2 in/hr).

Formula:

$Q_{TREATMENT}$= (0.2 in/hr)(A)(C_{POST})(K) cfs

Where:

$Q_{TREATMENT}$= Design flow rate required to be treated (cfs)

C_{POST} = Rational method runoff coefficient for the developed condition[10]

A_r = Reduced Tributary Area including credit for Pollution Prevention Measures (ft^2)

K = Seasonal Precipitation Factor[7]

Input:

A_r =	5,167	ft^2 =	0.12 Acres
C_{POST}[10] =	0.30		
K[7] =	1		

Solution:

$Q_{TREATMENT}$= 0.01 cfs

$Q_{TREATMENT}$= (0.2)(0.12)(0.30)(1.00)

INSTRUCTIONS:

If the Design Goal of 100% Capture on page 3 of this calculator is not achieved; then Requirement 1-100% Treatment, this page of the calculator, AND Requirement 2- Volume Capture, page 5 of the calculator, **must** be achieved.

Requirement 2: Delta Volume Capture

No increase in volume of runoff leaving the site due to development for the 85th percentile 24 hour storm event.

INSTRUCTIONS:
If the Design Goal of 100% Capture on page 3 of this calculator is not achieved; then Requirement 1-100% Treatment, page 4 of the calculator, AND Requirement 2- Volume Capture, this page of the calculator, **must** be achieved.

NOTE:
If the amount of volume generated after development is less than or equal to that generated before development, Requirement 2-Volume Capture is not required.

($C_{POST} \leq C_{PRE}$ or $CN_{POST} \leq CN_{PRE}$)

Formulas:

$$S = \frac{1000}{CN} - 10$$

Where:
- S= Potential maximum retention after runoff (in)[5]
- CN= Curve Number [5]

$$Q = \frac{[(P*K)-(0.2*S)]^2}{[(P*K)+(0.8*S)]} \times \frac{1ft}{12in}$$

Where:
- Q= Runoff depth (ft) [6]
- P= Precipitation (in) = 0.92 *0.92 inches in the Santa Rosa area, based on local historical data.*
- K= Seasonal Precipitation Factor [7]

$$V = (Q)(A_r)$$

Where:
- V= Volume of Storm Water to be Retained (ft^3)
- A_r= Reduced Tributary Area including credit for Pollution Prevention Measures (ft^2)

Input: (Pick data from drop down lists or enter calculated values)

A_r =	5,167	ft^2
K [7] =	1	

Drop down Lists

Select hydrologic soil type within tributary area [8] =	D: 0 - 0.05 in/hr infiltration (transmission) rate
Select predevelopment ground cover description [5] =	Pasture, grassland, range - Good (>75% ground cover, lightly or occasionally grazed)
Select post development ground cover description [5] =	Urban districts - Commercial and business
CN_{PRE} =	80
CN_{POST} =	95
OR Composite Predevelopment CN [9] =	
Composite Post development CN [9] =	86

Solution:

Pre Development Storm Water Runoff Volume

S_{PRE}= 2.50 in

$$S_{PRE} = \frac{1000}{80} - 10$$

Where:
S= Pre development potential maximum retention after runoff (in).

Q_{PRE}= 0.00503 ft

$$Q_{PRE} = \frac{[(0.92*1.00)-(0.2*2.50)]^2}{[(0.92*1.00)+(0.8*2.50)]} \times \frac{1ft}{12in}$$

Q= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

V_{PRE}= 25.99 ft^3

V_{PRE}= (0.00503)(5,167)

V= Pre Development Volume of Storm Water Generated (ft^3)

Post Development Storm Water Runoff Volume

S_{POST}= 1.63 in

$$S_{POST} = \frac{1000}{86} - 10$$

Where:
S= Post development potential maximum retention after runoff (in).

Q_{POST}= 0.01322 ft

$$Q_{POST} = \frac{[(0.92*1.00)-(0.2*1.63)]^2}{[(0.92*1.00)+(0.8*1.63)]} \times \frac{1ft}{12in}$$

Q= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

V_{POST}= 68.31 ft^3

V_{POST}= (0.01322)(5,167)

V= Post Development Volume of Storm Water Generated (ft^3)

Solution: Volume Capture Requirement

Increase in volume of storm water that must be retained onsite (may be infiltrated or reused).

Delta Volume Capture= $(V_{POST}-V_{PRE})$

Delta Volume Capture= (68.31) - (25.99)

V_{DELTA}= 42 ft^3

Where:
Delta Volume Capture= The increase in volume of storm water generated by the 85th percentile 24 hour storm event due to development that must be retained onsite (may be infiltrated or reused).

LID BMP Sizing Tool: 100% Volume Capture Goal; V_{GOAL}

NOTE:
LID Sizing Tool only applicable for volume based BMPs. Not required if site requires treatment only.

INSTRUCTIONS:
The 100% volume capture sizing tool helps the designer appropriately size a LID BMP to achieve the design goal of 100% volume capture of the post development condition. Enter the percent porosity of the specified soil and depth below perforated pipe (if present). The width and length entries will need to be interactively adjusted until "Percent of Goal" equals 100%.

Formulas:

$V_{LID\ GOAL}=((V_{GOAL}))/(P)=$ 273 ft^3

$A_{LID\ GOAL}=(W)(L)=$ 140 ft^2

Where:
$V_{LID\ GOAL}$= Required volume of soil in LID BMP.
$A_{LID\ GOAL}$ = Footprint of LID BMP area for a given depth (below perforated pipe if present).

$V_{GOAL}=$ 68 ft^3

$$\text{Percent of Goal Achieved} = \frac{(D)(A_{LID\ GOAL})}{V_{LID\ GOAL}} \times 100$$

Where:
P= Porosity (enter as a decimal)
D= Depth below perforated pipe if present (in decimal feet)
W= Width (in decimal feet)
L= Length (in decimal feet)

Input:

P =	0.25	as a decimal
D =	2.0 ft	Below perforated pipe if present
W =	2.0 ft	
L =	70.0 ft	

Solution:

Percent of Goal Achieved = 102 **%**

$$= [(2.0 \times 140.0) / 273]^{1.0} \times 100$$

LID BMP Sizing Tool Delta Volume Capture Requirement: V_{DELTA}

NOTE:
LID Sizing Tool only applicable for volume based BMPs. Not required if site requires treatment only.

INSTRUCTIONS:
The Delta Volume Capture sizing tool helps the designer appropriately size a LID BMP to achieve the design requirement of the delta volume capture. Enter the percent of porosity of the specified soil and depth below perforated pipe (if present). The width and length entries will need to be interactively adjusted until "Percent of Requirement achieved" reaches 100%

Formulas:

$V_{LID\ DELTA}=((V_{DELTA}))/(P)=$ 169 ft^3

$A_{LID\ DELTA}=(W)(L)=$ 140 ft^2

Where:
$V_{LID\ DELTA}$= Required volume of soil in LID BMP
$A_{LID\ DELTA}$ = Footprint of LID BMP area for a given depth (below perforated pipe if present).

$V_{DELTA}=$ 42 ft^3

$$\text{Percent of Requirement Achieved} = \frac{(D)(A_{LID\ DELTA})}{V_{LID\ DELTA}} \times 100$$

Where:
P= Porosity (enter as a decimal)
D= Depth below perforated pipe if present (in decimal feet)
W= Width (in decimal feet)
L= Length (in decimal feet)

Input:

P =	0.25	as a decimal
D =	2.0 ft	Below perforated pipe if present
W =	2.0 ft	
L =	70.0 ft	

SEE SWALE CALCULATION FOLLOWING VOLUME CAPTURE SUMMARY

Solution:

Percent of Requirement Achieved = 165 **%**

$$= [(2.0 \times 140.0) / 169] \times 100$$

City of Santa Rosa

STORM WATER CALCULATOR

STORM WATER CALCULATOR

874 North Wright Road
874 North Wright Road
BKF Engineers
Trib #4, Area F

Project:	874 North Wright Road
Address/Location:	874 North Wright Road
Designer:	BKF Engineers
Date:	July 29, 2013
Inlet Number/Tributary Area/BMP:	Trib #4, Area F

NOTE: In order for this calculator to function properly **macros must be enabled.**

Physical Tributary Area that drains to Inlet/BMP = 2,357 ft^2

This portion of the Storm water Calculator is designed to account for pollution prevention measures implemented on site. Additional information and description of these measures can be found in the Fact Sheets in Appendix F and in Chapter 4 of the narrative.

Disconnected Roof Drains [1]

Input:

Select disconnection condition: Runoff is directed across landscape; Width of area: 25' and larger

Condition Factor = 1

Method 1: **Based on the total rooftop drainage area - to** be used if rooftop information is known.

Input:

Enter amount of rooftop area that drain to disconnected downspouts = _____ ft^2

Rooftop Area Factor = 0.00 Rooftop Area Factor= (Total Rooftop Disconnected Area/Tributary Area)

Solution:

Area reduction = (Physical Tributary Area x Conditional Factor x Rooftop Area Factor)

(2,357 x 1.00 x 0.00) = - ft^2 **Rooftop Drainage Area Reduction**

Method 2: **Based on density (units per acre) - to be used if rooftop information is unknown.**

Input:

Enter percent of rooftop area to be disconnected from downspouts: 0 %

Select Density: 1 Units per Acre

Density Reduction Factor= 0.08

Solution:

Area reduction = (Physical Tributary Area x Conditional Factor x Percent Disconnected x Density Factor)

(2,357 x 1.00 x 0.00 x 0.08) = - ft^2 **Density Reduction**

NOTE:

Either Method 1 (rooftop area) or Method 2 (density) can be used. Providing input for both methods will cause an error. If rooftop area information is available, Method 1 should be used.

[1] *See "Impervious Area Disconnection" Fact Sheet in Appendix E for further details.*

[2] See "Interceptor Trees" Fact Sheet in Appendix E for further details and see "Plant and Tree List" in Appendix G for approved trees.

[3] See "Vegetated Buffer Strip" and "Bovine Terrace" Fact Sheets in Appendix E for further details.

[4] *Total area reductions due to pollution Prevention Measures cannot exceed 50% of the physical Tributary Area.*

[5] *Per the "Urban Hydrology For Small Watersheds" TR-55 manual.*

[6] *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

[7] *From Sonoma County Water Agency Flood Control Design Criteria.*

[8] *Hydrologic soil type based of infiltration rate of native soil as defined by "Urban Hydrology For Small Watersheds" TR-55 Manual.*

[9] *Composite CN calculated per Worksheet 2 Part 1 of the "Urban Hydrology For Small Watersheds" TR-55 manual.*

[10] From "Using Site Design to Meet Development Standards For Storm water Quality" by the Bay Area Storm water Management Agencies Association (BASMAA).

Paved Area Disconnection [1]

Paved Area Type (select from drop down list): Not Directly-connected Paved Area

Multiplier = 1

Enter area of alternatively designed paved area: 0 ft^2

Area Reduction = 0 ft^2

INSTRUCTIONS:
Calculates the area reduction credit for driveways designed to minimize runoff. Enter type and area of alternate design.

Interceptor Trees [3]

Number of new *Evergreen Trees* that qualify as interceptor trees= 0 **New Evergreen Trees**

Area Reduction due to new Evergreen Trees= 0 ft^2 (200 ft^2/tree)

Number of new *Deciduous Trees* that qualify as interceptor trees= - **New Deciduous Trees**

Area Reduction due to new Deciduous Trees= 0 ft^2 (100 ft^2/tree)

Enter square footage of qualifying **existing tree canopy** = 0 **Existing Tree Canopy**

Allowed reduction credit for existing tree canopy= 0 ft^2 Allowed credit for existing tree canopy = 50 % of actual canopy square footage

Area Reduction = - ft^2 = Sum of areas managed by evergreen + deciduous + existing canopy

INSTRUCTIONS:
Calculates the area reductions credit due to interceptor trees. Includes both new and existing trees. Enter the number of new deciduous and evergreen trees and the canopy area of existing trees.

Buffer Strips & Bovine Terraces [4]

Enter area draining to a Buffer Strip or Bovine Terrace = 0 ft^2

Buffer Factor = 0.7

Solution:

Area Reduction = (Area draining to Buffer Strip or Bovine Terrace) x (Buffer Factor) =

Area Reduction = 0 ft^2

INSTRUCTIONS:
Calculates the area reduction credit due to buffer strips and/or bovine terraces. Runoff Must be direct to these features as sheet flow. Enter the area draining to these features.

STORM WATER CALCULATOR

Revised Tributary Area due to Pollution Prevention Measures

Physical Tributary Area =	2,357	ft²
Tributary Area Reduction due to Pollution Prevention Measures [4] =	-	ft²
Reduced Tributary Area to be used for Calculations =	2,357	ft²

This worksheet calculates the quantity of storm water that needs to be addressed (captured and/or treated) to comply with the NPDES Storm Water Permit issued to the City of Santa Rosa and County of Sonoma by the North Coast Regional Water Quality Control Board.

Design Goal: 100% Volume Capture

Capture (infiltration and/or reuse) of 100% of the volume of runoff generated by the 85th percentile 24 hour storm event.

Formulas:

$$S = \frac{1000}{CN} - 10$$

Where:
S= Potential maximum retention after runoff (in)[5]
CN= Curve Number [5]

$$Q = \frac{[(P*K)-(0.2*S)]^2}{[(P*K)+(0.8*S)]} \times \frac{1ft}{12"}$$

Where:
Q= Runoff depth (ft) [6]
P= Precipitation (in) = 0.92 *0.92 inches in the Santa Rosa area, based on local historical data.*
K= Seasonal Precipitation Factor [7]

$$V = (Q)(A_r)$$

Where:
V= Volume of Storm Water to be Retained (ft³)
A_r= Reduced Tributary Area including credit for Pollution Prevention Measures (ft²)

Input: (Pick data from drop down lists or enter calculated values)

A_r =	2,357	ft²
K [7] =	1	

Drop down Lists

Select post development hydrologic soil type within tributary area [8] =	D: 0 - 0.05 in/hr infiltration (transmission) rate
Select post development ground cover description [5] =	Urban districts - Commercial and business

CN_{POST} =	95	
OR: Composite post development CN [9] =		

Note: Entering a calculated composite CN will override selections made from the pull down menu above. Calculation worksheet should be used for all composite calculations and included with submittal.

Solution:

Volume of storm water - Post Development

S_{POST}= 0.53 in

$$S_{POST} = \frac{1000}{95} - 10$$

Where:
S= Post development potential maximum retention after runoff (in).

Q_{POST}= 0.04108 ft

$$Q_{POST} = \frac{[(0.92 * 1.00)-(0.2 * 0.53)]^2}{[(0.92 * 1.00)+(0.8 * 0.53)]} \times \frac{1ft}{12in}$$

Q= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

V_{GOAL}= 97 ft³

V_{GOAL}= (0.04108)(2,357)

V= Post Development Volume of Storm Water to be Retained (ft³)

INSTRUCTIONS:

This Design Goal of 100% Capture is the ideal condition and if achieved satisfies all requirements so that no additional treatment is required and pages 4 and 5 of this calculator do not need to be completed.

NOTE:

If the Design Goal of 100% Capture is not achieved, 100% Treatment AND Volume Capture must be achieved and both pages 4 and 5 of this calculator need to be completed.

Requirement 1: 100% Treatment

Treatment of 100% of the flow generated by 85th percentile 24 hour mean annual rain event (0.2 in/hr).

Formula:

$Q_{TREATMENT}$= (0.2 in/hr)(A)(C_{POST})(K) cfs

Where:

$Q_{TREATMENT}$= Design flow rate required to be treated (cfs)

C_{POST} = Rational method runoff coefficient for the developed condition [10]

A_r = Reduced Tributary Area including credit for Pollution Prevention Measures (ft^2)

K = Seasonal Precipitation Factor [7]

Input:

A_r =	2,357	ft^2 =	0.05 Acres
C_{POST} [10] =	0.75		
K [7] =	1		

Solution:

$Q_{TREATMENT}$= 0.01 cfs

$Q_{TREATMENT}$= (0.2)(0.05)(0.75)(1.00)

INSTRUCTIONS:

If the Design Goal of 100% Capture on page 3 of this calculator is not achieved; then Requirement 1-100% Treatment, this page of the calculator, AND Requirement 2- Volume Capture, page 5 of the calculator, **must** be achieved.

Requirement 2: Delta Volume Capture

No increase in volume of runoff leaving the site due to development for the 85th percentile 24 hour storm event.

INSTRUCTIONS:
If the Design Goal of 100% Capture on page 3 of this calculator is not achieved; then Requirement 1-100% Treatment, page 4 of the calculator, AND Requirement 2- Volume Capture, this page of the calculator, **must** be achieved.

NOTE:
If the amount of volume generated after development is less than or equal to that generated before development, Requirement 2-Volume Capture is not required.
($C_{POST} \leq C_{PRE}$ or $CN_{POST} \leq CN_{PRE}$)

Formulas:

$$S = \frac{1000}{CN} - 10$$

Where:
S= Potential maximum retention after runoff (in)[5]
CN= Curve Number [5]

$$Q = \frac{[(P*K)-(0.2*S)]^2}{[(P*K)+(0.8*S)]} \times \frac{1ft}{12in}$$

Where:
Q= Runoff depth (ft) [6]
P= Precipitation (in) = 0.92 *0.92 inches in the Santa Rosa area, based on local historical data.*
K= Seasonal Precipitation Factor [7]

$$V = (Q)(A_r)$$

Where:
V= Volume of Storm Water to be Retained (ft^3)
A_r= Reduced Tributary Area including credit for Pollution Prevention Measures (ft^2)

Input: (Pick data from drop down lists or enter calculated values)

A_r =	2,357	ft^2
K [7] =	1	

Drop down Lists

Select hydrologic soil type within tributary area [8] =	D: 0 - 0.05 in/hr infiltration (transmission) rate
Select predevelopment ground cover description [5] =	Pasture, grassland, range - Good (>75% ground cover, lightly or occasionally grazed)
Select post development ground cover description [5] =	Urban districts - Commercial and business
CN_{PRE} =	80
CN_{POST} =	95
OR Composite Predevelopment CN [9] =	
Composite Post development CN [9] =	

Solution:

Pre Development Storm Water Runoff Volume

S_{PRE}= 2.50 in

$$S_{PRE} = \frac{1000}{80} - 10$$

Where:
S= Pre development potential maximum retention after runoff (in).

Q_{PRE}= 0.00503 ft

$$Q_{PRE} = \frac{[(0.92*1.00)-(0.2*2.50)]^2}{[(0.92*1.00)+(0.8*2.50)]} \times \frac{1ft}{12in}$$

Q= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

V_{PRE}= 11.86 ft^3

V_{PRE}= (0.00503)(2,357)

V= Pre Development Volume of Storm Water Generated (ft^3)

Post Development Storm Water Runoff Volume

S_{POST}= 0.53 in

$$S_{POST} = \frac{1000}{95} - 10$$

Where:
S= Post development potential maximum retention after runoff (in).

Q_{POST}= 0.04108 ft

$$Q_{POST} = \frac{[(0.92*1.00)-(0.2*0.53)]^2}{[(0.92*1.00)+(0.8*0.53)]} \times \frac{1ft}{12in}$$

Q= *Q in feet of depth as defined by the "Urban Hydrology For Small Watersheds" TR-55 Manual.*

V_{POST}= 96.83 ft^3

V_{POST}= (0.04108)(2,357)

V= Post Development Volume of Storm Water Generated (ft^3)

Solution: Volume Capture Requirement

Increase in volume of storm water that must be retained onsite (may be infiltrated or reused).

Delta Volume Capture= $(V_{POST}-V_{PRE})$

Delta Volume Capture= (96.83) - (11.86)

V_{DELTA}= 85 ft^3

Where:
Delta Volume Capture= The increase in volume of storm water generated by the 85th percentile 24 hour storm event due to development that must be retained onsite (may be infiltrated or reused).

LID BMP Sizing Tool: 100% Volume Capture Goal; V_{GOAL}

NOTE:
LID Sizing Tool only applicable for volume based BMPs. Not required if site requires treatment only.

INSTRUCTIONS:
The 100% volume capture sizing tool helps the designer appropriately size a LID BMP to achieve the design goal of 100% volume capture of the post development condition. Enter the percent porosity of the specified soil and depth below perforated pipe (if present). The width and length entries will need to be interactively adjusted until "Percent of Goal" equals 100%.

Formulas:

$V_{LID\ GOAL}=((V_{GOAL}))/(P)=$ 387 ft^3

$A_{LID\ GOAL}=(W)(L)=$ 230 ft^2

Where:
$V_{LID\ GOAL}$= Required volume of soil in LID BMP.
$A_{LID\ GOAL}$ = Footprint of LID BMP area for a given depth (below perforated pipe if present).

$V_{GOAL}=$ 97 ft^3

$$\text{Percent of Goal Achieved} = \frac{(D)(A_{LID\ GOAL})}{V_{LID\ GOAL}} \times 100$$

Where:
P= Porosity (enter as a decimal)
D= Depth below perforated pipe if present (in decimal feet)
W= Width (in decimal feet)
L= Length (in decimal feet)

Input:

P =	0.25	as a decimal
D =	1.8 ft	Below perforated pipe if present
W =	10.0 ft	
L =	23.0 ft	

← USED

Solution:

Percent of Goal Achieved = 104 %

$$= [(1.8 \times 230.0) / 387] \times 100$$
$$1.0$$

LID BMP Sizing Tool Delta Volume Capture Requirement: V_{DELTA}

NOTE:
LID Sizing Tool only applicable for volume based BMPs. Not required if site requires treatment only.

INSTRUCTIONS:
The Delta Volume Capture sizing tool helps the designer appropriately size a LID BMP to achieve the design requirement of the delta volume capture. Enter the percent of porosity of the specified soil and depth below perforated pipe (if present). The width and length entries will need to be interactively adjusted until "Percent of Requirement achieved" reaches 100%.

Formulas:

$V_{LID\ DELTA}=((V_{DELTA}))/(P)=$ 340 ft^3

$A_{LID\ DELTA}=(W)(L)=$ 230 ft^2

Where:
$V_{LID\ DELTA}$= Required volume of soil in LID BMP
$A_{LID\ DELTA}$ = Footprint of LID BMP area for a given depth (below perforated pipe if present).

$V_{DELTA}=$ 85 ft^3

$$\text{Percent of Requirement Achieved} = \frac{(D)(A_{LID\ DELTA})}{V_{LID\ DELTA}} \times 100$$

Where:
P= Porosity (enter as a decimal)
D= Depth below perforated pipe if present (in decimal feet)
W= Width (in decimal feet)
L= Length (in decimal feet)

Input:

P =	0.25	as a decimal
D =	1.8 ft	Below perforated pipe if present
W =	10.0 ft	
L =	23.0 ft	

Solution:

Percent of Requirement Achieved = 118 %

$$= [(1.8 \times 230.0) / 340] \times 100$$

Volume Capture Summary

Volume Under Perf Pipe

	Depth of Structural Soil Below TC (inches)	Depth of AC + AG (feet)	Structural Soil Depth Below 6" Perf Pipe (feet)	Structural Soil Area (sq feet)	Planter Volume (cubic feet)	Void Space (cubic feet)	Void Volume (cubic feet)	Storm Water Calculator Volume (cubic feet)	
TRIB 1							AVAILABLE	REQUIRED	
Area A	47	1.05	2.02	700	1412	0.25	353	313	
Area B	43	1.7	1.03	2280	2356	0.25	589	524	
Area C	47	1.05	2.02	560	1129	0.25	282	254	
TRIB 2									
Area D	N/A	N/A	1.50	207	311	0.25	78	70	
TRIB 3									
Area E	N/A	N/A	1.00	70	70	0.25	18	16	plus treatment
TRIB 4									
Area F	N/A	N/A	1.75	230	403	0.25	101	97	

Area E Swale runoff Factors

Estimated C-Factor

	C-Factor	Area (SF)	
Concrete	0.8		
Asphalt	0.7	1600	1120
Pervious Concrete	0.6		
Cobbles	0.6		
Pervious Asphalt	0.55		
natural stone without Grout	0.25		
Turf Block	0.15		
Brick without Grout	0.13		
Unit Pavers on sand	0.1		
Crushed Aggregate	0.1		
Grass	0.1	3567	356.7
Grass over Porous Plastic	0.05		
Gravel over Porous Plastic	0.05		

1476.7 1476.7/5167 = 0.285 = C C = 0.30

use C=0.45 IN SWALE CALCULATOR TO MATCH Q = 0.01

TREATMENT CALCULATIONS

BkF
ENGINEERS · SURVEYORS · PLANNERS

874 North Wright Road
Job No: 20109009
Date: 7/29/2013
Tributary Area Label: Trib #3, Area E

VEGETATED SWALE CALCULATION

Vegetated Swales are designed to reduce storm water velocity, encourage infiltration and filter storm water by providing contact time with planting and through evapotranspiration. This vegetated swale computation has been prepared in general conformance with the Low Impact Development (LID) Technical Design Manual developed for the Santa Rosa area and unincorporated areas of Sonoma County.

Computation of Treatment Flow

According to the LID Technical Design Manual, the rainfall intensity that occurs during the 85th percentile mean annual 24-hour storm event is 0.2-inches per hour and does not vary by type of flow based treatment control or time of concentration. The flow required to be treated by this manual is calculated using the following expression:

$$Q = (0.2)(C)(A)(K)$$

Where:
Q = Design flow rate required to be treated (cfs)
C = Watershed runoff coefficient for the developed condition
A = Project area that drains to the treatment control (acres)
p = Seasonal precipitation from the SCWA flood control design criteria
K = Seasonal precipitation factor = p/30

C = 0.45
A = 0.12 acres
p = 30 inches

K = 30/30=1.00

Q = (0.2)(0.45)(0.12)(1.00)

Q = **0.0108** cfs

Computation of Treatment Size

Left Slope (H / V) =	3.00	ft/ft	Right Slope (H / V) =	3.00	ft/ft
Swale Bed width, b =	2.00	ft	Swale Slope, s =	0.010	ft/ft
Treatment width, W =	2.30	ft	Manning's n =	0.250	

Depth of Flow, d =	0.070	ft = 0.8 inches ≤ 4 inches
Storm Water Velocity =	0.086	ft/s
Cross-sectional area, A =	0.127	ft^2
Wetted Perimeter, P =	2.314	ft^2
Hydraulic Radius, R =	0.055	ft

Manning's Equation:

$$Q = \frac{(1.49)(A)(R)^{2/3}(s)^{1/2}}{n}$$

Q = Treatment flow rate (cfs)
A = Cross-sectional area (ft^2)
R = Hydraulic Radius = A/P (ft)
P = Wetted Perimeter (ft)
s = Channel slope (ft/ft)
n = Manning's roughness coefficient

Calculated Design Flowrate, Q (cfs) = $\frac{(1.49)(0.127)(0.055)^{(⅔)}(0.010)^{(½)}}{(0.250)}$

Q (cfs) = 0.0109 cfs

Minimum required contact time, t (min) = 12.0

Minimum length of vegetated swale to achieve contact time L (ft) = (0.086 ft/s)(12.0min)(60 s/min)

L = **62** ft

BMP SELECTION TABLES

BMP Selection Table

Tributary No. 1 Area A, B, & C

	Best Management Practice (BMP)	Detail Sheet	Detail Title	Can be used with...	High Ground Water	Contamination	Slope Constraints	Achieves...	Treatment	Volume Capture	Pollution Prevention Credit	BMP in priority selected?	Yes	No	Explanation of selection	Other notes:
Universal LID Features- to be considered on all projects.	Living Roof	N/A	N/A		x	x	x		x	x				X		
	Rainwater Harvesting	N/A	N/A		x	x	x			x				X		
	Interceptor Trees	N/A	N/A		x	x	x				x		x		2	
	Vegetated Buffer Strip	UN-01	Vegetated Buffer Strip								x			X		
	Bovine Terrace	UN-02	Bovine Terrace		x						x			X		
	Impervious Area Disconnection	N/A	N/A		x	x	x				x		x		1	

1. Limited to downspouts drain to pervious gutter.

2. interceptor trees will be incorporated into the project because it fits into the context of this site.

BMP Selection Table

Tributary No. 1 Area A, B, & C

	Best Management Practice (BMP)	Detail Sheet	Detail Title	Can be used with...	High Ground Water	Contamination	Slope Constraints	Achieves...	Treatment	Volume Capture	Pollution Prevention Credit	BMP in this priority selected?	Yes	No	Explanation of selection	Other notes:
Priority 1 and 1A BMPs- to be installed with no underdrains or liners. Must drain all stading water within 72 hours.	Rain Garden	P1-01	Rain Garden						x	x				X		
	Roadside Bioretention	P1-02	Roadside Bioretention - no C & G						x	x				X		
	Vegetated Swale-with Bioretention	P1-06	Swale with Bioretention						x	x				X		
	Constructed Wetlands	N/A	N/A						x	x				X		
	Infiltration Trench	P1-07	Infiltration Trench						x	x				X		

BMP Selection Table

Tributary No. 1 Area A, B, & C

	Best Management Practice (BMP)	Detail Sheet	Detail Title	Can be used with...	High Ground Water	Contamination	Slope Constraints	Achieves... Treatment	Volume Capture	Pollution Prevention Credit	BMP in this priority selected?	Yes	No	Explanation of selection	Other notes:
Priority 2 BMPs- with subsurface drains installed above the capture volume.	Rain Garden	P2-01	Rain Garden					x	x				X		
	Roadside Bioretention	P2-02	Roadside Bioretinton - Flush Design Roadside					x	x			X		1	
		P2-03	Roadside Bioretenion- Contiguous SW					x	x			X		1	
		P2-04	Roadside Bioretenion- Curb Opening					x	x				X		
		P2-05	Roadside Bioretenion- No C & G					x	x				X		
	Pervious Pavement	P2-06	Vegetated Buffer Strip					x	x				X		
	Constructed Wetlands	N/A	N/A					x	x				X		

1. Roadside bio-retention proposed as best use of class C, D soils in this case.

BMP Selection Table

Tributary No. 1 Area A, B, & C

	Best Management Practice (BMP)	Detail Sheet	Detail Title	Can be used with...	High Ground Water	Contamination	Slope Constraints	Achieves...	Treatment	Volume Capture	Pollution Prevention Credit	BMP in this priority selected?	Yes	No	Explanation of selection	Other notes:
Priority 3 BMPs- installed with subdrains and/or impermeable liner. Does not achieve volume capture and must be used as part of a treatment train.	Rain Garden	P3-01	Rain Garden		x	x	x		x					X		
	Bioretention	P3-02	Roadside Bioretinton - Flush Design Roadside		x	x	x		x					X		
		P3-03	Roadside Bioretenion- Contiguous SW		x	x	x		x					X		
		P3-04	Roadside Bioretenion- Curb Opening		x	x	x		x					X		
		P3-05	Roadside Bioretenion- No C & G		x	x	x		x	x				X		
	Flow Through Planters													X		
	Pervious Pavement	P1-04	Vegetated Buffer Strip		x	x	x		x	x				X		
	Vegetated Swale	P3-07	Vegetated Swale		x	x	x		x	x				X		

BMP Selection Table

Tributary No. 1 Area A, B, & C

	Best Management Practice (BMP)	Can be used with...	High Ground Water	Contamination	Slope Constraints	Achieves...	Treatment	Volume Capture	Pollution Prevention Credit	BMP in this priority selected?	Yes	No	Explanation of selection	Other notes:
Priority 4 BMPs- does not achieve volume capture and must be used as part of a treatment train.	Tree Filter Unit		x	x	x		x					X		
	Modular Bioretention		x	x	x		x					X		
Priority 5 BMPs- does not achieve volume capture and must be used as part of a treatment train.	Chambered Separator Units		x	x	x		x					X		
	Centrifugal Separator Units		x	x	x		x					X		
	Trash Excluders		x	x	x		x					X		
	Filter Inserts		x	x	x		x					X		
Priority 6 BMPs-	Offset Program						N/A	N/A	N/A			X		
Other	Detention		x									X		

BMP Selection Table

Tributary No. 2 Area D

	Best Management Practice (BMP)	Detail Sheet	Detail Title	Can be used with...	High Ground Water	Contamination	Slope Constraints	Achieves...	Treatment	Volume Capture	Pollution Prevention Credit	BMP in priority selected?	Yes	No	Explanation of selection	Other notes:
Universal LID Features- to be considered on all projects.	Living Roof	N/A	N/A		x	x	x		x	x				X		
	Rainwater Harvesting	N/A	N/A		x	x	x			x				X		
	Interceptor Trees	N/A	N/A		x	x	x				x			X		
	Vegetated Buffer Strip	UN-01	Vegetated Buffer Strip								x		X		1	
	Bovine Terrace	UN-02	Bovine Terrace		x						x			X		
	Impervious Area Disconnection	N/A	N/A		x	x	x				x			X		

1. Vegetated Buffer Strip will be incorporated into the project because it fits into the context of this site.

BMP Selection Table

Tributary No. 2 Area D

	Best Management Practice (BMP)	Detail Sheet	Detail Title	Can be used with...	High Ground Water	Contamination	Slope Constraints	Achieves...	Treatment	Volume Capture	Pollution Prevention Credit	BMP in this priority selected?	Yes	No	Explanation of selection	Other notes:
Priority 1 and 1A BMPs- to be installed with no underdrains or liners. Must drain all stading water within 72 hours.	Rain Garden	P1-01	Rain Garden					x	x					X		
	Roadside Bioretention	P1-02	Roadside Bioretention - no C & G					x	x					X		
	Vegetated Swale-with Bioretention	P1-06	Swale with Bioretention					x	x					X		
	Constructed Wetlands	N/A	N/A					x	x					X		
	Infiltration Trench	P1-07	Infiltration Trench					x	x				X		1	

1. Infiltration trench will be incorporated into the project because it fits into the context of this site.

BMP Selection Table

Tributary No. 2 Area D

	Best Management Practice (BMP)	Detail Sheet	Detail Title	Can be used with...	High Ground Water	Contamination	Slope Constraints	Achieves...	Treatment	Volume Capture	Pollution Prevention Credit	BMP in this priority selected?	Yes	No	Explanation of selection	Other notes:
Priority 2 BMPs- with subsurface drains installed above the capture volume.	Rain Garden	P2-01	Rain Garden						x	x				X		
	Roadside Bioretention	P2-02	Roadside Bioretinton - Flush Design Roadside						x	x				X		
		P2-03	Roadside Bioretenion- Contiguous SW						x	x				X		
		P2-04	Roadside Bioretenion- Curb Opening						x	x				X		
		P2-05	Roadside Bioretenion- No C & G						x	x				X		
	Pervious Pavement	P2-06	Vegetated Buffer Strip						x	x				X		
	Constructed Wetlands	N/A	N/A						x	x				X		

BMP Selection Table

Tributary No. 2 Area D

	Best Management Practice (BMP)	Detail Sheet	Detail Title	Can be used with...	High Ground Water	Contamination	Slope Constraints	Achieves...	Treatment	Volume Capture	Pollution Prevention Credit	BMP in this priority selected?	Yes	No	Explanation of selection	Other notes:
Priority 3 BMPs- installed with subdrains and/or impermeable liner. Does not achieve volume capture and must be used as part of a treatment train.	Rain Garden	P3-01	Rain Garden		x	x	x	x						X		
	Bioretention	P3-02	Roadside Bioretinton - Flush Design Roadside		x	x	x	x						X		
		P3-03	Roadside Bioretenion- Contiguous SW		x	x	x	x						X		
		P3-04	Roadside Bioretenion- Curb Opening		x	x	x	x						X		
		P3-05	Roadside Bioretenion- No C & G		x	x	x	x	x					X		
	Flow Through Planters													X		
	Pervious Pavement	P1-04	Vegetated Buffer Strip		x	x	x	x	x					X		
	Vegetated Swale	P3-07	Vegetated Swale		x	x	x	x	x					X		

BMP Selection Table

Tributary No. 2 Area D

	Best Management Practice (BMP)	Can be used with...	High Ground Water	Contamination	Slope Constraints	Achieves...	Treatment	Volume Capture	Pollution Prevention Credit	BMP in this priority selected?	Yes	No	Explanation of selection	Other notes:
Priority 4 BMPs- does not achieve volume capture and must be used as part of a treatment train.	Tree Filter Unit		x	x	x		x					X		
	Modular Bioretention		x	x	x		x					X		
Priority 5 BMPs- does not achieve volume capture and must be used as part of a treatment train.	Chambered Separator Units		x	x	x		x					X		
	Centrifugal Separator Units		x	x	x		x					X		
	Trash Excluders		x	x	x		x					X		
	Filter Inserts		x	x	x		x					X		
Priority 6 BMPs-	Offset Program						N/A	N/A	N/A			X		
Other	Detention		x									X		

BMP Selection Table

Tributary No. 3 & 4 Area E & F

	Best Management Practice (BMP)	Detail Sheet	Detail Title	Can be used with...	High Ground Water Contamination	Slope Constraints	Achieves... Treatment	Volume Capture	Pollution Prevention Credit	BMP in priority selected? Yes	No	Explanation of selection	Other notes:
Universal LID Features- to be considered on all projects.	Living Roof	N/A	N/A		x x x		x x				X		
	Rainwater Harvesting	N/A	N/A		x x x		x				X		
	Interceptor Trees	N/A	N/A		x x x			x			X		
	Vegetated Buffer Strip	UN-01	Vegetated Buffer Strip					x			X		
	Bovine Terrace	UN-02	Bovine Terrace		x			x			X		
	Impervious Area Disconnection	N/A	N/A		x x x			x			X		

BMP Selection Table

Tributary No. 3 & 4 Area E & F

	Best Management Practice (BMP)	Detail Sheet	Detail Title	Can be used with...	High Ground Water	Contamination	Slope Constraints	Achieves...	Treatment	Volume Capture	Pollution Prevention Credit	BMP in this priority selected?	Yes	No	Explanation of selection	Other notes:
Priority 1 and 1A BMPs- to be installed with no underdrains or liners. Must drain all stading water within 72 hours.	Rain Garden	P1-01	Rain Garden					x	x					X	1	
	Roadside Bioretention	P1-02	Roadside Bioretention - no C & G					x	x					X		
	Vegetated Swale-with Bioretention	P1-06	Swale with Bioretention					x	x				X			
	Constructed Wetlands	N/A	N/A					x	x					X		
	Infiltration Trench	P1-07	Infiltration Trench					x	x					X		

1. Vegetated Swale-with Bioretention will be incorporated into the project because it fits into the context of this site.

BMP Selection Table

Tributary No. 3 & 4 Area E & F

	Best Management Practice (BMP)	Detail Sheet	Detail Title	Can be used with...	High Ground Water Contamination	Slope Constraints	Achieves... Treatment	Volume Capture	Pollution Prevention Credit	BMP in this priority selected? Yes	No	Explanation of selection	Other notes:
Priority 2 BMPs- with subsurface drains installed above the capture volume.	Rain Garden	P2-01	Rain Garden				x	x			X		
	Roadside Bioretention	P2-02	Roadside Bioretinton - Flush Design Roadside				x	x			X		
		P2-03	Roadside Bioretenion- Contiguous SW				x	x			X		
		P2-04	Roadside Bioretenion- Curb Opening				x	x			X		
		P2-05	Roadside Bioretenion- No C & G				x	x			X		
	Pervious Pavement	P2-06	Vegetated Buffer Strip				x	x			X		
	Constructed Wetlands	N/A	N/A				x	x			X		

BMP Selection Table

Tributary No. 3 & 4 Area E & F

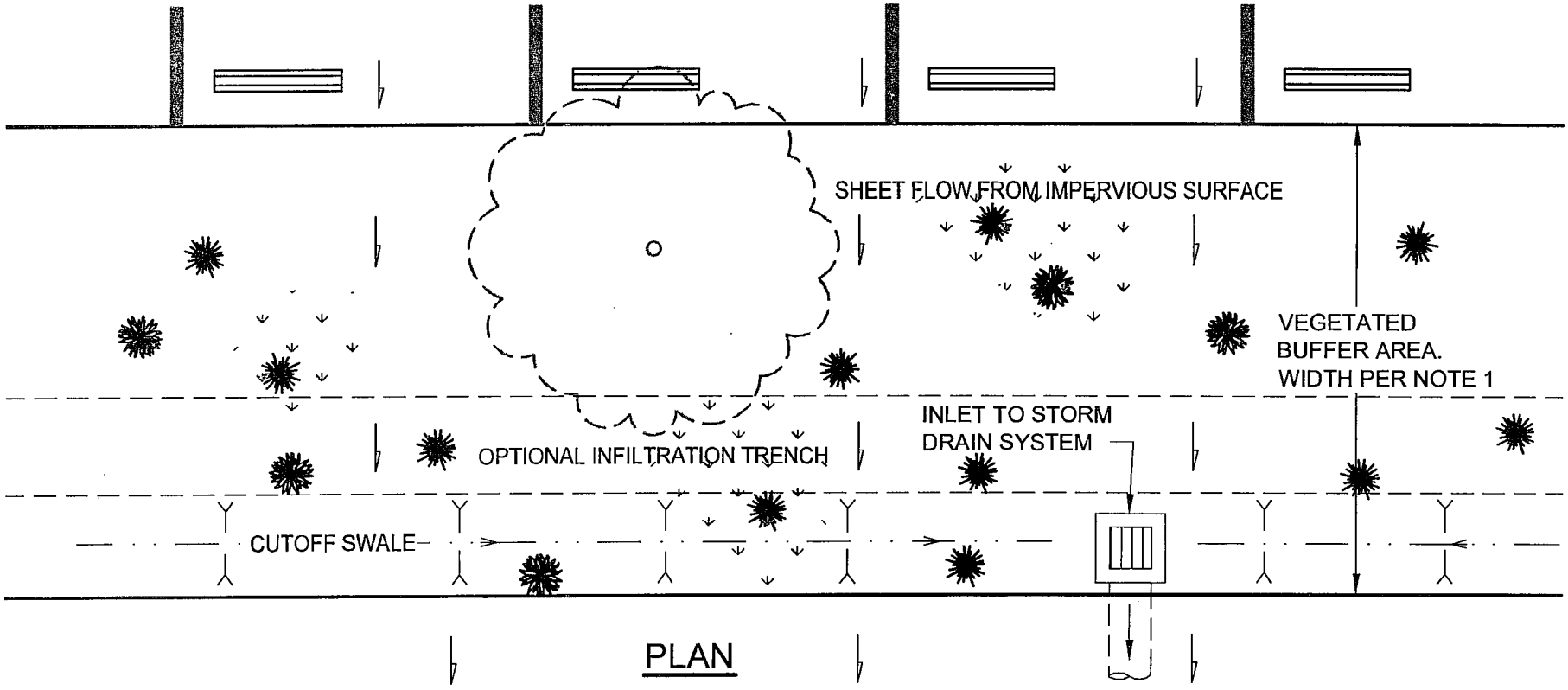
	Best Management Practice (BMP)	Detail Sheet	Detail Title	Can be used with...	High Ground Water	Contamination	Slope Constraints	Achieves...	Treatment	Volume Capture	Pollution Prevention Credit	BMP in this priority selected?	Yes	No	Explanation of selection	Other notes:
Priority 3 BMPs- installed with subdrains and/or impermeable liner. Does not achieve volume capture and must be used as part of a treatment train.	Rain Garden	P3-01	Rain Garden		x	x	x		x					X		
	Bioretention	P3-02	Roadside Bioretinton - Flush Design Roadside		x	x	x		x					X		
		P3-03	Roadside Bioretenion- Contiguous SW		x	x	x		x					X		
		P3-04	Roadside Bioretenion- Curb Opening		x	x	x		x					X		
		P3-05	Roadside Bioretenion- No C & G		x	x	x		x	x				X		
	Flow Through Planters													X		
	Pervious Pavement	P1-04	Vegetated Buffer Strip		x	x	x		x	x				X		
	Vegetated Swale	P3-07	Vegetated Swale		x	x	x		x	x				X		

BMP Selection Table

Tributary No. 3 & 4 Area E & F

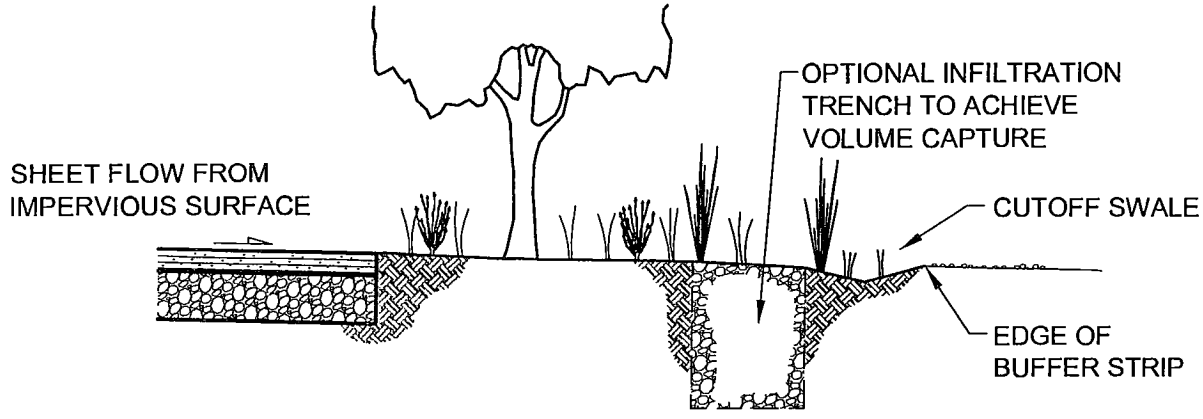
	Best Management Practice (BMP)	Can be used with...	High Ground Water	Contamination	Slope Constraints	Achieves...	Treatment	Volume Capture	Pollution Prevention Credit	BMP in this priority selected?	Yes	No	Explanation of selection	Other notes:
Priority 4 BMPs- does not achieve volume capture and must be used as part of a treatment train.	Tree Filter Unit		x	x	x		x					X		
	Modular Bioretention		x	x	x		x					X		
Priority 5 BMPs- does not achieve volume capture and must be used as part of a treatment train.	Chambered Separator Units		x	x	x		x					X		
	Centrifugal Separator Units		x	x	x		x					X		
	Trash Excluders		x	x	x		x					X		
	Filter Inserts		x	x	x		x					X		
Priority 6 BMPs-	Offset Program						N/A	N/A	N/A			X		
Other	Detention		x									X		

SELECTED BMP'S



PLAN

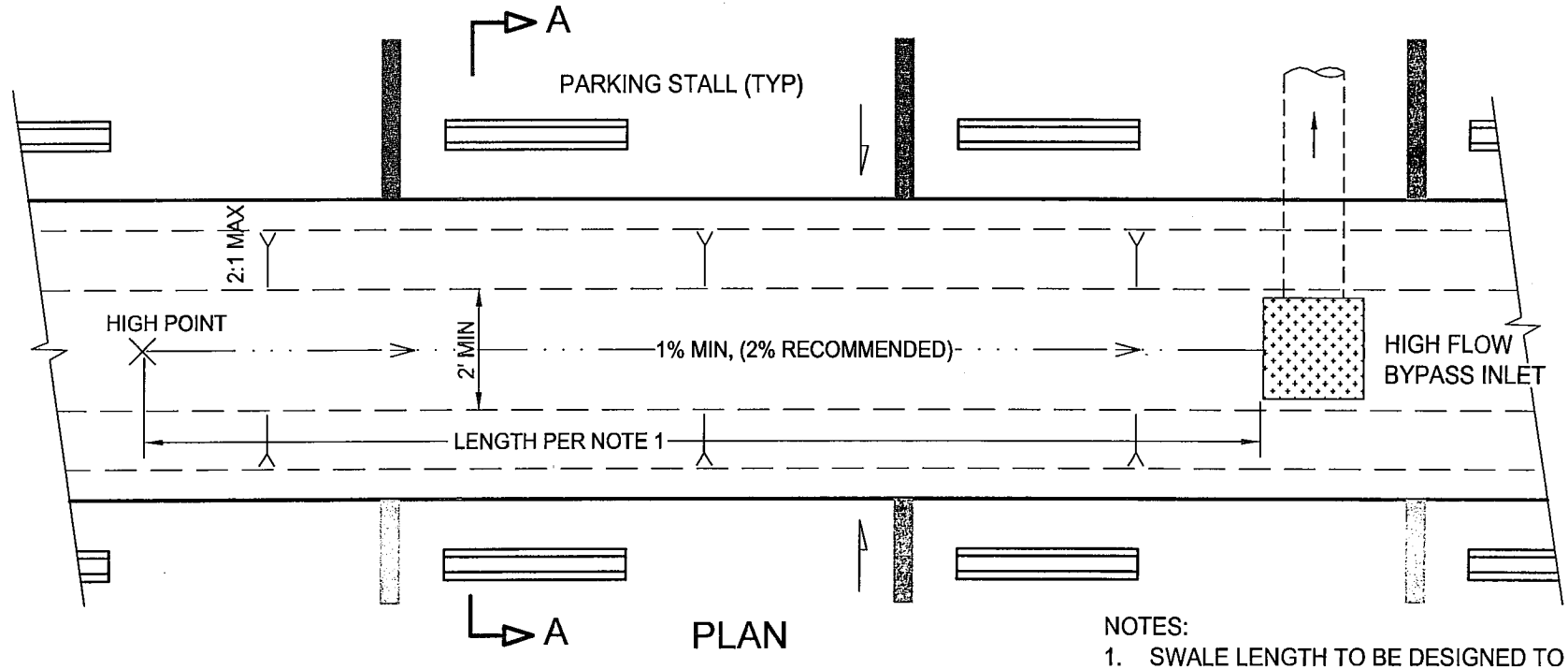
NOTES:
1. 15' MINIMUM WIDTH. 15% MAXIMUM SLOPE



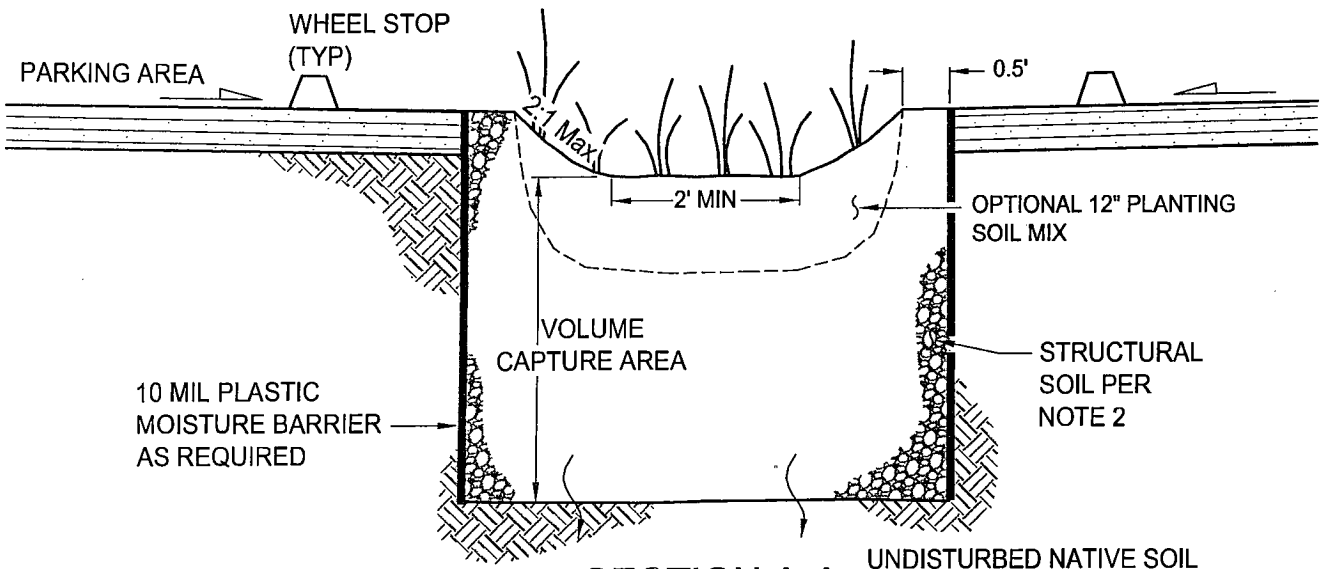
TYPICAL SECTION

Not to Scale

PRIORITY 1 VEGETATED BUFFER STRIP		
SCALE: *NONE*	DATE: *05/10/11*	
DWN. *DIT* CHK. *HH*	SHEET 1 of 1	P1–04



PLAN



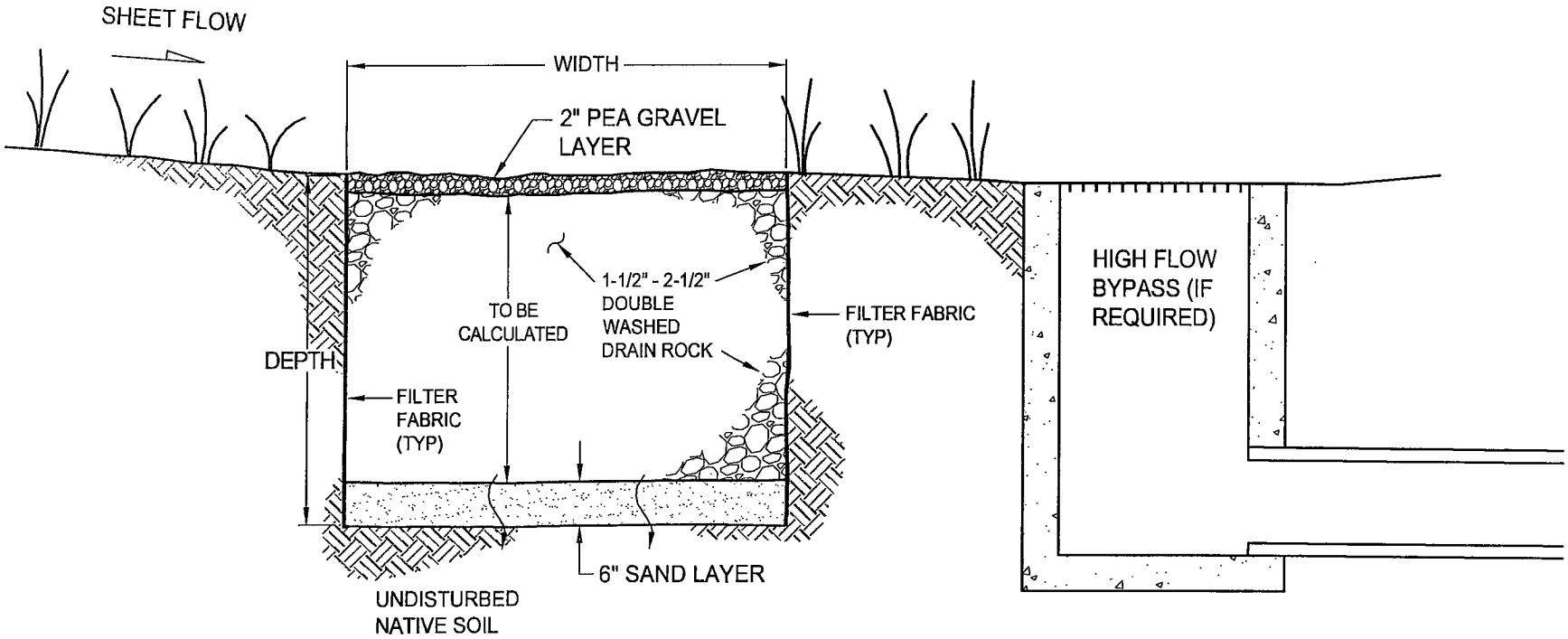
SECTION A-A

NOTES:

1. SWALE LENGTH TO BE DESIGNED TO PROVIDE 12 MINUTES OF CONTACT TIME WHEN FLOW ENTERS UNIFORMLY ALONG LENGTH.
   OR
   PROVIDE 5 MINUTES OF CONTACT TIME IF 90% OR MORE OF THE FLOW ENTERS AT THE UPSTREAM END.
2. STRUCTURAL SOIL UNLESS OTHERWISE APPROVED BY GEOTECHNICAL ENGINEER AND ACCEPTED BY GOVERNING AGENCY.
3. SWALE MUST CONVEY DESIGN FLOWS PER GOVERNING AGENCY DESIGN STANDARDS.
4. PARKING ISLAND WIDTH PER APPLICABLE GOVERNING AGENCY STANDARDS.

Not to Scale

PRIORITY 1 SWALE WITH BIORETENTION		
SCALE: *NONE*	DATE: *05/10/11*	
DWN. *DIT* CHK. *HH*	SHEET 1 of 1	P1–06

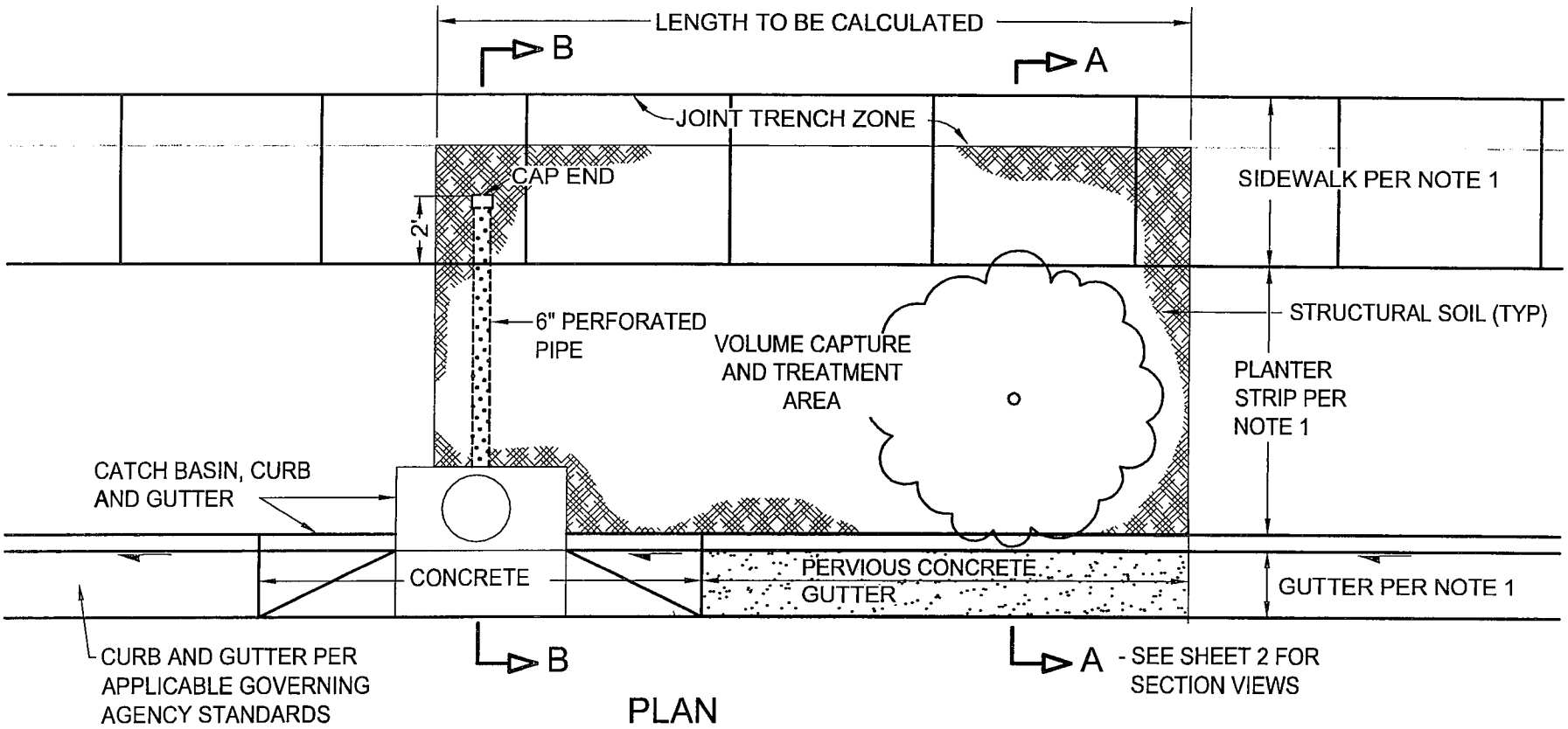


NOTES:

1. DEPTH SHALL NOT EXCEED EITHER WIDTH OR LENGTH, WHICHEVER IS GREATER.
2. TO BE USED AS PART OF A TREATMENT TRAIN THAT PROVIDES TREATMENT.
3. ALL SURFACE WATER MUST DRAIN WITHIN 72 HOURS TO PREVENT MOSQUITO BREEDING.

Not to Scale

PRIORITY 1 INFILTRATION TRENCH		
SCALE: *NONE*	DATE: *05/10/11*	
DWN. *DIT* CHK. *HH*		P1–07



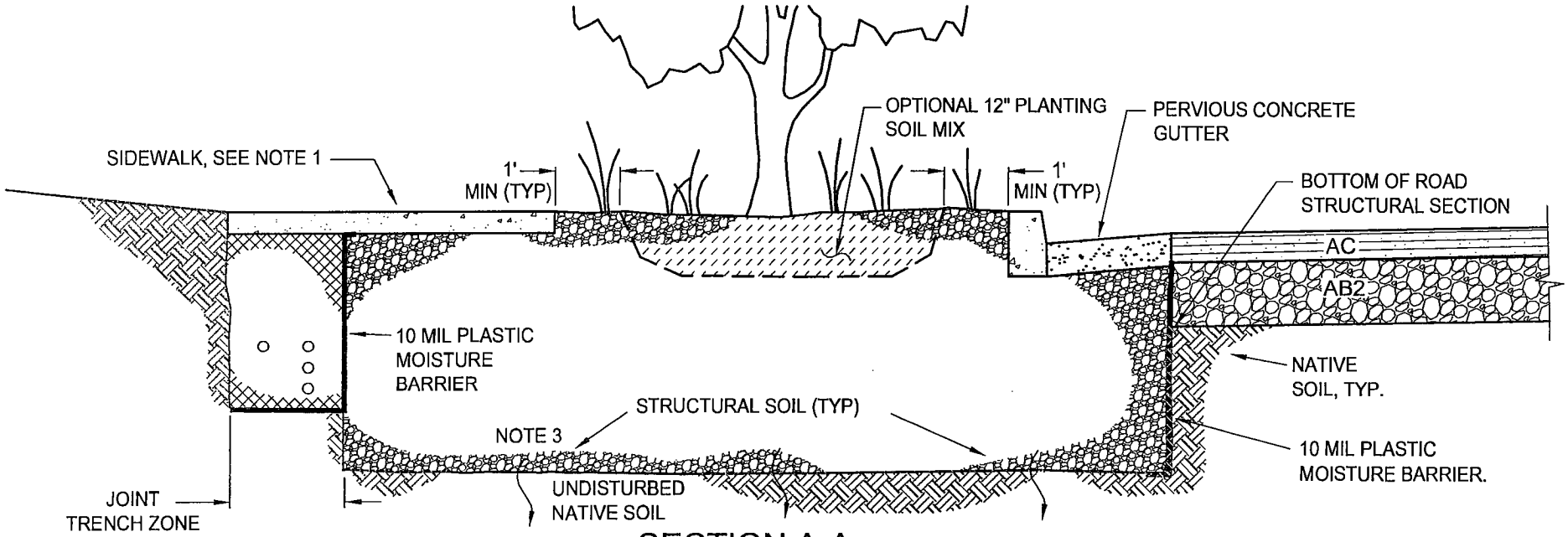
PLAN

NOTES:

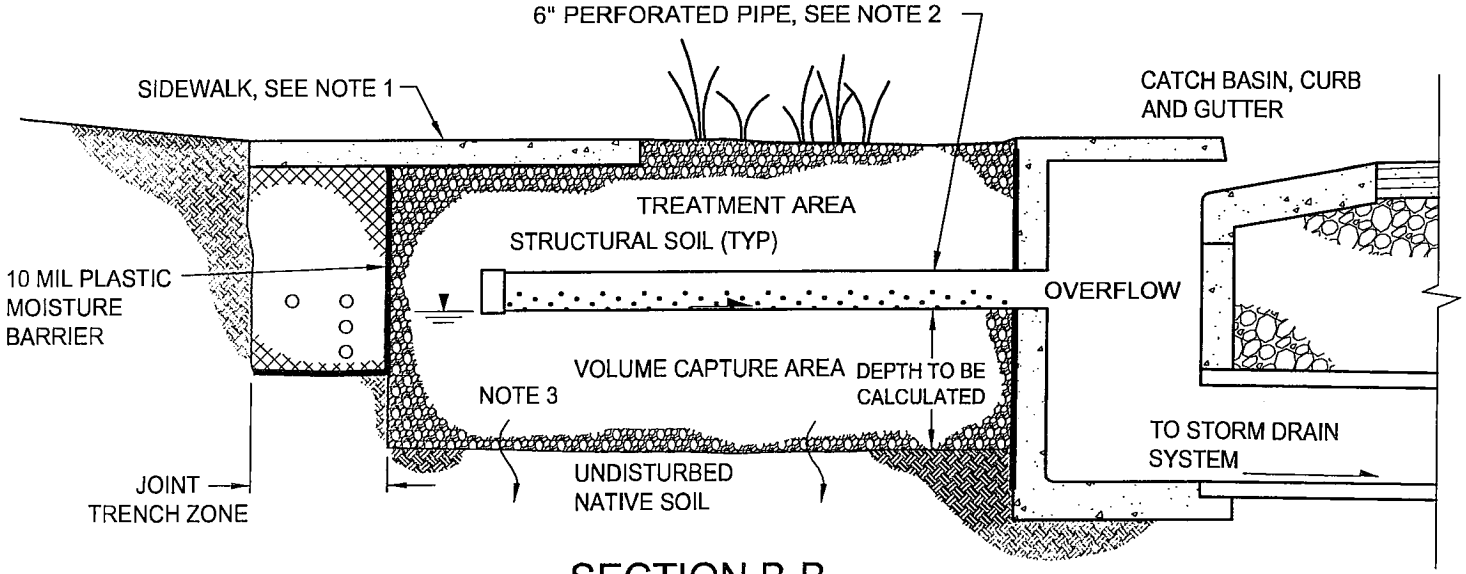
1. SIDEWALK AND PLANTER WIDTHS PER APPLICABLE GOVERNING AGENCY STANDARDS (TYP).

Not to Scale

PRIORITY 2 ROADSIDE BIORETENTION - FLUSH DESIGN		
SCALE: *NONE*	DATE: *05/10/11*	
DWN. *DIT* CHK. *HH*	SHEET 1 of 2	P2-02



SECTION A-A



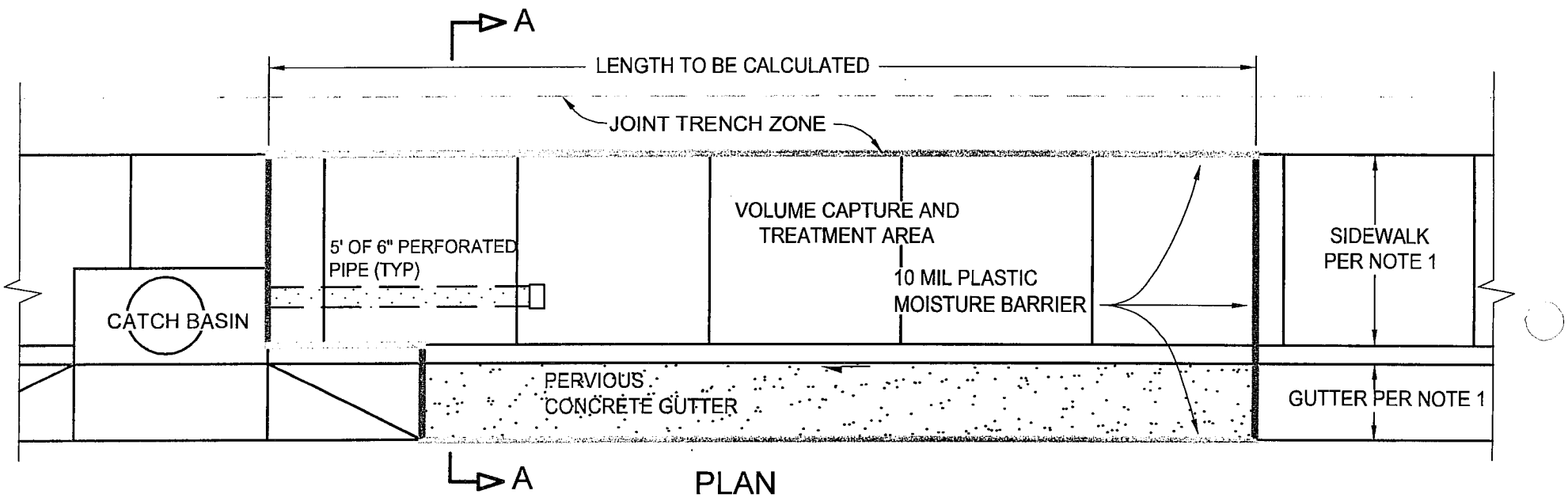
SECTION B-B

Not to Scale

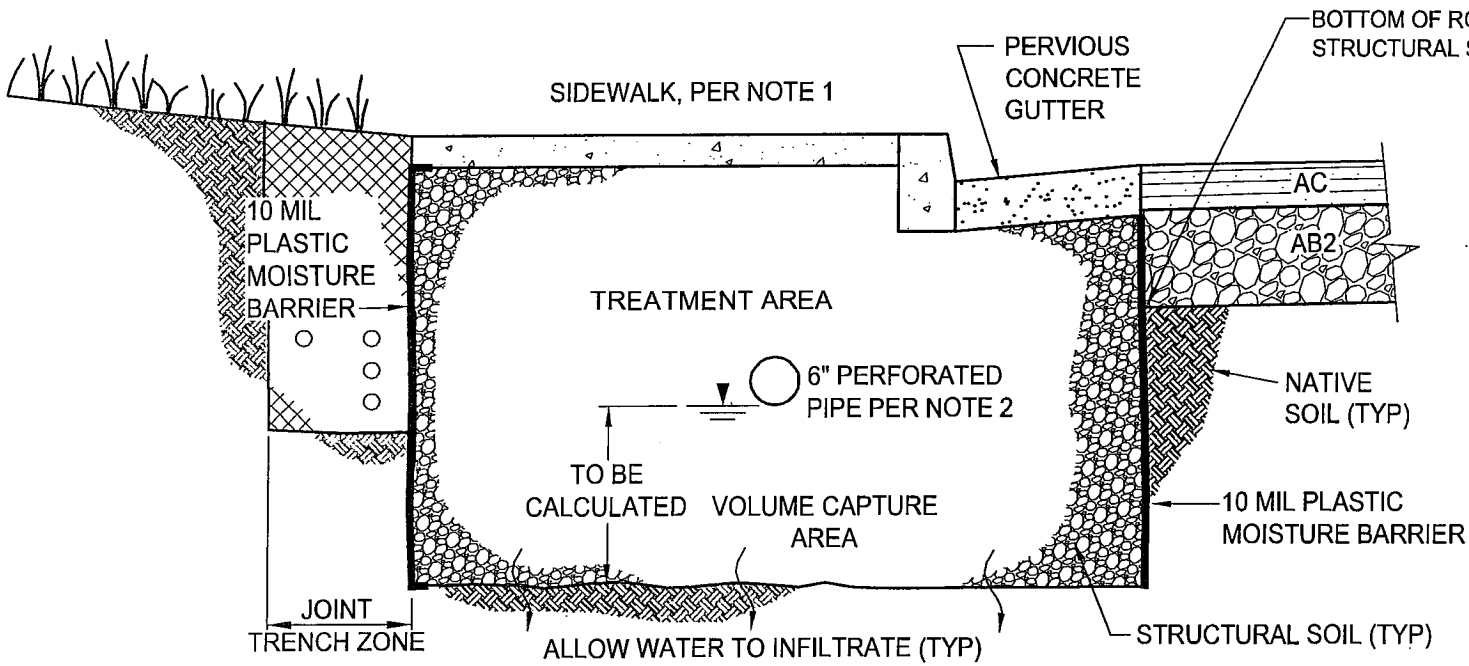
NOTES:

1. SIDEWALK AND PLANTER WIDTHS PER APPLICABLE GOVERNING AGENCY STANDARDS (TYP).
2. TOP OF 6" PERFORATED PIPE TO BE SET 6" BELOW BOTTOM OF ROAD STRUCTURAL SECTION.
3. BOTTOM OPEN TO ALLOW INFILTRATION INTO NATIVE SOIL.

PRIORITY 2 ROADSIDE BIORETENTION - FLUSH DESIGN		
SCALE: *NONE*	DATE: *05/10/11*	
DWN. *DIT* CHK. *HH*	SHEET 2 of 2	P2-02



PLAN



SECTION A-A

Not to Scale

NOTE:

1. SIDEWALK AND CURB AND GUTTER WIDTHS PER APPLICABLE GOVERNING AGENCY STANDARDS (TYP).
2. TOP OF 6" PERFORATED PIPE TO BE SET 6" BELOW BOTTOM OF ROAD STRUCTURAL SECTION.

PRIORITY 2 ROADSIDE BIORETENTION - CONTIGUOUS SIDEWALK		
SCALE: *NONE*	DATE: *05/10/11*	
DWN. *DIT* CHK. *HH*	SHEET 1 of 1	P2-03

MAPS

MAPS

© BKF ENGINEERS

VICINITY MAP
NOT TO SCALE

PRELIMINARY
FOR STUDY PURPOSES ONLY
07/29/2013
DATE:
BONNIE A. DIEFENDORF RCE 24916

PROFESSIONAL ENGINEER * BONNIE ANN DIEFENDORF * R.C.E. 24916 * CIVIL * STATE OF CALIFORNIA

BKF
ENGINEERS / SURVEYORS / PLANNERS
235 TOSCHI CIRCLE SANTA ROSA, CA 95401
(707) 584-8600 FAX (707) 584-8339

874 NORTH WRIGHT ROAD/COMMERCIAL RETAIL
APN 035-063-001
SANTA ROSA, CALIFORNIA

PRELIMINARY STORM WATER MANAGEMENT PLAN

No.	Revisions

Date: JUN 2013
Scale: 1"=20'
Design: BAD
Drawn: AEG
Approved: GNH
Job No: 20109009

Drawing Number:

1 OF 1

Plot: Jul 29, 2013 at 11:05am

109009_STORMWATER PLAN.dwg

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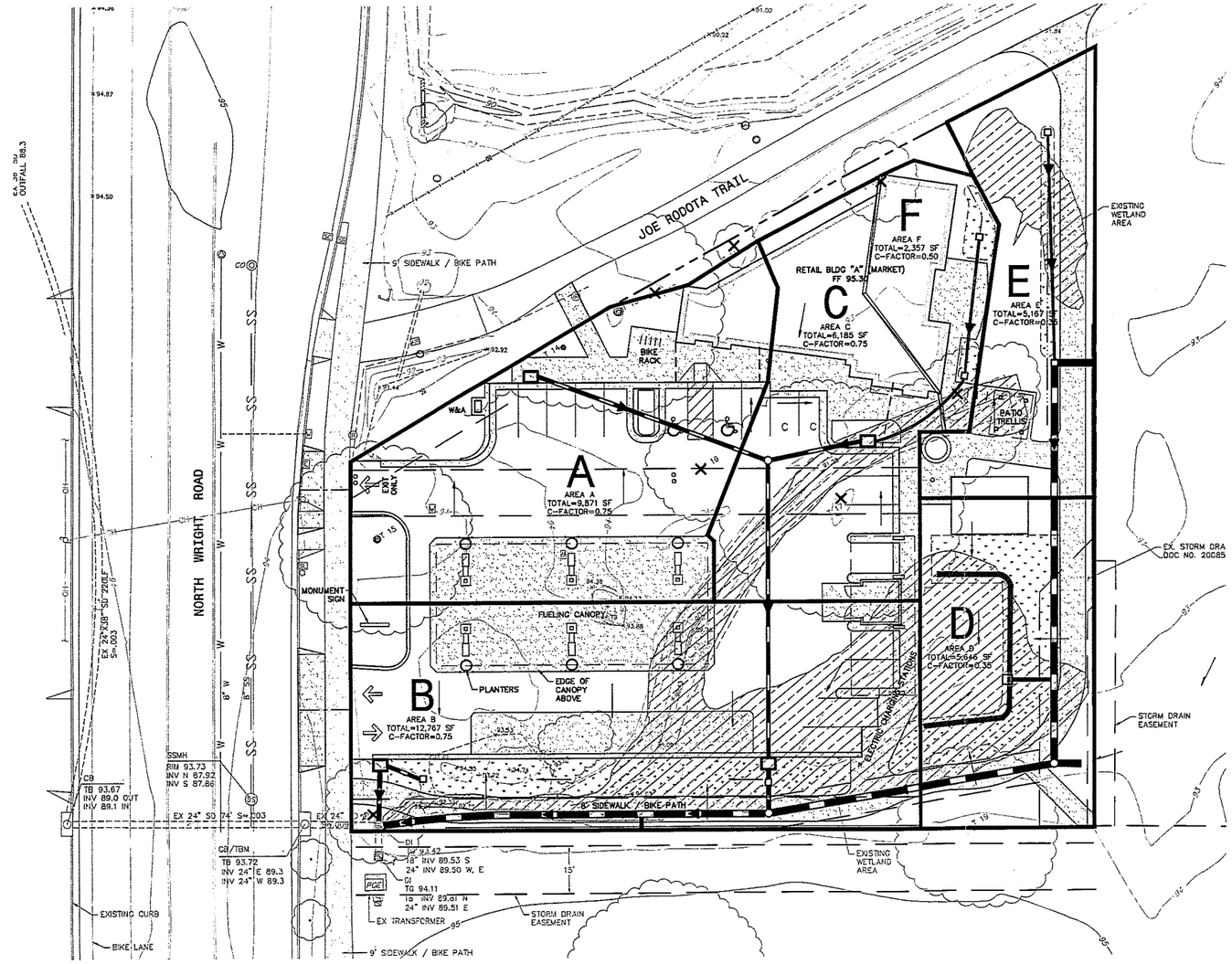

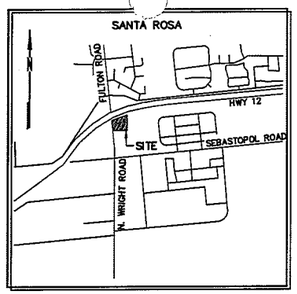

VICINITY MAP
NOT TO SCALE

UNITED STATES DEPARTMENT OF AGRICULTURE SOIL SURVEY ISSUED 1972 IDENTIFIES SOILS ON SITE AS CLAY AND LOAM. THESE SOILS ARE TYPICALLY CLASSIFIED AS LYING IN HYDROLOGIC SOIL GROUP "D" HAVING AN INFILTRATION RATE~.05IN/HR.

20 0 20 40
scale 1" = 20' feet

REGISTERED PROFESSIONAL ENGINEER * DONNIE A. DIEFENDORF R.C.E. 24916 * CIVIL * STATE OF CALIFORNIA

PRELIMINARY
FOR STUDY PURPOSES ONLY
07/29/2013
DATE:
DONNIE A. DIEFENDORF RCE 24916

874 NORTH WRIGHT ROAD/COMMERCIAL RETAIL
APN 035-083-001
SANTA ROSA, CALIFORNIA

HYDROLOGY MAP

No.	Revisions

Date: JUN 2013
Scale: 1"=20'
Design: BAD
Drawn: AEG
Approved: BAD
Job No: 20109009

Drawing Number:
1 OF 1

Plot: Jul 29, 2013 at 8:46am
109009_STORMWATER PLAN.dwg

JOB NO. 20109009

BkF
ENGINEERS
SURVEYORS
PLANNERS

HYDROLOGY PLAN

FOR

ELM TREE STATION

874 NORTH WRIGHT ROAD

Santa Rosa, CA

APN 035-063-001

JUNE 2013

REGISTERED PROFESSIONAL ENGINEER
BONNIE A. DIEFENDORF
No. C 24916
6-14-13
CIVIL
STATE OF CALIFORNIA

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CITY OF SANTA ROSA
P.O. Box 1678
Santa Rosa CA 95402

JUN 25 2013

DEPARTMENT OF
COMMUNITY DEVELOPMENT

GENERAL INFORMATION REGARDING THE HYDROLOGY

The area wide drainage is currently overland flow with numerous depressions which catch rainwater in pools and shallow swales. The lands to the east and south of this site generally flow in a westerly direction. A proposed tentative map of the easterly lands which is no longer in effect obtained storm drain easements over the project site and the neighboring Blue Gas site adjacent to the south property line of this project. Their plan was to construct two 24-inch storm drains through this project site and the Blue gas site to take the drainage to the existing 24-inch storm drain system in N. Wright Road. Not all of the lands east of this project drain in this direction, some drain north toward the Joe Rodota Trail, We have assumed that the lands will drain in this direction and that when they are developed to the General Plan density, additional storm drains may be required depending upon the development plan. This project proposes to provide 50% of the pipes anticipated with the previous tentative map picking up the existing drainage and the anticipated drainage based on the developed c-factors assumed for the easterly properties. Should those developed c-factors exceed those we have assumed, then the properties have easements to improve the storm drain infrastructure to suit that development.

PROJECT DESCRIPTION

This project is a new commercial development in an infill area. The commercial development is a market, automobile service station, an electric car recharging station and small commercial building.

Since this project proposes to impact an existing isolated wetlands area, a 401 clean water certification from the Regional Water Quality Control Board and 404 permit from the Army Corps of Engineers are required.

HYDROLOGY AND HYDRAULIC SIZING

The project uses the Rational Method where:

$Q = (K)(C)(i)(A)$

Where Q = Design flow rate(cfs)
K = Site specific precipitation factor (from the SCWA design criteria) K=1.0 for this site.
C = Watershed runoff coefficient for the developed condition
i = Rainfall Intensity (in/hr)
A = Project area (acres)

For the C factor used in the Hydraflow program, KC is used to provide the proper calculations. In this case, KC = 1.0xC = C

EXISTING HYDROLOGY
10 YR

The existing hydrology is based on overland flow without a defined channel until entering the N. Wright Road conduit system. The area has numerous ponding areas and no one channel to convey flows to or through the project site. A portion of the area to the south of the site enters the storm conduit system at N. Wright Road.
The existing flow for a 10-yr storm event is approximately 6.0 CFS. The pipes do not flow full.
The calculations follow.

RATIONAL METHOD DRAINAGE STUDY

By: B. DIEFENDORF Date 6-13-12 Subject ELM TREE STATION Sheet No. _____ of _____

Chkd. By P. DIEFENDORF Date 6-13-13 Storm Freq. 1 % 10 yr. Job. No. 20109009-10

Point of Conc.	Area	EL / Distance	Slope	v	Time of Conc. (in minutes) Travel Time	Time of Conc. (in minutes) Total Time	i	K	C	ΔA / A Total	KΔAC	ΣKΔAC	Q	Design	Remarks
(1)	A	98 / 400'			15	15	1.7	1.0	0.3	1.86 / 1.86	0.55	0.55	0.95	OVERLAND	
(2)	B	97 / 163'	0.006		5.6	20.6	1.44	1.0	~~0.4~~ 0.3	2.93 / 4.79	0.88	1.43	2.06	"	
(3)	C	96.3 / 287	0.002		10	30.6	1.17	1.0	0.3	4.39 / 9.18	1.32	2.75	3.22	"	
(4)	D_1	96 / 157	0.002		5.6	36.2	1.07	1.0	0.3	1.54 / 10.72	0.46	3.21	3.43	"	
(5)	E_1	/ 250	0.002		4.0	40.2	1.01	1.0	0.3	1.27 / 11.99	0.38	3.59	3.63	DIRT/GRASS CHANNEL	
(6)	E_2	/ 23'	0.01		—	40.2	1.01	1.0	0.9	1.12 / 13.11	1.01	4.60	4.64	24" SD	
(7)	E_3	/ 74'	0.004	3.0	0.4	40.6	1.01	1.0	0.9	0.73 / 13.84	0.66	5.26	5.31	24" SD	PARTIALLY FULL A=5.1SF
(8)	F	/ 222'	0.003	1.8	2.0	42.6	0.98	1.0	0.9	0.98 / 14.82	0.88	6.14	6.02	24 x 38"	SD

DEVELOPED HYDROLOGY
10 YR

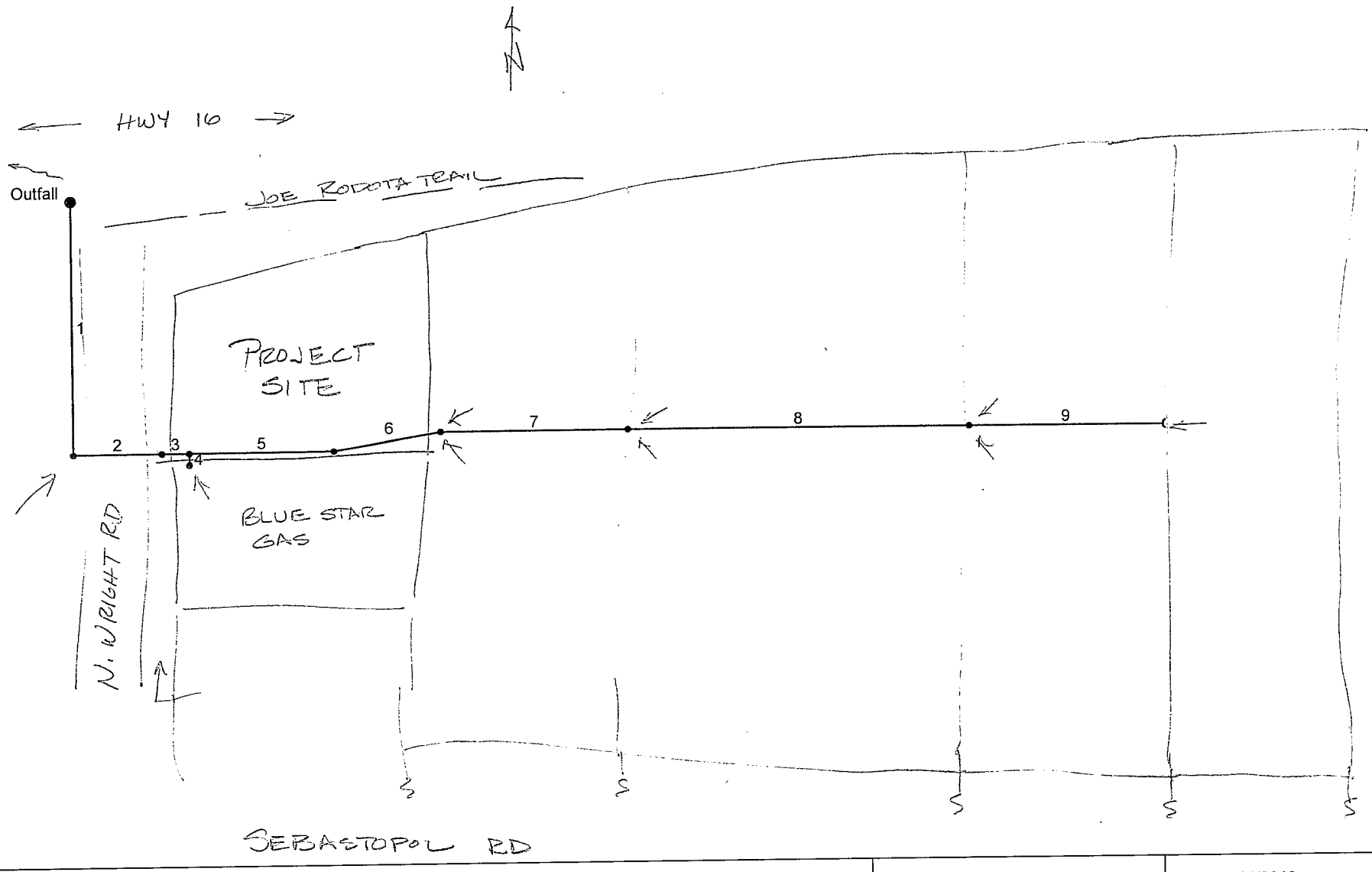
The general plan designation for the properties to the east of the project site vary from Low Density, 2-8 dwelling units per acre and open space, for the easterly two parcels, Medium Density, 8-18 dwelling units per acre, for the next two parcels with the southern portions commercial overlay, to commercial for those bordering N. Wright Road. We have used runoff factors (c-factors) for these parcels of 0.65, 0.75, and 0.90 respectively to determine the developed runoff. For the project site we have used 0.85 as the runoff factor based on the paving of paving and landscape treatment areas.

In reality, the storm drain systems to develop the easterly drainage basin area would be more complex and may involve open channels which tend to flow at different rates. We have selected a piping system using the shortest distance from our site to the upstream parcels and selected a 24-inch pipe at a slope of 0.3% to model the flows. The resultant flow rate for the developed system is Q= 17.58 cfs. The results indicate that the existing and proposed pipes can handle the anticipated flows.

The starting hydraulic grade line was taken from records at the Sonoma County Water Agency. The Courtside Village calculations determined the starting 10-yr HGL as 90.0 ft at the outfall of the 24"x38" storm drain (36" at outfall) into the east/west channel paralleling HWY 16. This was also used by the West Entry project for their calculations that were submitted by not completed before the project stopped.

The model calculations are attached.

Hydraflow Storm Sewers Extension for AutoCAD® Civil 3D® 2012 Plan



Project File: 20109009 TRIB 63 10YR DEV.stm	Number of lines: 9	Date: 6/14/2013

Storm Sewer Inventory Report

Line No.	Alignment				Flow Data				Physical Data								Line ID
	Dnstr Line No.	Line Length (ft)	Defl angle (deg)	Junc Type	Known Q (cfs)	Drng Area (ac)	Runoff Coeff (C)	Inlet Time (min)	Invert El Dn (ft)	Line Slope (%)	Invert El Up (ft)	Line Size (in)	Line Shape	N Value (n)	J-Loss Coeff (K)	Inlet/ Rim El (ft)	
1	End	220.0	90.0	Curb	0.00	0.98	0.90	7.0	88.30	0.32	89.00	24X38	Ell	0.014	1.50	93.67	
2	1	74.0	-90.0	Curb	0.00	0.73	0.90	7.0	89.10	0.27	89.30	24	Cir	0.014	0.50	93.73	
3	2	23.0	0.0	DrGrt	0.00	0.12	0.90	7.0	89.30	0.87	89.50	24	Cir	0.014	1.50	93.42	
4	3	10.0	90.0	DrGrt	0.00	1.12	0.90	7.0	89.50	0.10	89.51	24	Cir	0.014	1.00	94.11	
5	3	121.0	0.0	MH	0.00	1.15	0.85	7.0	89.50	0.30	89.86	24	Cir	0.014	0.21	94.00	
6	5	91.0	-10.0	MH	0.00	1.54	0.75	0.0	89.86	0.30	90.13	24	Cir	0.014	0.21	95.00	
7	6	157.0	10.0	MH	0.00	4.39	0.75	7.0	90.13	0.30	90.60	24	Cir	0.013	0.15	96.00	
8	7	287.0	0.0	MH	0.00	2.93	0.65	10.0	90.60	0.30	91.46	24	Cir	0.014	0.15	96.30	
9	8	163.0	0.0	Hdwl	0.00	1.86	0.65	10.0	91.46	0.30	91.95	24	Cir	0.014	1.00	97.00	

Project File: 20109009 TRIB 63 10YR DEV.stm

Number of lines: 9

Date: 6/14/2013

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1		17.58	24x38	Ell	220.0	88.30	89.00	0.318	90.00	90.36	n/a	90.88 i	End	Curb-Horiz
2		16.30	24	Cir	74.0	89.10	89.30	0.270	91.10*	91.55*	0.21	91.76	1	Curb-Horiz
3		15.30	24	Cir	23.0	89.30	89.50	0.870	91.76*	91.88*	0.55	92.43	2	DropGrate
4		2.56	24	Cir	10.0	89.50	89.51	0.100	92.43*	92.43*	0.01	92.44	3	DropGrate
5		13.70	24	Cir	121.0	89.50	89.86	0.298	92.43*	92.95*	0.06	93.01	3	Manhole
6		12.27	24	Cir	91.0	89.86	90.13	0.297	93.01*	93.32*	0.05	93.37	5	Manhole
7		10.63	24	Cir	157.0	90.13	90.60	0.299	93.37*	93.72*	0.03	93.74	6	Manhole
8		5.64	24	Cir	287.0	90.60	91.46	0.300	93.74*	93.95*	0.01	93.96	7	Manhole
9		2.55	24	Cir	163.0	91.46	91.95	0.301	93.96*	93.98*	0.01	93.99	8	OpenHeadwall

Project File: 20109009 TRIB 63 10YR DEV.stm

Number of lines: 9

Run Date: 6/14/2013

NOTES: Return period = 10 Yrs. ; *Surcharged (HGL above crown). ; i - Inlet control.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	220.0	0.98	14.82	0.90	0.88	11.19	7.0	17.5	1.6	17.58	21.49	4.71	24x38 e	0.32	88.30	89.00	90.00	90.36	93.00	93.67	
2	1	74.0	0.73	13.84	0.90	0.66	10.31	7.0	17.3	1.6	16.30	10.92	5.19	24	0.27	89.10	89.30	91.10	91.55	93.67	93.73	
3	2	23.0	0.12	13.11	0.90	0.11	9.65	7.0	17.2	1.6	15.30	19.58	4.87	24	0.87	89.30	89.50	91.76	91.88	93.73	93.42	
4	3	10.0	1.12	1.12	0.90	1.01	1.01	7.0	7.0	2.5	2.56	6.64	0.82	24	0.10	89.50	89.51	92.43	92.43	93.42	94.11	
5	3	121.0	1.15	11.87	0.85	0.98	8.54	7.0	16.8	1.6	13.70	11.46	4.36	24	0.30	89.50	89.86	92.43	92.95	93.42	94.00	
6	5	91.0	1.54	10.72	0.75	1.16	7.56	0.0	16.5	1.6	12.27	11.44	3.91	24	0.30	89.86	90.13	93.01	93.32	94.00	95.00	
7	6	157.0	4.39	9.18	0.75	3.29	6.41	7.0	15.8	1.7	10.63	12.38	3.39	24	0.30	90.13	90.60	93.37	93.72	95.00	96.00	
8	7	287.0	2.93	4.79	0.65	1.90	3.11	10.0	13.3	1.8	5.64	11.50	1.80	24	0.30	90.60	91.46	93.74	93.95	96.00	96.30	
9	8	163.0	1.86	1.86	0.65	1.21	1.21	10.0	10.0	2.1	2.55	11.52	0.81	24	0.30	91.46	91.95	93.96	93.98	96.30	97.00	

Project File: 20109009 TRIB 63 10YR DEV.stm

Number of lines: 9

Run Date: 6/14/2013

NOTES:Intensity = 7.08 / (Inlet time + 0.00) ^ 0.53 ; Return period =Yrs. 10 ; c = cir e = ellip b = box

FL-DOT Report

Line No	To Line	Type of struc	n - Value	Len (ft)	Drainage Area C1 = 0.3 C2 = 0.45 C3 = 0.9 Increment (ac)	Sub-Total (ac)	Sum CA	Time of conc (min)	Time of Flow in sect (min)	Inten (I) (in/hr)	Total CA	Add Q Total Flow Q (cfs)	Inlet elev (ft)	Elev of HGL / Elev of Crown / Elev of Invert Up (ft)	Down (ft)	Fall (ft)	Rise Span Size (in)	HGL Pipe Slope (%)	ADD Full Flow Vel (ft/s)	Cap (cfs)	Date: 6/14/2013 / Frequency: 10 yrs / Proj: 20109009 TRIB 63 10 Line description
1	End	Curb	0.014	220.0	0.00	0.00	0.00	17.51	0.77	1.57	11.19	0.00	93.67	90.36	90.00	0.36	24	0.16	4.71	17.58	
					0.00	0.00	0.00					17.58		91.00	90.30		38	0.32	4.32	21.49	
					0.00	0.00	0.00							89.00	88.30	0.70	Elip				
2	1	Curb	0.014	74.0	0.00	0.00	0.00	17.29	0.22	1.58	10.31	0.00	93.73	91.55	91.10	0.45	24	0.60	5.19	16.30	
					0.00	0.00	0.00					16.30		91.30	91.10		24	0.27	3.48	10.92	
					0.00	0.00	0.00							89.30	89.10	0.20	Cir				
3	2	DrGrt	0.014	23.0	0.00	0.00	0.00	17.22	0.07	1.58	9.65	0.00	93.42	91.88	91.76	0.12	24	0.53	4.87	15.30	
					0.00	0.00	0.00					15.30		91.50	91.30		24	0.87	6.23	19.58	
					0.00	0.00	0.00							89.50	89.30	0.20	Cir				
4	3	DrGrt	0.014	10.0	0.00	0.00	0.00	7.00	0.20	2.54	1.01	0.00	94.11	92.43	92.43	0.00	24	0.01	0.82	2.56	
					0.00	0.00	0.00					2.56		91.51	91.50		24	0.10	2.11	6.64	
					0.00	0.00	0.00							89.51	89.50	0.01	Cir				
5	3	MH	0.014	121.0	0.00	0.00	0.00	16.80	0.42	1.61	8.54	0.00	94.00	92.95	92.43	0.52	24	0.43	4.36	13.70	
					0.00	0.00	0.00					13.70		91.86	91.50		24	0.30	3.65	11.46	
					0.00	0.00	0.00							89.86	89.50	0.36	Cir				
6	5	MH	0.014	91.0	0.00	0.00	0.00	16.45	0.35	1.62	7.56	0.00	95.00	93.32	93.01	0.31	24	0.34	3.91	12.27	
					0.00	0.00	0.00					12.27		92.13	91.86		24	0.30	3.64	11.44	
					0.00	0.00	0.00							90.13	89.86	0.27	Cir				
7	6	MH	0.013	157.0	0.00	0.00	0.00	15.76	0.69	1.66	6.41	0.00	96.00	93.72	93.37	0.35	24	0.22	3.39	10.63	
					0.00	0.00	0.00					10.63		92.60	92.13		24	0.30	3.94	12.38	
					0.00	0.00	0.00							90.60	90.13	0.47	Cir				
8	7	MH	0.014	287.0	0.00	0.00	0.00	13.35	2.41	1.81	3.11	0.00	96.30	93.95	93.74	0.21	24	0.07	1.80	5.64	
					0.00	0.00	0.00					5.64		93.46	92.60		24	0.30	3.66	11.50	
					0.00	0.00	0.00							91.46	90.60	0.86	Cir				
9	8	Hdwl	0.014	163.0	0.00	0.00	0.00	10.00	3.35	2.11	1.21	0.00	97.00	93.98	93.96	0.02	24	0.01	0.81	2.55	
					0.00	0.00	0.00					2.55		93.95	93.46		24	0.30	3.67	11.52	
					0.00	0.00	0.00							91.95	91.46	0.49	Cir				

NOTES: Intensity = 7.08 / (Inlet time + 0.00) ^ 0.53 (in/hr)

Project File: 20109009 TRIB 63 10YR DEV.stm

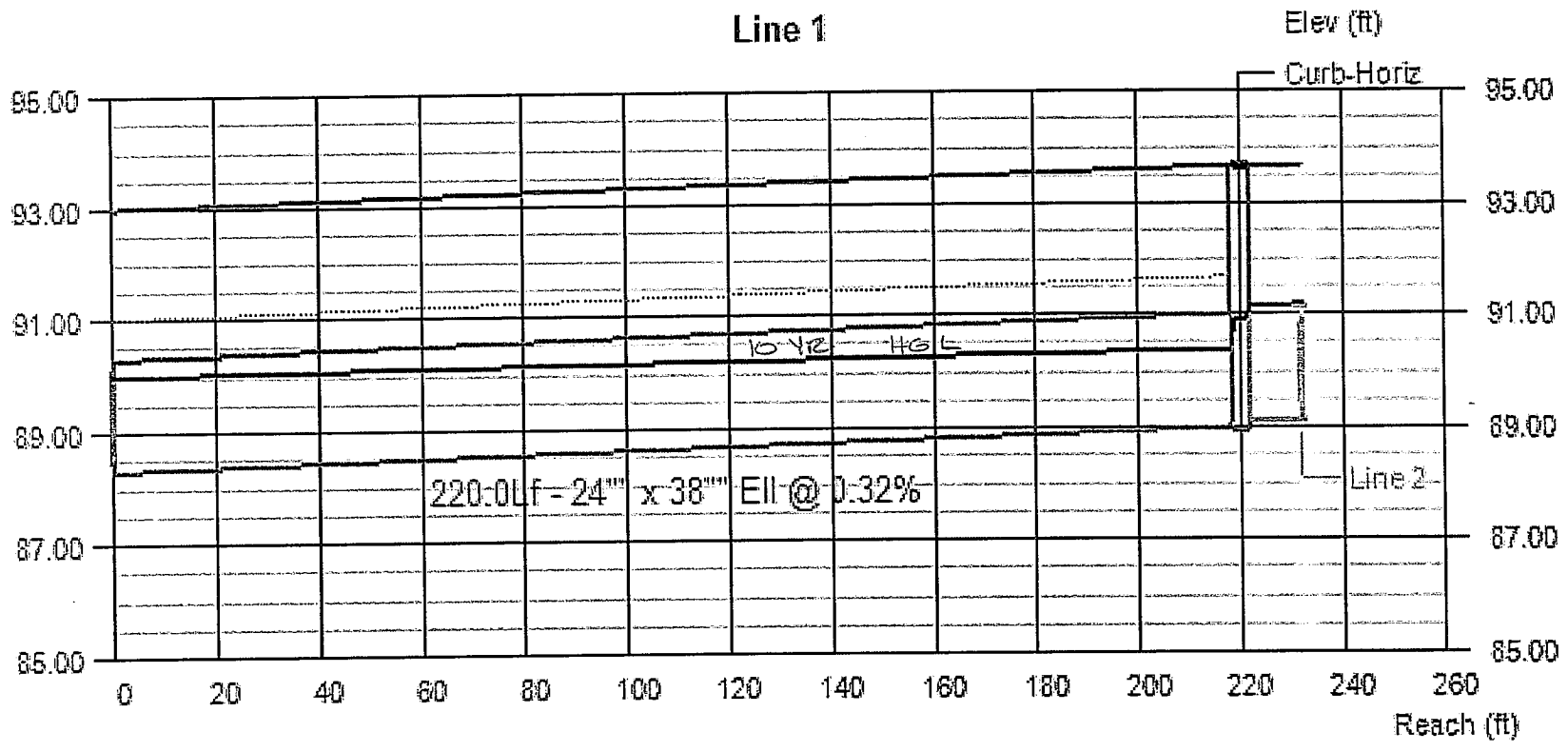
Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	24 38 e	17.58	88.30	90.00	1.70	3.73	4.71	0.35	90.35	n/a	220.0	89.00	90.36	1.36**	3.73	4.71	0.35	90.71i	n/a	n/a	n/a	1.50	n/a
2	24	16.30	89.10	91.10	2.00*	3.14	5.19	0.42	91.52	0.603	74.0	89.30	91.55	2.00	3.14	5.19	0.42	91.96	0.602	0.603	0.446	0.50	0.21
3	24	15.30	89.30	91.76	2.00	3.14	4.87	0.37	92.12	0.531	23.0	89.50	91.88	2.00	3.14	4.87	0.37	92.25	0.530	0.531	0.122	1.50	0.55
4	24	2.56	89.50	92.43	2.00	3.14	0.82	0.01	92.44	0.015	10.0	89.51	92.43	2.00	3.14	0.82	0.01	92.44	0.015	0.015	0.001	1.00	0.01
5	24	13.70	89.50	92.43	2.00	3.14	4.36	0.30	92.73	0.426	121.0	89.86	92.95	2.00	3.14	4.36	0.30	93.24	0.426	0.426	0.515	0.21	
6	24	12.27	89.86	93.01	2.00	3.14	3.91	0.24	93.25	0.342	91.0	90.13	93.32	2.00	3.14	3.91	0.24	93.56	0.341	0.341	0.311	0.21	0.05
7	24	10.63	90.13	93.37	2.00	3.14	3.39	0.18	93.55	0.221	157.0	90.60	93.72	2.00	3.14	3.39	0.18	93.89	0.221	0.221	0.347	0.15	0.03
8	24	5.64	90.60	93.74	2.00	3.14	1.80	0.05	93.79	0.072	287.0	91.46	93.95	2.00	3.14	1.80	0.05	94.00	0.072	0.072	0.207	0.15	0.01
9	24	2.55	91.46	93.96	2.00	3.14	0.81	0.01	93.97	0.015	163.0	91.95	93.98	2.00	3.14	0.81	0.01	93.99	0.015	0.015	0.024	1.00	0.01

Project File: 20109009 TRIB 63 10YR DEV.stm | Number of lines: 9 | Run Date: 6/14/2013

Notes: * Normal depth assumed.; ** Critical depth. ; c = cir e = ellip b = box

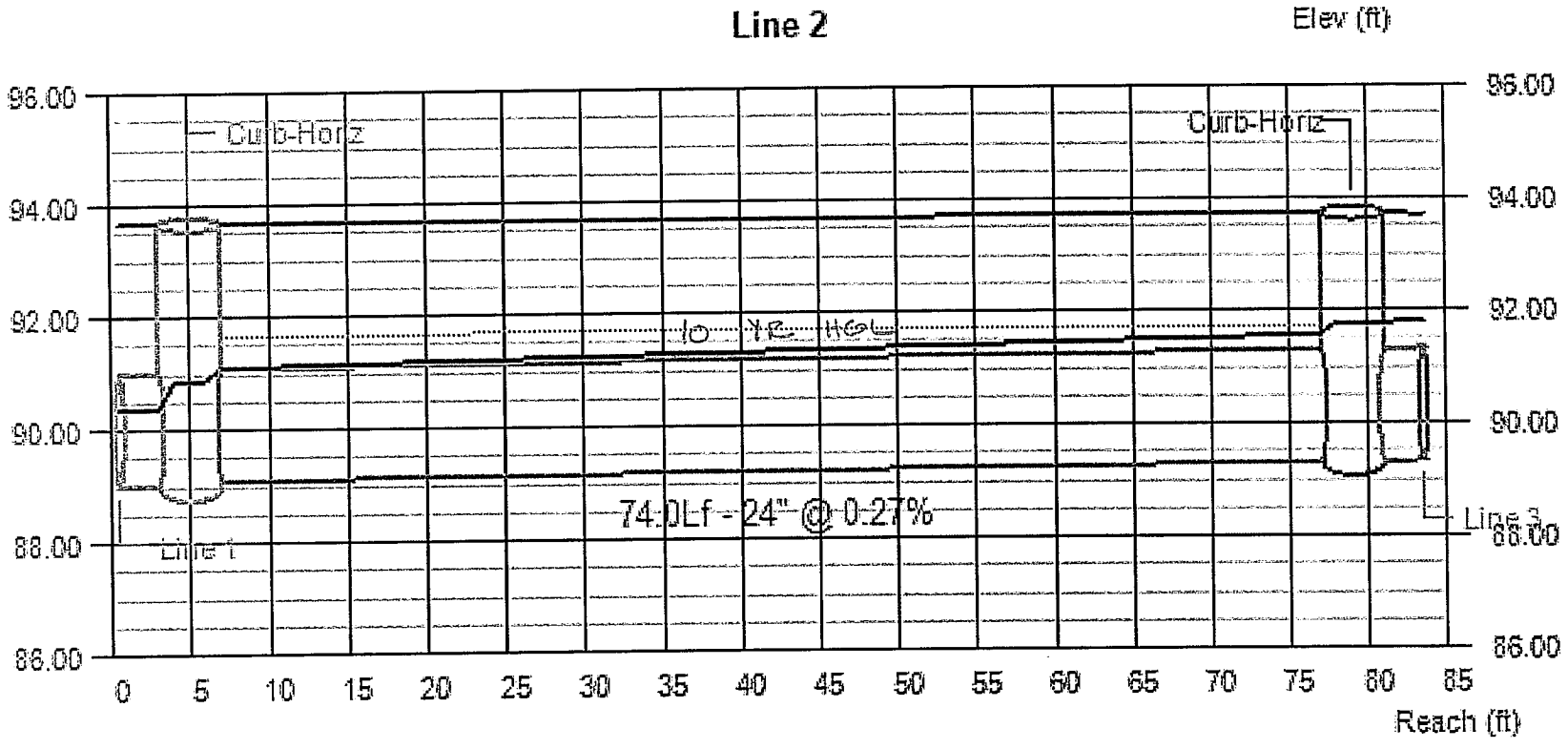
Line Profile (Line 1)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
1	17.58	88.30	89.00	1.70	1.36	1.88	90.00	90.36	90.88 i	4.71	4.71	2.70	2.67

Project File: | No. Lines: 9 | Run Date: 6/14/2013

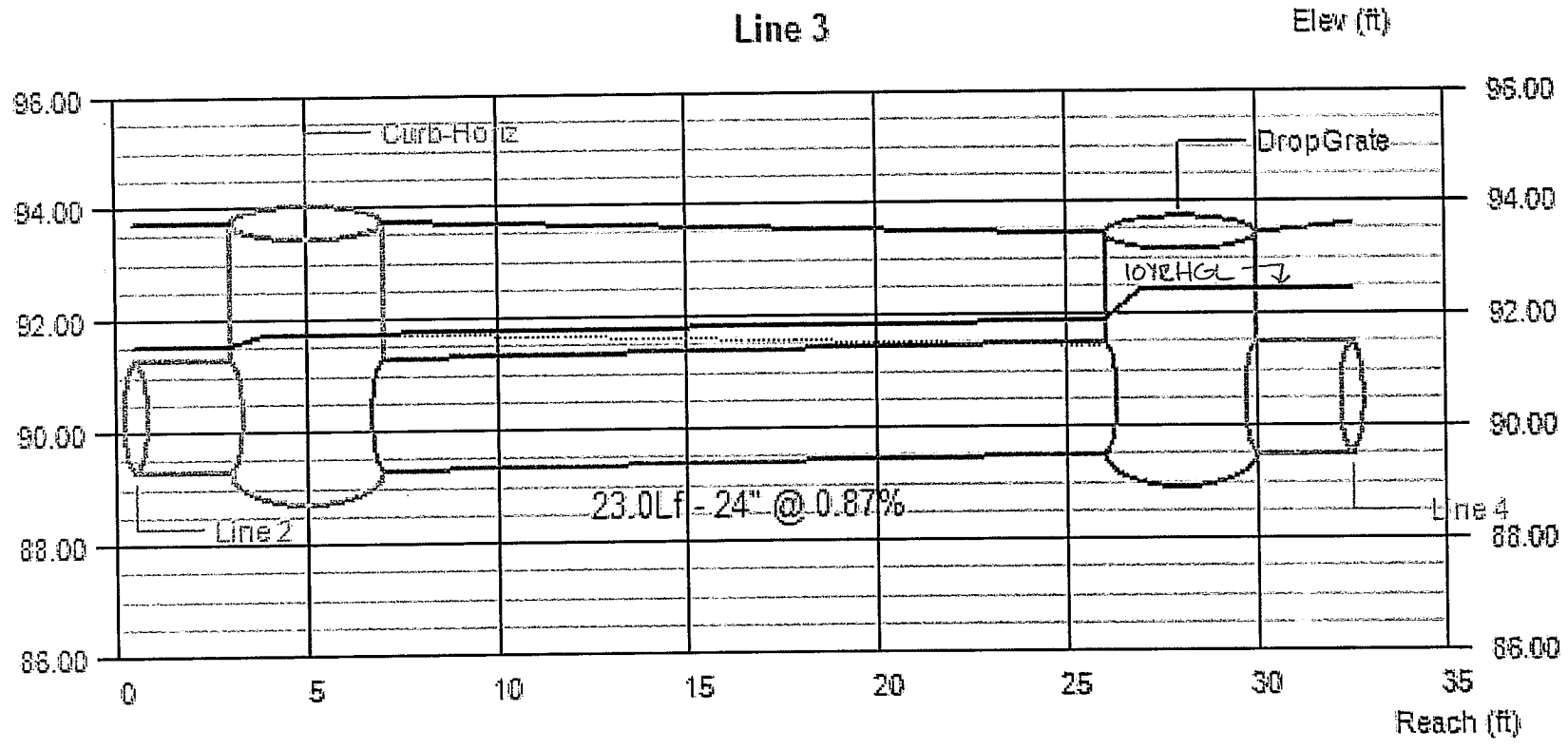
Line Profile (Line 2)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
2	16.30	89.10	89.30	2.00	2.00	2.46	91.10	91.55	91.76	5.19	5.19	2.57	2.43

Project File: | No. Lines: 9 | Run Date: 6/14/2013

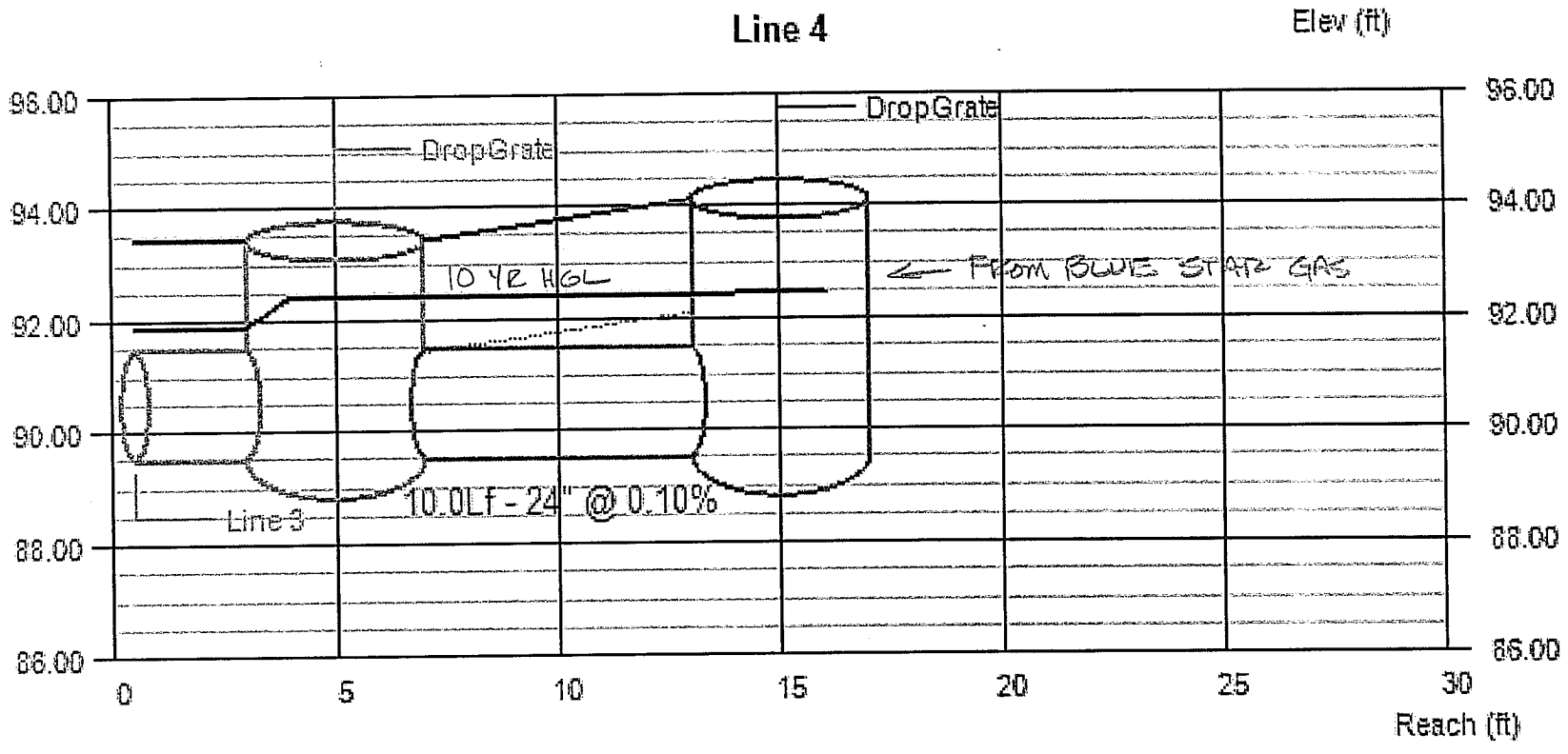
Line Profile (Line 3)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
3	15.30	89.30	89.50	2.00	2.00	2.93	91.76	91.88	92.43	4.87	4.87	2.43	1.92

Project File: | No. Lines: 9 | Run Date: 6/14/2013

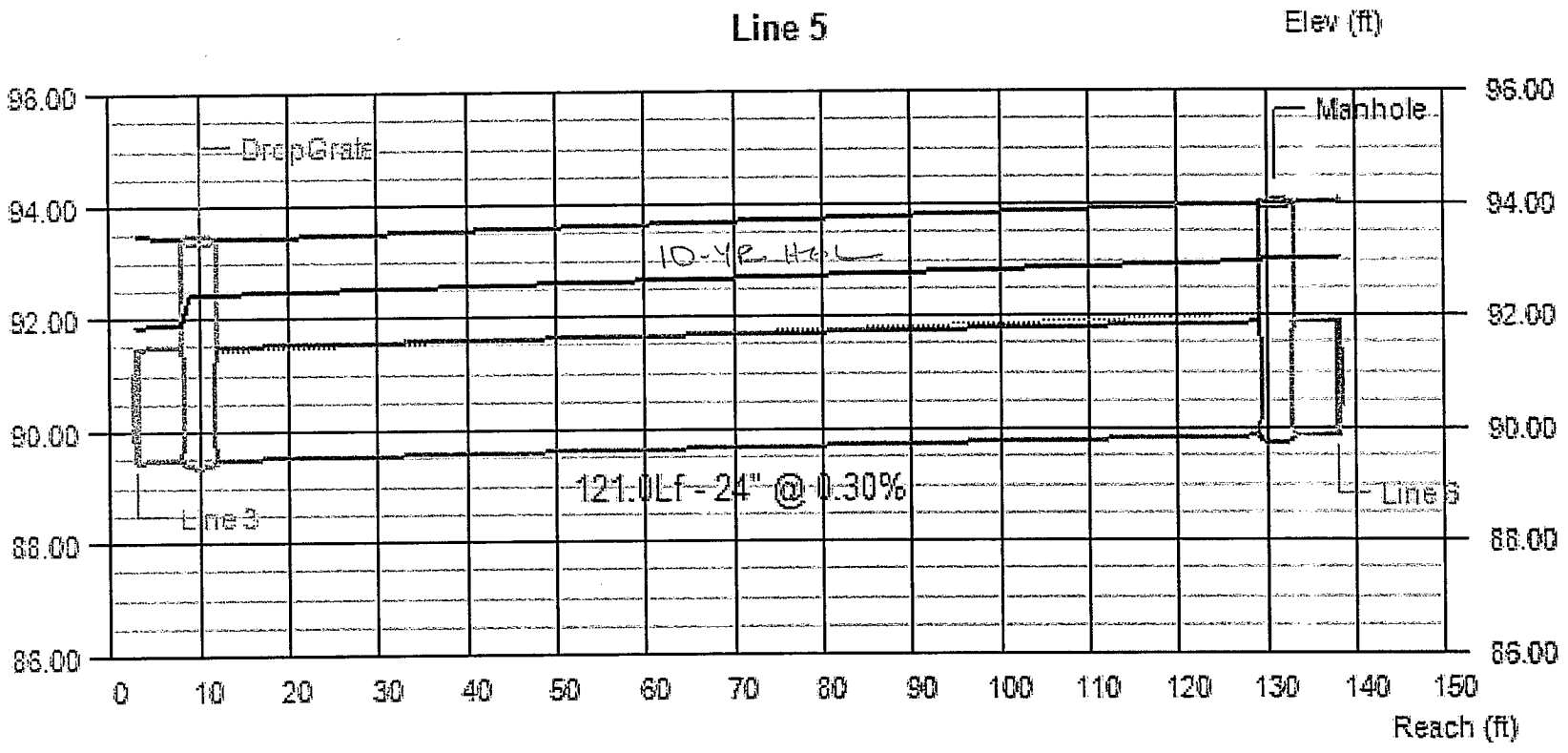
Line Profile (Line 4)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
4	2.56	89.50	89.51	2.00	2.00	2.93	92.43	92.43	92.44	0.82	0.82	1.92	2.60

Project File: | No. Lines: 9 | Run Date: 6/14/2013

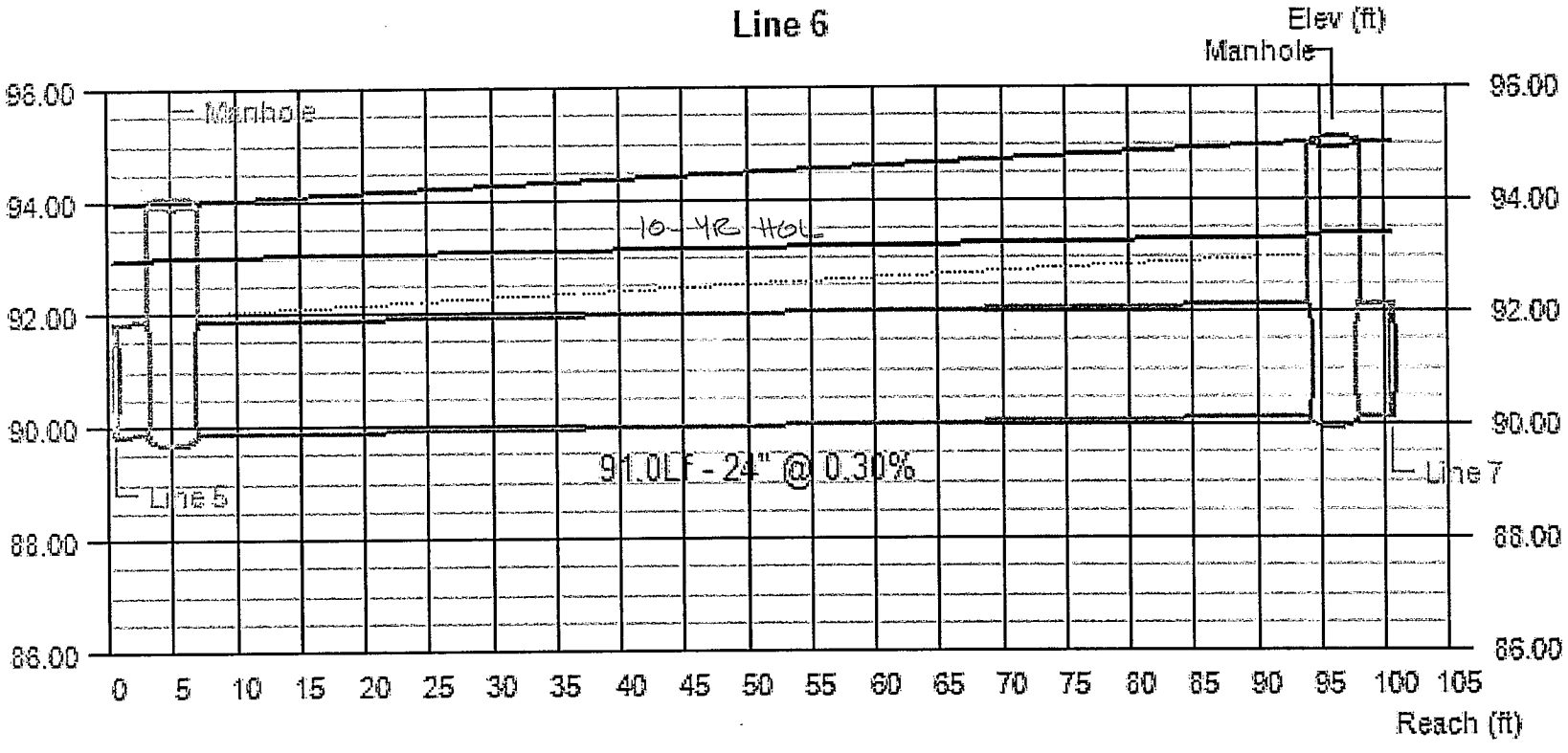
Line Profile (Line 5)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
5	13.70	89.50	89.86	2.00	2.00	3.15	92.43	92.95	93.01	4.36	4.36	1.92	2.14

Project File: | No. Lines: 9 | Run Date: 6/14/2013

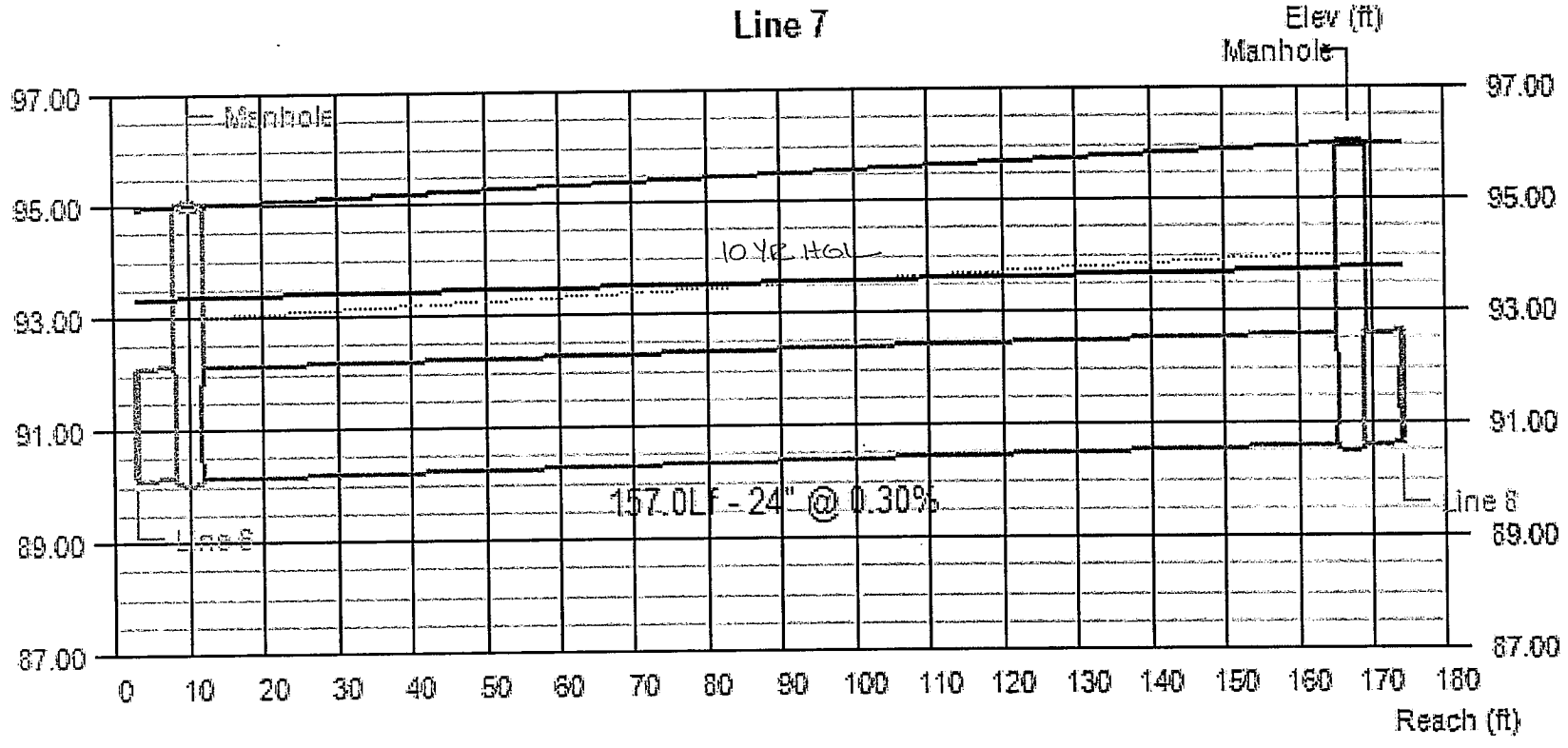
Line Profile (Line 6)



Line #	Q	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
	(cfs)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
6	12.27	89.86	90.13	2.00	2.00	3.24	93.01	93.32	93.37	3.91	3.91	2.14	2.87

Project File: | No. Lines: 9 | Run Date: 6/14/2013

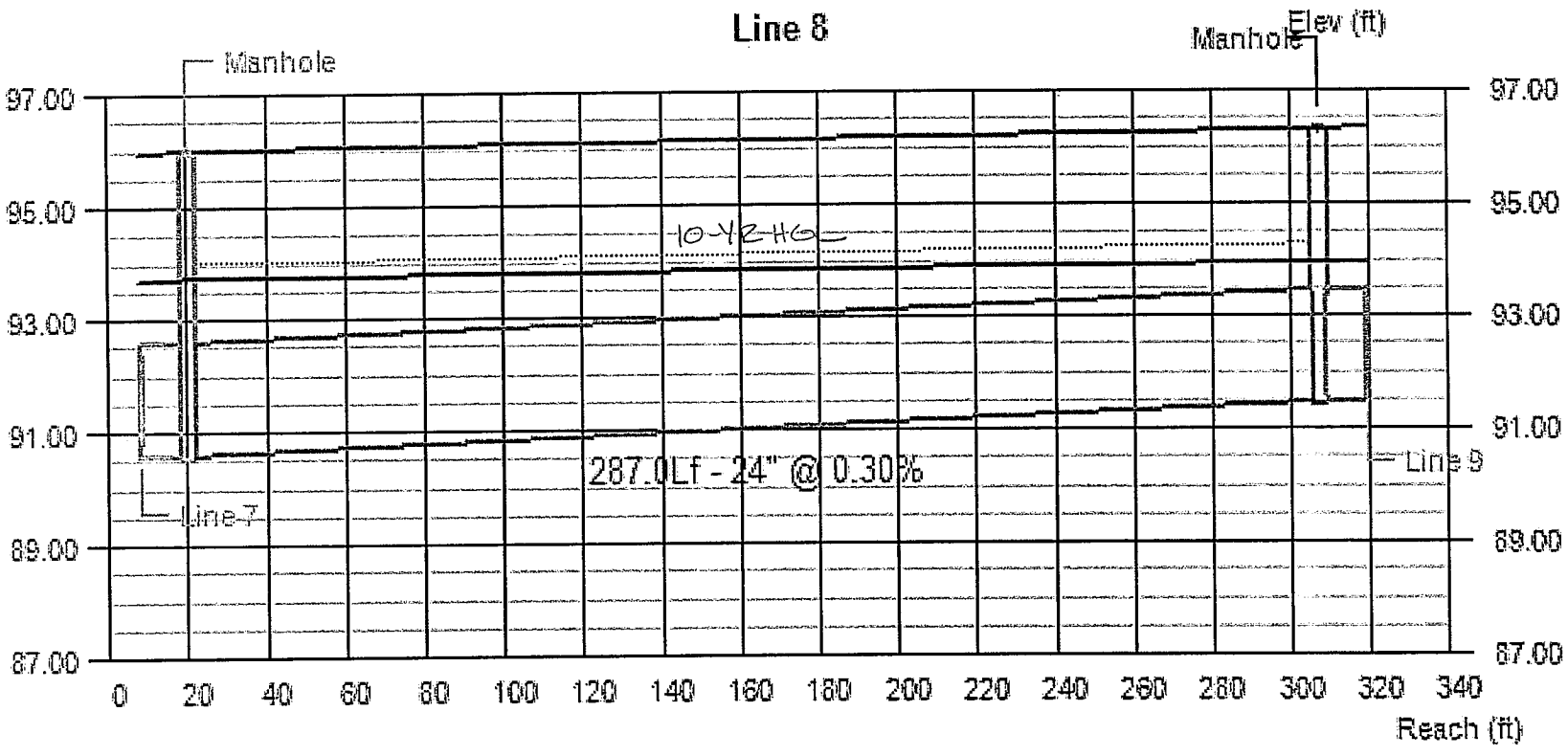
Line Profile (Line 7)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
7	10.63	90.13	90.60	2.00	2.00	3.14	93.37	93.72	93.74	3.39	3.39	2.87	3.40

Project File: | No. Lines: 9 | Run Date: 6/14/2013

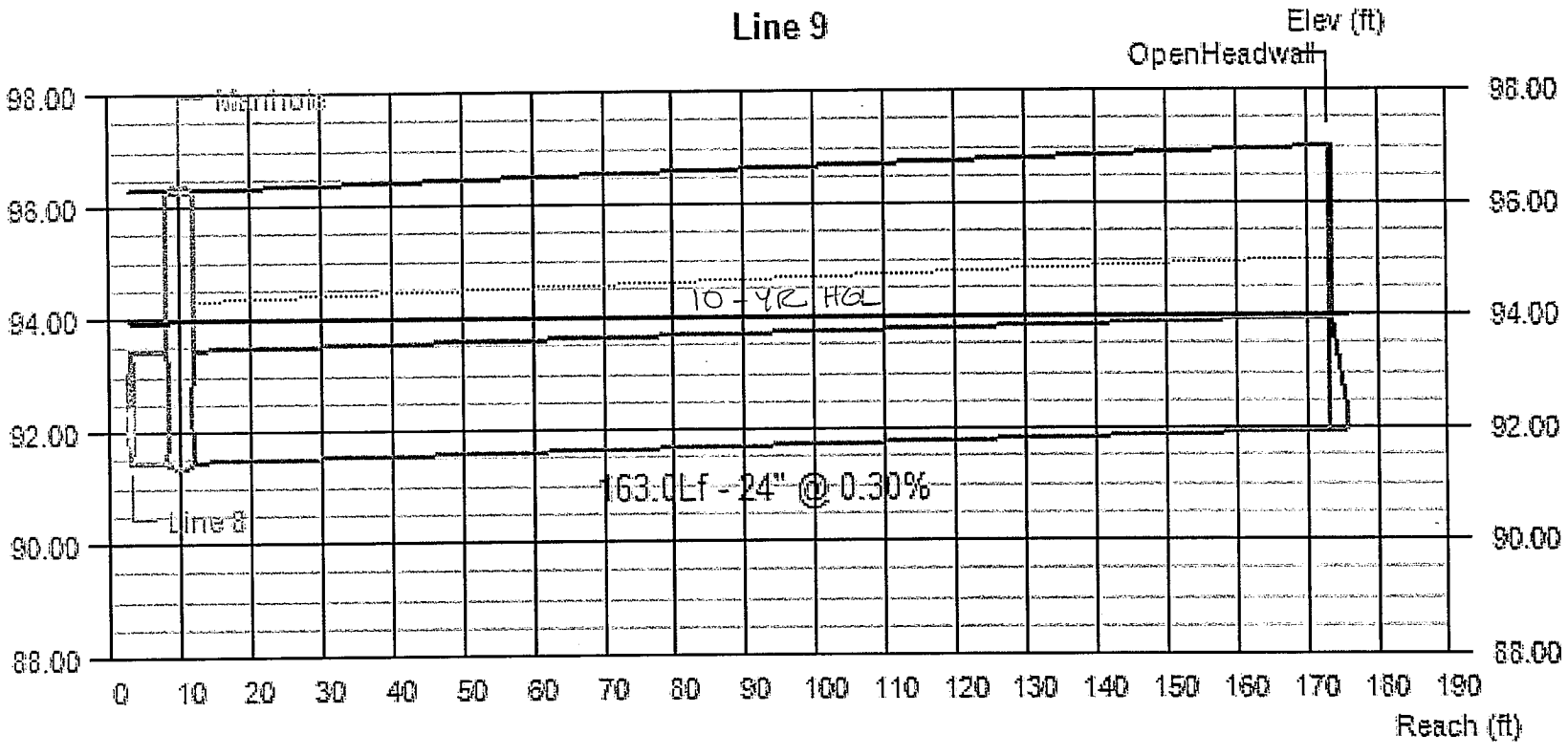
Line Profile (Line 8)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
8	5.64	90.60	91.46	2.00	2.00	2.50	93.74	93.95	93.96	1.80	1.80	3.40	2.84

Project File: | No. Lines: 9 | Run Date: 6/14/2013

Line Profile (Line 9)



Line #	Q (cfs)	Invert Elevation		Depth of Flow			Hydraulic Grade Line			Velocity		Cover	
		Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Hw (ft)	Dn (ft)	Up (ft)	Jnct (ft)	Dn (ft/s)	Up (ft/s)	Dn (ft)	Up (ft)
9	2.55	91.46	91.95	2.00	2.00	2.04	93.96	93.98	93.99	0.81	0.81	2.84	3.05

Project File: | No. Lines: 9 | Run Date: 6/14/2013

HYDROLOGY 100 YR

The existing 100 year flows for the drainage basin flow both to the north toward the Joe Rodota Trail and toward the west through the Blue Gas commercial property adjacent to the south property line of the project and through the project site. Development of the upstream drainage basin would need to determine how the 100-yr overflow would reach the North Wright Road. This project leaves the pathway and southernmost area of the site low so that 100-yr flows can flow across the pathway, across the open easement area of the Blue Gas Site, and north toward the northeast corner of the project site. The proposed buildings on the project site are sufficiently high enough to avoid inundation during a 100-year overland event.
It is probable that the development of the easterly properties will need to provide some added piping such as the second 24-inch parallel pipe to handle the 100-year events.

7-28-29-1

The starting HGL for the ditch was determined by the following:

Mary-Jane Stimson from Carlile, Macy, Mitchell & Heryford and Rich Zieber from the Sonoma County Water Agency agreed to a starting HGL_{10} of 88.0 and HGL_{100} of 89.0 at the existing box culvert outlet. From Charts 8 and 15 from the Bureau of Public Roads, we determined:

	Inlet Control	Outlet Control	Invert	Q
HGL_{10}	88.75	88.0	87.75	26.8
HGL_{100}	89.85	89.0	87.75	79.3

We then sized the ditch to accommodate the proposed flows, with HGL's at least as high as needed for the box culvert. This way, the ditch will not be backwatered from the culvert. We came up with a ditch with 2:1 side slopes, a 5' bottom width, and approximately 4' deep.

Using the above ditch, the headwater elevation at the 4'x10' RCB inlet, and the tailwater elevation at the twin RCB outlet will be:

	D_n at inlet	HGL at inlet	D_n at outlet	HGL at outlet
HGL_{10}	1.9	89.2	1.7	90.0
HGL_{100}	3.2	90.5	3.1	91.4

The outlet HGL was used for the starting water surface for the pipes outletting into the ditch. Using Charts 8 and 15, and the above tailwater elevations, the following HGL's were determined at the inlet to the twin RCB's at Wright Road:

	Inlet Control	Outlet Control	Invert	Q
HGL_{10}	89.2	90.0	88.43	14.2
HGL_{100}	90.5	91.8	88.43	61.4

See Appendix B for charts and calculations.

The resulting 10-year hydraulic grade lines were compared with the top of box or rim elevation to ensure conformance with the Water Agency's criteria

Conclusions

The storm drain system as designed will carry the 10-year storm. The combination of underground storm drain and streets will carry the 100-year storm without flooding either proposed or existing buildings.

EXHIBIT B2

EXHIBIT 82

WRIGHT ROAD

SITE

BLUE STAR GAS

NIY PUBLIC WORKS

STORM DRAIN ANALYSIS
(INPUT)

REPT: PC/RD4412.1
DATE: 04/08/97
PAGE 1

:T: Wright Road - (10) year to ditch
R: ajs

at the outfall
elev. pwr

?	MAX Q	ADJ Q	LENGTH	FL 1	FL 2	CTL/TW	D	W	S	KJ	KE	KM	LC	L1	L3	L4	A1	A3	A4	J	N	
						90.00																DITCH
0	16.6	16.6	232.00	88.30	89.04	0.00	36.	0.	3	0.00	0.40	0.00	1	31	0	0	90.	0.	0.	4.00	0.014	CB 404
	15.8	15.8	77.00	89.04	89.43	0.00	24.	0.	3	0.00	0.40	0.00	0	32	0	0	0.	0.	0.	4.00	0.014	CB 405
	13.7	13.7	20.00	89.43	89.~~53~~ 54	0.00	24.	0.	3	0.00	0.40	0.00	0	33	0	0	90.	0.	0.	4.00	0.014	DI 414
3	11.7	11.7	12.00	89.~~53~~ 54	89.59	0.00	24.	0.	1	0.00	0.40	0.00	0	0	0	0	0.	0.	0.	4.00	0.014	FD 415
	2.2	2.2	64.00	88.30	88.49	0.00	15.	0.	3	0.00	0.40	0.00	1	41	0	0	60.	0.	0.	4.00	0.014	CB406
11	1.2	1.2	93.00	88.49	88.95	0.00	15.	0.	1	0.00	0.40	0.00	0	0	0	0	0.	0.	0.	4.00	0:014	CB407
	7.1	7.1	130.00	88.30	88.43	0.00	24.	48.	1	0.00	0.40	0.00	1	0	0	0	0.	0.	0.	4.00	0.014	INLET

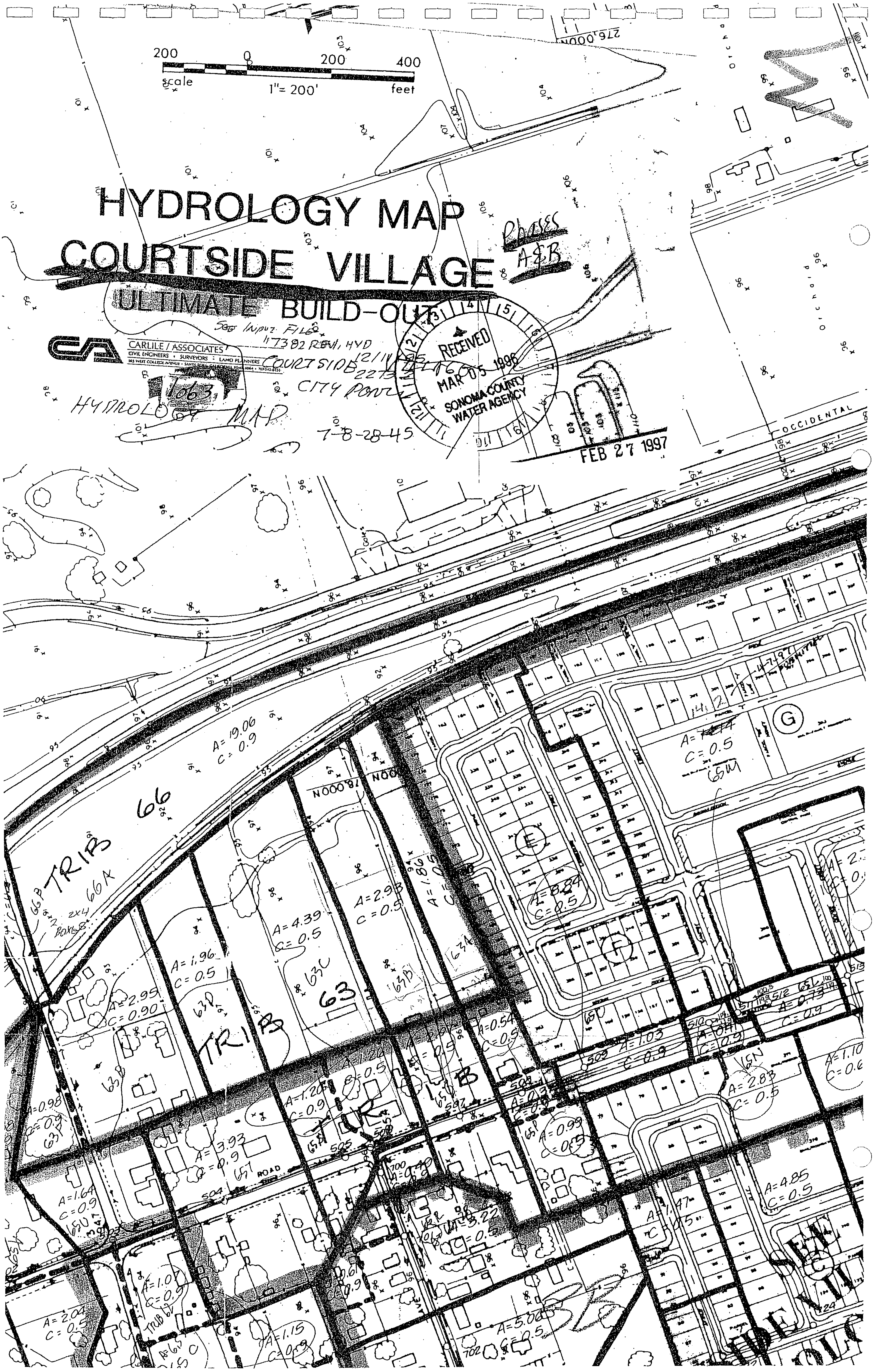
7.1 x 2 CULVERTS = 14.2 OK

Exhibit
B2

MAPS

Maps include:

The Courtside Village hydrology map of this drainage basin.
The existing conditions hydrology map by BKF Engineers.
The developed conditions map by BKF Engineers.



HYDROLOGY MAP
COURTSIDE VILLAGE
ULTIMATE BUILD-OUT
Phases A&B
CARLILE / ASSOCIATES
CIVIL ENGINEERS · SURVEYORS · LAND PLANNERS
RECEIVED
MAR 05 1996
SONOMA COUNTY WATER AGENCY
FEB 27 1997
scale
1"= 200'
200
0
200
400
feet
OCCIDENTAL
ROAD
TRIB 66
TRIB
A= 19.06
C= 0.9
A= 4.39
C= 0.5
A= 2.93
C= 0.5
A= 1.96
C= 0.5
A= 2.95
C= 0.90
A= 8.84
C= 0.5
A= 3.93
C= 0.9
A= 1.64
C= 0.9
A= 2.83
C= 0.5
A= 4.85
C= 0.5
A= 1.03
C= 0.9
A= 0.54
C= 0.5
A= 0.98
C= 0.9
A= 0.99
A= 1.07
A= 2.04
A= 1.15
A= 5.00
A= 1.10

N

100 0 100
scale 1" = 100' feet

TRIB 63 AREA B
C=0.30
A= 2.93 AC

TRIB 63 AREA C
C=0.30
A= 4.39 AC

TRIB 63 AREA D
C=0.30
A= 1.54 AC

TRIB 63 AREA E
C=0.30
A= 1.27

TRIB 63 AREA A
C=0.30
A= 1.86 AC

TRIB 63
AREA E-1
C=0.90
A= 1.12
AC

TRIB 63 AREA F
C=0.90
A= 0.98 AC

TRIB 63 AREA E-2
C=0.90
A= 0.73 AC

EXISTING CONDITIONS
OFFSITE STORM WATER EXHIBIT

874 NORTH WRIGHT ROAD
CITY OF SANTA ROSA, CALIFORNIA
JUNE 2013

BKF
ENGINEERS / SURVEYORS / PLANNERS
325 TESCONI CIRCLE SANTA ROSA, CA 95401
(707) 583-8500 FAX: (707) 583-8539

JOB NO. 20109009

SHEET 1 OF 1 SHEETS

Plot Jun 14, 2013 at 3:09pm

109009exhb.dwg

1 PIPE NUMBERS

100 0 100
scale 1" = 100' feet

TRIB 63
C=0.85
A= 1.12 AC

TRIB 63
C=0.85
A= 0.15 AC

TRIB 63
C=0.75
A= 1.54 AC

TRIB 63
C=0.75
A= 4.39 AC

TRIB 63
C=0.65
A= 2.93 AC

TRIB 63
C=0.90
A= 1.12 AC

TRIB 63
C=0.90
A= 0.98 AC

TRIB 63
C=0.90
A= 0.73 AC

TRIB 63
C=0.65
A= 1.86 AC

DEVELOPED CONDITIONS
OFFSITE STORM WATER EXHIBIT

874 NORTH WRIGHT ROAD
CITY OF SANTA ROSA, CALIFORNIA
JUNE 2013

BKF
ENGINEERS / SURVEYORS / PLANNERS
325 TESCONI CIRCLE SANTA ROSA, CA 95401
(707) 583-8500 FAX: (707) 583-8539

JOB NO. 20109009

SHEET 1 OF 1 SHEETS

Plot Jun 14, 2013 at 3:08pm

109009exhb.dwg

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality
505 Petaluma Boulevard South
Petaluma, California 94952
Tel: 707-766-7700 *Fax: 707-766-7790*
www.Illingworthrodkin.com *illro@illingworthrodkin.com*

May 16, 2013

Mr. Mangal Dhillon
2743 Yulupa Ave.
Santa Rosa, CA 95405
VIA Email: C/O Gwyn Bauer, J. Kapolchok & Associates, (gwynbauer@sbcglobal.net)
Ray Hickman, Hickman Realty, (hickmanrealestate@sbcglobal.net)

SUBJECT: Environmental Noise Study, Elm Tree Station, Santa Rosa, CA

Dear Mr. Dhillon:
This letter report summarizes Illingworth & Rodkin's (I&R) findings regarding the effects of noise generated by the proposed Elm Street Station project, which will include market and retail buildings and an electric charging and gasoline fueling station at 847 North Wright Road in Santa Rosa, CA. Our assessment presents the applicable regulatory criteria used, and the results of noise measurements conducted on the site. Noise generated by the project is evaluated with respect to the Santa Rosa General Plan and Municipal Code, and noise reduction measures are presented to reduce noise generated due to the operation of the project at the new residential uses proposed on the eastern side of the project site. Persons not familiar with environmental noise analysis are referred to Appendix A for additional discussion.

REGULATORY CRITERIA

CITY OF SANTA ROSA GENERAL PLAN

The City of Santa Rosa's General Plan[1] establishes noise and land use compatibility standards to evaluate a project's compatibility with the noise environment and General Plan policies designed to minimize the effects of noise throughout the community. Single-family residential land uses are considered "normally acceptable" in noise environments of 60 dBA L_{dn} or less. The City of Santa Rosa also establishes policies in the Noise and Safety Element of the General Plan in order to achieve the goal of maintaining an acceptable community noise level. The following policies are applicable to the proposed project:

NS-B-1 Do not locate noise-sensitive uses in proximity to major noise sources.

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…

[1] *Santa Rosa 2035: General Plan*, Adopted November 2009.

CITY OF SANTA ROSA
P.O. Box 1678
Santa Rosa CA 95402
JUN 25 2013
DEPARTMENT OF
COMMUNITY DEVELOPMENT

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.

NS-B-4 Require new projects in the following categories to submit an acoustical study, prepared by a qualified acoustical consultant:

- All new projects that could generate noise whose impacts on other existing uses would be greater than those normally acceptable.

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.

NS-B-6 Do not permit existing uses to generate new noises exceeding normally acceptable levels unless:

- Those noises are mitigated to acceptable levels; or
- The activities are specifically exempted by the City Council on the basis of community health, safety, and welfare.

NS-B-14 Discourage new projects that have potential to create ambient noise levels more than 5 dBA L_{dn} above existing background, within 250 feet of sensitive receptors.

CITY OF SANTA ROSA NOISE ORDINANCE

The City of Santa Rosa has adopted a quantitative noise ordinance in Chapter 17-16 of the Municipal Code. Relevant sections of this Code are presented below:

Section 17-16.120 regulates noise from machinery and equipment as follows:
It is unlawful for any person to operate any machinery, equipment, pump, fan, air-conditioning apparatus or similar mechanical device in any manner so as to create any noise which would cause the noise level at the property line of any property to exceed the ambient base noise level by more than five (5) decibels. The baseline (ambient) noise levels for residential areas from which noise levels can be compared are established in Section 17-16.030. These levels are shown in Table 1.

TABLE 1: City of Santa Rosa Municipal Code Ambient Base Noise Levels

Land Use Zone	Daytime Level: 7 am to 7 pm (dBA)	Evening Level: 7 pm to 10 pm (dBA)	Nighttime Level: 10 pm to 7 am (dBA)
Single-Family Residential	55	50	45
Multi-Family Residential	55	55	50

In Section 17-16.010, the Noise Ordinance defines ambient noise as follows:
Ambient noise is the all-encompassing noise associated with a given environment usually a composite of sounds from many sources near and far. For the purpose of this chapter, ambient noise level is the level obtained ... without inclusion of noise from isolated identifiable sources at the location and time of day near that at which a comparison is to be made.

The noise descriptor, L_{eq}, is used in this report for the purposes of determining noise levels with respect to these limits.

EXISTING NOISE ENVIRONMENT

The project site is located at the southeast corner of the North Wright Road/ Highway 12 intersection at the western edge of Santa Rosa. Currently the site is undeveloped, with North Wright Road to the west, Highway 12 and the Joe Rodota multiuse trail to the north and the Blue Star Gas Company to the south of the project site. Future residential uses are proposed on the currently undeveloped land to the east. Based on a review of the future development street and parking layout we expect that residences may be built as close as 85 feet from the project property line. When built these residential uses may be impacted by noise from the operation of the Market and Retail buildings.

A noise monitoring survey was conducted to quantify the existing noise environment to establish existing baseline (ambient) noise levels at the proposed residential areas adjacent to the project site. One long-term and two (2) short-term simultaneous noise measurements were made to complete the noise monitoring survey. The noise measurement locations are shown on the proposed site plan in Figure 1.

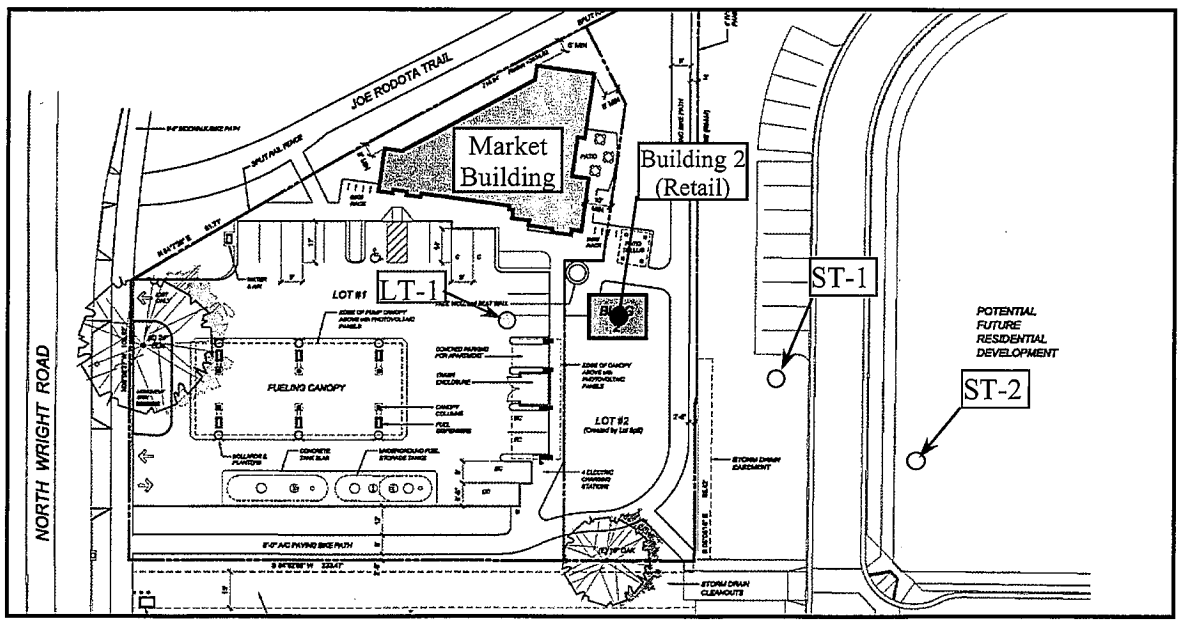
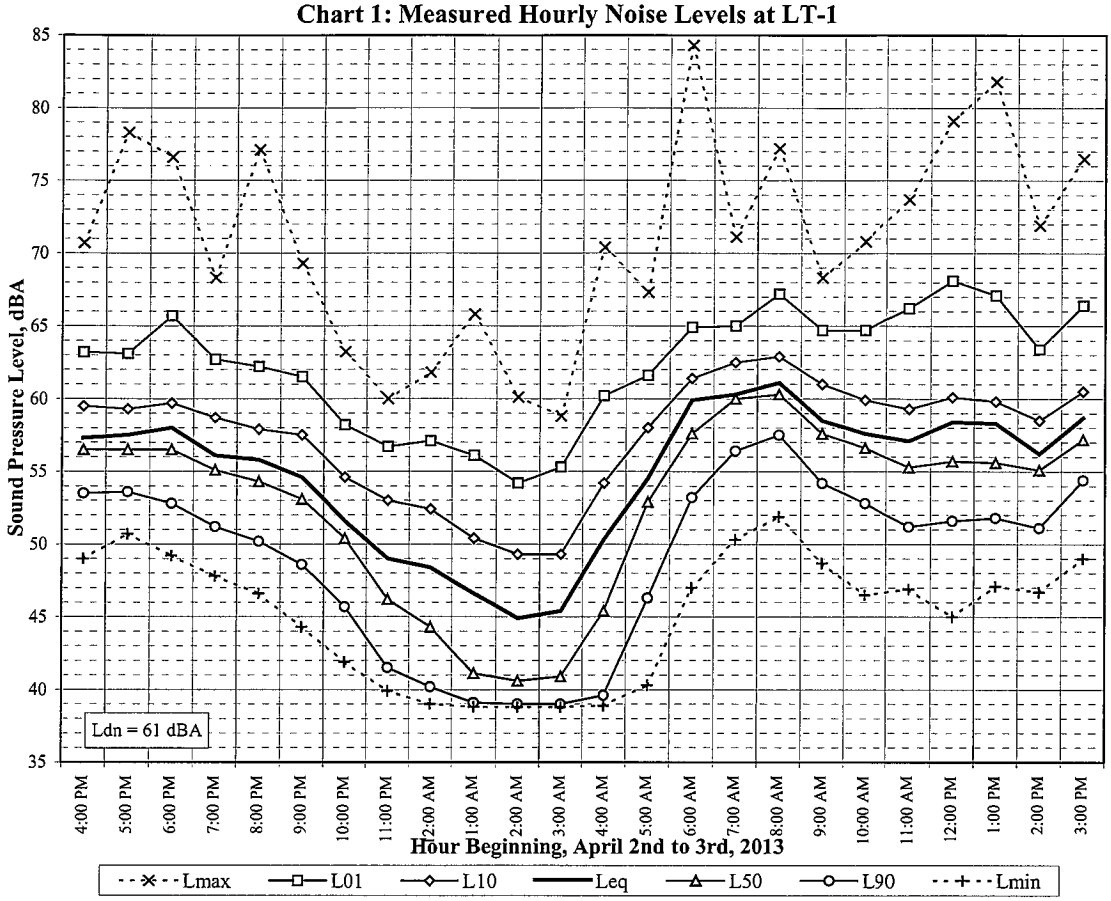


Figure 1: Project Site Plan, Future Residential Uses, and Noise Measurement Locations

The long-term noise measurement (LT-1) was conducted in the branches of an existing tree at a height of 12 feet above the existing grade and approximately 450 feet from the centerline of Hwy 12. Though made on the project site itself, this location is represents a potential setback of the future residential structures on the adjacent property from Highway 12 (Setback #1). The two short-term simultaneous noise measurements (ST-1 and ST-2) were made at distances of approximately 520 and 580 feet from the centerline of Hwy 12. These measurement locations also represent potential setback distances of future residential structures on the adjacent property from Highway 12 (Setbacks #2 and #3).

Chart 1: Measured Hourly Noise Levels at LT-1



The long-term measurement was made between 4 p.m. on April 2nd and 4 p.m. on April 4th, 2013 on an hourly basis. The noise environment at this location was primarily the result of vehicular traffic along Hwy 12, with secondary contributions from North Wright Road traffic. The hourly trend in noise levels measured including the energy equivalent noise level (L_{eq}), and the noise levels exceeded 01, 10, 50 and 90 percent of the time (indicated as L_1, L_{10}, L_{50} and L_{90}) are shown on Chart 1. A review of this chart indicates that daytime, evening, and nighttime average (L_{eq}) noise levels at potential residential setback #1 (relative to Hwy 12) ranged from 55 to 61 dBA, 55 to 56 dBA and 45 to 60 dBA, respectively, with an average daytime L_{eq} of 58 dBA, an average evening L_{eq} of 56 dBA, and an average nighttime L_{eq} of 53 dBA. The average Day-Night noise Level (L_{dn}) at the long-term position was calculated to be 61 dBA.

The results of the short-term measurements ST-1 and ST-2, which respectively represent the future noise exposure at potential residential setbacks #2 and #3, relative to the simultaneously measured levels at LT-1, indicate that the average (L_{eq}) sound levels at ST-1 are 2 dBA lower than those at the long-term position and that the L_{eq} sound levels at ST-2 are 3 dBA lower than those at the long-term position. Based on the measured levels at LT-1 and these differences we have determined the existing ambient daytime, evening and nighttime noise levels at potential residential setbacks #2 and #3. These levels are presented in Table 2, following.

Table 2: Existing Ambient Noise Levels at Future Residential Structures

Future Residential Setbacks	Average (L_{eq}) Ambient Noise Levels, dBA		
	Daytime Level (range) 7:00 AM to 7:00 PM	**Evening Level** (range) 7:00 PM to 10:00 PM	**Nighttime Level** (range) 10:00 PM to 7:00 AM
#1	58 (55 to 61)	56 (55 to 56)	53 (45 to 60)
#2	56 (53 to 59)	54 (53 to 54)	51 (43 to 58)
#3	55 (52 to 58)	53 (52 to 53)	50 (42 to 57)

A comparison of these noise levels with the ambient base noise levels for multifamily residential areas as established in Section 17-16.030 of the noise ordinance (see Table 1) shows that in all cases existing daytime and nighttime ambient noise levels at the setbacks of multifamily residential structures on the adjacent property are equal to or greater than the City's non-site specific base criteria. However, the evening ambient noise levels at setback #3 is below the City's non-site specific base criteria. Therefore, in keeping with the municipal code definition of ambient noise (see italicized entry on page 3), we would establish the applicable ambient noise levels at the proposed residential setbacks to be equal to the actual ambient noise levels in those areas where ambient noise levels exceed the City's non-site specific base criteria. Based on these ambient noise levels plus 5 dBA[2], the allowable noise levels from the operation of the proposed project at future residential structures are as shown in Table 3.

Table 3: Allowable Project Noise Levels at the Future Residential Structures

Future Residential Setbacks	Average (L_{eq}) Ambient Noise Levels, dBA		
	Allowable Daytime Level 7:00 AM to 7:00 PM	**Allowable Evening Level** 7:00 PM to 10:00 PM	**Allowable Nighttime Level** 10:00 PM to 7:00 AM
#1	63	61	58
#2	61	60	56
#3	60	60	55

NOISE ASSESSMENT

The proposed project would generate noise and introduce new noise sources into the existing noise environment. Operational noise sources would include;

1. Parking lot activity (including engine starts, door slams, and patron noise in the parking/gas pumping/electric charging area south of the market),
2. Truck deliveries to the market and gasoline pumps,
3. Building mechanical equipment.

The following discussions provide the estimated noise levels at the future adjacent residential uses at previously discussed setbacks from Hwy 12, and as close as 85 feet from the project property line, due to project operation noise generation.

Parking Lot Activity

The primary parking lot noise at the site would be from patrons at the gas pumps, electric charging, and those in the parking areas south of the market building. Noise would be generated by vehicles circulating within the lot, engine starts, door slams, and by the sound of human

[2] Section 17-16.120, which regulates noise from machinery and equipment, limits noise from these sources to not more than 5 dB above ambient noise levels.

voices. The sound of a passing car at 15 mph typically ranges from 55 dBA to 65 dBA at 25 feet. The noise of an engine start is similar. Door slams and patron voices create noise levels lower than engine starts. Based on the orientation of the market and retail buildings, future adjacent multi-family residences may not receive significant acoustical shielding from the building structures for noise generated by autos and patrons in these areas.

Considering this the noise level resulting from activity in the closest portions of the parking area to the eastern property line would result in sound levels ranging from 43 to 53 dBA, and 42 to 52 dBA at the closest (expected) future residential facades. Using this same method of analysis, the noise level resulting from activity generated by autos and patrons at the gas pumps would result in sound levels ranging from 41 to 51 dBA, and 40 to 50 dBA, at the closest (expected) future residential facades.

These sound levels would be below the site-specific allowable daytime, evening, and nighttime noise levels (refer to Table 3), and potential setbacks from Hwy 12 of the closest (expected) future residential facades.

Truck Deliveries

Noise generated by delivery trucks depends primarily on the truck. For the proposed market facility we would expect only step van and moderate sized truck deliveries. Heavy (semi-trailer type) trucks would be expected to deliver gasoline to the underground storage tanks. A-weighted noise levels generated by step vans and smaller gasoline-powered delivery trucks typically range from 60 to 70 dBA at a distance of 50 feet. Maximum noise levels generated at by heavy trucks typically reach 70 to 80 dBA at a distance of 50 feet. As in the previous discussion, given the orientation of the market building, future adjacent multi-family residences may not be acoustically shielded by the building structure from noise generated by in the parking areas of the site.

Based a similar analysis to that used for parking lot noise, medium truck deliveries at the market would be expected result in noise levels ranging from 52 to 62 dBA, and 51 to 61 dBA, at the closest respective facades of residences at setbacks 1 and 2. These sound levels would generally be at or near the site-specific allowable daytime and evening noise levels at residential setbacks 1 and 2 (refer to Table 2), however noise resulting from nighttime deliveries could exceed these limits by up 7 dBA.

A similar analysis shows that noise associated with heavy (semi-trailer type) truck fuel deliveries would be expected to range from 60 to 70 dBA and 59 to 69 dBA, at the closest facades of residences at setbacks 1 and 2. These sound levels would exceed site-specific daytime, evening and nighttime allowable noise levels at residential setbacks 1 and 2 by 7 to 12 and 9 to 14 dBA.

Based on these levels, daytime and evening medium truck deliveries at the market would comply with site-specific allowable noise levels, however nighttime medium truck market deliveries at residences at setbacks 1 and 2, and heavy truck fuel deliveries during all hours of the day or night hours could exceed the allowable noise levels.

Building Mechanical Equipment

Mechanical equipment associated with the market will likely include Heating, Ventilation, and Air Conditioning (HVAC) equipment. Though the location of this equipment in unspecified at the time, I&R expects that may either be located in the facilities attic space and vented to the rooftop, or located on a ground level pad on the north side of the building (away from customer entrances). The store's refrigeration equipment would likely be located inside the building and considering structural shielding would not be expected to increase noise levels at adjacent receivers. Noise from HVAC equipment located on a ground level pad on the north side of the building would also be expected to receive significant building shielding, such that equipment in this location would not be expected to increase noise levels at adjacent receivers.

Noise generated by rooftop/attic mounted mechanical equipment, because it may not be well shielding by building components, has the potential to resulting in increased noise at adjacent receivers. The noise level produced by such equipment varies significantly depending upon the equipment type and size. The precise noise impacts of rooftop vented mechanical equipment cannot be determined without detailed system design specifications regarding location, type, size, capacity, etc.—details, which are typically provided during later phases of the project design and development review along with other more detailed project engineering specifications. However, based on noise measurements made at other commercial centers, mechanical systems noise levels are typically 70 to 80 dBA at 3 feet in the open environment. Considering distance attenuation due to the spreading out of sound waves with distance for HVAC equipment located in an enclosed attic space and vented to the exterior, the sound level at a position five feet above ground level would be expected to range from 44 to 54 dBA and 42 to 52 dBA, at the closest expected facades at residential setbacks 1 and 2. These noise levels would not exceed the site-specific allowable noise levels in these areas.

MITIGATION GUIDELINES

Based on the results of this Noise Assessment, the following project activities could exceed the site-specific allowable noise levels, as shown in Table 2, at the future adjacent residential uses;

1. Nighttime market/retail deliveries,
and
2. Daytime, evening or nighttime fuel deliveries.

To reduce these potential project noise impacts and allow daytime fuel deliveries and daytime, evening and nighttime market deliveries to comply with the City's Noise ordinance limits, we recommend that prior to the occupation residences on the adjacent property (as discussed above) a sound wall with a minimum height of ten (10) feet above parking lot grade, be built on the eastern property line from the northern edge of the proposed southeast corner pedestrian access point northward for approximately 160 feet to a point approximately 30 feet north of the southernmost edge of the market footprint. A graphic representation of the location of this wall is shown in Figure 2, below.

To be effective as a noise barrier the wall should be built without cracks or gaps in the face or large or continuous gaps at the base and have a minimum surface weight of 3.0 lbs. per sq. ft. Acceptable materials for the wall includes, but are not limited to, masonry block and pre-cast

concrete panels. Wood may also be used. For a wood wall to meet these requirements we typically recommend that a homogenous sheet material, such as 3/4" plywood, be used as a backing for typical 1" thick (nominal) wood fence slats. Using the plywood ensures the continued effectiveness of the barrier with age, since wood slats alone have a tendency to warp and separate with age allowing gaps to form and the barrier effect of the wall to diminish.

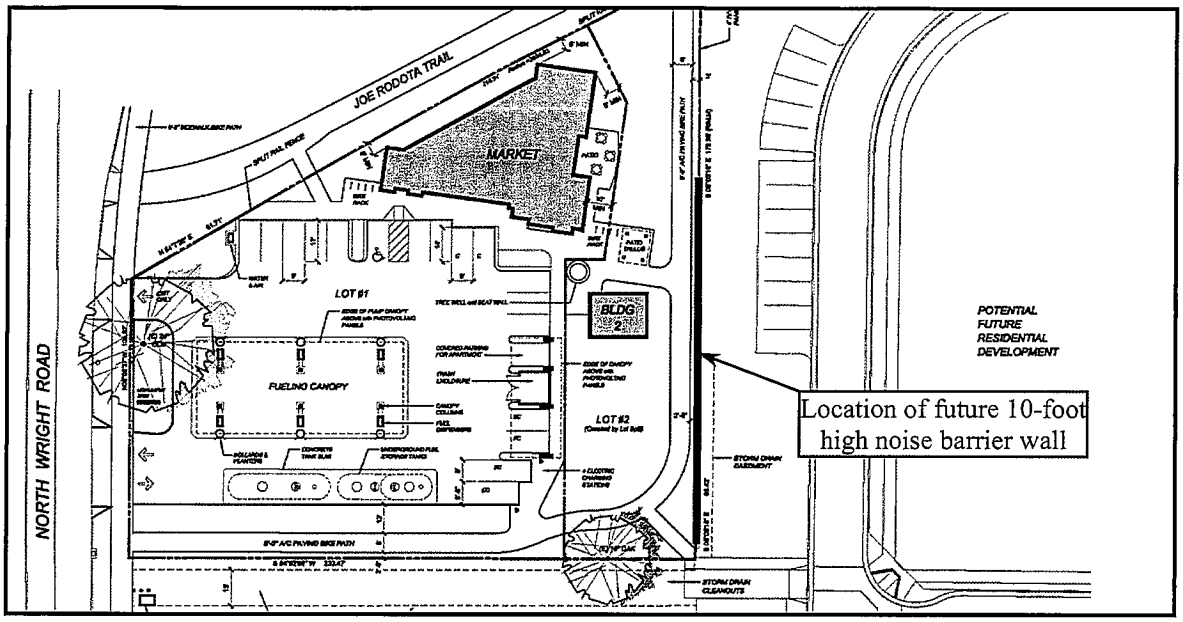


Figure 2: Site Plan with location of 10-foot high noise barrier wall

Since this measure will not fully mitigate noise impacts to future residential uses from heavy (semi-trailer type) truck fuel deliveries, in addition to the incorporation of the 10 foot high property line soundwall, a daytime only (7 am to 7 pm) restriction on fuel deliveries should be specified in the Conditions of Approval for the project.

This concludes our environmental noise assessment for the proposed Elm Street Station retail market, electric charge and gasoline fueling station project proposed at 847 North Wright Road in Santa Rosa, CA. If you have any questions or comments, please do not hesitate to call.

Sincerely,

Fred M. Svinth, INCE, Assoc. AIA
Senior Consultant Principal
Illingworth & Rodkin, Inc.

Appendix A:

Fundamental Concepts of Environmental Acoustics

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its *pitch* or its loudness. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales that are used to describe noise in a particular location. *A decibel (dB)* is a unit of measurement that indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10-decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 1.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level or dBA.* This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 2. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy-equivalent sound/noise descriptor is called L_{eq}. The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration. The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA.

Table 1: Definitions of Acoustical Terms Used in this Report

Term	DEFINITIONS
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, Leq	The average A-weighted noise level during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Table 2: Typical Noise Levels in the Environment

Common Outdoor Noise Source	Noise Level (dBA)	Common Indoor Noise Source
	120 dBA	
Jet fly-over at 300 meters		Rock concert
	110 dBA	
Pile driver at 20 meters	100 dBA	
		Night club with live music
	90 dBA	
Large truck pass by at 15 meters		
	80 dBA	Noisy restaurant
		Garbage disposal at 1 meter
Gas lawn mower at 30 meters	70 dBA	Vacuum cleaner at 3 meters
Commercial/Urban area daytime		Normal speech at 1 meter
Suburban expressway at 90 meters	60 dBA	
Suburban daytime		Active office environment
	50 dBA	
Urban area nighttime		Quiet office environment
	40 dBA	
Suburban nighttime		
Quiet rural areas	30 dBA	Library
		Quiet bedroom at night
Wilderness area	20 dBA	
Most quiet remote areas	10 dBA	Quiet recording studio
Threshold of human hearing	0 dBA	Threshold of human hearing